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# World Meteorological Organization

Working together in weather, climate and water

## Workshop on Multi-Hazard Early Warning Systems for Urban Areas

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**Session 3**

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**Radisson Europa Hotel and Conference Center**  
**San José, Costa Rica**





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# What is an Early Warning System?

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# Many countries are still in emergency response and relief mode!

## COMMUNITIES AT RISK

National Government (emergency systems)

disaster response

Local government

Disaster response

hazard warning

hazard warning

hazard warning

National Technical Services

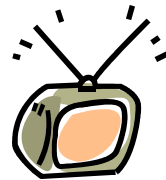
Meteorological

Hydrological

Geological

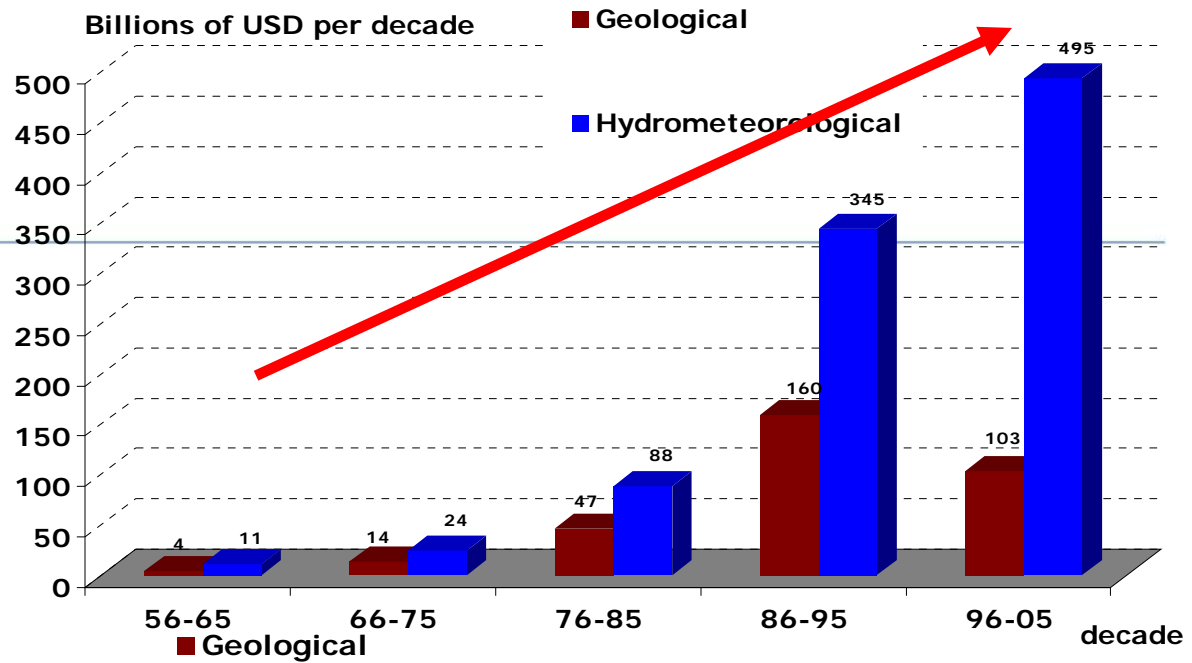
Marine

Health (etc.)...

