NATIONAL ENVIRONMENTAL HEALTH ACTION PLAN (NEHAP) 2019

24 September 2019
The Everly Putrajaya

Organized by:
Ministry of Health Malaysia

innovative • entrepreneurial • global

Climate Change, Extreme Events and Environmental Health Disasters

Translating Global Policy into Local Practice

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NEHAP MALAYSIA
National Environmental Health Action Plan

National Environmental Health Action Plan 2019 I 23-25 September 2019 @ Kuala Lumpur
"Environmental Health: Coping Up with Climate Change Challenges"

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Extreme Climate, Environmental Disaster, Resilience

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MULTI-GEOHAZARD & DISASTER RISK
A TRANSDISCIPLINARY DISASTER RESEARCH

Disaster Risk Reduction and Resilience 2030

Advancing science and technology for disaster risk reduction and management
Supporting evidence-based decision making for reducing future disaster risk
Promoting Transdisciplinary Approach (TDA) for building societal resilience

JASTIP
Japan - ASEAN Science, Technology and Innovation Platform

GADRI
Global Alliance of Disaster Research Institutes

AUN/SEED-Net

JICA

TC21
Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters

SENTINEL ASIA
Sentinel Asia

International Science Council
Regional Office for Asia and the Pacific

Global Young Academy
The voice of young scientists around the world

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"Knowing Our Current Risk, Preventing Our Future Risk"

MULTI-GEOHAZARD & DISASTER RISK GROUP

TRANSDISCIPLINARY DISASTER RESEARCH

Research interests

Advancing science and technology for disaster risk reduction;

Leveraging evidence-based decision making for future risk;

Promoting Trans-Disciplinary Approach (TDA) for building societal resilience to disaster and extreme climate;

Mainstreaming DRR into urban and regional development plans

Developing Big Earth Data platform for disaster risk reduction;

Assessing multi-geohazards and disaster risk quantitatively;

Mitigating sediment-based disaster in tectonically active regions;

Modelling debris flow & investigating mountain geohazards;

Integrating multi-hazard impact-based early warning system

Mapping, & modelling hillslope-, fluvial- and tectonic geomorphology

Intelligently supporting disaster resilient city;

Analyzing remotely sensed data, 3D-GIS, 3D geo-visualization, object-based image analysis and machine/deep learning;

Classifying element-at-risk & critical infrastructure for multi-hazard, exposure, vulnerability, and risk assessment;;

Designing geospatial-derived disaster business continuity plans;

Implementing community-based disaster risk reduction (CBDRR)

For more info, please contact us:

Multi-Geohazard & Disaster Risk – A Transdisciplinary Disaster Research

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Malaysia Japan International Institute of Technology (MJIIT)

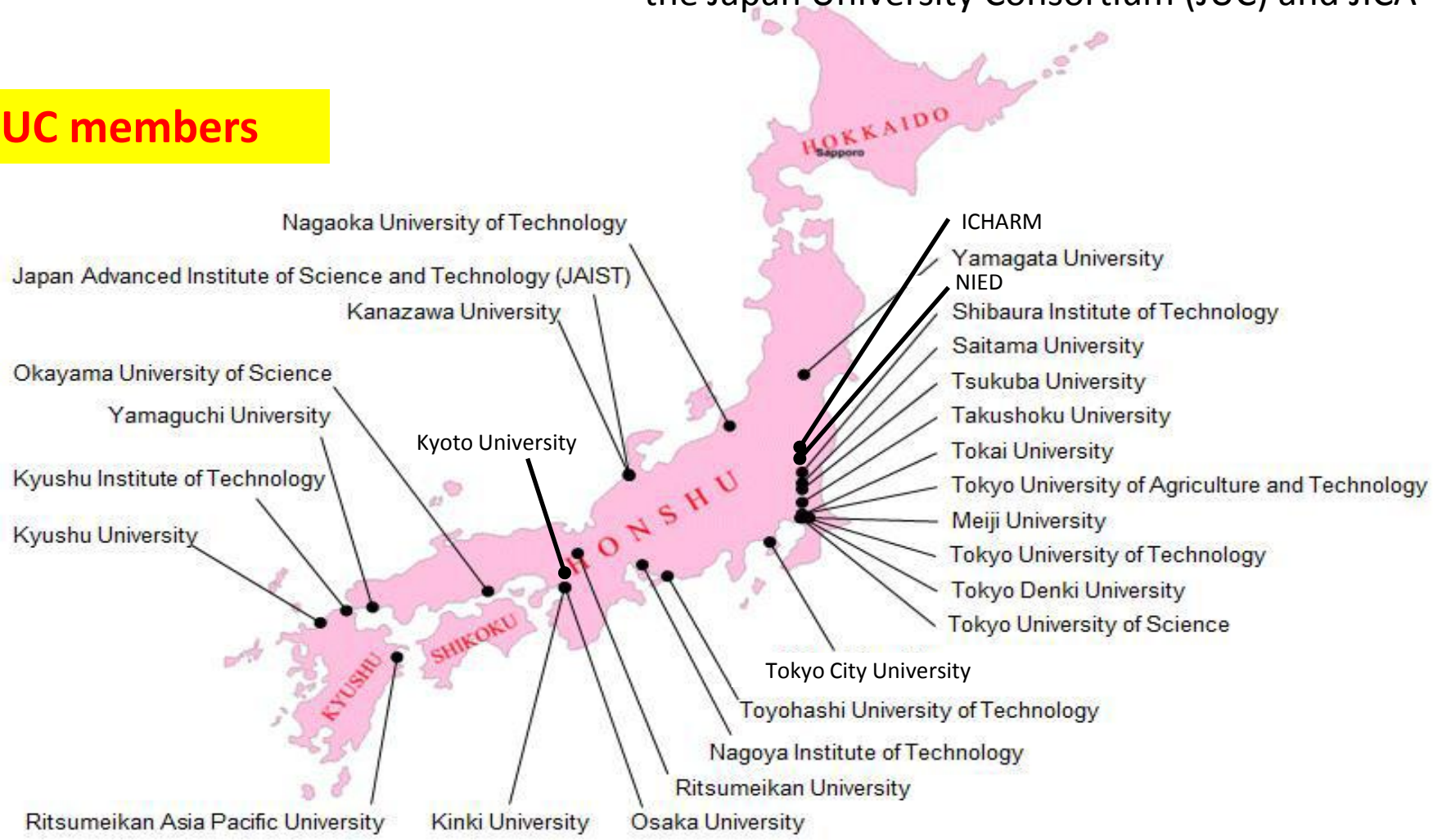
- A G-G Project aimed to set up an educational Institute in Malaysia offering Japanese Style Engineering Education
- Set up in 2010 in UTMKL and the first intake of Students in September 2011
- Continuous Support from both Government of Malaysia and Government of Japan

