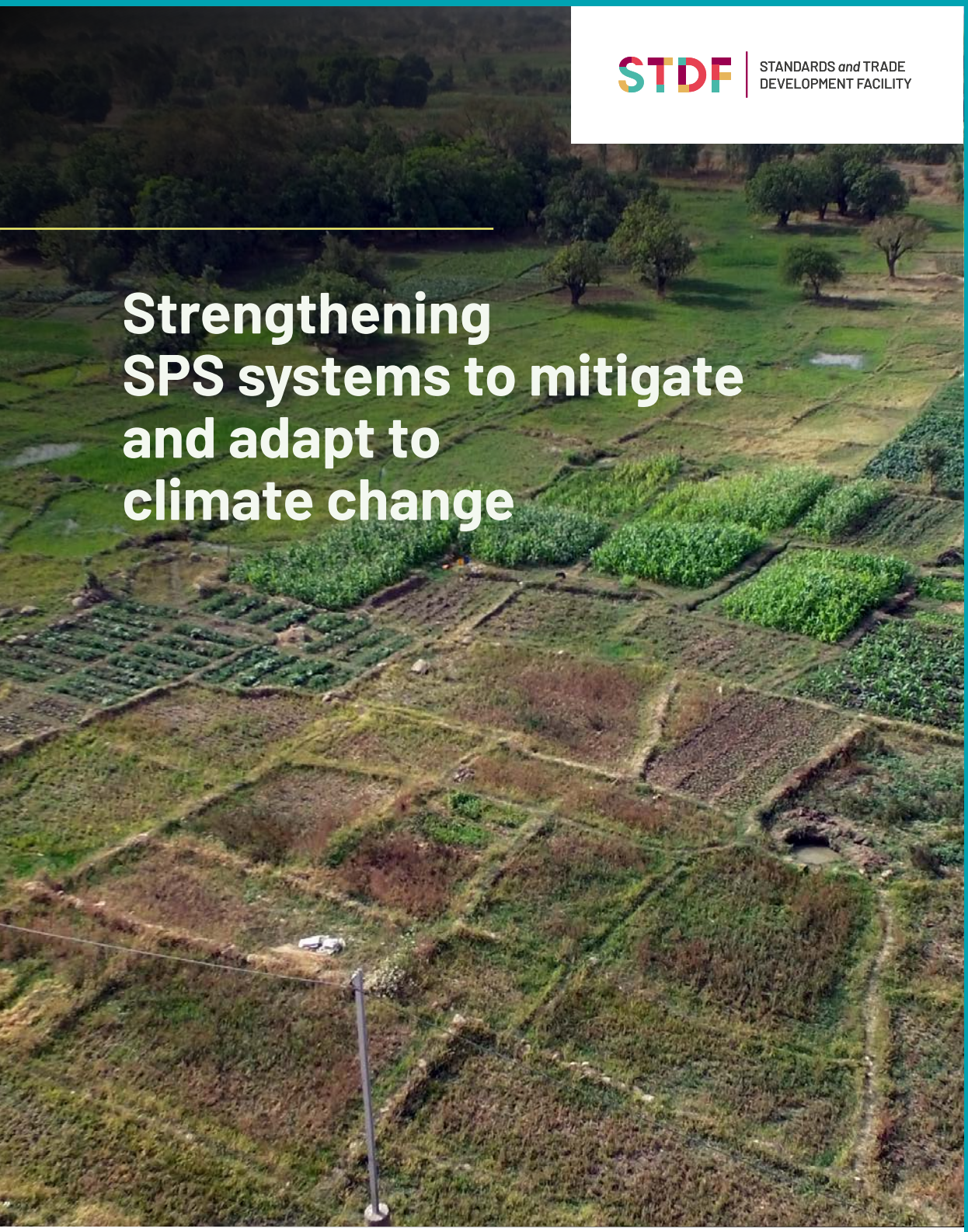
STDF | STANDARDS and TRADE DEVELOPMENT FACILITY

