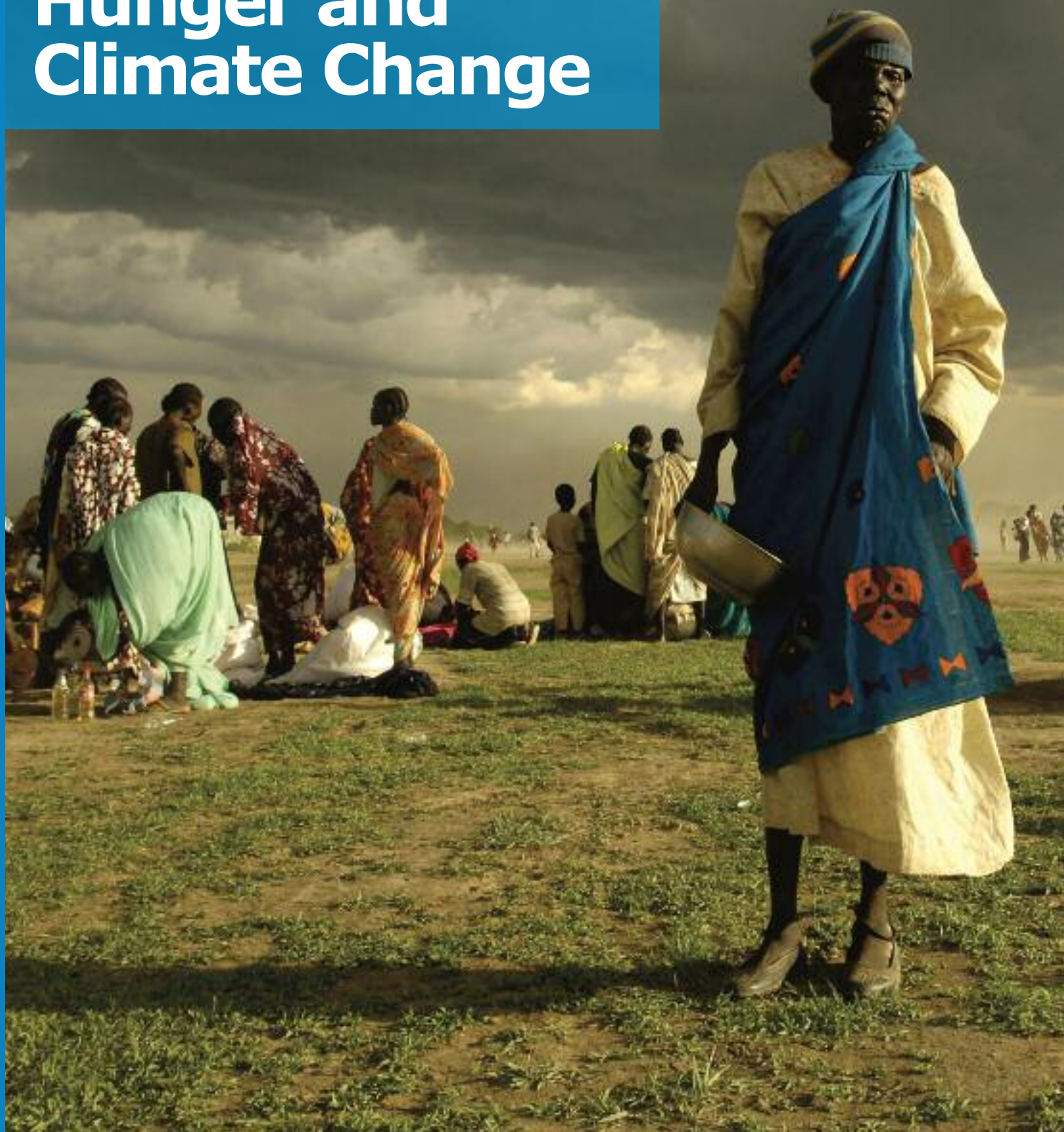


# Hunger and Climate Change



**World Food Programme**



Kenya: The arid northern district of Turkana has suffered from recurring droughts in recent years. Under WFP's food-for-asset programme, participants build community assets such as water catchments and agricultural contour bands.

