DRAFT WHO GLOBAL STRATEGY FOR FOOD SAFETY 2022-2030

Towards stronger food safety systems and global cooperation
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Introduction

Why an updated global food safety strategy?

Safe food is a primary determinant of human health. It is a basic human right to have access to safe and healthy food. In seeking to guarantee this right, governments must ensure that available food meets safety standards. This task is not easy as the world is now more interconnected, and food systems are changing faster than ever. Foods are produced, managed, delivered and even consumed in ways that could not have been anticipated two decades ago. These factors call for a fresh global approach to improve food safety that aims to strengthen national food safety systems while improving international and national collaboration.

While recognizing that food safety is a shared responsibility among multiple stakeholders, countries must show leadership in adopting and implementing food safety policies which ensure that each stakeholder knows – and correctly plays – their part. However, access to sufficient, safe, and wholesome food for all remains an elusive goal. Economic disparities within and across countries, including marked differences in the strength of national food safety systems and complex dynamics that operate within food systems, have significantly slowed progress towards achieving this goal.

Since its establishment in 1948, the World Health Organization (WHO) has had an unwavering commitment to reducing the burden of foodborne illness on global health. In pursuit of continuous improvement in food safety, WHO was a partner in the First FAO/WHO/AU International Food Safety Conference, which was held in Addis Ababa on 12–13 February 2019.1 This Conference set out to identify food safety priorities, align strategies across sectors and borders, reinforce efforts to reach the Sustainable Development Goals (SDG) and support the UN Decade of Action on Nutrition. In April 2019, the WTO International Forum on Food Safety and Trade2 met in Geneva and continued the discussions, addressing the trade related aspects and challenges of food safety such as use of new technologies, multi-stakeholder coordination and harmonizing regulation in a time of change and innovation.

The conclusions from both conferences were integrated into Resolution WHA73.5, “Strengthening efforts on food safety”3 adopted by the Seventy-third World Health Assembly in 2020, which reaffirmed that food safety is a public health priority with a critical role in the 2030 agenda for sustainable development. The resolution acknowledged that governments must act at the global, regional, and national levels to strengthen food safety. It also called on Member States to remain committed at the highest political level to recognizing food safety as an essential element of public health; to develop food safety policies that take into consideration all stages of the supply chain, the best available scientific evidence and advice, as well as innovation; to provide adequate resources to improve national food safety systems; to recognize consumer interests; and to integrate food safety into national and regional policies on health, agriculture, trade, environment, and development.

In turn, Member States requested WHO to update the Global Strategy for Food Safety to address current and emerging challenges, incorporate new technologies, and include innovative approaches for strengthening national food safety systems.

This global strategy responds to this request by outlining five strategic priorities that arise from a situational assessment and multiple consultations with Member States, subject matter experts that

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3 WHA73.5, Strengthening efforts on food safety, https://apps.who.int/ebwha/pdf_files/WHA73/A73_R5-en.pdf
form the WHO’s Technical Advisory Group (TAG) for the Food Safety, intergovernmental, nongovernmental organizations, and private sector.

The strategy’s vision is to achieve safe and healthy food for all so that all countries are capable of promoting, supporting and protecting their population’s health by applying food safety best practice to reduce the burden of foodborne diseases. WHO remains committed – more than ever – to providing continued guidance and support to Member States to prioritize, plan, implement, monitor and regularly evaluate actions to continuously strengthen food safety systems and promote global cooperation.

Food safety: A public health and socioeconomic priority

Foodborne diseases have a significant impact on public health. Unsafe food containing harmful levels of bacteria, viruses, parasites, chemical or physical substances makes people sick and causes acute or chronic illnesses – more than 200 diseases, ranging from diarrhoea to cancers to permanent disability or death. An estimated 600 million – almost 1 in 10 people in the world – fall ill after eating contaminated food, resulting in a global annual burden of 33 million disability-adjusted life years (DALY) and 420 000 premature deaths. Unsafe food disproportionately affects vulnerable groups in society, particularly infants, young children, the elderly and immunocompromised people. Low- and middle-income countries are the most affected, with an annual estimated cost of US$ 110 billion in productivity losses, trade-related losses, and medical treatment costs due to the consumption of unsafe food. Moreover, the globalisation of the food supply means that populations worldwide are increasingly exposed to new and emerging risks, such as the development of antimicrobial resistance (AMR) in foodborne pathogens that is accelerated by the misuse of antimicrobials in food production. It is estimated that by 2050, 10 million lives will be at risk and a cumulative US$ 100 trillion will be lost due to the spread of AMR if no proactive solutions are taken.

Nutrition and food safety are closely interlinked as two health outcomes from food systems. At the same time, food security encompasses both nutrition and food safety as food has to be available, accessible, of the right kind (utilization) and in the form of a stable supply. Simply put, there is no food security and nutrition without food safety. To be specific, unsafe food creates a vicious cycle of disease and malnutrition, particularly affecting infants, young children, the elderly and immunocompromised people. Figure 1 illustrates the close linkages between food safety and foodborne disease, and the impact on human health and nutrition.

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4 WHO Estimates of the global burden of foodborne diseases. https://apps.who.int/iris/bitstream/handle/10665/199350/9789241565165_eng.pdf?sequence=1
Unsafe food impacts health, but it also influences socioeconomic growth in terms of agribusiness, trade and tourism. In 2019, the World Bank estimated the value of the global food system to be approximately US$ 8 trillion. Low- and middle-income countries (LMIC) are increasingly participating in global food trade, both as exporters and importers. At the same time, global agricultural value chains have become complex, and food products are often grown, processed and consumed in different countries. While these trends have contributed to increasing the quantity and diversity of foods available to consumers throughout the world, with the increased volumes of traded foods, food safety risks are also increased. Consumers have the right to expect that both domestically produced and imported food are safe. Thus, the development of international food safety standards for application at domestic levels and in international trade has become more important than ever before. Failure to ensure compliance with regulations and standards will lead not only to economic losses but also to a loss of confidence in business and assurances provided by government authorities. If producers fail to ensure compliance, they risk being denied access to high-value markets, resulting in expensive export rejections and damage to brand reputation. Failure to address food safety impacts the growth and modernization of domestic food markets, thus diminishing income and employment opportunities. For countries wishing to develop tourism, the safety and quality of food can reinforce the attraction of tourism offerings or, on the contrary, be an impediment to economic growth.

Food safety: An integral part of the Sustainable Development Goals (SDG)
The SDG are a call for action by all countries to promote prosperity while protecting the planet; they are a blueprint to achieve a better and more sustainable future for all. The 17 Goals are all interconnected and are to be collectively achieved by 2030. Sufficient, safe and nutritious foods are clearly identified as relevant to all SDG, which reaffirms the interdependence between health and well-being, nutrition, food safety, and food security. It is vital that food safety be incorporated into realisation of the SDGs (Table 1), especially SDG 2 (Zero hunger), SDG 3 (Good health and well-being), and SDG 8 (Decent work and economic growth). But food safety must also be integrated in achieving SDG 1 (No poverty), SDG 12 (Responsible consumption and production patterns), and SDG 17

Figure 1 Conceptual framework for foodborne hazards, nutrition and health nexus

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Food business operators bear the primary responsibility to produce safe food, which are likely to be unattainable without adequate, safe and healthy food, particularly for domestic consumers in LMIC.

Table 1: Food safety is fundamental to SDG 1, 2, 3, 8, 12 and 17

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<tr>
<th>SDG 1: End poverty.</th>
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<td>Economic losses associated with unsafe food go well beyond human suffering. Losses in household income and medical care costs due to foodborne illness will have major ramifications for families in LMIC. Rejection of food exports in international markets can result in severe economic losses. An unsafe food supply will hamper socioeconomic development, overload healthcare systems and compromise economic growth, trade and tourism.</td>
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<th>SDG 2: End hunger.</th>
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<td>Unsafe food creates a vicious cycle of disease and malnutrition, which can lead to long-term developmental delays in children. Achieving food security, improving nutrition and promoting sustainable agriculture can only be achieved when food is safe for people to eat.</td>
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<th>SDG 3: Good health and well-being.</th>
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<td>Unsafe food accounted for 33 million DALYs in 2010. Every year more than 600 million people fall ill and 420,000 die from eating food contaminated with biological and chemical agents. The most vulnerable in society are the poor, particularly infants, pregnant women, the elderly, and those with compromised immunity.</td>
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<th>SDG 8: Decent work and economic growth.</th>
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<td>The agriculture and agri-food sectors are the mainstay of employment in LMIC and a major driver of sustainable economic development and poverty reduction. Traditional food markets form part of the social fabric of communities and are an important source of livelihoods for millions of urban and rural dwellers. As such, unsafe food can cause economic loss and increase the unemployment rate in agri-food sectors.</td>
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<th>SDG 12: Sustainable consumption and production patterns.</th>
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<td>There is a fundamental need to change the way that our societies produce and consume goods and services. Governments, relevant international organizations, the private sector and all stakeholders must play an active role in changing unsustainable consumption and production patterns and promote social and economic development within the carrying capacity of ecosystems.</td>
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<th>SDG 17: Global partnership for sustainable development.</th>
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<td>The COVID-19 crisis has demonstrated that the role of partnerships to deliver sustainable, inclusive and resilient development is more essential and urgent than ever. This crisis has demonstrated the limitations of government in every country in the world and the vital need for multi-stakeholder collaboration to collectively build more inclusive, resilient and sustainable societies.</td>
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Drivers of change and current trends in food safety

Unsafe food has been recognized by many national governments as a major social cost; it threatens consumer health, produces inefficiencies in animal and plant production systems, and creates trade barriers across the global food web. While it is not always possible for those government agencies with responsibilities for food safety to control drivers of change when strengthening food safety systems, it is important to be aware of them so they can be considered, and ideally managed, into the overall design of the system.

