Food and Agriculture Organization of the United Nations

Policies to promote food security, sustainability and resilience:

The role of agrifood systems approaches

A report to the G20 Food Security Task Force

Food and Agriculture Organization of the United Nations (FAO)
and International Fund for Agricultural Development (IFAD)

with inputs from

African Centre for Food Security and the Sustainable and Healthy Food Systems – Southern Africa, University of KwaZulu-Natal
Committee on World Food Security Secretariat (CFS)
Centre of Excellence in Food Security, University of the Western Cape and the University of Pretoria
Institute for Economic Justice (IEJ)

IFAD
Investing in rural people

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UNITED REPUBLIC OF TANZANIA, 2025. Woman cassava farmer collects water for her farm.

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Introduction

1. Hunger has no place in the twenty-first century and yet, the world is still far from achieving Zero Hunger (UN, 2024). In the wake of the COVID-19 pandemic, the global prevalence of undernourishment rose sharply and has persisted at nearly the same level for three consecutive years. Between 713 and 757 million people may have faced hunger in 2023 – that's one out of 11 people in the world, and one out of every five in Africa (FAO *et al.*, 2024). Malnutrition in all its forms – undernutrition, micronutrient deficiencies, and overnutrition (obesity and diet-related diseases) – is also widespread. In 2022, 2.5 billion adults were overweight, 390 million were underweight, and 71.5 percent of the population in low-income countries, were not able to afford a healthy diet (WHO, 2024). Globally, unsustainable food production threatens biodiversity and degrades natural resources, which, in turn, impacts food production, livelihoods and human health.
2. Food systems continue to face persistent challenges and there is an urgent need to transform them into Sustainable Food Systems (SFS) i.e. "*A food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised"* (FAO, 2018). Tackling hunger, malnutrition, poverty, and environmental degradation cannot be solved by isolated measures. It requires a comprehensive, systems-level perspective, one that considers the full complexity of how food is produced, who is producing food, and how it is distributed, consumed and disposed of.
3. The agrifood systems (see Box 1) approach includes all the interconnected activities and actors involved in getting food from field to fork to final disposal. They also include non-food agricultural products such as forestry, feedstock, biomass for biofuels, and fibres. Measured in terms of employment, livelihoods, and planetary impact, it is the largest economic network of systems globally (FAO, 2021). They employ 4 billion people, directly and indirectly, but poverty and inequality are endemic, with many food-related jobs offering low wages and poor working conditions.
4. It is evident that our agrifood systems are not aligned with the needs of the global population or with the environment and that their transformation is urgently needed to improve their contributions to economic, social, health and environmental goals. A transformed agrifood system must be:
    i. healthy and nutritious, enabling all people to access diets that support lifelong wellbeing;
    ii. inclusive, ensuring a decent living for all who depend on agrifood systems for employment and livelihoods, particularly smallholders, women, and youth;
    iii. environmentally sustainable, safeguarding biodiversity, soils, water, and ecosystems for current and future generations; and
    iv. resilient, able to withstand and adapt to shocks from climate extremes, market volatility, and political instability, while maintaining access to food and protecting livelihoods (Ruben *et al.*, 2021).

    To ensure a successful transformation, it is essential to examine policy impacts across the full system to understand, utilise and manage the synergies and trade-offs.
5. The necessary transformation of food systems will also require substantial new investments, especially in developing countries, and presents a significant opportunity for private-sector finance. In fact, one analysis suggests that shifting to sustainable food systems could unlock about USD 4.5 trillion in annual business opportunities while eliminating up to USD 15 trillion in hidden costs from current models (Gillespy,

Davey and Mortara, 2025). However, public funding and aid alone cannot fill the huge financing gap – an estimated USD 2.5 trillion is needed in developing countries, meaning private capital must be mobilized at scale (FAO, n.d.). Demonstrating a clear business case for agrifood investments is essential to attract commercial financiers, convincing them that projects in areas like sustainable agriculture, nutrition, and value-chain upgrades can yield competitive returns alongside social benefits. Equally important is reducing perceived risks through de-risking instruments that make such investments more attractive to lenders and investors. Common de-risking approaches include blended finance mechanisms where public or philanthropic funds provide concessional capital, guarantees, or insurance to improve a project's risk-return profile, along with tools like hedging contracts, off-take agreements, and technical assistance to build capacity. By sharing or mitigating risks, whether related to weather shocks, market volatility, or credit constraints, these instruments help "crowd in" private-sector funding and unlock the large-scale financing needed to transform food systems in a sustainable and inclusive way. In this context, mobilising coordinated, concessional financing becomes essential. Many countries face rising debt burdens and limited fiscal space, which undermines their capacity to invest. Blending public and private capital, including concessional loans, risk-sharing instruments, and patient investment, is critical to transform food systems and ensure food security for all.

Box 1: Food systems and agrifood systems definitions

Food systems encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded. The food system is composed of sub-systems (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g. energy system, trade system, health system, etc.). Therefore, a structural change in the food system might originate from a change in another system; for example, a policy promoting more biofuel in the energy system will have a significant impact on the food system.

Agrifood systems cover the journey of food from farm to table – including when it is grown, fished, harvested, processed, packaged, transported, distributed, traded, bought, prepared, eaten and disposed of. They also encompass non-food products that constitute livelihoods and all of the people, as well as the activities, investments and choices, that play a part in getting us these food and agricultural products. In the FAO Constitution, the term "agriculture" and its derivatives include fisheries, marine products, forestry, and primary forestry products.

Sources: **FAO.** 2018. *Sustainable food systems: Concept and framework.* Rome. Available at: https://openknowledge.fao.org/server/api/core/bitstreams/b620989c-407b-4caf-a152-f790f55fec71/content; **FAO**. 2024. *The State of Food and Agriculture 2024 – Value-driven transformation of agrifood systems.* Rome. https://doi.org/10.4060/cd2616en

6. This report, prepared by FAO and IFAD with contributions from the Committee on World Food Security Secretariat (CFS), the Institute of Economic Justice (IEJ), the Centre of Excellence in Food Security, University of the Western Cape and the University of Pretoria, and the African Centre for Food Security and the Sustainable and Healthy Food Systems – Southern Africa, at the University of KwaZulu-Natal, is submitted to the G20 Presidency of South Africa in response to its request for insights on policy instruments and agrifood system approaches aimed at promoting food security and enhancing the effectiveness, sustainability, and resilience of agrifood systems at national, regional and global levels. Section 1 introduces the main challenges confronting agrifood systems today, including structural vulnerabilities, climate-related risks, and systemic inequities. Section 2 takes stock of global progress towards achieving Zero Hunger, drawing on available data and trends. Section 3

highlights a selection of policy options and best practices that are driving agrifood systems transformation and presents a group of 35 policies to highlight how they can impact different thematic areas, and the potential to group policies synergistically. The last section concludes with a set of recommendations for consideration by the G20 members.

1. Food system challenges

Balancing productivity and sustainability for a growing population

7. By 2034, the global population is projected to increase by over 729 million, reaching 8.8 billion, and is expected to approach 10 billion by 2050 (OECD/FAO, 2025). In the next decade, sub-Saharan Africa is anticipated to witness the most rapid population growth at 2.3 percent per year, while China's population is expected to decline gradually. Overall, there is a slight slowdown in population growth expected and, in line with this, the growth in global food demand is also expected to slow in the next ten years, compared to the previous decade (OECD/FAO, 2025). Nonetheless, sufficient safe and nutritious food will need to be produced to feed a growing world population, through sustainable food systems that not only meet demand but also improve nutrition, equity, and support climate resilience. The need to advance sustainable intensification is crucial, and effective transformation needs to select appropriate advances that enhance food production while balancing it with environmental sustainability, biodiversity protection and limiting land conversion. Successfully doing so could also create up to USD10 trillion in annual economic opportunities by 2050 (Ruggeri Laderchi *et al.*, 2024).

8. Yield improvements have contributed to global production growth, especially in low- and middle-income regions, and technological innovation, such as new seed varieties and animal breeds, will continue to support this growth, holding great promise for agrifood systems. However, large disparities in yield levels persist across commodities and regions (OECD and FAO, 2025). This suggests that there is continued uneven access to inputs, technologies, and a lack of the necessary enabling environments.

9. While sustainable agricultural intensification is part of the solution to ensuring global food supply, the challenge is multifaceted. Food loss and waste (FLW), for example, is an important issue that needs to be addressed throughout the agrifood supply chain. It is estimated that around 13 percent of food produced is lost between harvest and retail, and that 19 percent of total global food production is wasted in households, the food service and in retail (FAO, 2022; UNEP, 2024). Subsequently, the resources used to produce the food, such as water, land, energy, labour and capital are also wasted, which ultimately weakens the resilience and sustainability of the agrifood systems. Food waste is also estimated to generate between 8–10 percent of global greenhouse gas emissions. Scenario analysis suggests that halving food loss and waste has the potential to reduce the global agricultural GHG emissions by 4 percent and the number of undernourished people by 153 million by the year 2030 (OECD and FAO, 2024). Reducing FLW also has the potential to increase smallholder incomes.

Supporting livelihoods across sustainable agrifood systems

10. Agrifood systems are central to global livelihoods. Around 600 million smallholder farmers operate worldwide, but their influence stretches far beyond the farm. In total, over 1.2 billion people depend directly on agrifood systems for their livelihoods, while nearly 4 billion people live in households linked to agrifood systems-based livelihoods (Davis *et al.*, 2023). These systems not only produce the food that sustains the world but also form the economic backbone of many rural communities.

11. Smallholder farmers are foundational to global food security and agrifood systems. They produce a significant share of the world's food, accounting for 61 percent of global fruits and vegetables, 67 percent of roots and tubers, and around 30–34 percent of the global food supply, while operating on just 24 percent of global cropland (Ricciardi *et al.*, 2018). Their contributions are not limited to food production but extend to rural employment, biodiversity preservation, and cultural heritage. As

such, any process aimed at transforming agrifood systems must be firmly rooted in the realities of smallholders (Squires and Gaur, 2020). They are not passive beneficiaries but system-level actors capable of driving environmentally sustainable, socially inclusive, and economically viable transformation.

12. The central role of smallholders in agrifood systems also intersects with the opportunities and challenges facing the world's youth. Of the 1.3 billion people aged 15–24 years globally, nearly 85 percent live in lower-income countries, with large concentrations in Asia and sub-Saharan Africa. Yet more than one in four young people are not in employment, education, or training (FAO, 2025). Agrifood systems, if made more inclusive and dynamic, offer a unique opportunity to boost youth employment, stimulate rural economies, and channel the energy and innovation of young people towards agrifood system transformation (FAO, 2025).

13. Despite their importance to food production and distribution, smallholders particularly women and rural youth often face low and unstable incomes, limited access to land, credit, and markets, and high exposure to climate and price shocks. Rural livelihoods are often shaped by structural inequalities, including poor infrastructure, restricted land tenure rights, limited access to credit and inputs, and weak integration into markets. Women and youth, in particular, remain underrepresented and underserved within agrifood value chains, despite their significant contributions. Limited opportunities often result in rural-to-urban migration and creating decent work in rural and food value chains – especially for young women and men – is essential for reducing rural poverty and fostering social and political stability. Regions like Africa also have the potential to reach a USD 1 trillion agribusiness sector by 2030 if adequately capitalized, and local agri-small- and medium-sized enterprises (SMEs) and mid-sized value chain actors are critical for scaling transformation and attracting private investment (African Development Bank, 2016). Therefore, inclusive agricultural systems have the potential to reduce economic pressures that drive distress migration, particularly among young people seeking better prospects elsewhere.

14. Increasing sustainable productivity and value addition in agriculture while expanding employment opportunities across agrifood value chains will promote inclusive rural development. Investments in storage, processing, and transport infrastructure, along with access to digital technologies and financial services, can help rural populations capture more value from their labour, by increasing yields and reducing FLW. To ensure long-term viability, these gains must be achieved through practices that sustain and enhance yields without degrading natural resources. Strengthening farmer organisations, cooperatives, and inclusive business models can further improve bargaining power and market access for small-scale producers. However, it is important to note that when opportunities are created, there is need for systems to be in place to support access to them, including land access, particularly for youth in order to ensure their continuation (FAO, 2025).

15. Inequalities within agrifood systems need to be urgently addressed in order to allow the systems, and the stakeholders within them, to maximise their potential. Globally, 36 percent of working women are within the agrifood systems, and in developing countries, 80 percent of food is produced by women (FAO, 2025a). Yet women continue to face structural inequalities and discrimination. Not only do women have less access to inputs, land and services, but there is a persistent gender pay gap, meaning that, on average, women in agriculture earn 18 percent less than men (FAO, 2025a). When shocks occur, it is also women that are impacted the most, yet many households are headed by women who carry the responsibility of household food security. For example, in the first year of the COVID-19 pandemic, globally, 22 percent of women working in off-farm roles within the agrifood systems lost their jobs, compared to 2 percent of men. In part, this was likely to have been due to the higher

amount of unpaid care work that women generally undertake compared to men (4.2 hours per day versus 1.9 hours per day) which would have increased greatly during the pandemic (FAO, 2025a). If these structural inequalities are not addressed at the core, through working to change discriminatory social norms and providing women with the same legal rights as men, the agrifood system will remain flawed and the negative impacts will continue to threaten livelihoods.

16. Social protection systems, such as cash transfers and school feeding, as well as input subsidies, and crop insurance, targeted to small-scale producers, also play a critical role in protecting rural incomes, particularly in times of crisis. At the same time, policies that ensure decent work, fair pricing mechanisms, and equitable participation in value chains are vital for building more inclusive and resilient agrifood systems. They reduce vulnerability particularly when shocks, such as a climate extremes or market disruptions, are experienced, and the need to rely upon negative coping strategies, like selling assets or taking children out of school. This helps to build resilience and enhance risk management, through strengthening human capital, improving nutrition, and enabling households to invest in more diverse and sustainable livelihoods. Ultimately, a positive cycle can be built, whereby, reducing the intergenerational transmission of poverty.

17. However, these policies are not without trade-offs. If poorly designed or narrowly targeted, social protection and input subsidies can inadvertently promote dietary choices that worsen health outcomes or reinforce unsustainable agricultural practices. Moreover, the expansion of social protection coverage in low-income countries may divert limited fiscal resources from other critical areas or crowd out long-term income-generating activities (Kangasniemi *et al.*, 2025). Ensuring that the economic transformation of agrifood systems leaves no one behind will require coordinated policy action, long-term investment, and a firm commitment to tackling rural inequalities at their root.

Conflict and the fragility of agrifood systems

18. Armed conflicts have devastating effects on all aspects of people's lives, the environment and the economy with negative impacts lasting for generations, long after the physical conflict has ended. Local food systems are often devastated, with extreme poverty and food security crises increasing in conflict-affected situations (World Bank, 2021). Estimates suggest that, since 2014, two-thirds of the increase in global hunger was directly linked to conflicts, and at the end of 2020 over 80 percent of acutely food-insecure people lived in conflict affected areas (World Bank, 2021).

19. Conflict profoundly disrupts agrifood systems, displacing farm and livestock workers and creating sudden surges in food demand that drive hunger and price spikes. Trust-based relationships that underpin trade and value chains collapse, and this fragments markets, distorts seasonal price signals, discourages food storage and investment and fuels the black market (IFPRI, 2025). Critical supply chain functions, such as, transport, storage, processing, and distribution often completely stop, and even humanitarian operations are constrained (See Box 2: *Food aid in conflict and emergency settings for long-term food security*). Across this chain of disruption, one outcome remains consistent: people go hungry (IFPRI, 2025).

Box 2: Food aid in conflict and emergency settings for long-term food security

Conflict is the number one driver of hunger. In 2025, over 70 percent – or 223 million people – facing acute food insecurity live in fragile or conflict-affected areas. Among the 13 countries identified as Hunger Hotspot, conflict is a major factor in 12.

Violence impacts every stage of the food system – from production to distribution. It damages agricultural infrastructure, restricts access to farmland, and disrupts transport networks, driving up food prices. Those displaced by conflict lose access to land, livestock and livelihoods and livestock, undermining their food production capacity. Host communities face increased pressure on local resources and food markets. Insecurity and shifting frontlines also impact humanitarian access, delaying or hindering the delivery of essential food aid and services.

Disruptions to food systems are not just a result of conflict, they are also a driver of instability. As such, food assistance in conflict-affected areas plays a critical role beyond addressing immediate needs: When designed to support local food production, empower marginalized groups, and foster social cohesion, it can actively contribute to long-term stability, peace, and food security.

Sources: **Delgado, C., Murugani, V. and Tschunkert, K.** 2021. *Food Systems in Conflict and Peacebuilding Settings: Pathways and Interconnections (SIPRI Policy Paper No. 62).* Stockholm, Stockholm International Peace Research Institute. Available at: https://www.sipri.org/sites/default/files/2021-06/2106_food_systems.pdf

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WFP and FAO. 2025. *Hunger Hotspots. FAO–WFP early warnings on acute food insecurity: June to October 2025 outlook.* Rome. https://doi.org/10.4060/cd5684en

20. The widespread and interlinked impacts of conflict, weather shocks, and economic disruption underscore the urgent need to transition from reactive crisis response to proactive investment in resilient and inclusive agrifood systems (Sova *et al.*, 2023). While humanitarian interventions remain essential in emergencies, long-term stability depends on restoring value chains, revitalising markets, and strengthening institutions that govern land, water, and food production. Food-related instability, including from climate extremes, resource conflict, and economic shocks, has been a trigger for social unrest and, in some cases, civil war. Today's record levels of armed conflict, combined with emerging risks such as biological and digital threats that could target agrifood systems, heighten the need to reduce fragility (Uppsala University, 2024; UN, 2025). Strengthened collaboration, both across states and among national stakeholders, is essential to bridge institutional divides and build agrifood systems that generate livelihoods, reduce inequality, and foster local cohesion. In this context, agrifood systems are not only a source of sustenance, but a foundation for peace, resilience, and conflict prevention.

Challenges of technological change

21. The agrifood system is under increasing pressure to deliver sustainable, efficient, and inclusive solutions, and digitalization has emerged as a critical lever for transformation. Technologies and innovations are key triggers for transforming the agrifood systems, enhancing connectivity across the value chain, reducing inefficiencies, and providing timely access to technical information (FAO, 2022a). They enable better coordination among actors and support decision-making with real-time data, such as early warnings in the face of natural disasters. Open data and

digital platforms can also foster greater transparency and trust among stakeholders who may otherwise be disconnected from the global food system.

22. The transformational impacts of digital innovations can support a range of market outcomes including sustained market participation. For example, digital technologies promote financial inclusion as they reduce entry costs in rural markets. E-commerce platforms can facilitate remote employment and reduce rural-urban migration of educated youth and women. Blockchain technology can facilitate increased traceability of food throughout the value chain, fostering transparency and consumer trust. This technology can therefore support the implementation of environmental and social sustainability standards and labelling that provide information to consumers on . All of these increasing possibilities also provide an increased ability to generate, collect and analyse data – a fundamental foundation of evidence-based policy making (FAO, 2020).

23. However, if not carefully managed, digital tools can deepen existing inequalities by widening the digital divide, especially in areas where agriculture is the main source of employment. Smallholder farmers often face difficulties adapting to new technologies, which leaves them at a disadvantage. Risks related to data protection, privacy, and cybersecurity also pose serious concerns, particularly where strong regulatory frameworks are not in place. Addressing these challenges requires concerted efforts in policymaking, regulation, and capacity-building. Ensuring equitable access to digital infrastructure, finance, and skills is essential to avoid reinforcing systemic barriers and to ensure that digitalization benefits all actors within the agrifood system. These risks are particularly high in dual food systems where advanced technologies may disproportionately benefit the commercial sector, further widening inequality and marginalising under-resourced producers unless targeted measures are taken to support their inclusion. It is also important to note that, while technology and innovation has the potential to address many challenges related to food security, deeper ecological transformation of food systems is needed, to ensure sustainability in resource use and resilience to extreme climate events.

Environmental protection and threats

24. The agrifood system produces around one third of greenhouse gas emissions globally, is responsible for up to 80 percent of biodiversity loss and deforestation, and uses up to 70 percent of freshwater (United Nations Convention to Combat Desertification, 2022). While natural resources are finite, populations continue to grow. Maintaining current lifestyles would require the equivalent of almost three planets to satisfy the needs of a projected global population of 10 billion by 2050(UN, 2025b). Unless this depletion of our natural resources is addressed with affordable and readily available actions, this amount will grow proportionately along with the increasing population and demand for food.

25. Global biodiversity decline is also a major concern. Recent studies estimate that global biodiversity declined by between 2 and 11 percent during the twentieth century due to land-use change alone. Extreme climate events may become the primary driver of biodiversity loss by the mid-twenty-first century (Pereira *et al.*, 2024). This poses an existential challenge for our agrifood systems and the smallholders that underpin them.

26. In turn, agriculture is highly dependent upon the climate; extreme weather events, delayed rainy seasons and heatwaves can destroy crops and lives. Every year up to 40 percent of food crops are also lost to plant pests and diseases, having a devastating effect on the poorest communities in the world (FAO, 2022b; IPPC Secretariat, 2021). Climate extremes are also exacerbating the spread of pest and diseases to new areas creating challenges where they did not originally exist.

27. Technological advances have the capacity to protect against many of these climate-related challenges, and to increase yield in a sustainable manner, but they are not a panacea. Agrifood systems need to be resilient to climate extremes at their core, balancing both food security needs and reducing the use of limited resources. For example, land restoration is a proven and cost-effective solution to help reverse climate-related challenges and biodiversity loss caused by the rapid depletion of our finite natural resources (United Nations Convention to Combat Desertification, 2022). Practices such as sustainable crop production intensification, conservation agriculture, agroecology and integrated pest management, promote increased yields while conserving resources and minimizing environmental impact, emphasize ecosystem-based practices, drawing on natural processes to enhance crop growth and resilience. Such technologies are fundamental, together with potential shifts in diets towards alternative yet nutritious food and feed sources and policy and governance contexts that support these shifts.

28. Climate extremes, environmental degradation, and biodiversity loss are deeply interconnected challenges that must be tackled simultaneously, not in isolation. Fragmented responses risk undermining overall resilience and long-term sustainability. Integrated solutions that regenerate ecosystems, reduce emissions, and sustain productivity, such as nature-based approaches, improved resource governance, and diversified farming systems, are essential. Delivering these solutions at scale requires aligning climate, environment, and biodiversity agendas within agrifood system transformation efforts, supported by coherent policies, long-term investments, and inclusive governance.

Triple gap in financing needs

29. Agrifood systems, as they currently function, impose massive hidden costs – estimated at nearly USD 12 trillion annually – linked to health problems, environmental degradation, and poverty (FAO, IFAD, UNICEF, WFP and WHO, 2023).[1] Of these, poor diets alone cost the global economy at least USD 9.3 trillion, primarily through increased healthcare spending and lost productivity (FAO, IFAD, UNICEF, WFP and WHO, 2023). At the same time, 733 million people face hunger, and 2.33 billion experience food insecurity (FAO, IFAD, UNICEF, WFP and WHO, 2023). These figures underscore the urgency of systemic transformation – not only to reduce environmental and health burdens, but also to alleviate the substantial economic and human costs of inaction.

30. Agrifood systems are foundational to economies, societies, and ecosystems worldwide, but contribute significantly to environmental degradation and GHG emissions. Despite their potential to drive substantial sustainability gains, a lack of investment and appropriate incentives continues to hinder progress and prevent countries from fully leveraging this potential. Transitioning global agrifood systems to be resilient to climate extremes, will require more than USD 1.1 trillion per year until 2030, yet current climate finance flows to these systems amount to just USD 28.5 billion per year (CPI and FAO, 2025). This disparity reveals a staggering finance gap that must be urgently addressed to focus on the trade-off, and to build more complementary relationships between food production, the environment and food security.

31. While global climate finance is increasing overall, the funding allocated to small-scale agrifood systems remains alarmingly low, despite their critical contribution to food production and climate resilience. In 2019/20, only USD 5.53 billion, or 0.8 percent of total climate finance across all sectors (USD 660.2 billion), was directed to small-scale

[1]. Research is broadly consistent in pointing towards such costs being at least 10 percent of global GDP, amounting to USD 12.7 trillion. For more information, see FAO. 2023. The State of Food and Agriculture 2023. Revealing the true cost of food to transform agrifood systems. Rome.

agrifood systems. This represents just 19 percent of total climate finance flowing to agrifood systems more broadly (USD 28.5 billion) (CPI, 2023). This striking underinvestment reflects a misalignment between the importance of smallholders and their access to climate finance – despite being among the most exposed to climate shocks and among the least equipped to adapt. Rectifying this imbalance is essential for achieving just and effective climate resilience across agrifood systems.

32. It has been found that there are two further gaps in the needs to transition agricultural systems, namely, planning and data**.** Nationally Determined Contributions (NDCs) submitted by countries vastly underestimate the financing required for agrifood systems, allocating only 15 percent of climate funding needs to this critical sector (CPI and FAO, 2025). This planning gap reflects the limited integration of agrifood systems into climate finance strategies. At the same time, there is a significant data gap, that limits knowledge on investment needs, and undermines global and national efforts.

33. Addressing the triple gap calls for more effective, coordinated, and inclusive financing approaches. With an increasing number of financing actors within the field, coordination is key to ensuring alignment of interventions and to effectively respond to the direct needs and priorities of recipient countries (FAO, IFAD, UNICEF, WFP and WHO, 2024). In addition, many low- and middle-income countries, and certain populations, including women, Indigenous Peoples and small-scale producers, face substantial barriers in accessing affordable finance, and those with the least access often face the highest burdens of undernutrition and climate vulnerability (FAO, IFAD, UNICEF, WFP and WHO, 2024). A shift is needed towards coordinated, holistic investment strategies that include grants, concessional loans, and blended finance models tailored to country contexts, and that provide innovative approaches to increase financing access and de-risk investments.

