

# Joint Workshop on Strengthening Multi-Hazard Early Warning Systems and Early Actions in Southeast Asia

18-20 February 2020, Bangkok, Thailand

*Session 1b: Setting the scene*

## ***Multi-hazard early warning systems (MHEWS) Concept, policy context and assessments***

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WEATHER CLIMATE WATER  
TEMPS CLIMAT EAU



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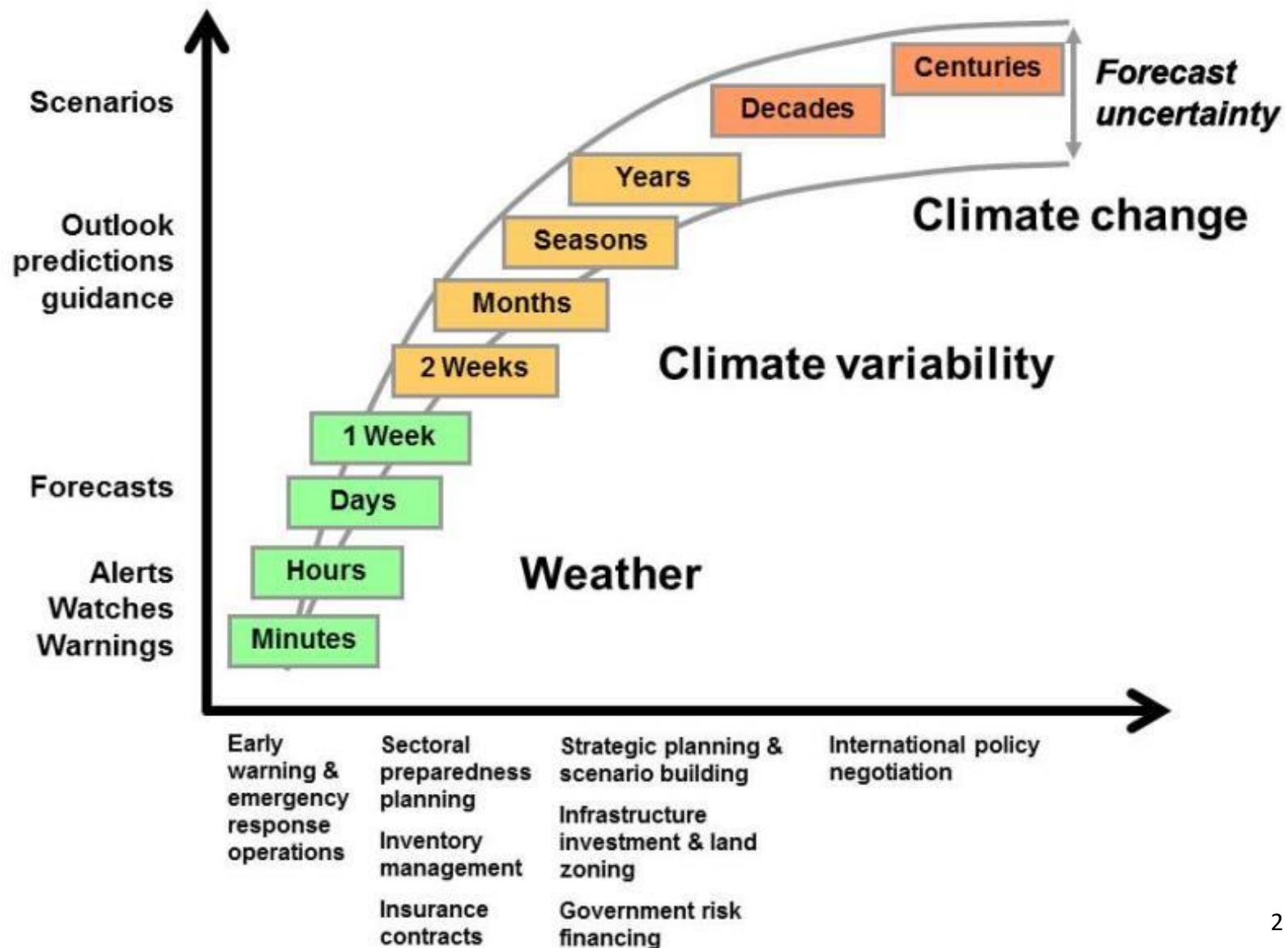
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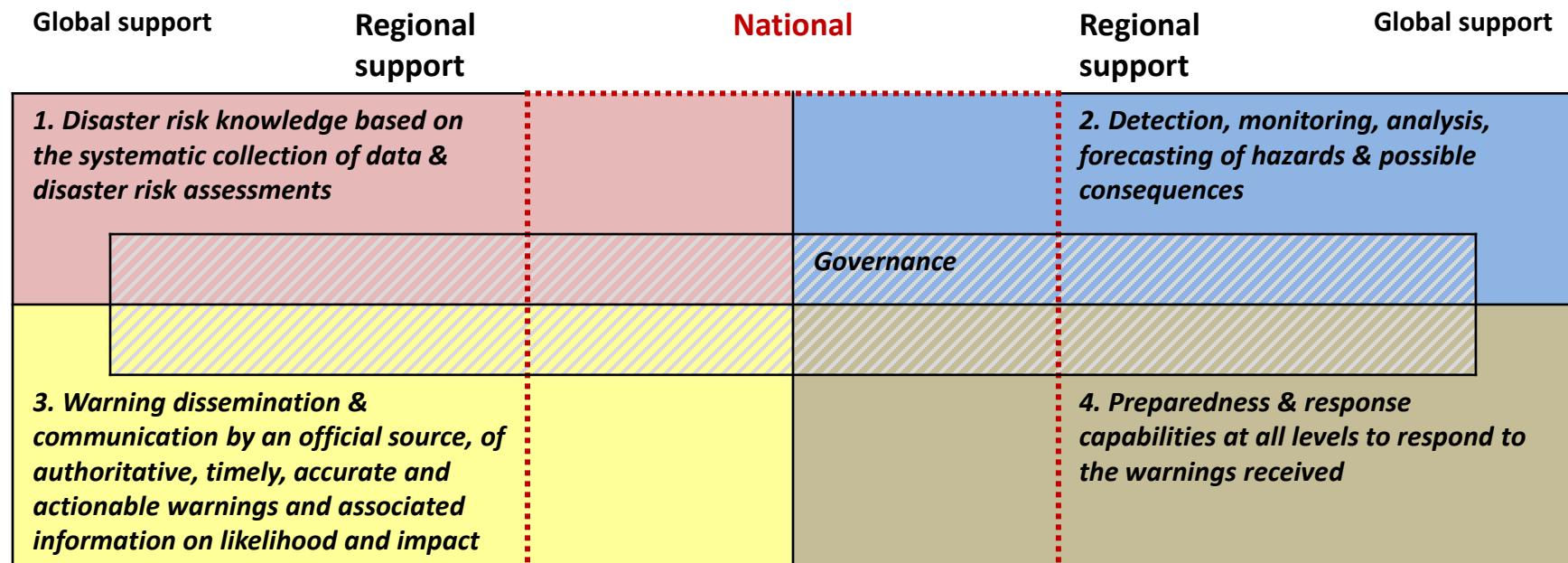
# Seamless Meteorological and Climate Forecasting Services for Early Warning and Preparedness