Interests and demands for safe food

There is a growing awareness worldwide of the need to strengthen national food safety systems to improve protection of consumers’ health and to gain trust and confidence in the safety of the food supply to facilitate food trade. Stakeholders are demanding that national governments provide strong leadership in response to current and emerging food safety challenges, and provide adequate resources at appropriate levels for improving systems to ensure food safety across the entire food and feed chain while understanding that food business operators bear the primary responsibility to produce safe food.

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Global food safety threats

Many food safety events and emergencies have resulted in global changes in food systems, food flows and food safety regulations. Examples of such events include variant Creutzfeldt-Jakob Disease because of bovine spongiform encephalopathy in cattle, adulteration of infant formula with melamine, and multi-country outbreaks of Verotoxigenic *Escherichia coli* (VTEC) associated with imported contaminated seed sprouts and hepatitis A resulting from contaminated frozen berries. A global public health focus on antimicrobial resistance and recognition of the potential for foodborne transmission as a contributing factor is already resulting in shifts in agricultural practise and exploration of tighter regulatory food safety requirements for the future.

Global changes in the economics of the food supply

Interconnected national food systems and food value chains continually undergo changes in supply and production costs, some of which aggregate into global trends in food movements. For instance, entry of new high value foods into the market can create a strong incentive for adulteration and fraud.

Extended and complex global supply chains for food and food ingredients pose new challenges with respect to the traceability and authenticity of foods.

Environmental challenges

Climate change poses real challenges and is a highly relevant driver of existing and emerging risks. Higher temperatures and more frequent extreme weather events have a significant impact on global food systems. Forward looking studies predict lower levels of agricultural production, disruption in the food supply, lowering of the nutrient quality of some crops through stress and drought, and emergence of new pathogens and antimicrobial resistance for humans, animals, and plants at the One Health interface.

While it is not possible to accurately assess the full impact of climate change on food safety, countries must be conscious of the effects of climate change on food systems so they can prepare and take appropriate precautionary and mitigation measures. National governments need to pay more attention to capacity-building, awareness raising and focusing on science-based solutions. It is vital that food safety infrastructure at national level is not only maintained but reviewed and improved. This will require continued investment in surveillance and monitoring of our foods coupled with risk assessment, management and communication.

Intensive agricultural production systems are a major contributor to global greenhouse gas emissions and a key driver for climate change. Threats from environmental pollution and transmission of antimicrobial resistance in the food chain pose serious risks to consumer health.

Plastic waste in the form of nano and microplastics may become a global health concern in the future as it has the potential to enter/re-enter the food chain from aquatic, soil and atmospheric sources. Reducing environmental pollution from intensive livestock farming systems and wastewater treatment are major challenges for safe food production.

Food waste also burdens waste management systems and exacerbates food insecurity. Food waste from households, retail establishments and the food service industry totals 931 million tonnes annually. A key target of the SDG is to halve food waste and reduce food loss by 2030.

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Society: changing expectations and behaviour

Social megatrends are a common phenomenon in today’s interconnected world. Shifts in consumer preferences and expectations are rapidly changing production and distribution of certain foods (e.g. a desire for foods that are organic, fresh and unprocessed). Moreover, new business models, including e-commerce and food deliveries, are emerging to meet the needs of consumers, particularly during the COVID-19 pandemic. From the communication side, social media platforms provide new opportunities for risk communication and education regarding food safety, however, the difficulty in distinguishing facts from misleading information can lead to loss of consumers’ trust in food sectors and governments.

Rise of new technologies and digital transformation

The pace of innovation in food and agriculture is increasing, bringing significant economic advantages to food production and benefits to consumers through increased product choice and a reduction in food waste. Novel plant and animal breeding methods involving genetic editing offer the potential for developing species with new traits such as disease resistance and drought tolerance, or food products with extended shelf-life. Nanotechnology applications in the food sector can lead to improvements in nutrients, bioactive delivery systems and novel food packaging materials, which can extend the shelf-life of foods. Synthetic meat and dairy substitutes, cell-based meat and fishery products, and food product reformulation can lead to greater consumer choice and sustainability. In the meantime, digital innovation and transformation in the context of big data and analytics, artificial intelligence and the internet of things (IoT) are trends that are rapidly changing food systems. For example, genomics and related tools – such as whole genome or next generation sequencing and international sharing of data relevant to foodborne disease – enable more precise investigations, including pathogen detection, characterization, identification and source tracking.

Demographic changes

Demographic changes including urbanisation, population growth and aging are all drivers of change for food systems. Food safety is of critical importance with the growth of the global population and changing socio-demographics. The global population is expected to reach 9.7 billion by 2050, with growth taking place particularly in sub-Saharan Africa and Central and Southern Asia. Virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. Older people are more susceptible to foodborne hazards due to age-related weakened immune systems. The challenge for the national food safety system is to identify at-risk population groups and to develop and communicate information on the importance of safe and healthy diets, particularly for an aging population. Population growth in sub-Saharan Africa and Central and Southern Asia will see an increase in numbers of vulnerable infants and children. Foodborne pathogens have a disproportionate impact on children under the age of five because their young immune systems have a limited ability to fight infections.

Urbanization is one of the main drivers in shaping a country’s food systems. Today, half of the world’s population lives in cities or towns located upon three percent of the Earth’s surface. By 2050, over 65 percent of the global population will be urban dwellers. Cities, with their high population density, are particularly vulnerable to food safety emergencies and many cities in low-income countries do not have adequate capacity to address disruptions to the food supply. The risk is particularly high for people living in congested and overcrowded informal urban settlements where conditions are already unsafe and unhealthy for human living. The COVID-19 pandemic is disrupting urban food systems

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worldwide, posing several challenges for cities and local governments that coping with rapid changes in food availability, accessibility and affordability – which strongly impact the food security and nutrition situation of urban populations. These issues highlight the need for competent authorities and other national agencies with responsibility for food safety to develop contingency plans for food safety emergency management.

**Food safety: A holistic approach**

Food safety demands a One Health approach

It is now widely recognized that human health is closely connected to the health of animals and our shared environment (Figure 2). With rapid population growth, globalisation and environmental degradation, threats to public health have become more complex. Most recent emerging diseases such as Middle East respiratory syndrome (MERS), Ebola virus disease, and H7N9 have all been linked to our food systems and the environment. The COVID-19 pandemic has shown how vulnerable the global population is to the undetected emergence of new diseases, particularly zoonoses that originate at the human-animal-environment interface. Food production, intensive agriculture and livestock systems, wildlife trade and encroaching on wildlife habitats all contribute to increasing the risk of emergence of new zoonotic diseases and antimicrobial resistance. Mitigation of these threats cannot be achieved by one sector acting alone.

The One Health approach goes beyond the detection and control of emerging diseases. Future improvements in food safety and public health will largely depend on how well sectors manage to collaborate using a One Health approach.

Without knowledge of the incidence and burden of disease associated with hazard/food combinations, prioritization of mitigation action will be difficult and food safety improvements will be largely unsuccessful.

Data on occurrence and disease burden from foodborne hazards combined with knowledge of source attribution will be crucial in assessing costs and benefits of novel control measures. One Health collaboration will enable the necessary integration of data.

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Many food-related chemical hazards reach consumers from or via animals or the environment and should be the focus of a One Health initiative. Chemical food contamination is a major cross-cutting issue with many chemicals, including antimicrobials, used in animal and plant production. Therefore, One Health monitoring and surveillance systems should clearly include chemical hazards.

Additionally, climate change as an influencing factor of food systems, is likely to have considerable negative impacts on food security, nutrition, and food safety. By modifying the persistence and transmission patterns of foodborne pathogens and contaminants, climate change leads to the escalation of foodborne risks. In this regard, food safety should also be integrated into interventions and commitments for climate change adaptation and mitigation under a One Health approach.

**Combating Foodborne Antimicrobial Resistance: Adopting a One Health Approach**

Globally, more than half of all antimicrobials are used in agriculture – such use together with human use leads to the development of antimicrobial resistance (AMR) in bacteria, resulting in untreatable human and animal diseases. The misuse of antimicrobials in food animals, and plants accelerates the development and transmission of AMR through the food chain, increase the foodborne disease prevalence and risk of outbreaks due to resistant bacteria. Foodborne diseases caused by resistant foodborne pathogens reduce the treatment options, while increasing morbidity and severity of infections, and the cost and duration of hospital stays. This problem is now characterized by WHO and the UN as one of the major health crises of the future. These bacteria are transmitted through contact – through food and through the environment – therefore any surveillance or mitigation solutions in this area must be One Health based. Novel DNA characterization of resistant genes can assist significantly in linking AMR to sources and disease occurrence in relevant ecosystems. The resolution WHA73.5 urges Member States to promote coherent actions to tackle foodborne AMR, including by actively supporting the work of relevant national bodies together with intergovernmental groups, such as the Codex Alimentarius ad hoc Intergovernmental Task Force on Antimicrobial Resistance.