Part of Look East Policy of Malaysian Government

Support from Japan

Supported by the DRM Subcommittee of
the Japan University Consortium (JUC) and JICA

29 JUC members

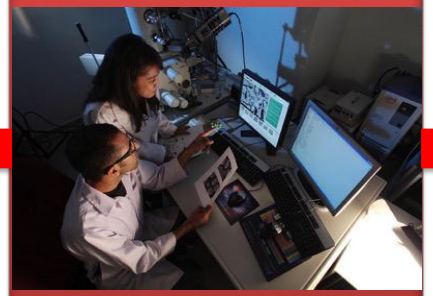


3 pillars of the Program

Technical support by Board of Studies (BoS) and JUC DRM Subcommittee

Facilitating Disaster Risk Reduction in **ASEAN** through Education/Training, Research and Field Practice

DRM Issues

Education/ Training	Research	Field Practice
		
MA Programme Professional training	Research projects Publications	Field work, stakeholder engagements

Outputs

3 Program Pillars

- Train & build network of DRR organizations and professionals
- Provide scientific basis to plan & implement disaster risk management & reduction measures

Education/Training

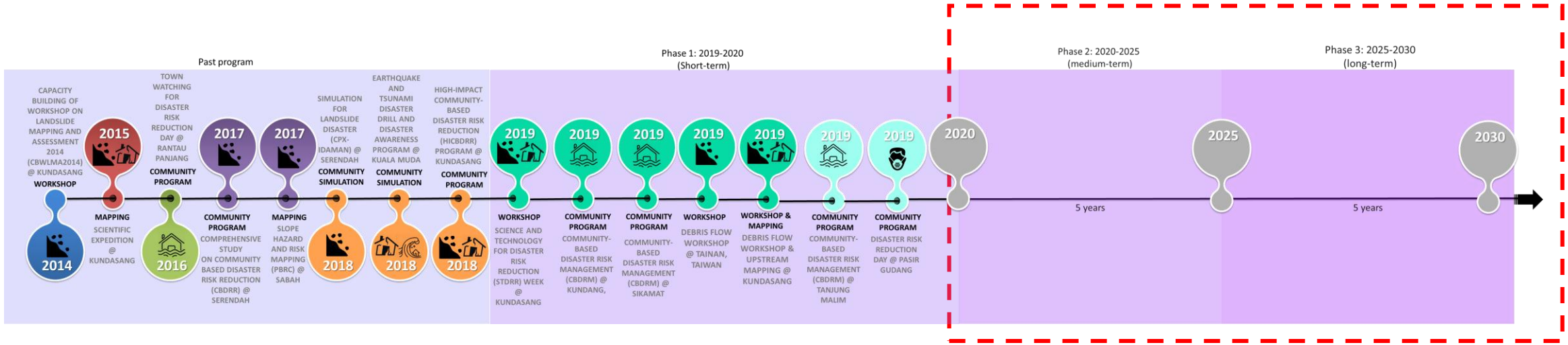
Technical Advisory Body: BOARD OF STUDIES (BOS)

- National Disaster Management Agency, Prime's Minister Department
- Department of Irrigation & Drainage
- Public Work Department
- Fire and Rescue Department of Malaysia (BOMBA)
- Federal Department of Town and Country Planning (PLANMalaysia)
- Malaysian Civil Defense Force
- Malaysian Meteorological Department
- Malaysian Medical Relief Society
- Hospital Selayang
- Universitas Gadjah Mada Indonesia
- National Cheng Kung University, Taiwan
- De La Salle University
- Nippon Koei Research Institute, Japan
- Japan International Cooperation Agency

High-Impact Science-based Community for Disaster Risk Reduction

Policy Recommendation | **Technical Assessment** | **Data Analytics**

Science- and evidence-based decision making



SUSTAINABLE DEVELOPMENT GOALS | TOGETHER TOWARDS HABITAT III | Sendai Framework for Disaster Risk Reduction 2015 - 2030 | asean | ASEAN VISION 2025 ON DISASTER MANAGEMENT

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Advancing science and technology for disaster risk reduction and resilience

"fostering inclusivity, empowering local actors, promoting science & technology, and strengthening societal resilience"

Focus Area 1
Public-Private-Academic-Civil Society (PPAPCS) **Platform** for DRR

Focus Area 2
Disaster **Risk** Governance, Communication and Investment

Focus Area 3
Science-Evidence based Decision Making for Disaster Risk Reduction

Focus Area 4
Locally-led and nationally-**support**ed initiatives, programs and activities

Focus Area 5
Area-based **Action** (Urban, Rural, Mountainous, Coastal, Tectonic)

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National Environmental Health Action Plan

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Risk-informed sustainable development 2030

