POLICY BRIEF
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One Health: A Strategic Imperative to Secure Global Food Systems

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Context

Since the 1940s, about **75% of emerging infectious diseases affecting humans have had a zoonotic origin** [1]. Among these zoonotic epidemics, about **50% have originated in food production systems** [2]. These risks disproportionately affect Low- and Middle-Income Countries (LMICs) due to limited biosecurity, surveillance and public health system capacities [3].

- At the farm level, the intensification of livestock and aquaculture production increases animal density, animal stress, the uncontrolled use of antimicrobials and leads to pathogen spread. In China, the rise of dense poultry farms favoured the spread of highly pathogenic avian H5N1 influenza, while African Swine Fever (ASF) decimated pig herds, with nearly 100% mortality in some outbreaks [4].

- At the level of the agricultural plot, biodiversity loss and the massive use of pesticides lead to soil erosion, pollinators loss, the selection of resistant plant pathogens and threaten human health. Importantly, more than 75% of crops, especially vegetables and fruits, rely on animal pollination [5].

- At the national and international scales, food and animal trade converts local outbreaks into systemic threats to food security and economic stability. In Germany, pig movements between farms forms highly connected trade systems through which infectious diseases can rapidly spread if introduced into the livestock population [6].

- Globally, climate change and human increased mobility act as risk multipliers by altering wild and domesticated species distributions, vector geography, pathogen survival, host-pathogen interactions and ecosystem dynamics. In the Global South, warming intensifies locust outbreaks, particularly in Africa, the Middle East, and South Asia, with devastating effects on staple crops. Parallel changes in vector ecology increase livestock disease burdens, including bluetongue, trypanosomiasis, and Rift Valley Fever [3].

Failing to address these interconnected drivers will continue to generate avoidable health crises, destabilize food systems and impose rising economic costs on societies worldwide. Overall, many local food production systems that supply the global food system remain unsustainable, as they rely heavily on non-renewable inputs, degrade soils, and erode biodiversity. In particular, the widespread use of synthetic pesticides and fertilizers threatens on-farm and off-farm biodiversity, including pollinators and soil microorganisms essential for food production, contaminates ecosystems and poses risks to human health.

In the 21st century, health security increasingly depends on confronting a convergence of ecological and agricultural pressures that extend well beyond the health sector, where livestock density, and crop intensification, and environmental degradation interact to amplify systemic vulnerabilities [3].

Key messages

- **Health security in the 21st century is increasingly shaped by food production systems, which have become major drivers of zoonotic emergence and transboundary disease risks.**
- **Health security and food security are tightly intertwined, as current food systems remain highly vulnerable to environmental disruption, climate shocks, and socio-economic crises.**
- **Strengthening health security through prevention within food systems is more effective and less costly than responding to crises after they emerge.**
- **Protecting health security ultimately requires transforming food systems, by addressing the interacting pressures of ecological degradation, livestock density, and crop intensification that amplify systemic vulnerabilities.**
- **Global health security hotspots –particularly in Southeast Asia, South America, and parts of Sub-Saharan Africa– require urgent investment in surveillance, adaptive governance, and sustainable production systems.**
- **Ensuring long-term health and food security requires that agriculture, trade, environmental, and health policies systematically adopt a One Health framework.**

Key Results

1. **Intensive food systems are epidemiological accelerators,** amplifying pathogen transmission from production to consumption stages. In Asia, intense poultry farming led to the influenza H5N1 outbreak resulting in the destruction of more than 1.2 million chickens. African Swine fever (ASF) killed nearly half of China's swine population and spread to South-East Asia which contain half of the world's swine population [7].

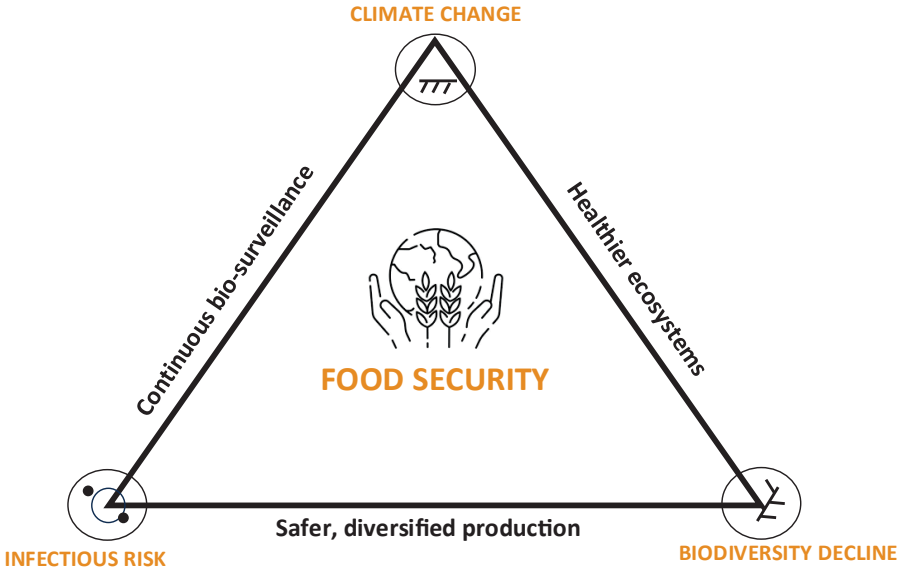
2. **Aquatic infectious risks are underestimated in global health surveillance,** despite their role in disease emergence and antimicrobial resistance. In aquaculture, intensive farming and antimicrobial use pose additional risks, in particular bacterial zoonoses and the spread of antimicrobial resistance (AMR) through water systems, farm environments and seafood products, linking food systems, animal and human health risk [8].

