



Food and Agriculture Organization  
of the United Nations

## Increasing the resilience of agricultural livelihoods





## Challenges facing agriculture, food and nutrition

Due to the growing world population, it is estimated that global food production will need to increase by 60 percent to feed over 9.5 billion people by 2050.

Worldwide, the livelihoods of 2.5 billion people depend on agriculture. These small-scale farmers, herders, fishers and forest-dependent communities generate more than half of the global agricultural production and are particularly at risk from disasters that destroy or damage harvests, equipment, supplies, livestock, seeds, crops and stored food.

Disasters and crises don't just have immediate, short-term effects – they undermine livelihoods and national development gains that have taken years to build.

As the magnitude and impact of crises and disasters increase – aggravated by the overexploitation of natural resources – more and more households, communities and governments of developing countries are less able to absorb, recover and adapt, making them more vulnerable to future shocks.



Today, there are still 795 million undernourished and hungry people in the world, which means just over one in nine people do not get enough food to lead healthy, active lives.

Our ability to eradicate hunger and feed a growing population by 2030 depends on fostering the unique skills of farmers, fishers, herders and forest-dependent communities to produce food and manage the environment we all rely on.

FAO believes that countries, communities and individuals, together with development and humanitarian actors, can build livelihoods that are resilient to disasters and crises.

The resilience of agricultural livelihoods is key to making sustainable development a reality by ensuring that agriculture and food systems are productive and risk sensitive in order to feed present and future generations.

We must ensure that years of step-by-step agricultural development gains are not wiped out by sudden shocks.

Increasing the resilience of agricultural livelihoods is a powerful lever to reach the Sustainable Development Goal pledge “to leave no one behind”.



## Different shocks, different challenges affecting agricultural livelihoods

FAO resilience work is defined around **three** main groups of shocks: **natural hazards**, including climate change extreme events; **food chain crises** of transboundary or technological threats (including plant pests and diseases, animal diseases and food safety); and **protracted crises**, including violent conflicts.

Over the past decade, economic damages resulting from natural hazards have amounted to USD 1.5 trillion (caused by geophysical hazards such as earthquakes, tsunamis and landslides, as well as hydrometeorological hazards, including storms, floods, droughts and wild fires). **Climate-related disasters**, in particular, are **increasing worldwide** and expected to intensify with climate change. **They disproportionately affect food insecure, poor people – over 75 percent of whom derive their livelihoods from agriculture.**

### Natural hazards and climate-related disasters

**The human food chain is under continued threat from an alarming increase in the number of outbreaks of transboundary animal and plant pests and diseases,** as well as food safety and radiation events.

Avian influenza, *peste des petits ruminants*, locust infestations, wheat, cassava, maize and banana diseases, armyworm, fruit flies, food-borne pathogens and mycotoxins are just some examples of threats to the human food chain that have detrimental effects on food security, human health, livelihoods, national economies and global markets. Climate change is in part responsible for a rise in food chain emergencies.

### Food chain crises

**Protracted crises are one of the most challenging contexts in which to fight hunger, malnutrition and poverty.** They are driven by a combination of recurring causes – human-made factors and natural hazards (often occurring simultaneously), lengthy food crises, breakdown of livelihoods and food systems and insufficient governance and institutional capacity to deal with the resulting crisis. Two-thirds of international humanitarian assistance goes to protracted (eight years or more) or recurrent crises.

### Protracted crises

**USD 250 to 300 billion**  
a year in economic losses

Economic losses caused by disasters have reached an average of USD 250 billion to USD 300 billion a year, severely affecting stable economic growth in low- and middle-income countries and eroding development gains in vulnerable communities.

**2 billion**  
people affected

In developing countries, disasters cost about USD 550 billion in estimated damages over the past decade and affected 2 billion people.

**22%** of damages  
to agriculture sector

Between 2003 and 2013, 22 percent of damages and losses caused by disasters in developing countries affected the agriculture sector.

**22.5 million**  
people/year displaced by  
climate-related disasters

In the last seven years, an average of 22.5 million people were displaced from their homes each year by climate-related disasters, mostly floods and storms. That is equivalent to 62 000 people every day.

**80%** of drought  
damage on agriculture

More than 80 percent of the damages and losses caused by droughts are to the agriculture sector, affecting livestock and crop production.