34. Transforming agrifood systems is not only essential to the environment, but also represents a major opportunity to restore biodiversity, improve livelihoods, and secure long-term sustainability (CPI and FAO, 2025). Strategic investments in sustainable agriculture also offer high returns, as every dollar invested can yield up to USD 16, with far-reaching effects on food security, incomes, and social cohesion (World Bank, 2024). Targeted spending on small-scale infrastructure, such as irrigation, storage, rural roads, and digital connectivity, can dramatically increase productivity, reduce food loss, and improve climate resilience. Supporting local entrepreneurs, agri-SMEs, and cooperatives energizes domestic markets, strengthens food systems from the ground up, and builds self-reliance.

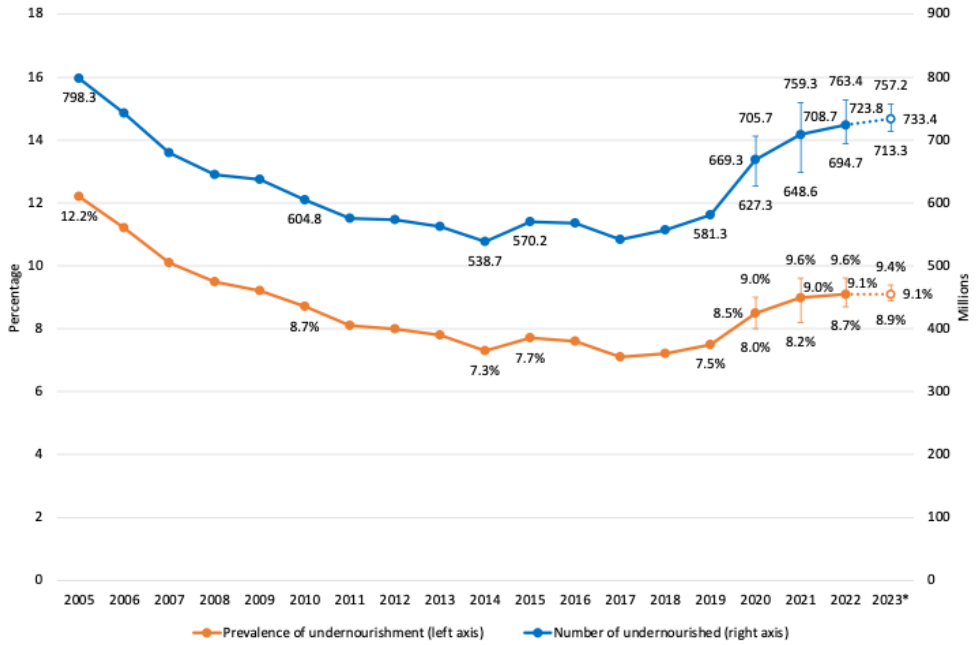
2. The global food security landscape

35. This section provides an overview of the current status, and recent and future trends in global hunger, food security, nutrition, and sustainable agriculture. It outlines key indicators such as the prevalence of undernourishment and food insecurity, highlighting how these have evolved in recent years. Regional patterns and disparities are also presented, offering a snapshot of where the world stands today in efforts to end hunger and ensure access to safe, nutritious, and affordable food for all.

Food security trends

36. In recent years, global hunger has remained high, with the Prevalence of Undernourishment (PoU) increasing from 7.5 percent in 2019, to 9.1 percent in 2023 (Figure 1). In numbers, this means that an estimated 733 million people faced hunger, an increase of 152 million since 2019 (FAO, IFAD, UNICEF, WFP and WHO, 2024).

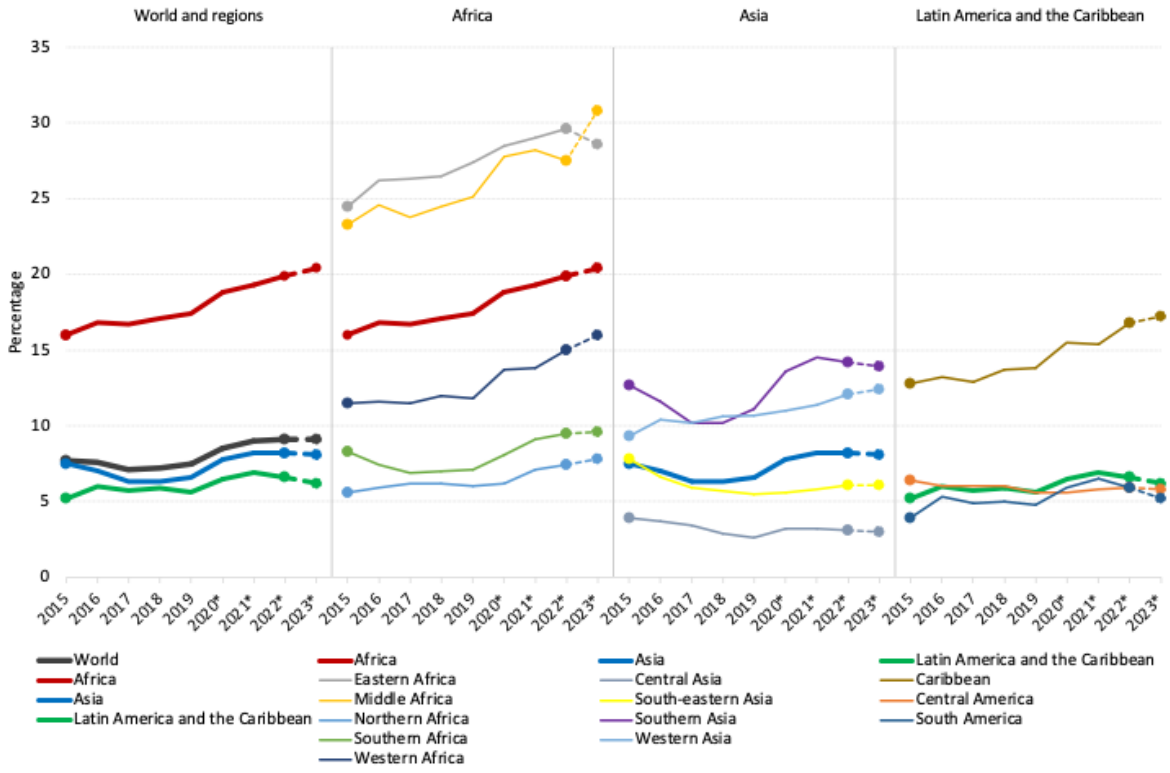
Figure 1. Global Prevalence of Undernourishment (PoU), 2005–2023, percent



Notes: Bars show lower and upper bounds of the estimated range. * Projections based on nowcasts for 2023 are illustrated by dotted lines.
Source: **FAO**. 2024. FAOSTAT: Suite of Food Security Indicators. [Accessed on 24 July 2024]. https://www.fao.org/faostat/en/#data/FS. Licence: CC-BY-4.0. *In* FAO, IFAD, UNICEF, WFP & WHO. 2024. The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms. Rome, FAO.

37. There are increasing regional disparities, with the PoU for Africa increasing from 2015 to 2023, with 20.4 percent of the African population now facing hunger. In Asia, the PoU has remained relatively stable, with 8.1 percent suffering from hunger in 2023, yet Asia still accounts for over half of the worlds hungry. The Latin America and Caribbean region has seen a slight decline with an estimated 6.2 percent of the population experiencing hunger in 2023 (Figure 2) (FAO, IFAD, UNICEF, WFP and WHO, 2024). All three regions demonstrated an increase in the PoU as a result of the COVID-19 pandemic and have not yet returned to pre-pandemic numbers.

Figure 2. Regional Prevalence of Undernourishment (PoU), 2005–2023, percent

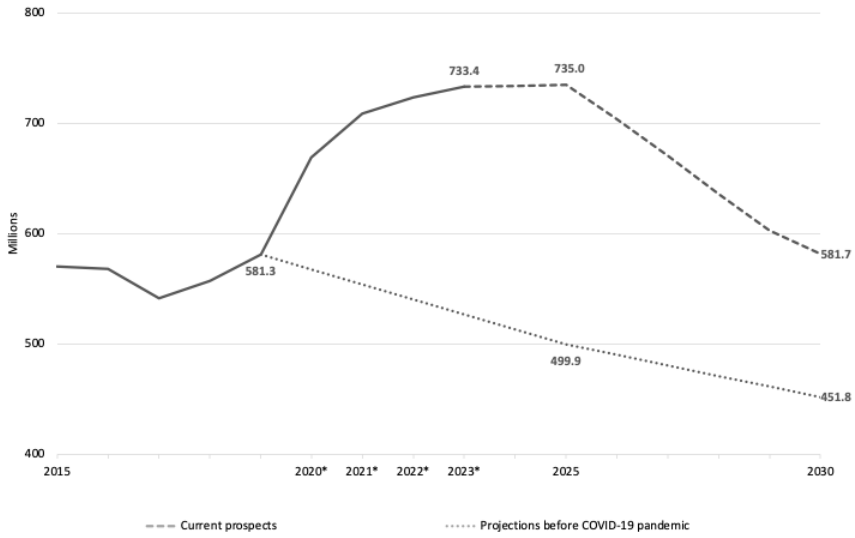


Notes: Only regions for which data were available for all the subregions and the prevalence of undernourishment (PoU) was greater than 2.5 percent are shown. Eastern Asia is not shown because the PoU has been consistently below 2.5 percent since 2010. * Values are based on the projected mid-ranges. The full ranges of the 2020 to 2023 values can be found in the Supplementary material to Chapter 2.

Source: **FAO**. 2024. FAOSTAT: Suite of Food Security Indicators. [Accessed on 24 July 2024]. https://www.fao.org/faostat/en/#data/FS. Licence: CC-BY-4.0. *In* FAO, IFAD, UNICEF, WFP & WHO. 2024. The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms. Rome, FAO

38. Figure 3 demonstrates the concerning impact that the COVID-19 pandemic made on the progress towards Zero Hunger. A comparison between PoU projections and pre-COVID-19 pandemic estimates suggests there will be approximately 130 million more undernourished people by the end of the decade, than anticipated before the pandemic. On the current trajectory, we can expect that 582 million people, or 6.8 percent of the global population, will be chronically undernourished in 2030. This impact is also evident by region, with the projections for Africa, Asia and Latin America and the Caribbean all demonstrating the negative impact of the pandemic. Africa is projected to have 10 million more people (18 percent of the population) facing chronic hunger by 2030, while Latin America and the Caribbean will reduce chronic hunger by 8 million people, a slower pace than expected, and will bring the PoU below 5 percent by 2030. However, Asia is expected to make a strong recovery in the second half of the decade where the number of undernourished is projected to fall from the current 385 million to 229 million people by 2030, nearly halving the PoU to 4.8 percent by 2030 (FAO, IFAD, UNICEF, WFP and WHO, 2024).

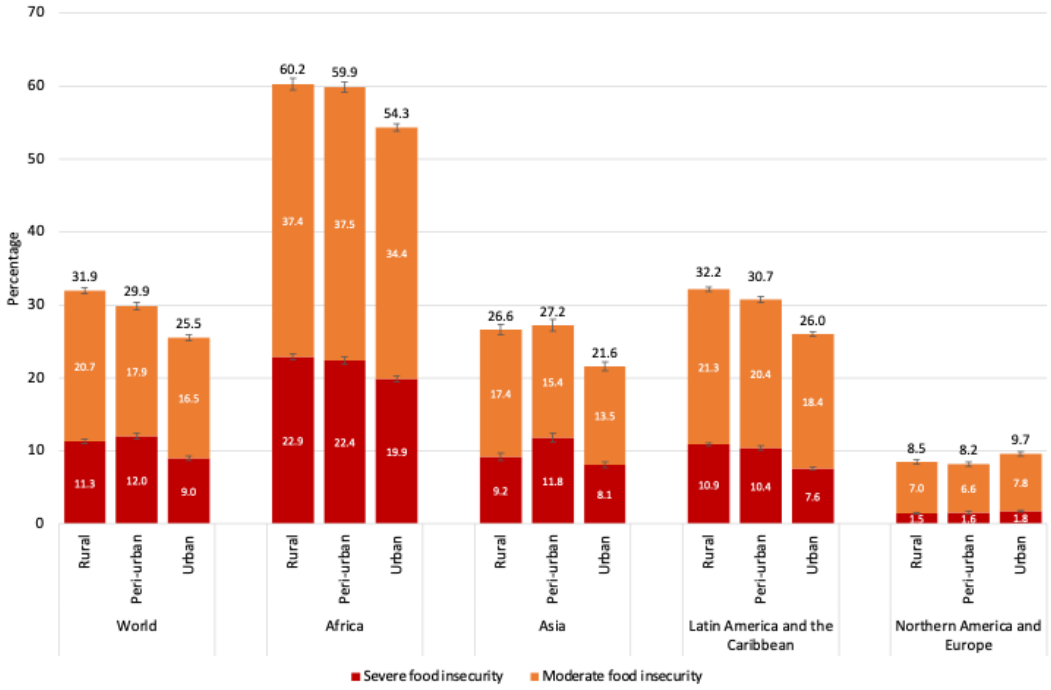
Figure 3. Projected Prevalence of Undernourishment (PoU) pre and post COVID-19 pandemic, millions



Source: **FAO, IFAD, UNICEF, WFP & WHO**. 2024. *The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms.* Rome, FAO.

39. Access to safe, nutritious and sufficient food is a basic human right, however, after the sharp increase in food insecurity during the pandemic, levels have remained relatively unchanged. Nearly 2.33 billion people experienced moderate or severe food insecurity in 2023, including 864 million facing severe levels. Africa's food insecurity rate (58 percent) is nearly double the global average, while in Asia, 24.8 percent of the population (1.18 billion people), faced moderate or severe food insecurity. Latin America and the Caribbean was the only region that made progress in this area. Moderate to severe food insecurity dropped from 31.4 percent in 2022 to 28.2 percent in 2023 – equivalent to approximately 20 million fewer people facing moderate or severe food insecurity – and from 11.0 percent to 8.7 percent for severe food insecurity. Food insecurity continues to rise in Oceania, with moderate or severe levels increasing from 23.2 percent in 2020 to 26.8 percent in 2023. Severe food insecurity also edged up in the region, reaching 10.4 percent in 2023. Globally, and in most regions, the prevalence of food insecurity is higher in rural than urban levels (Figure 4).
40. Since data was first available in 2015, food insecurity has consistently affected women more than men across all regions (FAO, IFAD, UNICEF, WFP and WHO, 2024). This gender gap widened significantly between 2019 and 2021, especially during the COVID-19 pandemic, due to women's greater job losses and caregiving roles. Globally, the gap in moderate or severe food insecurity rose from 1.4 to 3.6 percentage points during that period, and from 0.6 to 2.3 points for severe food insecurity (FAO, IFAD, UNICEF, WFP and WHO, 2024). As pandemic-related disruptions eased, the gap narrowed for moderate or severe food insecurity to 2.3 points in 2022 and 1.3 points in 2023, and to around 1 point for severe food insecurity. However, this apparent improvement is partly due to rising food insecurity for men in Asia and in Northern America and Europe (FAO, IFAD, UNICEF, WFP and WHO, 2024).

Figure 4. Moderate and severe food insecurity, rural vs urban areas



Note: Only regions for which data were available for all the subregions are shown.

Source: **FAO**. 2024. FAOSTAT: Suite of Food Security Indicators. [Accessed on 24 July 2024]. https://www.fao.org/faostat/en/#data/FS. Licence: CC-BY-4.0. *In* **FAO, IFAD, UNICEF, WFP & WHO**. 2024. *The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms*. Rome, FAO.

Malnutrition in all its forms

41. Globally, progress on nutrition related targets are not on track, with numbers for low birthweight and childhood overweight remaining stagnant, and the prevalence of anaemia in women aged 15 to 49 years increasing. Although global stunting and wasting prevalences have been declining and levels of exclusive breastfeeding have been rising over the past decade, the progress is still not sufficient. Compared to global levels, least developed countries (LDCs) are faring the worst in all these areas. Adult obesity is an increasing issue globally, rising from 12.1 percent (591 million people) in 2012 to 15.8 percent (881 million people) in 2022. This number is projected to increase to more than 1.2 billion by 2030 (Figure 5) (FAO, IFAD, UNICEF, WFP and WHO, 2024). With rising obesity comes the triple burden of malnutrition, i.e. the co-existence of undernutrition and micronutrient deficiencies together with overweight and obesity, an increasing problem globally, including in LDCs (FAO, IFAD, UNICEF, WFP and WHO, 2024). *Box 3: A triple burden of malnutrition*, provides further information on this topic. Recent data from 28 countries also highlight the gender gap in this area, showing that women facing severe food insecurity are significantly less likely to meet minimum dietary diversity standards (FAO, IFAD, UNICEF, WFP and WHO, 2024).
42. Malnutrition directly impacts health and vulnerability to infection and disease, including non-communicable diseases (NCDs), which also account for 70 percent of the quantified health related hidden costs of global agrifood systems (van Neerven, 2025; FAO, 2024). Poor health impacts the wellbeing of individuals and their families, increases burden on health systems, diminishes innovation and human capital through reduced schooling and ability to work, and ultimately impacts the economy. This highlights the importance of access to affordable and nutritious food.

Figure 5. Trends and projections of key malnutrition indicators, World and LDCs

Notes: The target year to halt the rise of adult obesity is 2025. Methodology to calculate global aggregates and projecting to 2030 can be found in the Supplementary material to Chapter 2. *Sources*: See Figure 5 references in References section

Sources: **UNICEF and WHO.** 2023. *Low birthweight.* In: UNICEF. [Cited 24 July 2024]. Available at: https://data.unicef.org/topic/nutrition/lowbirthweight

UNICEF and WHO. 2023. *Joint low birthweight estimates.* In: WHO. [Cited 24 July 2024]. Available at: https://www.who.int/teams/nutrition-and-food-safety/monitoringnutritional-status-and-food-safety-and-events/joint-low-birthweight-estimates

UNICEF. 2024. *Infant and young child feeding.* In: UNICEF. [Cited 24 July 2024]. Available at: https://data.unicef.org/topic/nutrition/infant-and-young-child-feeding

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WHO. 2021. *WHO global anaemia estimates, 2021 edition.* In: WHO. [Cited 24 July 2024]. Available at: https://www.who.int/data/gho/data/themes/topics/anaemia_in_women_and_children

WHO. 2024. *Global Health Observatory (GHO) data repository: Prevalence of obesity among adults, BMI ≥ 30, age-standardized. Estimates by country.* [Accessed 24 July 2024]. Available at: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/prevalence-of-obesity-among-adults-bmi-=-30-(age-standardizedestimate)-(-). Licence: CC-BY-4.0

Box 3: A triple burden of malnutrition

Malnutrition is no longer confined to moments of crisis or acute hunger. Around the world, children experience a *slow violence* of malnutrition: a form of harm that unfolds gradually, often invisibly, across the life course and across generations. Nowhere is this more evident than in the global coexistence of stunting, micronutrient deficiency, and rising overweight and obesity, a triple burden of malnutrition that affects rich and poor countries alike.

This burden reflects the structural inequalities embedded in agrifood systems, care environments, and social institutions. In many countries, including middle-income countries such as South Africa, and also in parts of Asia, Latin America, and Africa's urbanising regions, children are born into households where cheap calories are abundant but quality nutrition is scarce.

In South Africa, 27 percent of children under five are stunted, a rate that has remained virtually unchanged since 1999. Simultaneously, 13.3 percent of children under five are overweight, and among adolescent girls aged 15–19, 10.9 percent are obese, with one in three suffering from anaemia. By adulthood, 68 percent of women are overweight or obese, with associated increases in diabetes, hypertension, and maternal health complications. These statistics, drawn from multiple waves of the South African Demographic and Health Surveys and nutrition studies between 1999 and 2021 echo trends observed in India, Mexico, Nigeria, and Brazil, where undernutrition persists even as overweight and diet-related non-communicable diseases (NCDs) surge.

Such trends are not random. They are shaped by structural violence, the cumulative effects of poverty, inequality, weak public services, and food environments saturated with ultra-processed, nutrient-poor products. These foods are aggressively marketed, widely available, and often more affordable and storable than fresh produce. As a result, even in countries where food is plentiful in caloric terms, micronutrient deficiencies remain widespread.

The slow violence of malnutrition unfolds at key sensitive periods: pregnancy, infancy, early childhood, and adolescence. It begins with poor maternal nutrition, adolescent pregnancy, and food insecurity during pregnancy, all of which increase the risk of low birth weight, affecting 15 percent of South African newborns. It continues with low rates of exclusive breastfeeding (just 32 percent of infants under six months in South Africa are exclusively breastfed) and inadequate complementary feeding. And it culminates in adolescence, where dietary transitions, reduced physical activity, and economic precarity heighten the risk of overweight, obesity, and NCDs.

Importantly, this burden is also intergenerational. Stunted girls are more likely to become overweight adolescents and undernourished mothers. They, in turn, give birth to small-for-gestational-age infants – perpetuating a cycle of low productivity, ill health, and premature mortality. National surveys show that in nearly 1 in 8 households, an overweight adult and an undernourished child coexist, making clear that the triple burden is not confined to isolated populations but is *embedded within the same household*.

This structural crisis is often obscured in policy discourse. Hunger has declined, self-reported food security has improved, and national food production is often adequate. Yet this conceals the inequitable distribution of nutritious foods, the erosion of dietary diversity, and the failure of systems to support caregivers and children. Moreover, nutrition is often siloed, seen as the responsibility of the health sector alone, despite evidence that it is shaped by access to clean water, safe housing, energy, social protection, and education.

Addressing this slow violence requires life course-based, multi-sectoral strategies. It means investing not just in food and supplements, but in adolescent girls' health, maternal care, early childhood development, and social protection systems. It also requires stronger regulation of the food industry, protection of breastfeeding, promotion of healthy food environments, and better monitoring systems to track nutrition outcomes, not just hunger.

Ultimately, the triple burden of malnutrition is not just a health issue. It is a manifestation of unjust development pathways. Reframing child malnutrition as *slow violence* foregrounds its long-term human cost, reveals its structural roots, and compels a more integrated, rights-based response.

Sources: Global Diet Quality Project. DQQ data 2021–2023. Accessed at dietquality.org
Global Nutrition Report. Accessed at https://globalnutritionreport.org/resources/nutrition-profiles/

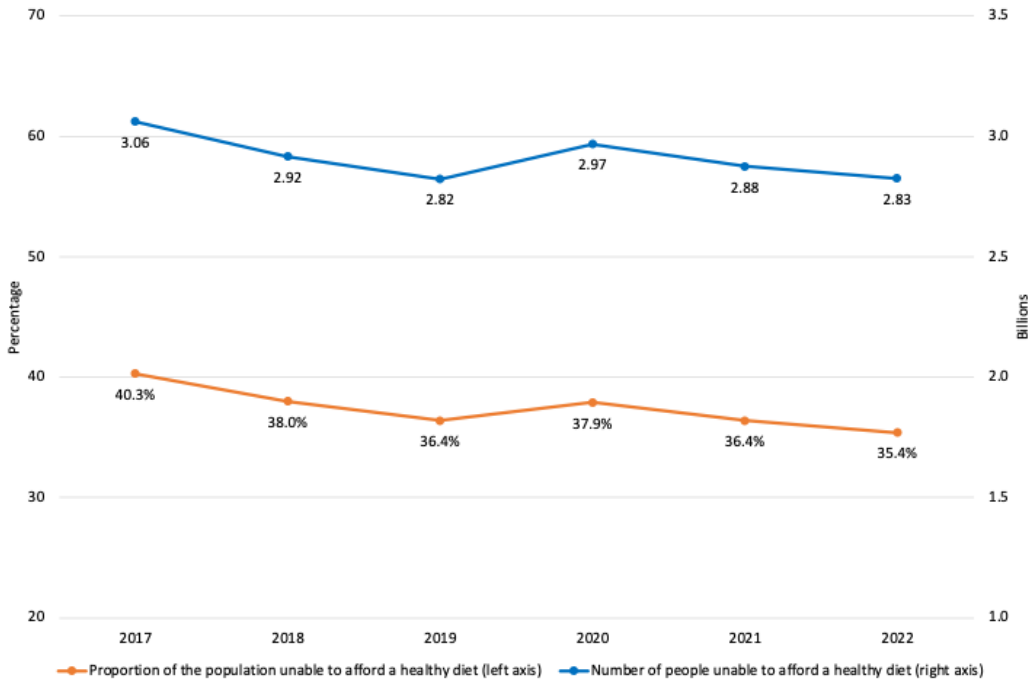
Cost and affordability of healthy diets

43. In recent years, global events have heavily impacted the cost of healthy diets. In 2022, food prices surged due to the ongoing effects of the COVID-19 pandemic and the war in Ukraine. This drove the average cost of a healthy diet up to 3.96 purchasing power parity (PPP) dollars per person, per day, compared to 3.56 PPP dollars in 2021 (FAO, IFAD, UNICEF, WFP and WHO, 2024).

44. Despite these rising costs, and thanks to a partial economic rebound, 2022 saw the number of people globally unable to afford a healthy diet decline to pre-pandemic levels of 2.83 billion. Overall, 35.4 percent of the world's population could not afford a healthy diet in 2022, although this is an improvement from 36.4 percent in 2021, it remains an unacceptably high rate (Figure 5). However, the recovery has been uneven across income groups, where lower-middle-income countries accounted for the largest share of those unable to afford a healthy diet (1.68 billion people), and low-income countries faced the highest proportion of affected populations (71.5 percent) – accounting for three quarters of the global population unable to afford a healthy diet (Figure 6) (FAO, IFAD, UNICEF, WFP and WHO, 2024).