Adopting a One Health approach to food safety will allow Member States to detect, prevent and respond to emerging diseases at the human-animal-environment interface and to address food-related public health issues more effectively.

**The concept of a food safety system and a food control system**

Food safety systems embrace the entire range of actors and their interlinked activities along the food and feed chain aiming at improving, ensuring, maintaining, verifying and otherwise creating the conditions for food safety. These actors include national competent authorities, the private agri-food sector, consumers, academia and any other stakeholders as relevant to the broader context in which they implement their activities in food safety.

National food control systems provide a critical contribution to food safety systems. As outlined in “Principles and guidelines for national food control systems” (CXG 82- 2013), their objective is “to protect the health of consumers and ensure fair practices in the food trade”. This foundational Codex

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14 Food Safety - Climate Change and the Role of WHO
[https://www.who.int/foodsafety/publications/all/Climate_Change_Summary.pdf?ua=1](https://www.who.int/foodsafety/publications/all/Climate_Change_Summary.pdf?ua=1)

Alimentarius text underlines the pivotal role of competent authorities and provides principles and a framework for the design and operations of national food control systems.

Though food control systems include both mandatory and non-mandatory approaches, including the interactions between competent authorities with other relevant stakeholders, the concept of food control system has a special focus on the role of competent authorities.

The term food safety system is used in this strategy in the context of the outcomes of the two high-level international food safety conferences in 2019 co-hosted by African Union (AU), Food and Agriculture Organization of the United Nations (FAO), WHO, and World Trade Organization (WTO) and the WHA73.5 resolution, “Strengthening efforts on food safety”. Food safety systems encompass the combination of activities of all stakeholders in the food and feed chain that contributes to safeguarding the health and well-being of people.

The strategy refers to Food Control Systems when addressing aspects or activities that are particularly driven or implemented by national governments and competent authorities. Instead, the term, Food Safety Systems is used in the strategy when referring to joint efforts and partnership among all stakeholders.

**Global strategy for food safety**

At the meeting of the 73rd World Health Assembly in May 2020, Member States requested WHO to update the WHO Global Strategy for Food Safety to address current and emerging challenges, incorporate new technologies and include innovative approaches for strengthening food safety systems. There was a recognition that the food safety systems of many Member States are under challenge and need significant improvements in their key components, such as regulatory infrastructure, enforcement, surveillance, food inspection and laboratory capacity and capability, coordination mechanisms, emergency response, and food safety education and training. Member States also recognized the need to integrate food safety into national and regional policies on health, agriculture, trade, environment and development.

In response, WHO has developed this Global Strategy for Food Safety with the advice of the Technical Advisory Group (TAG) for Food Safety, WHO regional advisers in food safety, international partners, nongovernmental organizations (NGO) and WHO Collaborating Centres. Together the focus is to build more sustainable, resilient, innovative and integrated food safety systems globally. In developing this strategy, WHO has also taken into account the Regional Framework for Action on Food Safety in the Western Pacific, the Framework for Action on Food Safety in the WHO South-East Asia Region, the Regional Food Safety Strategy of the Eastern Mediterranean Region, the Food Safety Programmes of the WHO African, European and Americas Regions, and the standards, recommendations and guidelines of the Codex Alimentarius. As well, WHO organized technical consultations with TAG members, web-based public consultations, and consultations with Member States consultations. Throughout the entire process, WHO engaged in regular consultations with FAO and the World Organisation for Animal Health (OIE).

This strategy also adds value by providing an overall vision and strategic priorities for concerted global action, and by underlining the importance of food safety as a public health priority, as well as the need for enhancing global cooperation across the whole food and feed chain. The strategy also reflects and complements existing WHO health programmes and initiatives, such as nutrition and

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noncommunicable diseases, AMR, public health emergency and emerging diseases, climate change, environmental health, water and sanitation, and neglected tropical diseases.

Target audience and timeframe
The target audience for this strategy includes policy-makers (national governments), technical authorities/agencies responsible for food safety, academia in public health and food safety, food business operators and private sectors, consumers, civil societies, and other international organizations in the field of food safety.

This new strategy will contribute to the achievement of the SDG and will be reviewed in 2030 when the world will reflect upon the progress made towards the SDG.

Aim and vision
The Global Food Safety Strategy has been developed to guide and support Member States in their efforts to prioritize, plan, implement, monitor and regularly evaluate actions towards the reduction of the incidence of foodborne diseases by continuously strengthening food safety systems and promoting global cooperation.

The strategy’s vision is the availability of safe and healthy food for all and to reduce the burden of foodborne diseases. This strategy gives stakeholders the tools they need to strengthen their national food safety systems and collaborate with partners around the world.

Scope
Strengthening national food safety systems begins with establishing or improving infrastructure and components of food control systems as described in Strategic Priority 1. For example, this can include developing framework food legislation, standards and guidelines, laboratory capacity, food control activities and programmes, and emergency preparedness capacity.

In addition to having legislation, policy, institutional framework and control functions in place, Member States need to consider and adopt four important characteristics/principles for the system to be fully operational:

1) **Forward-looking.** This principle is reflected as Strategic Priority 2: Identifying and responding to food safety challenges resulting from global changes and transformations in food systems. The global changes and transformation that food systems are experiencing today and that are predicted to occur in the future will have implications for food safety. Therefore, food safety systems should be equipped to identify, evaluate and respond to existing and emerging issues. The food safety systems must be transformed from reactive to proactive systems, especially when addressing health risks emerging at human-animal-ecosystems interface.

2) **Evidence-based.** This principle is reflected in Strategic Priority 3: Increasing the use of food chain information, scientific evidence, and risk assessment in making risk management decisions. Food safety risk management is based on science. The collection, utilization and interpretation of data lay the foundation for building evidence-based food safety systems.

3) **People-centered.** This principle is reflected as Strategic Priority 4: Strengthening stakeholder engagement and risk communication. Food safety is a shared responsibility, and it requires a joint effort by all stakeholders in food systems. Successfully ensuring food safety from farm to fork requires a more inclusive approach with all stakeholders, including empowered consumers.

4) **Cost-effective.** This principle is reflected as Strategic Priority 5: Promoting food safety as an essential component in domestic and international food trade. Food safety is a complex issue
that is influenced by socioeconomic status. With the globalization of food trade, foodborne pathogens and diseases can travel across borders and cause significant health and economic impacts. To ensure increased access to safe food in both domestic markets and international trade, food safety systems should be more cost-effective for both importing and exporting countries while enhancing food safety in domestic market.

The Global Food Safety Strategy’s five strategic priorities that are based on the fundamental components/infrastructure of the food safety systems and the above four principles. A conceptual framework of the five strategic priorities is illustrated in Figure 3.

**Strategic priorities**

**Strategic priority 1: Strengthening national food controls.**

**Aim**

To establish and strengthen national food controls by evaluating and improving key components that will contribute to reducing foodborne illness, ensuring food authenticity, and enhancing trade in food.

Why strengthen national food controls?

National food controls play a pivotal role in protecting the health of consumers and ensuring fair practises in trade at both the national and global levels. When governmental policies neglect food safety, it can result in high social, health, economic and environmental costs that impede the achievement of the SDG. Regular review and strengthening of national food controls throughout the farm-to-fork food system continuum is essential for effective management to ensure food safety.

National food controls are central to the prevention and control of foodborne disease.

Countries have the flexibility to determine how best to design their food controls and implement a wide range of control measures. The Codex Alimentarius Principles and Guidelines for National Food Control Systems will assist Member States in reviewing and strengthening their national systems.\(^\text{17}\)

While different legislative arrangements and structures can apply, the system should be sufficiently flexible to allow for modifications over time as national conditions evolve. Above all, the food controls should always be fit-for-purpose, resources efficiently applied, and consumers’ health and economic interests well protected. The expected goals and outcomes from the national food controls should be articulated in a national food safety strategy, (or health security or food and nutrition strategies, depending on national circumstances) with regular measurement and demonstration of performance of the food controls as an important component.

When setting and implementing regulatory requirements, the national food controls should consider the whole food chain and take a risk-based approach. The current climate of accelerated globalized trade, increased linkages between food systems, and growing interdependence on food controls between countries presents both challenges and opportunities. They demand in response that national food controls are focused, responsive, capable, flexible and fit-for-purpose. No matter how well established a system, regular review, adjustment and continuous improvement are essential.

In addition to the norms set down in the guideline of the Codex Alimentarius (CXG/GL 82-2013), strong and resilient food control systems are expected to have addressed or contain the components or elements outlined in Table 2:

**Table 2 Components of a National Food Control Programme**

- A strong policy and regulatory framework
- Setting of standards and guidelines aligned with those of the Codex Alimentarius, and the OIE, where relevant
- Adequate resources to support the programme
- The promotion of shared responsibility, coordination and communication amongst all stakeholders
- Effective operational management of food controls along the entire food and feed chain
- Scientific capacity to conduct risk assessment, including laboratory capability
- Data and information collection/generation to support risk-based control measures
- Food safety emergency response plans
- International connectivity and collaboration
- Food safety communications and education, including staff competence and training
- Performance monitoring for periodic review and continuous improvement

Some Member States will have well established national food controls while others are in the process of establishing or strengthening their national systems. It is recommended, however, that Member States adopt a strategic approach to strengthening their national food controls, where appropriate, using the following six strategic objectives.