**70%** of poor depend  
on livestock

Nearly 70 percent of the world's 1.4 billion extremely poor people depend on livestock for their livelihoods, income, food and well-being.

over **70%** of emerging diseases  
in humans originate in animals

Over the past decades, more than 70 percent of emerging diseases affecting humans originated in livestock and wildlife.

estimated economic losses  
**USD 1.45 billion**  
to **2.1 billion**

Transboundary animal diseases, such as *peste des petits ruminants* (goat and sheep plague), can cause production and economic losses estimated at USD 1.45 billion to USD 2.1 billion each year.

locust plagues can  
destroy up to  
**100%** of crops

Locust plagues can destroy the crops of entire communities, as was the case in 2003–2005 when a major Desert Locust upsurge wiped out 30 to 100 percent of agropastoral resources in the Sahelian countries of West Africa, affecting more than 8 million people.

up to **80%**  
yield losses

Plant diseases such as wheat rust can cause yield losses of up to 80 percent, putting worldwide wheat production at risk.

**500 million**  
people are potentially affected  
by protracted crises

Almost half a billion people live in over 20 countries and territories affected by protracted crises, mostly in Africa.

**3** times higher  
hunger

Hunger rates in protracted crisis situations are almost three times higher than in other developing contexts.

**40%** more  
protracted crises

Today, 40 percent more ongoing food crises are protracted than in 1990.

absorbs **80%** of  
humanitarian funds

Protracted crises absorb 80 percent of all funds dedicated to humanitarian response by OECD member countries.

**87%** do not flee  
their homes

In conflict situations, an average of 87 percent of those affected do not flee their homes.



## Addressing the different shocks threatening agricultural livelihoods

### Crisis and disaster risk governance:

Agricultural livelihoods can only be protected from multihazards if adequate disaster risk and crisis governance is present at all levels. Appropriate and enabling policies, institutional structures, capacities and financing for disaster risk reduction and crisis management must be in place at local, national, regional and global levels to reduce increasing levels of threats from multiple types of shocks affecting the agriculture sector and related food security.

### Crisis and disaster risk monitoring and early warning:

It is also important to monitor and predict crisis and disaster risks and their likelihood of occurrence and effects as much as possible on the agriculture sector. Such risk monitoring must be coupled with timely alerts to trigger accurate decision-making at institutional and community levels. Monitoring crises and disaster risks helps to prevent, prepare for and reduce the impact of such shocks and avoid a full-blown humanitarian crisis and the human suffering and cost associated with it.

### Prevention and vulnerability reduction:

Reducing the root causes of vulnerabilities of individuals and communities whose livelihoods depend on crop, livestock, fish, trees and other renewable resources is also fundamental. Crisis and disaster risk protection, prevention and impact mitigation through the application of risk sensitive technologies and good practices, risk transfer and social protection are crucial to strengthen agricultural livelihoods, reduce the impact of a shock on them and enable them to bounce back better and faster.

### Emergency preparedness and response:

Sound crisis and disaster risk governance, monitoring and early warning systems and vulnerability reduction measures cannot always avert a crisis. When disasters, conflicts and/or epidemics strike, we must be prepared to respond quickly and effectively to save lives and livelihoods and reduce the impact of these crises. The emergency work to prepare for, protect and rehabilitate agricultural livelihoods is crucial to ensure that people do not become irreversibly destitute and dependent on international assistance. Humanitarian support for agricultural livelihoods enables people to rapidly become self-reliant and productive again with dignity.



## Increasing the resilience of agricultural livelihoods



Govern crisis  
and disaster risk



Monitor crisis  
and disaster risk  
with early warnings



Reduce community  
vulnerability  
to crises and  
disaster risk



Prepare for and  
respond to crises  
and disasters

Adopting a multihazard and cross-sectoral approach, increasing the resilience of agricultural livelihoods to threats and crises can only be done if action is taken across these four mutually reinforcing areas:

- ➔ Govern crisis and disaster risk;
- ➔ Monitor crisis and disaster risk with early warnings;
- ➔ Reduce community vulnerability to crises and disaster risk; and
- ➔ Prepare for and respond to crises and disasters.

FAO's resilience work is context-specific, anchored in the local livelihoods system. It taps into a wide range of technical expertise on the various types of shocks, the agriculture subsectors and the four interconnected priority actions listed above, which include a blend of short-term humanitarian and long-term development and investment interventions.

## FAO's resilience work

People with resilient livelihoods are better able to prevent and reduce the impact of disasters on their lives.

They can better withstand damage, recover and adapt when disasters cannot be prevented.

In close collaboration with its partners, **FAO works to increase the resilience of agricultural livelihoods** at risk of disasters and crises in countries and regions around the world as illustrated in the following examples.