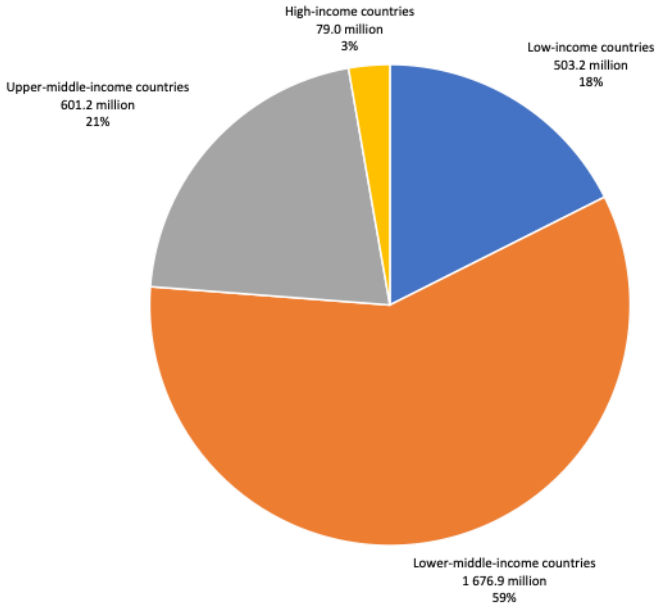
45. Regionally, the situation has also varied significantly. Asia and Latin America and the Caribbean saw improvements in the number of people unable to afford a healthy diet in 2022 compared to 2020, and Northern America, Europe, and Oceania recorded slight reductions. Africa, on the other hand, experienced a notable deterioration with the number of people unable to afford a healthy diet rising by 24.6 million in 2022, reaching 924.8 million in 2022. Low-income countries have had slower economic growth compared with other income levels, and rising food prices have compounded challenges.

Figure 6. The proportion of the population and number of people unable to afford a healthy diet in the world, 2017–2022



Source: **FAO**. 2024. FAOSTAT: Cost and Affordability of a Healthy Diet (CoAHD). [Accessed on 24 July 2024]. www.fao.org/faostat/en/#data/CAHD. Licence: CC-BY-4.0. *In* **FAO, IFAD, UNICEF, WFP & WHO.** 2024. *The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms*. Rome, FAO.

Figure 7. The percentage of countries, by income, unable to afford a healthy diet



Notes: The global number of people unable to afford a healthy diet (NUA) estimate is obtained by multiplying the prevalence of unaffordability for each of the five world regions by the total population size in each region. Calculating the global NUA estimate as the sum of the NUA estimates of other country groupings, such as those based on income levels, should be avoided.
Sources: **FAO**. 2024. FAOSTAT: Cost and Affordability of a Healthy Diet (CoAHD). [Accessed on 24 July 2024]. www.fao.org/faostat/en/#data/CAHD. Licence: CC-BY-4.0. *In* FAO, IFAD, UNICEF, WFP & WHO. 2024. The State of Food Security and Nutrition in the World 2024 - Financing to end hunger, food insecurity and malnutrition in all its forms. Rome, FAO.

Agricultural productivity

46. Agriculture is often considered the backbone to economies, particularly in developing countries, where it feeds the populations and can act as a powerful tool against extreme poverty. In fact, agricultural sectoral growth is 2–3 times more effective at reducing poverty than an equivalent amount generated in other sectors, with the largest impacts being on the poorest in society (World Bank, 2025). However, sustainable agricultural intensification is key to ensure food security for a growing population, to increase incomes and to safeguard environmental resources.

47. Global agricultural production has seen significant expansion over the past decade, with the total output of primary crops reaching 9.9 billion tonnes in 2023, a 28 percent increase since 2010. This growth has been driven by improvements in production technologies, intensification of cultivation, and favourable conditions in key producing countries. Cereals remain the dominant crop group, with maize leading in volume (1.2 billion tonnes in 2023), followed by rice and wheat. The production of sugar crops, oil crops, fruit, and vegetables also rose steadily, while roots and tubers such as cassava and potatoes continued to play a major role in regions like Africa and Asia. Oil crops experienced particularly rapid growth, up 45 percent since 2010, reflecting increased demand for edible oils and biofuels (FAO, 2024a).

48. In the livestock sector, production also expanded significantly: meat output grew by 26 percent, milk by 34 percent, and egg production by 40 percent between 2010 and 2023. Poultry, pig, and cattle meats led global meat production, with chicken meat overtaking pig meat in 2019. India and the United States of America were the top producers of raw cattle milk in 2023, while Asia dominated egg production (FAO, 2024a). These trends reflect not only the intensification of global agrifood systems but also the need to address the sustainability and equity of agricultural growth across different regions and production systems.

3. Policy measures for food systems transformation: synergies and trade-offs

49. The global agrifood system encompasses all actors and activities involved in producing, processing, distributing, consuming and disposing of food, and is embedded in broader social, economic and environmental contexts. It plays a vital role in ensuring food security, generating livelihoods, and sustaining natural resources. However, the system faces growing challenges, including feeding a global population – expected to reach nearly 10 billion by 2050 – with sufficient, safe, and nutritious food; securing decent incomes for over 600 million farmers and others along the agrifood value chains; and achieving these aims sustainably, in other words, within planetary boundaries, using finite land and water resources more efficiently. To ensure a successful transformation of agrifood systems, policy measures need to fully utilise synergies and address the trade-offs. In order to do so, a holistic approach is required; one that considers the impact of policy measures across agrifood systems.

3.1 Why an agrifood systems approach matters

50. Food security and nutrition challenges are complex in nature; they directly or indirectly impact numerous areas, including, the environment, livelihoods, health, and the broader economy. Likewise, the governance of these issues potentially cut across governments, ministries, international institutions, civil society and local level, traditional authorities. This complexity demands a broader, integrated lens, that goes beyond focusing narrowly on certain elements of the system when tackling hunger.

51. Recent decades have seen major structural transformations in agrifood systems, particularly in low- and middle-income countries. These shifts have brought benefits such as increased off-farm employment, a greater variety of food choices and increased production. But they've also generated significant trade-offs, ranging from the proliferation of unhealthy, highly processed foods to widening inequalities in access to markets and persistent levels of food loss, waste, and environmental degradation. These unintended consequences undermine progress toward food security and nutrition and highlight the limits of compartmentalised solutions and the need to find complementary actions across food systems (FAO, 2018).

52. A systems approach, in the context of agrifood systems transformation, is defined as *"…a way of thinking, acting, and working together that considers the interconnections among components and outcomes across agrifood systems and interrelated systems."* (FAO, 2025b). Rather than isolating issues within individual value chains or sectors, it considers the interlinkages between actors, activities, and feedback loops across the entire system. It allows for the identification of both synergies and trade-offs between economic, social and environmental objectives, such as between raising agricultural productivity and safeguarding biodiversity while ensuring affordable diets and fair producer incomes. As such, this approach enables more coherent decision-making and inclusive, context-specific strategies that are better suited to today's interconnected challenges (FAO, 2018).

53. There is increasing acknowledgement within the global community of the need to take a systems approach, and it can be applied to any area of agrifood systems. For example, FAO promotes a One Health approach as part of the agrifood system transformation, that addresses the health of people, animals, plants and the environment (FAO, UNEP, WHO and WOAH, 2022). A systems approach can also be taken at any level of governance, including local level, ensuring that local realities and national and global aspirations are fully aligned (UN, 2024a). However, to ensure the success of this approach, solid, multi-level governance, that ensures coordination, trust and transparency is vital. Box 4 provides further information on the importance of good governance for an agrifood systems approach.

Box 4: Governance of Agrifood Systems Transformation

FAO provides governance support through its Regional Conferences, which transfer relevant norms and standards to regional contexts, call for or endorse joint initiatives, and gather, analyse and share data to provide both the evidence base and mutual accountability framework for agreed regional priorities.

At the national level, FAO's evidence-based normative and policy guidance work is translated into legally binding norms, including legislation, regulation and constitutional recognition of rights, as well as policies, strategies and programmes for institutional reform. FAO's work is supported by a combination of tools, instruments and partnerships brought together to promote transformative change.

The Committee on World Food Security (CFS)

The FAO-hosted Committee on World Food Security also plays a catalytic role in global governance of agrifood systems by fostering multi-stakeholder collaboration, providing science-based policy recommendations and building policy coherence by negotiating policy recommendations and voluntary guidelines[1] and bringing the voice of those constituencies most affected by food insecurity. CFS strives for a world free from hunger where countries implement those voluntary guidelines and policy recommendations to support the progressive realization of the right to adequate food in the context of national food security.

The CFS was established in 1974 and reformed in 2009, transforming into an inclusive platform where diverse stakeholders, including governments, UN agencies, civil society organizations, indigenous peoples, the private sector and philanthropic foundations, can collaboratively work on food security and nutrition issues. With more than 50 years of existence, the Committee serves as a central forum to address challenges in food governance, ensuring that the interests of all affected parties are represented and heard and promoting coordination and fostering collaborative action amongst its stakeholders.

The CFS is recognized for its multi-stakeholder approach, allowing various entities to have a voice in food security discussions. This ensures that policy-making considers the perspectives and needs of vulnerable populations, such as smallholder farmers and indigenous communities. Stakeholders include not only member states but also civil society, private sector representatives, academia and international organizations. This broad participation bolsters ownership and accountability in food policies, enhancing legitimacy.

The High-Level Panel of Experts on Food Security and Nutrition (HLPE-FSN) of the CFS is the body for assessing the science related to world food security and nutrition. It provides independent, comprehensive and evidence-based analysis, and elaborates studies and reports through a scientific, transparent and inclusive process that support the function of the policy convergence process and the identification of critical and emerging issues that guide the process of discussion for the Multi-Year Programme of Work (MYPoW) of the Committee.

The CFS has an important role to play as a key organ in addressing the issues of global food security and is an integral component of the governance of world food security. The recommendations and decisions included in the report adopted at the CFS annual Plenary sessions shall be referred to the Conference of the Food and Agriculture Organization of the United Nations and to the General Assembly of the United Nations through the Conference and the Economic and Social Council to bring the attention of those relevant topics for food security and nutrition that requires attention at global level.

The United Nations Food Systems Co-ordination Hub

The United Nations Food Systems Coordination Hub (the Hub), plays an important role in catalyzing the transformation of agri-food systems globally.

Established following the 2021 UN Food Systems Summit, the Hub is designed to facilitate a cohesive approach to food systems transformation in alignment with the 2030 Agenda for Sustainable Development. Hosted by the Food and Agriculture Organization of the United Nations (FAO), the Hub serves as a coordinating entity within the UN system.

The key functions of the Hub include the following:

Facilitation of National Pathways: The Hub assists countries in developing and implementing national food systems pathways that align with their specific goals. This includes providing technical and policy support and ensuring these pathways are inclusive and responsive to governmental priorities

Stakeholder Engagement: One of the Hub's primary roles is to engage a diverse ecosystem of stakeholders, including governments, civil society, and the private sector. By promoting inclusive decision-making, it aims to enhance the representation of marginalized groups, such as Indigenous peoples and smallholder farmers, in food systems governance.

Coordination Across UN Agencies: The Hub coordinates efforts among various UN agencies to ensure that food systems transformation is approached holistically. This involves leveraging the strengths of multiple actors and aligning their contributions with the countries' needs, focusing on synergistic actions rather than siloed efforts

Evidence Generation and Policy Advocacy: The Hub emphasizes the importance of evidence-based policymaking by mobilizing research and best practices. It advocates for coherent policies that align with sustainable food system goals, helping countries navigate complex food systems challenges.

Resource Mobilization: The Hub plays a strategic role in identifying funding opportunities and supporting countries in accessing financial resources essential for implementing their food systems transformation goals. This includes fostering partnerships with global funding mechanisms and donor countries

The UN Food Systems Coordination Hub's governance model focuses on building capacities for multi-stakeholder collaboration and integrating food systems consideration into broader policies. This approach aims to address the interconnections between food systems and other areas such as health, extreme climate events, and environmental sustainability. It encourages a participatory governance framework that aligns with the principles of transparency, accountability, and inclusivity – critical for achieving sustainable development outcomes.

In summary, the UN Food Systems Coordination Hub significantly contributes to the governance of food systems transformation by facilitating collaboration among diverse stakeholders, promoting alignment with sustainable development goals, and providing targeted support to countries. Its emphasis on inclusive governance practices facilitates that the transformation processes are equitable and effectively address the complex challenges facing global food systems today.

The Global Alliance against Hunger and Poverty

The Global Alliance Against Hunger and Poverty, launched at the G20 Leader's Summit in 2024, plays a crucial role in transforming food systems globally to combat hunger and poverty. The key contributions of the Alliance to food systems transformation are as follows:

Policy Framework and Support Mechanisms: The Alliance promotes a Policy Basket that includes evidence-based policy instruments and programs aimed at eradicating hunger and poverty. This framework supports interventions tailored to national contexts and, for example, includes initiatives such as those described below.

School Feeding Programs: Addressing child nutrition and supporting local agriculture by sourcing food from smallholder farmers.

Cash Transfer Schemes: Providing financial support to vulnerable populations to enhance their purchasing power and access to nutritious food.

Public Food Procurement: Encouraging government purchases from smallholder farmers to boost local economies and food security.

Focus on Vulnerable Populations: The Alliance prioritizes addressing the needs of vulnerable groups, including women, children, indigenous communities, and those in fragile contexts. Programs are designed to elevate food security and nutrition while promoting economic inclusion.

Innovative Financing and Cooperation: A significant aspect of the Alliance's approach is to mobilize international and domestic financial resources through innovative financing strategies. This includes blended financing, partnership with development banks, and encouraging official development assistance (ODA) commitments from member countries. These efforts are aimed at scaling up successful interventions and enhancing resilience in food systems against extreme climate events and economic shocks.

Global Partnerships and Collective Action: The Alliance functions as a collaborative platform uniting governments, international organizations, NGOs, and philanthropic foundations. This collective action enhances synergies among initiatives and establishes a global response to hunger and poverty challenges.

Integration of Social Protection Systems: Recognizing the link between food security and social protection, the Alliance incorporates social safety nets as essential components of food systems transformation. This dual approach aims to build resilience among communities, allowing them to withstand and recover from crises.

In summary, the Global Alliance Against Hunger and Poverty represents a pivotal global initiative aimed at transforming food systems to eradicate hunger and mitigate poverty. By focusing on tested policies, mobilizing financial resources, improving social protection, and fostering collaborative action, it supports countries in their journey toward sustainable development and improved food security. The Alliance's commitment to integrating humanitarian efforts and sustainable agriculture is vital in achieving lasting change for the most vulnerable populations worldwide.

Conclusions

In conclusion, governance of agrifood systems transformation involves a wide range of agencies, levels, and sectors, each contributing to transformation efforts from different angles. Governments, international organizations, non-governmental organizations (NGOs), philanthropic foundations, development banks, and the private sector must all work in tandem to ensure that policies are well-coordinated, resources are efficiently mobilized, and programs are inclusively designed and implemented. Effective governance necessitates the integration of these diverse actors into a cohesive framework that prioritizes the needs of vulnerable populations and addresses the evolving challenges of enhancing food security and nutrition, creating decent employment opportunities in agrifood systems, and addressing extreme climate events and environmental degradation, in the short as well as the long-term.

Sources: **Bojić, D., Clark, M. and Urban, K.** 2022. *Focus on governance for more effective policy and technical support. Governance and policy support framework paper.* Rome, FAO. https://doi.org/10.4060/cc0240en

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3.2 Identifying entry and leverage points for agrifood systems transformation

54. Agrifood systems transformation cannot be achieved through isolated, single-sector interventions, yet many policy efforts remain fragmented, limiting their transformative potential and missing opportunities to leverage synergies.

55. To move beyond fragmented action, policymakers must identify key entry points – opportunities within existing systems that can be used to initiate transformation – and levers – where strategic interventions can yield disproportionately large impacts across the system. These levers could include governance, economy and finance, individual and collective action, science and technology, and capacity building (Independent Group of Scientists, 2023).

56. Table 1, below, provides a practical example of an agrifood systems approach in action, using school feeding as a strategic policy entry point. It demonstrates how activating multiple leverage points, for example, governance, finance, collective action, technology, and capacity, can generate transformational change across key impact areas: sustainable productivity, food security and nutrition, environment and climate, income and inequality, and cross-cutting priorities. This integrated framing reflects the core logic of the agrifood systems approach: recognising interconnections, managing trade-offs, and enabling multi-sectoral policy coherence to deliver lasting outcomes.

Table 1: School feeding programme: Levers and transformational potential

Leverage Point	How the lever works	Transformational potential
Governance	Facilitates inter-ministerial coordination (education, agriculture, health); embeds school feeding in national development plans; ensures institutional accountability and policy coherence.	Creates durable, cross-sectoral governance structures that support integrated food and education policy.
Economy and Finance	Mobilises public procurement budgets for sourcing from local smallholders; aligns school meal financing with food security and rural development goals.	Strengthens rural economies and food systems through inclusive, stable markets for local producers.
Individual and Collective Action	Engages parents, teachers, and local farmers in programme design and monitoring; strengthens community ownership and demand for local, nutritious food.	Improves programme responsiveness and legitimacy by anchoring it in local knowledge and participation.
Science and Technology	Applies digital tools for meal planning, traceability, and monitoring nutritional outcomes; enables data-informed decision-making and efficiency.	Boosts effectiveness and transparency of school feeding operations; encourages innovation in public service delivery.
Capacity Building	Trains cooks, school staff, and smallholder suppliers in nutrition, hygiene, and supply standards; builds long-term human capital and implementation capacity.	Enables continuous improvement and sustainability of the programme through strengthened local skills and systems.

57. An approach that is increasingly used to help identify potential leverage points is True Cost Accounting (TCA). TCA enables a systems-based assessment of hidden costs and benefits across environmental, social, health, and economic domains. TCA uses both qualitative and quantitative data, providing a holistic tool to estimate critical trade-offs, informing value-based decision-making, and helping shape policy packages. As developing policy measures that transform agrifood systems will require enhanced multisectoral coordination, TCA also offers an approach by which benefits and costs of transformation can be analysed and shared (FAO, 2024b).

58. In addition to TCA, a range of complementary methods can support the identification of effective leverage points. These include value chain analysis, systems mapping, participatory stakeholder analysis, policy coherence assessments, and scenario modelling. Such approaches help reveal interconnections, feedback loops, and context-specific trade-offs, offering valuable insights into where strategic interventions can drive systemic transformation. Using multiple methods together can strengthen the evidence base for prioritising policy action.

59. To support the application of these assessments within a systems approach, FAO has identified *Six Core Elements of a Systems Approach* that can be used as a framework to transform food and agriculture systems (FAO, 2025b). This framework highlights the importance of key shifts needed for each core element to translate into concrete action, it also recognises the core challenges to adopting an agrifood systems approach, namely: time and cost; leadership and people skills; and accepting the risks and uncertainties of a new approach. A number of comprehensive tools have been developed to help decision-makers apply systems thinking in policy design and implementation and that can complement the implementation of this framework. These include the *Food Systems Decision-Support Toolbox*, the *City Region Food System Toolkit*, and the *Food Systems Policy Tool* that focusses specifically on nutrition related policy actions (Posthumus, Bosselaar and Brouwer, 2021; FAO, 2023; FAO, 2023; Global Panel on Agriculture and Food Systems for Nutrition, 2021). A full list of resources and tools can be found in Annex 4. The mapping exercise undertaken for this report (section 3.3.1) can also serve as a baseline for more detailed, context-specific systems analysis at national or subnational levels in order to implement the suggested framework. These initiatives support the application of systems thinking to inform more coherent and impactful policies, with multiplier effects across several agrifood areas.

60. Global policy frameworks also provide a critical foundation for national transformation strategies. The Committee on World Food Security (CFS) has developed a suite of voluntary guidelines and policy recommendations that serve as important entry points for strengthening governance, inclusivity and rights-based approaches across food systems. See Annex 5.

61. Finally, stakeholder engagement has been identified as an important element of the successful implementation of an agrifood systems approach for policy development (Holley, Rudebjer and Chuluunbaatar, 2025). Such engagement should also address uneven power relations amongst stakeholders (UNDP, 2023). While policy measures are often grounded in robust quantitative evidence, such as statistical data and modeling, this alone is not always sufficient. Stakeholders, including producers, consumers, community leaders, and local institutions, possess experiential knowledge and contextual insights that cannot always be captured in datasets. These qualitative dimensions are critical for interpreting evidence, understanding trade-offs, and ensuring that policies are both feasible and equitable in practice. Box 6: *Country case studies – Applying the agrifood systems approach in practice* highlights examples of stakeholder engagement.

3.3 Policy synergies for agrifood transformation

62. This section aims to highlight specific policy measures that have great potential to positively impact different thematic areas, and to demonstrate how bundling and aligning policies and actions can generate greater coherence, address trade-offs, and accelerate progress across food security, nutrition, environmental sustainability, and equity.

Policy measures with multi-dimensional impacts

63. Many past and present policy choices have narrowly focused on boosting the production of staple cereals to ensure food security. While this has succeeded in making calories more affordable, it has unintentionally reduced dietary diversity, contributed to environmental degradation and to the global rise in non-communicable diseases. The resulting health costs are projected to reach USD 1.3 trillion annually by 2030 (FAO, IFAD, UNICEF, WFP and WHO, 2022). Simultaneously, the environmental toll of agrifood systems continues to intensify, with GHGs from food production and consumption projected to impose social costs exceeding USD 1.7 trillion per year by 2030.

64. Sustainable agriculture approaches have the potential to reconcile food security, environmental and health needs. Precision agriculture, for example, uses data-driven approaches to optimize the management of crops, soil, and resources. The benefits of this approach can include increased yields, input savings, and potentially improved working conditions, better animal welfare and improved environmental management (Ceccarelli *et al.*, 2022). However, its adoption at the small-scale level can be hindered by several key constraints: small and fragmented landholdings, high upfront costs, technological complexity, limited access to professional support, and weak enabling policies. Potential solutions to overcome these barriers, can include promoting collective action through cooperatives, facilitating zone delineation for better field management, and encouraging shared use of machinery (Mizik, 2023). Simplified, modular, and low-cost technologies, coupled with advisory services and vendor support, can further ease adoption. Additionally, targeted public investments, capacity-building, and regulatory frameworks are essential to create a conducive environment for precision agriculture to benefit smallholders. Further examples include integrated pest management, that combines biological, chemical, physical and crop specific management strategies and practices to grow healthy crops and minimize the use of pesticides, and conservation agriculture, that promotes minimum soil disturbance (i.e. no tillage), maintenance of a permanent soil cover, and diversification of plant species in order to enhance biodiversity and natural biological processes (FAO, 2025c and 2025d).

65. Finally, some of the most promising solutions may not be entirely new, just forgotten. Weaving innovation into locally rooted, time-tested practices could offer a sustainable solution to food production that minimises trade-offs. One such approach is agroecology, that exemplifies how innovation can work in harmony with traditional knowledge to build more inclusive, equitable, and resilient agrifood systems. Although there may be concerns regarding the yield potential of this approach, recent evidence also highlights that regenerative farmers in Europe achieved only 1 percent lower yields (in kilocalories and proteins) between 2020 and 2023, while using 62 percent less synthetic nitrogen fertiliser and 76 percent less pesticides per hectare (European Alliance for Regenerative Agriculture, 2025). They also recorded a 17.2 percent increase in soil cover and a 17.1 percent increase in photosynthesis compared to conventional farmers. Importantly, these farms produced without importing livestock feed beyond their bioregion, in contrast to the EU average of over 30 percent import dependence.

66. To accelerate transformation, governments must also revisit the incentives embedded in current policies. Public support has long favoured commodity-based agriculture, often reinforcing monocultures and undervaluing ecosystem services. Redirecting these subsidies towards diverse and nutrition-sensitive practices, that are also resilient to climate extremes, could amplify positive outcomes for both people and the planet (FAO, IFAD, UNICEF, WFP and WHO, 2022). See Box 5: *Repurposing agricultural support: A strategic lever for food systems transformation.*

Box 5: Repurposing agricultural support: A strategic lever for food systems transformation

Agriculture and agrifood systems lie at the heart of the world's efforts to end poverty, eradicate hunger, improve nutrition, safeguard natural resources, and mitigating extreme climate events. Yet, the current architecture of public agricultural support is often viewed as misaligned with these objectives. Between 2013 and 2018, global support for food and agriculture averaged 630 billion USD per year. Of this, 446 billion USD went directly to producers – around 70 percent of total support and 13 percent of global production value.

The transformation of agrifood systems and the concept of repurposing are closely linked and mutually reinforcing in addressing the complex challenges of malnutrition, climate extremes, inequality, and environmental degradation. Agrifood system transformation involves a fundamental shift in how food is produced, distributed, and consumed, aiming to make these systems more sustainable, resilient, and equitable. Repurposing agricultural support is a critical lever within this transformation process.

Repurposing agricultural support can take many forms, including shifting input subsidies toward nutritious crops and sustainable practices, diversifying price supports to benefit smallholders and underutilized foods, and using public procurement, such as school meal programs, to promote demand for healthy, local produce. Other forms include trade and tax incentives, and research and development. Through such forms, repurposing is essential to altering this imbalance and enabling more affordable access to healthy diets, particularly for vulnerable populations. It also helps restore ecosystems, enhance rural livelihoods, and strengthen the resilience of food systems to extreme climate weather shocks.