**Strategic objective 1.1: Establish a modern, harmonized and risk-based framework of food legislation.**

In strengthening the national food controls, governments should ensure that these are founded on a sound legislative and policy base, including the clear articulation of goals and objectives, expected outcomes, and performance frameworks. As different agencies of government may be responsible for promulgation of food legislation, it is important to ensure that such legislation is harmonized nationally. Modern frameworks of food legislation are those that, for example, have moved from end
product testing and vertical food regulations to a risk-based approach and horizontal regulations to ensure a more effective and efficient approach to consumer protection.

The structure and objectives of the national food controls should be fully described in legislation, together with the roles and responsibilities of all central, regional or local competent authorities – and should include a system for coordination of functions of these competent authorities across the entire food chain. National food regulations and standards should reflect the Codex Alimentarius standards, guidelines and codes of practise. Legislation should include provisions for food inspections to be carried out regularly by competent authorities on a risk basis and with appropriate frequency to verify compliance by food business operators. The obligations for food business operators, who bear the primary responsibility of producing safe food, should also be clearly defined in law; this includes the responsibility to develop and implement risk-based food safety management systems for each of their operations. Powers to monitor and enforce compliance should sit alongside dissuasive sanctions. A systematic process should be in place to review and update the national food controls as required, including consultation with affected stakeholder groups when significant changes in regulation are proposed.

Strategic objective 1.2: Establish an institutional framework to coordinate the work of different competent authorities that manage national food controls.

Effective national food controls require operational coordination at the national level. Within most countries, responsibilities for food safety are usually spread across several ministries, institutions or departments. National governments therefore face a key challenge in coordinating the functions of different agencies across the entire food system, and to ensure impartiality and the absence of conflicts of interest.

In strengthening the national food controls, it is essential to develop a structure, defined in legislation, for the oversight and operation of the system. The responsibilities, powers, goals and objectives of each constituent part of the system, along with agreed operational procedures should be defined. Effective coordination between the central, regional and local levels is fundamental to success. Coordination should also include the work of any third party to which control tasks are delegated. Overlap and duplication of effort should be avoided. All parts of the system should be subject to regular audit and review.

Each country should design a coordination process that is appropriate to the national setting. There is no single coordination mechanism that applies in all countries. Some have consolidated responsibility in a single agency; others have put commissions or coordinating bodies in place. What matters is that there is a single vision for food control, defined roles for all competent authorities and clear expectations, preferably recorded in a transparent national food control plan.

Strategic objective 1.3: Develop and implement fit-for-purpose standards and guidelines.

Control measures will need to be tailored to the specific circumstances operating at the country level. In particular, the implementation of control measures must be proportionate and take account of the nature and extent of food business operations, in particular in small and medium-sized enterprises (SME). In many cases, Codex standards, guidelines and codes of practise will provide robust benchmarks for design of country-level control measures. In the past, food safety standards were often prescriptive in nature, unnecessarily limiting innovative methods of food production and processing, restricting cost-effective compliance, and not fully addressing new and emerging food
safety risks. Drawing on science and risk-based knowledge, standards and guidelines in modern national food controls should be flexible in design and implementation, as long as they achieve intended food safety outcomes.

**Strategic objective 1.4: Strengthen compliance, verification and enforcement.**

One of the primary functions of national competent authorities is to verify that food business operators comply with food legislation. Competent authorities should monitor and verify that the relevant requirements of legislation are fulfilled by food business operators at all stages of production, processing and distribution. Competent authorities should have enough suitably qualified and experienced staff and possess adequate facilities and equipment to carry out their duties properly. Staff should be free of any conflicts of interest.

The frequency of food control verification measures should be regular and proportionate to the risk, considering the results of the checks carried out by food business operators under Hazard Analysis and Critical Control Point (HACCP)-based food safety management systems or quality assurance programmes, where such programmes are designed to meet requirements of food legislation. Additional targeted verification measures should be carried out in cases of non-compliance. Competent authority staff should be competent in inspection, audit and investigation techniques. Control programmes should extend to cover the operations of online aspects of food businesses, internet-based food traders, as well as the use of digital marketplaces. Compliance with control measures should be recorded, and operators provided with reports, particularly in cases of failure or non-compliance. Enforcement policies should be proportionate, effective, documented and transparent.

**Strategic objective 1.5: Strengthen food monitoring and surveillance programmes.**

Food monitoring and surveillance systems are essential components of the national food control programme. These should be structured and based on factors such as known and emerging risks, volumes of food produced or imported, legal compliance, intelligence from disclosures or alert systems. Sampling and analytical testing can be both random and targeted.

Competent food laboratories are critical to successful monitoring programmes. As laboratories require considerable initial and ongoing capital investment, access and capacity should be commensurate with identified priority food risks. Laboratories involved in the analysis of food samples should be operated in accordance with internationally approved procedures or criteria-based performance standards and use methods of analysis that are, as far as possible, validated.

Surveillance of foodborne disease and AMR in the human population is essential for monitoring the safety of the food and feed supply chains. Identifying outbreaks, estimating the burden of illness, and monitoring epidemiological trends and modes of transmission are key responses. The prevention and control of foodborne diseases is a central objective of the national food control programme. WHO has issued several guidance and technical tools to support Member States to strengthen their capacity in foodborne disease surveillance. These documents also facilitate the understanding by Member States of available epidemiological and laboratories technologies that can be utilized in food safety. For example, whole genome sequencing (WGS) provides the highest possible microbial subtyping resolution available to public health authorities for the surveillance of – and response to – foodborne disease. Used as part of a surveillance and response system, WGS has the power to increase the speed with which threats are detected and the detail in which the threats are understood, and ultimately
leads to quicker and more targeted interventions. Given its power, all countries are encouraged to
explore how the technology can be used to improve their surveillance and response systems.

Currently, human health surveillance is the responsibility of the public health sector, while surveillance
in food producing and domestic animals is the responsibility of the veterinary services. Wildlife
surveillance is usually the responsibility of the veterinary services, forestry, environment, or wildlife
sectors. It is important to establish a One Health Platform, which facilitates integration and
cooperation between all sectors, and enables the identification of early warning of pathogen
emergence and the proactive introduction of preventative measures. One example of integrated
collaboration in the One Health Platform is the integrated surveillance of AMR.

Strategic objective 1.6: Establish food safety incident and emergency response systems.
The management of food safety incidents and emergencies are rarely the responsibility of a single
national authority, and timely and coordinated collaboration among all partners is required to ensure
effective responses. To respond to food safety emergencies, Member States require a multiagency,
multidisciplinary national food safety emergency plan with appropriate links between food control
authorities, public health authorities and as necessary with other responsible agencies. Similar
structures are required to manage responses to food safety incidents. Such plans should include links
to the International Food Safety Authorities Network (INFOSAN) and the International Health
Regulations (IHR), as appropriate. Simulation exercises should be carried out regularly to test and
update, as appropriate, emergency response plans. As part of such plans, national guidance or codes
of practise should be developed for traceability of implicated food and feed for the timely
identification and effective recall of affected products.

While recognizing the diversity of national food control programmes at different levels of
development and the wide range of food safety hazards, FAO and WHO have published a framework
for developing national food safety emergency response plans to assist Member States in developing
country-specific plans.18

Strategic priority 2: Identifying and responding to food safety challenges resulting
from global changes and transformations in food systems.

Aim
National governments or competent authorities need to be aware of – and proactively respond to –
global changes and transformations in food systems, as well as the movement of foods that have the
potential to impact on food safety and foodborne disease.

Why awareness and response to global changes and transformations in food systems?
Today’s global challenges are transforming the way we produce, market, consume and think about
food.19 The provision of a long-term safe, nutritious, and affordable food supply is a global endeavour.
The way we grow, produce and sell food impacts us all, either as stakeholders in national and global
agri-food value chains or as consumers of the increasing variety of food that is produced domestically or
imported. The complexity of global food systems and the speed at which they can change demands
that governments and competent authorities have a clear view of the connectedness between the
global and regional food systems within which food is produced, distributed, and sold, and the food
control system they regulate. Food safety is a core enabling factor to successfully transform food

18 http://www.fao.org/3/i1686e/i1686e00.pdf
systems and Member States need to be aware of food safety issues as the transformation of food systems accelerates. Responding to emerging risks in the food chain will require national coordination between all agencies with responsibilities for food safety, as well as international connectiveness and involvement of all food chain stakeholders.

Food systems engage the entire range of actors and their interlinked value adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal (loss or waste) of food products that originate from agriculture (including livestock), forestry, fisheries, and food industries, and the broader economic, societal, and natural environments in which they are embedded. Food systems need to be transformed to create healthy, sustainable and resilient food supplies and to enable sustainable consumption during climate change and natural resource degradation. The success of current food systems is measured primarily on whether they are delivering sufficient quantities of food to meet population needs. The food system must be transformed to place health – of people, the environment and animals – as a key priority. This requires a shift in the focus of current systems from quantity to safety and quality of food, which benefits health for all. Embracing a narrative that prioritizes better human, environmental and animal health outcomes will mean introducing decision-makers to new ways of thinking with a focus on the environmental, social, economic, commercial, and political contexts that shape our food systems.

