

RESILIENT LIVELIHOODS

DISASTER RISK REDUCTION
FOR FOOD AND NUTRITION SECURITY

2013 EDITION



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FOREWORD

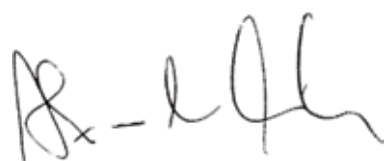
Disasters and food insecurity are directly interconnected. Floods, hurricanes, tsunamis and other hazards can spoil food, destroy agricultural, livestock and fishing and food processing infrastructure, assets, inputs and production capacity. They interrupt market access, trade and food supply, reduce income, deplete savings and erode livelihoods. Drought, plant pests and diseases such as locusts and armyworms, animal diseases like African swine fever, and food contamination or adulteration have a direct economic impact by reducing or eliminating farm production, by adversely affecting prices, trade, and market access and by decreasing farm income and employment. Economic crises such as soaring food prices reduce real income, force the poor to sell their assets, decrease food consumption, reduce their dietary diversity and access to safe and quality food. Disasters create poverty traps that increase the prevalence of food insecurity and malnutrition.

For these reasons, resilient livelihoods are critical to the efforts of the Food and Agriculture Organization of the United Nations (FAO) to help the world's most vulnerable people achieve food security and the freedom from hunger — one of the most basic human rights. At FAO, disaster risk reduction is about protecting people's livelihoods from shocks, and strengthening their capacity to absorb the impact of, and recover from, disruptive events. Disaster risk reduction is a necessary ingredient for food and nutrition security, and for the achievement of the Millennium Development Goal 1.

FAO responded to the recommendations made by its governing bodies by developing a Disaster Risk Reduction for Food and Nutrition Security Framework Programme. It expresses FAO's corporate commitment to reducing risks and building livelihood resilience thus protecting development gains. It aims to scale-up and accelerate actions for disaster risk reduction at local, country, regional and global levels, building on FAO's existing technical capacities as well as on disaster risk reduction initiatives and good practices worldwide.

The FAO Disaster Risk Reduction for Food and Nutrition Security Framework Programme aims to provide strategic direction to the implementation of disaster risk reduction measures in member countries across the agricultural-related sectors in line with the Hyogo Framework for Action and its five priority areas. In addition, it promotes an inter-disciplinary and programmatic approach to disaster risk reduction for food and nutrition security, by integrating the agriculture, livestock, fisheries, forestry and natural resource management sectors, to respond more effectively to the diverse livelihoods of small-scale farmers and to the complex set of factors which contribute to disaster risks.

Our intent is that this Framework Programme will help generate greater understanding, interest and action in disaster risk reduction for food and nutrition security.



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FAO's Interdepartmental Technical Team on disaster risk reduction, established under FAO's Strategic Objective for disaster and crises management in 2009, played an instrumental role in, and provided strategic guidance and technical contributions to, the development of this Framework Programme. In particular, we wish to thank Shukri Ahmed, Cristina Amaral, Philippe Ankers, Stephan Baas, David Brown, Mona Chaya, Peter Kenmore, Thomas Muenzel, Lucia Palombi, Christian Pantenius, Florence Poulain, Pieter VanLierop and Sylvie Wabbes-Candotti for their direct contributions and extensive participation in technical discussions.

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The development of the Disaster Risk Reduction for Food and Nutrition Security Framework Programme was made possible with the overall guidance, coordination and process facilitation provided by Cristina Amaral, Stephan Baas and Sylvie Wabbes-Candotti, and Monica Trujillo as coordinating lead author.

EXECUTIVE SUMMARY

The multiple threats to food and nutrition security, their negative and cumulative impact, and the clear link between shocks and hunger reveal the fragility of current food production systems and their vulnerability to disasters.

Through its disaster risk reduction (DRR) activities, the Food and Agriculture Organization of the United Nations (FAO) seeks to protect livelihoods from shocks, to make food production systems more resilient and more capable of absorbing the impact of, and recovering from, disruptive events.

Disaster risk reduction protects development investments in the agriculture, livestock, fisheries/aquaculture and forestry sectors, helping the world's most vulnerable people become food secure. Disaster risk reduction is vital for ensuring one of the most basic human rights — the right to food and freedom from hunger. Furthermore, disaster risk reduction creates a multiplier effect that accelerates the achievement of the Millennium Development Goal 1: the eradication of extreme poverty and hunger.

At FAO, disaster risk reduction and management is a corporate priority. It is expressed in FAO's Strategic Framework 2010-19, and further elaborated through Strategic Objective 5 Increase the resilience of livelihoods to threats and crises.

The FAO Disaster Risk Reduction for Food and Nutrition Security Framework Programme (DRR for FNS) serves to support and provide strategic direction, to FAO member countries and partners, for the implementation of Disaster Risk Reduction for Food and Nutrition Security programmes.

The FAO Disaster Risk Reduction for Food and Nutrition Security Framework Programme reflects the Hyogo Framework for Action and strives to assist member countries implement the five Priorities for Action in the Hyogo Framework for Action in the agricultural sectors. It also responds to recommendations made on disaster risk reduction in 2010 by the Committee on Agriculture, the Programme and Finance Committee, the Committee on World Food Security and the Committee on Fisheries. It contributes to meeting the needs of member countries, as expressed in the Regional Areas of Priority Action and identified by FAO Regional Conferences held in 2010.

The goal of the FAO Disaster Risk Reduction for Food and Nutrition Security Framework Programme is to enhance the resilience of livelihoods against threats and emergencies to ensure the FNS of vulnerable farmers, fishers, herders, foresters and other at risk groups.

While the Framework Programme supports national government partners, the direct beneficiaries are smallholders in developing countries, including small-scale farmers, fishers, pastoralists, foresters and the urban poor – particularly women – whose lives and livelihoods are threatened. Small-scale farmers represent 90 percent of the rural poor and make up the majority of the world’s hungry population.

At the core of the Disaster Risk Reduction for Food and Nutrition Security Framework Programme are four integrated thematic pillars:

PILLAR 1 – ENABLE THE ENVIRONMENT

Institutional strengthening and good governance for DRR in agricultural sectors.

Pillar 1 seeks to support the enabling environment of member countries, with appropriate legislation, policies and institutional frameworks for disaster risk reduction for food and nutrition security in agriculture, livestock, fisheries/aquaculture, forestry and natural resource management, and to strengthen the institutional capacities to implement these.

PILLAR 2 – WATCH TO SAFEGUARD

Information and early warning systems on food and nutrition security and transboundary threats.

Pillar 2 seeks to strengthen and harmonize food and nutrition security information and early warning systems to better monitor the multiple threats and inform decision-making in preparedness, response, policy, advocacy and programming.

PILLAR 3 – APPLY PREVENTION AND MITIGATION MEASURES

Promotion and diversification of livelihoods with risk reducing technologies, approaches and practices across all agricultural sectors.

Pillar 3 seeks to address the underlying risks to food and nutrition security and to apply prevention and impact mitigation measures through the application of technologies, good practices and approaches in farming, fisheries/aquaculture, forestry and natural resource management.

PILLAR 4 – PREPARE TO RESPOND

Preparedness for effective response and recovery across all agricultural sectors.

Pillar 4 seeks to strengthen capacities at all levels in preparedness to improve response to, and recovery from, future threats to food and nutrition security, and to reduce their potential negative impact on livelihoods.

Together, the four pillars address core themes for disaster risk reduction for food and nutrition security for the agricultural sectors. Each pillar directly contributes to one of the Priorities for Action in the Hyogo Framework for Action. The pillars include options for capacity development that indicate, by way of example, a range of technical services, technologies, good practices that FAO can provide, and from which member countries can select based on their needs and priorities.

The four pillars address DRR for agriculture and food and nutrition security as a whole. They are inter-dependent and mutually reinforcing. DRR for FNS promotes the integrated implementation of the four pillars for a more holistic approach, striving to maximize the synergies and complementarities between the pillars and hence the critical links between good governance, early warning, preparedness, mitigation and prevention for FNS risk reduction.

The four DRR for FNS **cross-cutting priorities** are in line with the core functions in FAO's Strategic Framework. They include:

- 1) **capacity development of member countries**
- 2) **knowledge management and communication**
- 3) **strategic partnerships**
- 4) **gender equity**

The Framework Programme gives strategic direction and guides the implementation of DRR measures for FNS in member countries. FAO has been implementing DRR related activities within the context of FAO's Strategic Framework and Programme of Work and Budget, including the development of regional programmes on DRR and disaster risk management. Building on FAO's existing DRR interventions, the DRR for FNS Framework Programme consolidates FAO's cross-sectoral expertise on DRR under one umbrella. It is a coherent corporate commitment for scaling-up DRR actions for FNS at local, country, regional and global levels.

The Framework Programme promotes an integrated modus operandi by applying an inter-disciplinary and programmatic approach that integrates the agriculture, livestock, fisheries/aquaculture, forestry and natural resource management sectors. It thereby responds to the diverse livelihoods of poor and vulnerable households and to the complex set of factors that contribute to disaster risk. It adopts a sustainable livelihoods and ecosystem perspective that includes the integrated management of land, water and living resources, promotes the conservation and sustainable use of natural resources in an equitable way, and ensures sustainable livelihood outcomes. It offers a common rationale to bridge humanitarian assistance and long-term sustainable development.

DRR for FNS programmes is implemented in countries that express an interest in, and need for, DRR for FNS. These countries receive enhanced support in programme formulation and implementation. The implementation will expand across a greater number of countries incrementally over time while building on lessons learned and good practices. Countries considered include hunger and/or natural disaster hotspots, as well as areas most vulnerable to climate change. The specific content and priorities of DRR for FNS country programmes are designed on a modular and demand-responsive basis, tailored to national and local needs, capacities and gaps. DRR for FNS country programmes is context and location specific. Implementation takes into account FAO's Country Programme Framework, the United Nations Development Assistance Framework, the National Platform on Disaster Risk Reduction, and other key national strategies related to FNS and natural resources management.

DRR for FNS is implemented through FAO's existing structures at national, regional and global levels. Outputs and actions are delivered through FAO's Strategic Framework with the appropriate FAO technical leadership of FAO units at headquarters and in decentralized offices. FAO decentralized offices and FAO Emergency and Rehabilitation Coordination Units provide coordination, operational and implementation support.

At the global level, priority is given to advocacy and partnership promoting greater interest and commitment on the part of the international community to increase financial resources for DRR for FNS in favour of member countries, and particularly for vulnerable small-scale farmers. Knowledge management and communication is also promoted, with products and services which, when embedded across the agricultural sectors, can substantially increase awareness and knowledge, understanding and visibility of the importance of DRR for FNS in the fight against hunger. FAO continues to advocate for the development of global standards specific to FNS within the global agenda for DRR, in close collaboration with strategic partners.

INTRODUCTION



EXTERNAL SHOCKS, FOOD INSECURITY AND GLOBAL HUNGER

The alleviation of hunger and poverty is strongly correlated with disaster risk reduction (DRR). The Millennium Development Goal 1 and the World Food Summit strive to eradicate extreme poverty and hunger, and aim to halve by 2015 the proportion of people who suffer from hunger¹. Worldwide, there are 925 million undernourished people, and hungry people account for 16 percent of developing countries' populations². Most of the poor and hungry live in rural areas and depend on agriculture, fisheries, forests and livestock for their livelihoods. These sectors belong to the most affected by extreme weather events, making resource-poor farmers/fishers/herders even more vulnerable to disasters and impacts of climate change. In most Least Developed Countries, **agriculture** and related sectors are the main economic drivers and account for almost one-third of the GDP³. The livelihoods of 2.5 billion smallholders depend on agriculture. Worldwide, over 500 million people depend, directly or indirectly, on **fisheries and aquaculture**. Fish provides essential nutrition to three billion people, including at least 50 percent of the animal protein and essential mineral intake of 400 million people in the poorest countries. Similar importance applies to **livestock**, which in many regions is central to the livelihoods of the poor and often forms an integral part of mixed farming systems; livestock provides sources of employment, income, quality food, fuel, draught power and fertilizer. Furthermore, close to 1.6 billion people – more than 25 percent of the world's population – rely on forest resources for their livelihoods and to generate food and cash. Moreover, many countries in the developing world draw on fuel wood to meet as much as 90 percent of their energy requirements. The targets of the Millennium Development Goal 1 and the World Food Summit are compromised by the impacts of natural disasters, protracted crises and armed conflicts on these sectors which reverse development and poverty-reduction gains, destroy livelihoods, reduce food production and increase hunger.

The incidence of food crises, which are caused by severe adverse weather conditions, natural hazards, economic shocks, conflicts, or a combination of these factors, has been rising since the early 1980s. There have been between 50 and 65 food emergencies every year since 2000, up from 25 to 45 during the 1990s⁴.

Floods, hurricanes, tsunamis and other hazards destroy agricultural infrastructure and assets, crops, inputs and production capacity. **Drought** alone has caused more deaths during the last century than any other physical hazard. Asia and Africa rank first among continents in the number of people directly affected, while Africa has a high concentration of deaths associated with drought⁵. These natural hazards have a direct impact on agriculture, food safety and quality and food and nutrition security. They interrupt market access, trade and food supply to the cities. They reduce income, deplete savings, and erode livelihoods. They also have a negative consequence for

1 Millennium Development Goal, target 1C

2 *The State of Food Insecurity in the World. 2010. FAO, WFP.*

3 *The State of Food insecurity in the World. 2012.FAO.*

4 *The State of Food Insecurity in the World. 2008. FAO.*

5 *Global Assessment Report on Disaster Risk Reduction. 2011. UNISDR.*

animal production by reducing range productivity and rangeland yields, leading to food insecurity, overgrazing and degradation of ecosystems.

Transboundary plant pests and diseases, such as locusts, armyworms and wheat rust, and **transboundary animal diseases** such as African swine fever, foot-and-mouth disease and Rift Valley fever, have a direct economic impact by reducing or eliminating agricultural and livestock production. Furthermore, pests and diseases may adversely affect prices and trade, negatively affecting farm income. Reduced productivity of crops or animals can have a long-lasting effect as well. Pest infestations can impair fertilization rates or seed recovery. Diseases can have lasting effects on livestock output by delaying reproduction, leading to a reduced population and extended food and nutrition insecurity. The same applies to the fishery sector. Diseases threaten fish and contribute to food and nutrition insecurity among rural populations dependent on fish farming. For example, in 2009, fish stock in the Zambezi River Valley was infected by Epizootic Ulcerative Syndrome, threatening to spread the disease to seven countries surrounding the river basin and potentially affecting the food security and livelihoods of 32 million people.

Food safety events and emergencies impact global food security, with reduced safe food availability for national consumption and food losses, and public health, with 3 million people dying yearly from food-borne diseases around the world. The use of unsafe food, with many million additional people becoming sick, affects local and global market access and therefore employment, revenues, as well as whole economies, implying a high cost to address the impacts of the threats.

Wildfires in forests and other ecosystems also affect livelihoods. An estimated 150 to 250 million hectares of tropical forests are affected by wildfires annually; more than two million people worldwide were affected in the past 10 years. The Centre for Research on the Epidemiology of Disasters estimated the damage caused by wildfires at around US\$ 24 billion in the last decade⁶.

Economic crises constitute yet another threat that impacts on poverty and hunger. The past two years have witnessed a rapid increase in the number of hungry, largely influenced by the global food and fuel crisis. A similar pattern was observed between 2003 and 2005 and in 2007–2008, with high food prices followed by a rapid increase in chronic hunger. In 2008, 75 million people were added to the total number of undernourished relative to 2003–2005⁷. World food prices surged to a new historic peak in February 2011 and these high prices are expected to persist in the future. These crises create poverty traps and increase the prevalence of food insecurity, malnutrition and consumption of unsafe food by reducing real income and forcing the poor to sell their valuable assets, decrease their food consumption, reduce their dietary diversity and increase exposure to food-borne diseases. The impact is strongly felt in low-income, food-deficit countries that may face problems in financing

⁶ News Archive July 2011. UNISDR.

⁷ *The State of Food Insecurity in the World. 2008.* FAO

food imports, and for poor households that spend a large share of their income on food. The urban poor are particularly affected by soaring food prices. They do not produce food but rather invest the bulk of their income on food expenditures and have no alternative access to food other than local markets.

Countries in **protracted crisis** situations, which are characterized by recurrent natural disasters and/or conflict, longevity of food crises, breakdown of livelihoods and insufficient institutional capacity to react to the crises, show high levels of food insecurity. On average, the proportion of people who are undernourished is almost three times as high in countries in protracted crisis as in other developing countries⁸.



8 *Ibid.*

THE NATURAL RESOURCE – ENVIRONMENTAL FACTOR

As highlighted by the United Nations International Strategy for Disaster Reduction (UNISDR), “the environment and disasters are inherently linked” because of the strong dependency and interconnectedness of natural resources with the environment. Deforestation, degradation of catchments/watersheds, degradation of land and desertification, depletion of reefs and coastal ecosystems especially of corals and mangroves, among other factors, reduce nature’s defense capacity against hazards and aggravate the impact of disasters such as floods, landslides, storm surges, hurricanes and drought. Disasters in turn contribute to ecosystem degradation and loss, including increased soil erosion, declining rangeland quality, salinization of soils, and biodiversity loss. Increasing environmental degradation reduces the availability of goods and services to local communities, shrinks economic opportunities and livelihood options, and ultimately contributes to greater food insecurity and hunger. It further drives increasing numbers of people to marginal lands and fragile environments⁹.

Water scarcity, projected to increase worldwide even without climate change, is also intricately linked to disaster risks and food insecurity. In addition, water scarcity is compounded by poor water quality, which exposes communities to major water- and food-borne threats affecting public health and livelihoods. The exploitation of subterranean water reserves, for example, is contributing to desertification in many parts of the world; as subterranean water levels recede, the soil near the surface dries out and plants wither and die. With continued deforestation and exploitation of subterranean water reserves it is likely that many more parts of the world will face severe water shortages and decreased water quality. Agriculture accounts for more than 70 percent of the world’s total water use. Irrigation is a direct source of livelihood for hundreds of millions of the rural poor in developing countries. As farmers face the challenge of accessing an increasingly scarce resource, groundwater levels continue falling each year, causing more rivers to dry up. In arid and semi-arid regions water scarcity is almost endemic, placing greater pressure on both surface and groundwater resources to meet domestic and irrigation demands. Drought is another major cause of water shortage with devastating impacts, especially in countries with reduced capacity to absorb the shocks. Prolonged or frequent drought episodes can lead to the irreversible stage of desertification unless adequate measures are taken to increase the resilience of countries prone to such phenomena. DRR efforts need to support enhanced management and conservation of water resources and preserve the water quality. This includes improved capture and utilization of rainfall, such as rainwater harvesting, and the adoption of water conservation technologies and practices that use less water, and reduce water loss, such as using drip and furrow irrigation to increase water productivity.