Food chain  
crisis

Madagascar

Since April 2012, a migratory locust plague has threatened the livelihoods of 13 million people in Madagascar, where 80 percent of the rural population lives in poverty.

The plague, which began in the country's predominantly agricultural regions, threatened to wipe out food crops and livestock grazing lands. The situation stemmed from years of decreasing locust control measures due to underfunding and political instability.

**In September 2013, a three-year joint emergency programme by FAO and Madagascar's Ministry of Agriculture was launched to control the locust plague** and return to a calm locust situation, in addition to strengthening the Government's locust management capacities.

Large-scale, mostly aerial survey and control operations, carried out from September 2013 to February 2016, managed to control locust infestations on more than 2.1 million hectares. Reducing the density and geographical reach of locust infestations helped limit crop and pasture damage and protect the food security

of vulnerable populations, contributing to the goal of ending poverty and hunger.

Training on all aspects of locust management and on-the-job field exercises helped strengthen the capacity of national staff.

The programme set up a Locust Watch Unit to gather and analyse weather, ecological and locust data for regular surveillance bulletins and to implement a human health and environmental management plan.





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**The Philippines is one of the most disaster prone countries in the world.** Between 2006 and 2013, approximately 6 million hectares of crops were damaged by 78 natural disasters, costing the agriculture sector about USD 3.8 billion.

The Philippines is a leading example of institutional capacities for managing and reducing risks of natural hazards and climate change through legislation on disaster risk reduction and climate change adaptation. **FAO has been assisting the Government in laying the groundwork for disaster risk reduction and climate change adaptation in the agriculture sector.**

**When Typhoon Haiyan** – one of the strongest typhoons to ever make landfall – **struck the central Philippines in November 2013, it caused more than USD 700 million in agricultural damages.**

In response, FAO's humanitarian and rehabilitation efforts were designed to link with the Government's longer-term development

objectives and the principle to “build back better”.

**The programme reached over 1.1 million people** through rice and corn farming, coconut-based farming systems, and fisheries and coastal mangrove forest rehabilitation.

The combination of lessons learned from the Typhoon Haiyan programme and FAO's experiences in mainstreaming disaster risk reduction and climate change adaptation in agriculture allowed FAO to strategically support the Government. It also facilitated the upscaling of good practices and technologies for agriculture and fisheries that boost productivity sustainably, while strengthening resilience to threats and crises.

**South Sudan is highly prone to shocks, from economic downturns and conflict-driven crises to natural hazards such as floods, drought and outbreaks of animal and plant diseases.**

These shocks exacerbate prevailing food insecurity and undermine agriculture-based livelihoods. Since the current conflict erupted in 2013, FAO has responded with a multitrack approach to resilience building (saving lives, saving livelihoods, and developing livelihoods), depending on needs, vulnerability and access.

Each year since the crisis began, **FAO has reached an average of 2.7 million people with a combination of farming, fishing and livestock support.** In 2015, portable lifesaving survival kits were developed as part of a multiagency effort to address the needs of internally displaced persons (IDPs) in hard-to-reach areas. The kits contained various lifesaving supplies such as mosquito nets, short-maturity vegetable seeds, fishing supplies, water purification tablets and oral rehydration salts, and were a lifeline to families cut off from other assistance.

FAO has also sought to protect livestock herds, widening the scope of its vaccination and treatment programme – reaching over 3 million animals in 2014, 5.3 million in 2015 and targeting 11 million in 2016.

**FAO also distributed more than 27 000 fuel-efficient stoves, within the framework of the Safe Access to Fuel and Energy Initiative.**

This has helped reduce the need for firewood and charcoal in the short term, easing the pressure on forests and woodlands close to IDP settlements, while decreasing the pace of deforestation and soil erosion in the medium to long terms. At the same time, the stoves help to protect women and girls against the risk of sexual and gender-based violence associated with collecting firewood. The stoves promoted by FAO are durable, low cost, highly portable and lightweight to allow for mobility.





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In **Central America, one of the areas most affected by climate extreme events is the Dry Corridor** – an eco-region of dry tropical forests covering the Pacific coastal lowlands and most of the central pre-mountain region of Guanacaste in Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama’s Arco Seco area.

The region has a distinct and prolonged dry season with **a risk of recurrent drought and excessive rainfall, exacerbated by El Niño and La Niña events**, respectively.

The levels of poverty and malnutrition are also alarming and mostly affect rural populations and indigenous communities.

