

Food and Agriculture Organization of the United Nations

INCREASING CLIMATE RESILIENCE

Addressing the impact of extreme events on agriculture and the way forward



Over the last decades there has been a rising trend in the occurrence of disasters worldwide and related economic impact. This is particularly notable for climate related disasters - such as droughts, floods and storms - which are of significant concern to agriculture given the sector's dependence on climate. The FAO study on The Impact of Disasters on Agriculture and Food Security highlighted that, between 2003 and 2013, one quarter of the total economic impact of climate-related disasters in developing countries was absorbed by agriculture, with the share rising to 84 percent when only drought is considered. The rising trend in weather and climate-related disasters, also driven by climate change, is likely to exacerbate impacts on food security and rural livelihoods in developing countries, unless relevant climate change adaptation (CCA) and disaster risk reduction and management (DRR/M) measures are taken to better understand disaster impacts and enhance resilience.

As part of its strategic objective on increasing the resilience of livelihoods to threats and crises, FAO works with member countries to enhance and harmonize the assessment of damage and losses from disasters in crops, livestock, fisheries, aquaculture and forestry, as well as the monitoring and evaluation of DRR/M and CCA good practice technologies in agriculture. Advancements and improvements in the field of damage and losses monitoring are crucial to support global and regional initiatives on climate change adaptation in agriculture.

For more information: www.fao.org/emergencies/how-we-work/resilience www.a2rinitiative.org

Climate-related disaster trends

Average climate-related disasters

1980-1990 **149**/year (c) 2004-2014 **332**/year Average economic damage of climate-related disasters*

increased from

1980-1990 USD **14B**/year to 2004-2014 USD **100B**/year

In the last seven years on average



were displaced from their homes each year by **climate-related disasters** mostly floods and storms

⊖

62 000 people every day

The impact of disasters between 2005 and 2015

1.8 billion people

94%

were affected by **natural disasters** over the past decade in **developing countries**

were affected by climate-related disasters

64% of all damage

due to natural disasters were climate-related



Damage and losses from climate-related disasters in agriculture



Natural disasters causing greatest damage and losses to agriculture 2003-2013

Of these natural disasters, 9 are climate-related disasters



\$824 M Colombia floods 2010-2011 **\$1.3 B** Thailand floods 2011

\$1.9 B Pakistan floods 2011 \$5.3 B Pakistan floods 2010



\$845 M Philippines cyclone Ondoy and Pepeng 2009

\$1 B Yemen TS038 2008 **\$1.4 B** Philippines Typhoon Haiyan 2013



\$863 M Uganda drought 2008-2011

\$10.5 B Kenya drought 2008-2011





Source: FAO (2015), based on PDNAs

Damage and losses by type of hazard

Share of climate related disasters' damage and losses absorbed by agriculture in developing countries (2003-2013)



Agriculture absorbed 84% of total damage and

losses caused by drought in developing countries (2003-2013)

Agriculture sectors need to be prioritized in order to enhance the **resilience of livelihoods** to drought impacts

Damage and losses by agricultural subsector and type of hazard

Share of total damage and losses in each subsector (2003-2013)



Crops and livestock are the most affected by climate-related disasters i.e. drought, floods, storms

Source: FAO (2015), based on PDNAs

The impact of large-scale climate-related disasters on crop and livestock production varies by region

Between 2003-2013:

Sub-Saharan Africa and the Near East were maily affected by drought Asia was mainly affected by floods. Latin America and Caribbean countries were affected mostly by floods, and to a lesser extent by drought and storms.



Climate change exacerbates spread and impact of food chain threats



70% of poor depend on livestock



over 70% of emerging diseases in humans originate in animals



estimated annual economic losses from transboundary animal diseases





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



Plant diseases can cause up to

vield losses

Source: FAO (2016)

Climate change worsens protracted crises and conflict



500 M people are potentially affected by protracted crises



5 times higher than in other developing contexts





Protracted crises absorb 80% of humanitarian funds



87% of people affected by conflict do not flee their homes

The cascading effect of disasters on agriculture, food security, and value chains:

Case study from 2010 Pakistan floods



Macro-economic impact

Impact on agricultural livelihoods,

food security and nutrition

The agriculture sector growth fell to 0.2% in 2010 from 3.5% in 2009

of their food grain stocks Food inflation surged to **20%** by

September 2010 from **12%** in July

Over 60% of households lost much

Over **70%** of farmers lost more than **50%** of their expected income. The poorest were the most affected

Almost one-third of the population had poor consumption intake and **19%** were borderline

4.5 million workers were affected; two-thirds were employed in agriculture

The effect on sustainable development

Hinder the achievement of Sustainable Development Goals, especially **SDG1**: "End poverty in all its forms everywhere"; **SDG 2**: "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture"; and **SDG 13**: "Take urgent actions to combat climate change and its impacts".

FAO's work on measuring and addressing disaster damage & losses

FAO information system on damage and losses from disasters in agriculture

FAO is working with





member countries

experts



relevant stakeholders

on establishing an information system on damage & losses in









Systematic information on disaster impact would provide policy-makers and stakeholders with consistent and standardized data and metadata for evidence-based decision-making on Disaster Risk Reduction and Management (DRR/M), as well as more informed disaster response and recovery efforts.

Methodology for measuring the return on investment into DRR/M Good Practice Technologies in Agriculture

FAO provides technical support to member countries for the monitoring and evaluation of DRR/M good practice technologies in agriculture.

Goal: Enhance understanding of how much damage and losses can be avoided through the implementation of DRR technologies for agriculture at local level, and identify leverage points and potential barriers to upscaling.

FAO's Resilience Programme



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

Adopting a multihazard and cross-sectoral approach and increasing the climate resilience of agricultural livelihoods to threats and crises require action across these four mutually reinforcing areas.

FAO climate resilience efforts contribute to the UN Secretary General collective outcome "the climate resilience initiative (A2R)", under SDG 13, target 1.1.