Governments must be ready for expected and unexpected changes in global food systems and movements of food and the potential impact these changes could have on food and feed safety. This vigilance will support proactive response to threats and opportunities. We live in unprecedented times in relation to global influences on a safe, affordable, secure and sustainable food supply. Failure to respond to new information will also magnify existing threats at the national level, such as public health risks from AMR transferred through food moving between countries.

Global awareness and engagement of competent authorities on food system changes beyond national boundaries is clearly subject to policy direction and availability of resources. Another challenge lies in the differing strengths of national food safety systems in countries at different stages of economic development and their ability to respond to threats and opportunities. Further, some geographical regions have relatively limited information available on how trends in food systems are impacting food safety and human illness. Given such disparities, international organizations such as WHO and FAO have an important role in facilitating knowledge transfer and offering guidance on appropriate national food safety responses to global changes in food systems.

Strategic objective 2.1: Identify and evaluate food safety impacts arising from global changes and transformations in food systems and movement of food.

National competent authorities with responsibilities for food safety should allocate specific policy and technical resources to identifying global changes in food systems and evaluating the potential food safety impacts. The primary goal will be to ensure that changes in food systems and food flows are not generating new and unacceptable risks to human health. Evaluation of potential food safety issues associated with global changes in food systems usually reverts to standard practices in food safety. Food supply chains should be monitored as appropriate to determine exposure to new and existing hazards, and food safety science and risk assessment should be used to determine the likelihood and impact of foodborne illness occurring. Competent authorities may need a cross-disciplinary One Health approach when evaluating new hazards arising at the human-animal-environmental interface. Liaising with international organizations such as WHO, OIE and FAO can assist with identifying sources
of information on likely risks to consumers. It would also include participation in national, regional and international networks such as, INFOSAN, Codex Alimentarius, the Association of Southeast Asian Nations (ASEAN) Food Safety Network, and Food Safety Risk Analysis Consortium–South America (FSRisk)\(^2\) and engaging with all stakeholders to foresee new trends.

Active sourcing of information on impending changes in global food systems and evaluation of changes in food safety risk profiles will provide early opportunities to change food safety measures that are evidence- and risk-based rather than reactive and prescriptive. Systematically identifying and evaluating new and emerging risks provides the opportunity to rank those of most importance in the national circumstance and respond accordingly. It will be important to include and evaluate the impact of new technologies and novel production methods on the safety of the food and feed chain.

**Strategic objective 2.2: Adapt risk management options to emerging foodborne risks brought about by transformation and changes in global food systems and movement of food.**

National competent authorities should proactively respond to evidence of new food safety risks arising from global changes in food systems as well as evidence of shifts in current levels of consumer protection for known hazards and adapt this evidence in risk management and regulations. Without a broad and dynamic understanding of the scale and impact of potential food safety risks, governments will make ill-informed risk management decisions.

New scientific thinking on the response to emerging foodborne risks is often initiated through intergovernmental actions, such as the ad hoc Codex Intergovernmental Task Force on Antimicrobial Resistance. Competent authorities should monitor and take up early development of international guidance and refine the regulatory response at country level as more information on the extent of the change in food systems and risk assessment data accumulates. A One Health approach can also be used to minimize the use of antimicrobials in food animals and crop production by improving husbandry and management procedures for disease prevention and control, and enhancement of surveillance of AMR, including in the food chain.

Evidence of food fraud on a global scale may cause substantial shifts in trade flows of food and stimulate food safety authorities to generally strengthen national food safety systems in terms of traceability and certification of foods, even if the nature of the food fraud does not constitute a public health risk.

**Strategic priority 3: Increasing the use of food chain information, scientific evidence, and risk assessment in making risk management decisions.**

**Aim**

Competent authorities should utilize food chain information, scientific evidence and risk assessment to the greatest extent feasible in making risk management decisions and allocating resources to strengthen national food safety systems.

**Why take an evidence- and risk-based approach to utilization of information gathered from throughout the food chain?**

The modern regulatory approach is to intervene at the point in the food chain where the greatest mitigation of risk can be achieved. Therefore, sourcing information on hazards from throughout the food and feed chain is essential to achieve integrated development and implementation of evidence-based and risk-based risk management options.

\(^2\)https://www.paho.org/es/search/r?keys=food+safety+risk+analysis+consortium+fsrisk+PANAFTOSA
Generating the evidence base for development of control measures is primarily dependent on scientific knowledge on the presence and level of hazards at different steps in the food chain. Given that microbiological hazards can remain static, or multiply or diminish at different steps, and risk to consumers depends largely on the level of exposure remaining at the point of consumption, evidence on fluctuations of foodborne pathogen concentration throughout the food chain greatly assists design of control measures. In the case of chemical hazards, levels generally remain constant once introduced to the food and evidence on potential entry points and methods to limit contamination throughout the food chain is the primary risk management goal. As well as informing development of specific control measures, scientific evidence on hazards and their control from throughout the food and feed chains is essential to design risk-based system elements. Examples include a risk-based inspection programme for imported foods, categorization of the risk category of food businesses when deploying verification resources, and sampling plans for monitoring and review of food safety outcomes and regulatory performance.

A strategic approach to increasing the use of whole-of-food-chain information, foodborne disease databases, food consumption data, scientific evidence and risk assessment to strengthen national food safety systems can be actioned through the following objectives.

Strategic objective 3.1: Promote the use of scientific evidence and risk assessment when establishing and reviewing food control measures.

Risk analysis consists of risk assessment, risk management and risk communication. The application of this discipline is now well embedded in the food safety legislation of most countries. The principles for application are well described by Codex Alimentarius. However, many Member States need to invest in capacity-building for risk assessment, promote evidence-based health policy-making and strengthen participation in national and regional networks for risk assessment.

Applying a risk management framework to establish and monitor food control measures consists of the following well-established steps:

i. Describing and scoping the food safety issue
ii. Gathering scientific evidence and carrying out an assessment of any risks to consumers
iii. Identifying risk management options and making a selection
iv. Implementing the control measure
v. Monitoring the food chain and reviewing the measure if it is not achieving the expected outcome.

Applying an evidence- and risk-based approach to setting and reviewing control measures at the national level is an important obligation under the provisions of the WTO Sanitary and Phytosanitary (SPS) Agreement and will greatly enhance trading opportunities.

Strategic objective 3.2: Gather comprehensive information along and beyond food chain and utilize these data when making informed risk management decisions.

There are many sources for gathering information on hazards throughout the food chain. Depending on the circumstance, the prevalence and/or concentration of hazards in or on the food will be the primary input to an evidence-based or risk-based decision on the control measures required at specific steps in the food chain. For imported foods, exporting country risk profiles, importer declarations and the results of border and post-border inspection and monitoring should be combined as information sources to continuously evolve a risk-based imported food safety system. For foods produced

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domestically, information sources start at the production level and are strengthened by supplier declarations, traceability arrangements and monitoring during primary and secondary processing. Information along the food chain should not only focus on hazards, but also should include industry practises, consumption data, and foodborne disease information. Advanced digital technology can improve food traceability systems leading to rapid recall or withdrawals of unsafe foods from the market.

Food safety management systems implemented by food business operators at primary and secondary processing are a prime source of food chain information, especially when they incorporate monitoring of process control criteria and regulatory food safety criteria. At the retail end of the food chain, competent authorities may implement routine and targeted sampling of foods for chemical and sometimes microbiological hazards. Industry electronic product recall services used to manage both voluntary and regulatory recalls, along with submission to the competent authority of the risk-based actions taken by the food supplier, are also useful sources of information for evidence- and risk-based strengthening of national food safety systems.

Strategic objective 3.3: Source food safety information and risk analysis experiences from beyond national borders to strengthen risk management decisions and technical capacity.

Risk management at the national level increasingly relies on global availability of data on sources and levels of hazards in foods; a consequence of the increasing volume and complexity of food in trade and the substantial inputs needed to carry out risk assessment. International organizations such as FAO, WHO and OIE offer a wealth of food safety and standard-setting information to competent authorities establishing and reviewing national food safety systems, alongside a substantial library of risk assessments carried out by the FAO and WHO expert bodies, such as the Joint FAO/WHO Expert Committee on Food Additives (JECFA), Joint FAO/WHO Meeting on Pesticide Residues (JMPR), and the Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA).

Many countries have limited resources to monitor the food and feed chain for hazards and to survey the human population for foodborne disease and should draw on international bodies to supplement national information sources and inform standard setting. WHO developed the Global Environmental Monitoring and Assessment Programme (GEMS/Food) which provides governments and other stakeholders with information on global trends in chemical contamination of food and their contribution to total human dietary exposure. Membership of the International Food Safety Authorities Network (INFOSAN) involves exchange of information on food safety incidents and provides access to global intelligence to inform emergency responses at the national level. The Global Foodborne Infections Network (GFN) strengthens national and regional surveillance and investigation of foodborne illness and AMR, and fosters connections between food safety, animal health and public health stakeholders, as well as building capacity to help with risk management. The Global Early Warning System (GLEWS) was jointly established by WHO, FAO and OIE; it provides early warning of threats to human and animal health and carries out rapid risk assessments at the One Health human-animal-environment interface.

Strategic objective 3.4: Consistent and transparent risk management decisions when establishing food control measures.