3. **One Health implementation is overly focused on human health,** and should be more equitably balanced across ecosystem, plant, animal and human health to foster mutual benefits. In the Andes region, community-based governance inside ayllu ancestral communities integrates communal work, crop diversity, and collective food storage to cushion households against climatic shocks and market fluctuations. In Central and Latin American countries, agroforestry covers more than 80% of arable lands, and systems with native fruit trees improve peoples' nutrition while promoting biodiversity [3].

4. **Integrated ecosystem-health indicators are needed** to assess the sanitary sustainability of food chains. The Global One Health Index – Food Security (GOHI-FS) shows strong links between One Health indicators and socioeconomic and health outcomes, suggesting that integrated indicators can help identify systemic weaknesses in health-food systems [9]. Methodological frameworks developed to assess the sustainability of agriculture, livestock, and agri-food systems consistently show that environmental considerations are central not only to agribusiness sustainability but also to safeguarding health security through a One Health perspective [10].

5. **Upstream prevention delivers higher economic returns than downstream treatment,** particularly through ecological restoration and biosecurity investments. Along coastal West Africa, shellfish cooperatives run by women combine sustainable harvesting with mangrove forest restoration and thus bolster both food security and ecosystem services. Payments for ecosystem services offer supplementary incentives, demonstrated by large-scale programs across Costa Rica and watershed protection schemes in Africa and Europe [3].

ONE HEALTH: THREE FORCES THAT CAN SECURE (OR BREAK) OUR FOOD FUTURE



RECOMMENDATIONS

FOR POLITICAL ACTORS (LOCAL TO INTERNATIONAL INSTITUTIONS):

> Short-term priorities (1–3 years)

- **One Health must evolve from a health-sector coordination tool to a strategic lens for all policies:** Develop formal coordination mechanisms between food production, trade, environment and health ministries at national and regional scales.
- **Support policy alignment at national and international scales:** Europe can lead by embedding One Health performance indicators into the Common Agricultural Policy and future trade agreements.
- **Create a One Health Surveillance Hub** linking European Center for Disease Control and Prevention (ECDC), European Food Safety Authority (EFSA), and World Organisation for Animal Health (WOAH) for terrestrial and aquatic pathogens.
- **Condition market access** for agricultural and aquatic food products on compliance with measurable sustainability and One Health standards (traceability, reduced antimicrobial use, ecosystem protection, pesticide reduction).

> Medium- to long-term priorities (post 2030)

- **Institutionalize One Health across global food governance systems:** Moving from sectoral coordination to fully integrated multisectoral governance at local/national/international levels.
- **Embed One Health into the post-2030 policy frameworks,** including Farm to Fork, World Health Organisation (WHO)/ Food and Agriculture Organisation (FAO) and The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) food, climate and biodiversity agendas.
- **Accelerate the transition towards agro-ecological production systems** by reforming incentives and financing mechanisms embedded in subsidies, taxation, public procurement and agricultural components of free trade agreements.
- **Apply just transition frameworks** to food system transformations to ensure equitable, gender-inclusive and rights-based policies that protect vulnerable smallholders, Indigenous peoples, women and youth, by securing land tenure and access to resources

FOR CIVIL SOCIETY ACTORS (NGOS, ASSOCIATIONS, ETC.):

> Short-term actions

- **Foster acknowledgement of the importance of Indigenous knowledge,** traditional practices and community-based food systems through participatory approaches, ensuring context-specific and culturally appropriate solutions.
- **Strengthen community-based surveillance and early warning systems** through risk communication with farmers and sellers, using a One Health approach tailored to local contexts.

> Medium- and long-term actions

- **Support the transition towards food production systems that yield co-benefits** for food security and public health (agroecology, promote locally-adapted, climate-resilient crop varieties, protect and restore biodiversity, safeguard environmental and animal health).

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