Because of the prolonged drought in 2014/15, and the population’s high vulnerability and reliance on subsistence farming, an estimated **3.5 million people were at risk of food insecurity** and malnutrition.

In response, **FAO, together with governments and partners, built on previous disaster risk reduction and nutrition work in the region**

**to formulate a programme to strengthen livelihood resilience.**

The three-year resilience programme includes interrelated and complementary priority actions for formulating national plans of action for disaster risk management in the agriculture sector; tailoring agroclimatic early warning information systems with a drought focus; investing in participatory and integrated management of watersheds for disaster risk reduction; supporting the implementation of financial risk transfer mechanisms to reduce the vulnerability of farming households to drought; and establishing a network of producers of certified quality seeds and prepositioning strategic seed stocks for emergency pre-positioning.



**The world is facing an increasing risk of high impact infectious diseases, emerging or re-emerging, at the human, animal and environmental interface** as a result of globalization, demographic growth, agricultural intensification, land use changes and climate change.

Animal diseases are known to spread rapidly around the globe and, if not properly tackled, can turn into major emergencies seriously affecting human health, food security and social stability, especially for the world’s poorest people.

From the recent deadly impact of Ebola to the recalcitrant H5N1 Highly Pathogenic Avian Influenza (HPAI), **FAO and its global partners have been at the forefront of combating such disease threats** originating in animals using various health risk management strategies and policies.

Increasing the resilience of countries to emerging pandemic threats is essential to break the poverty cycle and improve food security and nutrition.

FAO will continue, through **Phase 2 of the**

**Emerging Pandemic Threats programme**, to control diseases at their animal source and ensure that they are controlled and managed before becoming pandemics. Until 2019, **more than 30 countries in Africa, Asia and the Middle East will be targeted to build their veterinary systems’ capacities to mitigate risk and reduce the vulnerability of communities** to emerging and re-emerging pathogens. Diseases such as HPAI, the Ebola virus and the Middle East Respiratory Syndrome Coronavirus will be addressed by enhanced early detection, national level surveillance, preparedness and improved human hygiene practices. The **One Health** approach is at the heart of this programme, fostering multisectoral and multidisciplinary participation and adopting integrated disease risk management strategies.





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## The resilience promise

The increase in the frequency and impact of disasters and crises is becoming unsustainable, both in terms of human suffering and economic losses. Funding requirements for humanitarian crises have increased six fold from USD 3.4 billion in 2004 to nearly USD 19.5 billion in 2015. In the face of this new reality, there is no doubt **we need to change our way of thinking and decision-making, including on how and where to invest resources.** We need to move from a reactive response to crises to proactively preventing and anticipating them.

**For FAO, resilience is a common objective for all stakeholders in disaster and crisis areas, bridging short-term humanitarian and long-term development interventions.** Zero hunger, environmental conservation, climate change adaptation and sustainable economic development cannot be achieved without resilient agricultural livelihoods.

As three-quarters of the poor are farmers, **FAO believes that the humanitarian and development community must put the resilience of agricultural livelihoods as a top priority on their agenda in the five main global policy processes – the Sendai Framework for Disaster Risk Reduction, the Paris Climate Agreement, the One Health approach, the Committee on Food Security Framework for Action and the Agenda for Humanity of the World Humanitarian Summit – for delivering the 2030 Sustainable Development Goals.**

*In the case of natural hazards, several studies confirm that it is at least four to seven times more cost-effective to invest in disaster risk reduction than to rely on emergency response.*

In the case of natural hazards, several studies confirm that it is four to seven times more cost-effective to invest in disaster risk reduction – a major building block for resilience work – than to rely on emergency response. Yet, only 0.4 percent of Official Development Assistance is spent on disaster risk reduction.

Furthermore, in armed conflict and protracted crisis situations, protecting, saving and rebuilding agricultural livelihoods to save lives and create the conditions for longer-term resilience is a key step towards ensuring peace and stability. However, **the role of the agriculture sector in crisis situations is too often overlooked and the necessary investments not made.**

**Smallholders are the backbone of the developing world, generating about 80 percent of its agricultural production. They are also the custodians of precious agro-ecosystems. It is therefore crucial to include them in governance decisions and financial investments** to fight hunger, poverty and the destruction of precious natural resources on which life and food depend. Today, it is clear that without resilient agricultural livelihoods, it will be very difficult to eradicate hunger and achieve sustainable development for present and future generations.



*“I am convinced that fighting hunger and  
boosting the resilience of agricultural livelihoods  
can lead to peace dividends.”*

*José Graziano da Silva  
Director-General, FAO*