⁹ *Living with Risk: a Global Review of Disaster Reduction Initiatives. United Nations International Strategy for Disaster Reduction. 2004*

Inadequate land-use planning and tenure contributes to increasing the vulnerability of communities exposed to hazards. Land zoning and land-use management, including regional and territorial planning, need to consider the spatial parameters of physical vulnerability based on hazard and risk mapping. Better land access and secure tenure enable food production and provide an incentive for landholders to invest in improving their land with soil protection measures, tree planting, improved pastures, water conservation technologies or sustainable crop production.

To reduce risks, it is vital to build the resilience of the natural resource base, and to promote sound environmental and natural resource management practices and the sustainable use of ecosystems. Healthy and diverse ecosystems are more resilient to hazards. Forests are estimated to save between USD 2–3.5 billion per year equivalent in disaster damage restoration of key forest ecosystems¹⁰. They can be used as shelterbelts and windbreaks, and also play an important role in protecting against landslides, floods and avalanches. Trees stabilize riverbanks and mitigate soil erosion, while woodlots provide fuel wood, timber and fodder. Wetlands serve to store water, provide storm protection, flood mitigation, shoreline stabilization and erosion control. Barrier reefs, barrier islands and mangroves can help mitigate hurricane risk, storms and tidal surges. Getting the right energy source and technology can play a significant role in managing the environment in support of risk reduction, such as in the productive use of land (e.g. liquid fertilizer from biogas) and/or by reducing deforestation through the use of improved or non wood-dependent cook stoves.

The effective management of land, water systems, forests, wetlands, soils, and other resources is necessary for redressing the root causes and environmental drivers of vulnerability and risks.

¹⁰ Environmental Guidance Note for Disaster Risk Reduction: Healthy Ecosystems for Human Security. IUCN, United Nations International Strategy for Disaster Reduction. 2009

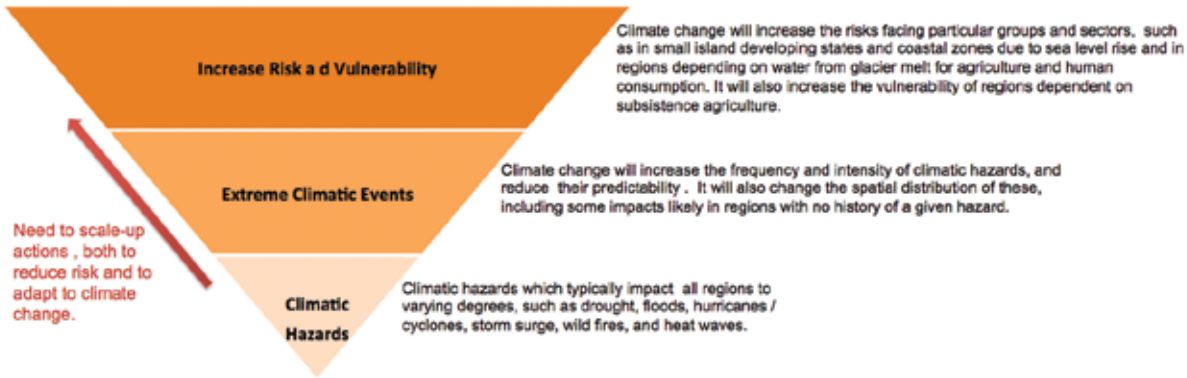
CLIMATE CHANGE AND DISASTER RISKS

Climate change will have profound and far-reaching effects on the environment, ecosystems, natural resources, economy and human life. In relation specifically to disaster risks, climate change is expected to result in more frequent and intensive climate-related hazards. It will magnify existing patterns of disaster risk and present scenarios that surpass the existing capacity of the humanitarian and development communities.

The Fourth Assessment Report and the Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation of the Intergovernmental Panel on Climate Change indicate that climate change is likely to alter risk patterns in several ways¹¹:

- Increase the frequency and intensity, reduce the predictability and change the spatial distribution of extreme climatic hazards, such as temperature extremes, floods and droughts, heat waves, wild-land fires and storms, with a range of effects in different regions. Some impacts will occur in regions with no history of a given hazard.
- Increase the risk and vulnerability of particular social groups and economic sectors as existing vulnerabilities are compounded by climate change-related processes, such as sea level rise, glacier melt and ecosystem stress and degradation of natural resources. The increase in vulnerability will vary by region: regions dependent on subsistence agriculture may be affected by food and water shortages; small island developing states and coastal zones will experience a rise in sea level; regions depending on water from glacier melt for agriculture and human consumption could experience water shortages.

Diagram 1: Climate Change and Disaster Risks



11 Disaster Risk Reduction: Global Review 2007. United Nations International Strategy for Disaster Reduction; Intergovernmental Panel on Climate Change, 2011: Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX).

Projected scenarios include an increase in: areas affected by drought, such as the Sahel, southern Africa and parts of southern Asia; the frequency of heavy precipitation events over most areas; the incidence of extreme high sea levels; and intense tropical cyclone activity in the North Atlantic. Some projected scenarios are provided in Table 1.

Table 1: Projected Scenarios for Specific Types of Hazards¹²

Drought

Drought-affected areas will likely become more widely distributed, leading to more widespread water stress, increased risk of water and food shortages and, therefore, malnutrition. Southern Africa, parts of South America, Mexico, the Mediterranean basin and northern China are highly likely to experience harsh drought conditions in the future. In Africa, the areas suitable for agriculture, as well as the length of growing seasons and yield potential, are expected to decrease, particularly along the margins of semi-arid and arid areas. By 2020 yields from rain-fed agriculture could be reduced by up to 50 percent in some African countries, severely compromising agricultural production and access to food.

Floods

It is very likely that heavy precipitation events will become more frequent as a result of climate change. Coastal areas, especially heavily populated mega-delta regions in South, East and South-East Asia, will be at the greatest risk due to increased flooding from the sea and, in some mega-deltas, flooding from the rivers.

Tropical cyclones

Higher sea temperatures are likely to lead to more intense tropical and extra-tropical cyclones. This will directly increase hazard exposure in existing cyclone hotspots, particularly if combined with an increase in the concentration of population and economic activities in these areas. At the same time, higher sea temperatures may also alter cyclone tracks, creating new hotspots exposed to tropical storms that historically have not suffered cyclones.

Glacier melt

The melting of the glaciers will produce water shortages, which are expected to be especially severe in parts of South America and Central Asia. The disappearance of glaciers in the Andes is expected to accelerate, a loss which would threaten nearly 30 million people dependent on the supply of glacial water for agriculture, human water consumption, electricity and livestock production. It is likely that increased glacier melt in the Himalayas will lead to the formation of larger glacier lakes, which are likely to result in increased flooding in many river systems in South Asia. This flooding could cause potentially catastrophic glacial lake outburst floods, rock avalanches from destabilized slopes, overflow floods and natural dam rupture.

¹² *Disaster Risk Reduction: Global Review 2007. United Nations International Strategy for Disaster Reduction; Climate Change 2007: Synthesis Report. Intergovernmental Panel on Climate Change, 2007; Climate Change and Disaster Risk Reduction: Briefing Note 1. United Nations International Strategy for Disaster Reduction, 2008; Intergovernmental Panel on Climate Change, 2011: Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX).*

Sea level rise

Over 600 million people live in coastal areas that are less than 10 meters above sea level, and two-thirds of the world's cities with populations over five million are located in these at-risk areas. Sea level rise is likely to produce coastal erosion, wetland and coastal plain flooding, salinization of aquifers and soils, and a loss of habitats for wildlife and plants. Low-lying coastal regions in developing countries such as Bangladesh, China, India and Viet Nam have especially large populations living in at risk coastal areas such as deltas. Another danger for some island nations is the possible loss of fresh-water supplies as sea levels rise and saltwater intrusion pollutes aquifers. Small island states are especially at risk, as sea level rise is expected to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure and settlements that support the livelihood of island communities.

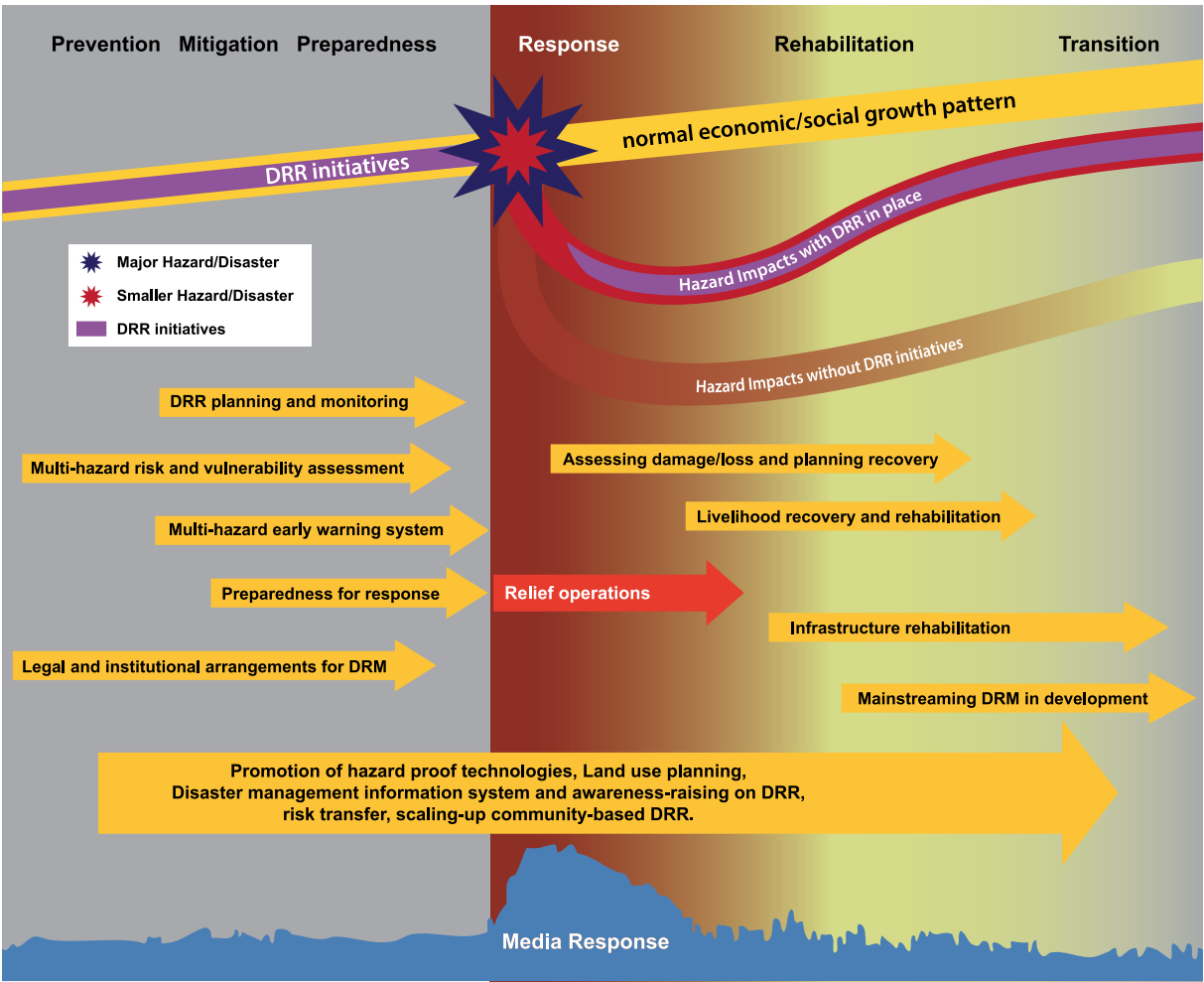
The most severe consequences of climate change will likely be on the food security and livelihoods of agriculture-dependent populations in vulnerable countries. Most estimates indicate that climate change is likely to reduce agricultural productivity, production stability and incomes in areas that already experience high levels of food insecurity. Long-term changes in the patterns of temperature and precipitation will shift production seasons, increase the supply variability and risks in agriculture livestock, forestry and fisheries, and contribute to the emergence of new animal and plant diseases, as well as emerging food safety threats including new geographical distribution of existing food safety hazards and food- and water-borne disease pathogens or introduce diseases in places where they formerly did not exist. In addition, changes in temperature and rainfall can favour outbreaks of insect infestations on forests and timber plantations. Drought, hurricanes, warmer temperatures and shifting winds resulting from climate change will increase the risk and frequency of wildfires.

The additional challenges posed by climate change require urgent investments in DRR for FNS above and beyond present levels. More details on the links with climate change adaptation and DRR are given further below and in Annex I, with some examples of the synergies between DRR and climate change adaptation for agriculture and FNS.

DISASTER RISK REDUCTION FOR FOOD AND NUTRITION SECURITY

The multiple threats to FNS and the clear link between shocks and hunger reveal the fragility of current food production systems and their vulnerability to disruptions. In order to break this cycle, it is necessary to protect livelihoods from shocks, and to make food production systems more resilient and more capable of absorbing the impact of, and recovering from, disruptive events and to secure sustainable development gains.

Diagram 2: Disaster Risk Reduction and Management



Disaster Risk Management is the “systematic process of using administrative directives, organizations and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disasters”¹³. It comprises the whole range of interventions before, during and after a shock in the humanitarian-development continuum. The need for integrating DRR, response and rehabilitation/transition and linking it to development is the DRM approach for agriculture and FNS sectors.

13 United Nations International Strategy for Disaster Reduction.

DRR refers to the concept and elements considered with the possibilities to minimize vulnerabilities and disaster risks, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development. DRR actions aim at strengthening the capacities and resilience of households, communities and institutions to protect lives and livelihoods, through measures to avoid (prevention) or limit (mitigation and preparedness) the adverse effects of hazards and to provide timely and reliable hazard forecasts. During emergency response, communities and relief agencies focus on saving lives and property. In post-disaster situations, the focus is on recovery and rehabilitation, including, however, the concept of “building back better”. This implies carrying-out DRR activities also during response, recovery and rehabilitation interventions. The paradigm shift to conceptualize DRR as a continuum reflects the reality that the transition between pre-, during and post- disaster is fluid, in particularly in countries, which are regularly exposed to hazards. The elements of DRR/M, elaborated in Diagram 2, include both structural (physical and technical) and non-structural (diagnostic, policy and institutional) measures¹⁴.

The need for an enabling environment

In 2005, 168 national governments endorsed the Hyogo Framework for Action and its five global Priorities for Action, a clear indication of the level of commitment of member countries to reducing risks and promoting sustainable development. Yet governments also need support from the international community to scale-up their national DRR/M system. For FNS, this means developing the capacity of line ministries and technical departments for an enabling environment that is conducive to protecting and building resilience in agriculture, fisheries/aquaculture, livestock and forestry.

The critical role of early warning

Improved monitoring for new emerging and existing threats to FNS – such as extreme climate events, economic crises (such as price volatility) and the emergence of new pests, transboundary plant and animal diseases, and food safety hazards – is essential. The presence of multiple threats demands a more complex monitoring and analysis of the potential simultaneous impact. Improvements are needed to bridge the gap between early warning and decision-making for better preparedness, response and impact mitigation. Better seasonal weather and climate forecasting tailored to the needs of agricultural producers, and improved outreach to farmers and small food business operators will further enhance planning capacities for risk reduction in agriculture and food.

¹⁴ Structural measures refer to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural measures refer to policies, awareness, knowledge development, public commitment, and methods and operating practices, including participatory mechanisms and the provision of information, which can reduce risk and related impacts. United Nations International Strategy for Disaster Reduction, 2007.

The importance of mitigation and prevention

The promotion of more productive and resilient rural livelihoods requires policy support, capacity development, transformations in agriculture, livestock and fisheries/aquaculture, food production and processing and improvements in the management of natural resources such as land, forests, water, soil nutrients, and genetic resources. Greater investments are needed to prevent and/or mitigate the impact of future disasters. DRR must be mainstreamed across sectors into longer-term sustainable development, protecting the built environment such as agricultural or food supply chain (food storage, processing, transport) infrastructures. Investment is needed in sustainable models of food production that apply technologies and practices adapted to local conditions to raise yields and reduce risks of production failure. For example, better management of crop species and varieties, the adoption of crops and varieties that are more resilient to floods or drought and adapted to new climate patterns, plant breeding to develop new adaptive and productive varieties, and development of efficient seed delivery systems for improving farmers' access to adequate varieties. Other examples include: sustainable water management to increase water use efficiency and productivity, such as rainwater harvesting, water storage and conservation techniques and irrigation efficiency; agro-forestry systems that make use of trees and shrubs as shelterbelts, windbreaks and live fences to diminish the effects of extreme weather events; conservation agriculture which uses minimal soil disturbance, permanent soil cover and crop rotations, thereby contributing to crop diversification, high water infiltration for reduced surface runoff and soil erosion, among other benefits; and natural resource management practices to restore degraded grasslands through grazing management, re-vegetation and supplementing poor quality forages with fodder trees, as in agro-silvo-pastoral systems and land tenure to secure land rights.

The importance of preparedness

Effective emergency response and recovery depends on robust preparedness measures at all levels, particularly in view of the expected increase in the frequency and intensity of natural hazards from changing climate patterns. Preparedness for effective response requires strong coordination of humanitarian and development actors at all levels. At the community level, preparedness can be improved through appropriate technologies and practices, such as seed and grazing reserves, safe storage facilities for seeds and harvest, livestock shelters and safe and hygienic food preparation practices. At the national and international levels, preparedness planning must be developed more consistently for the agriculture and food-related sectors. The national DRR/M system must integrate preparedness measures addressing FNS and all vulnerabilities to threats along the food chain. Technical support must be given to line ministries and departments in order to ensure that appropriate response measures are in place. For FAO, preparedness planning requires a corporate-wide effort to strengthen its capacity to assist its member countries in effectively responding to crisis, particularly in view of the multiple and simultaneous emergencies that threaten to increase in coming years.

DRR – a cost effective investment in sustainable development

There is growing evidence of the economic benefits of DRR. For every dollar spent on DRR, between 2 and 4 dollars are returned in terms of avoided or reduced disaster impacts¹⁵. DRR also safeguards development initiatives by ensuring that investments in the agricultural, livestock, forestry and fisheries/aquaculture sectors are less affected by hazards. By building resilience and safeguarding investments, DRR helps the world's most vulnerable people become or remain food secure. In short, DRR for FNS is vital for ensuring one of the most basic human rights – the right to food and freedom from hunger. This in turn can have a multiplier effect and accelerate the achievement of Millennium Development Goal 1. In the future, greater coherence between humanitarian, development and investment strategies will be crucial.



¹⁵ Reducing the Risk of Disasters - Helping to Achieve Sustainable Poverty Reduction in a Vulnerable World: A DFID Policy Paper. DFID. 2006.

FAO'S CORPORATE COMMITMENT TO DISASTER RISK REDUCTION AND MANAGEMENT

In line with, and building on, the Hyogo Framework for Action, DRM and DRR are corporate priorities of FAO, as expressed in FAO's Strategic Framework 2010–2019. FAO's specific commitment to DRR is stated in the four Organizational Outcomes under its Strategic Objective 5 (SO5), "Increase the resilience of livelihoods to threats and crises". The FAO DRR for FNS Framework Programme contributes to guiding the implementation of the Strategic Objective 5, and represents one of the cornerstones of FAO's approach to risk reduction and management, integrating humanitarian and development interventions. It supports existing initiatives while catalysing DRR activities to strengthen capacities of member countries.