Ensuring transparency and consistency in risk management decisions at the national level are important attributes that increase trust and confidence in the regulatory system. While minimizing foodborne risks to the consumer is the primary driver of risk management decisions, other considerations come into play when deciding on the best option for regulation in the national context. In addition to the specific adverse health effects being evaluated, these include feasibility, cost and
practicality of the proposed control measure, proportionality of the level of risk minimization that is achieved, availability of sampling and laboratory analytical tools for monitoring, socioeconomic impacts, and what may be highly stringent food safety requirements of importing countries. The final decision that balances these inputs against the primary goal of minimizing foodborne risks should be clearly documented as to the weighting given to each input.

In many countries, different government ministries have a keen interest in decisions on food control measures made by the competent authority and their inputs may need to be considered as part of the decision-making process. Competent authorities can benefit from the use of international guidelines on multifactor decision-making to promote consistency and transparency in their choice of control measures.\textsuperscript{22} A One Health approach to risk management generally involves cross-disciplinary inputs when responding to existing or emerging risks arising at the human-animal-plant-environmental interfaces. As health threats become more complex, mitigation cannot be achieved by one sector acting alone. Food safety authorities may have to factor in public, veterinary and environmental health considerations in establishing control measures. For example, antimicrobials\textsuperscript{23} that are critically important to public health require their withdrawal from use in food animal production because of the likelihood of AMR.

**Strategic priority 4: Strengthening stakeholder engagement and risk communication.**

**Aim**

To improve food safety throughout the food chain by fostering a food safety culture and encouraging an acceptance amongst all stakeholders of their individual and collective responsibility for food safety.

**Stakeholder engagement and risk communication**

Strengthening stakeholder engagement and communication on food safety is an essential part of the national food safety system. Stakeholder engagement – specifically, risk communication – complements and supports regulatory activities, promotes consultation with the agri-food sector and empowers consumers. This can build expectation of higher levels of food hygiene and an evolution towards a food safety culture.

Food safety is a shared responsibility. Stakeholders, including regulators, food business operators, academia, research institutions and consumers all have a role in ensuring safe food for all. Regulatory frameworks on food safety are necessary to define what is acceptable, establish measures to monitor compliance and penalize non-compliance, thus protecting the public from unsafe or fraudulent practises. Minimizing food safety risk requires that food business operators consistently play their part in producing safe food and minimizing foodborne risks. Regular interaction and consultation between industry and regulators leads to improved acceptance of, and compliance with, food standards.

Empowering consumers through effective risk communication and education to make safe and healthy food choices further stimulates industry to meet that demand by producing safe, nutritious and appropriately labelled food. Educated and informed consumers can play an important role in driving good hygienic practises and environmental sanitation in food processing and retail, as well as in traditional food market settings.

\textsuperscript{22} http://www.fao.org/documents/card/en/c/18240EN/

\textsuperscript{23} https://apps.who.int/iris/handle/10665/325036?search-result=true&query=WHO+CIA&scope=&rpp=10&sort_by=score&order=desc
In strengthening national food safety systems, risk communication and stakeholder engagement are priority areas for action. To develop a programme of strong engagement and shared responsibility, it is proposed that Member States focus activities on the following five Strategic Objectives.

**Strategic objective 4.1: Establish platforms for consultation on the national food safety agenda.**

Sharing responsibility at the national level comes in several forms. Engaging with all stakeholders is key to raising levels of food hygiene to prevent and reduce foodborne illness and encourage compliance with regulatory requirements. For the smooth functioning of national food safety systems, both formal and informal consultation with those likely to be impacted by changes and developments is essential. Including a provision in national legislation for competent authorities to establish platforms for constructive dialogue with different sectors of society will strengthen stakeholder engagement. Such a platform will allow for formal two-way dialogue that enables the food sector and civil society to bring views and concerns to the attention of competent authorities, and allows competent authorities to provide updates on new initiatives and food safety issues.

**Strategic objective 4.2: The use of non-regulatory schemes for enhancing food safety across the food chain.**

It is now internationally accepted that food business operators have the primary responsibility for producing and marketing safe foods. Competent authorities in Member States may wish to consider the adoption of incentive schemes to reward food business operators that fully comply with regulatory requirements. For instance, reducing the frequency of inspection for fully compliant food business operators will encourage investment in food safety management systems and reduce the overall cost of compliance. Where non-compliance is identified and additional inspections or laboratory analysis are required, this should be reflected in additional costs for the food business operator.

Private food standards are sometimes used by well-established industries to support their food safety management systems. These standards are generally not used in countries where small-scale producers and informal markets dominate. Private standards-setting coalitions and industry associations have created and adopted standards for food safety and food integrity that focus on establishing controls and conformance in the production, transport and processing of food that are additional to regulatory requirements and Codex standards. These are increasingly monitored and enforced through third-party certification. Accreditation to these standards is becoming an entry level requirement for some business-to-business transactions. However, private food safety standards may conflict with national regulatory food control systems that already incorporate agreed levels of consumer protection. Furthermore, they may present challenges for less developed countries that are already meeting Codex international standards and create an uneven playing field for different suppliers in common food systems. It is important that private food safety standards do not compete with – and marginalize – national authorities in exporting countries.

**Strategic objective 4.3: Establish frameworks for sharing verification of compliance with food safety regulatory requirements.**

Formal regulatory frameworks to share responsibility for food safety with nongovernmental bodies are embedded in the national legislation of some countries, following the realisation that such bodies could work effectively alongside the regulator in delivering food safety services. While delegating

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food control functions to third parties provides flexibility to all parties, the competent authorities need to maintain a strong oversight of compliance with regulatory requirements, carry out enforcement and retain final accountability for verification of food safety. Such schemes encourage food business operators to recognize their primary responsibility to produce safe food that is appropriately labelled so that consumers can make informed choices about the foods they eat. Competent authorities or governments must persist in their key responsibility of verifying that food business operators comply with food regulations.

Strategic objective 4.4: Facilitate communication and engagement with food business operators and foster a food safety culture.

Stakeholder engagement on food safety is a vital function of the competent authority and essential for building trust in the national regulatory programme. It complements and supports regulatory activities, empowers consumers, and builds expectation of a culture of safe food. Increasing food safety awareness and knowledge among all stakeholders in the national food safety system can have a significant impact on the prevention of foodborne diseases. National food safety systems should include training and education components designed to ensure that all food handlers receive the training required to adequately perform their work assignments; to maintain their professional competence; and to ensure consistent application of regulatory requirements. Food business operators should be encouraged to establish, commit to, and maintain appropriate food safety culture.

Guidance, training and awareness programmes targeted at all relevant food business operators should be put in place. These will facilitate the acceptance of the primary role of the food sector to produce safe food, build compliance with regulation and reinforce belief by control staff in the importance of their work. Communication systems and channels should be put in place to inform trading partner countries in all cases of an incident where unsafe or suspected unsafe food is placed on the market.

Strategic objective 4.5: Facilitate communication, education, and engagement with consumers.

Sharing responsibility comes in several forms. A simple but potentially very effective tool for improving food safety outcomes is to provide targeted and accurate information and health messages on food safety to consumers on how to minimize the risks associated with food handled, prepared and consumed in the household. A key challenge is how to channel relevant and factual information to consumers given the proliferation of social media platforms and the dissemination of false and potentially harmful information, particularly when managing serious food safety incidents. Inaccurate information can spread widely and at speed and cause anxiety and fear among consumers. Food safety messaging can be integrated with other educational programmes, such as school curricula, or awareness activities on nutrition, maternal health or noncommunicable diseases. This would require the joint effort and communication with other health programmes and other ministries at Member State level. The design of such educational messaging should also take into consideration consumers’ perception of food safety risks. In the event of unsafe food reaching the consumer, specific information on food recalls or market withdraws must be rapidly disseminated to consumers.

New digital technologies can also facilitate consumer protection through improved tracking and tracing of problematic foods and ingredients. In the event of unsafe food reaching the consumer, specific information on food recalls can be rapidly disseminated to consumers via both conventional
and social media channels. This is of particular importance when foods containing allergens need to be rapidly removed from the market.

Strategic priority 5: Promoting food safety as an essential component in domestic and international food trade.

Aim
To promote food safety as an essential contribution to the economic success of national food production in domestic and international trade.

Safe food enhances livelihoods and boosts economic development.
In addition to contributing to enhancing livelihoods and nutrition security, food safety has a critically important influence on the economic success of national food systems. The consequences of unsafe food can be measured in suffering, disability, and loss of life, or foregone income and wages; these personal and social costs are unnecessarily high. Estimates from the WHO show that foodborne diseases made 600 million people sick and caused 420,000 premature deaths in 2010. The adverse impacts of failure to achieve food safety are particularly apparent in low- and middle-income countries (LMIC). The INFOSAN activity report25, showed that there were 162 food safety events impacting all continents from 2018 to 2019, nearly double the number of events reported in any previous two-year period. These cross-border food safety events undoubtedly have negative impacts on consumers’ health and domestic and international markets. In its 2019 report26 the World Bank Group estimated that the economic costs of unsafe food, measured in terms of illness, disability, and premature deaths induced by unsafe food led to productivity losses of about US$ 95 billion a year in LMIC. In addition, the annual cost of treating foodborne illnesses was estimated to be US$ 15 billion. The report concluded that unsafe food undermines food and nutritional security, human development, the broader food and agriculture economy, and international trade. The impact on individual businesses of food safety failures can be significant through the immediate losses in productivity and food wastage, erosion of consumer and investor confidence, and interruptions in trade flows with food recalls and border rejections. When governmental policies neglect food safety, high social, health, economic and environmental costs result, which impedes the achievement of the SDG. The relevance of food safety to society, economic development and sustainable food systems is key to investing in national food safety systems.