A growing body of research underscores the potential of repurposing to deliver positive change across multiple dimensions. The 2022 edition *The State of Food Security and Nutrition in the World* provides analytical frameworks and scenario-based modeling to demonstrate the potential benefits. Specifically, it outlines two illustrative scenarios showing how redirecting subsidies and other policy measures toward the production and distribution of nutritious and sustainable foods, such as fruits, vegetables, legumes, and pulses – can yield positive macroeconomic and social outcomes. In addition, it includes measurable increases in agrifood GDP, enhanced rural employment opportunities, and a reduction in the cost and inaccessibility of healthy diets, particularly for low-income populations.

However, the report emphasizes that repurposing alone is not sufficient. Complementary policies across other sectors such as health, transportation, energy, and social protection to ensure equity and resilience. For example, investments in rural infrastructure and social safety nets can help offset short-term losses for smallholder farmers or marginalized groups who might otherwise be adversely affected by policy shifts. Thus, it calls for coordinated, cross-sectoral reforms to advance health, economic, and environmental goals.

Similarly, in 2021, a joint report by the FAO, UNDP, and UNEP called for better-targeted public investments to realign incentives toward sustainable food production and consumption. The report provides updated estimates of agricultural producer support in 88 countries through 2030 and urges action to phase out harmful, distortive support – such as price incentives and coupled subsidies – and redirect it toward public goods such as R&D, infrastructure, and decoupled subsidies.

Additionally, in 2022, modeling by the World Bank shows that investing in climate-smart agriculture could reduce global greenhouse gas emissions by over 40 percent, restore 105 million hectares of land, lower the cost of nutritious foods, and improve nutrition. It also highlights that redirecting just 70 billion USD or one percent of global agricultural output could generate net economic benefits of 2.4 trillion USD over two decades, without reducing overall farm incomes.

Other studies further highlight the potential of sustainable diets and farming systems. One estimates that such changes could prevent over 10 million premature deaths annually and reduce food-related greenhouse gas emissions by over 50 percent by 2050. Another study finds that repurposing agricultural fiscal support, especially toward consumer subsidies for high-priority foods, significantly improves the affordability of healthy diets, with the strongest impacts seen in middle-income countries. However, low-income countries see limited benefits due to constrained fiscal resources and may face slight increases in diet costs.

Repurposing agricultural support is a critical enabler of broader food systems transformation. It allows policymakers to move beyond siloed interventions and instead adopt an integrated approach that simultaneously addresses extreme climate events, nutrition, inequality, and environmental degradation. When well-designed and inclusive of smallholder farmers and vulnerable communities, repurposing can serve as a powerful tool for sustainable development.

Sources: **FAO, IFAD, UNICEF, WFP and WHO.** 2022. *The State of Food Security and Nutrition in the World 2022: Repurposing food and agricultural policies to make healthy diets more affordable.* Rome, FAO.

FAO, UNDP and UNEP. 2021. *A Multi-billion-Dollar Opportunity: Repurposing Agricultural Support to Transform Food Systems.* Rome, FAO.

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Glauber, J. and Laborde, D. 2023. *Repurposing food and agricultural policies to deliver affordable healthy diets, sustainably and inclusively: what is at stake?* FAO Agricultural Development Economics Working Paper 22-05. Rome, FAO.

Springmann, M., Clark, M., Mason-D'Croz, D. *et al.* 2018. Options for keeping the food system within environmental limits. *Nature*, 562(7728): 519–525. https://doi.org/10.1038/s41586-018-0594-0

67. Box 6 presents country experiences that demonstrate how agrifood systems approaches are already driving transformation in diverse settings. By aligning policy, governance, and local priorities, these cases show how systems thinking can achieve tangible progress across multiple dimensions – from nutrition and livelihoods to sustainability and equity.
68. To support a more coherent and synergistic approach to agrifood systems transformation, it is important to move towards integrated frameworks that enable the identification of multiple impacts. The next section presents an illustrative mapping of selected policy measures and their contributions to key thematic areas.

Box 6: Country case studies – Applying the agrifood systems approach in practice

Across diverse geographies and policy environments, countries are turning to agrifood systems approaches to respond to increasingly complex development challenges. The case studies from Côte d'Ivoire, Cambodia, the Pacific (Fiji, Vanuatu, Solomon Islands), Guatemala and Albania highlight how adopting systems thinking can open new pathways to inclusivity, sustainability, resilience and shared prosperity.

A new narrative in Côte d'Ivoire's cocoa sector – In Côte d'Ivoire, cocoa is not just a crop but a cornerstone of the economy, culture and rural livelihoods. Yet low farm gate prices, child labour, deforestation and social inequities long threatened its sustainability. By adopting a systems approach under the Food and Nutrition Security Impact, Resilience, Sustainability and Transformation (FIRST) programme, the country moved from a top-down commodity focus to a multi-dimensional national strategy – the National Sustainable Cocoa Strategy (SNCD) – which integrates social justice, agroforestry, income equity and traceability. Cocoa sector reform served as an entry point to broader food systems transformation, empowering producers and shifting policy emphasis from yield to well-being and sustainability.

Cambodia's shift from silos to systems – In Cambodia, despite strong economic growth, persistent malnutrition and rural poverty prompted reflection on the root causes of food and nutrition insecurity. Through the support of FIRST, the Council for Agricultural and Rural Development (CARD) adopted a "twin-track" systems approach, balancing sectoral contributions with joint priorities such as food safety, healthy diets and resilience. This enabled more coherent policymaking across ministries, inclusion of youth voices, and the development of the 2030 National Roadmap for Sustainable Food Systems, which now places empowerment and equity at its core.

Reviving tradition and tackling trade-offs in the Pacific – Pacific Island Countries, highly vulnerable to climate shocks and poor diets, used a food systems lens to link nutrition, agriculture, environment, and culture. With support from FIRST, Fiji, Vanuatu and the Solomon Islands engaged civil society, academia and even reality TV, to build public awareness. Policymakers confronted difficult trade-offs between industrial cash crops and ecological food production, and reimagined national policies like Fiji's Food and Nutrition Security Policy to reflect integrated, people-centred approaches.

Guatemala: Building long-term governance for change – In Guatemala, food insecurity was often treated as a temporary crisis rather than a systemic issue. FIRST's approach focused on governance: helping update the country's National Food Security and Nutrition Policy (POLSAN) through inclusive consultations, empowering civil society via INCOPAS, and shifting government focus from food aid to structural support for smallholders. Guatemala's new policy framework now recognises food systems transformation as a long-term, participatory journey anchored in rights, resilience and rural livelihoods.

Albania's agritourism: local action, national vision – Albania leveraged the growing agritourism sector to bridge rural–urban divides. Through the Sustainable Food Systems in the Mediterranean (SFS-MED) initiative, a systems approach brought together farmers, entrepreneurs, youth and government actors in multi- stakeholder dialogues. The result was a national roadmap, and local action plans linking biodiversity, vocational education, rural employment and sustainable food production. The country's agritourism clusters now offer a model for integrated rural development grounded in local identity, sustainability and innovation.

These country experiences demonstrate that a systems approach is not a one-size-fits-all formula but a flexible, inclusive way of working that helps to reframe problems, align diverse actors, and co-create sustainable solutions. Multistakeholder dialogues are vital in order to identify the interconnected issues and the barriers to change. When grounded in local realities and championed through long-term partnerships, the agrifood systems approach becomes a powerful tool to advance national development priorities and deliver on development goals.

Source: FAO, 2024. Stories of agrifood systems change: Insights from Côte d'Ivoire, Cambodia, the Pacific, Guatemala and Albania. Rome. https://doi.org/10.4060/cd1657en

3.3.1 Classifying policies and mapping their systemic impacts

69. This section highlights how individual policy measures can contribute to multiple thematic areas. The analysis draws on global-level qualitative evidence to map typical policy impacts across key thematic domains, demonstrating how policies can address sustainable productivity, food security and nutrition, environmental and climate outcomes, income and inequality, and cross-cutting enablers (see Annex 1: Methodology; supporting evidence is provided in Annex 2: List of policy areas).

70. Table 1 presents 35 example policies and their indicative impacts. While not exhaustive, this typology offers a global-level starting point for governments and stakeholders to assess synergies, anticipate trade-offs, and build more aligned and impactful policy packages. It complements the fully developed food systems toolkits mentioned earlier and can serve as a baseline for more detailed, locally grounded systems analysis.

Table 2: Policy actions and their impacts on agrifood system transformation

Thematic impact areas / Policy Measure Example	Sustainable Productivity	Food Security and Nutrition	Environment and Climate	Income and Inequalities	Cross-cutting
Consumer Oriented Policy Decisions					
1. Improve social protection systems	P	P	M+	P	P
2. Expand women's access to digital technologies	P	P	M+	P	P
3. Implement conditional cash transfer schemes	M+	P	M+	P	M+
4. Improve market access	P	P	M+	P	M+
5. Improve coordinated investments between public and private actors	P	P	P	M+	P
6. Reduce food loss and waste (FLW)	P	P	P	M+	P
7. Strategic grain reserves (SGRs)	M+	M+	N/A	N/A	N/A
8. Increase crop diversification	P	P	P	P	P
9. Strengthen food and feed safety systems and standards	M+	P	M	P	P
10. Promote school feeding as a multi-sectoral policy intervention	M+	P	M	P	P
11. Support development of food-based dietary guidelines (FBDGs)	M	P	M+	P	P
12. Promote front-of-pack nutrition labelling for informed consumer choices:	M	M+	M	M	M+
Producer Oriented Policy Decisions					
13. Improve animal and crop breeding and genetics	P	P	P	N/A	N/A
14. Improve veterinary services and disease surveillance	P	P	M+	N/A	N/A
15. Intensify livestock production and feeding	P	P	M-	P	P
16. Improve access to finance	P	P	M+	P	P
17. Foster the adoption of digital agriculture	P	P	P	P	P
18. Restore degraded soils	P	M+	P	N/A	N/A
19. Improve input use efficiency	P	P	P	M+	P

20. Improve practices that enhance soil organic carbon retention	P	P	P	M+	P
21. Freshwater storage and basin-level management	P	M+	P	M+	P
22. Sustainable fisheries	P	P	P	P	P
23. Protect forests and wetlands	P	P	P	P	P
24. Knowledge of soil and soil health	P	P	M+	N/A	N/A
25. Harness agri-food markets for sustainability	P	P	P	P	P
26. Improve land governance	P	P	P	P	P
27. Promote agroecological approaches and regenerative agriculture	P	P	P	M+	P
28. Promote sustainable and diversified protein sources	P	P	M+	P	P
29. Promote youth engagement in agrifood systems	P	P	M	P	P
30. Strengthen agricultural research and innovation systems	P	P	P	P	P
Trade and other Macroeconomic Policy Decisions					
31. Restrictive trade measures	M-	M-	M-	M+	M-
32. Foster international trade	P	P	P	M-	P
33. Review water-pricing/irrigation subsidies	P	P	P	P	P
34. Manage biomass demand for sustainable packaging within agrifood systems	M	M	P	M	P
35. Repurpose agricultural support	P	P	P	P	P

Note: Policy Measures are aligned with the FAPDA, Food and Agriculture Policy Classification. Thematic areas are aligned with FAO's programmatic approach: **Sustainable Productivity**: Enhances agricultural output while preserving resources and long-term viability; **Food Security and Nutrition**: Improves access to safe, nutritious, and affordable food; **Environment and Climate**: Protects ecosystems and addresses climate mitigation and adaptation; **Income and Inequalities**: Supports equitable livelihoods and reduces disparities across food systems; **Cross-cutting**: Enables or influences multiple areas through governance, coordination, or system-wide tools. Full descriptions can be found in *Annex 1: Methodology*.

P = Positive impact; M+ = Moderately positive impact**;** M = Moderate impact**;** M− = Moderately negative impact**;** N = Negative impact**;** N/A = Not Applicable or not directly relevant to that area

3.3.2 Bundling policy measures for greater impact

71. Building on the typology presented in Table 2, this section introduces the concept of policy bundling – the strategic combination of policy measures to amplify synergies, minimise trade-offs, and accelerate agrifood systems transformation. Bundling allows for the design of integrated policy packages that target multiple objectives simultaneously, such as improving productivity, enhancing nutrition, safeguarding ecosystems, and reducing inequalities. This approach is recommended by the *Food Systems Policy Tool* that suggests "… *implementing bundles of measures which promote pathways toward multiple wins. This is preferable to one-at-a-time actions that only tackle individual problems in isolation."* (Global Panel on Agriculture and Food Systems for Nutrition, 2021). It also aligns with systems thinking, which recognises that the interconnected challenges facing agrifood systems require coordinated solutions rather than siloed interventions. The Global Alliance against Hunger and Poverty also supports this approach through its Policy Basket, a reference list of adaptable policy instruments and country examples that can be bundled and tailored to national contexts with the support of Alliance members (Global Alliance Against Hunger and Poverty, n.d.).

72. This section offers two illustrative examples of how selected policy measures might be bundled to advance specific thematic outcomes. These bundles are designed at the global level and are intended as conceptual models rather than prescriptive solutions. In practice, national and subnational contexts will vary considerably, and effective bundling must be informed by local evidence, stakeholder engagement, political economy considerations, and the use of diagnostic tools such as those referenced in Annex 4. Annex 2 also provides further documentation and evidence for each of the policies featured in these examples.

Example 1: Policy bundling to foster international trade: Managing environmental and inequality trade-offs

73. This example starts with the policy objective of fostering international trade and explores how bundling it with targeted environmental safeguards and social equity mechanisms can help mitigate trade-offs and generate broader co-benefits.

74. Trade is integral to our agrifood systems as it fulfils the fundamental function of moving food from surplus to deficit regions, thus contributing to food security globally. Openness to trade can promote better nutrition, as not all countries have the resources, such as land and water, and favourable climate to produce enough diverse foods to support nutrition. On average across countries, trade can expand food diversity twofold, and the diversity of food supply can contribute to the nutrient adequacy of diets (FAO, 2024b). Trade liberalisation is often promoted as a pathway to economic growth and agricultural productivity, particularly in developing economies. Reductions in tariffs and non-tariff barriers, integration into global value chains, and participation in global agricultural input and output markets can direct resources more efficiently to where they are needed and stimulate technology spillovers. Evidence confirms that open trade has contributed to gains in productivity and income, including through increased competition, knowledge transfer, and the restructuring of domestic agricultural sectors in line with comparative advantages (Zimmerman and Rapsomanikis, 2023; FAO, 2022c).

75. However, these efficiency and growth benefits can come with significant trade-offs for the environment and may not be equitably distributed. Trade openness may benefit larger, capital-rich producers while marginalising smallholders, particularly in contexts with weak infrastructure, market failures, or unequal access to productive resources. For example, an analysis of the impact of tariff elimination on agricultural products

across low- and middle-income countries found that, the richest 20 percent of households gain more from tariff elimination than the poorest 20 percent, exacerbating rural inequality (Artuç, Porto and Rijkers, 2019; FAO, 2022c). Moreover, trade helps distribute production of food and agricultural products across countries more efficiency. Globally, trade can facilitate water and land savings, since trade offers economic incentives to allocate production in regions with relatively higher natural resource use efficiency (such as water and land use). However, at the local level, this can also intensify environmental degradation through land-use change, water stress, and emissions in exporting regions, especially where environmental regulations are weak.

76. In addition, it has been found that the short-term impact on agricultural efficiency can be negative, particularly for farmers with low resources. However, in the long term the sector can adapt to local markets and to the increased competition they bring. In part, this is due to the link with technology and the shift towards better farming practices (Zimmerman and Rapsomanikis, 2023). Therefore, safeguards need to be in place for stakeholders that will be negatively impacted in the short-term and ensure a smooth transition to fully gain from the long-term benefits.

77. A bundled policy approach could help address these challenges by combining trade reforms with targeted environmental and equity-enhancing instruments. One such bundle might include:

    - ***Trade liberalisation measures***, such as reducing or eliminating agricultural tariffs and export restrictions (Reference Table 2: Numbers 32. Foster international trade);
    - ***Environmental safeguards and incentives***, such as, payments for ecosystem services, support for sustainable certification schemes, application of environmental-related provisions in Regional Trade Agreements (Brandi and Schwab, 2024). (Reference Table2: Numbers 25 Harness agri-food markets for sustainability**;** 27 Promote agroecological approaches and regenerative agriculture**;** 20 Improve practices that enhance soil organic carbon (SOC) retention; and 23 Protect forests and wetlands); and
    - ***Social equity mechanisms***, such as, input subsidies targeted at smallholders, access to insurance, rural employment guarantees, inclusive contract farming models or education and skills upgrade (Reference Table 2: Numbers 16 Improve access to finance; 3 Implement conditional cash transfer schemes; 1 Improve social protection systems; and 2 Expand women's access to digital technologies).

78. This bundle brings together measures that support liberalised trade with enabling conditions that promote social inclusion and environmental sustainability. By ensuring that trade policies match with local capacity, it also ensures that the pace and design of trade reform are sensitive to national institutional readiness, local market functioning, and producer capacities – a critical equity dimension. Conservation agriculture, precision agriculture, agroecological and regenerative agriculture promotes sustainable intensification in a way that supports biodiversity and long-term soil health, helping align trade competitiveness with environmental integrity. This is strengthened by market-based levers that reward sustainable production through certifications, procurement, and pricing mechanisms, and that aim to reduce the risk of smallholders being priced out of "green" trade markets.

79. Addressing the short-term threats of agricultural transformation, conditional cash transfers can offer a stabilising mechanism for vulnerable populations, while finance access enables producers to invest in the technologies and standards required to compete in evolving global markets. Many farmers, particularly small and medium-

scale, are risk-averse and may be reluctant to adopt new practices, diversify production, or engage in unfamiliar markets without adequate insurance mechanisms or financial safety nets. Therefore, if such shifts are encouraged, it is essential that appropriate risk mitigation measures are in place to support farmer uptake.

80. Synergies arise when productivity-enhancing trade policies are paired with support for sustainable practices and targeted inclusion mechanisms. For instance, opening agricultural input markets to international competition has facilitated the diffusion of modern farming technologies across 65 countries since the 1980s, with notable gains in productivity (Farrokhi and Pellegrina, 2020). However, these benefits accrue unevenly. Bundling trade reform with education and extension services, infrastructure investment, and financing for small-scale producers can promote a more equitable structural transformation.

81. On the environmental side, trade has the potential to reallocate production to regions where resource use is more efficient, for example, sparing water-scarce countries the burden of local production, but this only delivers global sustainability benefits if safeguards prevent pollution outsourcing to regions with weaker environmental oversight (Zimmerman and Rapsomanikis, 2023). Trade-related environmental impact therefore depends on the interplay of global comparative advantage and national regulatory capacities. Environment-related provisions in regional trade agreements aim to integrate environmental considerations into trade agreements to mitigate the potential negative impacts of trade on the environment (Brandi and Schwab, 2024).

82. There are, however, still residual trade-offs: bundling policies adds administrative complexity and requires inter-ministerial coordination, robust public investment, and stakeholder buy-in. Enforcement of sustainability criteria may increase compliance costs for smallholders unless accompanied by financial and technical support. Additionally, transitioning to higher-value, sustainable exports may be risky in fragile or price-volatile markets.

Example 2: Tackling food loss and waste through coordinated policies that navigate social and economic trade-offs

83. This example begins with the policy objective of reducing food loss and waste (FLW) and illustrates how bundling it with regenerative practices, ecosystem protection, and subsidy reform can maximise impact while supporting an equitable and resilient transition. FLW reduction not only improves food availability and resource efficiency but also contributes to environmental benefits (FAO, 2022; UNEP,2024).

84. FLW is a symptom of deeper inefficiencies across agrifood systems, from production surpluses and post-harvest losses to wasteful distribution and consumption patterns. These inefficiencies are embedded in linear “take-make-waste” models that disconnect production from environmental boundaries and treat surplus or discarded food as an externality. A circular economy approach reframes this challenge by seeking to close resource loops, reduce waste generation, and repurpose by-products, while enhancing resilience and sustainability (FAO, 2019).

85. Despite the clear benefits of reducing FLW, the transition involves several trade-offs. First, reforms that influence production and consumption patterns, such as removing market-distorting subsidies that may exacerbate FLW, may disrupt livelihoods in the short term, particularly where producers rely on public support. Second, while redistribution and food recovery can improve efficiency, they raise logistical and food safety challenges, especially in informal or poorly regulated supply chains. Third, shifting consumer behaviour to minimise waste may involve changes in pricing, packaging, or labelling that increase costs or reduce convenience.

86. A policy bundle to reduce FLW can go beyond technical fixes by tackling its structural drivers. This might include:

    - ***Measures to reduce food loss and waste*** through improved logistics, storage, redistribution systems, and food safety protocols (Reference Table 2: Number 6. Reduce food loss and waste);
    - ***Reforms to phase out market-distorting agricultural support*** that incentivise overproduction and disincentivise efficient resource use (Reference Table 2: Number 35. Repurpose agricultural support);
    - ***Public procurement and consumer-facing strategies***, including awareness campaigns, labelling, and school feeding initiatives, which help shift consumption patterns and reduce downstream food waste (Reference Table 2: Numbers 10. Promote school feeding and 11. Support development of food-based dietary guidelines);
    - ***Agroecological and regenerative practices***, which reduce food losses caused by soil degradation, pest outbreaks, and unstable input supply (Reference Table 2: Number 27. Promote agroecological approaches and regenerative agriculture);
    - ***Support for coordinated investments between public and private actors***, including digital traceability, cold chain infrastructure, and valorisation facilities, which help overcome high upfront costs and food safety barriers (Reference Table 2: Number 5. Improve coordinated investments between public and private actors); and
    - ***Social protection and risk mitigation tools***, such as insurance, input support, or conditional transfers, to ensure producers and low-income consumers are not left worse off during the transition (Reference Table 2: Numbers 1. Improve social protection systems and 3. Implement conditional cash transfer schemes).

87. This bundle addresses both symptoms and root causes of FLW. For example, reducing spoilage and waste during harvest and transport increases system productivity and lowers emissions per unit of food consumed. Phasing out distortive subsidies reduce inefficiencies while freeing resources for more targeted support. At the same time, regenerative agriculture improves soil structure and water retention, which are key to preventing crop loss during climatic shocks. Consumer-facing strategies, such as labelling and school feeding, help change consumption behaviours, but also improve nutrition and reduce downstream waste without compromising food access.

88. Together, these interventions support a shift from reactive waste management toward proactive agrifood system transformation. FLW reduction becomes not just a technical goal, but a catalyst for broader circularity, enhanced climate resilience, and equity, especially when surplus food redistribution or waste valorisation benefits vulnerable consumers and new value chain actors.

89. When the trade-offs of a given policy are addressed through complementary measures that also generate benefits across multiple thematic areas, the likelihood of achieving long-term, system-wide impact increases significantly. Moreover, when policies are analysed through a systems lens, new synergies and leverage points become visible, highlighting the interconnected nature of challenges and reinforcing the case for integrated action.

3.4 Mobilizing finance for food systems transformation

90. The current outlook for public spending on agrifood systems transformation is concerning. While international support remains important, national governments hold

the primary responsibility for ensuring food systems deliver food security, economic opportunity, and environmental sustainability. The strategies and interventions required for this transformation are well understood; the real challenge lies in securing the political will to act decisively.

91. Transforming agrifood systems requires a broader base of financing that mobilizes resources from across government budgets, domestic financial systems, and the private sector. Reliance on traditional aid flows is not sufficient, and countries must look inward to reprioritize public spending, improve policy coherence, and leverage national investment to attract additional capital. International financing institutions can play a support role in, for example, de-risking and leveraging additional finance.

92. Changing the prevailing narrative around agrifood systems is essential (FAO, 2023c). The sector is too often undervalued in national development priorities, with its economic potential underestimated and its strategic importance to national stability overlooked. Policymakers need to challenge outdated perceptions, such as treating agricultural policy mainly as a matter of producing cheap calories rather than ensuring nutrition and public health, overestimating the risks of agrifood investment, or failing to recognize the systemic economic risks of deteriorating food systems.

93. Future costs and risks from inaction – including climate impacts, biodiversity loss, and economic instability – outweigh the perceived short-term risks of investment. Consumer demand for healthy, affordable, and sustainably produced food is increasing, while the global market is rewarding countries that manage agricultural land and food production in ways that align with climate and biodiversity goals. By positioning their agrifood sectors as part of the solution to environmental challenges, governments can open new revenue streams from environmental services and green investment.

94. Reforms to national policies, regulations, and public spending are critical to creating strong investment incentives. This entails strengthening rules-based trade policies to ensure fair and predictable markets, improving rural infrastructure, revisiting and repurposing agricultural subsidies to support sustainable practices, facilitating doing business. Addressing debt crises and distress, de-risking investment, and improving public financial management are also essential for freeing up resources for strategic investment.

95. Concessional and technical assistance financing should also aim to strengthen national and sub-national institutional capability. This includes strengthening agricultural policy units, improving planning and coordination capacity within Ministries of Agriculture and Finance, and enabling local governments to engage with investors and financiers.

96. National governments can lead this transformation by embedding agrifood priorities into fiscal and economic policy. This includes implementing tax incentives, subsidy structures, and regulatory frameworks which encourage sustainable agrifood systems; securing land tenure and improving governance frameworks; and ensuring rural communities have the infrastructure and services needed to thrive. Building strong domestic financial ecosystems is equally important, promoting financial inclusion through local institutions, supporting capacity development for underserved groups, and fostering markets for agrifood investment products.