Building on FAO existing DRR interventions and on good practices, the DRR for FNS Framework Programme consolidates FAO's cross-sectoral expertise on DRR under one umbrella. It provides a corporate approach for scaling-up DRR actions at local, country, regional and global levels. It provides strategic direction and guides the implementation of DRR measures in member countries, giving emphasis to risk prevention, mitigation and preparedness as well as information and early warning systems for FNS. The specificities and priorities of DRR for FNS programmes at country level are designed on a modular basis and in a demand-responsive way, and tailored to the national and local context based on required needs, capacities and gaps.

The Programme Framework promotes a more integrated *modus operandi* to DRR for FNS. It adopts an inter-disciplinary approach that comprises the agriculture, livestock, fisheries, forestry, natural resource management and food safety and consumer protection sectors and fosters synergies for greater coherence. It responds to the diverse livelihoods of small-scale farmers and food business operators, and to the complex set of factors that contribute to disaster risk in rural and urban areas. It promotes capacity development for member countries across the various agricultural sectors and across key DRR priority areas of action, maximizing the potential impact and benefit from FAO's technical capacities. Finally, DRR for FNS adopts a sustainable livelihoods and ecosystem perspective to include the integrated management of land, water and living resources, thus promoting conservation and sustainable use of natural resources in an equitable way, and ensuring sustainable livelihood outcomes.

The FAO DRR for FNS Framework Programme responds to the recommendations made by several Governing Bodies. The Committee on Agriculture, in its Priorities and Results under the Medium-Term Plan and Programme of Work and Budget 2012-13¹⁶, gave priority to: (i) the integration of the different FAO technical and normative components within a DRM approach; and (ii) improving the capacity for joint DRM planning and programming at the global, regional and country levels¹⁷. These priorities are also valid for FAO's Medium Term Plan and programme Work and Budget 2014 -17.

¹⁶ Committee on Agriculture. *Priorities and Results under the Medium-Term Plan and Programme of Work and Budget 2012-13*.

¹⁷ In addition, it highlighted the crisis in Haiti, which confirmed the importance of developing the DRM Framework as a corporate approach, adjusting unit results accordingly.

The Committee on Agriculture also noted that the *Evaluation of FAO's Operational Capacity in Emergencies* provides the basis for actions to adapt corporate culture and business models to successfully deliver expected results of FAO's Strategic Objective I. This recommendation has been followed by incorporating several of the findings from the evaluation. In order to ensure that FAO's technical and operational capacities are harmonized and accessible within a corporate approach, the committee proposed an emphasis on: (i) raising extra-budgetary resources for countries to access FAO's technical and operational support; (ii) strengthening external partnerships; and (iii) developing a DRM capacity-building and training programme for both FAO country teams and government counterparts and partners.

The Committee on World Food Security made risk reduction one of its key policy recommendations, with particular focus on enabling policies and institutions, and the application of technologies and approaches, such as crop diversification, genetically enhanced crop varieties able to withstand hazards, and conservation agriculture, among others¹⁸.

Supporting partners and countries in DRR and climate change adaptation is a priority. For example, the focus of the FAO Department of Fisheries and Aquaculture for the 2012-13 biennium (as agreed by the Committee on Fisheries) is on strengthening global, regional and national partnerships for disaster preparedness and transition planning together with strengthening the emergency capacity response of the sector, including the development of best practice guidance and standards.

The FAO DRR for FNS Framework Programme incorporates the Regional Areas of Priority Action identified by FAO's Regional Conferences in 2010 in relation to DRR¹⁹, namely the following:

- **Latin America and the Caribbean:** risk management, transboundary diseases, and institutional strengthening;
- **Africa:** emergency preparedness and risk management;
- **Asia and the Pacific:** improving capacity to prepare and respond to food and agricultural threats and emergencies.

In these regions, FAO has been working to develop capacities in disaster risk reduction and management, supporting member countries in line with its Strategic Objectives. In 2011-12, FAO has developed Regional Programmes on DRM in West Africa, Southern Africa, East and Central Africa, Latin America and the Caribbean. DRR for FNS supports these initiatives, and strives to strengthen and scale-up FAO actions in DRR for FNS within a corporate framework.

¹⁸ Policy Roundtable *Managing Vulnerability and Risk to Promote Better Food Security and Nutrition*, October 2010.

¹⁹ *Priorities for the Technical Work of the Organization in the 2012-13 Biennium*. Programme Committee. October 2010.

THE SCOPE OF THE FRAMEWORK



GOAL

The goal of DRR for FNS is to enhance the resilience of livelihoods against threats and emergencies to ensure the FNS of vulnerable farmers, fishers, pastoralists, foresters and other at risk groups.

PRIMARY BENEFICIARIES

DRR for FNS directly supports national government partners, research institutions, universities and non-governmental organizations (NGOs) as well as community based organizations. At country level, the primary beneficiaries are smallholders, including small-scale farmers, fishers, pastoralists and foresters, food business operators and particularly women. Small-scale farmers represent 90 percent of the rural poor and comprise the majority of the world's hungry population. About two-thirds of the three billion rural people in the world live from income generated by farmers managing some 500 million small farms of less than two hectares each. Typically, small-scale farmers have insufficient production capacity to assure staple food supply for the year, are landless or land-poor and depend on low-paid casual and informal work, and have to buy all or a substantial share of their staple foods from the market. Globally, small-scale farmers are the largest farmer group. Thus, realizing the potential to reduce risks to food and nutrition security depends largely on the participation of smallholders in managing risks to productive farming and off-farm activities. Assisting smallholders (estimated at 2.5 billion people)²⁰ is the most direct way to improve resilience and to protect against hunger.

The urban poor also constitute a beneficiary group as urban risks threaten their food related livelihoods. They live on marginal land exposed to hazards, yet they produce little or no food and frequently lack the means to buy food. In the year 2000, nearly two billion people lived in cities; by 2030 this figure will more than double. As cities expand, and as more people migrate from rural to urban areas, urban poverty and hunger will rise. DRR for FNS takes gender specific needs into account and devotes particular attention to women. The role of women is pivotal in food and agricultural production, and so is their influence on the livelihood, hygiene of food preparation and nutritional outcomes of their households.

²⁰ FAO publication 2011 "Save and Grow".

THREATS TO FOOD AND NUTRITION SECURITY

The primary threats to FNS, include:

- natural hazards (drought, floods, tsunamis, hurricanes/typhoons, earthquakes, volcanic eruptions, landslides);
- food chain emergencies of transboundary threats (e.g. transboundary plant, forest, animal, aquatic and zoonotic pests and diseases, food safety events, industrial pollution);
- socio-economic crises (e.g. volatility in agricultural commodity markets and soaring food prices);
- wild fires;
- environmental conditions such as land degradation, desertification and water scarcity;
- climate change, particularly the expected increase in the frequency and intensity of weather-related hazards;
- protracted emergencies (prolonged emergencies that combine two or more of the above-mentioned crises).



COUNTRIES AND REGIONS

In line with the *Rome Principles for Sustainable Global Food Security*²¹, DRR for FNS supports the implementation of country-owned plans. Specific investments vary by country and depend on their priorities. It is implemented in countries and regions that express an interest in and need for DRR for FNS. They receive enhanced support in the formulation and implementation of their DRR for FNS programme. DRR for FNS targets hunger hotspots and natural disaster hotspots as well as countries and regions most vulnerable to climate change.

The aim is to support core capacities in DRR for FNS, applying the key principles and approaches of the Framework Programme. FAO, with the support of the donor community and partners, provides financial and technical support to develop successful models that can be replicated in other countries and regions on a wider scale. In addition, global DRR for FNS initiatives supports the implementation of national and regional DRR for FNS programmes.

THE INTEGRATED THEMATIC PILLARS

In support of the Hyogo Framework for Action and in line with the FAO mandate, FAO supports member countries in areas that directly contribute to DRR for FNS in a strategic manner. These are expressed through four thematic pillars. Each DRR for FNS pillar has a specific objective, and makes a direct contribution to one of the Priorities for Action of the Hyogo Framework for Action, as indicated in Diagram 3.

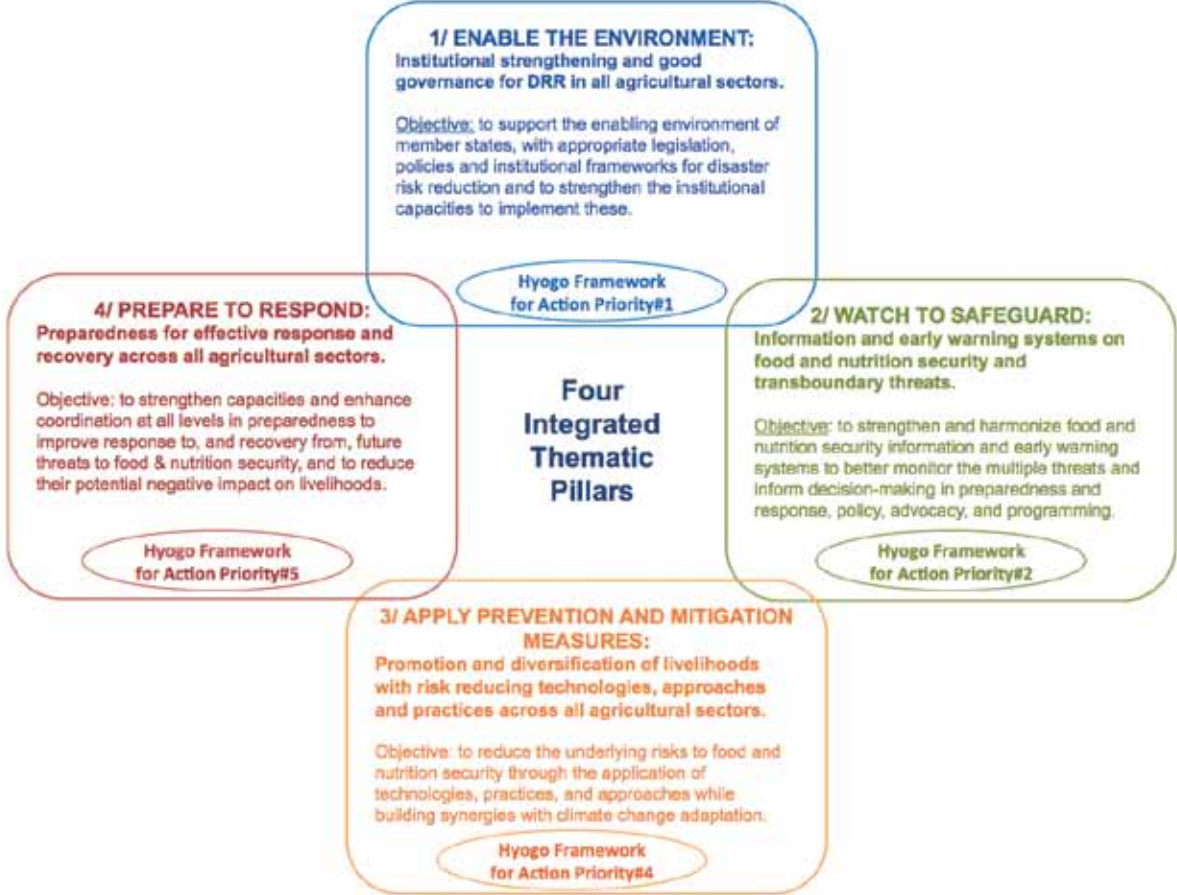
The pillars present options for capacity development that indicate, by way of example, a range of technical services, technologies, and good practices that FAO can support, and which member countries can select from based on their needs and priorities. Each pillar is inter-disciplinary and integrates FAO's technical capacities.

The four pillars combined address DRR for FNS as a whole, and are inter-dependent and mutually reinforcing. The implementation of the four pillars promotes a programmatic and holistic approach, striving to maximize the synergies and complementarities between the pillars and the critical links between good governance, early warning, preparedness, mitigation and prevention. The emphasis on the integration between pillars is in line with the mid-term review of the Hyogo Framework for Action, which cautioned against compartmentalizing actions according to its five priorities and recommended instead holistic approaches and strategic direction²².

21 Declaration of the World Summit on Food Security. World Summit on Food Security. 2009.

22 Mid-Term Review 2010-2011 of the Hyogo Framework for Action 2005-2015. United Nations International Strategy for Disaster Reduction.

Diagram 3: DRR for FNS thematic pillars contribute to the Priorities for Action of the Hyogo Framework for Action



**Agricultural sectors include agriculture, livestock, fisheries and forestry.*

CROSS-CUTTING PRIORITIES

DRR for FNS prioritizes four cross-cutting issues that underpin each of its thematic pillar and are in line with the core functions of FAO's Strategic Framework. They include:

1) Capacity Development

As part of the FAO corporate strategy on capacity development²³, DRR for FNS supports capacity development to member countries with its three inter-linked individual, institutional and policy dimensions. Depending on needs, this may include DRR for FNS technical expertise, technology transfer, practical tools, methodologies, extension, training, policy advice, advocacy, education and awareness-raising. Each of the four thematic pillar details options for capacity development for the various FNS and agriculture sectors.

2) Knowledge Management and Communication

Products and services that improve knowledge of and the links between DRR and FNS stimulate the generation, documentation, sharing and application of information and knowledge. FAO is well placed to fill this gap by increasing awareness, understanding, communication, visibility and encouraging greater commitment from the international community.

Knowledge Management and Communication directly contributes to meeting Priority for Action #3 under the Hyogo Framework for Action: *use knowledge, innovation and education to build a culture of safety and resilience*.

3) Strategic Partnerships

Through multi-stakeholder partnerships, learning networks and alliances at local, national, regional and global levels, each thematic pillar demands its key strategic partnerships. For the four pillars all together, strategic coordination and partnerships will be mobilized, especially among humanitarian and development actors, and in direct support of the Hyogo Framework for Action (HFA).

4) Gender Equity

The *State of Food and Agriculture 2010-11: Women in Agriculture*²⁴ demonstrates that gender inequalities are at the core of the underperformance of the agriculture sector, and the goals for poverty reduction and food security can only be achieved if gender is fully and adequately considered. DRR for FNS takes into account the differences in women's and men's vulnerability to disasters, as well as their differentiated role in fostering a culture of disaster resilience. Gender is a cross-cutting priority of the framework which ensures that gender concerns, needs and capacities in DRR for FNS are integrated. This includes the mainstreaming of gender in each of the four pillars.

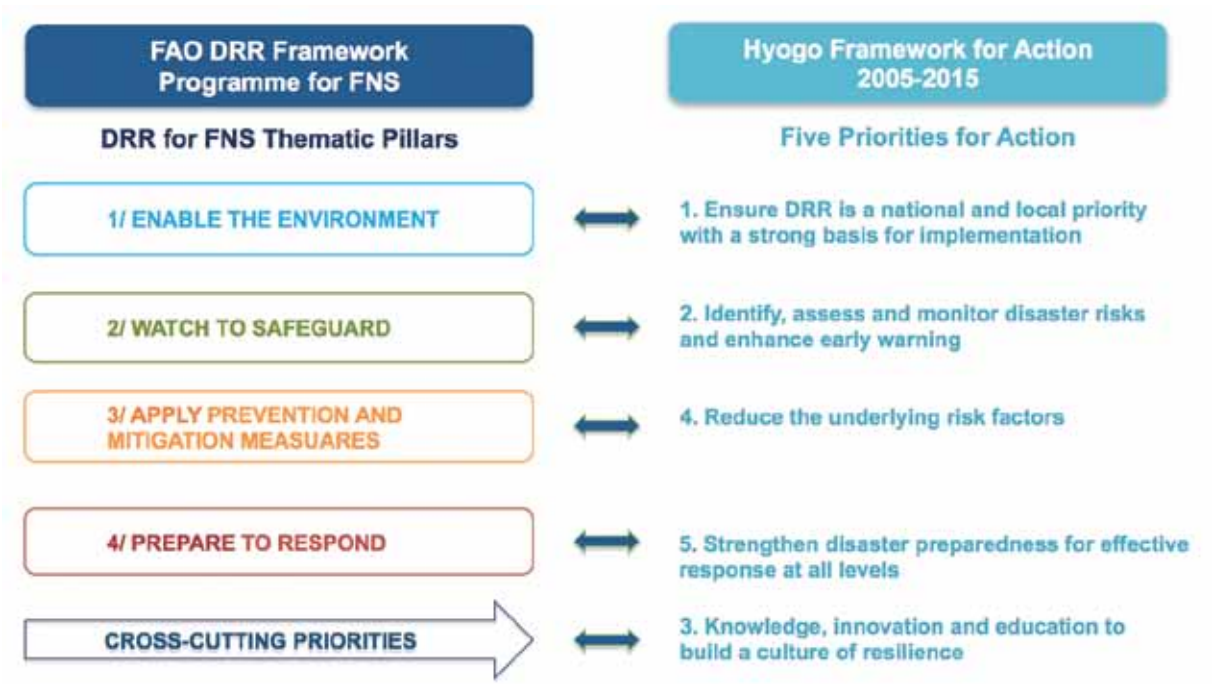
²³ FAO corporate strategy on capacity development, July 2010

²⁴ *State of Food and Agriculture 2010-11 Women in Agriculture: Closing the Gender Gap*. FAO.

BUILDING ON THE HYOGO FRAMEWORK FOR ACTION

The *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters* is the 10-year plan to make the world safer from natural hazards. It was adopted by 168 member countries of the United Nations in 2005 at the World Disaster Reduction Conference in Kobe Japan. UNISDR is the secretariat of the Hyogo Framework for Action. The FAO DRR for FNS Framework Programme builds on and supports the implementation of the Hyogo Framework for Action to reduce disaster risks in the agricultural sectors for FNS. The four DRR for FNS thematic pillars and cross-cutting priorities contribute to the achievement of the five Priorities for Action of the Hyogo Framework for Action, as outlined in Diagram 4. However, the Hyogo Framework for Action focuses only on natural disasters, while the FAO DRR for FNS Framework Programme goes beyond to include threats such as animal and plant pests and diseases, food safety threats and the volatility of food prices, etc.

Diagram 4: Linkages between the Hyogo Framework for Action and the Disaster Risk Reduction for Food and Nutrition Security Framework Programme



Contributing to the achievement of MDG 1: *the Eradication of Poverty and Hunger.*

GUIDING PRINCIPLES AND APPROACHES

The DRR for FNS Framework Programme is guided by the following principles:

- respond to demand and need at local and country levels;
- ensure national ownership and participatory mechanisms;
- ensure a gender perspective;
- adopt a multi-hazard approach at the appropriate territorial level (including urban and rural areas and their linkages);
- be part of the FAO Country Programme Framework and follow FAO results-based business model and FAO Strategic Framework;
- promote and ensure a multidisciplinary, livelihoods, ecosystem programmatic approach at all levels;
- work in partnership with United Nations agencies, donors, NGOs, civil society, etc.;
- reinforce synergies with disaster response, recovery, transition and development;
- foster complementarities with climate change adaptation, including National Adaptation Programmes of Action;
- reinforce national plans for DRR/M and climate change adaptation;
- take into account and support national strategies on sustainable development, poverty reduction, food security;
- build strategic linkages at local, national, regional and global levels;
- follow and support the sectoral delivery of the Hyogo Framework for Action;
- maintain synergy with the United Nations Development Assistance Framework.

