

FAO's role in Disaster Risk Reduction¹

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1. DISASTER FREQUENCY AND SEVERITY IS INCREASING

The world is witnessing an alarming increase in the frequency and severity of disasters: In the period between 2000 and 2007 of the more than 230 million people affected annually by disasters about 98% were due to climate related hazards², predominantly by floods and windstorms, followed by droughts. During the period 1987-2006, the number of reported disasters related to hydro-meteorological hazards (droughts, floods, tropical storms, wild fires) showed a significant increase: from an average of 195 per year in 1987-1998 to 365 per year in 2000-2006 (Figure 1).³

In late 2007, the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report drew together the scientific evidence on climate change. This report states that “warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

Observed changes in climate and weather extremes include:

- increase in areas affected by drought since the 1970s (particularly in the Sahel, the Mediterranean, southern Africa and parts of southern Asia),
- more frequent heat waves over most land areas,
- increase in the frequency of heavy precipitation events over most areas,
- increase in the incidence of extreme high sea level,
- increase in intense tropical cyclone activity in the North Atlantic since about 1970.⁴

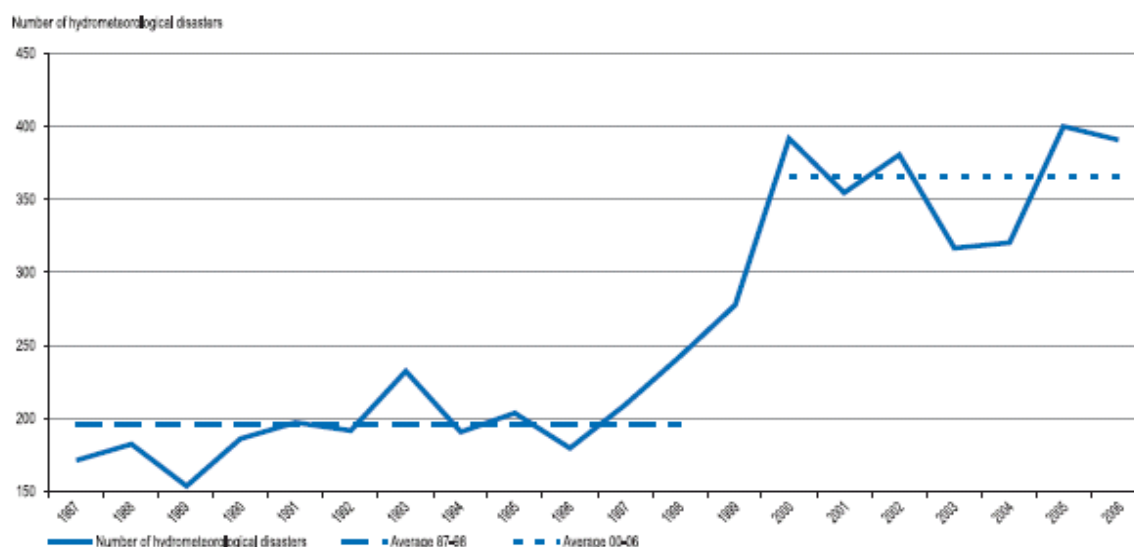


Figure 1 - Occurrence of hydro-meteorological hazards 1987-2006

Centre for Research on the Epidemiology of Disasters (CRED) – *Annual Disasters Statistical Review 2006*, Brussels, May 2007

¹ Prepared by Federica Battista, Stephan Baas and Florence Rolle

² CRED Crunch, Issue No 12, April 2008.

³ CRED, UCL, UN ISDR, *Annual Statistical Review: Numbers and Trends, 2006*, Brussels 2007. This dramatic increase in the number of reported disasters is also related to improvements in reporting of smaller scale disasters.

⁴ Note: there is no clear trend in the number of cyclones, and little evidence of similar increases elsewhere.



Disaster losses are increasing owing to a number of factors, including increased extreme weather events associated with climate change, population growth, unplanned urbanization and environmental degradation. A crucial observation by FAO is a shifting balance between man-made and disasters induced by natural phenomena; Worldwide, the proportion of food crises that are mostly man-made (economic constraints or policy failures, insecurity, and conflict) were cited as main causes for about 10 percent of food emergencies during the early 1980s. This increased to almost 70 percent by 1993. Since then, however, there has been a downward trend, with natural causes becoming the principal reason of food crises in about 40 percent of cases in

2007. The IPCC 4th assessment report (scientific evidence) points to a future where climate induced hazards and disasters will further increase.

2. CONCEPTS AND PRINCIPLES⁵

Disaster *risk* results from the combination of a potential damaging event- the *hazard*; and the degree of susceptibility of the elements exposed to that source – *vulnerability*.