97. International partnerships, including with bilateral donors, multilateral institutions and international financing institutions, will remain valuable and complementary to strong domestic action. Bilateral donors should play a key role in supporting strategic dialogue and policy analysis to advance reforms that foster an enabling environment for agrifood system investment. This support should include providing concessional finance and guarantees to catalyse private sector participation; funding technical

assistance and capacity-building initiatives to strengthen regulatory frameworks particularly in areas such as land tenure, tax systems, and rural financial markets; and offering assistance for debt restructuring where it can help unlock fiscal space for investment.

98. International financial institutions should integrate agrifood systems sustainability into their dialogues with national governments and embed it across their country portfolios. This requires reforming lending practices to create stronger incentives for investment in the sector, expanding direct lending channels to subnational governments and local financial institutions, and ensuring that climate, nutrition, and gender considerations are systematically applied in financing criteria and project appraisals.

99. In this context, private investment is a critical part of the solution. Private financial institutions and domestic banks should recognize agrifood systems as a profitable sector that can foster long-term stability, sustainability, and inclusive growth. This recognition should be reflected in the expansion of tailored financial products for agrifood small and medium-sized enterprises and other clients in rural areas, as well as in the provision of preferential lending for investments that meet climate resilience, nutrition, and sustainability standards.

Public development banks

100. Addressing the investment gap in agrifood systems requires the mobilization of both public and private capital, guided by enabling policy environments. Public Development Banks (PDBs) can play a catalytic role in financing climate-resilient and inclusive food systems. Globally, PDBs account for nearly two-thirds of formal agricultural finance and manage over USD 23 trillion in assets. Yet, agriculture remains underrepresented in many PDB portfolios, relative to its contribution to national GDP.

101. PDBs can mobilize domestic resources and utilize tax revenues, while also attracting private sector resources through co-financing arrangements, blended finance (for example, sustainability-linked bonds), and de-risking instruments (for example, guarantees, first-loss capital, political risk insurance). Deploying such de-risking mechanisms at scale is essential for aligning risk–return profiles with private investors' expectations and unlocking capital for smallholder-focused value chains. Engagement with Ministries of Finance is also critical to ensure that adaptation and food system investments are integrated into national fiscal frameworks, that budget allocations enable long-term commitments, and that policy and regulatory reforms reduce barriers to private sector participation.

102. Increasingly, PDBs are re-channelling climate finance to support sustainable development initiatives. Beyond financing, they are also key in influencing governments' policy priorities and instrumental in putting them into practice. Their role is critical in advancing national, regional, and global objectives across sectors, including energy, climate-smart agriculture, nutrition, and gender equality.

103. To fully realize this potential, adaptation investments in food systems should be positioned as delivering three streams of value: safeguarding assets and revenues, generating productivity and efficiency gains, and creating broader social, environmental, and economic benefits. This framing moves beyond the narrow view of adaptation as solely about avoiding losses, and instead presents it as a pathway to tangible returns that matter to both public and private stakeholders.

104. IFAD's and the French Development Agency's leadership in launching the Agri-PDB Platform, a coalition of more than 140 national and regional agricultural banks, demonstrates how targeted capacity-building, technical assistance, and peer learning can transform PDBs into powerful vehicles for food systems transformation.

Box 7: IFAD's Financing Facility for Remittances (FFR)

Through the FFR, IFAD is mandated by the United Nations to lead the global annual campaign of the International Day of Family Remittances (IDFR), and organizes the Global Forum on Remittances, Investment, and Development (GFRID). Both initiatives are supported by the United Nations' Global Compact for Safe, Orderly, and Regular Migration (GCM) and are considered vital platforms for fostering partnerships for innovative solutions on cheaper, faster, and safer remittance transfers.

IFAD's FFR team provides technical expertise to the G20 Global Partnership for Financial Inclusion (GPFI), the Financing for Development process, the Global Forum on Migration and Development (GFMD), and the United Nations' Network on Migration, where the IFAD's FFR leads the workstream on remittances and diaspora economic engagement.

IFAD's FFR also generates evidence-based data and information for policymakers and industry actors alike. Through its market intelligence data portal RemitSCOPE and its series of thematic reports, IFAD publishes global estimates and analyses of remittance flows and diaspora investment, and their impact in developing countries. Recent publications include a survey on the impact of remittances for climate resilience in Mali (survey/story from the field), and a study on the role of SACCOs as international remittance providers in Kenya (study)

At national level, the FFR also provides dedicated technical assistance on remittances data collection and integration into financial inclusion strategies to Regional and National Central Banks (currently to BCEAO in WAMU, and in the Gambia, Ghana, Kyrgyzstan, Morocco, Tajikistan, Uganda and Uzbekistan).

Source: IFAD. n.d.

Remittances and diaspora investment

105. Remittances and diaspora investments can empower rural people and drive long-term opportunity from the ground up. At the recent FfD4 in Sevilla, the adoption of the *Compromiso de Sevilla* marked a turning point in recognizing the transformative power of remittances and diaspora investment in rural development. At the Conference, Member States took the strongest global commitments to date to reduce transfer costs, promote digital solutions, and expand rural financial inclusion of remittance families, particularly in rural areas.

106. For almost two decades, IFAD has worked to unlock the development potential of remittances and diaspora investments through its Financing Facility for Remittances (FFR), leveraging its long-term experience to scale up solutions that harness remittances for rural transformation and building climate resilience. Over the years, the FFR implemented over 70 innovative projects in more than 50 countries worldwide, aimed at driving transformative financial inclusion among rural remittance families. This is done by enabling improved access to and use of accessible remittance solutions linked to financial services tailored to their needs, promoting new technologies and digitalization, as well as through diaspora investment mechanisms. Through different mechanisms, these projects enhanced the capacity of remittance families to save and invest, transforming remittances into investments at the local level and stimulating both rural development and climate resilience. Box 7 provides further information on the FFR.

4. Recommendations for strengthening agrifood system governance and collaboration

107. Global trends in hunger and food insecurity remain deeply concerning, and the lingering effects of the COVID-19 pandemic continue to strain agrifood systems, exposing vulnerabilities and exacerbating inequalities. As we move towards a global population of nearly 10 billion by 2050, there is an urgent need to transition to more sustainable, inclusive, and resilient agrifood systems. Achieving this transformation requires substantial investment, yet a significant financing gap has been identified. In this context, it is critical to maximise the impact of available resources through effective governance, coordinated action, and strategic policy bundling that delivers broader and more lasting benefits. Strengthening institutional capacities and leadership at national and subnational levels will be critical to drive implementation, monitor progress, and ensure accountability. In this regard, it would be advisable to:

❖ *Strengthen governance, coordination and inclusiveness*

- **Support and leverage existing platforms, tools, best practices and benchmarks**, including CFS – the foremost inclusive international and intergovernmental platform in the field of food security and nutrition – the UN Food Systems Summit process, and the Global Alliance against Hunger and Poverty. Improve effective governance by: supporting multistakeholder, evidence-based dialogue and agreement on CFS voluntary guidelines and policy recommendations at global, regional and national levels; advancing a systems approach at country level aligning with the efforts of the UN Food System Summit process; and by promoting coordinated policy development, implementation, and financing through the Global Alliance Against Hunger and Poverty.

- **Prioritise inclusive and transparent stakeholder processes** to build trust, accountability, and shared ownership. If these processes are foreseen and planned early in the development of policy measures, challenges further down the line will be avoided and synergies will be identified. Although multi-stakeholder processes do require resources, the returns ultimately justify the initial time and resource investment. The convening power of CFS can be used to foster global collaborative action amongst its multi-stakeholders.

- **Adopt the right to adequate food as a basic principle** to encourage the participation of all relevant stakeholders in every phase of the policy making process, from design to monitoring.

- **Embed good governance at all levels** as a foundation for durable, just, and effective agrifood system reform. At local and regional level, trust and transparency are key in this regard and can be promoted through fair processes and not leaving anyone behind. This is particularly important for policy measures that impact many different stakeholders and that are related to potentially contentious topics.

❖ *Accelerate progress towards Zero Hunger and resilient agrifood systems*

- **Intensify efforts to achieve Zero Hunger, promote food security, improve nutrition and support sustainable agriculture.** This will involve adopting a systems approach to address interconnected challenges across food, climate, environment, health and livelihoods. Siloed approaches are likely to overlook synergies that could be amplified with small adjustments to the policy measure and fail to identify and manage trade-offs appropriately.

- **Improve agrifood systems resilience** through: (i) Shifting from disaster response to anticipation: Anticipatory action uses risk analysis and forecasts to trigger interventions before a crisis escalates into an emergency. For small-scale farmers, early warning can make the difference between a shock and a crisis. (ii) Increasing farmers' access to risk mitigation tools, such as insurance, to build capacity to cope with risks, while prioritising social protection mechanisms to protect the most vulnerable population groups. (iii) Promoting productivity through technologies that are underpinned by science and innovation and improving food production's resilience to weather extremes. (iv) Fostering well-functioning global food markets. International trade can promote food security and improve global agrifood systems resilience to weather extremes by reallocating food from surplus to deficit regions.

- **Treat climate, environment, and biodiversity as integrated pillars of food system policy.** Policies should be designed to generate co-benefits across these interlinked domains rather than addressing them in isolation. Nature-based solutions, sustainable land and water use, and agroecological practices can simultaneously enhance climate resilience to weather extremes, restore ecosystems, and protect biodiversity while improving agrifood system performance. Integration enables more efficient use of resources, reduces unintended trade-offs, and delivers long-term sustainability gains.

- **Recognise and respond to local contexts**, ensuring solutions are tailored, equitable, and grounded in national realities. The analysis provided in this report provides an indication of how policies can generate impacts across certain thematic areas, and a baseline to start from, but local level analysis is key to assess the impact and possibilities of similar policy measures in similar contexts.

❖ *Align policy instruments and manage trade-offs*

- **Address trade-offs between food security, economic, environmental and social objectives by bundling complementary policy measures.** This can maximise impact and address the financing gap for transformation. Participatory stakeholder processes and the interministerial collaboration is fundamental to ensure that the complementary policy measures cut across the various agrifood systems and vertically through the necessary stakeholders.

- **Consider repurposing agricultural support as a critical enabler of agrifood systems transformation.** Repurposing, guided by True Cost Accounting (TCA). assessment of hidden costs and benefits across environmental, social, health, and economic domains, allows policymakers to move beyond siloed interventions and instead adopt an integrated approach that simultaneously addresses extreme weather events, nutrition, inequality, and environmental degradation. Moving away from market distorting support and redirecting it towards investments in public goods and services, such as research and development, infrastructure, or fiscal measures for supporting nutrition and

healthy diets can serve as a powerful tool for promoting food security and sustainable development.

❖ *Strengthen investment and financing mechanisms*

Build the investment case and align financing strategies

- **Demonstrate the business case for investment in agrifood systems transformation.** Public and private actors are more likely to mobilize capital when policy measures are underpinned by clear evidence of return on investment, reduced risk, and long-term value creation. Governments can systematically assess and communicate the economic, social, and environmental benefits of proposed reforms, including job creation, improved rural incomes, food price stability, and avoided climate environmental and health costs. Strong investment cases can help attract blended finance, public–private partnerships, and broader stakeholder support.

- **Align financing strategies with the five enabling conditions for scaling agrifood systems investment.** Transforming agrifood systems at scale requires prioritising agrifood investments across policy areas; integrating transformation goals into other sectoral strategies; catalysing private finance through smart use of public funds; repurposing existing expenditure to avoid fragmentation and inefficiencies; and coordinating efforts across ministries, sectors, and donors. These five elements offer a practical roadmap to increase the volume, quality, and coherence of finance for agrifood systems transformation, while generating returns across health, climate, livelihoods, and economic development.

- **Position adaptation investments in food systems as commercially relevant by presenting robust economic and financial modelling (NPV, IRR, ROI, BCR) that speaks to both public and private sector decision-making.** IFAD will be launching a Playbook for the Adaptation Investment Case, which will provide governments, financiers, and project developers with practical guidance on how to design, model, and present adaptation investments in a way that appeals to diverse investor profiles. The playbook will include templates for quantifying the triple dividend of resilience, examples of blended finance structures, and case studies showing successful mobilisation of capital for adaptation.

Mobilise and coordinate finance across public, private, and development partners

- **Leverage blended finance structures anchored by concessional capital to attract private investment into smallholder-focused value chains.** Public or philanthropic capital could absorb part of the risk through first-loss tranches, guarantees, or subordinated debt so that commercial investors can engage at acceptable risk-adjusted returns.

- **Develop collaborative agrifood financing agreements that align public, private and development finance around shared national investment priorities.** These constitute voluntary frameworks that align public and private actors around converging investment goals. These investments clearly identify how one actor’s investment can unlock or de-risk others, delivering innovative financing solutions. Regional platforms, such as those anchored in the African Union and Regional Economic Communities (RECs), can further strengthen policy coherence and facilitate cross-border coordination.

- **Empower Public Development Banks to channel domestic capital and integrate climate finance into agricultural lending portfolios.** This includes capacity building for PDBs to adopt climate risk screening in their credit assessments, develop green lending products for agrifood systems, and set measurable portfolio targets for climate-smart agriculture.

- **Strengthen domestic resource mobilisation and policy frameworks to incentivise responsible private sector investment**. This could include tax incentives for climate-resilient agribusiness investment, regulatory reforms to reduce barriers for green bonds, and integration of adaptation finance into national agricultural investment plans. Alignment with national policy frameworks will be critical for attracting climate finance and ensuring long-term policy coherence.

- **Recognize remittances and diaspora investment as drivers of rural development and climate resilience,** by reducing transfer costs, expanding digital remittance solutions, and linking remittance flows to inclusive rural financial services and investment opportunities.

Safeguard resilience and stability through fiscal and market measures

- **Protect vulnerable populations with well-designed fiscal responses.** Time-bound and targeted fiscal measures as well as social protection programmes, can be effective measures in support of vulnerable households during food price spikes. Such interventions must be aligned with broader national policy frameworks, include clear exit strategies and be carefully monitored to ensure that benefits reach intended beneficiaries.

- **Promote structural and trade-related measures for long-term stability** by maintaining adequate strategic food reserves, improving market transparency, and investing in trade-related infrastructure to reduce market volatility and the frequency of price shocks.

- **Enhance agricultural data and information systems** to strengthen market intelligence, manage price volatility, and support more informed decision-making among governments, producers, and consumers.

Annex 1: Methodology

Methodology

This mapping exercise identifies and categorises a set of widely used policy measures relevant to food security and agrifood system transformation. The aim is to assess the typical contributions of these policy types across key thematic impact areas, based on global evidence and expert-informed judgement.

Policy Measure Typology

The typology draws on policy categories established under the *FAO Food and Agriculture Policy Decision Analysis (FAPDA)* framework and reflects measures commonly referenced in global initiatives such as the *Global Alliance for Food Security* and the *Global Alliance Against Hunger and Poverty*.

The selected measures cover a broad mix of policy instruments, including public investments, regulatory tools, institutional reforms, and market-based interventions, and are aligned with the following three FAPDA classifications:

- Consumer-Oriented Policy Decisions
- Producer-Oriented Policy Decisions
- Trade and Macroeconomic Policy Decisions

This classification aims to capture the main entry points governments use to influence food security outcomes across production, access, markets, and governance.

Impact Mapping Approach

Each policy type was assessed against five thematic areas that reflect the multidimensional nature of food security and agrifood systems outcomes:

Sustainable Productivity

Sustainable productivity focuses on achieving long-term increases in agricultural output while safeguarding natural resources and ecosystems. It supports inclusive, efficient food and agriculture supply chains that operate at local, national, and international levels, helping communities adapt to environmental and climate challenges.

Key elements include:

- Raising agricultural yields in ways that improve livelihoods and ensure a more stable supply of food and other essential goods;
- Promoting practices that balance productivity with environmental stewardship, contributing to food security and healthy ecosystems;
- Enhancing water-use efficiency to meet both agricultural and household needs, helping communities become more self-reliant and climate-resilient;
- Expanding access to safe and reliable water sources to support well-being and public health;
- Reducing illegal and unregulated fishing to protect marine resources and sustain fishing-dependent communities;
- Managing forests sustainably to generate local income while conserving biodiversity and ecological services.

Food Security and Nutrition

Ensuring food security and improved nutrition involves tackling hunger in all its forms and promoting access to diverse, safe, and nutritious diets. This requires a focus on availability, affordability, and the quality of food throughout the entire supply chain.

Key priorities include:

- Reducing undernourishment, particularly in early childhood, to support healthy growth and long-term well-being;
- Strengthening the availability of nutritious foods to improve overall health outcomes;
- Enhancing food security to help stabilise prices and ensure that low-income populations can access a wide range of essential goods and services;
- Improving food safety standards to protect public health and reduce avoidable deaths – especially among mothers and children affected by diet-related diseases;
- Making food systems more efficient and equitable by minimising loss and waste, and reinforcing local resilience and self-sufficiency.

Environment and Climate

Protecting and restoring terrestrial and marine ecosystems – and promoting their sustainable use – are critical for addressing extreme climate events and supporting resilient food systems. This includes actions that reduce environmental harm, make efficient use of natural resources, and strengthen community stewardship of biodiversity and ecosystems.

Priorities include:

- Conserving endemic biodiversity so that local communities can continue to rely on native species for food, farming, and traditional medicine;
- Safeguarding local animal breeds that underpin cultural heritage and sustain rural livelihoods;
- Applying farming techniques that are adaptable to climate extremes, along with supportive policies and programmes, to help communities adapt to and mitigate extreme climate events;
- Rebuilding fish populations to support the food security and incomes of vulnerable coastal communities;
- Protecting marine ecosystems to improve access for small-scale artisanal fishers and strengthen their participation in resource management;
- Conserving forest ecosystems to secure critical services – such as clean water, air, and carbon storage – for the benefit of all, particularly those in local and upland areas.

Income and Inequalities

Addressing income disparities and promoting inclusive economic growth are essential for reducing inequalities across rural and urban areas, between countries, and among different social groups, including women and men. Empowering small-scale producers and improving access to resources can lead to stronger, more equitable communities.

Key actions include:

- Raising the incomes of small-scale food producers to enhance household welfare and strengthen community resilience;
- Prioritising public investment in agriculture to support rural populations whose livelihoods depend heavily on farming and related activities;

- Securing land tenure by promoting ownership or long-term access to agricultural land, enabling individuals and families to invest in and build thriving rural economies;
- Advancing women's rights to land ownership and control, helping close gender gaps and improve outcomes for entire communities.

Cross-cutting enablers

Transforming food systems requires supportive structures and enabling conditions that cut across sectors and themes. Strong governance, inclusive coordination, innovative tools, and coherent policies are essential to drive sustainable, equitable, and resilient change at all levels.

Key enablers include:

- **Governance and Institutions**: Strengthening institutional capacity and coordination mechanisms; promoting transparent, inclusive decision-making processes; and supporting governance across local, national, and regional levels.
- **Resilience and Risk Management**: Supporting climate adaptation and disaster risk reduction strategies; establishing social protection systems that help communities withstand shocks; and building long-term resilience in food systems and rural livelihoods.
- **Digitalisation and Innovation**: Expanding access to digital tools – especially for women and youth; promoting agricultural technologies that are climate-smart and context-appropriate; and developing data and early warning systems for timely, informed decision-making.
- **Gender Equality and Social Inclusion**: Empowering women across all areas of food systems; ensuring fair and equitable access to resources, services, and opportunities; and addressing the root causes of social and economic exclusion.
- **Capacity Building and Education**: Enhancing farmer training and advisory services; strengthening the institutional capacities of public and private actors; and engaging youth through education and skills development in rural areas.
- **Finance and Investment**: Improving access to credit and financial services for small-scale producers; leveraging blended finance models and public–private investment partnerships; and aligning financial incentives with sustainability goals.
- **Policy Coherence and Integration**: Embedding food systems thinking across sectors; ensuring that trade, climate, and agricultural policies are mutually supportive; and promoting integrated land and water resource governance.

The analysis is qualitative and based on documented global evidence regarding the typical intent and demonstrated effects of each policy type. A policy measure was tagged under a given theme if it is commonly recognised to have a direct or enabling impact in that area, drawing from reviews by international organisations (e.g. FAO, IFPRI, OECD), academic literature, and cross-country policy evaluations.

Limitations

The mapping reflects generalised linkages between policy types and thematic outcomes. It does not assess national- or local-level implementation, policy coherence, or effectiveness in specific contexts. Further analysis is recommended to understand how policy design, targeting, and institutional capacity influence actual impact.

Annex 2: List of policy areas

Consumer oriented policy decisions

1. **Improve social protection systems:** Strengthened social protection (SP) systems ensure that governments can reach and assist vulnerable populations, providing timely support and facilitating effective adaptation and recovery efforts. Modernising SP systems through digital technologies and better data integration, including national ID, national registry and payment/delivery systems, can significantly improve the identification of individuals in need, increase benefit take-up, and reduce administrative burdens. Countries that link administrative databases and automate enrolment processes, such as for child benefits, have shown promising results in closing coverage gaps (OECD, 2024). Adopting a systems approach to SP, anchored in joint tools like ISPA and TRANSFORM, helps close coverage gaps, improve delivery, and ensure coherence across fragmented schemes (ISPA, 2024; ILO, 2024). Evidence from over a decade of joint UN engagement shows that integrated, country-led strategies aligned with human rights standards are more effective in building inclusive and resilient systems (ILO, FAO and UNICEF, 2022). However, challenges remain with relation to complex eligibility rules, digital barriers, and weak outreach mechanisms still lead to high non-take-up rates, particularly among vulnerable groups. Moreover, the use of advanced technologies like AI carries risks of bias, exclusion, and data privacy breaches if not properly governed. In addition, countries need to adapt SP systems to incorporate refugees and internally displaced people (IDPs) – 41 percent of which are children (Holmes and Lowe, 2023). If well designed and reliably delivered, systems can reduce poverty and vulnerability, and have the potential to generate wider economic, social and institutional benefits for the host society, economy and state (Holmes and Lowe, 2023). Safety net programs should also tackle the underlying vulnerabilities to climate shocks, particularly among women, and ensure that women's needs, challenges and priorities are included and budgeted for in agrifood system and climate-related policies through these systems.

2. **Expand women's access to digital technologies:** The COVID-19 pandemic brought the digital divide to the forefront, particularly for women, as digital proficiency and access to technology became key for learning and working from home (UNICEF, 2023). In low-income countries, 9 out of 10 females are offline, and have less access and digital skills compared to males of the same age, in the same households (UNICEF, 2023). Targeted training programmes, especially those delivered in local languages, and initiatives promoting women's participation in digital platforms and services have shown strong potential to improve livelihoods. Digital tools for delivering agricultural extension services, such as videos and mobile-based platforms, have been found to increase women's knowledge, promote the adoption of improved practices, and enhance their role in decision-making and production (FAO, 2023a). Digitalization also enhances access to finance. Digital agricultural platforms can expand women's access to markets, finance, and formal work opportunities, and female users of these platforms report higher rates of access to working capital loans and formal contracts compared to non-users. However, women in rural and remote areas, particularly those with low education or digital skills, continue to face challenges

in using digital services. Expanding access requires national policy frameworks that explicitly address women's digital inclusion. Evidence shows that gender-responsive digital policies, such as setting inclusion targets, mainstreaming gender across broadband strategies, and investing in large-scale digital literacy initiatives, are associated with stronger outcomes in women's access, skills, and participation (FAO, 2023a). Supportive regulatory environments that enable digital financial services and reduce the gender gap in mobile phone ownership are also essential. With the right enabling conditions, digitalization can be a powerful tool for reducing gender gaps and strengthening women's participation and leadership in agrifood systems.

3. **Implement conditional cash transfer (CCT) schemes:** CCTs aim to address current poverty through cash transfers, while fostering long-term human capital development. By empowering recipients to make their own purchasing decisions, CCTs stimulate local markets and support agricultural livelihoods. Eligibility is based on criteria such as income level, children's school attendance or participation in health and nutrition programmes. Evidence has shown positive impacts on nutrition, health and education outcomes for the targeted children for their early years and into adulthood. There is less evidence, however, on whether CCTs break in the intergenerational cycle of poverty – a key objective of such programmes (Barham *et al.*, 2025). In order to fully harness the benefits of CCTs, it is necessary to examine the intended and unintended consequences. For example, there may be a tendency for households to give more attention to the school age child within the CCT programme, and less to the older children. There may also be issues of mistargeting, which can create tension within communities (ADB, 2025). Evidence has suggested the need to design such interventions with an understanding of the complicated intergenerational mechanisms across genetic, biological, environmental and behavioural factors (Barham *et al.*, 2025). The consequences of CCTs are intrinsically linked to the context, therefore, it is advisable to start with small-scale pilots to ensure targeting and impact are aligned, and then scale-up the measure.

4. **Improve market access and transparency:** Improved market access and greater transparency are critical to fostering the adoption of more diverse, resilient, and profitable cropping systems. Better links to markets, including with private agricultural input providers empowers farmers to make informed decisions, secure fairer prices, and invest in productivity-enhancing and sustainable practices. When markets are stable, transparent, farmers are more likely to adopt sustainable approaches, diversify production, and enhance their livelihoods. FAO, through initiatives such as the Agricultural Market Information System (AMIS), helps monitor agricultural markets and reduce price volatility by providing timely, reliable, and science-based information (FAO, 2024c). Similarly, the Global Information and Early Warning System (GIEWS), a key platform since the 1970s, supports food security analysis at national, regional, and global levels. In addition, reports such as the OECD-FAO Agricultural Outlook also offer crucial information to inform decision-making and policy formulation (OECD and FAO, 2025). However, while improved market access offers numerous benefits, such as better price signals, reduced transaction costs, and increased competitiveness, it can also present challenges. Smallholders may be exposed to greater price volatility and market-driven pressures to standardise production, sometimes at the expense of local crops or agroecological practices. Inadequate

infrastructure, limited bargaining power, or unequal information access can further marginalise vulnerable producers. Projects like GLOBEFISH demonstrate how inclusive, transparent systems can mitigate some of these risks (FAO, 2025e). Since 1984, it has helped improve traceability and information exchange in the fisheries and aquaculture sector, promoting more equitable access to markets. While market access and transparency are essential enablers of agrifood systems transformation, they must be complemented by inclusive policies that also address potential disparities and support equitable participation across value chains.