# Hunger and Climate Change

There are more than one billion hungry people in the world – and climatic changes threaten to significantly increase the number of people at risk of hunger and undernutrition.

Predictions are that more powerful and more frequent droughts and storms will wreak greater devastation. Rising sea levels will ruin fertile farmland. Changing rainfall patterns will deplete harvests. Increasingly scarce resources will exacerbate social tensions and may spark conflict.

Millions more people will be at risk of hunger and undernutrition. And most of them will be in the world's poorest countries where hunger, undernutrition and food insecurity are already widespread.

Sub-Saharan Africa is likely to be the region worst affected. In some countries yields from rain-fed agriculture could fall by 50 percent by 2020. Diminishing water availability and quality, and rising water demand will also create immense challenges.

The effects of these changes on hunger and undernutrition will be felt across the world with a disproportionate impact on vulnerable communities in less developed countries – those with the least resources and capacities to adapt and respond.

## WHAT THE SCIENCE SAYS

According to the Inter-governmental Panel on Climate Change (IPCC), the leading scientific forum for climate analysis, climate change will lead to:

- Increases in the frequency and intensity of natural disasters and extreme weather events, such as droughts, floods and hurricanes
- Rising sea levels and the contamination/salinization of water supplies and agricultural lands
- Changes in rainfall patterns with an expected reduction in agricultural productivity in already fragile areas, especially in sub-Saharan Africa
- Declining water quality and availability in arid and semiarid regions
- Surging health and sanitation problems, which will affect malnutrition rates

Rwanda: Food-for-work interventions help households and communities shift to sustainable livelihoods, improve productivity and prevent degradation of the natural resource base. In Rwanda, WFP implements a land terracing project for geranium plantation in Remera, Nyaruguru district.



# Addressing the impact of climatic changes

Responding to increased hunger and undernutrition caused by climatic changes will be a key pillar of WFP's work in the 21<sup>st</sup> century – providing emergency relief when disasters strike, helping devastated families recover and rebuild, and assisting vulnerable communities adapt to more difficult and uncertain times.

WFP approaches the challenges of climate change from the point of view of its impact on hunger and nutrition. Working with governments and partners WFP can use its extensive experience, innovative programmes and risk reduction tools to help the poor and vulnerable mitigate and adapt to hunger-related consequences of climate change.

Along with short-term emergency assistance for those left hungry and destitute by natural disasters, WFP has a collection of activities and projects developed over four decades of responding to cyclical weather-related emergencies.

WFP has also developed sophisticated tools and services to enhance the ability of governments and partners to predict the onset of natural hazards and respond appropriately to cushion their impact.

From anticipating shocks, to reacting rapidly when disasters occur, to building resilience to future threats, to strengthening social protection systems and safety nets, WFP makes a difference to tens of millions of people whose lives and livelihoods are affected and imperiled by environmental degradation, poverty and the cumulative effects of climate change on food security and hunger.

## Track record in addressing climate and weather-related hunger

As the world's largest humanitarian agency fighting hunger, WFP has operations across the globe in areas that are severely threatened by weather and climate-related hunger.

With experienced staff working out of 76 country offices and 270 sub-offices, WFP's unmatched deep-field presence provides the agency and its partners on-the-ground solutions to address a wide range of climate-related food and nutrition issues.

Mozambique: WFP works closely with the Government's National Institute for Disaster Management in early warning and impact assessments and, with the joint United Nations programme, helps develop national capacity in emergency preparedness and disaster mitigation.



And WFP continues to improve its operational ability to respond – both at regional and global levels. For example in Central America, where the number of weather-related emergencies has increased significantly in recent years, WFP has been prepositioning relief items to respond in a timely and effective manner to disasters affecting Haiti, Cuba, Nicaragua, Honduras and El Salvador. It also supports countries where it usually has no presence, such as Mexico and Belize.