BRIEFING NOTE

Strengthening SPS systems to mitigate and adapt to climate change



Food and Agriculture Organization of the United Nations | World Organisation for Animal Health Founded as OIE | WORLD BANK GROUP | World Health Organization | WORLD TRADE ORGANIZATION

A global food system in peril

Climate change is one of the defining issues of our time, affecting ecosystems and agricultural production throughout the world. It has rapidly become a major disruptor of the global food system, changing the way food is produced, processed, stored and distributed. Extreme weather events, droughts and rising temperatures affect distribution patterns of pests and diseases and contribute to increased and new food safety risks. The effects on food safety, animal and plant health are already noticeable, and will further intensify in the future. With the world population projected to reach 9.8 billion in 2050, this presents a huge threat to agricultural productivity and food security, ultimately leading to migration and conflict.

Trade is inextricably linked to the effects of climate change on the world's food supply, presenting both opportunities and challenges. As agro-climatic zones shift, new regions will face food deficits, requiring agri-food trade to flow predictably and smoothly to meet demand. The Intergovernmental Panel on Climate Change predicts that climate change will result in increased agricultural trade in both physical and value terms. At the same time, trade can also function as a pathway for the movement and spread of pests, diseases and food safety risks to new areas where they were previously unknown. Countries normally protect themselves against such risks by establishing sanitary and phytosanitary (SPS) measures to regulate the importation of agricultural commodities.

Climate change will bring about new challenges for the design and application of SPS measures, as recognized by WTO Members in the 12th Ministerial Conference **SPS Declaration**. The capacity to face these challenges will differ across countries and food systems. Many developing countries are particularly affected as their SPS systems tend to be weak and underfunded, while being located in areas where climate change scenarios predict the most severe consequences. Farmers, producers and governments in Africa, Asia and the Pacific, and Latin America and the Caribbean are hit the hardest, as they often lack the skills and resources needed to adapt quickly.

The WTO SPS Agreement

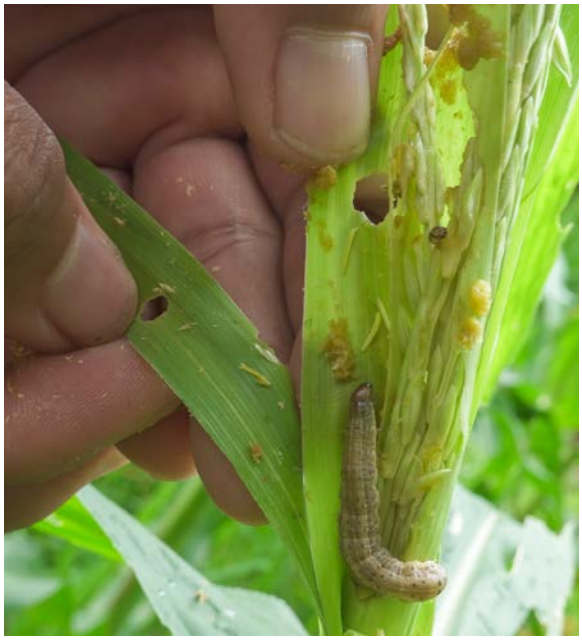
The World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) facilitates safe trade in food and agriculture products. It aims to ensure that SPS measures are not more trade restrictive than necessary to protect human, animal or plant life or health, and are based on science. WTO Members are strongly encouraged to base their SPS measures on the international standards, guidelines and recommendations developed by Codex Alimentarius, the World Organization for Animal Health (WOAH) and the International Plant Protection Convention (IPPC), or on a risk assessment.

HOW IS CLIMATE CHANGE AFFECTING FOOD SAFETY, ANIMAL AND PLANT HEALTH?