5. **Improve coordinated investments between private and public actors:** Strengthening coordination between public and private sectors is key to building efficient, resilient, and inclusive agrifood systems, particularly in contexts with limited public investment capacity (FAO, 2016). Enhancing coordination between public and private actors is essential to reduce post-harvest losses, improve supply chain efficiency, and support the sustainable transformation of agrifood systems. Blended finance, defined as the strategic use of development finance to mobilise additional private investment, has shown strong potential in agriculture. It helps align incentives, de-risk investments, and improve access to capital for agri-SMEs and smallholder farmers (OECD, 2021). For instance, the Financing Ghanaian Agriculture Project (FinGAP) and Tanzania's Private Agriculture Sector Support (PASS) programme used guarantees and technical assistance to scale up lending to agri-SMEs, particularly for women and youth-led enterprises. When well-designed, coordinated investments can go beyond individual transactions to build market ecosystems and catalyse new value chains. For example, initiatives in Kenya and Bhutan supported not only finance, but also innovation, training, and access to markets for small producers (OECD, 2021). However, poorly designed partnerships risk favouring large-scale agribusinesses, bypassing the needs of local communities. Blended finance structures can also be complex and administratively burdensome for local institutions (OECD, 2021). There is also a risk of crowding out private capital or subsidising investments that would have occurred anyway. It is vital to ensure that investments promote inclusivity, climate resilience, and environmental sustainability requires strong public governance, transparency, and alignment with national development strategies.

6. **Reduce food loss and waste (FLW):** Reducing FLW is critical to improving food security, strengthening environmental sustainability, and enhancing agrifood system resilience. Globally, around 13 percent of food is lost between harvest and retail, while an additional 19 percent is wasted at the consumption stage (FAO, 2022; UNEP, 2024). This not only represents a major loss of food, but also resources used to produce it, including land, water, energy, and labour, and contributes an estimated 8–10 percent of GHGs. Halving FLW could reduce agricultural emissions by 4 percent and the number of undernourished people by 153 million by 2030 (OECD and FAO, 2024). Infrastructure investment plays a vital role. Improved post-harvest systems, including cold storage, packaging, and transport, reduce spoilage and quality degradation, particularly for perishables like fruit, vegetables, dairy, and fish (HLPE, 2014). A broader circular economy approach can help reframe FLW as a symptom of inefficient, linear production systems, for example, using organic waste as feedstock for anaerobic digestion to produce biogas. Measures such as improved logistics, food safety protocols, and valorisation facilities can close resource loops while reducing environmental

burdens and economic losses. However, trade-offs must be considered. Phasing out subsidies that encourage overproduction may disrupt short-term livelihoods. Food recovery and redistribution raise logistical and safety challenges, especially in informal markets. Behavioural shifts, such as labelling reforms or consumer education, can impose costs or reduce convenience. Investments in cold chains and digital traceability may exclude smallholders if not equitably designed. A coordinated policy package that combines technical solutions, market reforms, and consumer-facing strategies is therefore essential.

7. **Strategic grain reserves (SGRs):** SGRs can be effective when they are carefully designed and integrated into broader food security strategies. They are most effective when they have clear, manageable objectives, are fiscally prudent, and are used specifically to mitigate temporary food supply disruptions (World Bank, FAO and WFP, 2025). They are most suitable for countries vulnerable to supply shocks, especially net importers or landlocked nations, where import delays can severely impact food availability. Effective SGRs are typically small, simple, and smart, operate through market-based mechanisms like auctions or commodity exchanges, and complement tools such as trade, safety nets, and private sector storage systems. SGRs are unlikely to be effective when they are used to pursue too many or conflicting objectives, which often results in policy confusion and operational inefficiencies. SGRs fail when they are treated as tools for price stabilization. Their effectiveness diminishes when fiscal costs are excessive, such as maintaining overly large stocks or operating with high procurement and storage expenses, which can divert resources from other essential food security investments. SGRs can also be counterproductive when they distort markets, crowd out private sector storage and trade, or are used in environments with weak governance, poor information systems, or fragile institutions. In such cases, public stock operations may lack transparency, fail to respond in a timely manner, or worsen food price volatility.

8. **Increase crop diversification:** Crop diversification is a key strategy for enhancing resilience, food security, and environmental sustainability. It offers safeguards against climate variability, market shocks, and soil degradation while contributing to nutritional security through greater dietary diversity (Malézieux, Beillouin and Makowski, 2022). Integrating legumes, traditional, and under-utilised crops into production systems can improve soil health, reduce dependency on synthetic inputs, and offer low-cost, nutrient-rich options for both human and animal consumption (FAO, 2024d). Diversified farming practices, such as intercropping, agroforestry, and crop rotation, enhance biodiversity and ecosystem services (Malézieux, Beillouin and Makowski, 2022). Evidence from the Mediterranean highlights how integrating traditional land use, such as using autochthonous species and crop mixtures, can improve yields, reduce chemical input dependency, and build resilience to climatic shocks (Di Bene *et al.*, 2022). However, the adoption of diversification practices faces several barriers. Farmers may encounter limited market demand for non-mainstream crops, lack of appropriate equipment, and insufficient storage or transport infrastructure for multiple crops (Morel *et al.*, 2020). The fear of increased complexity, coupled with inadequate extension services and value chain support, further deters uptake. Additionally, dominant agricultural systems often favour monoculture through subsidies and commodity-driven value chains, limiting incentives for diversification. To scale up crop diversification, policies must address these

structural constraints. This includes investing in decentralised research and extension services, strengthening local seed systems, and aligning subsidies to reward ecological benefits. Cultural knowledge and traditional crop systems should also be protected and integrated into agrifood systems. Ultimately, crop diversification is not only an agronomic intervention but a strategic lever for building climate resilience, restoring degraded ecosystems, and enabling equitable, sustainable agrifood systems.

9. **Strengthen agrifood and feed safety systems and standards:** Policies on food safety and standards have had a significant positive impact by improving public health, enabling market access, and enhancing food security, but risks remain if these policies are not inclusive or well-coordinated. FAO and WHO, through their longstanding partnership under the Codex Alimentarius, have supported Member States with scientific advice, capacity development, and strengthened food control systems to promote safe, nutritious food for all (Tibebu, Tamrat and Bahiru, 2024; FAO, 2023b). Safe food is essential for achieving healthy diets, boosting economic development, and ensuring food security, defined as “access to sufficient, safe, nutritious food to maintain a healthy and active life” (FAO, 2023b). However, unless food safety policies are designed to be inclusive, they risk excluding women, youth, the rural poor, small-scale producers, and Indigenous Peoples, who often face specific vulnerabilities in accessing or implementing food safety measures (FAO, 2023b). Effective coordination among competent authorities across sectors is vital for updating standards, laws, and operational procedures, and for ensuring food safety policies contribute to sustainable agrifood systems. Indeed, food safety considerations are central to transforming agrifood systems from linear to circular models (Pearson *et al.*, 2024).

10. **Promote school feeding as a multi-sectoral policy intervention:** School feeding programmes, especially those linked to local procurement, offer substantial benefits for both children and communities (FAO, 2022d; FAO, 2022e). They have been shown to improve nutritional intake, school attendance, and learning outcomes, particularly for vulnerable populations (Watkins, K., Fiala, O., Haag, P. and Zubai, A. 2024). When embedded in a agrifood systems approach, school feeding can also stimulate rural development by generating stable demand for locally produced food, thereby supporting smallholder farmers and boosting local economies (FAO, 2022e). FAO further emphasises the value of integrating nutrition education and school gardens to instil healthy eating habits and environmental awareness from an early age (FAO, WFP, FNDE and ABC, 2024). As such, school feeding can serve as a strategic policy intervention bridging education, agriculture, health, and social protection sectors. However, scaling and sustaining home-grown school feeding requires more than programme design, it demands robust policy frameworks. Many low-resource settings face persistent barriers, including limited infrastructure, inadequate technical capacity, and seasonal constraints that affect food supply and diversity. Additional policy-related constraints include low institutional coordination, limited budget allocations, weak transparency and accountability mechanisms, and minimal participation from families and children in programme design or oversight (FAO,2022d). To fulfil their potential, school feeding initiatives must be institutionalised through inclusive, well-resourced, and rights-based policy frameworks that go beyond short-term nutritional support. When governed effectively, school feeding can become a long-term lever for transforming agrifood systems, advancing social equity, and achieving national development goals.

11. **Support the development of food-based dietary guidelines (FBDGs) that include both nutritional goals and environmental sustainability (UN-Nutrition, 2023):** Food-based dietary guidelines (FBDGs) are powerful policy tools for promoting healthy, sustainable diets adapted to national contexts. Some FBDGs now incorporate both health and environmental sustainability dimensions, offering guidance on balanced diets, promoting plant-based and sustainable protein sources, and recommending reductions in ultra-processed food consumption and food waste. When rooted in local contexts, food availability, and public health priorities, FBDGs can guide coherent food, agriculture, and education policies, helping to balance nutrition with climate and biodiversity goals (UN-Nutrition, 2023). However, integrating environmental concerns into dietary guidance remains politically sensitive and sometimes contested by industry stakeholders (Béné, 2022). Additionally, developing FBDGs that are practical and context-specific requires substantial technical capacity, cross-sectoral coordination, and inclusive consultation processes. Without strong institutional backing and regular updating, FBDGs risk becoming static documents disconnected from real-world dietary transitions or novel food developments (UN-Nutrition, 2023). Despite these barriers, when well-designed, FBDGs can serve as an anchor for dietary education, public procurement, labelling, and agrifood system transformation. Using a systems lens, they help countries localise the principles of healthy, balanced diets while addressing trade-offs in food production, health, and the environment. Their strategic value lies in their ability to operationalise national and global goals through culturally appropriate, evidence-based guidance tailored to population needs.

12. **Promote front-of-pack nutrition labelling for informed consumer choices:** Front-of-pack (FOP) nutrition labelling provides consumers with clear, accessible information to make healthier dietary choices, especially in environments saturated with ultra-processed, nutrient-poor foods. Unlike traditional nutrition panels, interpretive FOP labels, such as traffic light systems, warning labels, or Nutri-Score, present simplified, colour-coded or symbol-based assessments that are easier to understand across literacy levels. Government-led, mandatory FOP labelling schemes have shown measurable impacts on both consumer behaviour and industry reformulation. For example, Chile's black "high-in" warning labels resulted in a significant reduction in sugar-sweetened beverage purchases (Taillie *et al.*, 2021). In France and Spain, the Nutri-Score has improved consumer ability to identify healthier options (Khoury *et al.*, 2024; Samper Márq, 2024). When aligned with national food-based dietary guidelines (FBDGs), FOP labelling can support broader nutrition, education, and public procurement strategies. To be effective, FOP labels should be aligned with national public health and nutrition policies and food regulations, as well as with relevant WHO guidance and Codex guidelines, be based on robust nutrient profiling models, be prominently displayed and easily interpreted, and supported by public awareness campaigns (OECD, 2023). Inclusive designs, that account for literacy, language, and cultural relevance, are also essential to avoid exacerbating inequalities. However, voluntary or poorly regulated schemes may have limited uptake or be undermined by industry influence. FOP labelling must therefore be embedded within a broader agrifood systems policy framework that includes fiscal incentives, marketing restrictions, and school-based interventions. When well designed, FOP labelling offers a low-cost, high-impact tool to improve public health and consumer agency across diverse settings.

Producer Oriented Policy Decisions

13. **Improve crop and animal breeding:** Investing in research and development is essential to enhance agricultural productivity, resilience, and sustainability. environmental conditions. For crops, this includes the development of high-yielding, drought-tolerant, heat-resistant, and pest-resistant and disease resistant varieties. Improved crop breeding not only boosts productivity but also reduces the need for land conversion, thereby contributing to lower greenhouse gas emissions and enhanced biodiversity protection (Kovak, Blaustein-Rejto and Qaim, 2022). Similarly, livestock breeding can increase productivity and reduce emissions through the selective breeding of animals that produce less methane (OECD and FAO, 2025). However, if breeding is not properly managed, it can lead to genetic erosion, making crops more vulnerable to emerging diseases and environmental stresses, and result in the loss of biodiversity, including traditional varieties. To mitigate these risks and support the conservation of rare and endangered species, tools such as next-generation sequencing, molecular markers, in vitro culture technology, cryopreservation, and gene banks are essential. Maintaining genetic diversity is crucial for the ongoing development and improvement of both crop and livestock breeds (Salgotra and Chauhan, 2023). Finally, breeding innovation efforts should promote co-generation and knowledge-sharing among farmers, processors, consumers, and researchers to ensure breeding advances are inclusive, context-specific, and responsive to local needs.

14. **Improve veterinary services and animal disease surveillance:** Strengthening veterinary services and animal disease surveillance systems is critical for improving animal health and welfare, protecting rural livelihoods, and enhancing the resilience of agrifood systems. Diseases, including transboundary and zoonotic threats, can severely disrupt livestock production, food supply chains, and rural incomes. Investment in veterinary infrastructure and workforce capacity ensures timely detection, diagnosis, response, and control of outbreaks, thereby reducing animal mortality and productivity losses. Enhancing the workforce capacity includes addressing the gender gap in animal health services which remains male-dominated in many parts of the world, including sub-Saharan Africa (FAO, 2025f). Improved surveillance systems enhance early detection of disease outbreaks and enable data-driven interventions, which are essential for protecting both animal and public health. This is particularly important for zoonoses, which pose pandemic risks and threaten global health security (FAO, 2025g). Furthermore, responsible use of veterinary drugs, guided by qualified professionals, is essential to reducing the emergence of antimicrobial resistance (AMR). For example, in 2019, 5 million deaths were associated with bacterial AMR (Murray *et al.*, 2022). However, several challenges can undermine the effectiveness of veterinary and surveillance systems. In many low- and middle-income countries, veterinary services remain under-resourced, particularly in rural or remote areas. Weak institutional coordination, limited laboratory infrastructure, and inadequate animal health data systems constrain surveillance capacity. Additionally, over-reliance on antibiotics in the absence of preventive care or biosecurity measures can accelerate AMR, especially where regulation and enforcement are weak. To address these gaps, improvements must be accompanied by investments in training, infrastructure, and governance. Public–

private partnerships, mobile veterinary outreach, and digital surveillance tools offer scalable, cost-effective solutions. Integrated approaches that link veterinary services within One Health frameworks can ensure that animal, human, and environmental health outcomes are addressed simultaneously.

15. **Intensify livestock production and improve feeding practices:** Sustainable intensification of livestock production, particularly in extensive and mixed systems, can improve productivity, reduce land-use pressure, and lower the carbon intensity of animal-source foods. By increasing output per animal or per hectare, intensification helps meet growing protein demand without proportionately increasing emissions, deforestation, or resource use (Sustainability Directory, 2025). This is especially relevant in low- and middle-income countries, where extensive systems often suffer from low productivity and poor animal health. Critical interventions include improved breeding (see policy measure 13), animal health, and water access; manure management; and the adoption of climate-smart housing and rotational grazing systems (Sustainability Directory, 2025). Investing in extension services and animal health infrastructure is vital, particularly with the growing problem of AMR. Improving health through technology and vaccines would be advisable, with a particular focus on diseases that have the greatest implications for sustainability (Capper and Williams, 2023). Improved feeding practices are a major entry point for emissions mitigation. Enhancing feed digestibility, incorporating high-quality forages (e.g. legumes), and providing seasonal supplements can significantly reduce enteric methane emissions. Innovative feed solutions, such as lipid-based supplements, seaweed additives, and insect-based protein, offer additional mitigation potential (see policy measure 32). Efficient manure management, that treats the product as a valuable resource rather than waste, through technologies like biogas digesters or composting, as well as precision livestock (see policy measure 17), enhance available resources (Sustainability Directory, 2025). Together, these measures contribute to a transition toward low-impact, resilient, and equitable livestock systems. However, challenges include the high cost of improved feeds, underdeveloped feed markets, weak regulatory frameworks (especially for novel feeds), and knowledge gaps among producers (Food Standards Agency, 2023). Therefore, to scale sustainable intensification, governments and partners should target investments in feed research and development, infrastructure, inclusive value chains, and enabling policy frameworks.

16. **Improve access to finance:** Enhancing smallholders' access to finance is fundamental for enabling investment, boosting productivity, and fostering more resilient and inclusive agrifood systems. Access to finance through channels such as Village Savings and Loan Associations (VSLAs) have been effective in expanding access to credit and increase savings, especially for women farmers and entrepreneurs in low- and middle-income countries (LMICs) (FAO and IPA, 2024). Capital constraints and lack of risk mitigation tools like insurance often deter farmers from investing in agriculture, as these can protect farmers from shocks and help them manage risks. However, while access to credit can expand investment and market opportunities, returns may vary depending on context (FAO and IPA, 2024). As digital financial inclusion grows, there will be an increasing opportunity for formal financial institutions to integrate with the local systems, but any integration would need to address the barriers faced by smallholders in particular. Access to affordable credit empowers farmers to invest

in essential inputs such as improved seeds, fertilisers, machinery, and climate-resilient technologies, often resulting in substantial yield increases and income gains. The rise of digital financial services (DFS) offers transformative potential by lowering transaction costs and removing traditional barriers to banking access. Tools such as mobile banking platforms, digital wallets, and e-payments reduce transaction costs and improve access to savings, and remittances, while enabling farmers to receive timely credit and insurance services. DFS also support financial inclusion of women and youth, who are often underserved by formal banking systems. Additionally, innovative financing mechanisms, such as blended finance, pay-as-you-go models, and value chain finance, can crowd in private investment and extend financial services to remote or informal producers. However, financial inclusion remains limited in many rural areas. Key barriers include high interest rates, lack of collateral, weak rural financial institutions, and limited financial literacy. To unlock finance at scale, governments and partners should invest in the promotion of digital financial literacy, affordable and secure digital infrastructure, innovation-friendly regulations, and strong data protection and privacy safeguards (IBRD-World Bank, 2022).

17. **Foster the adoption of digital agriculture:** Digital agriculture harnesses information and communications technologies (ICTs) across agricultural value chain to enable data-driven decision making, improve efficiency, and enhance resilience in agrifood systems. Tools such as precision farming, remote sensing, GPS-guided machinery, and farm management software enable farmers to monitor crop health, soil conditions, pest outbreaks, and weather patterns in real time, leading to more informed, data-driven decisions (Dibbern, Romani and Massruhá, 2024). Precision agriculture technologies enable targeted use of inputs, such as fertiliser, water, and pesticides, lowering production costs and environmental impacts. For example, satellite-based imagery and sensors support early detection of stress in crops, enabling targeted interventions that improve yields and resource efficiency. Precision Livestock Farming (PLF) technologies are increasingly used to boost productivity and sustainability in both intensive and extensive livestock systems, including in Mediterranean dairy sheep farming (Odintsov Vaintrub *et al.*, 2021). Digital platforms also facilitate access to extension services, market price information, and climate forecasts, and technology, such as blockchain can build trust and promote transparency and thus increase the traceability of food throughout the value chain (FAO, 2020). Additionally, mobile applications and digital advisory services can help bridge knowledge gaps, especially among women and youth, when designed inclusively. However, the digital divide remains a major constraint, and while the uptake of digital agriculture in developed countries is high, small-scale farmers in developing countries often lack the connectivity, infrastructure, training, and capital needed to adopt digital tools effectively (FAO, 2020). Moreover, good governance is essential to address issues of data privacy, exclusion, and dependency on platforms.

18. **Restore degraded soils, including pastureland:** Soil degradation affects around one-third of the world's land area, with over 40 percent located in Africa (Heinrich-Böll-Stiftung and TMG Research gGmbH, 2024). This threatens food security, ecosystem services, and rural livelihoods through the loss of fertile soil and soil sealing – when soil can no longer absorb water, leading to floods and reducing agricultural productivity (Heinrich-Böll-Stiftung and TMG Research

gGmbH, 2024). Restoring degraded soils and pastureland is essential for reversing productivity loss, sequestering carbon, and improving resilience. Effective practices include applying organic matter (e.g. compost, manure, and crop residues), reducing soil disturbance, minimising erosion through cover crops or mulching, and restoring vegetation. Systems such as agroecology (see policy measure 31) and agroforestry – combining trees, shrubs, and livestock – can enhance forage availability, reduce heat stress for animals, and regenerate soil health. These systems also promote biodiversity and carbon sequestration, with co-benefits for livelihoods and climate adaptation. Other practices that have evolved through technological and scientific innovation are also proven to improve soil quality, such as conservation agriculture, precision farming and integrated nutrient management. However, adoption barriers including poor extension services, insecure land tenure, lack of awareness, and upfront costs. Enabling environments and incentives will be needed to increase the uptake of sustainable practices and this will require investments in knowledge sharing, inclusive governance, and locally adapted incentive schemes that recognise the public value of healthy soils (Srivastava *et al.*, 2024).

19. **Improve farming practices for higher input use efficiency:** Improving input use efficiency, especially for fertilisers, is essential to balance agricultural productivity with environmental sustainability. Overuse or misapplication of fertilizers can lead to degraded soil and water resources and even have the potential to harm human and animal health through, for example, nitrogen leaching and water pollution (FAO, 2019a). Conversely, input underuse can limit yields and reduce farmer incomes. Smarter nutrient management involves tailoring fertiliser application to specific crop and soil needs using tools like soil testing, precision application, and decision support systems (see policy measure 17). A promising approach is integrating legumes into rotations as food, feed, or cover crops, as these not only fix atmospheric nitrogen naturally but also enhance soil health and reduce pest cycles (FAO, 2025h). Emerging technologies such as enhanced-efficiency fertilizers can reduce the loss of nutrients and provide higher nitrogen use efficiency. Biodegradable coatings (such as agricultural residues, biochar, starch, lignin, chitosan and alginate) and natural inhibitors (e.g. neem-coated urea) are also advancing as options to reduce negative impacts on soil biological quality. Policies should support knowledge sharing, capacity building, access to credit for inputs, and infrastructure for soil testing and advisory services. Importantly, subsidy reforms should favour efficient and environmentally responsible fertiliser use.

20. **Improve practices that enhance soil organic carbon (SOC) retention:** SOC is a major component of soil organic matter and plays a key role in soil fertility, ecosystem services, and human health. Long-term soil carbon sequestration is increasingly being viewed as an important and holistic strategy for soil and environmental health (Nazir *et al.*, 2024). The adoption of practices that enhance soil carbon stocks include conservation tillage (reduced or zero till), planting of cover crops, compost application, agroforestry, and perennial cropping systems minimize soil disturbance, protect the soil sequestration, and enhance biomass inputs, all of which increase SOC storage. Increased soil carbon boosts fertility, water-holding capacity, and microbial diversity, enhancing both productivity and resilience to drought (see policy measure 18). Carbon input strategies can also include incorporating external carbon sources like compost and biochar

application. Biochar, for example, has a high potential for long-term SOC sequestration, however, it is dependent upon the amount and quality of the biochar (Gross *et al.*, 2024). However, barriers include lack of extension services, high labour requirements, insecure tenure, and short-term land-use planning that disincentivises long-term practices. Additional barriers include lack of knowledge, resources and socio-cultural barriers (FAO, 2017). Scaling adoption requires incentives for ecosystem services, participatory soil management approaches, and integration into climate, land-use, and agricultural policies.

21. **Improve freshwater storage and management at river basin level:** Agriculture accounts for 70 percent of freshwater withdrawals worldwide, and pressure on water supplies is growing (FAO, 2025g). The increasing frequency and intensity of droughts, floods, and rainfall variability, are putting freshwater supplies under severe stress, and sustainable integrated water resource management (IWRM) is critical in order to increase water productivity in food and agriculture. This includes repurposing ageing grey infrastructure (e.g. dams, canals) and investing in nature-based solutions (e.g. wetlands, soil moisture retention, aquifer recharge) (FAO, 2023c). Agriculture related activities, such as cashmere production and dying, and the grazing of animals next to water resources can pollute water supplies without effective IWRM (OECD/AWC, 2025). Small-scale storage, such as ponds, tanks, and terracing, can also increase water access in rainfed areas, reducing reliance on unreliable rainfall. Effective freshwater management should consider the entire basin hydrology, linking upstream and downstream users, and balancing environmental flows with agricultural demand, in addition, transboundary considerations should always be at the forefront of policy measures to prevent any potential geopolitical issues. Water accounting tools, hydrological models, and stakeholder platforms can guide equitable allocation and enhance water use efficiency. Nature based solutions should also be explored as part of IWRM, such as purification ponds along riverbanks to provide natural filtration. However, challenges include fragmented institutions, weak coordination across sectors, and poor maintenance of infrastructure. Investing in multi-purpose, storage systems, including groundwater recharge zones and floodplain restoration, offers long-term benefits for food production, biodiversity, and disaster risk reduction. Governance reforms and community-based watershed management are crucial to ensure sustainability and resilience.