To protect consumers’ health and increase access to safe food in both domestic and international markets, it is essential for Member State competent authorities to strategically invest and actively engage in the work of the Codex Alimentarius and other international organizations. The following four strategic objectives are proposed to facilitate this process.

Strategic objective 5.1: Strengthen food controls and capacity development in regulatory systems for the domestic market.
The strengthening of national food safety systems for exports to meet standards of international markets must be carried while maintaining vigilant oversight of domestic markets. Trade-dependent compliance with food safety standards has been the catalyst for the significant upgrading of food safety management capacity in many LMIC. However, investment in trade-related capacity development and enhancement of the export food trade does not always influence better domestic food safety systems or improve public health for the national population. Unfortunately, it may also

25 https://www.who.int/publications/i/item/9789240006911
have a negative impact if unsafe products rejected in export markets find their way back into domestic markets.

The use of international food standards for domestic food production establishes a visible and acceptable level of consumer protection and promotes a fair-trading environment whereby countries can gain economic advantage from cost-effective and efficient national food production systems. Member States should promote the uptake of Codex standards within domestic legislation, setting public health goals that the food industry can use as a benchmark when bringing innovation and economic change to sustainable national food systems.

Strategic objective 5.2: Strengthen interaction between national agencies responsible for food safety and those facilitating the food trade.

Within most countries, responsibilities for food control and/or economic aspects of the food and agriculture sector are spread across several ministries, institutions or departments. National governments therefore face a significant challenge in coordinating the functions of different agencies across the entire food system and arriving at management decisions that accommodate different mandates and goals. Competent authorities responsible for food safety need to liaise with all agencies of government that have responsibilities for trade facilitation and promotion at the international level. This includes ministries or departments of trade or enterprise, national embassies and trade missions, national customs and excise agencies, and food marketing and promotion bodies. A high level of engagement and sharing of information is essential to achieve consistent access to international markets, particularly during crises or emergencies of food safety or security.

Entry of new high value foods into the market can create a strong incentive for adulteration for commercial gain, especially in internationally traded foods. As food systems grow with high-value supply chains, it is increasingly important that responsible agencies across government cooperate in protecting both the domestic and export trade from disruptions that may result in the loss of markets over the short or medium term. This is best achieved by establishing a formal structure for the collection and analysis of intelligence and information from a range of sources to enable the preparation of detailed strategic assessments to identify food fraud threats, risks and vulnerabilities.

Strategic objective 5.3: Ensure that national food safety systems facilitate and promote international trade.

Export assurances, certification and negotiation of trade arrangements are competent authority functions that have a significant impact on agribusiness value chain development. Strengthening export components of national food safety systems in these terms will engender trust and confidence in exported foods, facilitate access to new markets, and add economic advantage to the food industry. In return, this can stimulate stakeholders such as governments and food business operators invest more resources to ensure food safety. Principles and guidelines for a well-functioning national food safety system for exported foods are well established by Codex. They include requirements for systems to be designed and operated based on risk assessment, to be non-discriminatory, and – where export certification is carried out – the validity of the certification should be assured by the competent authority. These can be used as the basis for the development of food safety equivalency agreements between Member States, which, in turn, will minimize unnecessary duplication of controls while providing an effective means for protecting the health of consumers and ensuring fair practises in the food trade.
Strategic objective 5.4: Strengthen engagements of national competent authorities with international agencies and networks that establish standards and guidelines for food in trade. Food standards and trade go together in ensuring safe, nutritious and sufficient food for a growing world population. Governments should use internationally agreed standards and guidelines to the greatest extent practical in underpinning facilitation of food trade; this is congruent with the WTO Agreements that strongly encourage governments to harmonize their regulatory systems with the standards, guidelines and recommendations of the Codex Alimentarius and the OIE.

Member States should participate to the extent feasible in the activities of Codex Alimentarius Committees and working groups, and the OIE, when relevant. They should also build awareness of these activities within national competent authorities with the involvement of the food sector. An inclusive, transparent and effective consultation mechanism should be put in place at national level on Codex related matters to build informed and strategic country positions. Designation of a Codex Contact Point supported by a National Codex Committee (NCC) is the recommended way for countries to become actively involved in the work of Codex. The composition of the NCC should include representation from all relevant stakeholders, including ministries, NGOs, consumers and industry, providing an opportunity to present their views on Codex matters.

Recognizing that risks to human health and food safety may arise at the farm and any subsequent stage in the food production continuum, the OIE and Codex collaborate closely in the development of their respective standards relevant to the whole food production continuum. National level coordination between OIE delegates and NCC is also critical to ensure that risk management addresses risks at the appropriate stages in the whole food production continuum.

Strengthening national food safety systems: Implementation measures by Member States and the role of WHO

How can Member States implement the strategy?

Member States should modify, redesign or strengthen their national food safety systems as appropriate based upon the strategic priority areas and strategic objectives identified in this strategy. As food safety systems in Member States are in various stages of development, the prioritization of strategic actions should be tailored to the country situation.

The general guidance for Member States to implement the strategy comprises four steps (Figure 4):

1. Conduct a situation analysis
2. Develop a national strategy and action plan on food safety
3. Implement the strategy and national action plan
4. Conduct regular review of the implementation and adjust the plan and strategy as appropriate
For the situation analysis, FAO and WHO developed an assessment tool to assist Member States in evaluating the effectiveness of their food safety systems, whatever the level of its maturity.27 This tool can be used to evaluate the status of the national food control system, to identify strengths and weaknesses, and to identify priority areas for action. When evaluating national food safety systems, each of the core components should be assessed and benchmarked against the strategic priorities outlined in this Global Food Safety Strategy. Besides this FAO/WHO tool, the Joint External Evaluation and Electronic State Parties Self-Assessment Annual Reporting Tool under the WHO International Health Regulation can also be utilized to assess the national food safety preparedness capacity. Additionally, the OIE Performance of Veterinary Services (PVS) Pathway specifically targets the safety assessment of production and processing of food of animal origins. Once a baseline assessment of the national food safety system has been carried out, it will be possible to define objectives and target interventions to strengthen the system based on the five strategic priorities areas identified in this strategy.

The situation analysis should be followed by an implementation plan, including the sequence for different elements of the restructured food safety system to be applied. This will require engagement and analysis by a variety of experts, disciplines, and all relevant stakeholders. Once the plan is agreed and communicated, the implementation phase can begin. The plan should comprise activities designed to meet the strategic priorities, aims and objectives. It should also include timelines and deliverables and should be properly resourced. Regular progress checks and reports should form a part of implementation to ensure the plan remains on course.

The role of WHO

WHO is committed to reducing the health, economic and social burden derived from foodborne disease by advising and assisting Member States to reduce exposure to – and monitoring of – unacceptable levels of chemical, microbiological and physical hazards.

Specifically, WHO’s role in the strategy can be reflected in the following areas.

1. **Provide global leadership and foster policy dialogues**

   WHO will advocate for food safety in the global public health agenda by the development and implementation of this strategy. It will organize and utilize different global forums and campaigns to encourage policy dialogues with Member States, UN organizations, academia, private sectors, civil societies, and other non-state actors in food safety and nutrition. In this process WHO will ensure public health sectors’ representation and voices are enhanced in cross-cutting issues, such as AMR, food safety and trade, sustainable food systems transformation, climate change, and zoonoses.

2. **Synthesize evidence and generate normative guidance**

   WHO will generate evidence by catalysing and coordinating the scientific advice and research related to food safety and nutrition; continuing and further enhancing its role in the Codex Alimentarius, together with FAO to ensure secure, sustainable and predictable funding for the Codex scientific advice; and regularly updating the global burden estimates for the foodborne diseases and zoonoses. The knowledge generated will be further translated into international standards and normative guidance on food safety to inform policy-making. In the meantime, based on the initiatives on the WHO organizational impact measurement framework, WHO will monitor the evolution and changes of food safety risks over time and evaluate the solutions implemented, in terms of implementation rates, cost-effectiveness, health impacts, risk reduction, etc.

3. **Enhance technical cooperation and build stronger capacity**

   WHO will provide and regularly update diagnostic tools and practical guidance to assist countries in implementing the strategy. The supports will be tailored to countries’ needs and may vary between upstream actions – such as the development of national action plans on food safety – to downstream actions, such as the assessment of national food control systems, the data generation on research and surveillance related to foodborne diseases, and estimation of national foodborne disease burden. WHO will also actively disseminate food safety information, provide technical training and workshops for targeted audiences, including consumers and youth, and support and produce guidance for food business operators and competent authorities under both normal and emergency situations.

4. **Build partnership and foster global collaboration**

   Strategically, WHO will strive to harmonize the efforts and shape the future agenda for food safety together with key partners, such as FAO, OIE, and UNEP, by applying the One Health approach to tackle food safety, AMR, and public health risks. Technically, WHO will actively engage with a network of collaborating centres for support on various aspects in food safety. Moreover, WHO will further establish and strengthen the existing relationship with other relevant stakeholders, such as Consumers international, to support their engagement on driving positive policies and behaviour changes in food safety. Additionally, WHO will provide multilateral fora for dialogue, enabling Member States to share knowledge and experiences related to food safety risk assessment, risk management, risk communication, and capacity-building.