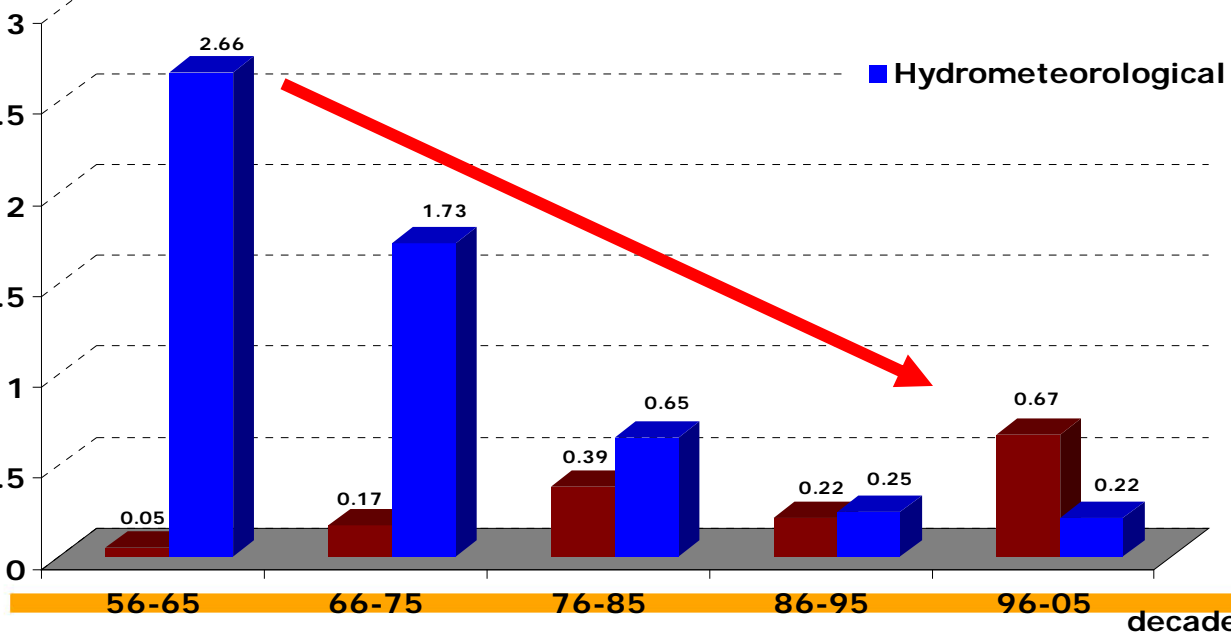




**While economic losses are on the way up!**



Millions of casualties per decade



**Loss of life from hydro-meteorological disasters are decreasing!**

Source: EM-DAT: The OFDA/CRED International Disaster Database



# Why such decrease in loss of life related to weather-related extremes?

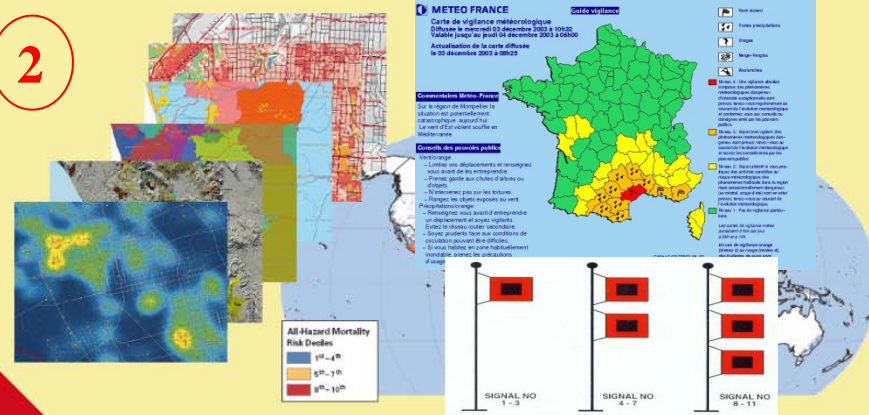
National to local disaster risk reduction plans, legislation and coordination mechanisms



