

World Meteorological Organization

Public-Private Partnerships: Opportunities and Challenges for Development of Weather-based Insurance and Derivatives Markets in Developing Countries

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Risk Management Involves a Wide Range of Decisions and Actions

Risk Management

Risk Identification

- Historical hazard data and analysis
- Changing hazard trends
- Vulnerability assessment
- Risk quantification

Risk Reduction

- Sectoral planning
- Early Warning Systems
- Emergency Preparedness planning
- Education and training

Risk Transfer

- Financial tools
 - Insurance
 - Weather derivatives
 - Cat bonds

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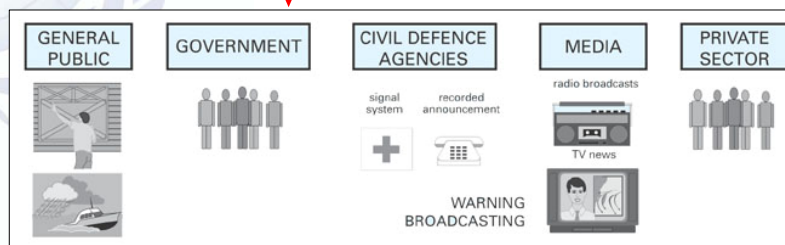
Supporting National Capacities for Disaster Risk Management

24 hours a day, everyday of the year, in every country

National Meteorological and Hydrological Services

Products and Services

Needs, requirements,
Feedback



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Contributions of National Meteorological and Hydrological Services to Risk Identification

- Availability of historical and real-time hazard databases
- Hazard analysis and mapping methodologies
 - Severity , Frequency, Location, Timing
 - Statistical analysis of historical data
 - GIS/GPS mapping
 - Probabilistic climate models – Forward looking trend analysis
 - Emerging technologies (factors in changing patters due to climate variability and change)

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Contribution of National Meteorological and Hydrological Services to Risk Reduction

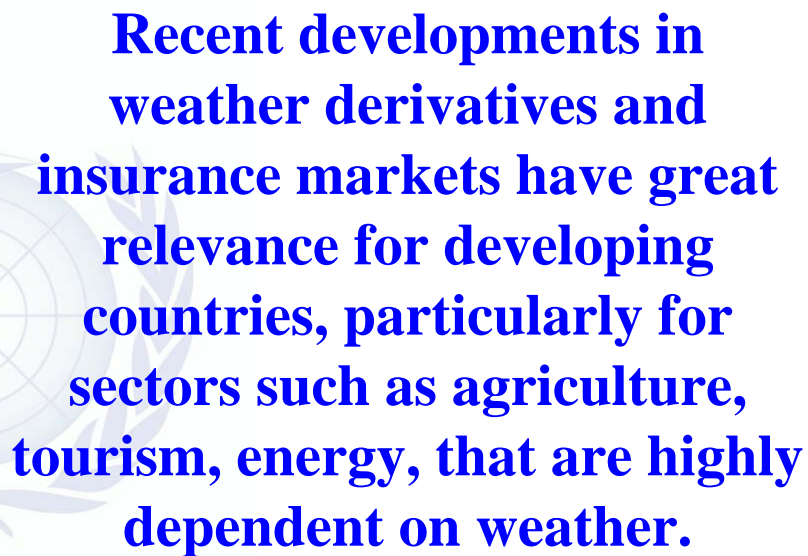
- Input into sectoral planning (zoning, development, etc)
- Early warning systems
 - Probabilistic forecasting and warnings from next hour to longer climate timescales
 - Integration of risk information into warning messages
 - Communication and dissemination
 - Partnerships, joint planning and joint training with national agencies responsible of emergency preparedness and response
- Meteorological Services in support of pre- and post-disaster response and relief operations

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Contribution of National Meteorological and Hydrological Services to Risk Transfer

products	provider	example
Insurance	Government	<ul style="list-style-type: none"> – Crop / flood insurance – Agricultural and drought derivatives
Weather derivatives		
Catastrophe bonds	Private sector	<ul style="list-style-type: none"> – Insurance for property and casualty – Micro-insurance – Weather derivatives – Catastrophe bonds for hurricanes

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Recent developments in weather derivatives and insurance markets have great relevance for developing countries, particularly for sectors such as agriculture, tourism, energy, that are highly dependent on weather.

In Many Developing Countries

- Traditional insurance products are largely underdeveloped
 - Crop Insurance can be very expensive to administer
 - Individual yields and field inspections needed
 - Small size of the farms
 - Adverse Selection and moral hazard issues
- Innovative weather insurance mechanisms provide opportunity for risk transfer
 - Based on weather events/indices rather than actual crop losses
 - Assumption: weather events/indices are closely correlated with crop failure
 - Trigger weather events/indices can be verified independently
 - Easy to market (more players can participate in the market)

However, there are some important challenges for weather risk management in developing countries!

At National Level Many Challenges Remain

- Political recognition for benefits of investing in observing networks
- Institutional capacity
 - Operations and sustainability of observing networks
 - Data collection and management systems
 - Data rescue to translate massive amount of paper-based records into digital records
 - Quality control to ensure consistency and completeness
 - Capacity to archive large databases
- Availability of data to users
 - National data policies (commercial vs. public good)

Development of these capacities should be considered as an investment for enhanced risk management.

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Contribution of National Meteorological and Hydrological Services to Design and Settlement of Weather Risk Contracts

- Availability, accessibility and reliability of historical and real-time meteorological and hydrological data (In situ and space)
- Technical support for data homogenization and analysis
- Reliable governmental authoritative data for contract design and settlement
- Forecasts and warnings for management of risk portfolios

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WMO Initiatives in Support of Weather Risk Market Development

- Advocacy at the ministerial level of the importance of meteorological and hydrological observing networks
- Working with the weather risk market to identify needs and requirements for hydro-meteorological products and services
- Technical capacity development of National Meteorological and Hydrological Services for providing relevant data and forecast products and services to this market
- Working with international partners on pilot projects in different countries
- Development of meteorological and hydrological standard indices (such as drought) that can be used in this market.

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Public-Private Partnerships In Education and Public Outreach: The Hong Kong Experience

- Multi-disciplinary participation in Conference on Catastrophe Insurance in Asia
- Active participation in local and regional workshops related to disaster reduction



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Public-Private Partnerships could bring opportunities for...

- Sectoral planning
 - Provision of observations and specialised information
 - Risk identification, analysis and mapping
- Community-based readiness programmes
 - Hurricane-ready, Storm-ready, Tsunami-ready...
- Education and Public Outreach Campaigns
- Risk transfer markets
 - Insurance
 - Weather derivatives
 - Cat bonds

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Thank you!

For more information please contact:

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Courtesy of Hans Erni

<http://www.wmo.int/disasters>

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