To ensure coherence and sustainability, implementation of DRR for FNS integrates four key elements: sustainable livelihoods and ecosystem perspective; from local to global levels; inter-disciplinary approach; and programmatic approach.

1) Sustainable Livelihoods and Ecosystem Perspective

In addition to national actions, DRR for FNS focuses on specific areas prone to natural hazards as well as other threats to FNS, such as an agro-ecological zone or watershed. It follows an ecosystem perspective that includes the integrated management of land, water and living resources to promote conservation and sustainable use of natural resources in an equitable way.

Linked to the ecosystem perspective, DRR for FNS applies the *Sustainable Livelihoods Approach* at local level to address FNS and ensure poverty alleviation and sustainable livelihood outcomes. Livelihoods consist of the capabilities, assets – both material and social resources – and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, and provide net benefits to other livelihoods locally and more widely, both now and in the future, while not undermining the natural resource base. The sustainable livelihoods approach consists of livelihood assets and activities, vulnerability and coping strategies, policies, institutions and processes, and livelihood outcomes in relation to the full food supply system (production, processing, storage, transport and marketing).

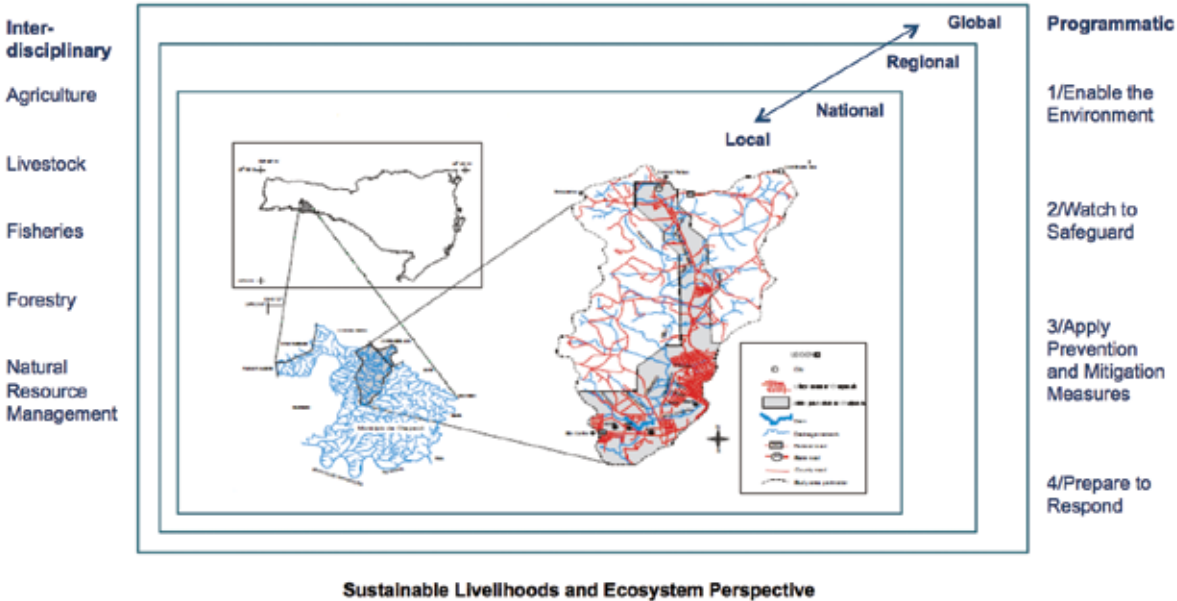
2) From Local to Global Levels

DRR for FNS requires action and partners at local, national, regional and global levels. Programme implementation is designed on a modular basis through a number of need/interest-based interventions, tailor made to (i) build on existing structures and strengths; and (ii) respond to country and/or region-specific demands. At the local, it focuses on specific geographic locations. At the same time, it links with national initiatives, where appropriate, such as institutional strengthening and good governance in DRR for FNS. For example, technologies that strengthen the resilience of farming systems are best applied locally, but to be most effective they often require adequate policy support to guarantee long-term sustainable agriculture.

Similarly, DRR for FNS promotes initiatives at regional levels, building on existing initiatives and in line with regional priorities. Where opportunities exist, it focuses on threats common to the region, such as the Mekong River Basin, the Zambezi River Basin and the Andes, among others. FAO regional and sub-regional offices and FAO Regional Emergency and Rehabilitation Coordination Units support regional DRR for FNS actions.

At the global level, the Framework Programme supports and strengthens efforts in advocacy, awareness-raising, knowledge management, communication, capacity development and normative guidance as well as other initiatives in favour of DRR for FNS.

Diagram 5: Sustainable Livelihoods and Ecosystems Perspective



3) Inter-disciplinarity

Each DRR for FNS pillar follows an inter-disciplinary approach that integrates the agriculture, livestock, fisheries/aquaculture, forestry and natural resource management sectors. This ensures integrated actions that respond to the diverse livelihoods of poor households, as well as to the complex set of factors that contribute to disaster risk in rural and urban areas. At the same time, the DRR for FNS Framework Programme links to other sectors where appropriate and feasible, such as water, land or the environment. By adopting an inter-disciplinary approach, DRR for FNS Framework Programme harnesses FAO’s technical capacities and fosters cross-sectoral collaboration.

4) Programmatic

The DRR for FNS Framework Programme moves away from the project-based towards a programmatic approach, both within each pillar and across the pillars. For instance, for a more harmonized and programmatic approach to information and early warning systems for FNS, Pillar 2 “Watch to safeguard” integrates FAO’s statistical time series and other baseline databases (National Statistical Information System for Food and Agriculture [CountrySTAT], State of Food Insecurity in the World [SOFI], State of World Fisheries and Aquaculture [SOFIA], etc.) and its early warning capacities (Global Information and Early Warning System [GIEWS], Emergency Prevention Systems [EMPRES] for Transboundary Animal and Plant Pests and Diseases and Food Safety hazards, etc.).

At the same time, actions are promoted in all four pillars as an overarching programme to ensure comprehensive DRR actions for FNS. This maximizes the potential impact of DRR for FNS programmes and ensures more sustainable interventions. For example, early warning initiatives under Pillar 2 are linked to preparedness actions under Pillar 4, or the application of technologies to build livelihoods under Pillar 3 are supported by a national or local enabling environment under Pillar 1.



THE FOUR THEMATIC PILLARS



PILLAR 1

ENABLE THE ENVIRONMENT

INSTITUTIONAL STRENGTHENING AND GOOD GOVERNANCE FOR DRR IN ALL
AGRICULTURAL SECTORS.



PILLAR 1

ENABLE THE ENVIRONMENT

The objective of Pillar 1 is to support the enabling environment of member countries with appropriate legislation, policies, strategies, standards and institutional frameworks for DRR in agriculture and related sectors, and to strengthen the institutional capacities to implement these initiatives.

RATIONALE

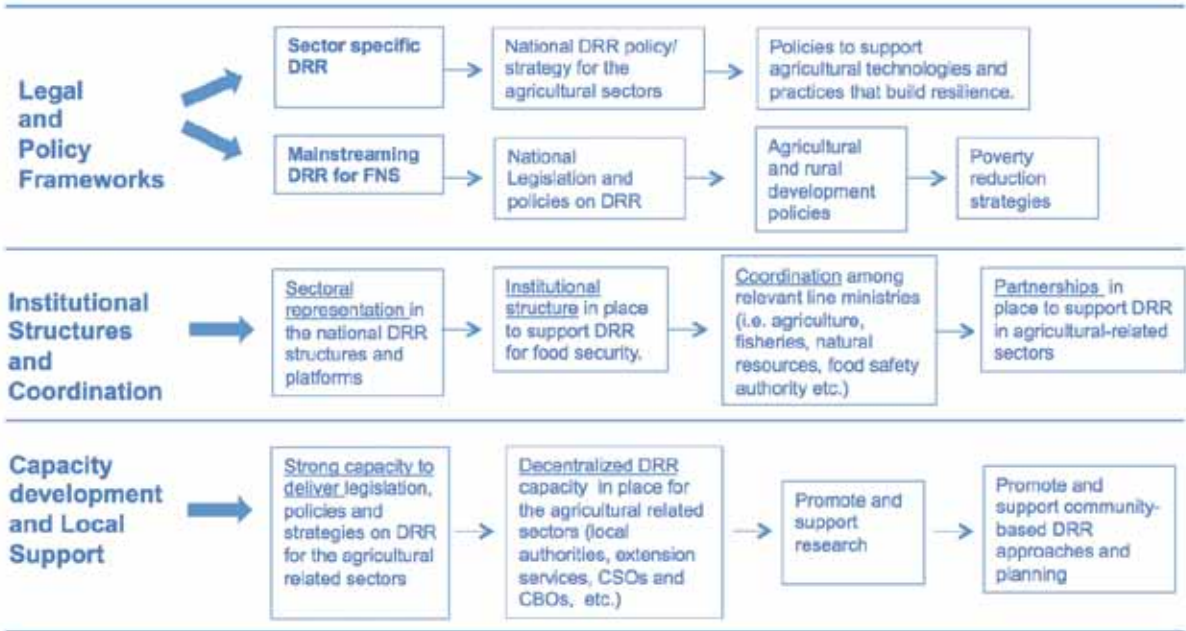
Effective DRR depends first and foremost on sustained political commitment and investment by governments. National governments have the primary responsibility for DRR and should provide leadership in DRR interventions. Yet, they also require support and cooperation from the international community to strengthen governance, as well as the legal and policy environments that facilitate national and local strategies, plans and financial investments in favour of risk reduction. Appropriate laws and institutional mechanisms are needed in DRR for FNS. Capacity development support to relevant line ministries is also essential. The strategic integration of DRR for FNS into rural and agricultural development policies is vital to meeting Millennium Development Goal 1. Sector-specific national strategies and plans are required to address DRR for FNS across agriculture, fisheries/aquaculture, forestry and natural resource management.

Similar efforts are also needed at the international level. Global dialogue, knowledge exchange and coordination among humanitarian and development actors on DRR for FNS are essential. It is important to step-up political and financial commitments, to develop policy frameworks and institutional arrangements to better support governments. With the present DRR for FNS Framework Programme, FAO supports the enabling environment of member countries and enhances its advocacy efforts at the global level. At the same time, it strengthens its policy environment and practical mechanisms needed to successfully implement the DRR for FNS corporate commitment.

OPTIONS FOR NATIONAL AND REGIONAL CAPACITY DEVELOPMENT

Institutional strengthening and good governance on DRR for FNS in agriculture, fisheries/aquaculture, livestock, forestry, food safety and consumer protection is an important area of work within FAO. It promotes political commitment and provides the resources required by member countries to translate these initiatives into actionable results. Although the specific type of support provided by FAO varies across countries and depends on national needs and priorities, Diagram 6 summarizes key examples that enable the environment for resilient livelihoods at national and sub-national levels. More specific examples or options for capacity development are detailed further.

Diagram 6: Enabling the Environment for Resilient Livelihoods



1) Legal and Policy Frameworks on DRR for FNS

- ensure national legislation on DRR for FNS addresses livelihoods and food security (agriculture, livestock, fisheries and aquaculture, forestry, natural resource management, and food safety and consumer protection);
- include FNS in national DRR/M strategy and action plans;
- integrate DRR for FNS into agricultural and rural development policies;
- integrate DRR into food safety and quality policies;
- integrate DRR for FNS into poverty reduction strategies linked to agriculture, fisheries/aquaculture, forestry, natural resource management, and food safety and consumer protection;
- ensure that environmental and natural resource management laws and disaster reduction strategies are mutually supportive;
- integrate DRR for FNS into landscape management policies, both rural and urban;
- mainstream pastoral risk management into national agricultural and development policies and strategies;
- regulatory frameworks for national emergency preparedness and response to animal/aquatic and zoonotic disease outbreaks;
- national and/or regional aquatic biosecurity frameworks;

- promote adoption of the Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests;
- develop national plans for the fisheries/aquaculture sector, in line with Code of Conduct for Responsible Fisheries;
- support laws and regulations for the design, construction and equipment of safe boats and risk-free agricultural infrastructure;
- develop national action plans for integrated fire management based on the Fire Management Voluntary Guidelines.

2) Institutional Structures and Coordination

- ensure relevant representation of line ministries in the national and local DRR for FNS structures;
- include agriculture and FNS in national platforms for DRR;
- facilitate strategic coordination and partnerships among humanitarian and development actors;
- ensure institutional structures support DRR for FNS;
- support coordination, ensuring linkages among relevant line ministries (e.g. environment and natural resources);
- promote partnerships among community-based organizations, research centres and extension services for DRR for FNS;
- strengthen traditional institutions and knowledge, and promote exchange between communities;
- support linkages and communication between community traditional institutions and formal government structures, and enhance accountability between government and communities;
- ensure compliance with international and regional conventions and frameworks.

3) Capacity Development for the Implementation of Risk Reduction in and across Agriculture-related Sectors

- strengthen the capacity of line ministries to deliver national legislation, policies and strategies on DRR for FNS through technical advice, human resources and expertise, training, practical tools and services;
- promote national, regional and international standards, norms and regulatory instruments to manage risks;
- support decentralized DRR for FNS and strengthen capacities at sub-national level, with local authorities, extension services and community-based organizations to deliver DRR for FNS;
- promote and support community-based DRR for FNS approaches and local planning;

- promote investment in knowledge management and dissemination for gender-sensitive disaster risk reduction at the global, regional, national and sub-national levels.
- support sustainable natural resource management strategies and practices (wetland management, land and soil management, efficient energy use, natural resources tenure rights security, etc.);
- promote sustainable land use planning to reduce risks, including urban/territorial development;
- support implementation of national strategies on aquatic/animal health for biosecurity risks related to transboundary aquatic animal diseases.

GLOBAL PUBLIC GOODS AND SERVICES

In order to strengthen its support to member countries and the implementation of this thematic pillar, FAO advocates further at the global level. It develops an enabling environment within the Organization with appropriate policies, normative guidance and capacity development instruments on DRR for FNS. In particular it focuses on the following outcomes:

Advocacy: promoting greater visibility, knowledge, commitment and financial investment in DRR for FNS.

Normative: promoting the development of global standards, codes of conduct, norms and instruments specific to FNS within the global DRR agenda.

Practical tools: developing tools to assess, monitor and evaluate institutional capacity in DRR for FNS, and to monitor delivery at country level.

STRATEGIC PARTNERSHIPS

In its effort to support member countries in good governance and institutional strengthening, FAO works in partnership with the following key organizations and bodies:

Global Partnerships: UNISDR, International Fund for Agricultural Development (IFAD), International Federation of Red Cross and Red Crescent Societies, World Organisation for Animal Health (OIE), United Nations Development Programme, United Nations Environment Programme, United Nations World Food Programme (WFP), World Bank, and United Nations Human Settlements Programme.

Regional inter-governmental bodies and economic communities: Association of Southeast Asian Nations, African Union, Inter-governmental Authority on Development (IGAD), Southern African Development Community, Sistema de Integración Centroamericana, Caribbean Disaster Emergency Management Agency, Centro de Coordinación para la Prevención de los Desastres Naturales en América Central, Asian Disaster Preparedness Center, Economic Community of Central African States, Indian Ocean Commission.

Fisheries/Aquaculture: regional fishery bodies such as Organization of Fishing and Aquaculture in Central America, Caribbean Regional Fishery Mechanism, and Latin American Organization for Fisheries Development, Asia-Pacific Fishery Commission.

Forestry: Wild-land Fire Advisory Group, Silva Mediterranean Working Group on Fire Management, Near East Fire Management Network, South American Fire Management Network, Fire Management Actions Alliance, and United Nations Economic Commission for Europe, FAO Team of Forest Fire Specialists.



PILLAR 2

WATCH TO SAFEGUARD

INFORMATION AND EARLY WARNING SYSTEMS ON FOOD AND NUTRITION SECURITY
AND TRANSBOUNDARY THREATS



PILLAR 2

WATCH TO SAFEGUARD

The objective of Pillar 2 is to strengthen and harmonize FNS information and early warning systems to better monitor the multiple threats and inform decision-making in preparedness and response, policy, advocacy and programming.

RATIONALE

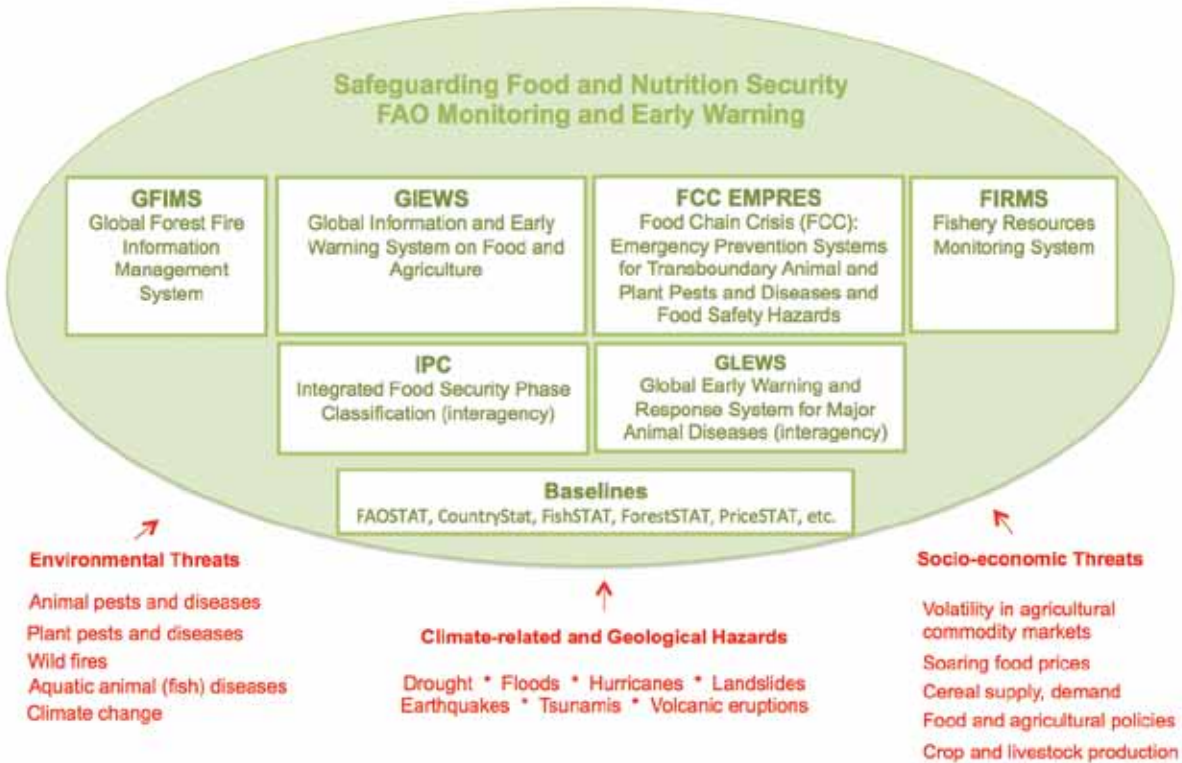
The unacceptably high levels of global hunger and the complexity of multiple threats to FNS make information and early warning systems a critical component of DRR. FAO's early warning capacity strives to keep abreast of a continuously changing global food security situation and to monitor the many risks that make people vulnerable to a sudden deterioration in their livelihoods. Yet, emerging threats such as soaring food prices represent new challenges, as does climate change. The capacity to monitor these threats needs to be strengthened and expanded to serve more countries.