- Natural *hazards* can be classified according to their geological (earthquake, tsunamis, volcanic activity), hydrometeorological (floods, tropical storms, drought) or biological (epidemic diseases) origin.
- *Vulnerability* conditions are determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards. The recognition of vulnerability as a key element in the risk notation has also been accompanied by a growing interest in understanding and enhancing the positive capacities of people to cope with the impact of hazards. These *coping capacities* are closely linked to the concept of *resilience*:
 - *Resilience* is defined as the capacity of a system, community or society potentially exposed to hazards to adapt and maintain an acceptable level of functioning.
 - *Disaster risk reduction (DRR)* includes the systematic development and application of policies, strategies and practices to avoid (*prevention*) or limit (*mitigation* and *preparedness*) the adverse effects of hazards.



DRR builds on the need of a sound the understanding of vulnerabilities and on the promotion of resilience, in particular of the poor and food insecure. There are two distinct modes of risk reduction: 1st those aimed primarily at the physical environment and 2nd those aimed at human processes, primarily socio-economic. However, in most cases the two are interdependent. The integration of DRR into sustainable development and in sectoral policies and planning is recognized as priority number one by the international community

3. DISASTER RISK REDUCTION: THE ROLE OF AGRICULTURE

FAO estimates that there are still over 850 million undernourished people, of which 820 million are in developing countries. These 820 million people in developing countries tend to be poor, live in rural areas, are dependent on agriculture and/or agriculture-related activities for their livelihood, and are among the most vulnerable to disasters.

⁵ Within the disaster community terminology is often applied inconsistently reflecting the involvement of practitioners from a wide range of disciplines. The terms used above are an adaptation from the ISDR terminology, for more detail see *ISDR-Living with Risk, 2004* (http://www.unisdr.org/eng/about_isdr/bd-lwr-2004-eng.htm)

Natural disasters can be considered as a cause and product of failed development. Disasters can wipe out years of development in a matter of hours; at the same time it has been clearly demonstrated how disaster risk accumulates historically through inappropriate development interventions. This situation is further aggravated by increased farming in high-risk areas, including geophysical risk areas, as a result of population pressures and lack of diverse economic opportunities.

The link to climate change adaptation provides new challenges and opportunities. Agriculture is perhaps the most climate sensitive sector. Communities heavily dependant on agriculture are increasingly vulnerable (harvests losses, destroyed plantations, salinization, animals losses and disease, etc.) but hazard threats and even post-emergency situations often provide the opportunity to make societies and farmers more aware about their risk and what they could do to reduce their exposure on the impacts of future natural hazards and thus the need for change. Severe disasters often catalyze the resources and momentum necessary to introduce policy reform and to strengthen the capacity of national DRM systems and prepare better for climate change.

Agriculture has a key responsibility in all phases of disaster risk management to complement national DRM systems from a sectoral perspective and carry forward the implementation of the Hyogo framework for action and national DRR strategies, in particular in rural, agriculture dominated areas. Key technical and areas and policy requirements for AG sector interventions and collaboration to promote a comprehensive, cross-sectoral approach to DRR at international and national levels include:

(i) Disaster risk profiling: hazard, risk and vulnerability assessments in ag sector(s).

Implementation of DRR measures needs to be based on an assessment and prioritization of the hazards and risks that people face, as well as their ability to cope and withstand the effects of those hazards. This assessment should in an integrated way: a) identify the typology, frequency and potential severity of an hazard (hazard assessment); b) identify geographical areas and communities that are most vulnerable to those hazards (hazard mapping); c) identify the key factors of vulnerability and local coping and adaptive strategies and capacities; and d) assess gaps in national policies, legislation and institutional capacity for DRM; (e) assess the role of agriculture, livestock, fishery and forestry line departments in disaster risk management and linkages with other relevant institutions⁶.

(ii) Promotion of prevention and mitigation

Action for disaster prevention and mitigation focuses on reducing the underlying factors of risk. This normally requires a medium- to long-term planning framework that can allow for adjustment of institutional mechanisms and integration of appropriate measures in sectoral development policies and planning. It includes structural and non-structural measures to provide outright avoidance (prevention) or limit the adverse impact (mitigation) of potential natural hazards. Risk reduction in agriculture requires appropriate sector policy frameworks and institutional mechanisms, sustainable natural resource management practices and the identification, adaptation and dissemination of targeted technical and structural mitigation measures.