Globally, WFP is enhancing its capacity – and the capacity of the humanitarian community – to respond effectively to more frequent and severe weather- and climate-related disasters. WFP operates five UN humanitarian response depots in Italy, Ghana, Panama, Malaysia and Dubai on behalf of 31 organizations, ensuring that indispensable relief supplies can be shipped to any disaster zone in the world within 24 to 48 hours.

*'Every day we at WFP see the effects of the ravages of weather-related hunger on the people we assist. Every day we see people suffer from droughts and floods. Every year the situation gets worse.'*

*WFP Executive Director Josette Sheeran,  
September 2009*

## Wealth of programming and operational experience

Over the past four decades, WFP has gained unparalleled experience in saving lives and livelihoods, in improving vulnerable people's access to food, and in enhancing adaptive and coping capacity at the national and community levels. In addition to emergency food assistance, WFP safety net programmes, such as school feeding and mother and child nutrition, have helped establish and strengthen livelihood and social protection systems, thus contributing to enhanced food security among the most vulnerable.

As part of targeted employment programmes to assist food insecure communities, WFP implements activities related to environmental conservation, reforestation and afforestation, land and water management, and food and agricultural production in Africa, Asia and Latin America. These activities have helped communities develop and use their natural resources and food security systems in a sustainable manner. The rehabilitation of vital infrastructure damaged by extreme weather events and construction of drainage and irrigation systems, roads and accesses to markets, have also been part of WFP's interventions in many remote and at-risk areas.

Developed with government partners across the world, these programmes have made and are making a meaningful and measurable difference – from rehabilitating tens of thousands of hectares of land in Kenya, to repairing hundreds of wells and water reservoirs across Afghanistan, to planting a greenbelt to protect Malian villages from the encroaching Sahara desert.

Promoted by WFP in collaboration with national, regional and international partners, SATCA's aim is to strengthen early warning capacities and systems across disaster-prone areas of Central America to enhance local and regional disaster preparedness and risk reduction. Using the latest technology, SATCA provides a unique regional informational platform, which improves the ability of WFP and its partners to anticipate and minimize the impact of natural hazards across Central America.

The SATCA project also supports south-south cooperation and the transfer of knowledge and skills between countries across the region.



*SATCA: Sistema de Alerta Temprana para Centro America or Early Warning System for Central America.*

## Sophisticated risk reduction tools and services

WFP has developed sophisticated early warning and vulnerability analysis tools that WFP uses and shares to predict and map the risk of hazards to livelihoods and food security. This often allows protective measures to be put in place, cushioning the impact of those affected. WFP has helped governments get ahead of the hunger curve by supporting preparedness and disaster risk reduction as well as adaptation efforts. In addition, WFP's tools and services support local, regional and national capacity building for disaster preparedness and response.

***WFP's Vulnerability and Analysis Mapping (VAM)*** – gathers critical information on the hungry poor, and identifies their potential needs and requirements. VAM also provides extremely valuable baseline data that enhances governmental capacities in risk mapping, risk reduction, and vulnerability targeting.

***Hunger and climate vulnerability indexing*** – WFP provides a detailed global analysis of climate impacts on hunger using several socioeconomic and environmental indicators. This information is useful in informing policy and prioritising interventions with benefits for both climate change adaptation and food security.



***WFP's Emergency Preparedness*** – offers expertise in providing early warning of impending risks by forecasting the onset of natural hazards and allowing protective measures to be put in place.

***Disaster Risk Reduction*** – strategies and approaches can help build governments capacities in a critical area of expertise. WFP's specific role in this field is aligned with the Hyogo Framework for Action and the International Strategy for Disaster Reduction.

***Geographic information systems (GIS) technology*** – remote sensing and satellite imagery enhances WFP's capacity to respond efficiently and effectively to extreme weather events.

***Regional level activities*** – WFP is closely working with regional institutions to support the development of broad coordination and policy frameworks in the common effort to fight the effects of climate change on hunger and undernutrition. In Africa, for instance, WFP is closely working with the African Union Commission, the New Partnership for Africa's Development (NEPAD), and other regional institutions such as the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) to enhance livelihood risk analysis, vulnerability mapping and food security monitoring systems and capacities.