Plant health

According to estimates, plant pests are responsible for the loss of between 20 and 40% of crop production, costing the global economy more than US$220 billion annually. Invasive insects, one of the main drivers of biodiversity loss, cost countries at least US$70 billion. Further post-harvest losses are also observed, with the worst scenarios in developing countries. Global travel and trade are major pathways for the movement and spread of plant pests.

Climate change is expected to exacerbate the risks associated with the spread of plant pests, with potentially devastating effects on agricultural ecosystems, food security and the environment especially in developing countries. Global warming, for example, may facilitate the establishment of pests in new areas that would otherwise not be able to do so. Several pests are known to have expanded their host range or distribution, at least in part due to changes in climate. Examples include fall armyworm, which attacks different plant species including staple food crops such as maize and sorghum, coffee leaf rust, banana Fusarium wilt, as well as different species of fruit flies.



Animal health

Climate change is affecting disease patterns, making outbreaks harder to control. Examples include the spread of bluetongue virus into Europe, Rift Valley fever in Africa, and highly virulent influenza viruses in Asia. This matters for the production and trade of livestock and livestock products, as well as for livelihoods and economic growth. Global warming may also increase the risk of viral disease outbreaks in aquaculture. On top, there is growing concern over the spread of vector-borne diseases, such as dengue and malaria, and over zoonotic diseases (i.e., those transmitted between animals and humans). The recent COVID-19 pandemic serves as a reminder that the implications for public health and the wider economy can be devastating.

Global production of livestock and livestock products is projected to expand further over the next decade. While livestock production is responsible for substantial contributions to greenhouse gas emissions, improving animal health is generally seen as a good strategy to reduce emission intensity and use resources more effectively by reducing mortality, and improving productivity and fertility. Animals will be more productive and generate lower emissions per weight of product. Good animal health not only facilitates trade but can also support lower carbon systems.

Food safety

Climate change is increasing the challenges for our agrifood systems to produce enough safe and nutritious food for all. Rising sea levels, ocean acidification and variations in temperature, humidity, and rainfall affect the persistence and occurrence of foodborne bacteria, viruses, and parasites, and therefore our exposure to them. Extreme weather events, resulting in flooding, can overwhelm public health infrastructure and increase the likelihood of outbreaks of waterborne diseases, such as cholera, and promote the transport and translocation of chemical contaminants. Droughts, on the other hand, can cause scarcity of clean water compromising commonly used food safety practices. Prevalence of chemical hazards such as harmful algal toxins, mycotoxins and methylmercury in food are also affected by changing climactic factors. On land, rising soil temperatures may facilitate a higher uptake of toxic heavy metals in staple crops, for example arsenic in rice.

Climate change is also changing the survival rates and geographic distribution of agricultural pests and their related disease. This combined with the emergence of new agricultural production locations in cooler temperate regions are expected to bring new food safety challenges to those areas. For instance, through altered patterns of application of pesticides and veterinary drugs as to control and manage new infections. Apart from possible environmental concerns, this may lead to chemical contaminants in food, potentially raising trade concerns. Increasingly higher temperatures are also being linked to antimicrobial resistance through higher growth rates of microbes and horizontal gene transfer, posing a major challenge to a multi-dimensional threat.

Mycotoxin contamination

Mycotoxins are secondary metabolites produced by fungi that grow in or on crops. Consumption of such contaminated crops can cause a variety of adverse health effects ranging from acute poisoning to long-term effects such as immune deficiency and cancer. Some of the important factors that influence mycotoxin production – temperature, relative humidity and crop damage by pests – are affected by climate change. Inadequate drying, storage and transportation facilities in areas experiencing greater climate impacts can exacerbate the issue of mycotoxin production and distribution along food chains.

Mycotoxins present a massive challenge to the achievement of food security in developing countries as they occur in staple food crops, such as wheat, peanuts and corn. The full impact of mycotoxin exposure tends to be grossly underestimated, owing to the lack of proper monitoring systems and resources for accurate detection of mycotoxin levels. In addition, mycotoxins are a major barrier to international trade, due to the lack of appropriate and harmonized regulatory limits for mycotoxin contamination in some countries, leading to the rejection of food in international and regional markets and economic loss.