22. **Improve sustainability practices in fisheries:** Improving sustainability practices in fisheries is essential to ensure long-term productivity, preserve marine biodiversity, and enhance resilience to extreme climate events. Globally, over 35 percent of fish stocks are overfished, with the proportion of overfished stocks increasing at a rate of approximately 1 percent per year (Sharma *et al.*, 2025). This poses risks to food security, livelihoods, and ecosystem integrity. Increased effort is needed to ensure that 100 percent of stocks are placed under effective management as called for by FAO's Blue Transformation vision. Sustainable fisheries management, through science-based catch limits, effective monitoring, and enforcement, can rebuild stocks, support biodiversity, and promote ecosystem restoration. Practices, including adaptive management and habitat protection, also strengthen resilience to ocean warming, acidification, and other stressors. Recycling of fishing gear is a practical and impactful way to enhance sustainability in the fisheries sector. It supports responsible equipment stewardship by preserving valuable materials, reducing marine litter, and offering

alternatives to landfilling. Effective recycling measures, ranging from mechanical and chemical recycling to energy recovery, depend on the composition of the material and local waste management capacity. Policymakers, fishers, equipment manufacturers, port authorities, and recyclers must collaborate to develop systemic solutions tailored to regional needs. Integrating fishing equipment recycling into fisheries and waste governance frameworks can advance circular economy principles while reducing environmental impacts (Sala and Richardson, 2023). At the same time, phasing out harmful subsidies – estimated at USD 22 billion annually – that encourage overfishing and redirecting those funds to sustainable fisheries is needed (Sumaila *et al.*, 2019). However, shifting towards more sustainable practices presents challenges. Many small-scale fishers lack access to services, infrastructure, reliable data systems, or credit for upgrading equipment (Sharma *et al.*, 2025). Weak governance, limited surveillance capacity, and illegal, unreported, and unregulated (IUU) fishing further undermine sustainable management. Equity concerns must also be addressed, particularly for women and coastal communities dependent on artisanal fisheries. To overcome these barriers, reforms must be accompanied by targeted public investment, capacity-building, regional cooperation, and inclusive governance that protects tenure rights.

23. **Protect existing forests, halt deforestation and conversion into agricultural land:** Protecting forests is a foundational strategy for biodiversity conservation, mitigation of extreme climate events, and water regulation. Forests sequester vast amounts of carbon, regulate rainfall patterns, and support critical ecosystems, yet agriculture remains a main driver of deforestation. Between 2015–2020, it is estimated that around 10 million hectares of forests were destroyed each year, almost 90 percent of which is due to agricultural expansion (FAO, 2020a).[2] Market based mechanisms that reward conservation can support the reduction of deforestation. One of the most prominent examples is REDD+ (Reducing Emissions from Deforestation and Forest Degradation), which provides financial incentives to developing countries for forest protection and sustainable forestry management through voluntary carbon markets. Despite its potential, REDD+ has faced challenges including weak governance, unclear land tenure, and variability in carbon credit quality (UN-REDD+, 2025). Agricultural expansion and degradation can often reflect local livelihood pressures and poverty, addressing these root causes are also essential in reducing deforestation. Capacity building and support in developing sustainable techniques, for example, through agroforestry and conservation agriculture can offer some solutions that also support livelihoods (UNCC, 2023). Finally, integrated land-use planning that balances conservation with food security, rural development and poverty reduction strategies are essential, together with robust monitoring systems and legal enforcement.

24. **Protect existing wetlands and halt conversion into agricultural land:** Wetlands are subject to significant pressure from agriculture as a result of land conversion, excessive use of nutrients and pesticides, unsustainable water extraction or diversion, and biodiversity loss (Convention on Wetlands, 2022). Protecting wetlands is essential to agriculture as they supply water for crops, livestock and aquaculture, provide habitat for rice production and pond fisheries

[2] FRA 2025 will be released in the last quarter of 2025.

and help to regulate the environment. Wetland degradation is also responsible for the loss of millions of hectares of vital ecosystems, with inland marshes and swamps particularly affected. Wetlands provide up to USD 39 trillion in ecosystem services annually, including food provision, carbon storage, flood control, and water purification, yet they continue to decline at an average rate of 0.52 percent per year (Convention on Wetlands, 2025). Protecting remaining wetlands is more cost-effective than restoration and this will require integrated approaches: recognising wetlands as global hydrological assets, embedding them in innovative financial instruments (such as blue bonds and biodiversity credits), and addressing the financing gap through blended public-private investments. Wetland conservation must be fully embedded in land-use planning and supported by policies that reflect their full ecological and economic value. An important part of this is increased knowledge on the interactions between agriculture and wetlands that should lead to a transformation to sustainable agricultural practices, including the adoption of nature- based solutions, low-impact aquaculture, and the implementation of programmes that support farmers to identify low environmental impact methods that maintain the biodiversity of wetlands (Convention on Wetlands, 2022).

25. **Harness agricultural and food markets to deliver sustainable development outcomes:** Harnessing the power of agricultural and food markets is essential to aligning trade and investment flows with sustainable development objectives. Voluntary sustainability certification schemes – such as those covering fair trade, organic production, and environmental stewardship – can help address trade-offs between economic growth, environmental protection, and social inclusion. When widely adopted, these schemes incentivize producers to adopt better practices related to biodiversity, water use, deforestation, and labour rights, while providing value-added market opportunities and improving transparency across global agri-food value chains. However, the proliferation of overlapping or inconsistent standards across countries and buyers can impose high compliance costs on producers, particularly smallholders, and create market entry barriers. Harmonising sustainability standards and promoting mutual recognition between certification systems can reduce duplication, improve efficiency, and enhance access to export markets. At the same time, governments and development partners must invest in technical assistance, traceability systems, and institutional support to help producers, especially in low-income countries, comply with and benefit from certification schemes. Without inclusive approaches, such mechanisms risk reinforcing inequalities, excluding informal producers, or disproportionately benefiting large commercial operations. Moreover, the voluntary nature of these schemes means that market incentives alone may be insufficient to drive transformation at scale. To maximize their impact, sustainability standards should be integrated into public procurement, trade agreements, and blended finance facilities, and supported by consumer awareness initiatives and responsible sourcing policies. Linking certification to national sustainability priorities and embedding environmental, social, and governance (ESG) criteria across food markets can amplify their contribution to climate action, biodiversity, and inclusive economic development.

26. **Improve land governance:** Strengthening land governance is essential for equitable and sustainable agrifood systems, as land issues cut across many sectors and are linked to social, economic and environmental issues. Land tenure

systems define who can use land and natural resources, for how long, and under what conditions, shaping access to livelihoods, food, and environmental services. When individuals and communities have secure and legally recognized rights to land, they are more likely to invest in long-term productivity-enhancing and sustainable practices, such as soil restoration, agroforestry, and water conservation, that build resilience and reduce land degradation. Secure tenure also enables access to credit, insurance, and agricultural support services, particularly for smallholders, women, and Indigenous Peoples who are often excluded from formal landholding systems. Yet, 1.1 billion adults across the 108 countries feel insecure about their land or property rights (Prindex, 2024). The CFS's *Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security* (VGGT) provide framework for improving land governance (FAO, 2022f). They serve as a set of principles and internationally endorsed practices, that emphasize transparency, non-discrimination, gender equality, participation, and accountability in land administration, and promote legal recognition of customary and collective tenure rights. VGGT's primary goal is to assist to achieve food security for all. Some countries have made progress in integrating the VGGT into national policies and land reforms, for example, in Sierra Leone the VGGT principles have guided the development of the National Land Policy and the Customary Land Act and Land Commission Act, and in Kazakhstan, they have been used to tackle land degradation neutrality and desertification (FAO, 2024e). However, implementation gaps persist due to limited political will, institutional fragmentation, lack of capacity, and competing commercial land interests. In sub-Saharan Africa, significant gaps have been identified in legal frameworks, implementation of rights' recognition and protections for collective forest rights (Sander *et al.*, 2025). Land registration systems are often incomplete or inaccessible to marginalized populations, in Rwanda, for example, women and the poor were found to have less access to digital land data systems, and the cost of registration was viewed as a key reason for lack of registration (Ali *et al.,* 2021). Land grabs, especially where there is weak governance, continue to threaten tenure security. Advancing land governance requires inclusive legal reform, participatory mapping, integrated land-use planning, and investment in land administration systems that protect rights while enabling sustainable use. Coordinated efforts are needed across agriculture, environment, urban planning, and justice sectors to realize the VGGT principles and strengthen land tenure as a foundation for climate-resilient and socially just food systems.

27. **Promote agroecological approaches and regenerative agriculture:** Agroecology and regenerative agriculture are increasingly recognized for their contributions to resilient, sustainable, and socially just food systems (HLPE, 2019; IDS and IPES-Food, 2022). Both approaches apply ecological principles, such as intercropping, crop rotation, and natural fertilisation, to enhance biodiversity, soil health, and climate resilience. Recent evidence from the European Alliance for Regenerative Agriculture (2025) highlights that regenerative farmers in Europe achieved only 1 percent lower yields (in kilocalories and proteins) between 2020 and 2023, while using 62 percent less synthetic nitrogen fertiliser and 76 percent less pesticides per hectare. They also recorded a 17.2 percent increase in soil cover and a 17.1 percent increase in photosynthesis compared to conventional farmers. Importantly, these farms produced without importing livestock feed beyond their bioregion, in contrast to the EU average of over 30 percent import dependence. Agroecology, endorsed

by institutions such as CIRAD and the Committee on World Food Security's (CFS), further offers a participatory and science-based framework rooted in local knowledge (CFS, 2021). However, greater policy clarity and investment are needed to distinguish and support these approaches, linking them to global frameworks such as the CFS and the United Nations Food Systems Summit (UNFSS), and scaling context-specific farmer-led innovations.

28. **Promote sustainable and diversified protein sources, including pulses, insects, and low-impact animal production**: Promoting diversified and sustainable protein sources, such as legumes, insects, and low-emission animal products, offers a transformative pathway to healthier diets and more resilient food systems in developing countries. Legumes and pulses also enhance dietary diversity, provide affordable plant-based proteins, and improve soil fertility (FAO, 2024d). Insects, particularly species like the Black Soldier Fly, offer a high-protein, low-emission alternative for both animal feed and human food. They can also be used in circular bioeconomy approaches, as they convert organic waste – including food waste that drives methane emissions, a potent GHG (UNCC, 2024), and increases the risk of landfill fires – into valuable biomass. This contributes to climate mitigation, resource efficiency, and improved public health by reducing air pollution and fire risks. Low-emission livestock such as poultry, goats, and fish are nutritionally important, especially for vulnerable populations. Small livestock systems can enhance dietary intake of animal-source foods (ASFs), generate income and support employment (IFAD, 2020). Improved feeding practices of cattle, for instance, more digestible feeds, planting pasture with improved grasses and legumes, providing seasonal feed supplementation (including but not limited to lipids), and adopting new feed solutions (seaweed, insects) adapted to different types of livestock can also lower methane emissions. However, insect-based foods are an increasing ingredient for animal feed, it may not appeal to many consumers and requires targeted awareness campaigns. In addition, legal and food safety frameworks for insect farming are underdeveloped in many countries, hindering scale-up (Xu *et al.*, 2024). Insect production also depends on consistent, hygienic waste inputs and breeding technologies. Legume promotion is constrained by weak value chains, low productivity, and limited R&D. Similarly, low-impact livestock systems must be managed carefully and face the rising risks such as transboundary diseases (IFAD, 2020).

29. **Promote youth engagement in agrifood systems:** Youth engagement in agrifood systems is essential for driving innovation, improving rural livelihoods, and ensuring generational renewal in agriculture. While important for all regions, this is especially urgent in Africa, which is projected to be home to the majority of the world's youth by the end of the century (Malabo Montpellier Panel, 2024). Targeted policies supporting agribusiness incubators, digital entrepreneurship, and skills aligned with food system transformation can help unlock this potential and reduce rural underemployment (HLPE, 2021). Effective youth engagement strategies must also account for intersecting aspects of identity, such as gender, class, ethnicity, and knowledge systems, rather than relying solely on chronological age. Often, policies do not provide clear transitions into adulthood or sustained livelihoods beyond initial support and fail to acknowledge youth as a temporary and socially diverse life stage. Structural constraints, including land tenure insecurity, limited access to credit, and inadequate infrastructure, can also make agricultural work unappealing to young people (IFAD, 2022; WFF, 2023). Moreover, youth are frequently excluded from policy and decision-making spaces, limiting their influence over the systems they are meant to shape and sustain (HLPE, 2021). To be effective, youth targeted policies must adopt a life-course approach, be regularly updated based on robust evidence and lessons

learned, and ensure that youth are involved not just as beneficiaries but as key partners (HLPE, 2021).

30. **Strengthen agricultural research and innovation systems:** Strengthening agricultural innovation systems (AIS) is critical to improving productivity, sustainability, and equity in food systems. Agricultural research and development boosts efficiency and resilience, particularly in the face of extreme climate events, while also reducing poverty and hunger. However, there are significant trade-offs, for example, returns are often long-term, leading to underinvestment, especially in LMICs where short-term priorities often dominate due to necessity. Global AIS faces collective action problems; smaller, low-income countries invest less due to weak capacity, thinly spread resources, and limited immediate gains (IFPRI, 2022). CGIAR has developed a system that addresses some of these gaps, but success depends on strong national research systems and regional integration to maximize spillovers and local adaptation. In addition, there is a significant research funding gap, this is concerning, as raising agricultural productivity enough to reduce hunger to 5 percent globally would require an additional USD 52 billion annually in research and development and infrastructure (IFPRI, 2022). Public investment remains essential where private incentives are insufficient, especially for climate-smart innovations, postharvest systems, and nutrition-sensitive technologies. FAO, with the support of the Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), has developed a framework and operationalized approach to provide guidance on creating an AIS enabling environment, support AIS capacity development, and to guide responsible AIS investments that can be utilized by governments (FAO, 2022g). Policies must incentivize both public and private research and development, support regional centres of excellence, and promote gender-responsive, demand-driven innovation. Dedicated funds for food systems and climate research, open-access platforms, and improved data systems are essential to drive transformation.

Trade and other Macroeconomics Policy Decisions

31. **Restrictive trade measures**: Open, rules-based trade is a cornerstone of global food security (FAO, 2024f). While trade restrictions, such as export bans, tariffs, and other barriers, are often introduced to protect domestic markets, they can significantly disrupt the balance of food supply and demand across regions, undermining efforts to ensure stable and affordable access to food. Such measures also reduce the incomes of farmers who might otherwise benefit from higher prices on global markets (ODI, 2022). Moreover, they increase market uncertainty, amplify price volatility in international markets, and disrupt food supply chains as seen during the 2007–2008 food price crisis and again in the wake of the war in Ukraine. Rather than resorting to short-term trade restrictions, countries should adopt policies that address long-standing structural challenges. For example, investing in affordable food-storage infrastructure would enable farmers to stockpile during peak harvests and release supplies during lean seasons, helping to stabilize prices and availability. If the goal of export restrictions is to contain domestic food prices, direct cash transfers to consumers can serve as a more effective and targeted alternative to ensure affordability. In situations where restrictions are imposed to address domestic food shortages, affected farmers could be compensated through input subsidies (e.g. fertilisers,

water, energy) or direct tax benefits for the impacted production year (ODI, 2022). These policies are especially detrimental for low-income, food-importing countries, where they further limit food accessibility and affordability. Additionally, import tariffs, levied each time a product crosses a border, often escalate along global value chains, inhibiting the development of value-added industries. In contrast, lowering trade barriers can promote the growth of global value chains, support agricultural development, and stimulate the broader food economy.

32. **Foster international trade:** International and regional trade play a critical role in enhancing the efficiency, resilience, and sustainability of agrifood systems. Well-functioning trade facilitates the movement of food and agricultural inputs across borders, offering economic incentives for producers, expanding consumer access to diverse and affordable foods, and promoting more efficient global resource use. Trade cooperation, through bilateral or multilateral agreements, can help stabilize food supplies, stimulate rural economies, and reduce global food price volatility. Encouraging efficient and climate-aligned trade, including intra-regional trade, is particularly important for achieving environmental goals. Evidence suggests that GHG reductions from trade are most significant at local and regional levels, due to shorter supply chains and better alignment with local production conditions (UN-Nutrition, 2023). As climate-related shocks intensify, trade becomes a key resilience strategy. For many low- and middle-income countries (LMICs), food imports will be increasingly essential to meet nutritional needs, particularly where climate burdens undermine domestic production (IFPRI, 2022). However, trade liberalisation alone does not guarantee positive outcomes. Poorly regulated trade can increase environmental externalities, spread pests and diseases, and undermine local producers if markets are flooded with subsidised imports. Food-exporting countries may prioritize commercial crops over local food security needs, while overreliance on imported staples can expose vulnerable populations to price shocks and geopolitical risks. A balanced trade strategy should therefore support diversified import sources, strengthen domestic food production, and ensure environmental and nutritional safeguards in trade agreements.

33. **Review water-pricing policies and irrigation subsidies:** Reforming water-pricing policies and irrigation subsidies is essential to promote efficient water use, reduce overextraction, and incentivize the adoption of sustainable practices in agriculture. In many countries, water for irrigation is either free or heavily subsidized, but this can lead to negative externalities, namely overuse, leading to declining groundwater tables, and increased environmental degradation. Similarly, low-cost energy for water pumping, especially where diesel or electricity is subsidized, encourages inefficiency and unsustainable practices. However, in developing countries, governments often have to invest in water subsidies to ensure food security, therefore, pricing reforms must be carefully designed to protect vulnerable farmers and avoid unintended negative impacts on food security or rural livelihoods. A more effective use of public funds would be to reallocate inefficient subsidies towards investments in modern irrigation infrastructure, watershed management, soil enhancement methods, and payment schemes for ecosystem services, including carbon sequestration in soils. Payments for soil carbon, linked to sustainable land management practices, can create dual benefits for climate mitigation and water retention. Precise subsidies – where subsidies are adjusted according to different regions, crops, irrigation

methods and guide changes in water use behaviour combined with water pricing could be considered, but such models require strong governance, transparency, and stakeholder engagement to build trust and ensure equity (Zhang and Oki, 2023). Complementary policies, such as targeted financial support, technical assistance, and participatory water governance, are vital to ensure reforms deliver environmental, economic, and social benefits.

34. **Manage biomass demand for sustainable packaging within agrifood systems**: Food packaging plays an essential role in reducing food loss and waste by preserving the quality and safety of perishable items such as fruits, vegetables, and animal-source foods (UN-Nutrition, 2023). However, conventional plastic packaging poses environmental and health risks, including chemical leaching into food, soil, and water, as well as long-term plastic pollution (Sid *et al.*, 2021). Biosourced and biopolymer-based packaging alternatives offer a lower-impact solution and are gaining momentum, particularly in light of the emerging global plastics treaty (Global Green Growth Institute and UNOSD, 2025). This shift presents both opportunities and challenges for agrifood systems in developing countries. On one hand, rising demand for bio-based materials could open trade opportunities for countries capable of producing the necessary biomass. On the other, governments must proactively monitor and manage potential trade-offs, such as the diversion of land or food crops away from essential food production, risks to smallholder livelihoods, and unintended environmental consequences (Global Green Growth Institute and UNOSD, 2025). National policies should prioritize the use of sustainable feedstocks, such as agricultural residues and non-food biomass, and support the development of circular packaging solutions that rely on composting, reuse, or recycled inputs.

35. **Repurpose agricultural support:** Redirecting agricultural support toward public goods and away from market-distorting policies is a critical step in transforming food systems. Currently, most public subsidies disproportionately benefit high-emission, resource-intensive commodities and often bypass small-scale producers. Repurposing these funds can unlock major co-benefits, boosting productivity, improving nutrition outcomes, supporting rural livelihoods, and enhancing environmental sustainability (FAO, UNDP and UNEP, 2021). Investments should prioritize climate resilient agriculture, rural infrastructure, research and development, and decoupled fiscal support aligned with equity and environmental goals. Reforming subsidies to support the production of nutrient-dense foods with low environmental footprints, such as fruits, vegetables, legumes, nuts, and seeds, could improve dietary quality and reduce global greenhouse gas emissions (UN-Nutrition, 2023). However, reforms must be carefully managed to avoid harming livelihoods, especially where farmers depend heavily on current support structures. Transition pathways should be inclusive, transparent, and tailored to national contexts.

Annex 3: UN agencies' roles in food systems

ORGANIZATION	DESCRIPTION
Food Systems Coordination Hub	Coordinates efforts among various stakeholders to improve food systems, facilitating collaboration and promoting coherence in addressing global food challenges.
Food and Agriculture Organization of the United Nations (FAO)	FAO is a specialized agency of the United Nations that leads international efforts to defeat hunger. FAO's goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.
World Food Programme (WFP)	WFP is the world's largest humanitarian organization saving lives in emergencies and using food assistance to build a pathway to peace, stability and prosperity, for people recovering from conflict, disasters and the impact of extreme climate events.
International Fund for Agricultural Development (IFAD)	IFAD is an international financial institution and specialized United Nations agency which focuses on investing in rural people to reduce poverty and improve food security. It provides financing and technical assistance for smallholder farmers, empowering them to increase productivity, access markets, and adapt to extreme climate events.
United Nations Environment Programme (UNEP)	UNEP works to promote sustainable food systems by addressing environmental challenges such as extreme climate events, biodiversity loss, and pollution. It supports initiatives that promote resource-efficient agriculture, reduce food waste, and encourage sustainable consumption patterns.
World Health Organization (WHO)	WHO plays a crucial role in food systems by providing evidence-based guidance on nutrition, food safety, public health and food systems for health. It works with countries to develop policies and programmes that promote healthy diets, prevent malnutrition, and address emerging food-related health risks.
United Nations Children's Fund (UNICEF)	UNICEF focuses on improving nutrition and food security for children and vulnerable populations. It supports breastfeeding, micronutrient supplementation, and access to nutritious foods, aiming to reduce malnutrition and promote child development.
United Nations Development Programme (UNDP)	UNDP promotes inclusive and sustainable development by supporting countries to strengthen their food systems. It works on policy reforms, building institutional capacity, and fostering partnerships to enhance agricultural productivity, food security, and rural livelihoods.
United Nations Industrial Development Organization (UNIDO)	UNIDO supports the development of agro-industries and value chains to enhance food security and promote economic growth. It assists countries in improving food processing, storage, and distribution systems, as well as in adopting sustainable production practices.
United Nations Educational, Scientific and Cultural Organization (UNESCO)	UNESCO focuses on the cultural aspects of food systems, including traditional knowledge, culinary heritage, and sustainable food practices. It promotes education and awareness-raising activities to preserve food diversity, promote gastronomic traditions, and foster cultural exchange.
United Nations Office for Project Services (UNOPS)	UNOPS provides project management and infrastructure support to enhance food systems' resilience and sustainability. It implements infrastructure projects such as irrigation systems, storage facilities, and market infrastructure to improve agricultural productivity and market access.
International Labour Organization (ILO)	ILO addresses decent work and social justice within food systems. It focuses on promoting fair labour practices, improving working conditions for agricultural workers, and ensuring that all individuals involved in food production have access to equitable opportunities and protections.
United Nations Human Settlements Programme (UN-Habitat)	UN-Habitat works on urban food systems, focusing on issues such as urban agriculture, food accessibility in cities, and sustainable urban planning for food security. It promotes strategies to integrate food production into urban areas, improve access to nutritious food for urban populations, and address food-related challenges in informal settlements.
UN-Nutrition	UN Nutrition is the United Nations inter-agency coordination mechanism for nutrition. It was founded in 2020 by its five constituent members: FAO, IFAD, UNICEF, WFP and WHO. UN-Nutrition is universal in scope, working to safeguard the nutrition of all people in all countries. UN-Nutrition provides a platform for UN entities to gather, share information, and coordinate nutrition actions in line with the spirit of UN reform.