Bangladesh: Providing cash transfers to people affected by floods is one of the most effective ways to help them to rebuild their lives and stimulate local markets.

## FOCUS ON ETHIOPIA

WFP's MERET\* project in Ethiopia demonstrates how conservation and better land management practices can promote more sustainable livelihoods among the rural poor, while helping to protect them from extreme weather events.

Supported jointly by WFP and the Ethiopian government, MERET operates in over 600 communities and has benefited more than a million people. It has contributed to the rehabilitation of over 300,000 hectares of degraded land since its launch in 2000.

The project helps to increase the income and food security of poor families by creating new assets and rehabilitating over-grazed land. As the land regenerates, vegetative cover returns – helping to recharge underground water sources and reduce soil erosion, and contributing to minimizing the impact of future droughts and floods.

\* Managing Environmental Resources to Enable Transitions to More Sustainable Livelihoods



## Country examples

WFP's programmes and expertise helps support countries' adaptation efforts:

In **Kenya**, WFP's targeted employment programmes in drought-prone and arid regions have contributed to the rehabilitation of 28,000 hectares of land.

In **Malawi**, WFP is supporting asset-based development and disaster risk reduction and preparedness capacities at the community level. A major objective for WFP and its partners is to establish a coordinated disaster-management system and build related capacity at all levels. This is in line with Malawi's National Adaptation Programme of Action (NAPA) that calls for the implementation of priority adaptation projects to reduce the number and effects of floods, drought and landslides.

In **Mali**, WFP has been supporting the Government's Rural Development Strategy to fight the devastating effects of desertification and climate change on food security.

As part of the UN Country Team in **Mozambique**, WFP is implementing a Joint Programme for Environmental Mainstreaming and Adaptation to Climate Change, which directly contributes to the implementation of the NAPA.

In **Bangladesh**, WFP has a leading role in strengthening the government's National Early Warning Systems and in enhancing disaster management, including preparedness and response capacities. Since 2000, disaster risk reduction and climate change adaptation strategies and activities have resulted in 30,000 homesteads being raised above flood levels, and 1.6 million women trained in disaster preparedness and adaptation issues.

*'Climate change affects every aspect of society, from the health of the global economy to the health of our children. It is about the water in our wells and in our taps. It is about the food on the table.... it is at the core of nearly all the major challenges we face today'.*

*UN Secretary-General Ban Ki-moon,  
World Business Summit 2009*



Climate change and high food prices have severely increased the impact of the drought in Syria, especially for herders and their families. Together with the Syrian government, WFP aims to mitigate the destruction of livelihoods and preserve assets of herding families by providing them with food assistance.

# What the science says

Scientific knowledge about the expected impact of climate change has evolved substantially over the last 15 years. The Inter-governmental Panel on Climate Change (IPCC) and the International Food Policy Research Institute (IFPRI) state the following regional climatic and food security impacts.

## Small Island States

### OVERALL IMPACT OF CLIMATE CHANGE

- Projected sea level rise of 5 millimetres per year over the next 100 years will cause enhanced soil erosion, loss of land, poverty, dislocation of people, increased risk from storm surges, reduced resilience of coastal ecosystems and saltwater intrusion into freshwater resources
- Coral reefs would be negatively affected by bleaching and by reduced calcification rates due to higher CO<sub>2</sub> levels.
- Mangrove, sea grass bed, and other coastal ecosystems and the associated biodiversity would be adversely affected by rising temperatures and accelerated sea level rise.

### SPECIFIC CLIMATIC IMPACTS ON FOOD SECURITY

- Small island states already have agricultural production systems under severe stress, making small island states particularly sensitive to climate change from a food security point of view.
- Extended dry season or significantly increased rainfall, a 30-50% maize crop decline is to be expected, a 10-35% decline for sugarcane and 35-75% decline for taro.
- In small island states with little available land, subsistence food production is vital for food security rendering impacts of climate change the main reason for loss of livelihoods and increased vulnerability in the region.