# What is an early warning system (EWS)?

*“An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events.” (OIEWG 2016)*

Effective “end-to-end” and “people-centred” EWS may include **four interrelated key elements**:



These four interrelated components need to be **coordinated within and across sectors and multiple levels** for the system to work effectively and to include **feedback mechanism for continuous improvement**. Failure in one component or lack of coordination across them could lead to the failure of the whole system.

# What is a multi-hazard EWS (MHEWS)?

***“Multi-hazard early warning systems cover a range of hazards and impacts. They are designed to be used in multi-hazard contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects.***

***A multi-hazard early warning system increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities, involving multiple disciplines for updated and accurate hazards identification and monitoring for multiple hazards.” (OIEWG 2016)***

- **Hazard:** A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards biological, environmental, geological, hydrometeorological and technological processes and phenomena.
- **Multi-hazard** means (1) the selection of multiple major hazards that the country faces, and (2) the specific contexts where hazardous events may occur simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects.



# A MHEWS:

Clear roles, responsibilities and coordination mechanisms (e.g. SOPs, MOUs)

**Disaster risk knowledge and detection, monitoring, analysis and forecasting of the hazards and possible consequences**

## HAZARD(S) INFORMATION

- Observation
- Monitoring
- Analysis
- Forecasting
- Mapping

## MULTI-RISK ANALYSIS

Assessment and quantification of:

- Exposure and vulnerability of people and assets to hazards
- Multi-hazard interactions

## WARNINGS

Including:

- Probability of affecting people and assets
- Possible impacts
- Message targeted at different sectors

**Institutional partnerships** are essential among technical agencies and other MHEWS stakeholders for the development of hazard, exposure and vulnerability information and risk analysis.

Dissemination and communication

Prepare and respond

**GOVERNMENT LOCAL TO NATIONAL**  
(all relevant hazards)

**TRANSPORTATION**  
(road ice, street flooding, travel delays, etc.)

**AGRICULTURE PRODUCTIVITY AND FOOD SECURITY**  
(frost, hail, flooding, etc.)

**ENERGY SUPPLY & DEMAND, PROTECTION**  
(heat and cold waves, severe storms, etc.)

**HEALTH EPIDEMICS**  
(excessive rainfall, cold spells, heatwaves, etc.)

**WATER RESOURCE MANAGEMENT**  
(excessive rainfall, drought, etc.)  
(Example sectors)

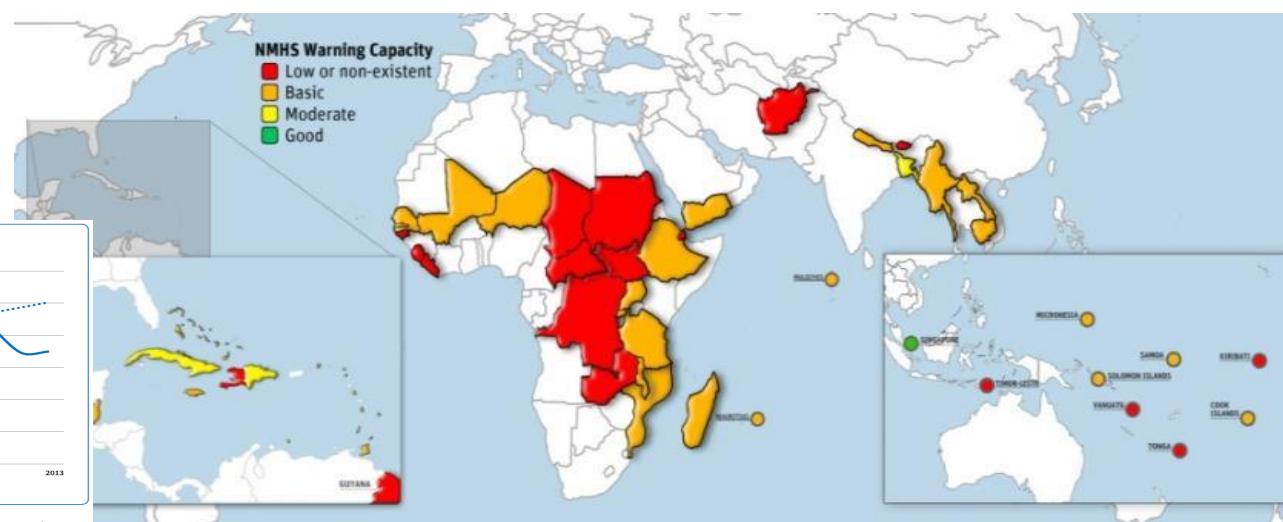
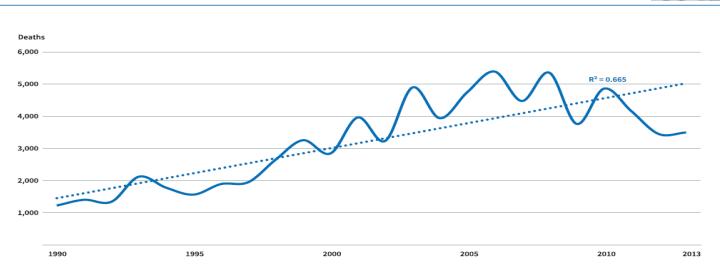