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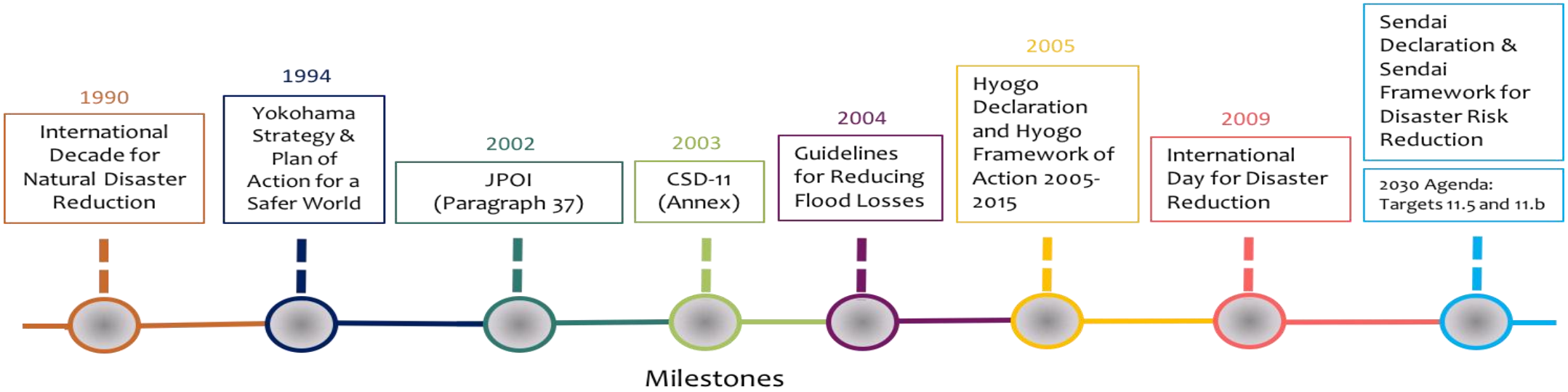
As core development strategies, **10 of the 17 SDGs with 25 targets** are identified related to **disaster risk reduction (DRR).** Given extreme climate and rapid urbanization, it is crucial for us to better cope the disaster capacity, assessing our increased exposure to natural hazards and advancing our understanding disaster by science and technology.



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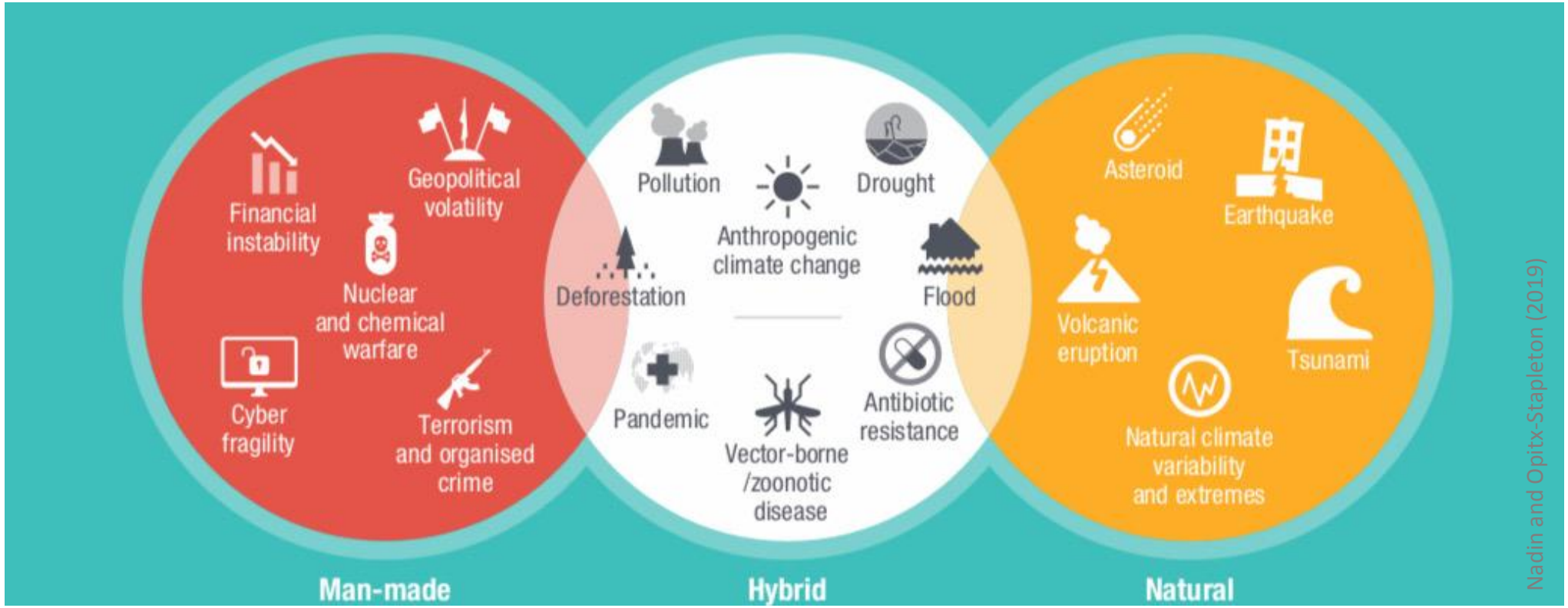
Sustainable development cannot be achieved unless disaster risk is reduced

With complexity and interaction of human, economic and political systems, risk becomes increasingly systemic. It is timely for us to better cope our capacity and assess our increased vulnerability to climate risk.



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Malaysian Wellbeing Index

Ministry of Economic Affairs

Health

– Improved life expectancy, declining maternal mortality rate and stagnating non-communicable disease cases

– But affected by increased infant mortality rate and unhealthy modern lifestyle brought by stress, poor eating habits, smoking and physical inactivity

Environment

– Deteriorated mainly due to fall in air pollution index, water quality index, while quantity of scheduled waste generated increased