Source: UN Food Systems Task Force. 2025. *Food Systems Thinking Guide for UN Resident Coordinators and UN Country Teams – Working collectively towards food systems transformation.*. Rome, FAO. https://doi.org/10.4060/cd0497en

Annex 4: Resources and tools

TITLE AND CITATION	DESCRIPTION
Rethinking our food systems: A guide for multi-stakeholder collaboration UNEP (United Nations Environment Programme), FAO & UNDP. 2023. *Rethinking our food systems: A guide for multi-stakeholder collaboration.* Nairobi, Rome, and New York, USA. https://doi.org/10.4060/cc6325en	A building block for ensuring a good understanding of the food system.
System Change: A Guidebook for Adopting Portfolio Approaches UNDP. 2022. *System Change: A Guidebook for Adopting Portfolio Approaches.* Bangkok. https://www.undp.org/publications/system-change-guidebook-adopting-portfolio-approaches	Presents key steps for the development of a portfolio of interventions.
A Guide to Effective Collaborative Action UNDP. 2021. *A Guide to Effective Collaborative Action*. New York, USA. https://www.undp.org/facs/publications/effective-collaborative-action	Provides advice on analysing and prioritizing stakeholders.
The MSP guide: How to design and facilitate multi-stakeholder partnerships Brouwer, H., Woodhill, J., Hemmati, M., Verhoosel, K. and Van Vugt, S., 2019. *The MSP guide: How to design and facilitate multi-stakeholder partnerships.* Practical Action Publishing, Rugby, UK. https://mspguide.org/wp-content/uploads/2021/12/the_msp_guide_3rd_ed_2019_wcdi_brouwer_woodhill.pdf	These two documents provide guidance for multi-stakeholder partnerships and a set of related relevant tools.
Common Minimum Standards for Multi-Stakeholder Engagement in the UN Development Assistance Framework UNSDG. 2020. *Common Minimum Standards for Multi-Stakeholder Engagement in the UN Development Assistance Framework.* New York, USA, United Nations. https://unsdg.un.org/sites/default/files/2020-05/UNSDG-Common-Minimum-Standards-for-Multi-Stakeholder.pdf	Provides standards for multistakeholder engagement for the implementation of the 2030 Agenda at country level.
Update on FAO's collaboration with other UN system entities FAO. 2023. *Update on FAO's collaboration with other UN system entities.* CL 174/12. Rome, FAO. https://openknowledge.fao.org/handle/20.500.14283/nn739en	Provides a report on FAO's partnerships with the United Nations (UN) system entities. It highlights key global, regional, and country level collaboration mechanisms and modalities.
Strengthening multi-stakeholder dimension of national development planning and SDGs mainstreaming DESA (Department of Economic and Social Affairs of the UN). 2021. Strengthening multi-stakeholder dimension of national development planning and SDGs mainstreaming. In: *UN Department of Economic and Social Affairs Sustainable Development.* New York, USA, United Nations. https://sdgs.un.org/stakeholders/strengthening-multi-stakeholder-dimension-national-development-planning-and-sdg	Stocktaking of the current landscape of stakeholder participation in SDG implementation in each country and forward-looking proposals for cooperation frameworks, etc.
Taking a Food Systems Approach to Policymaking: A Resource for Policymakers Nyaku, A., Flory, A., Ledlie, N., Andridge, C., Fletcher, E.K., Huestis, A., Detwiler, B., Hawkes, C. and Trübswasser, U., 2022. *Taking a Food Systems Approach to Policymaking: A Resource for Policymakers.* London, Centre for Food Policy at City University of London and Results for Development (R4D). https://r4d.org/resources/taking-a-food-systems-approach-to-policymaking-a-resource-for-policymakers/	Brief II of a series on Taking a Food Systems Approach to Policymaking, focuses. The brief focuses on stakeholders' engagement and jointly identifying entry points.
The Political Economy of Food System Transformation: Pathways to Progress in a Polarized World Resnick, D. and Swinnen, J., eds. 2023. *The Political Economy of Food System Transformation: Pathways to Progress in a Polarized World.* Oxford, UK, Oxford University Press. https://doi.org/10.1093/oso/9780198882121.001.0001	Analyses the political economy dynamics of food systems transformation with contributors who span several disciplines, including economics, ecology, geography, nutrition, political science, and public policy.
Political economy analysis of the Kenyan food systems Rampa, F. and Dekeyser, K. 2020. *AgrInvest-Food Systems Project – Political economy analysis of the Kenyan food systems. Key political economy factors and promising value chains to improve food system sustainability.* Rome, FAO. https://doi.org/10.4060/cb2259en	Analyses Kenya's national food system through a food systems and political economy approach.

TITLE AND CITATION	DESCRIPTION
Food systems policy tool Global Panel on Agriculture and Food Systems for Nutrition. 2021. *Policy Tool.* London, Global Panel. https://www.glopan.org/policy_tool/	Provides a framework designed to stimulate country-level dialogue to support the development of realistic public and private sector actions.
The food systems decision-support toolbox: a toolbox for food system analysis Posthumus, H., J.M. Bosselaar, H. Brouwer. 2021. *The food system decision support tool – a toolbox for food system analysis.* Wageningen University & Research and KIT Royal Tropical Institute. https://doi.org/10.18174/541410	Provides different tools and methods that can be used to conduct food systems analysis. Has insights that can be leveraged for identifying potential entry points.
Taking a Food Systems Approach to Policymaking: A Resource for Policymakers Nyaku, A., Flory, A., Ledlie, N., Andridge, C., Fletcher, E.K., Huestis, A., Detwiler, B., Hawkes, C. and Trübswasser, U., 2022. *Taking a Food Systems Approach to Policymaking: A Resource for Policymakers.* London, Centre for Food Policy at City University of London and Results for Development (R4D). https://r4d.org/resources/taking-a-food-systems-approach-to-policymaking-a-resource-for-policymakers/	Brief II of a series on Taking a Food Systems Approach to Policymaking, focuses on stakeholders' engagement and jointly identifying entry points.

Food Systems Transformation: What's in the policy toolbox? Parsons, K. and Barling, D. 2021. *Food Systems Transformation: What's in the policy toolbox?* Hatfield, UK, University of Hertfordshire. https://www.foodsecurity.ac.uk/wp-content/uploads/2009/10/Transformation-toolbox-summary.pdf	Provides policy levers for food systems transformation, based on a project by the University of Hertfordshire's Food Systems & Policy Research Group.
Policy coherence in food systems Parsons, K. and Hawkes, C. 2019. *Rethinking Food Policy: A Fresh Approach to Policy and Practice – Brief 5: Policy coherence in food systems.* London, Centre for Food Policy. https://symposium.bayes.city.ac.uk/__data/assets/pdf_file/0018/504621/7643_Brief-5_Policy_coherence_in_food_systems_2021_SP_AW.pdf	Describes what policy coherence is, why it is needed and how to analyse it to devise more coherent food policy.
National and Sub-national Food Systems Multi-Stakeholder Mechanisms: An Assessment of Experiences One Planet Network. 2021. *National and Sub-national Food Systems Multi-Stakeholder Mechanisms: An Assessment of Experiences.* Paris, UNEP. https://www.oneplanetnetwork.org/sites/default/files/2021-10/211018_WWF_One%20Planet%20Report_FA_Full%20Report_1.pdf	Compiles existing initiatives and partnerships working in sustainable food systems. Highlights good practices and success stories of multistakeholder mechanisms.
12 tools for connecting food policy: A typology of mechanisms Parsons, K. 2022. *12 tools for connecting food policy: A typology of mechanisms.* Rethinking Food Governance, Report 3. London, Centre for Food Policy at City University of London. https://foodresearch.org.uk/publications/12-tools-for-connecting-food-policy-a-typology-of-mechanisms/	Examines how food policymaking in England – and in other countries – could be better connected, in ways that would lead to more coherent and effective policy.
Food systems policy tool Global Panel on Agriculture and Food Systems for Nutrition. 2021. *Policy Tool.* London, Global Panel. https://www.glopan.org/policy_tool/	Provides a framework to stimulate country-level dialogue and support the development of realistic public and private sector actions. It follows a food systems approach, using the food system as a framework to support the multisector collaborative action required to deliver high-quality diets, as well as supporting other agricultural, health, environmental and economic policies.
Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions Global Alliance for the Future of Food. 2022. *Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions.* https://futureoffood.org/wp-content/uploads/2022/03/assessment-of-food-systems-in-ndcs.pdf	Comprehensively assesses how 14 countries have incorporated food systems into their NDCs to date. Designed as a toolkit for policymakers and other interested stakeholders, the assessments, country case studies, framework, and summary report that make up the full suite of materials highlight the many opportunities for governments to use food systems transformation to drive significant greenhouse gas emissions reductions, as well as other health, environmental and social benefits.

Enhancing NDCs for food systems: Recommendations for decision-makers WWF (World Wide Fund for Nature). 2020. *Enhancing NDCs for food systems. Recommendations for decision-makers.* Berlin. https://climatefocus.com/wp-content/uploads/2022/06/200909_WWF_NDC_Food_final_low.pdf	The paper by WWF, in cooperation with UNEP, EAT, and Climate Focus, gives an overview of the role of and opportunities for the food system to contribute to climate change mitigation and adaptation and summarizes how it is currently featured in NDCs. It also provides suggestions for policies and measures that could be included in NDCs for activities across the food system. These recommendations are meant to serve as a starting point for discussions, and future development and to provide a clear way towards measurable, actionable outcomes within NDCs.
Food, Environment, Land and Development (FELD) Action Tracker Food and Land Use Coalition (FOLU). 2024. Food, Environment, Land and Development (FELD) Action Tracker. In: *FELD Action Tracker.* https://feldactiontracker.org/	This strategic initiative under the Food and Land Use Coalition (FOLU) Coalition is dedicated to providing practical support to countries' transformations of food and land use systems by analysing national policies; by tracking the resulting implementation and other related actions; by identifying good practices to be shared on a dedicated platform; and by assessing specific impact and overall progress against national and global strategies and targets under the Paris Agreement and the SDGs. The FELD programme and its methodologies are designed to support countries and their partners in devising, implementing and improving effective and ambitious policies for transforming their food and land-use systems and practices.
COP28 Agriculture, Food and Climate National Action Toolkit Bakhtary, H., Rynearson, A., Fleckenstein, M., Nelson, W., Fong, P., Seggel, A., Crumpler, N.K. *et al.* 2023. COP28 *Agriculture, Food and Climate National Action Toolkit – Taking stock of good practices, initiatives, and tools for food system transformation through Nationally Determined Contributions and National Adaptation Plans.* Gand, WWF. https://openknowledge.fao.org/handle/20.500.14283/cc9049en	Serves as a key resource for national policymakers and decision-makers aiming to accelerate and align national efforts on climate action and food and agriculture system transformation. It provides a summary of priority actions, gives an overview of good examples of NDCs and NAPs and how they integrate agriculture and food system measures, and, lastly, presents an overview of existing initiatives, platforms, and tools that can help governments in developing and implementing agriculture and food system policy measures as part of their NDCs and NAPs.
Food Forward NDCs WWF. 2024. *Food Forward NDCs.* https://foodforwardndcs.panda.org/	This guidance tool supports the enhancement and implementation of NDC ambitions for agriculture and food systems transformation. It will help countries strengthen their NDCs by providing easy and accessible content to identify policy measures and practices and information about their climate change mitigation, adaptation and sustainable development benefits.
Building Circularity into Nationally Determined Contributions (NDCs) Learning for Nature. 2023. Building Circularity into Nationally Determined Contributions (NDCs)– A Practical Toolbox. In: *Learning for Nature.* UNEP, UNDP & UNFCCC. https://www.learningfornature.org/en/building-circularity-into-nationally-determined-contributions/	Aims to support countries to identify, prioritize, implement and track circular economy interventions for increased ambition and implementation of their NDCs. It aims to provide policymakers with a methodology and tools to help: 1. assess and identify greenhouse gas emissions hotspots from material use to prioritize sectors and/or subsectors in the NDC for circular economy interventions for increased climate ambition;

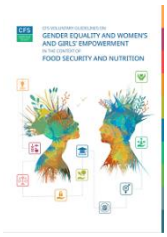
	2. assess and select circular economy interventions in prioritized sectors for the NDC; 3. identify policy instruments and indicators for the implementation of selected circular economy interventions in the NDC; and 4. track and report progress in the national Biennial Transparency Report under the Paris Agreement. The toolbox is divided into four stages to leverage a country's policy cycle. Each stage includes a set of steps and key questions to consider as well as tools and case studies
Hotspot Analysis Tool For Sustainable Consumption And Production One Planet Network. 2024. Hotspot Analysis Tool for Sustainable Consumption and Production to support science-based national policy frameworks. In: *SCP Hotspot Analysis*. UNEP. https://scp-hat.org/	Provides two modules to analyse hotspots of unsustainable consumption and production. In addition, standard reports provide more comprehensive information tailored to your needs, and in the Methods & Data section users can learn more about and download all the data used.
Adaptation, Biodiversity and Carbon Mapping Tool (ABC-Map) FAO. 2024. *Adaptation, Biodiversity and Carbon Mapping Tool (ABC-Map).* FAO. http://abc-map.org/	This is an all-in-one tool to assess the environmental impact of projects and investments in the agriculture, forestry and land use sector. ABC-Map is an open-source geospatial app based on Google Earth Engine. It integrates global datasets including climate data from ERA5, land cover data from the European Space Agency, and biodiversity data from the World Database on Protected Areas. It provides users with comprehensive assessments in three key areas: adaptation, biodiversity, and carbon. Users can input project details and quickly assess climate vulnerabilities, biodiversity impacts, and carbon reduction potential. ABC-Map aims to support countries in fulfilling their commitments under the UNFCCC, CBD and the United Nations Convention to Combat Desertification by enhancing their capacity to plan and monitor climate-resilient agricultural and land-use projects effectively.
Nationally Determined Contribution Expert Tool (NEXT) FAO. 2024. Nationally Determined Contribution Expert Tool (NEXT). In *FAO.* http://clh-ckan.apps.fao.org/dataset/ac7bada1-da53-4e5f-90b2-67660eef0ec8/resource/71e5c0b4-cc00-4d1f-acb3-dd66635c3bcf	NEXT is a greenhouse gas accounting tool developed by FAO to support annual environmental impact assessment for the agriculture, forestry and other land use sector. NEXT provides a 30-year time series of annual and cumulated estimates of carbon removal and greenhouse gas emissions reductions from climate actions made by Parties to the Paris Agreement. The NEXT tool was specifically designed to align with the enhanced transparency framework of the Paris Agreement, facilitating the tracking of NDCs as outlined in the modalities, procedures and guidelines. It provides a detailed temporal series of results and a broad range of indicators, including the social value of carbon, offering a comprehensive assessment of environmental and economic impacts related to mitigation targets. Moreover, NEXT supports countries in interpreting, tracking and enhancing the ambition of their NDCs, thereby contributing to the global stocktake process of the Paris Agreement in a coherent manner.

Climate Risk Toolbox FAO. 2023. *Climate Risk Toolbox – Guiding material for climate risk screening.* Rome. https://doi.org/10.4060/cc2909en	Supports the design of climate-resilient agricultural investment projects and plans, by allowing users to conduct climate risk screenings through advanced climate-related geospatial information and data.
Global Stocktake Explorer Climate Policy Radar. 2024. *Global Stocktake Explorer.* London. https://gst1.org/	Supports the analysis of inputs to the first Global Stocktake. These include thousands of inputs that were submitted via the Global Stocktake Information Portal, and other input documents available on other UNFCCC portals such as the NAP Central portal. Key climate action topics under the themes of mitigation, adaptation, means of implementation and crosscutting have also been labelled in the text using machine-learning methods supervised by a team of climate policy experts and data scientists. These are reflected in the filters that you can use to understand and analyse the inputs in addition to the search functionality.
Nationally Determined Contributions Tracking Tool Download the tool User manual: Umulisa, V., Schiettecatte, L-S., Bloise, M., Crumpler, K., Prosperi, P., Salvatore, M. & Bernoux, M. 2023. *The Nationally Determined Contributions Tracking Tool user manual.* Rome, FAO. https://doi.org/10.4060/cc4960en	Facilitates countries in collecting the information required to track progress made in implementing and achieving their NDCs. Based on the information available in each country, the user-friendly tool compares planned versus implemented mitigation and adaptation actions, and estimates the greenhouse gas reduction achieved thereafter compared to the sectoral and/or national baseline and NDC target scenario. Overall, the tool is designed to support governments, national experts and practitioners involved in the preparation, implementation, updates, revision and reporting of all sectors covered by the NDC.
Food Waste Index Report 2024 UNEP. 2024. *Food Waste Index Report 2024. Think Eat Save: Tracking Progress to Halve Global Food Waste.* Nairobi. https://wedocs.unep.org/ 20.500.11822/45230	Provides the most comprehensive global assessment of food waste data and analysis, and provides a spotlight on solutions to reduce food waste. It plays a pivotal role in bridging food and environmental agendas through comprehensive data analysis and strategic insights. By tracking global progress towards SDG Target 12.3 to halve food waste by 2030, the report highlights critical areas for intervention and collaboration. It emphasizes the compounding benefits of reducing food waste, such as mitigating greenhouse gas emissions and addressing food insecurity amidst global hunger challenges. The report underscores the significant environmental impact of food waste, generating 8–10 percent of global greenhouse gas emissions, while illustrating that food waste is not solely a problem of affluent nations. The report calls on countries to utilize the Food Waste Index to develop robust national baselines and track progress, urging integration into national climate plans (NDCs) and biodiversity strategies (NBSAPs) to enhance sustainability efforts. Overall, the report serves as a critical tool for policymakers, businesses and communities worldwide to collaboratively address food waste, enhance resilience in food systems, and advance global environmental goals.
Changing behaviour to help more people waste less food Goodwin, L., Blondinn, S., Bassett, G., Roberts, M., Wistrand, L., White, H., Swannell, R., Leib, E.B., Plekenpol, R. & Rouse, H. 2022. *Changing behaviour to help more people waste less food: a guide.* Nairobi, UNEP & Washington, DC, WRI (World Resources Institute) https://champions123.org/sites/	Aims to help key actors in the food system focus on how they can help consumers reduce food waste through behaviour change. It is specifically aimed at household food waste, where the majority of waste (61 percent) occurs.

default/files/2022-09/Champions_12.3_Playbook_HIGH-RESOLUTION.pdf	
IGREENFIN I – Multi-country (Burkina Faso, Côte d'Ivoire, Ghana, Mali, Mauritania) https://www.greenclimate.fund/document/inclusive-green-financing-initiative-igreenfin-greening-agricultural-banks-financial-sector	Financing instrument: Blended finance with GCF, AfDB, Islamic Development Bank, and domestic agricultural banks. Policy & tools contribution: Helped domestic PDBs develop green credit lines and lending guidelines for climate-smart agriculture and renewable energy. Supported regulatory dialogue on integrating climate risk assessment into agricultural loan appraisals. These tools are now embedded in several national agricultural finance strategies, influencing long-term allocation of public and private capital to green value chains. Impact: Targets 378,600 direct and 2.49M indirect beneficiaries, with annual GHG reductions of 225,487 tCO_2e.
PACT – Ethiopia https://www.ifad.org/en/w/projects/2000003447	Financing instrument: ASAP+ grant blended with GCF and EU co-financing, plus private sector investment through Rabo Bank for carbon market participation. Policy & tools contribution: Introduced Ethiopia's first operational framework for smallholder participation in voluntary carbon markets, including benefit-sharing agreements where 80% of carbon revenues go to farmers. This has informed Ministry of Agriculture policy on carbon finance in agroforestry and watershed programmes. Impact: Supports 150,000 households, expected ~12M tCO_2e GHG reductions over 20 years.
PRIDE – Malawi https://pride.mw/	Financing instrument: Concessional IFAD loan blended with ASAP grant. Policy & tools contribution: Developed technical standards for climate-resilient irrigation schemes and integrated them into the Ministry of Agriculture's irrigation investment guidelines. Promoted gender-responsive governance models in farmer organizations, now referenced in national rural infrastructure programmes. Impact: Benefits over 14,800 households, with 922.5 ha under climate-resilient practices and 60% women's participation.

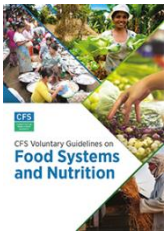
Source: UN Food Systems Task Force. 2025. *Food Systems Thinking Guide for UN Resident Coordinators and UN Country Teams – Working collectively towards food systems transformation.*. Rome, FAO. https://doi.org/10.4060/cd0497en

Annex 5: CFS Policy Products: Voluntary guidelines, frameworks and policy recommendations

	**POLICY RECOMMENDATIONS ON REDUCING INEQUALITIES FOR FOOD SECURITY AND NUTRITION (CFS 52, 2024)** These CFS policy recommendations are envisioned as a focused, action-oriented document that provides guidance on developing and strengthening policies that explicitly focus on reducing inequalities and addressing their immediate and systemic drivers to achieve food security and nutrition for all, while transforming agriculture and food systems. They can serve as a critical resource for policymakers, stakeholders, and organizations working to eradicate hunger and improve nutrition outcomes by offering a set of actions that aim to reduce inequalities, both within and beyond food systems.
	**VOLUNTARY GUIDELINES ON GENDER EQUALITY AND WOMEN'S AND GIRLS' EMPOWERMENT IN THE CONTEXT OF FOOD SECURITY AND NUTRITION (CFS 51, 2023)** The CFS Voluntary Guidelines on Gender Equality and Women's and Girls' Empowerment in the Context of Food Security and Nutrition, explore and address the systemic barriers and the multiple challenges that women and girls face in food security and nutrition, providing strategic entry points for change and offering a comprehensive framework for stakeholders to create more inclusive, equitable, and sustainable food systems that benefit everyone. These guidelines stand out also for their cross-cutting nature and for being built on key principles that ensure their effectiveness and relevance across the diverse contexts.
	**STRENGTHENING COLLECTION AND USE OF FOOD SECURITY AND NUTRITION (FSN) DATA AND RELATED ANALYSIS TOOLS TO IMPROVE DECISION-MAKING IN SUPPORT OF THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF NATIONAL FOOD SECURITY (CFS 51, 2023)** The purpose of this policy recommendations is to provide specific and actionable actions for strengthening the capacities of all stakeholders, especially governments, involved in the collection, analysis, dissemination, protection and the use of quality FSN data, towards enhancing effective, inclusive, evidence-informed decision making.
	**PROMOTING YOUTH ENGAGEMENT AND EMPLOYMENT IN AGRICULTURE AND FOOD SYSTEMS FOR FOOD SECURITY AND NUTRITION (CFS 50, 2022)** The CFS policy recommendations on Promoting Youth Engagement and Employment in Agriculture and Food Systems are expected to inform public policies to foster enabling environments capable of nurturing the energy and skills of youth to make agriculture and food systems more sustainable and promote improved food security and nutrition outcomes., These policy recommendations present a variety of actions that look at creating enabling environments for young people, securing dignified livelihoods and increasing equitable access to resources for them, enhancing their knowledge and skills, and promoting sustainable and inclusive innovation for youth.

AGROECOLOGICAL AND OTHER INNOVATIVE APPROACHES FOR SUSTAINABLE AGRICULTURE AND FOOD SYSTEMS THAT ENHANCE FOOD SECURITY AND NUTRITION (CFS 48, 2021)

The CFS Policy Recommendations on Agroecological and other innovative approaches underline that there is no single approach for achieving food security and nutrition. They emphasize the importance of adopting context-appropriate transition pathways towards food systems that are resilient, equitable, diversified, support climate change adaptation and mitigation, provide healthy diets accessible for all, and respect human rights – for current and future generations. These Policy Recommendations are intended to support countries and other stakeholders to develop policies that strengthen agroecological and other innovative approaches for sustainable agriculture and food systems and the progressive realization of the right to adequate food in the context of national food security,

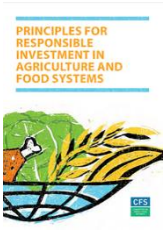


VOLUNTARY GUIDELINES ON FOOD SYSTEMS AND NUTRITION (CFS 47, 2021)

The CFS Voluntary Guidelines on Food Systems and Nutrition are intended to support countries and other stakeholders to develop, multi-sectoral national policies, laws, programmes and investment plans for healthy diets through sustainable agrifood systems. They provide guidance on policies and interventions to address malnutrition in all its forms through a holistic 'agrifood systems' lens that considers agrifood systems in their totality and looks at the multidimensional causes of malnutrition. These Voluntary Guidelines aim to promote policy coherence and reduce policy fragmentation between sectors relevant to agrifood systems and nutrition like health, agriculture, education, environment, gender, social protection, trade and employment.

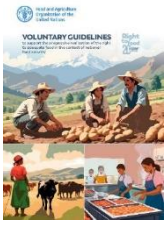
POLICY RECOMMENDATIONS ON CONNECTING SMALLHOLDERS TO MARKETS (CFS 43, 2016)

The CFS Policy Recommendations on Connecting Smallholders to Markets aim to address the key challenges faced by smallholders and foster opportunities to improve their access to markets. These policy recommendations recognize the key role played by smallholders in ensuring food security and nutrition, bearing in mind their heterogenous nature and their engagement in many interrelated markets as well as their challenges in securing market access, and they represent a tool to support Governments in addressing their specific constraints of smallholders and maximizing potential for beneficial access to reliable and remunerative markets.



PRINCIPLES FOR RESPONSIBLE INVESTMENT IN AGRICULTURE AND FOOD SYSTEMS (CFS 41, 2014)

The CFS Principles for Responsible Investment in Agriculture and Food Systems serve as a framework to guide the actions of all stakeholders engaged in agriculture and food systems by defining Principles which can promote responsible investment, enhance livelihoods, and guard against and mitigate risks to food security and nutrition. They are a set of ten principles that apply to all types and sizes of agricultural investment including fisheries, forests and livestock. They address all stakeholders and apply to all stages of the value chain. As a soft law instrument, they are globally applicable and include actions to address a range of environmental, social and economic issues.

	**VOLUNTARY GUIDELINES ON THE RESPONSIBLE GOVERNANCE OF TENURE OF LAND, FISHERIES AND FORESTS IN THE CONTEXT OF NATIONAL FOOD SECURITY (CFS 39, 2012)** The purpose of these Voluntary Guidelines is to serve as a reference and to provide guidance to improve the governance of tenure of land, fisheries and forests with the overarching goal of achieving food security for all and to support the progressive realization of the right to adequate food in the context of national food security. These Guidelines are intended to contribute to the global and national efforts towards the eradication of hunger and poverty, based on the principles of sustainable development and with the recognition of the centrality of land to development by promoting secure tenure rights and equitable access to land, fisheries and forests.
	**VOLUNTARY GUIDELINES TO SUPPORT THE PROGRESSIVE REALIZATION OF THE RIGHT TO ADEQUATE FOOD IN THE CONTEXT OF THE NATIONAL FOOD SECURITY (FAO, 2004)** The Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security provide practical guidance to States and other stakeholders in developing and adopting a wide range of measures - including national strategies, institutions, legal frameworks, access to resources and assets, nutrition, national financial resources and monitoring – that positively contribute to the progressive realization of the right to food. The Guidelines take into account a wealth of important considerations and principles, including equality and non-discrimination, participation and inclusion, accountability and human dignity, and remind stakeholders that all human rights are universal, indivisible, interrelated and interdependent.

Source: Compiled by IFAD, based on the Committee on World Food Security (https://www.fao.org/cfs/en/).

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