- **Legislation and policies:** National legislation on DRM is a basic requirement. It would normally include a national act establishing and mandating a national authority for disaster (risk) management and an inter-ministerial commission/committee for policy making and coordination on disaster (risk) management. It would specify responsibilities and tasks of relevant public and private stakeholders in all phases of DRM as well as the coordination mechanism and procedures. Examples of legal and policy issues for the agriculture sector include: risk reduction standards for agricultural infrastructure and construction; clear definitions about the declaration of emergency situations and phasing of emergencies; sector development policies to define priorities and strategies for risk reduction; land use planning and zoning; frameworks to control land degradation and combat desertification; water management; coastal management; forestry conservation; transboundary agreements for watershed managements and control of animal and plant disease.

⁶ For this purpose FAO is developing *Guidelines for the assessment of DRM Systems*.

- ***Institutional structures, capacities and coordination:*** The national authority for disaster (risk) management and/or an inter-ministerial commission/committee for disaster (risk) management are normally replicated at district and local government level, ideally allowing for a combination of “top-down” and “bottom-up” approaches. Most DRM functions benefit from devolution of responsibilities (following principles of subsidiarity) provided that this is combined with: clear definition of tasks and effective coordination systems, appropriate budget allocations and capacity building for local staff. Examples of issues to be addressed from the agriculture sector perspective include: representation of agriculture sector line departments in the inter-ministerial commission/committee (including at decentralized levels); definition of technical contributions and capacities of agriculture departments, extension services and agricultural research institutes to DRM systems; linking with other relevant line departments such as water affairs, meteorological services, environment and natural resources) linkages?
- ***Technical interventions for enhanced DRR;*** The day to day development work with farming and fishing communities promoted by AG, FO and FI line agencies, NGOs and other stakeholders provides in most developing countries a good opportunity to embed DRR aspects into ongoing sectoral programmes and activities. Technical intervention areas that can be operationalized through the sectoral agencies in partnership with national and local level DRR committees include

Agricultural measures such as

- ✚ appropriate crop selection (testing and introducing new varieties, drought/saline/flood resistant crops, quick growing crops) and animal breeding;
- ✚ improved cropping systems and cultivation methods (crop diversification, intercropping, adjustment of cropping calendars, soil conservation);
- ✚ post-harvest management (storage, food drying, food processing);
- ✚ pest control;
- ✚ sustainable water management: improved design, construction and maintenance of irrigation and water control infrastructure; rainwater harvesting; water conservation techniques; and
- ✚ afforestation/reforestation and agroforestry.

Sector specific infrastructural measures: examples include

- ✚ raised seeds beds, dams, wind breaks, fire breaks;
- ✚ proofing of storage facilities and livestock shelters;
- ✚ erosion control structures, routine clearing of drainage system and canals; and
- ✚ safe rescue places/platforms and strategic animal fodder reserves
- ✚ drought resilient strategic water points
- ✚ earthquake proof fish ponds and irrigation facilities
- ✚ flood safe seed and fodder stocking infrastructure



Linking Early Warning Systems with agricultural sector needs

The purpose of the EWS is to detect, forecast and, when necessary, issue the alert relating to impending hazard events. However, in order to be effective and fulfil a risk reduction function in the agriculture sector alerts need to:

- ✚ be associated on information on possible impact on the agriculture sector and on what farmers can do to reduce disaster risk;
- ✚ be communicated in a way that is understandable by vulnerable people;
- ✚ transmitted through media accessible to rural farming and fishing communities;
- ✚ take into consideration issues relating to people’s risk perceptions and trust in public institutions⁷;

⁷ Some of the above issues can be tackled with EWS based on multiple sources of information for for vulnerable rural communities. For example: a) national weather forecasts; b) local irrigation authorities monitoring hydrological parameters; c) river level monitoring from local communities. These systems have the advantage of allowing the application both of local knowledge and of science/technology based knowledge.

- ✚ where possible include medium and long-range climate forecasts to allow for contingency cropping plans.

Socio-economic measures: examples include

- ✚ risk sharing and transfer instruments: crop/livestock/fishery insurance, compensation and calamity funds, micro-credit and cash transfers; and
- ✚ livelihood diversification: may include small-scale enterprise development, introducing new farming activities (small-scale livestock, fish ponds, new crops of higher market value) or promoting non-farm activities.

Training and awareness raising

- ✚ Regular awareness raising and training of those who might be affected by a disaster and those who will be providing support to the affected communities.
- ✚ Dissemination and practical demonstrations of good practices for DRR from sectoral and cross-sectoral perspectives to increase resilience of existing farming systems
- ✚ Regular mock exercises to simulate the real event and individual responsibilities and tasks.

(iii) Preparedness:

Preparedness measures are taken directly in advance of an announced or expected hazard to prepare for and reduce its effects and potential impacts. That is to further reduce through short term preparatory activities the impacts of a forecasted event on vulnerable populations, and to be ready to effectively respond to the consequences. Key components of disaster preparedness are the issuing and dissemination of hazard warnings and alerts (through EWS), contingency planning for the post disaster situation, protective infrastructural measures and household level preparedness measures.

