

## WMO Disaster Risk Reduction Programme

Hydro-meteorological extremes such as droughts, floods, tropical cyclones, storms surges, extreme temperatures and wild fires cause disasters worldwide. The devastating January 2011 floods in Australia and Sri Lanka, the storm in Myanmar in March 2011 which is feared to have drowned about 700 people at sea; the worst floods in Pakistan's history, in August 2010, which killed more than 1,900 people and affected more than 20 million are just a few examples. These events are expected to rise in frequency and severity as climate changes in the years to come.

The Hyogo Framework for Action 2005-2015 (HFA) adopted by 168 countries at the Second United Nation World Conference on Disaster Risk Reduction (2005, Kobe, Japan), shifted the paradigm in disaster risk management from emergency response to a comprehensive and strategic approach focusing on preparedness and prevention. A comprehensive disaster risk reduction framework requires: (i) Scientifically sound risk assessment to quantify and understand the risks associated with natural hazards and their impacts, based on quality assured historical and real time data and climate analysis tools; (ii) Risk reduction through preparedness (including early warning systems to save lives) and prevention through long-term sectoral planning in areas such as land zoning, infrastructure development, agricultural and water resources management etc.; and (iii) Risk transfer through the utilization of weather-indexed insurance and financing mechanisms to reduce and transfer the economic impacts of disasters at various levels and decision timescales. These must be underpinned by appropriate legal frameworks; organizational coordination and appropriate allocation of resources at national to local levels. While early warning systems are demonstrated as effective tools for reducing loss of life, emergence of climate prediction and forecasting tools provides opportunities to provide warnings with longer lead times that can be used in savings of livelihoods through improved sectoral planning. Analysis of hazard patterns from historical data is necessary but not sufficient for strategic planning and needs to be complemented with forward-looking climate analysis and forecasting tools. Changing patterns of hazards are posing challenges with longer-term investments in infrastructure planning and retrofitting, as this requires building codes and specifications designed based on hazard characteristics (both historical and forward looking).

### The Role of National Meteorological and Hydrological Services (NMHSs)

Development of preparedness and preventive strategies for disaster risk management require meteorological, hydrological and climate information products and services provided by NMHSs. NMHSs are key for the detection, monitoring and forecasting of hazard; provision of hazard data for risk assessment; issuing of hazard warnings; and provision of historical and real time data for risk transfer.

### Gaps and Needs of the NMHSs to support Disaster Risk Management

The WMO Disaster Risk Reduction Programme conducted a 139-nation survey in 2006. This revealed a number of challenges faced by the NMHSs, including:

- (i) **Legislation and Planning:** Nearly 70% of countries are still focused on post-disaster response and are in need of effective planning, legislation, coordination and institutional capacities for disaster risk management. Even if NMHSs were able to provide good weather and climate information, in most countries there is no capacity to carry out preparedness and preventive measures;
- (ii) **Hydro-meteorological Infrastructure:** Over 65% of NMHSs are significantly challenged with respect to their core infrastructure (observational networks, 24/7 operational forecasting systems, telecommunication, etc.) needing resources for modernization (different from country to country) and sustainability of these capacities over time;
- (iii) **Human Resource, Technical and Scientific Capacity Development:** Nearly 80% of NMHSs need various technical tools, guidelines and training for meteorological, hydrological and climate-related hazard databases, hazard analysis and mapping, as well as forecasting and analysis tools from weather to climate timeframes;
- (iv) **Institutional Partnerships, Coordination and Service Delivery:** Over 80 % of NMHSs need strengthening of their partnerships with various disaster risk management stakeholders pertaining to management, coordination, operational and service delivery aspects.

### About the WMO DRR Programme

The DRR Programme of WMO was established in 2003 to strengthen institutional capacities for the provision of meteorological, hydrological and climate services and cooperation to support the HFA for the protection of lives and property and contributing to sustainable development of Members.



## Strategic Priorities and Implementation Strategy

The WMO Strategic Goals in DRR are underpinned by the Hyogo Framework for Action and are implemented through a two tier approach involving: (i) development of critical knowledge and methodologies (guidelines, manuals, methodologies and tools based on good practices), and (ii) coordinated national and regional capacity development projects that ensure:

- (i) Modernization of meteorological and hydrological infrastructures;
- (ii) Implementation of national operational multi-hazard early warning systems;
- (iii) Development of hydro-meteorological hazard/risk assessment capacities to support risk assessment, reduction and transfer;
- (iv) Establishment of operational cooperation between NMHSs, disaster risk management agencies and other socio-economic sectors in DRR;
- (v) Development of training programmes for NMHSs and their stakeholders

Regional coordination and cooperation projects to promote data and forecast product development and sharing among countries, through the WMO Regional Specialized Meteorological Centres, Regional Climate Centres and Drought Monitoring and Management Centres complement the national projects and support the NMHSs in their mandate to provide science-based information to support decision-making.

### *Documenting and utilizing latest tools, methodologies and know-how based on good practices*

WMO is working with an extensive network of research and operational experts to identify, develop and validate good practices in strengthening observing networks, databases, and various forecasting and analysis tools. These are combined with an international effort coordinated by WMO to identify and systematically document good practices in key areas of disaster risk management. To date, seven good practices from early warning systems in Bangladesh, China's Shanghai city, Cuba, France, Germany, Japan and the United States have been documented and guidelines on the necessary institutional arrangements developed. Lessons from the good practices are being used in capacity development programmes in different regions. Other initiatives will document good practices for a range of hydro-meteorological hazards to support risk assessment and financial transfer markets.

### *Systematic National and regional capacity development since 2007*

To support capacity development and strengthening of disaster risk management, systematic initiatives are underway in:

- **South East Europe:** Beneficiary countries include: Albania, Bosnia and Herzegovine, Croatia, FYR of Macedonia, Montenegro, Serbia, Kosovo (as defined by UNSCR 1244/99) and Turkey supported by the European Commission DG Enlargement. This capacity development programme is coordinated together with WMO, UNDP, UN-ISDR, the World Bank, Regional Disaster Risk Management Network as well as the European Operational Meteorological, Hydrological and Climate networks and centres.
- **Central America and the Caribbean:** Pilot countries in Central America include: Costa Rica, El Salvador, Mexico. Capacity development proposals are underway for the Caribbean countries and territories. This capacity development programme is coordinated together with WMO, UNDP, UN-ISDR, the World Bank, Regional Disaster Risk Management Network as well as the regional Operational Meteorological and Hydrological and climate networks and centres as well as bi-lateral donors and development banks.
- **South East Asia:** This initiative is underway for beneficiary countries including: Cambodia, Indonesia, Lao PDR, the Philippines, Thailand and Vietnam. This capacity development programme is coordinated together with WMO, UNDP, UN-ISDR, the World Bank, Regional Disaster Risk Management Network as well as the global and regional Operational Meteorological, Hydrological and Climate networks and centres and a number of bi-lateral donors and development banks.

Other regional and national capacity development programmes are underway for Central and South Asia, Africa and the Pacific.

## Partnerships with other United Nations, International and Regional Agencies

WMO is collaborating with partners such as UN and international agencies linked to the UN-ISDR system (including the United Nations Development Programme (UNDP), the World Bank, Food and Agricultural Organizations of the United Nations (FAO), World Food Programme (WFP), United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA), International Federation of Red Cross and Red Crescent Societies (IFRC)), development banks, donors, regional organizations and agencies who are interested in supporting DRR activities at international, regional and national levels for the establishment of strategic partnerships for regional and national capacity development to support effective disaster risk management.

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