## Latin America

### OVERALL IMPACT OF CLIMATE CHANGE

- Loss and retreat of glaciers will adversely impact runoff and water supply in areas where snowmelt is an important water resource.
- In already arid areas, climate changes will salinate arable land and cause desertification.
- Temperature rise and increased frequency of droughts will lead to poorer water quality, gradually transforming the eastern Amazon into a savannah.
- Increases in the intensity of tropical cyclones will aggravate the risks to life, property, and ecosystems.

### SPECIFIC CLIMATIC IMPACTS ON FOOD SECURITY

- Climate change is expected to cause a decline in crop yields by 4.6% on the most important crops grown in Latin America and the Caribbean that will cause a decrease in food availability by about 300 calories per person per day.
- The effects of climate change will result in a total of 6.4 million malnourished children by 2050 – 1.4 million more children suffering from hunger due to climate.





## Africa

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### OVERALL IMPACT OF CLIMATE CHANGE

- Increase in droughts, floods, and other extreme events will add to stress on water resources, food security, human health, and infrastructure.
- In 2020, it is projected that 75-250 million people will be exposed to increased water stress and changes in rainfall and intensified land use will further exacerbate desertification.
- Sea level rise will affect coastal settlements, flooding and coastal erosion, especially along the eastern Southern African coast.
- Major rivers are sensitive to climate variations and decrease in run-off and water availability affects agriculture and hydropower systems, increasing potential cross boundary tensions.

### SPECIFIC CLIMATIC IMPACTS ON FOOD SECURITY

- Increased vulnerability to climate change due to dependence on rain fed agriculture, high levels of poverty, low levels of human and physical capital as well as a predominately-poor infrastructure.
- By 2050 crop yields in Sub-Saharan Africa will have declined by 14% (rice), 22% (wheat) and 5% (maize) pushing the vast number of already poor, who depends on agriculture for their livelihoods, deeper into poverty and vulnerability.
- Decreased food availability by 500 calories less per person in 2050 – a 21% decline. A further increase in the number of malnourished children by over 10 million - a total of 52 million in 2050 in Sub-Saharan Africa alone.

## Asia

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### OVERALL IMPACT OF CLIMATE CHANGE

- Extreme events increase in number in Asia, including floods, droughts, forest fires, and tropical cyclones.
- Reduced soil moisture may increase land degradation and desertification, diminishing food security in countries of arid, tropical, and temperate Asia.
- Agricultural productivity is likely to increase in northern areas but degrading conditions in the South Asia region projects the number of hungry to increase severely.
- Sea level rise and an increase in intensity of tropical cyclones would displace tens of millions of people in low-lying coastal areas of temperate and tropical Asia.

### SPECIFIC CLIMATIC IMPACTS ON FOOD SECURITY

- The Asia region will experience up to 50% decline (wheat) and 17% (rice) in crop yields by 2050 compared to 2000 levels. Decreasing yields threatens the food security for over 1.6 billion people.
- A significant negative impact on progress made reducing the proportion of malnourished children, increasing the number by about 11 million in comparison with a no climate change scenario.
- Asia accounts for 89% of people affected by disasters worldwide. About 60% of the economically active population and their dependents – 2.2 billion people, rely on agriculture production for their livelihoods.

#### Sources:

Food Policy Report 21. September 2009 by the International Food Policy Research Institute (IFPRI)  
IPCC Fourth Assessment Report: Climate Change 2007 (AR4)



Peru: WFP assists almost 70,000 food insecure people in the rural Andes to ensure their sustainable development and to offset the negative effects of climate change.

## Partnerships and Inter-Agency Collaboration

As a key actor on the ground in livelihood protection programmes and innovative hunger solutions, WFP is an important contributor to the global response to the extraordinary challenges posed by climate change.

**Working with communities:** WFP's activities are built around the specific needs and vulnerabilities identified with local communities in order to increase their resilience to weather-related disasters and the longer term impacts of climate change.