What needs to be done?

Increased and new food safety, animal and plant health risks are only mentioned on the outer edge of the international discussions on climate change. While melting icecaps, rising sea levels and extreme weather events receive much attention, the international spread of pests, diseases and food-borne pathogens and contaminants will equally have huge impacts on biodiversity and living conditions on earth. It is essential that these developments, and the role of trade therein, are included to their fullest in international policy considerations surrounding climate change.

The STDF partnership has drawn attention to the implications of **climate change** for emerging SPS risks and global trade flows as early as 2009, including through targeted events, publications and briefing notes. Most recently, in 2022, the STDF organized a series of **webinars** to explore how climate change is altering the design and application of SPS measures in international trade and the actions needed to address these challenges. Building on the experiences and lessons from these events, it is recommended to:

Make strong SPS systems in developing countries a top priority in the international climate change debate: To prevent the introduction and spread of pests, diseases and food-borne hazards, and realize the full potential of international agricultural trade, discussions on climate change should prioritize efficient food safety, animal and plant health systems, resulting in more political attention and subsequent much-needed funding. Raising awareness among policy-makers and reaching out to the private sector and the general public, will help to enhance capacity to respond and contribute to increased production levels, enhanced food security and protection of the environment.

Mainstream SPS capacity in development cooperation: Increased Aid for Trade and other climate-related support should focus on institutional and regulatory frameworks, diagnostic capacity, surveillance and border infrastructure, as highlighted below. Development partners should commit to replicate and scale up solutions that work in one country across other countries and regions, including through the creation of joint research programmes, regional networks and centres of excellence.

Intensify risk assessment activities, underpinned by more research: Risk assessment provides the scientific justification of all SPS measures regulating trade, and underpins international standards. A better understanding of the ecology of pests and diseases and their hosts, not just the correlations between them, combined with improved climate and impact modelling is necessary to prioritize risks and improve the reliability of predictions. Without sufficient scientific information, risk assessments may become speculative or judgemental, leading to ineffective and/or provisional SPS measures, with more trade restrictions as a result.

Strengthen monitoring and surveillance programmes, and better anticipate risks: Improving monitoring and surveillance capacity will be fundamental to detect, manage and control increased and new SPS risks posed by climate change, to inform risk assessments and reduce their uncertainty. It will also facilitate the creation and maintenance of pest and disease-free areas, a tool in the SPS Agreement that facilitates frictionless trade. Early warning systems and other rapid response mechanisms, such as contingency planning and readily available eradication methods, will be important tools in preparing for emerging issues in a changing climate. More and better use should be made of foresight and new screening and digital technologies, including to improve traceability along food supply chains.

Continue trade facilitation reforms: Many countries are making efforts for trade to flow more smoothly and quickly across borders. This puts food safety, animal and plant health agencies on the spot, urging them to modernize their border operations, improve inspections and reduce unnecessary trade costs. Small and medium-sized enterprises in developing countries stand to benefit the most. Risk-based inspections, electronic certification, more transparency and the integration of SPS controls into single window systems will reduce the likelihood of food contamination during storage and transport, instances of food loss, and lessen waiting time at borders.

Promote cooperation across countries, sectors and disciplines: The international and multidisciplinary nature of food safety, animal and plant health risks implies that a siloed response to the growing challenges will simply not do. More research, risk assessment and surveillance should be undertaken collaboratively at national, regional and international levels. The interconnectedness among human, animal and plant health, given their shared environment, emphasizes the need for greater collaboration, communication and cooperation under a more holistic and integrated food systems or "One Health" approach, especially in settings where resources are limited.

MORE:

www.standardsfacility.org

OUT

STDFSecretariat@wto.org

FIND

#STDF