**Hazard Data and Forecasts**

1

2



**Risk Information**



**Communication and Dissemination Mechanisms**

3

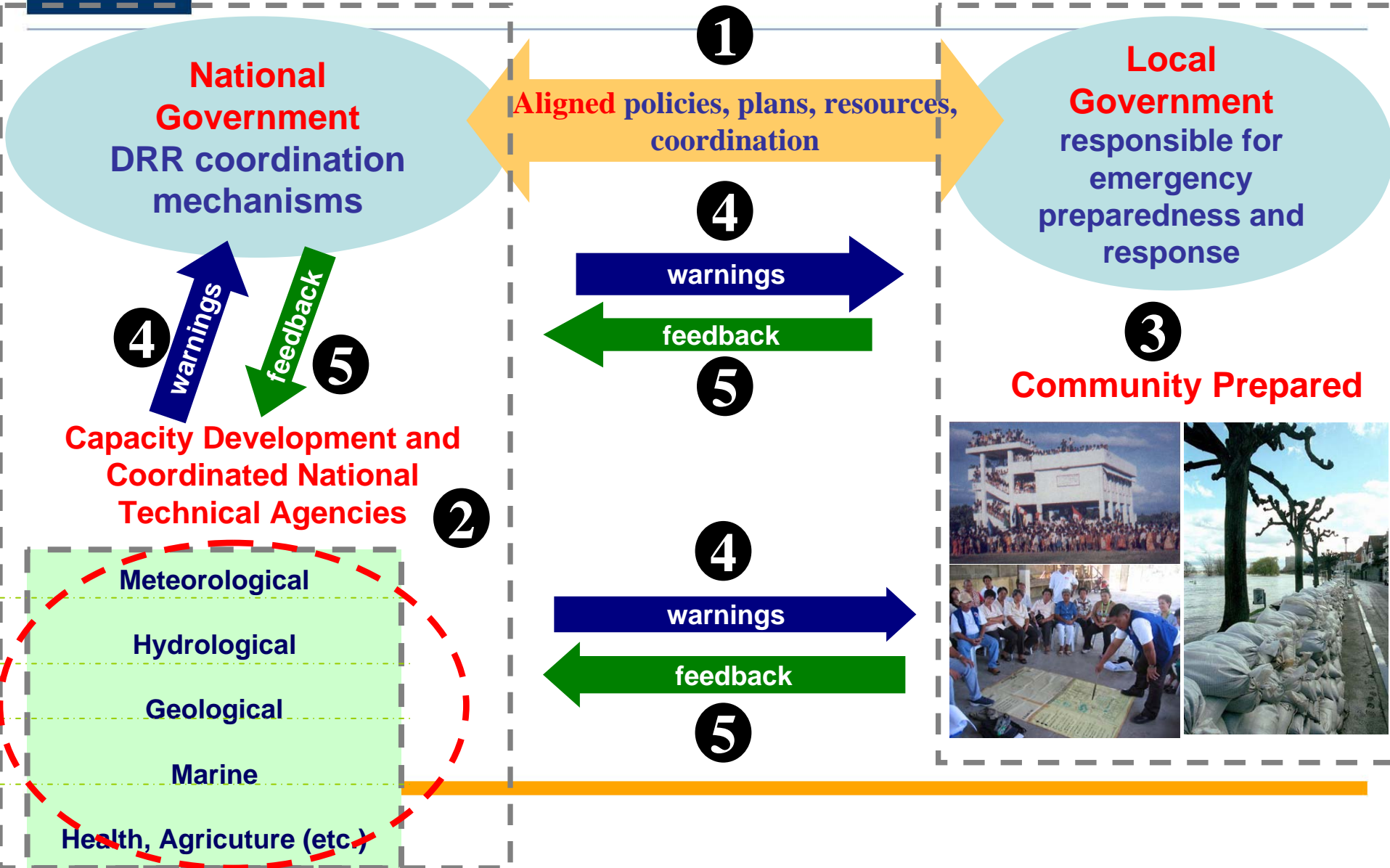
4



**Preparedness and Early Response**



# There is need for investments in all Components of Early Warning Systems at national to local levels





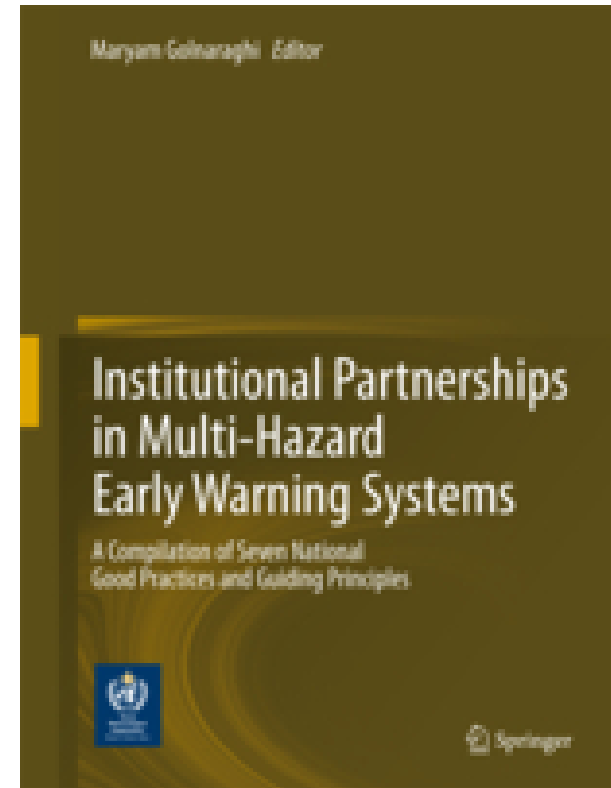
# Critical Aspects of Early warning System

- Sustainability
- Capacity Building and training



# Examples of Good practices in Multi-Hazard Early Warning Systems and Lessons Learned

- Bangladesh
- Cuba
- French Vigilance system
- Germany
- Japan
- Shanghai (Mega City)
- USA



**Ref. Golnaraghi, M. (Ed.) "Institutional Partnerships in Multi-Hazard Early Warning Systems: A compilation of Seven National Good Practices and Guiding Principles," Springer Verlag (2012)**





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# Ten common principles for successful EWS

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# 10 common principles for successful Early Warning Systems (1/3)

- 1. Political recognition of the benefits of EWS along with effective planning, legislation and budgeting**
- 2. Effective EWS are built upon four components:**
  - (i) hazard detection, monitoring and forecasting;
  - (ii) analyzing risks and incorporation of risk information in emergency planning and warnings;
  - (iii) disseminating timely and “authoritative” warnings with clarity on the responsibilities and mandate for issuance of warnings;
  - (iv) community emergency planning and preparedness and the ability to activate emergency plans to prepare and respond
- 3. Roles and responsibilities of all EWS stakeholders and their collaboration mechanisms clearly defined and documented**



## 10 common principles for successful Early Warning Systems (2/3)

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4. **Capacities aligned with resources across national to local levels (sustainability)**
5. **Hazard, exposure and vulnerability information are used to carry-out risk assessments at different levels**
6. **Clear, consistent and actionable hazard warnings, with risk information and issued from a single recognized authoritative source**



# 10 common principles for successful Early Warning Systems (3/3)

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- 7. Timely, reliable, redundant and sustainable warning dissemination mechanisms**
- 8. Emergency response plans targeted to the individual needs of the vulnerable communities, authorities and emergency responders**
- 9. Regular training and education programmes in risk awareness and emergency response actions**
- 10. Effective feedback mechanisms throughout levels of the EWS for system improvement over time**



# *Thank You*

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