The Joint Thematic Evaluation²⁵ re-affirmed that early warning is "critical for all food security stakeholders" and that FAO's global initiatives in food and nutrition information systems, such as GIEWS, are relevant and needed among all key stakeholder groups (governments in food insecure countries, United Nations agencies, NGOs and donors). However, it also noted that support to early warning functions has been steadily decreasing over the last decade, mainly as a result of FAO's discontinuation of a number of regional and country support programmes. This has been a result of reduced funding, leading to closure of many sub-regional and national programmes and projects, which in turn has had a "severe negative impact on the early warning capacities in many countries".

The quality of key data is essential for analysis, early warning and forecasting. Gaps need to be filled in the quality and efficiency of information systems and early warning. For example, many countries still lack a formal mechanism for assessing and reporting local outbreaks of plant and animal diseases, or for reporting food prices. Better seasonal weather and climate forecasting tailored to the needs of agricultural producers, and improved outreach to farmers, is needed to enhance planning capacities for risk reduction in food and agriculture. Capacity development is needed to enable timely information of potential threats to support decision-making and ensure a timely response.

²⁵ *Ibid.*

Diagram 7: Safeguarding FNS – FAO Monitoring and Early Warning



The Joint Thematic Evaluation emphasized that although there is a certain improvement with regard to more integrated early warning systems, “existing early warning functions still tend to focus on agricultural production”. There is a need for holistic monitoring approaches and integrated analysis of key agricultural sub-sectors and livelihood systems, such as livestock and fisheries, and new threats such as food prices. Such an approach would enable the monitoring of multiple threats for a more comprehensive understanding of, and response to, food and nutrition insecurity. The multiplicity of threats affects rural and urban populations and includes both old and new threats:

- natural hazards such as drought, floods, hurricanes and earthquakes;
- plant pests (e.g. locusts, wheat rust);
- animal diseases (e.g. highly pathogenic avian influenza);
- aquatic animal (fish) diseases;
- food safety emergencies;
- wildfires;
- environmental conditions such as land degradation, desertification and water scarcity;
- climate change, which increases variability and uncertainty in food production;
- volatility in agricultural commodity markets and soaring food prices.

A recent FAO evaluation also recommended improved information systems for food security that respond to identified needs and promote long-lasting capacity development and national multi-stakeholder partnerships. It also emphasized the strong demand for improved communication, presentation and timing of information, with greater attention to short, targeted policy briefs to inform decision-makers²⁶.

Pillar 2 is in line with and supports the implementation of FAO's five-year Corporate Strategy on Information Systems for Food and Nutrition Security, which aims to provide a clear statement of intent on how FAO supports member countries and the global community of food security stakeholders and practitioners in strengthening the collection, management, analysis, dissemination and use of data and information on FNS to achieve a sustainable reduction in poverty, hunger and malnutrition.

OPTIONS FOR NATIONAL AND REGIONAL CAPACITY DEVELOPMENT

Technical assistance and capacity development is country-specific and depends on national needs, capacities and priorities. Implementation of this thematic pillar ensures that member countries are better equipped with high quality data and information, have the analytical capacity to anticipate and prevent food crises, and are better able to improve the FNS situation of households, communities and nations. Options for capacity development focus on two issues: FNS baselines and monitoring and early of threats to FNS. In addition, FAO assists member countries on a demand-responsive basis to access and integrate new/upgraded monitoring systems (hazard- and exposure-related) as part of national early warning systems, including for emerging threats. Furthermore, FAO supports mechanisms to identify, monitor and provide timely and actionable early warning and outreach at local levels.

1) FNS Baselines

Countries often lack adequate baseline information on FNS and vulnerability, including gender disaggregated data which limits the capacity to monitor and forecast as well as to inform policy. Information sharing across line ministries is also weak and compartmentalized across sub-sectors, limiting the ability to obtain a comprehensive view on livelihoods and FNS. Data reporting is not always linked to the policy-making process, missing the critical link with appropriate responses to threats and risks, prevention and mitigation. Through this theme, FAO strengthens the knowledge base on food security, livelihoods and vulnerabilities, which may include establishing and strengthening the capacity of member countries through the following:

- statistical baselines;
- multi-hazard risk mapping and analysis in agriculture-related livelihoods; and
- vulnerability and risk assessment and analysis.

²⁶ *Ibid.*

FAO can support the collection, processing, analysis, storage and information exchange of sex-disaggregated statistical data to improve the knowledge base, the scope and quality of information, and the analysis of risk and vulnerability in national agriculture, fisheries/aquaculture, nutrition, forestry and livestock. This includes disaggregated data that underlines the differentiated vulnerabilities of various population groups, and particularly women, and ensures access to relevant data by stakeholders. FAO can provide technical assistance, financial resources, technology transfer, information and communication technology, training and scientific cooperation.

Sex-disaggregated statistics on FNS constitute the information baseline for analysis, early warning monitoring, policy formulation and programming. FAO maintains and updates a substantive body of historical statistical datasets. FAO makes available its existing in-house capacities (including the statistical time series, technology and technical know-how, through FAO Corporate Database for Substantive Statistical Data (FAOSTAT), CountryStat, Nutrition Country Profiles, FAO Computer System for Global Fish Catches (FishSTAT), Food Insecurity and Vulnerability Information and Mapping System, FAO Forestry Statistics, PriceSTAT, National Basic Food Price Database, FAO Global Information System on Water and Agriculture (AQUASTAT), SOFI, SOFIA, State of the World's Forests, State of Agricultural Commodity Markets, State of Land and Water and others).

In addition, FAO is striving to achieve an integrative approach that includes all data and information relevant to FNS (fisheries/aquaculture, agriculture, livestock, forestry and natural resources). This is done on the basis of national demands and capacities, complementing existing national information services as required, yet striving to achieve greater consistency, coherence and efficiency.

2) Monitoring and early warning of threats to FNS

FAO's early warning monitoring capacities provide additional options for capacity development by member countries. FAO has comparative advantages in FNS information and early warning systems, primarily through the following:

GIEWS: Global Information and Early Warning System on Food and Agriculture, which monitors and reports on agricultural production and commodity markets, short-term forecasts and medium-term projections on food supply and demand, food balance sheets, food prices, crop prospects, requirements for external assistance and other data.

EMPRES: Under its Food Chain Crisis Management Framework, FAO manages EMPRES for transboundary animal and plant pests and diseases and food safety hazards. EMPRES seeks to detect, prevent, contain and control food safety hazard as well as the world's most serious transboundary livestock and plant pests and diseases, while also surveying for newly emerging pathogens.

FIRMS: Fishery Resources Monitoring System, which provides information on the global monitoring and management of fishery marine resources.

GFIMS: Global Forest Fire Information Management System, which provides real-time monitoring of forest fires around the world.

GLEWS: Global Early Warning System builds on the added value of combining and coordinating the alert and disease intelligence mechanisms of OIE, FAO and World Health Organization (WHO) for the international community and stakeholders to assist in prediction, prevention and control of animal disease threats, including zoonoses, through sharing of information, epidemiological analysis and joint risk assessment.

INFOSAN: The International Food Safety Authorities Network monitors food safety events of international importance and receives alerts from national food safety authorities.

Table 2 outlines examples of FAO early warning and monitoring capacities. These represent options for capacity development to support member countries depending on national needs and priorities. Under this pillar, special emphasis is given to integrated and harmonized monitoring, analysis and communication in order to improve early warning of the multiple threats to FNS. Pillar 2 also supports the further roll-out of the Integrated Food Security Phase Classification Version 2.0 in Sub-Saharan Africa, Latin America and Asia.

Table 2: Examples of FAO Monitoring and Early Warning Systems

GIEWS	EMPRES	Fisheries	Forestry
<ul style="list-style-type: none"> • Rainfall and vegetation monitoring (rainfall, vegetation index, yield forecast, etc.) • Crop forecasting • Crop prospects: cereal supply, demand, import volume, prices, requirements for external assistance. • Market analysis (production, trade, prices, utilization, consumption, and stocks for main cereals, fish and fishery products) • Food prices • Food and agricultural policies • Livestock production monitoring • Crop and food security assessments • Seasonal climate forecasting for strategic crop choices 	<ul style="list-style-type: none"> • Transboundary animal pests and diseases: <ul style="list-style-type: none"> - Small ruminants’ plague - Rift Valley fever - Highly pathogenic avian influenza - Pandemic influenza A (H1N1) - Swine fever • Transboundary plant pests and diseases: <ul style="list-style-type: none"> - Locusts - Wheat rust • Food safety hazards, INFOSAN alerts 	<ul style="list-style-type: none"> • Biosecurity risks of aquatic animal diseases • Status and trends in marine resources and fisheries • Fish stock assessments • Surveillance of new pathogens • Fish production, imports, exports, prices • Transboundary aquatic animal diseases 	<ul style="list-style-type: none"> • Forest plant pests and diseases • Wildfire monitoring and early alert

GLOBAL PUBLIC GOODS AND SERVICES

In order to ensure the effective delivery of Pillar 2 and capacity development in member countries, FAO needs to further develop its delivery in the following areas:

1) Improved monitoring of traditional and emerging threats.

Strengthen the monitoring capacity in the following key areas:

- weather monitoring and forecasting (rainfall, vegetation index, yield forecast, etc.);
- livestock production monitoring;
- transboundary animal diseases, plant pests and diseases, and threats to food safety;
- food price monitoring: expand national coverage (geographic and time series dbase), add more food items (such as livestock and livestock products) and improve analysis of impact on the poor in rural and urban areas and for differentiated groups (women and men, female and male headed households, etc.);
- national food and agricultural policies;
- better classification of countries in crisis requiring external assistance for food;
- simulation and modelling the impact of shocks on household food and nutrition security, improving and expanding the geographic coverage;
- seasonal agriculture forecasting.

2) Harmonized monitoring, analysis and communication of the multiple threats to FNS.

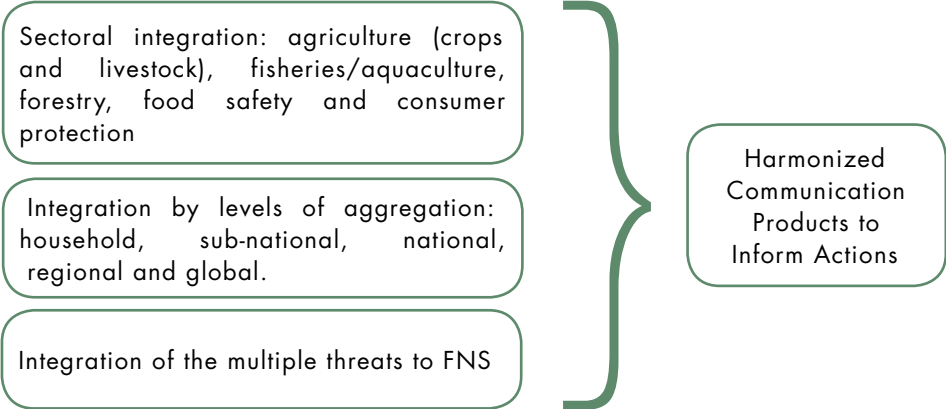
a) Integrated Monitoring and early warning

FAO seeks to streamline and harmonize its monitoring and early warning activities for greater coherence and improved service to member countries and the global community. This includes integration at three levels:

- across sub-sectors: agriculture (crops and livestock), fisheries/aquaculture, forestry and food safety and consumer protection sectors;
- across levels of aggregation: systematic linkages between household, local, national, regional and global monitoring;
- across the multiple threats: natural hazards, food consumption and demand, food price, food policies, transboundary plant pests and animal disease.

Much of the information and monitoring is already produced by FAO and harmonization is promoted through the design of information products integrating key messages and warnings from existing reports and publications. FAO promotes multi-hazard risk analyses to facilitate monitoring on location-specific risks. Overall, improved integration of monitoring contributes to a more robust and harmonized monitoring capacity that can inform decision-makers of the multiple threats to food and nutrition security in a particular country, region or worldwide.

Diagram 8: Integrating monitoring systems for sound decision making at all levels



b) Improved communication products to inform actions

Communication is a critical element of food and nutrition information and early warning systems, ensuring the right messages reach the right people at the right time. Well-designed and targeted policy briefs, monitoring updates, and early warnings can support decision making at all levels (preparedness and response, mitigation, prevention, programming, policy formulation, targeting). Pillar 2 integrates communication as an integral part of its strategy, focusing in particular on the following:

- enhanced communication products (early warning briefs, updates and alerts and other communication products) that integrate the multiple threats to FNS and respond to a well-identified demand from internal and global stakeholders;
- demand-driven communication products that are tailored to the needs of key users and decision-makers at all levels;
- products that harmonize early warning information across relevant sectors (fisheries/aquaculture, livestock, agriculture, forestry, food safety and consumer protection);
- the application of appropriate communication and information technology.

To achieve this, a plan is formulated based on the mapping of FAO monitoring and early warning products. In addition, a stakeholder analysis is applied to identify key users and their information needs in order to facilitate decision-making.

STRATEGIC PARTNERSHIPS

At country and regional levels: critical partnerships include the Permanent Inter-State Committee for Drought Control in the Sahel, Southern African Development Community, IGAD, the Food Security Working Group in East Africa, and Regional Vulnerability Assessment Committees, as well as national early warning and food security information systems.

At global level: FAO works with its traditional partners, including the European Commission, United States Agency for International Development (USAID), World Meteorological Organization, USAID's Famine Early Warning System Network [FEWSNET]), United States Department of Agriculture (USDA), Joint Research Centre of the European Commission, WFP, the World Bank, Save the Children – United Kingdom, Oxfam and CARE.

Many of these are already established partners under the Integrated Food Security Phase Classification or the Global Early Warning System for Major Animal Diseases (GLEWS), which builds on combining alert mechanisms of FAO, OIE and WHO. FAO continues to engage on the "One Health" Agenda in the tripartite strategic partnership – together with OIE and WHO – for collaborative, cross-sectoral and multidisciplinary approaches to address threats of infectious diseases at the livestock/wildlife-human-ecosystem interface.

FAO also manages, with WHO, the International Food Safety Authorities Network (INFOSAN), which promotes the rapid exchange of information during food safety-related events and emergencies, shares information on important food safety related issues of global interest, promotes partnerships and collaboration between countries and between networks and helps countries strengthen their capacity to manage food safety emergencies.

With WFP, FAO has a joint strategy on information systems for FNS. It will aid harmonization of information products disseminated by the two agencies, and support the provision of more targeted and effective capacity development efforts of FAO's five-year Corporate Strategy on Information Systems for Food and Nutrition Security.

FAO also works closely with the International Food Policy Research Institute, United Nations Development Programme and the World Resources Institute. Other key bodies with which FAO seeks collaboration and alignment are the United Nations High-Level Task Force on the Global Food Security Crisis, which also promotes a unified response to global food insecurity, and the newly reformed Committee on World Food Security.

PILLAR 3

APPLY PREVENTION AND MITIGATION MEASURES

PROMOTION AND DIVERSIFICATION OF LIVELIHOODS WITH RISK REDUCING TECHNOLOGIES, APPROACHES AND PRACTICES ACROSS ALL AGRICULTURAL SECTORS.



PILLAR 3

APPLY PREVENTION AND MITIGATION MEASURES

The objective of Pillar 3 is to reduce the underlying risks to food and nutrition security through the application of good practices, processes and technologies for prevention, mitigation and livelihood diversification.

RATIONALE

To adequately protect agricultural livelihoods and hence FNS, it is critical to reduce the underlying drivers of the risks affecting farmers, pastoralists, fishers and foresters. The negative impact of natural hazards and other threats to FNS can be effectively reduced, mitigated or prevented through investment in sustainable models of food production and the application of appropriate agricultural technologies and practices, which raise yields and increase resilience against production failure. Examples include better management of crop species and varieties, the promotion of crop, livestock and fish varieties that are more resilient to stress (floods, droughts or saline conditions), plant breeding to develop new adaptive and productive varieties, development of efficient seed delivery systems, and resilient animal breeding, fodder conservation, or conservation agriculture.

Given the strong dependency and interconnectedness of natural resources, the environment, natural hazards and food security, it is necessary to apply an ecosystem approach and to address the underlying drivers of risk and vulnerability by integrating sustainable environmental and natural resource management practices into DRR efforts that seek to make livelihoods more resilient. This can be accomplished by supporting the effective management of land, water systems, forests, wetlands, soils and other resources, as illustrated in Diagram 9. Examples include the enhanced management and conservation of water to increase water use efficiency and productivity (rainwater harvesting, water storage and conservation techniques), agro-forestry systems that make use of trees and shrubs as shelterbelts, windbreaks and live fences, and the restoration of degraded grasslands through grazing management and re-vegetation, and by supplementing poor quality forages with fodder trees, as in agro-silvo-pastoral systems.

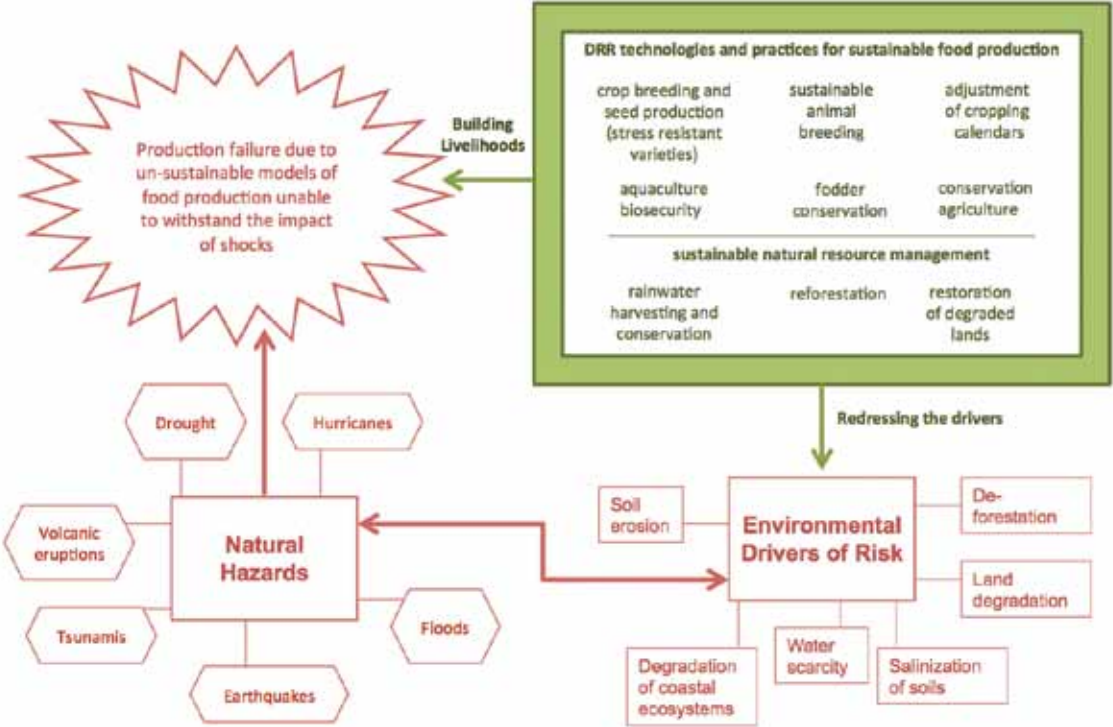
Healthy and diverse ecosystems are more resilient to hazards. Forests safeguard against drought and protect against landslides, erosion, floods and avalanches. Wetlands serve to store water, provide storm protection, flood mitigation, shoreline stabilization and erosion control. Barrier reefs, barrier islands and mangroves help to mitigate hurricane risk, storms and tidal surges. Land zoning and land-use management, including regional and territorial planning, need to consider the spatial parameters of physical vulnerability based on hazard and risk mapping. Improved land access and secure tenure enable food production and provide an incentive for landholders to invest in improving their land with soil protection measures, tree planting, improved pastures, construction of irrigation systems or sustainable crop production. The use of modern and efficient energy services can improve food production and reduce dependence on wood fuel, thereby reducing pressure on land and forest resources.