The abovementioned four dimensions are closely interconnected. Thus, WHO will also focus on strengthening its own capacity and capability in all four areas to support Member States in implementing the strategy.
Enhance international cooperation

Besides conducting national activities to implement the WHO Global Strategy for Food Safety, national governments need to engage with the global food safety community to the maximum extent practical to inform and assist in strengthening food safety systems. International organizations such as WHO and FAO need to further facilitate and coordinate international cooperation on food safety through continuing to provide secretariat functions to multiple food safety networks, initiatives and programmes.

Effective national food safety systems are key to safeguarding the health and well-being of people, as well as to fostering economic development and improving livelihoods by promoting access to domestic, regional and international markets. The COVID-19 pandemic that rapidly spread throughout the world in 2020, is a compelling reminder of the links between people and the interconnectivity of nations. Efforts to supress the virus and protect public health rely on leadership, science, evidence, guidance, collaboration and cooperation across the globe. The same factors would apply to an emergence of a new foodborne pathogen and AMR in a world in which food and food ingredients – as well as the associated hazards and risks – traverse the globe. Greater international and regional cooperation are required to prevent unsafe food from causing ill health and hampering progress towards sustainable development.

There are two dimensions for international cooperation:

1) Technical cooperation among countries, and 2) Participation of food safety programmes, initiatives, and networks coordinated by international organizations.

Technical cooperation among countries includes the need for the collection and exchange of data on food control and food contamination with trading partners; the recognition of equivalence of national food safety systems where these achieve the same level of public health protection; the joint risk assessment and food safety research programmes among countries; study tours, staff secondment, and sharing Code of Practise (CoP) or best practises.

Examples of the participation of regional and international networks and WHO programmes, include:

- WHO programme on surveillance and response to foodborne diseases and AMR. Countries can strengthen their foodborne disease and AMR and response activities, integrating them into existing national surveillance and response systems as required by the International Health Regulations (IHR).
- WHO Global Environment Monitoring System (GEMS/Food) gathers data on levels and trends of contaminants in food, their contribution to total human exposure, and significance with regard to public health and trade.
- International Food Safety Authorities Network (INFOSAN) provides a secure communication platform for country members to interact and learn from other countries, leading to improved international cooperation. During food safety events of international concern, critical information such as the international distribution of contaminated foods, possible public health consequences, and risk management options is shared from one country to many through INFOSAN processes.
- Codex Alimentarius, which establishes and supports Codex Contact Points and National Codex Committees and participates to the extent practical in international expert groups and the development of international standards, guidelines and recommendations so as to represent national views and gain experience in risk analysis.
Monitoring and evaluation

Monitoring the performance at national level

Once a national food control programme is in place, it is essential to verify that it is properly implemented, operates effectively, has the capacity and capability to undergo continuous improvement, and can adapt to advances in science and technology. The keys to success are knowing that expected outcomes are identified, and that appropriate objectives are set, communicated and being achieved.

Monitoring and evaluation require analyses of the results being achieved and a comparison against the aims and objectives set out in the plan. The evaluation can help identify failures, inefficiencies or other issues which may result in less than satisfactory outcomes. It can also identify opportunities for improvement. This may result in changes or adjustments to the plan and its implementation.

Part of the management of any programme is to select indicators and set targets. These simplify performance management by allowing all participants to understand their roles, and also understand the roles others play. Indicators provide information about progress towards an objective and targets, and also support decision-making at all levels of an organization so that the necessary actions can be taken. Indicators are important to the objectives of national food safety systems because they keep the objectives at the centre of decision-making. Once properly communicated, they ensure that overarching aims are at the forefront and the intention of the food safety system is clear.

National competent authorities should also put programmes in place to regularly assess the effectiveness and appropriateness of the national food safety system in achieving its objectives to protect the health of consumers and ensure fair practises in food trade. As part of the overall management of the food safety system, it is proposed that competent authorities should establish an appropriate National Audit Systems for the independent auditing of the effective implementation of their official food controls. The Principles and Guidelines for Monitoring the Performance of National Food Control Systems developed by the Codex Alimentarius will assist with this task.²⁸

Global progress and impact measurement

The strategy’s theory of change (Figure 5) depicts the expected contribution of the strategy to the SDGs, particularly 2, 3 and 8, by continuously improving food safety systems.

Progress of the strategy will be measured through at least the three following indicators:

- Diarrhoeal diseases due to food consumption;
- National foodborne disease surveillance in place for the detection and monitoring of foodborne disease and food contamination;
- Multisectoral collaboration mechanism for food safety events.

WHO is in the process of appointing the Foodborne Disease Burden Epidemiology Reference Group (FERG). The FERG is a group of experts that will advise WHO on the methodology to estimate the global burden of foodborne diseases in 2025, and advise on the development of - and the methodology to

monitor - food safety-related indicator(s). The outputs of their work are expected to inform the impact measurement of this strategy.
Draft Theory of Change - a path towards a global food safety strategy vision (version 10 May 2021)

Figure 5 A path towards safe and healthy Food for All
Annex 1: Glossary

**Competent authority:** The official government organization or agency having jurisdiction (throughout this document this usually means the competent authority responsible for food safety). Ref: CAC/GL 71-2009

**Control:** Any form of control that the competent authority performs for the verification of compliance with feed and food law (and animal health rules). Ref: http://www.fao.org/3/ca5334en/CA5334EN.pdf

**Control measure:** Any action and activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level. Ref: CXC 1-1969

**Control plan:** A description established by the competent authorities containing information on the structure and organization of the official control system, as well as its operation and the detailed planning of official controls to be performed, over a period of time. Ref: http://www.fao.org/3/ca5334en/CA5334EN.pdf

**Drivers:** Factors causing change, affecting or shaping the future. Ref: http://www.fao.org/docs/eims/upload/315951/Glossary%20of%20Terms.pdf

**Food:** Any substance, whether processed, semi-processed or raw, which is intended for human consumption. This includes drinks, chewing gum and any substance which has been used in the manufacture, preparation or treatment of food. It does not include cosmetics, tobacco or substances used only as drugs. Ref: Definitions for the Purposes of the Codex Alimentarius

**Food business operator (FBO):** The entity responsible for operating a business at any step in the food chain. Ref: CXC 1-1969

**Food control:** A mandatory regulatory activity of enforcement by national or local authorities to provide consumer protection and ensure all food is safe, wholesome and fit for human consumption during production, handling, storage, processing and distribution; that it conforms to food safety and quality requirements; and is labelled honestly and accurately as prescribed by the law. Ref: FAO and WHO, (2003) Ref: http://www.fao.org/3/a-y8705e.pdf

**Food safety:** Assurance that food will not cause adverse health effects to the consumer when it is prepared and/or eaten according to its intended use. Ref: CXC 1-1969

**Food control system:** The integration of a mandatory regulatory approach with preventive and educational strategies that protect the whole food chain. Ref: CAC/GL 82-2013; http://www.fao.org/tempref/docrep/fao/006/y8705e/y8705e00.pdf

**Food safety system:** The food safety system is a component of the food system. It is the combination of all stakeholder activities in the food and feed chain that contributes to safeguarding the health and well-being of people, animals, and the environment.

**Food safety management system:** A systematic risk-based approach to controlling food safety hazards within a food business utilizing HACCP principles to ensure that food is safe to eat.

**Foodborne disease:** Foodborne disease (FBD) can be defined as a disease commonly transmitted through ingested food. FBDs comprise a broad group of illnesses, and may be caused by microbial pathogens, parasites, chemical contaminants and biotoxins. Ref: https://apps.who.int/iris/bitstream/handle/10665/199350/9789241565165_eng.pdf?sequence=1
**Food safety culture**: Within a food business, a food safety culture is a combination of shared values, attitudes and behaviours of all staff to ensure the food they produce and market is safe.

**Food security**: When all people, at all times have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Ref: [http://www.fao.org/3/w3548e/w3548e00.htm](http://www.fao.org/3/w3548e/w3548e00.htm)

**Food system**: Food systems embrace the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption, and disposal (loss or waste) of food products that originate from agriculture (including livestock), forestry, fisheries, and food industries, and the broader economic, societal, and natural environments in which they are embedded. Ref: [http://www.fao.org/3/ca2079en/CA2079EN.pdf](http://www.fao.org/3/ca2079en/CA2079EN.pdf)

**Official control**: Means any form of control that the competent authority performs for the verification of compliance with food law, including animal health and animal welfare rules. Ref: [http://www.fao.org/3/ca5334en/CA5334EN.pdf](http://www.fao.org/3/ca5334en/CA5334EN.pdf)

**Outcome**: Intended effects or results that contribute to achieving the national food safety control system objectives. Outcomes may be categorized at different levels, such as ultimate, high-level, intermediate, preliminary or initial. Ref: [CAC/GL 91-2017](https://www.fao.org/3/ca5334en/CA5334EN.pdf)

**One Health**: An approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes. Ref: [https://www.who.int/news-room/q-a-detail/one-health](https://www.who.int/news-room/q-a-detail/one-health)