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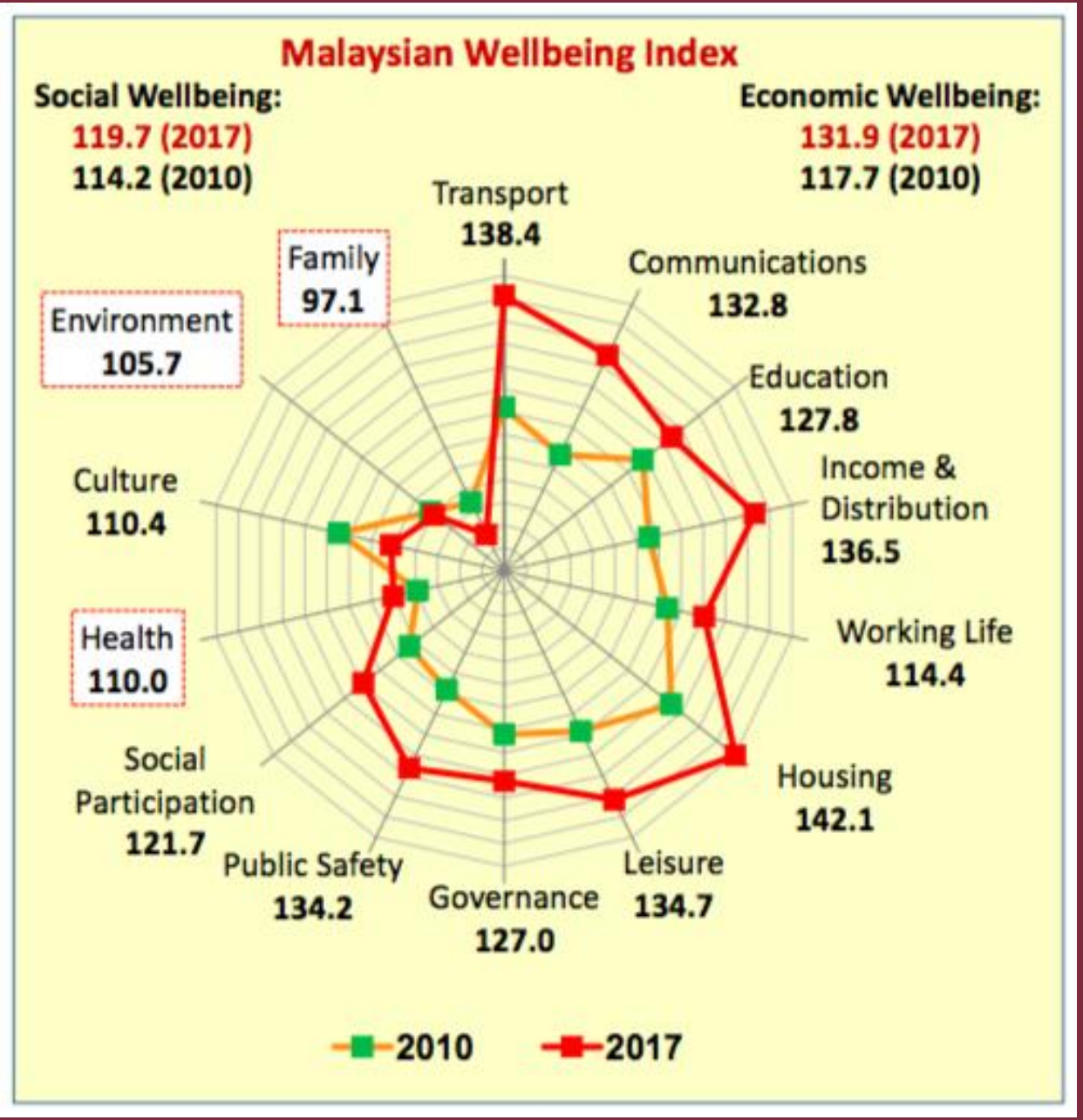
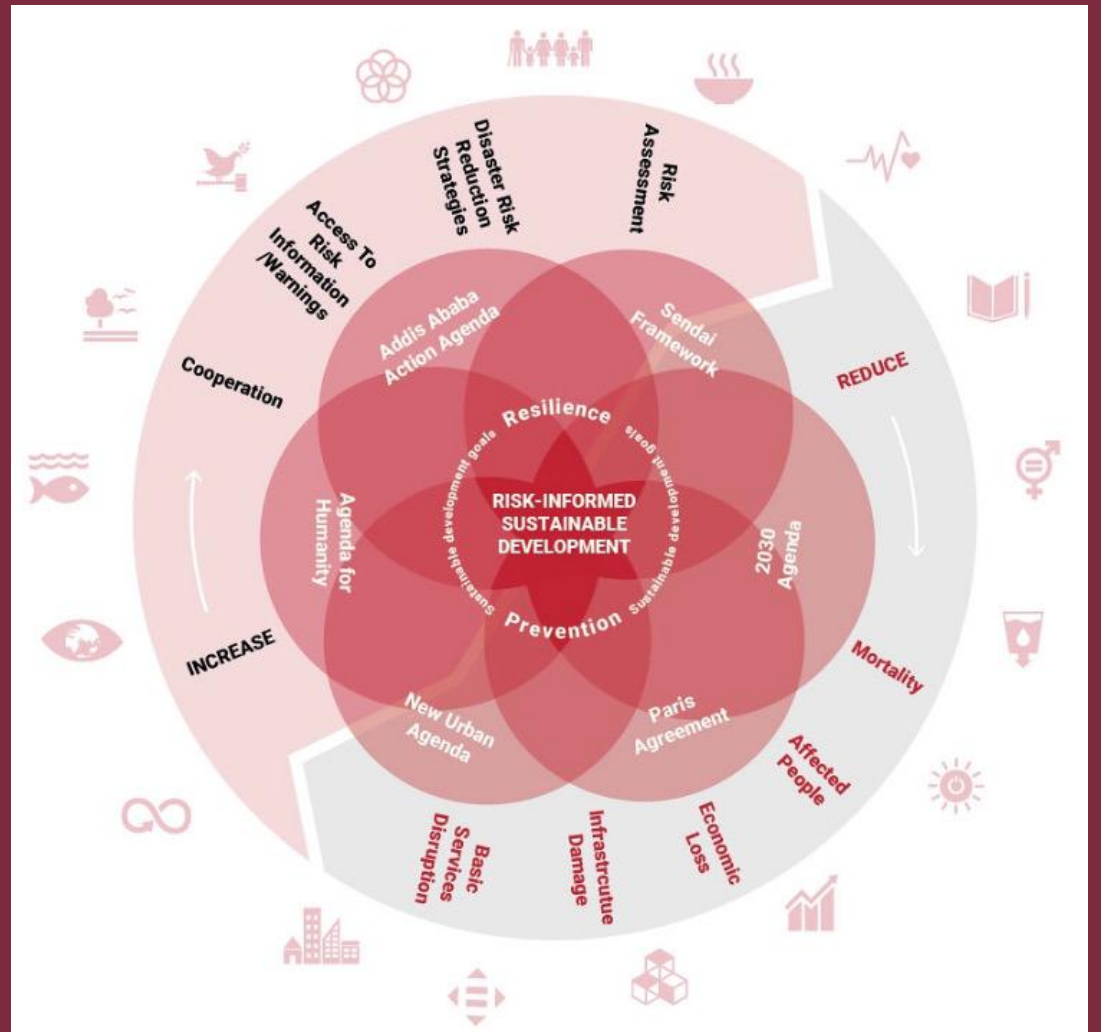