Feedback for system improvement

# EWSSs for Climate Change Adaptation & Disaster Risk Reduction

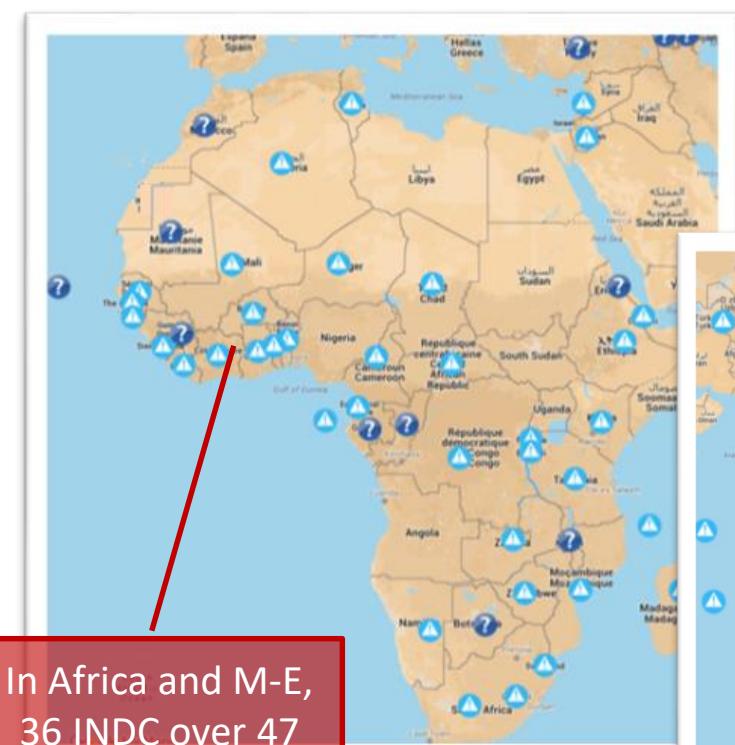
- ❑ 314 billion US\$ projected annual loss to national economies globally for disasters
- ❑ Extreme weather events likely to be more frequent and more intense
- ❑ Casualty risk increasing in LDCs and SIDS (going down in most other countries)
- ❑ Low capacity in LDCs & SIDS
- ❑ About ¾ of countries have low or non-existent or basic capacity to provide early warnings
- ❑ Only few countries have good capacity to provide early warnings and risk information