- ***Dissemination of hazard alerts and EW messages at local level;*** National and local responsibilities must be defined and capacities in place to ensure immediate outreach to the most vulnerable households and people living in marginal or remote areas; local DRR groups or farmer's cooperatives and associations have proven to be suitable mechanisms to assist.
- ***Contingency planning:*** During the actual emergency, quick and effective action is required. Effective action will often depend on the existence of ready-made and tested contingency plans, which should be available at national, provincial and local level. When provincial and local level plans are not in place, translating recommendations into action becomes very difficult. Contingency plans at different levels should be complementary and ensure that appropriate linkages are established for coordination and to support action along lines of command. Contingency planning measures are normally associated with life-saving measures (evacuation procedures and identification of safety sites, search and rescue etc.) however these may also be a key instrument for saving equipment, livestock, seeds and other agricultural inputs. Contingency planning in the agriculture sector includes: contingency crop planning (changing of cropping patterns to match late/early rains, availability of seed of drought, flood, salinity tolerant crop varieties, famine reserve crops etc.), conservation of forage/fodder, moving of animals to safer grounds, plans for vaccination of livestock exposed to flooding, emergency seed procurement networks; safety at sea measures for fisherman.
- ***Protective structural measure and household level preparedness:*** communities and households are the first line of response in any emergency and many disasters occur on a small/regular basis unnoticed by national authorities and international organizations community. Community-led initiatives play a major role in immediate response (saving lives and moving people to safer grounds, providing emergency food and shelter) and recovery (mutual support in reconstruction work), but are rarely recognized, sustained and integrated by the formal disaster risk management systems. Examples of community/household preparedness measures are: Cleaning of drainage channels, pruning of trees exposed to hurricanes, bring animals and seeds at secure places; prepare buffer capacities of food, fodder and water for humans and animals, basic medical/veterinary package prepared ;stand-by agreements for

the use of equipment and machinery such as water pumps, use of fishing boats for rescue operations; emergency harvest if season and time allows (hurricane or flood warning);

4. HOW FAO ENGAGES IN IMPROVING DISASTER RISK REDUCTION

In 2005 the international community adopted the *Hyogo Framework for Action* (HFA) which sets the Strategic Goals and Priority Areas of Action for a ten-year programme *to substantially reduce disaster losses in live, and in social, economic and environmental assets of communities and countries*. The Strategic goals of the strategy are:

- the integration of DRR into sustainable development policies and planning;
- The development and strengthening of institutions, mechanisms and capacities to building resilience to hazards; and
- the systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes.

As the UN Specialized Agency for the food and agriculture sectors, FAO has the responsibility of assisting member countries in integrating DRR measures in agriculture and food sector policies and practices and has a key role to play in protecting and restoring agriculture based livelihoods in the aftermath of a disaster, and in view of future impacts to be expected from climate change⁸.

FAO supports member countries in various ways in their efforts of strengthening DRM systems and integrating disaster risk reduction in sustainable development planning, as well as into the implementation of emergency preparedness, response and recovery:

- undertaking hazard profiling and vulnerability assessments for the agriculture, forestry and fishery sectors or participating in national/local multi-sectoral disaster risk profiling exercises;
- assessing and enhancing capacities for DRR within sectoral line departments and extension services;
- integrating DRR in sectoral development plans or country programming exercises (United Nations Development Assistance Framework [UNDAF], National Medium-Term Priority Framework [NMTPF])⁹;
- promoting sustainable natural resource management (for example on: land, water, watershed, forestry, or coastal areas);
- identifying, documenting, adapting, and facilitating the exchange and replication of good agriculture, fishery and forestry practices for disaster risk reduction;
- participating in inter-agency processes for enhancing emergency preparedness in the country;
- providing emergency response, integrating the building back better principle in the design and implementation of post-emergency assistance



⁸ UN/ISDR, Hyogo Framework for Action 2005-2015. Available at: [HTTP://WWW.UNISDR.ORG/ENG/HFA/DOCS/HYOGO-FRAMEWORK-FOR-ACTION-ENGLISH.PDF](http://www.unisdr.org/eng/hfa/docs/hyogo-framework-for-action-english.pdf) . For the role and contributions of International Organizations see para 32.

⁹ Tools for integrating disaster risk reduction in country programming see : ProVention Consortium, *Tools for Mainstreaming Disaster Risk Reduction*, ([HTTP://WWW.PROVENTIONCONSORTIUM.ORG/THEMES/DEFAULT/PDFS/TOOLS_FOR_MAINSTREAMING_GN4.PDF](http://www.proventionconsortium.org/themes/default/pdfs/tools_for_mainstreaming_gn4.pdf))