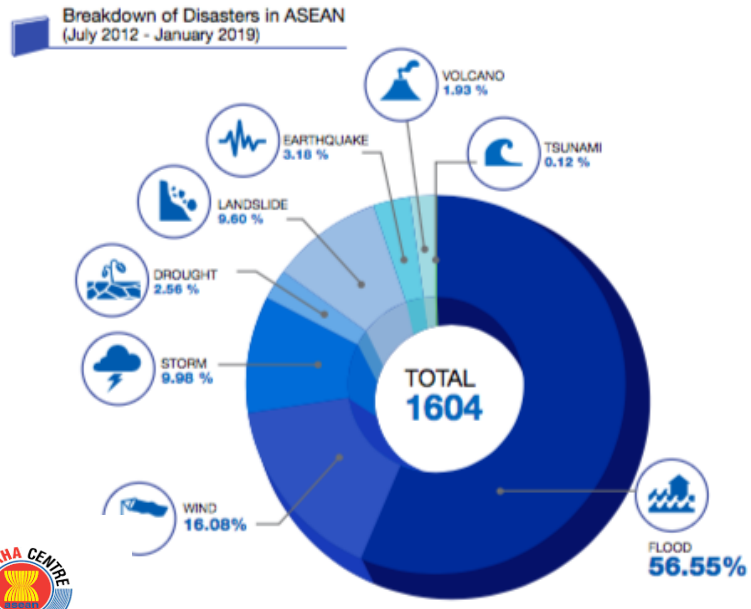
Risk-Informed Sustainable Development

2030 Agenda
Sendai Framework
Paris Agreement
New Urban Agenda
Agenda for Humanity
Addis Ababa Action Agenda



UN Global Assessment Report, 2019

1. Risk Assessment
2. DRR Strategies
3. Access to Risk Information/ Warnings
4. Cooperation

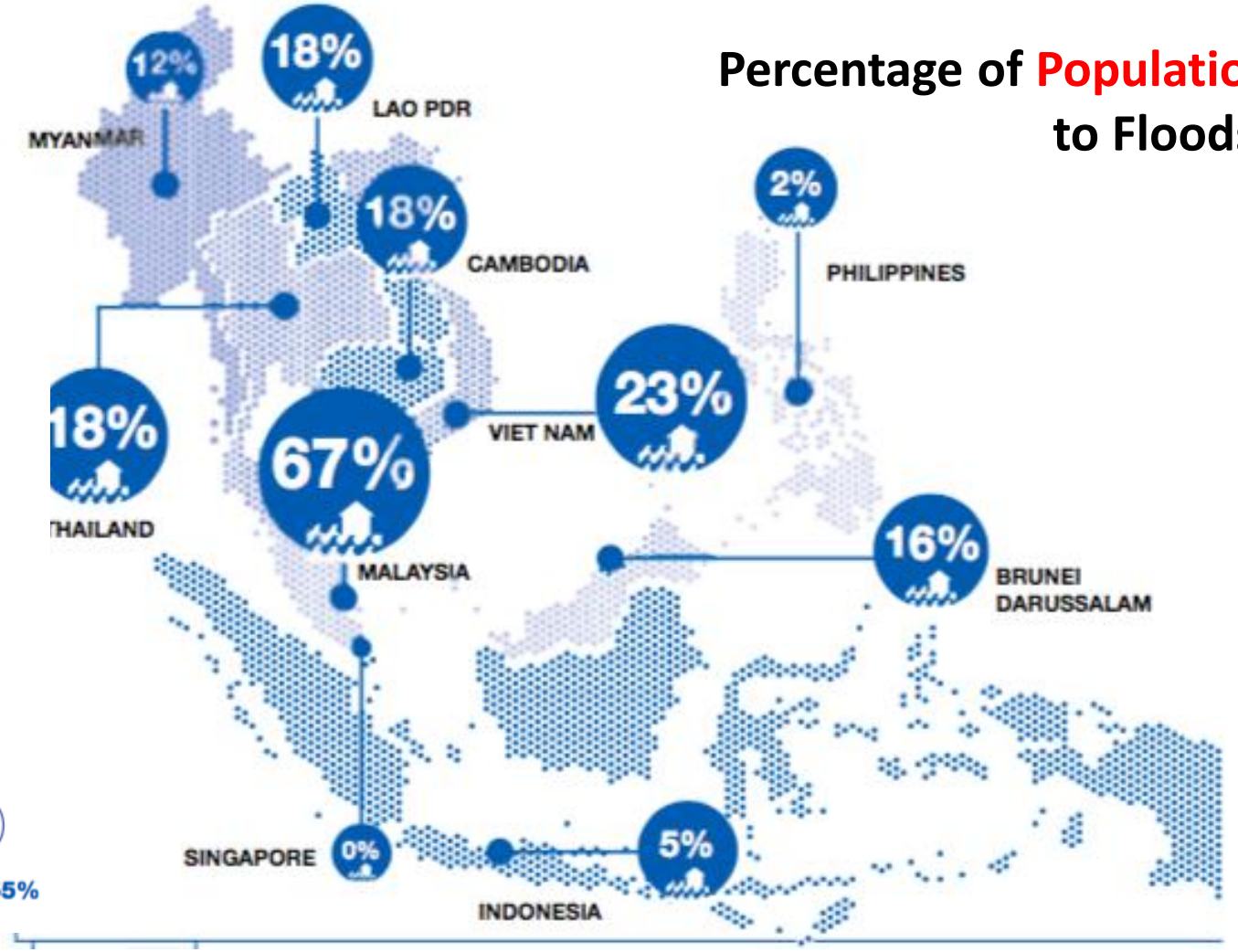


Flood (56.55%)

ONE ASEAN ONE RESPONSE

AHA CENTRE
ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management

Percentage of Population Exposed to Floods in ASEAN



Distribution of Disasters in ASEAN (July 2012-January 2019)