## Extensive mortality 1990-2013



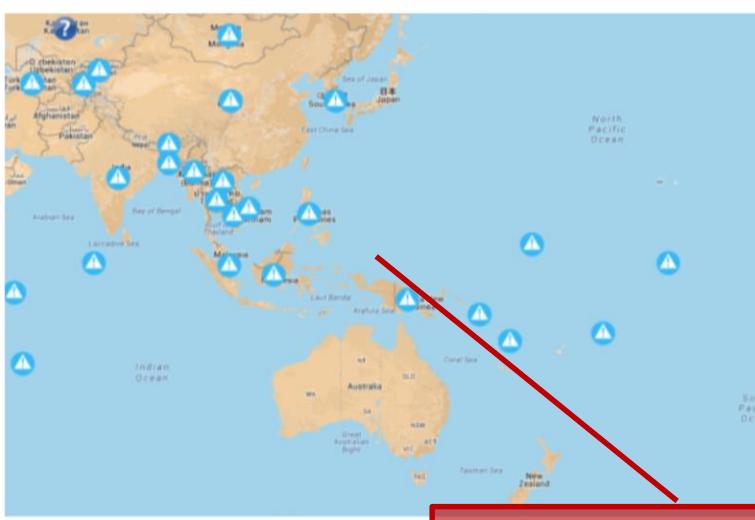
# EWSSs are in high demand from countries

About 80% of Intended Nationally Determined Contributions (INDCs) from developing countries define EWSSs as a priority for adaptation\*



In Africa and M-E,  
36 INDC over 47  
include EWS as a  
priority

In LAC, 16 INDC  
over 21 include  
EWS as a priority



In Asia and Pacific, 100% of  
INDC include EWS as a  
priority



\*Base on the INDCs published before October 2, 2015

# Global Target G of the Sendai Framework for Disaster Risk Reduction 2015-2030

**Substantially increase the availability of and access to MHEWS and disaster risk information and assessments to the people by 2030**

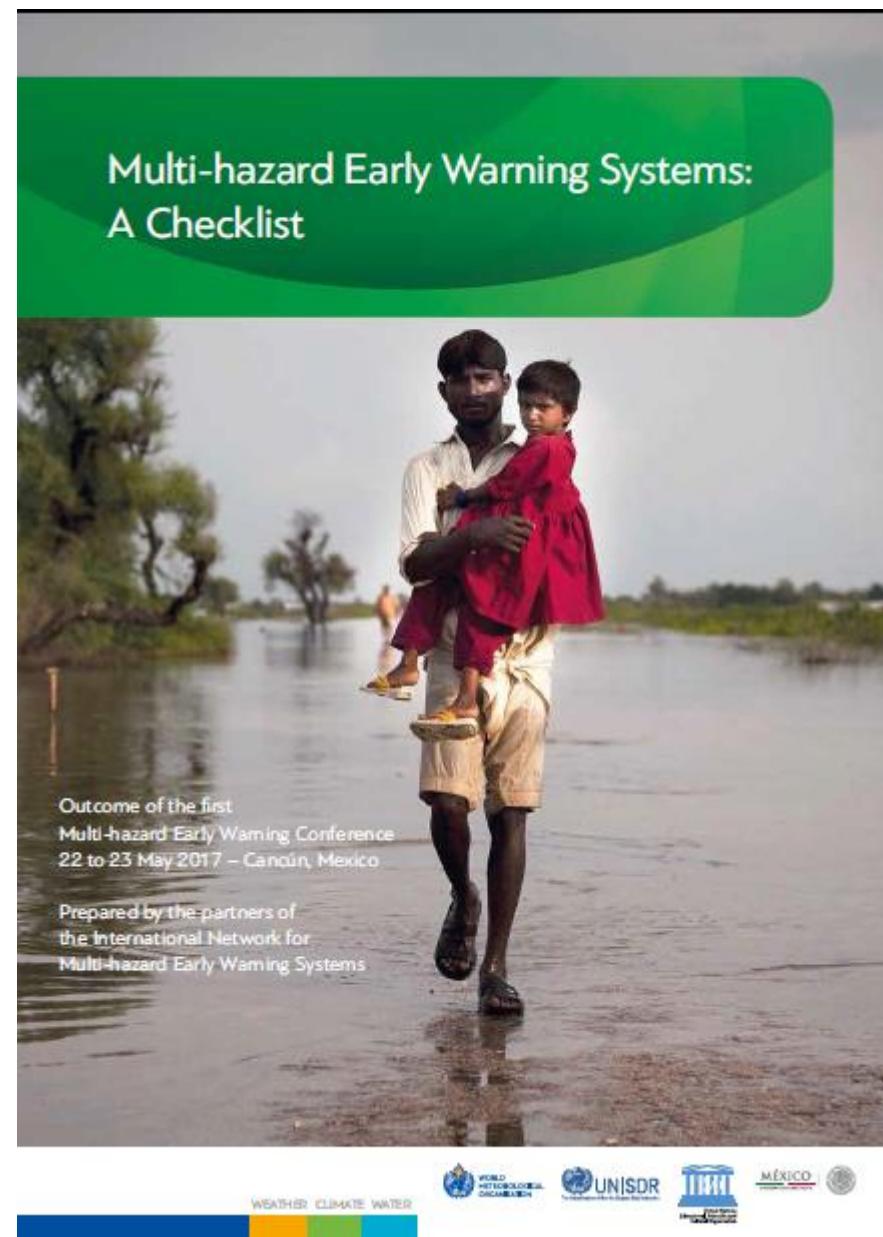
Indicators:

- G-1 (compound G2-G5) – Number of countries that MHEWS.
- G-2 – Number of countries that have multi-hazard monitoring and forecasting systems.
- G-3 – Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms.
- G-4 – Percentage of local governments having a plan to act on early warnings.
- G-5 – Number of countries that have accessible, understandable, usable and relevant disaster risk information and assessment available to the people at the national and local levels.
- G-6 – Percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning.

*Member States in a position to do so are encouraged to provide information on the number of evacuated people.*

# The International Network for MHEWS (IN-MHEWS)

## Two Multi-Hazard Early Warning Conferences (MHEWC-I & II, 2017 & 2019)



# Multi-Hazard Early Warning Systems: A Checklist

An outcome of the 2017 MHEW Conference and IN-MHEWS

## Disaster risk knowledge

- Are key hazards and related threats identified?
- Are exposure, vulnerabilities, capacities and risks assessed?
- Are roles and responsibilities of stakeholders identified?
- Is risk information consolidated?

## Detection, monitoring, analysis and forecasting of the hazards and possible consequences

- Are there monitoring systems in place?
- Are there forecasting and warning systems in place?
- Are there institutional mechanisms in place?

## Warning dissemination and communication

- Are organizational and decision-making processes in place and operational?
- Are communication systems and equipment in place and operational?
- Are impact-based early warnings communicated effectively to prompt action by target groups?

## Preparedness and response capabilities

- Are disaster preparedness measures, including response plans, developed and operational?
- Are public awareness and education conducted?
- Are public awareness and response tested and evaluated?

# Sub-project MHEWS assessment (Outcome 1)

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- ❖ **Aims:** Strengthen the governance of the participating NMHSs and the coordination and communication mechanisms with their stakeholders
  - Provide an update on capacities in the countries in SEA for generating and delivering multi-hazard early warnings
  - Identify gaps and needs
  - Implement key capacity development activities according to expressed needs and priorities
- ❖ **Nov 2018 – Mar 2020**
- ❖ **Commissioned to RIMES**

# Sub-project MHEWS assessment (Outcome 1)

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## ❖ Activities:

- Desk study of key ongoing/recently completed regional and national programmes and projects relevant to MHEWS and DRR in SAA
- Identification, analysis, and documentation of capacities, gaps, and needs relevant to MHEWS at regional, national, and sub-national/local levels
  - 4 components of MHEWS and the legislative/institutional frameworks (aligned with the MHEWS Checklist)
  - desk study, interviews, and national/regional workshops
- Analysis on how regional and national programmes and projects have addressed or will address identified capacity gaps and needs
- Preparation of regional and country-specific technical briefs



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# Thank you!

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