FAO has the expertise, technologies and good practices to help protect and build the resilience of agricultural livelihoods across the fisheries/aquaculture, livestock, forestry and agriculture sectors. In some cases, however, established technologies and successful experiences are not well documented, or information about them is dispersed. There is limited awareness of some technologies that have proven to be effective, which limits their potential adoption and replication. Some technologies and practices may be better known in a particular sub-region and unknown elsewhere; these can be successfully transferred to other regions.

Pillar 3 enables the further transfer and scaling-up of proven technologies to ensure that these can benefit more member countries and, in particular, smallholders. It does so in line with the following three approaches:

- Focus on a specific territory or geographic area at the sub-national level that is prone to natural hazards and/or other threats to food and nutrition security, such as watersheds or agro-ecological zones.
- Integrated and inter-disciplinary interventions that combine technologies and practices in agriculture, livestock, fisheries/aquaculture, forestry and natural resource management for a coherent approach to building resilience across the livelihoods of smallholders.
- An ecosystem perspective to ensure the integrated management of land, water and other key resources that promotes conservation and sustainable use in an equitable way.

Diagram 9: Building livelihoods: linking natural hazards, environmental drivers of risks and DRR technologies and practices for sustainable food production



OPTIONS FOR NATIONAL AND REGIONAL CAPACITY DEVELOPMENT

The application of appropriate technologies or practices are always location and context-specific, depending on the threats to FNS of a particular country or geographic location, the types of crops produced and the local agricultural practices, among other factors. Below are some examples of the technologies and practices promoted by FAO.

- **Agro-forestry** is an integrated approach combining trees and shrubs with crops and/or livestock. Trees in the farming system or in urban/peri-urban environments can help to increase incomes and to diversify production, thus spreading risk against agricultural production or market failures. Trees and shrubs can be used as shelterbelts, windbreaks and live fences and thereby diminish the effects of extreme weather events, such as heavy rains and wind storms. They also stabilize soils, prevent erosion, and halt land degradation.
- **Agro-silvo-pastoral systems** is the deliberate combination of tree, pasture and livestock production to take advantage of the synergy between them with beneficial effects for the environment, economy, and farmers. It seeks to improve productivity in the short, medium and long term, based on a biodiverse ecological system that produces multiple products in a sustainable use of land.

- **Aquasilviculture** integrates aquaculture and mangrove forestry. It is more resilient to shocks and extreme events, leading to increased production owing to improved ecosystem services.
- **Conservation Agriculture** is a farming practice which combines three key elements: (i) minimal mechanical soil disturbance (no tillage and direct seeding); (ii) use of mulch composed of carbon-rich organic matter to cover and nourish the soil (e.g. straw, leaves, stems and stalks); and (iii) rotations or sequences and associations of crops, including trees. The protective soil cover shields the soil surface from heat, wind and rain, keeps the soil cooler and reduces moisture losses by evaporation. In drier conditions, it reduces crop water requirements, and makes better use of soil water. Conservation agriculture facilitates rain water infiltration, reducing soil erosion and the risk of downstream flooding. Crop rotation over several seasons also minimizes outbreaks of pests and diseases.
- **Integrated fire management** is a holistic approach that addresses the management of fire on all vegetation, integrating measures for prevention, preparedness, suppression and restoration.
- **Integrated pest management** is an approach to crop protection that integrates measures to discourage the development of pest populations. Integrated pest management encourages natural pest control mechanisms while ensuring minimum risks to human health, the environment and agro-ecosystems. It promotes both sustainable intensification of crop production and pesticide risk reduction.
- **Secure land tenure and administration** approaches are an essential basis to manage land tenure issues that may arise following natural disasters. They need
- to be considered to promote DRR for FNS.
- **Strengthening seed systems.** Seed systems are the various channels through which farmers access the seed they need to carry out production activities. Resilience of seed systems to shocks can be increased by securing farmers' access to high quality seed varieties and to crops that are more resistant to shocks such as floods or droughts. This requires strengthening the capacities of research for plant breeding and the introduction of new varieties, and building the capacities of extension services to facilitate the transfer of new varieties to farmers. These transfers are accomplished through field-based learning methodologies and strengthening informal and formal seed multiplication systems.
- **Sustainable water management** addresses water use efficiency and productivity, and promotes best practices for water use and conservation, including expansion of rainwater harvesting, water storage techniques, water reuse and irrigation efficiency.
- **Urban multifunctional landscape management** integrates agriculture, home gardening, trees and forests to make urban populations more resilient by diversifying urban food sources and income opportunities, and by maintaining open green spaces, enhancing vegetation cover and water infiltration, and contributing to sustainable water and natural resource management.

In addition to these examples, there are a number of other technologies and practices that FAO can support with and which may be considered options for capacity development for member countries. These are listed in the Diagram 10.

Diagram 10: Examples of technologies, practices and approaches for building resilient livelihoods

Agriculture	Livestock	Fisheries
<ul style="list-style-type: none"> • Crop diversification • Appropriate crop selection (drought/saline/flood tolerant) • Intercropping • Crop breeding • Conservation agriculture • Adjustment of cropping calendars • Seed systems • Terracing • Post-harvest management (storage, food drying, food processing) • Livelihoods diversification • Crop insurance • Integrated pest management • Urban gardening 	<ul style="list-style-type: none"> • Proofing of storage facilities • Livestock shelters • Strategic animal fodder reserves • Fodder conservation • Resilient animal breeding • Vaccination to reduce or prevent the spread of animal disease • Grazing and pasture resource management • Strengthening pest management systems to cope with threats • Biosecurity in animal production systems • Agro-silvopastoral systems 	<ul style="list-style-type: none"> • Implementation of the Code of Conduct for responsible fisheries. • Fisheries, aquaculture, vessel and infrastructure insurance • Safety in the design, construction and equipment for fishing vessels • Aquaculture biosecurity measures to reduce or prevent the spread of fish disease
Natural Resource Management		
Water	Land	Forests
<ul style="list-style-type: none"> • Rainwater harvesting, conservation and storage to improve capture and utilization of rainfall • Water reserves to buffer droughts • Efficient irrigation such as drip and furrow irrigation that use less water and reduce water loss • Management of fragile catchment areas • Capture of floods or recharge of groundwater for use in dry season 	<ul style="list-style-type: none"> • Restoration of degraded lands. • Land use and territorial planning • Sustainable wetland management • Land and soil management • Field or network drainage to minimize flood impact • Appropriate energy sources and technologies to reduce pressure on land. • Secure natural resources tenure rights 	<ul style="list-style-type: none"> • Integrated Fire Management • Forest pests prevention • Agro-forestry • Afforestation/reforestation • Preventive silviculture • Prescribed burning • Fire breaks • Improved cook stoves and alternatives to wood energy to reduce deforestation

GLOBAL PUBLIC GOODS AND SERVICES

In order to support the effective delivery of Pillar 3 and the capacity development of member countries, FAO is further developing the following key global goods and services:

1) Research and innovation: promote research and innovation on farm technologies and practices that reduce risks, build ecosystem resilience and directly benefit food and nutrition security.

2) Compendium of technologies, practices and approaches: develop, publish and disseminate a compendium of good practices in the application of technologies and approaches that contribute to reducing risks for building resilience, and hence improve FNS.

3) Manual and training package: provide training support on key technologies and practices that have a solid track record for reducing risks and building livelihood resilience, and support the further scaling-up and replication of training to benefit more member countries.

4) Guide on integrated technologies: develop method and guidance for integrated and inter-disciplinary approaches that combine complementary technologies and practices into coherent programmatic packages. For example:

- conservation agriculture, integrated pest management and agro-forestry;
- watershed management, forest protection and forest utilization;
- the “value-chain” system: combining conservation agriculture, seed systems, agro industries and rural infrastructure;
- save and grow: sustainable crop production intensification of small holders to increase agricultural productivity while conserving resources, enhancing natural capital and the flow of ecosystem services.

5) Databases on good practices: update and enhance existing databases relating to DRR – such as the database on technologies and practices for small agricultural producers or the World Overview of Conservation Approaches and Technologies – including the following:

- Technology for Agriculture;
- Conservation Agriculture Technology;
- Water and Soil Conservation Approaches and Technologies, etc.

STRATEGIC PARTNERSHIPS

Partnerships under this pillar are numerous and diverse given the number of technologies across each sector, and depend largely on the national and regional context. Below are some examples.

National: line ministries, technical governmental bodies, universities, research institutes, extension services, local authorities, NGOs, cooperatives, civil society and community-based organizations.

International Organizations: USAID, IFAD, WFP, CARE, World Bank, United Nations Children’s Fund, United Nations Human Settlements Programme, World Vision, Oxfam, Save the Children – United Kingdom, International Federation of Red Cross and Red Crescent Societies, Consultative Group on International Agricultural Research Centers, and other NGOs working on agricultural related sectors. Also important are the United Nations Environment Programme and the United Nations Development Programme on natural resource management.





PILLAR 4

PREPARE TO RESPOND

PREPAREDNESS FOR EFFECTIVE RESPONSE AND RECOVERY ACROSS ALL AGRICULTURAL SECTORS



PILLAR 4

PREPARE TO RESPOND

The objective of Pillar 4 is to strengthen capacities at all levels – in preparedness – to improve response to, and recovery from, future threats to food and nutrition security, and to reduce their potential negative impact on livelihoods.

RATIONALE

Preparedness for response and recovery, including to respond faster and better, is a critical part of FAO's Strategic Objective "Increase the resilience of livelihoods to threats and crises". Preparedness is an intrinsic yet distinct theme in DRR, required for both humanitarian and development actors.

FAO supports member countries with different preparedness measures, including assisting countries to develop food safety contingency and response plans, and supporting preparedness planning and simulation exercises for highly pathogenic avian influenza and response to food safety emergencies. At the international level, FAO participates in inter-agency preparedness planning efforts such as animal health and biosecurity pandemic planning through the Towards a Safer World initiative. At the same time, FAO has been investing to strengthen its internal capacity to prepare and respond effectively to emergencies worldwide, for example through its Crisis Management Centre – Animal Health, a rapid response platform for transboundary animal disease emergencies.

Yet, at the same time the FAO Programme and Finance Committees view preparedness as an area of work with potential for growth. In particular they made the following observations and recommendations²⁷:

- Emergency operations are more predictable than is often assumed. Almost all of the larger emergency operations also continue for periods of more than three years and may extend for a decade or more. There is thus an opportunity for major improvements in all aspects of planning.
- Introduce preparedness planning for predictable and recurrent emergencies.
- Improve forward identification and management of the necessary human resources for emergencies, such as establishing a core of emergency personnel, and basing staffing requirements on a level of safely predictable business for the foreseeable future (e.g. 25 percent below the current business level).

²⁷ The Evaluation of FAO's Operational Capacity in Emergencies, Programme and Finance Committees (2010).

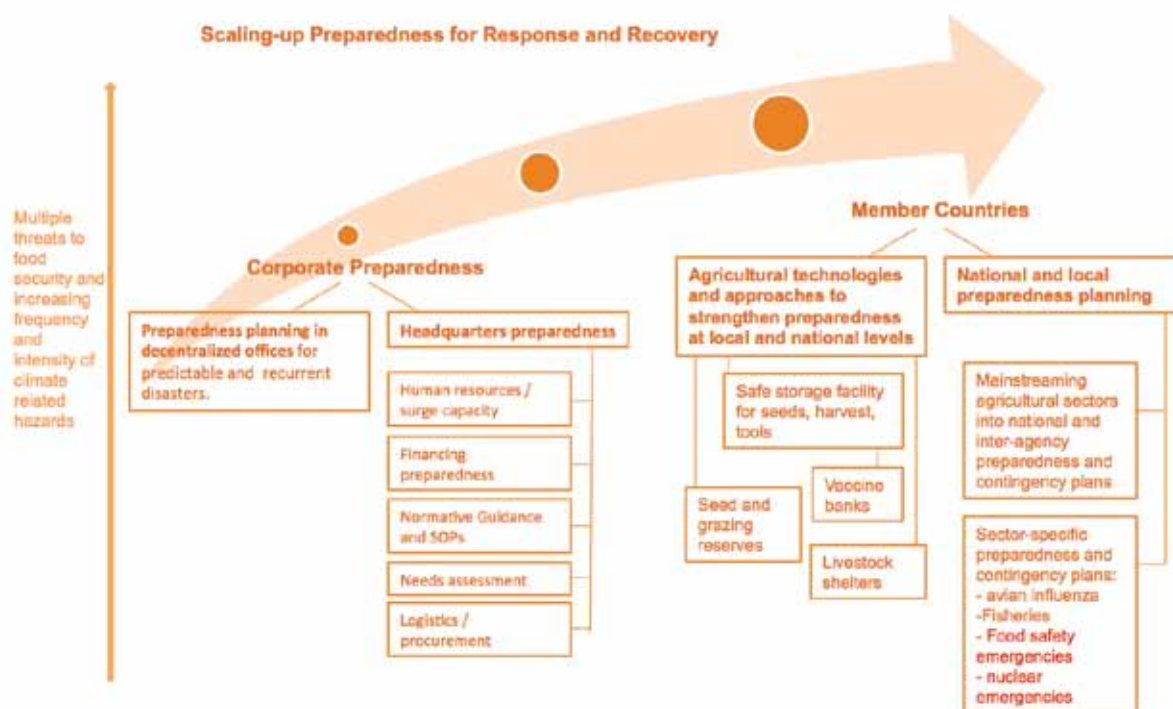
- Procurement preparedness and meeting delivery deadlines are probably the greatest single areas for improvement.
- Funding for planning and preparatory work at country level is a major constraint and needs to markedly increase the availability and use of funds under the Special Fund for Emergency and Rehabilitation Activities (SFERA) component for preparatory work at country level.

Finally, two important internal evaluations conducted by FAO²⁸ reported the following recommendations:

- Stockpiling standard equipment for rapid office set up when a disaster strikes (office-in-a-box).
- Developing an FAO Strategy and Priority Actions for Preparedness.
- Stand-by partnership agreements should be explored with NGOs, with the United Nations Joint Logistics Centre to help develop FAO's logistical capacity, and with WFP to subcontract some logistical functions (storage, transport).

Pillar 4 supports the above recommendations and proposes a specific strategy for their implementing.

Diagram 11: Scaling-up Preparedness for Response and Recovery



28 Real-time Evaluation of the FAO Emergency and Rehabilitation Operations in Response to the Indian Ocean Earthquake and Tsunami. 2007; and The Thematic Evaluation of Strategy A.3: Preparedness for, and effective and sustainable response to, Food and Agricultural Emergencies (Report prepared by the Evaluation Service), 2002.

OPTIONS FOR NATIONAL AND REGIONAL CAPACITY DEVELOPMENT

Hazard-prone countries need to be prepared at any time to respond to emerging threats or crises. Quick and effective response requires technical leadership, advocacy and coordination among key stakeholders, as well as operational capacities and technical know-how on disaster risk reduction and management, including for food and agriculture. FAO assists countries in preparing to mobilize resources and to lead, coordinate and implement humanitarian interventions for the agricultural sectors in affected countries, ensuring accountability to beneficiaries.

Below are two key areas for technical assistance and capacity development of member countries with examples of preparedness measures:

1) Agricultural practices to strengthen preparedness at national/local level

- seed and grazing fodder reserves;
- safe storage facility for seeds, harvests and tools;
- livestock shelters;
- protection of food processing facilities;
- vaccine banks to ensure the rapid supply of emergency stock of vaccines;
- stockpiling agricultural tools;
- emergency/contingency funds;
- other.

2) National and local preparedness planning

- support local and national preparedness/contingency plans for agriculture, fisheries/aquaculture, forestry and livestock;
- support national food safety emergency response planning, development or improvement of food recall systems;
- support simulation exercises (both real-time and table-top) to strengthen in-country capacities;
- integrate agriculture and food security into local and national preparedness/contingency plans;
- inclusion of agricultural sectors in inter-agency preparedness/contingency plans;
- provide guidance on viable operational and financial components of national contingency plans;
- support multi-hazard risk analysis and its integration into preparedness planning and development programming;
- support crisis or sector-specific preparedness planning for identified high-threat diseases (avian Influenza, aquatic animal disease, etc.);
- support rapid risk assessment, management and communication preparedness for agriculture and food safety emergencies.

GLOBAL PUBLIC GOODS AND SERVICES

FAO works to develop the following key global goods and services:

- 1) Systematize good practices in preparedness within the agriculture, livestock, fisheries and forestry sectors, both within FAO and with its partners, to enhance the knowledge base and support knowledge sharing.
- 2) Explore the potential benefit of establishing voluntary guidelines and/or other standard setting products in preparedness for the agriculture-based sector, working in close coordination with partners such as the Global Food Security Cluster.

SCALING-UP CORPORATE PREPAREDNESS

To ensure the effective delivery of Pillar 4, FAO is strengthening its corporate preparedness capacity. This enables FAO to more effectively support member countries. A number of these initiatives are already under way.

1) Decentralized offices preparedness planning

FAO introduces preparedness planning as standard practice at country level in order to strengthen the capacity of FAO's decentralized offices to prepare for, and respond to, recurrent and priority emergencies and threats. Preparedness plans address:

- crisis scenario, response requirements and assessment methodologies;
- surge capacity such as standby agreements and a roster of experts;
- management arrangements;
- coordination and partnerships;
- logistics;
- information and communications technology (pre-positioning);
- procurement preparedness (forward tendering, market research, local suppliers);
- programming and financing, such as the pre-development of FAO Technical Cooperation Programmes, SFERA, etc.;
- procedures, such as focal points, contact lists, etc.; and
- communication.