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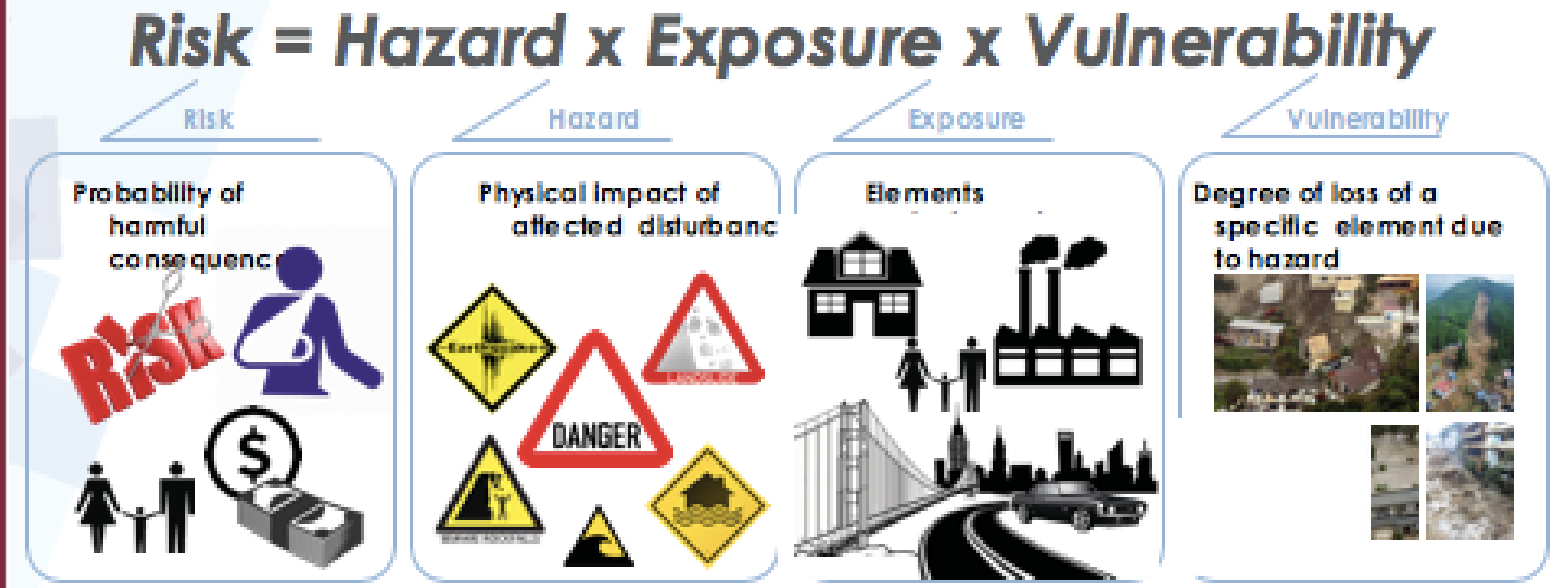
Multi-Hazard Risk Assessment

Concept, terminology, principles, and implementation

$$\text{Risk} = \sum_{\text{All hazards}} \left(\int_{P_T=0}^{P_T=1} P_{(T|HS)} * (P_{(S|HS)} * \sum (A_{(ER|HS)} * V_{(ER|HS)})) \right)$$



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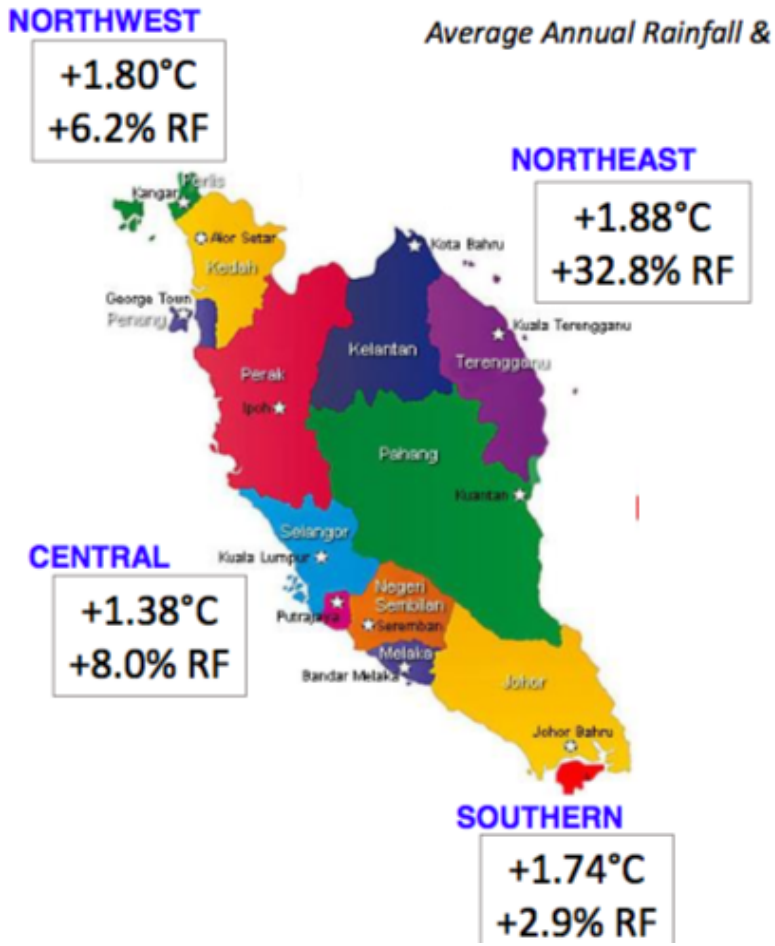
Possible Future Climate Projection

Average Annual Rainfall & Mean Temperature (1984-93 vs 2025-34 & 2041-50)