WFP co-chairs the Inter-Agency Standing Committee (IASC) sub-working group on preparedness and contingency planning along with UNICEF. Together with IASC partners, WFP also developed the IASC Humanitarian Early Warning Service (HEWSweb), which provides a common platform for early warning and forecasting relating to natural hazards.

**Working with governments:** As part of targeted employment programmes to assist food insecure communities, WFP implements many resilience-building, climate-related activities in partnership with host governments – both at the local and national level. National Adaptation Programmes of Action as well as other national and regional planning frameworks offer several opportunities for WFP to support national adaptation, food security, livelihood protection and disaster risk reduction plans and programmes.

**Working with other agencies and organizations:** UN Secretary-General Ban Ki-moon spoke of climate change as the “defining challenge of our times.” A core strength of WFP lies in its unique network of non-governmental and intergovernmental partners. WFP will further expand its collaboration with partner institutions in order to enhance its collective ability to combat the effects of climate change on hunger and undernutrition.

# Inventory of WFP activities that contribute to communities' adaptation and resilience to climatic changes



## Water harvesting and storage activities

Afghanistan  
 Bangladesh  
 Bolivia  
 Cambodia  
 Chad  
 DPR Korea  
 Ethiopia  
 Guinea-Bissau  
 Honduras  
 India  
 Kenya  
 Laos  
 Lesotho  
 Madagascar  
 Malawi  
 Mali  
 Mauritania  
 Myanmar  
 Niger  
 Nepal  
 Nicaragua  
 Pakistan  
 Rwanda  
 Senegal  
 Sri Lanka  
 Somalia  
 Timor Leste  
 Sudan  
 Zambia

## Irrigation and drainage systems

Afghanistan  
 Armenia  
 Bangladesh  
 Bolivia  
 Cambodia  
 Ethiopia  
 Georgia  
 Guinea-Bissau  
 Jordan  
 Laos  
 Mali  
 Mauritania  
 Nepal  
 Pakistan  
 Peru  
 Philippines  
 Rwanda  
 Senegal  
 Somalia  
 Tajikistan  
 Timor Leste

## Land rehabilitated and made available for agricultural production

Armenia  
 Bangladesh  
 Bolivia  
 Burkina Faso  
 Burundi  
 Chad  
 Colombia  
 DPR Korea  
 Ethiopia  
 Gambia  
 Guatemala  
 Georgia  
 Guinea  
 Guinea-Bissau  
 Haiti  
 Honduras  
 India  
 Indonesia  
 Kenya  
 Laos  
 Liberia  
 Malawi  
 Mali  
 Myanmar  
 Nicaragua  
 Russia  
 Sierra Leone  
 Somalia  
 Sri Lanka  
 Sudan  
 Syria  
 Timor Leste  
 Zambia

## Land reforested

Afghanistan  
 Bangladesh  
 Bolivia  
 Burundi  
 Chad  
 DPR Korea  
 Ethiopia  
 Guinea-Bissau  
 Haiti  
 Honduras  
 Indonesia  
 Malawi  
 Mauritania  
 Myanmar  
 Nicaragua  
 Peru  
 Senegal  
 Sri Lanka  
 Syria

## Land terraced

Chad  
 Ethiopia  
 Indonesia  
 Kenya  
 Laos  
 Nicaragua  
 Peru  
 Rwanda  
 Senegal  
 Somalia  
 Sudan

- **Climatic changes and more frequent natural disasters threaten to significantly increase hunger and malnutrition.**
- **WFP has a track record in addressing hunger resulting from weather-and-climate related phenomena.**
- **WFP's wealth of programming and operational experience provides a unique contribution to countries and communities in their effort to adapt to climatic changes.**
- **WFP has sophisticated tools and services to help governments and partners predict the onset of natural hazards and take appropriate measures to cushion their impact.**

*Somalia: Somalia has been afflicted by a succession of failed harvests due to an exceptionally severe and prolonged drought. WFP aims to provide assistance to more than 3 million people through general food distributions and emergency nutrition assistance.*



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