2) Headquarters preparedness planning

FAO is further strengthening its capacity to prepare for future disasters, particularly in light of the expected increase in the frequency and intensity of climate-related hazards. This includes developing preparedness plans at global level in headquarters for emergencies and threats with a wide reaching impact on FNS across several countries or regions. Some of the core areas that will be further strengthened include:

Human resources and training: strengthen the human resource capacity to support crisis response, through improved standby agreements for emergency personnel, a cross-departmental roster and staff capacity development training on preparedness.

Financial resources: allocate funds from SFERA and other partners to support preparedness planning at country level.

Normative guidance: develop and/or strengthen guidance to set corporate standards on preparedness and response, including standard operating procedures to improve communication and operational efficiency in preparedness, response and recovery, Guidelines on Preparedness Planning for FAO staff, and sectoral technical guidelines for preparedness and response.

Logistics preparedness: assess the potential benefit to pre-position standard equipment that has a long shelf-life and is routinely needed (cost recovery basis). This may include office equipment to set-up FAO Emergency and Rehabilitation Coordination Units, vehicles, information and communications technology equipment, and inputs. Pre-positioning can be considered within any of the United Nations Humanitarian Response Depots.

Procurement preparedness: develop plan with relevant divisions and in line with the Root and Branch Review proposals. Planning may consider virtual stocks, forward tendering, market research, expanding suppliers, developing database of pre-selected vendors, updating standard operating procedures and reviewing letters of agreement.

Needs assessment: develop an integrated assessment framework (agriculture, fisheries, livestock and forestry) and establish a mechanism to strengthen post-disaster assessments.

Operations centre: assess the potential cost-benefits of establishing an operations centre at FAO headquarters to support disaster response, particularly for rapid onset emergencies and large-scale disasters. This may include exploring successful models, such the FAO Crisis Management Centre – Animal Health and those of other agencies.

STRATEGIC PARTNERSHIPS

National and regional: line ministries and their local chapters, Civil Protection, National Red Cross, United Nations Country Team/Humanitarian Country Team or other inter-agency mechanisms, NGOs, civil society, cooperatives and communities.

Global: standby partners' operating rosters (i.e. Norwegian Refugee Council, Canada's Civilian Reserve, Information Management and Mine Action Programmes, Danish Refugee Council, USDA, etc.) and the Office of Foreign Disaster Assistance of USAID to support the development of standard operating procedures. Other potential partnerships include United Nations Humanitarian Response Depots for pre-positioning equipment, WFP on logistics, warehousing, and preparedness planning, and the Global Food Security Cluster.



DRR AND CLIMATE CHANGE ADAPTATION



Disaster risks and climate change threaten FNS. Actions on both fronts are needed to protect and build the resilience of livelihoods. As indicated in Diagram 12, both DRR and climate change adaptation are concerned with the increase in the number and scale of extreme climate-related hazards, and the changing patterns of risk and vulnerability expected from climate change. As the world is expected to experience climate-related hazards on an unprecedented scale, it is necessary to scale-up and accelerate efforts in both DRR and climate change adaptation, with the shared policy objective of supporting sustainable development and the achievement of Millennium Development Goal 1.

It is widely accepted that DRR directly contributes to climate change adaptation. The 2005 Hyogo Framework for Action specifically identifies the need to “*promote the integration of risk reduction associated with existing climate variability and future climate change...*”. Parties to the United Nations Framework Convention on Climate Change also stressed DRR to advance adaptation in the December 2007 Bali Action Plan, which calls for enhanced action on risk management and risk reduction²⁹. The Cancun Adaptation Framework³⁰ promotes enhanced action on “climate change related DRR strategies, taking into consideration the Hyogo Framework for Action...” Financing mechanisms for climate change adaptation also reflect this integration, including the Global Environment Facility and the Special Climate Change Fund established under the United Nations Framework Convention on Climate Change, which support preparedness, prevention, early warning and other DRR-related initiatives relating to extreme weather events.

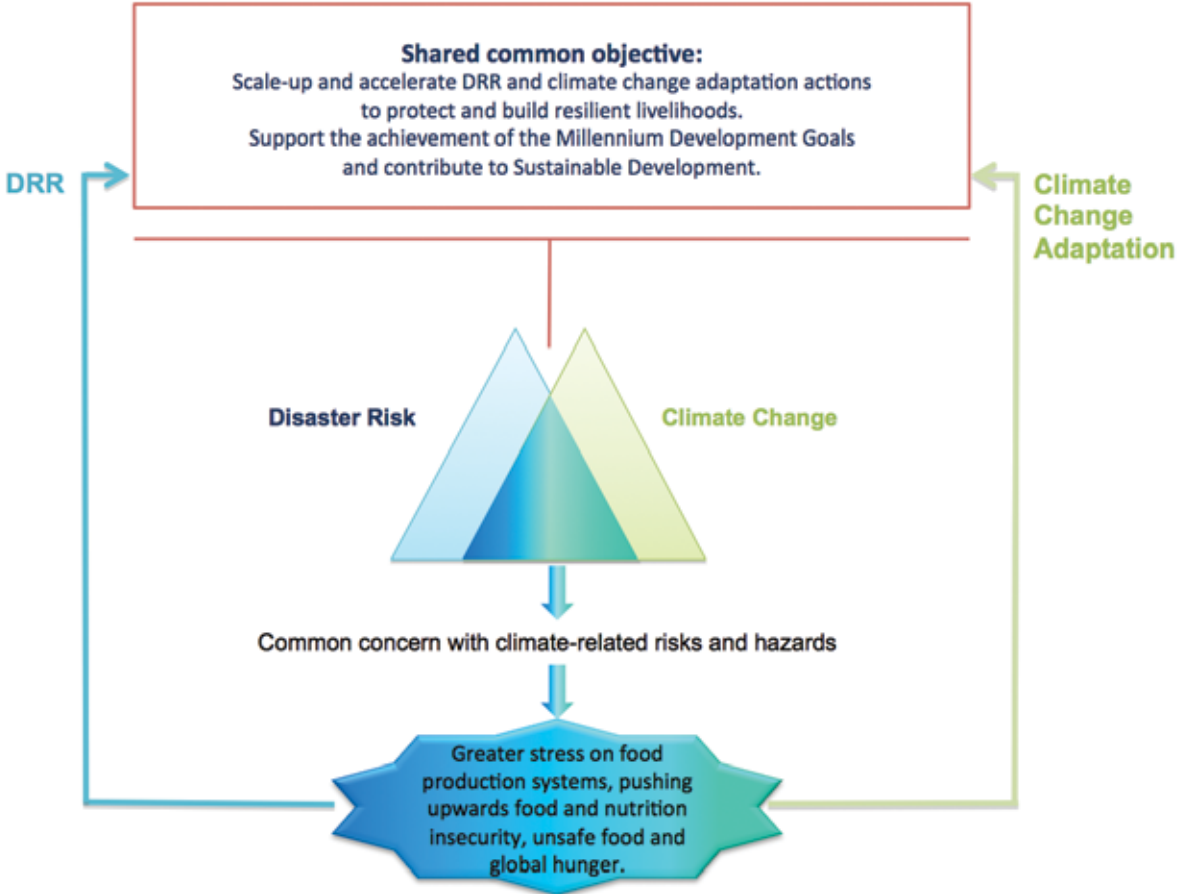


29 Strengthening Climate Change Adaptation through Effective Disaster Risk Reduction: Briefing Note 03. UNISDR.

30 Framework Convention on Climate Change. United Nations Framework Convention on Climate Change. March 2011.

Decades of DRR experience and research, and the methods and tools developed and practiced, can be used to guide adaptation planning and to help countries better manage the expected change in the frequency and intensity of severe weather patterns. As noted by the United Nations Secretary General, “better DRR will help the world adapt to climate change”; therefore, DRR should be applied “as a first line of defense in adapting to climate change.”³¹ The aim should be to “capitalize on the common concerns of adaptation and DRR, both in policies and practical action, and to seek the triple win of lower disaster risks, adaptation to climate change, and sustainable development outcomes.”³²

Diagram 12: DRR and Climate Change Adaptation



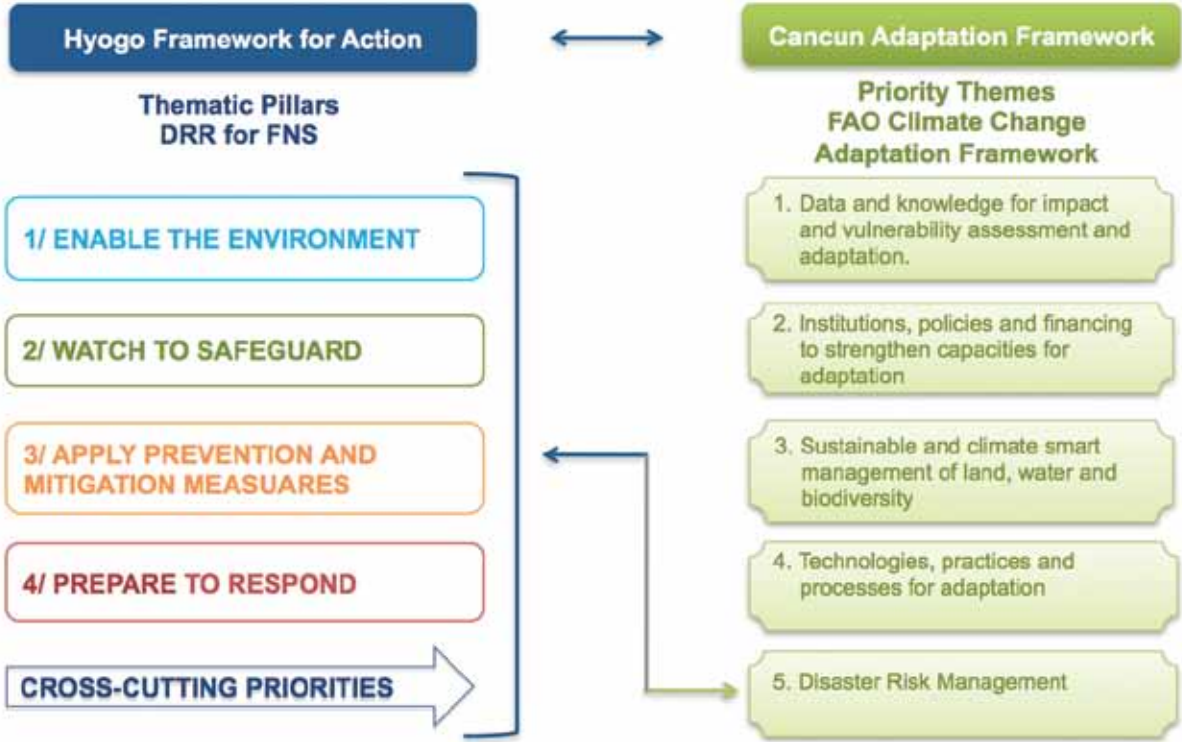
31 Speech by Secretary-General BAN Ki-moon on Risk Reduction and Climate Change, United Nations Headquarters, 29 September 2008.
 32 Adaptation to Climate Change by Reducing Disaster Risks: Country Practices and Lessons Briefing Note 02. UNISDR.

A number of mutually reinforcing synergies and benefits have been identified by UNISDR and United Nations Framework Convention on Climate Change to address the increased frequency and intensity of weather-related events. These include the following complementary actions in DRR and climate change adaptation:

- build on DRR practices, technologies and tools for longer-term adaptation;
- adopt a multi-hazard approach to improve effectiveness rather than addressing hazards separately;
- engage the diverse technical expertise and political interests concerned with adaptation and disaster risk;
- make use of existing DRR institutional structures and enabling environments in favour of climate change adaptation;
- ensure DRR policies and programmes operate in synergy with climate change adaptation strategies at local and national levels;
- support national coordination mechanisms linking DRR and adaptation;
- support national baseline assessment on the status of DRR and adaptation efforts;
- prepare adaptation plans drawing on the Hyogo Framework for Action and its five priorities for action;
- integrate DRR and climate change adaptation into national development plans, poverty reduction strategies and post disaster recovery, as well as in-country assistance strategies and United Nations Development Assistance Frameworks;
- integrate DRR and climate change adaptation within development budgets, and across different sectors of development;
- design interventions that address both DRR and climate change adaptation. Adaptation programmes can be developed on the basis of existing DRR efforts, while DRR can be expanded through the increased capacity and resources becoming available for climate change adaptation.

Recognizing the need to build on DRR and understanding the links with climate change adaptation, The FAO Framework Programme on Climate Change Adaptation makes DRR/M one of its five priority themes, as illustrated in Diagram 13.

Diagram 13: Synergies between FAO DRR for FNS and FAO Climate Change Adaptation Framework Programmes

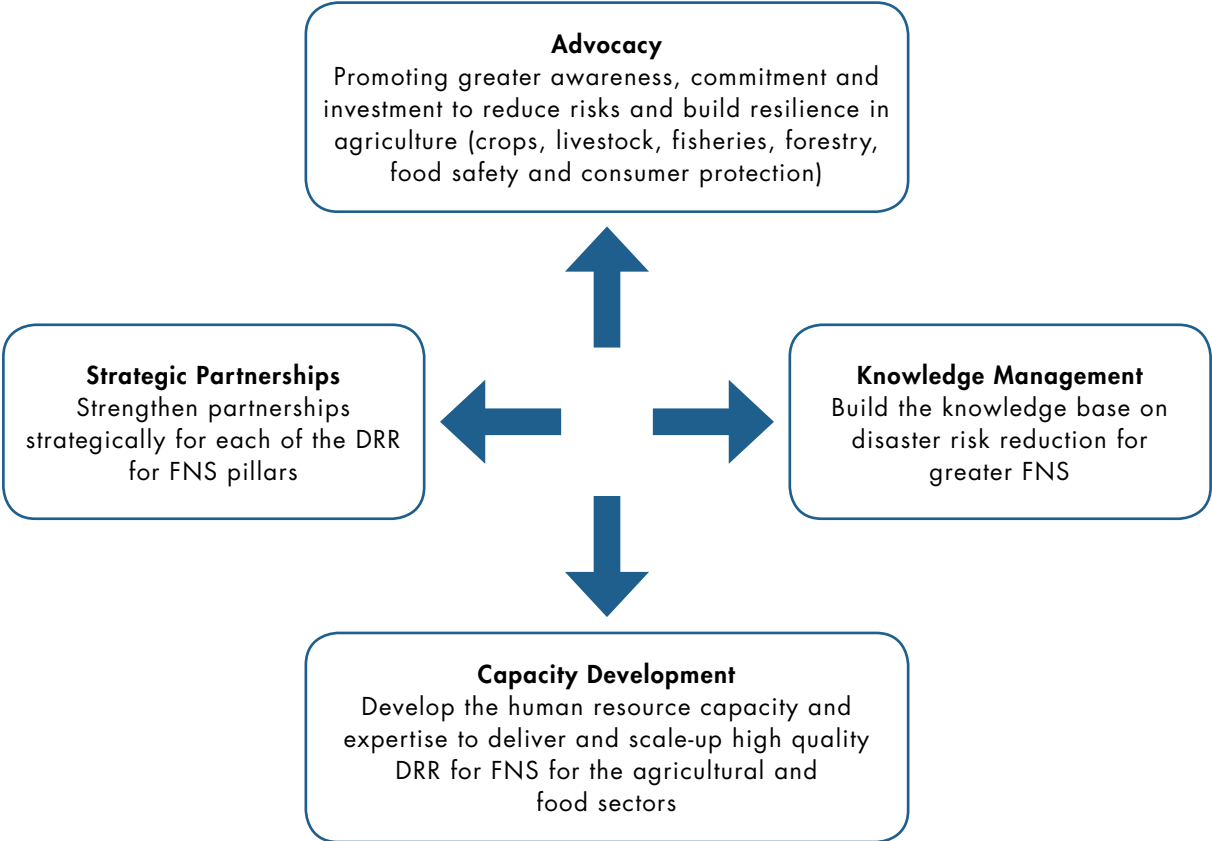


HARNESSING GLOBAL ACTION



The capacity development and scaling-up of DRR actions at regional, national and sub-national levels through DRR for FNS strategic actions requires support from the global agenda in favour of resilient livelihoods and FNS. Through the DRR for FNS Framework Programme, FAO works to harness global support in four strategic areas: (i) advocacy; (ii) knowledge management; (iii) capacity development; and (iv) strategic partnerships, as illustrated in Diagram 14.

Diagram 14: Strategic areas for harnessing global action



STRATEGIC PARTNERSHIPS

The FAO DRR for FNS Framework Programme outlines specific strategic partnerships under each of the four thematic pillars. In some cases, the aim is to support existing partnerships, such as the Integrated Food Security Phase Classification under Pillar 2, while in other cases, the aim is to strengthen current partnerships, such as with UNISDR. Overall, given the broad scope of DRR for FNS, the four thematic pillars and its inter-disciplinary approach, FAO works in partnership with a host of key organizations and bodies at local, national, regional and global levels. This includes United Nations agencies, international financial institutions, donors, NGOs, regional inter-governmental bodies and economic communities, sector-specific regional and global networks, government ministries, academic institutions and extension services, local authorities, civil society organizations, private sector and communities. Specific partnerships are detailed under each pillar.

ADVOCACY

While there is considerable awareness, knowledge, studies and documented practice, and normative standards on DRR in general, particularly since the development of the Hyogo Framework for Action in 2005, this capacity is still largely undeveloped for the agriculture livelihoods sector. There is a critical need to fill this gap by building the knowledgebase and fostering greater commitment and investment in DRR for FNS. FAO seeks to fill this gap by making use of its mandate and comparative advantages in this sector.

Under the DRR for FNS Framework Programme, FAO enhances advocacy efforts to increase visibility and attract more attention to FNS and the global dialogue on DRR. Similarly, it promotes greater commitment and financial investment in favour of member countries and smallholders in this area.

FAO also promotes the development of normative guidance specific to FNS within the global agenda for DRR, namely:

1) Global standards: promote the development of common global standards on DRR for FNS, such as voluntary guidelines or a code of conduct, in close collaboration with strategic partners such as UNISDR.

2) Policy on DRR: develop a corporate FAO policy on DRR as normative guidance and establish minimum corporate standards for implementing and mainstreaming DRR for FNS.

3) Pillar-specific normative guidance: support the development of normative guidance identified under each of the DRR for FNS pillars.

KNOWLEDGE MANAGEMENT AND COMMUNICATION

FAO is a knowledge organization. Knowledge management is a core function embedded in FAO's Strategic Framework. It is also a cross-cutting priority of DRR for FNS, reflecting FAO's corporate priorities and the critical role it plays in DRR for FNS. While there is considerable knowledge and knowledge-sharing on DRR in general, its direct relation to FNS is less developed.