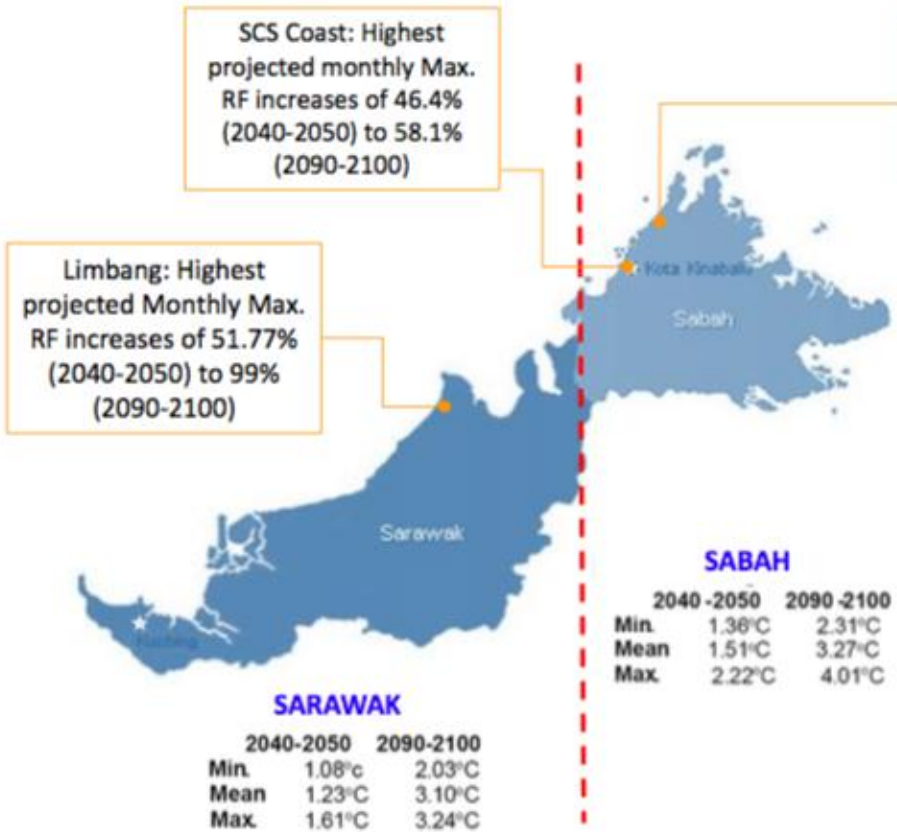
Regions / Sub-regions / States	Projected change* in maximum monthly value	
	Temperature (°C)	Rainfall (%)
North East Region • Terengganu, Kelantan, Northeast-coast	+1.88	+32.8
North West Region • Perlis (west coast), Perak, Kedah	+1.80	+6.2
Central Region • KL, Selangor, Pahang	+1.38	+8.0
Southern Region • Johor, Southern Peninsula	+1.74	+2.9

**Change in Maximum Monthly Value*

Source: NAHRIM

Possible Future Climate Projection

Average Annual Rainfall & Mean Temperature (1984-93 vs 2025-34 & 2041-50)



Climate Parameter	Peninsular Malaysia	Sabah	Sarawak
Annual Mean Surface Temperature	1.0-1.5°C [2050]	1.3-1.7°C [2050] 2.9 - 3.5°C [2100]	1.0-1.5°C [2050] 3.0 - 3.3°C [2100]
Maximum Monthly Rainfall	+113mm (12%) [2050]	+59mm (5.1%) [2050] +111mm (9%) [2100]	+150mm (8%) [2050] +282mm (32%) [2100]

Source: NAHRIM

Disaster Resilience Model

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management (UNISDR, 2017).

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Disaster Preparedness and Prevention Center, MJIIT
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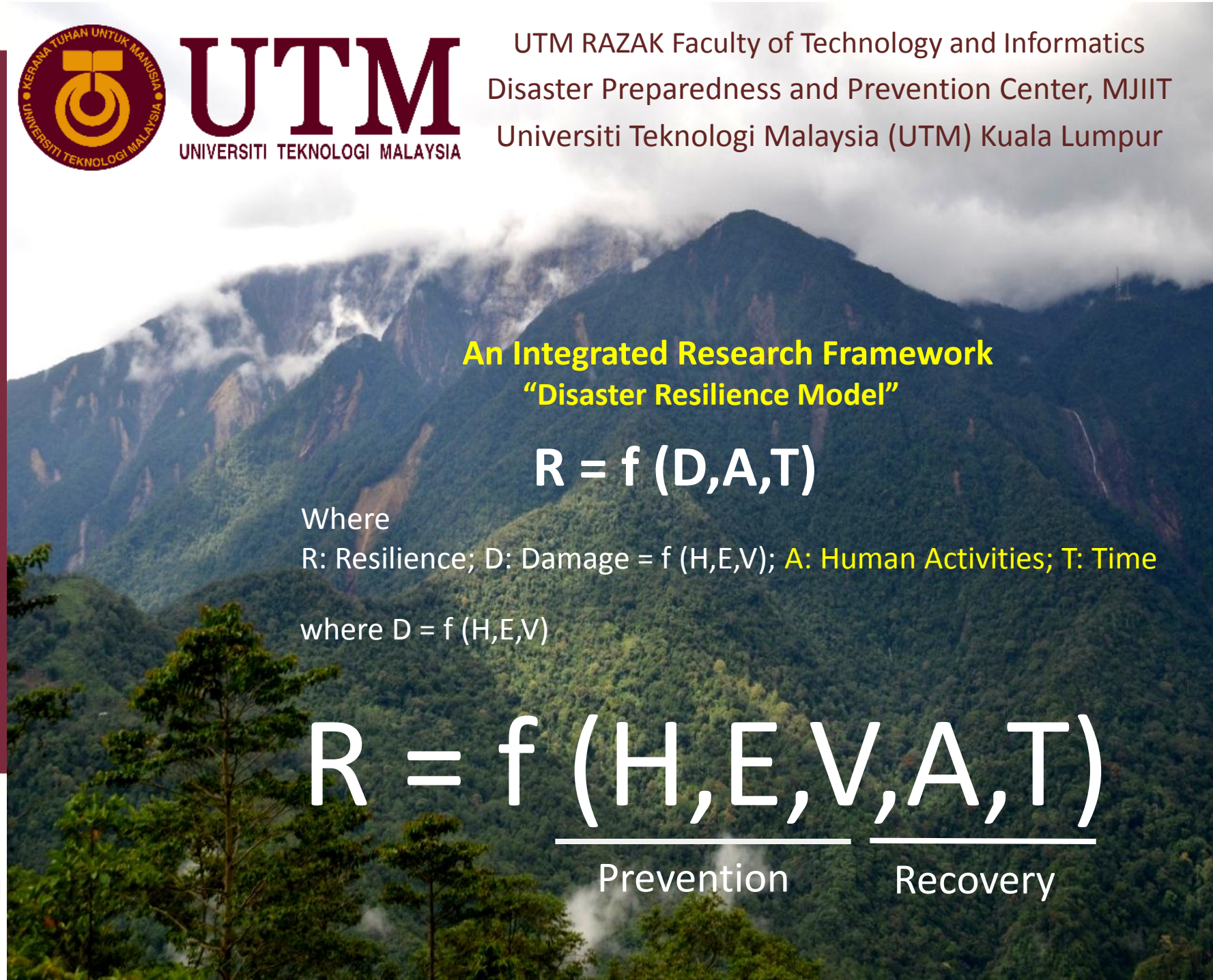