The knowledge management and communication component of DRR for FNS seeks to substantially increase awareness, knowledge, understanding and visibility of the importance of DRR in the fight against hunger. Advocacy is also strategically important. The DRR for FNS Framework Programme seeks to harness greater commitment on the part of the international community, and to increase financial resources in favour of member countries and vulnerable smallholder farmers. This component embraces

all FNS sectors (agriculture, livestock, fisheries/aquaculture, forestry and natural resource management) and delivers products as part of a joint cross-departmental collaboration. In addition, FAO will establish strategic partnerships with key partners that share complementary mandates and interests, such as UNISDR, World Bank, United Nations Development Programme, IFAD and WFP. FAO focuses on the following key knowledge management products and services:

1) Disasters and Global Hunger: the Impact of Multiple Shocks on FNS. In spite of the negative impact of natural hazards and other crises on FNS and the interplay between shocks and hunger, the global knowledgebase is still very limited. Some studies and data exist, for example, on the impact of hazards on agriculture, yet the aggregate global data is not systematically consolidated. Also, while agriculture receives considerably more study and analysis, the same is not true in terms of the impact of disasters on the livestock, fisheries/aquaculture and forestry sectors, all of which are also critical to food security. Furthermore, there are separate statistics and information on other threats, such as economic crises, but no integrated analysis of the multiple threats and their cumulative impact on food and nutrition security. This FAO initiative aims to fill the knowledge gap, contribute to a better understanding, give greater visibility, and serve as an advocacy tool. An important step toward more concerted and coordinated global action on DRR for FNS must be a clear understanding of the depth and extent of the multiple threats.

2) Web Platform on DRR for Food and Nutrition Security. FAO has considerable technical expertise on good governance and institutional strengthening, food security information and early warning systems, and on technologies and farming practices that effectively reduce disaster risks and promote sustainable food security. FAO has examples of good practices, normative and guidance material, publications, and many more resources. These resources, however, are dispersed, limiting knowledge sharing both internally and externally. In order to promote widespread access to these materials, this Web platform seeks to collect these good practices and share knowledge with member countries and the greater international community.

3) Compendium of Good Practices in DRR for Resilient Livelihoods. Document the good practices implemented through DRR for FNS national and regional programmes across the four pillars.

4) Knowledge Sharing Events: Organize regional and global knowledge sharing events on DRR good practices for FNS, including on technologies and approaches that contribute to building resilience, across the agriculture, livestock, fisheries/aquaculture, forestry and resource management sectors. Events may include knowledge fairs, south-south exchanges and field visits. Global Knowledge Fairs could be part of a showcase in future global conferences on DRR organized by UNISDR.

CAPACITY DEVELOPMENT

FAO is working to strengthen capacities of various stakeholders for scaling-up DRR for FNS actions across all regions in terms of technical leadership, advocacy, implementation and coordination support for risks and crises affecting the food and agriculture systems. Hence, capacity development will contribute to accountable and robust engagements in disaster risk reduction and management and linking to post-crisis rehabilitation, transition and longer-term development. It focuses on the following three outcomes:

- 1)** Deliver DRR capacity training for FAO decentralized offices and a group of core experts who will play a key role in DRR for FNS and support the effective implementation of DRR for FNS national and regional programmes. Training addresses the four pillars and their synergies and cover all relevant sectors.
- 2)** Roll-out capacity development training on DRR for FNS to relevant stakeholders in countries, decentralized FAO offices, FAO Emergency and Rehabilitation Coordination Units and headquarters, including the development of a training curriculum on DRR for FNS.
- 3)** Establish a team of DRR specialists to support and provide enhanced technical backstopping for the effective implementation of DRR for FNS national and regional programmes.

IMPLEMENTATION ARRANGEMENTS



COUNTRIES AND REGIONS

DRR for FNS programmes are implemented in countries and regions that express an interest in and need for DRR for FNS, particularly from member countries, FAO decentralized offices and FAO Emergency and Rehabilitation Coordination Units. They receive enhanced DRR for FNS programme formulation and implementation support. Countries include hunger hotspots and natural disaster hotspots as well as countries and regions most vulnerable to climate change.

In these countries and regions, the aim is to develop essential capacities in DRR for FNS, applying the core principles and approaches of the Framework Programme. FAO, with the support of the donor community, partners and its technical expertise, provides the necessary financial and technical support to develop successful models that can be replicated in other countries and regions on a wider scale.

DRR FOR FNS PROGRAMMING AT COUNTRY AND REGIONAL LEVEL

Context and Location Specific DRR for FNS Programming

The primary goal of the DRR for FNS Framework Programme is capacity development of member countries. Guided by the Rome Principles, it supports the implementation of country-owned plans, and national ownership with the support of FAO decentralized offices and FAO emergency and rehabilitation teams. Specific investments vary by country and depends on the key priorities articulated by member countries. Planning is informed by the national and local context and tailored to each specific country's needs, capacities and gaps. Programming at country level should take into account the following considerations:

- priority threats to FNS in the country;
- geographic areas most prone to recurrent natural hazards and threats, both rural and urban;
- national priorities;
- local conditions and needs;
- existing local and national capacities;
- national strategies / plans for DRR and management of risks;
- national strategy / plans for agriculture and rural development;
- FAO Country Programme Framework;
- The United Nations Development Assistance Framework;
- national platform on DRR/M;
- national adaptation programmes of action;
- capacities and programmes of international partners (donors, United Nations agencies, NGOs);

National Programme Formulation and Implementation

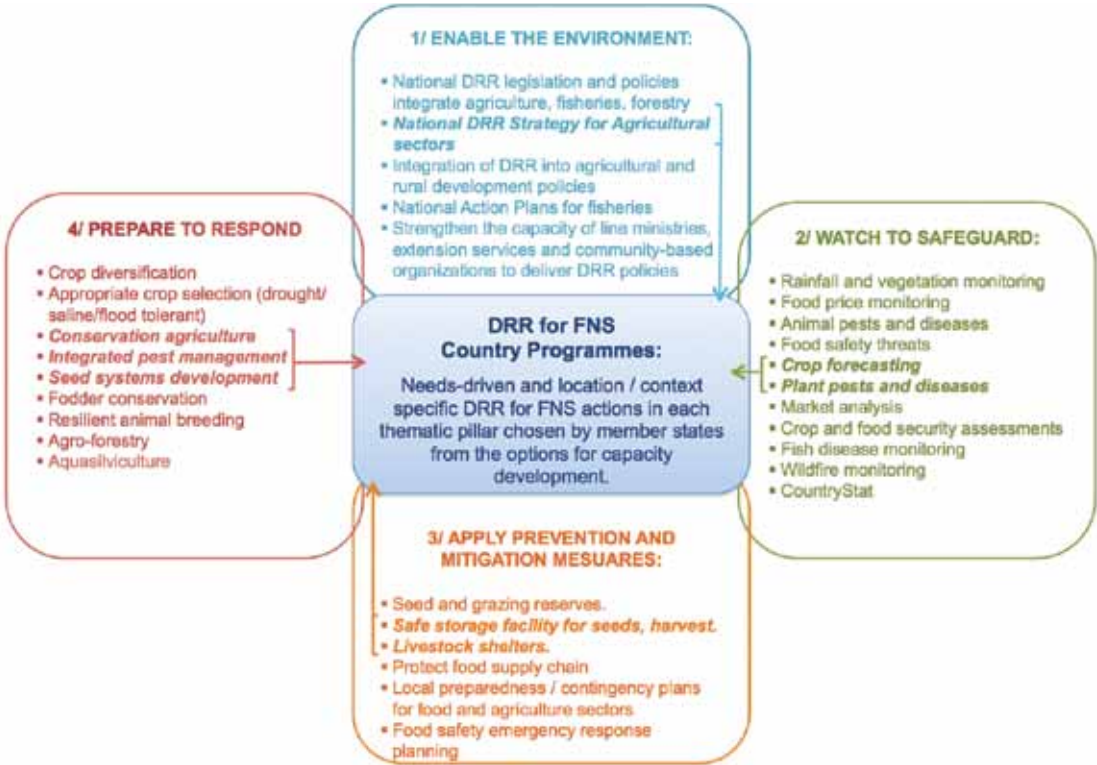
The design and formulation of country DRR for FNS programmes is based on a national DRR institutional and technical assessment. The assessment consults with national and local authorities, civil society and international partners, and to evaluate the needs, capacities, gaps and other criteria mentioned above. The assessment informs and leads to the formulation of demand responsive DRR for FNS country programmes, which is used as a basis for resource mobilization.

The inter-disciplinary assessment team assesses, designs and plans the DRR for FNS country programmes along the four thematic pillars across the agricultural sub-sectors. The team is composed of government authorities from relevant line ministries, civil society organizations, as well as FAO experts.

As noted, the specific interventions that form national DRR for FNS programmes is informed by the capacities, gaps and priorities of member countries, and draws from the options for capacity development under each pillar, as illustrated in Diagram 15.

FAO decentralized offices and FAO emergency and rehabilitation teams provide coordination and operational support to countries implementing DRR for FNS programmes. Additional technical support is provided at country and regional levels in technical areas required to effectively implement the DRR for FNS and support member countries. Such technical support depends on the specific content and needs of the country DRR for FNS programmes.

Diagram 15: Capacity development options under each of the four DRR for FNS pillars



IMPLEMENTATION SUPPORT

The DRR for FNS Framework Programme is implemented through FAO's existing structures at national, regional and global levels. Outputs and actions are delivered through the FAO Strategic Framework, managed by FAO units in headquarters and decentralized offices. Decentralized offices and FAO emergency and rehabilitation teams provide coordination and operational support.

In order to ensure the necessary delivery capacity, FAO will add specialists in DRR for FNS to provide technical backstopping to countries, regions and FAO departments. At headquarters, these specialists form a DRR Support Team, which will provide technical and practical support for the roll-out of regional and country DRR for FNS programmes. Support includes knowledge-sharing and cross-departmental coordination, both needed to deliver multi-sector and programmatic approaches.

The FAO cross-departmental core team of SO5 provides overall strategic direction, guidance and coordination for the successful implementation (as an integral part of SO5) of country and regional programmes for DRR for FNS; FAO technical departments (Agriculture, Fisheries/Aquaculture, Forestry, Economic and Social Development, Technical Cooperation, and Natural Resources) provide overall technical supervision and backstopping.

RESOURCE MOBILIZATION

Although the International Community is increasing its attention to, and financial support for, disaster risk reduction interventions, the funding available is still inadequate to implement the Hyogo Framework for Action and to support hazard-prone countries in the development and implementation of their overall sector-specific strategies for disaster risk reduction and management. FAO advocates for resource mobilization, extra-budgetary resources and other financing mechanisms for DRR and FNS through its Strategic Objectives. Efforts will continue through existing resource mobilization and allocation systems coordinated by the FAO Technical Cooperation Department, and with a leading role of decentralized offices.

At the same time, FAO will mobilize financial resources in support to DRR for FNS in three ways:

- 1)** FAO SFERA funding mechanism to support the initial roll-out of DRR for FNS in countries and regions.
- 2)** Fund raising in countries and regions where DRR programmes are formulated as part of the roll-out of the Framework Programme.
- 3)** Strategic partnerships with donors for corporate resource mobilization to implement DRR for FNS and significantly scale-up DRR actions across all sub-regions.

Funding will be sought through a modular approach applying a multi donor funding mechanism to consolidate resource contributions along geographic priority settings or in line with selected thematic pillars or main activities within pillars. A transparent mechanism for oversight, priority setting and resource allocation will be put in place when additional resources are mobilized for the DRR for FNS Framework Programme.

ANNEXES

ANNEX I

Synergies between DRR and climate change adaptation for FNS

The following table provides examples of the synergies between FAO's approach to DRR and climate change adaptation as it relates to FNS. This table should be used only as an indicative reference.

Examples of FAO Measures in DRR
<p>PILLAR 1 - ENABLE THE ENVIRONMENT</p> <p>Institutional Strengthening and Good Governance for DRR in all Agricultural Sectors</p> <ul style="list-style-type: none"> • Legislation on DRR that addresses FNS; • Integration of DRR into agricultural and rural development policies, as well as agriculture included in DRR policies, and into poverty reduction strategies linked to agriculture, fisheries, forestry and natural resource management; • Strengthen the capacity of line ministries, extension services and community-based organizations to implement legislation and policies on DRR.
<p>PILLAR 2 - WATCH TO SAFEGUARD</p> <p>Information and Early Warning Systems on Food and Nutrition Security and Transboundary Threats</p> <ul style="list-style-type: none"> • Strengthen baseline information: creating statistical baselines, mapping risks to agricultural livelihoods, and conducting vulnerability and risk assessment and analysis; • Integrate and harmonize monitoring and early warning for threats to food and nutrition security: rainfall and vegetation monitoring, market analysis, food prices and food policies, livestock production monitoring, plant pests and diseases, and animal pests and diseases, food safety events and emergencies, food-borne diseases surveillance, fish disease monitoring, wild fire monitoring; • Linking early warning with decision-making and appropriate communication products.
<p>PILLAR 3 - APPLY PREVENTION AND MITIGATION MEASURES</p> <p>Promotion and diversification of livelihoods with risk reducing technologies, approaches and practices across all agricultural sectors.</p> <ul style="list-style-type: none"> • Harness available knowledge and know-how, and promote the further application of proven technologies and practices; • Promote the scaling-up of proven technologies; • Adopt an inter-disciplinary and programmatic approach, integrating technologies and practices in agriculture, livestock, fisheries/aquaculture, forestry and natural resource management to benefit all livelihood systems and maximize the benefits.
<p>PILLAR 4 - PREPARE TO RESPOND</p> <p>Preparedness for Effective Response and Recovery across all Agricultural Sectors</p> <ul style="list-style-type: none"> • Support community-level preparedness: such as safe storage facility for seeds and harvest, livestock shelters, drainage networks, vegetation barriers, among others; • Develop local and national preparedness / contingency plans for agriculture, fisheries, forestry, food safety emergencies. Integrate agriculture into inter-agency preparedness / contingency plans; • Develop FAO Preparedness Plans at country level.

Examples of FAO Measures to Support Climate Change Adaptation

- Integrate climate change adaptation into national and sub-national agriculture, forestry and fisheries sector policies and plans, land use and water policies, food security programmes, legal frameworks and investment priorities;
- Strengthen institutional capacities and coordination needed for climate change adaptation;
- Strengthen dialogue and networks and develop partnerships for adaptation;
- Enhance national capacities to access the financial resources available for climate change adaptation.

- Assess and monitor impacts of climate variability and climate change on agriculture, forestry and fisheries, and the livelihoods that rely on these sectors;
- Conduct integrated climate change vulnerability assessments for agriculture, forestry, and fisheries;
- Develop and disseminate guidelines, methodologies and tools for collection, processing and analysis of climate change-related data and information;
- Strengthen capacities on impact and vulnerability assessment.

- Promote the breeding and conservation of crops, trees, livestock and fish adapted to changed climate conditions;
- Support the development and dissemination of technologies and practices and enhance local knowledge to improve the adaptive capacity of production and management systems;
- Identify and promote ecosystem-based technologies and practices;
- Promote work on integrated food-energy systems;
- Support and promote diversification of livelihoods and income generation.

- Expand and scale-up preparedness planning, especially in areas expected to witness more intense climate hazards;
- Consider new and evolving risk scenarios linked to climate change.

ANNEX II

Acronyms

AQUASTAT	FAO Global Information System on Water and Agriculture
CountrySTAT	FAO National Statistical Information System for Food and Agriculture
DRM	Disaster risk management
DRR	Disaster risk reduction
DRR for FNS	Disaster Risk Reduction for Food and Nutrition Security
EMPRES	Emergency Prevention Systems for Transboundary Animal and Plant Pests and Diseases and Food Safety hazards
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Corporate Database for Substantive Statistical Data
FNS	Food and nutrition security
FIRMS	Fishery Resources Monitoring System
FishSTAT	FAO Computer System for Global Fish Catches
GIEWS	Global Information and Early Warning System
GFIMS	Global Forest Fire Information Management System
GLEWS	Global Early Warning System
HFA	Hyogo Framework for Action
IFAD	International Fund for Agricultural Development
IGAD	Inter-governmental Authority on Development
INFOSAN	International Food Safety Authorities Network
NGO	Non-governmental organization
OIE	World Organisation for Animal Health
SFERA	Special Fund for Emergency and Rehabilitation Activities
SOFI	State of Food Insecurity in the World
SOS	Strategic Objective 5
SOFIA	State of World Fisheries and Aquaculture
UNISDR	United Nations International Strategy for Disaster Reduction
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WFP	United Nations World Food Programme
WHO	World Health Organization

ANNEX III

Glossary

Adaptation: the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. (UNISDR 2009)

Capacity Development: the process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions. (UNISDR, 2009)

Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. In Article 1, the United Nations Framework Convention on Climate Change defines “climate change” as: “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. (Intergovernmental Panel on Climate Change: 2001)

Contingency planning: a management tool used to analyze the impact of potential crises and ensure that adequate and appropriate arrangements are made in advance to respond in a timely, effective and appropriate way to the needs of the affected population(s). Contingency planning is a tool to anticipate and solve problems that typically arise during humanitarian response. (IASC. 2007)

Disaster: a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. (UNISDR 2009)

Disaster risk management: the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster. (UNISDR 2009)

Disaster risk reduction: the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events. (UNISDR 2009)

Early warning system: the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss. (UNISDR 2007)

Emergency management: the organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps. (UNISDR 2007)

Food and nutrition security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Hazard: a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. (UNISDR 2009)

Mitigation: the lessening or limitation of the adverse impacts of hazards and related disasters. (UNISDR 2009)

Natural hazard: natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. (UNISDR 2009)

National platform for disaster risk reduction: A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country. (UNISDR, 2009)

Preparedness: the knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions. (UNISDR 2009)

Preparedness planning: aims to establish a standing capacity to respond to a range of different situations that may affect a country or region by putting in place a broad set of preparedness measures. This includes for example early warning systems, ongoing risk and vulnerability assessment, capacity building, the creation and maintenance of stand-by capacities and the stockpiling of humanitarian supplies. (OCHA, UNISDR 2008)

Prevention: the outright avoidance of adverse impacts of hazards and related disasters. (UNISDR 2009)

Resilience: For FAO, “resilience to shocks” is the ability to prevent and mitigate disasters and crises as well as to anticipate, absorb, accommodate or recover and adapt from them in a timely, efficient and sustainable manner. This includes protecting, restoring and improving livelihoods systems in the face of threats that impact agriculture, food and nutrition (and related public health). (FAO 2012)

Response: The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. (UNISDR, 2009)

Risk: The combination of the probability of an event and its negative consequences. (UNISDR, 2009)

Sustainable Development (SD): The concept of sustainable development was introduced in the World Conservation Strategy (IUCN 1980) and had its roots in the concept of a sustainable society and in the management of renewable resources. Adopted by the WCED in 1987 and by the Rio Conference in 1992 as a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations. SD integrates the political, social, economic and environmental dimensions. (IPCC, 2007 WG III)

Vulnerability: the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. (UNISDR 2007)

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RESILIENT LIVELIHOODS

DISASTER RISK REDUCTION FOR FOOD AND NUTRITION SECURITY

A Framework Programme to support and provide strategic direction, to FAO member countries and partners, for the implementation of Disaster Risk Reduction for Food and Nutrition Security at global, regional, national and local levels.



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