An Integrated Research Framework
"Disaster Resilience Model"

$$R = f(D,A,T)$$

Where
R: Resilience; D: Damage = f (H,E,V); A: Human Activities; T: Time

where D = f (H,E,V)

$$R = f(\underbrace{H,E,V}_{\text{Prevention}},\underbrace{A,T}_{\text{Recovery}})$$

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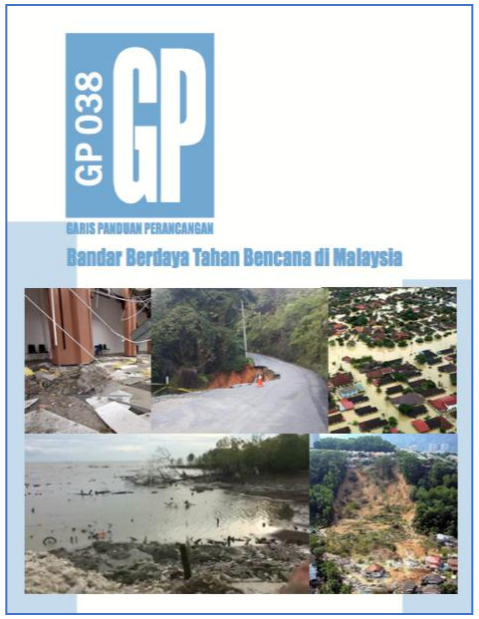
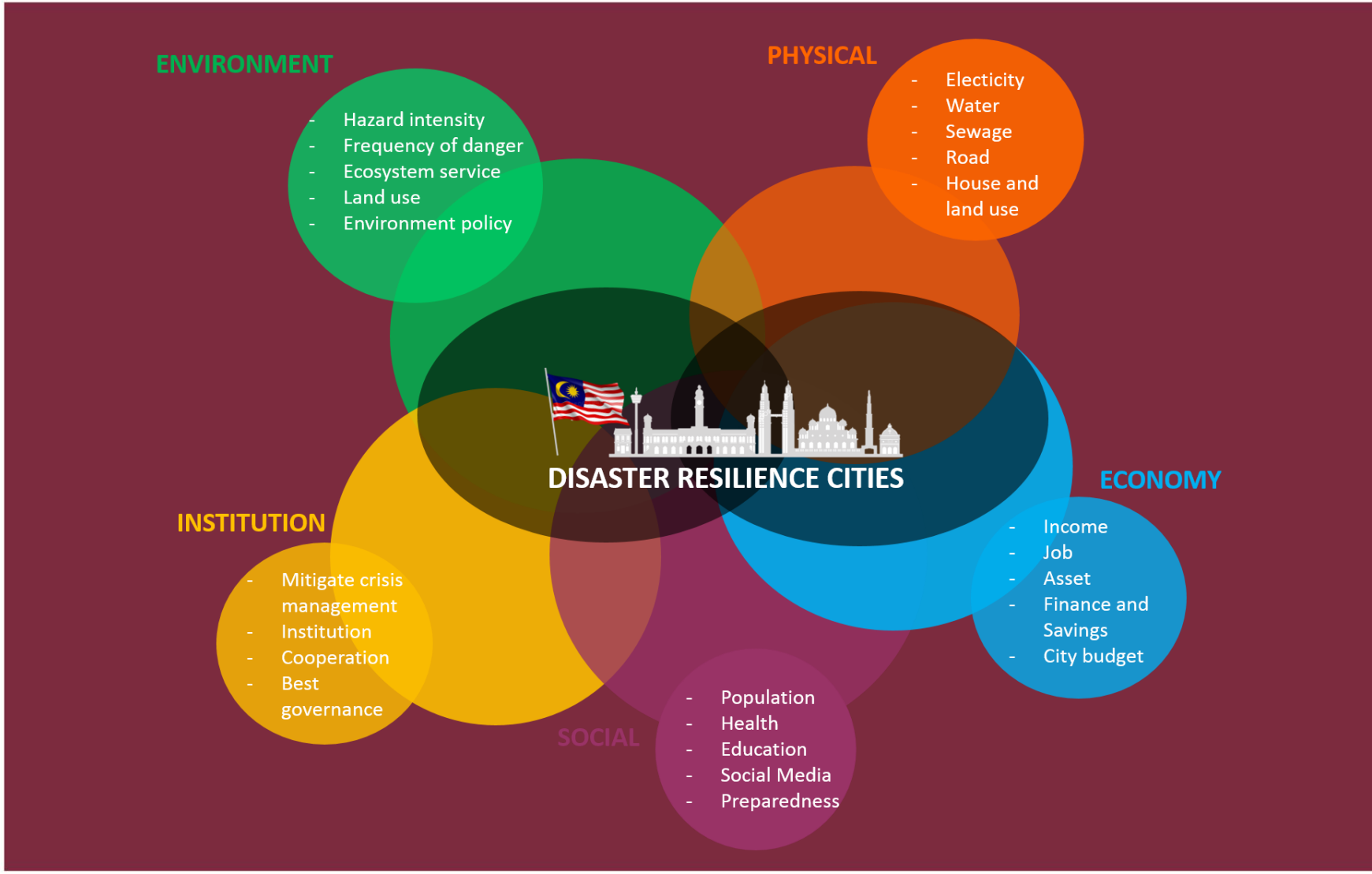
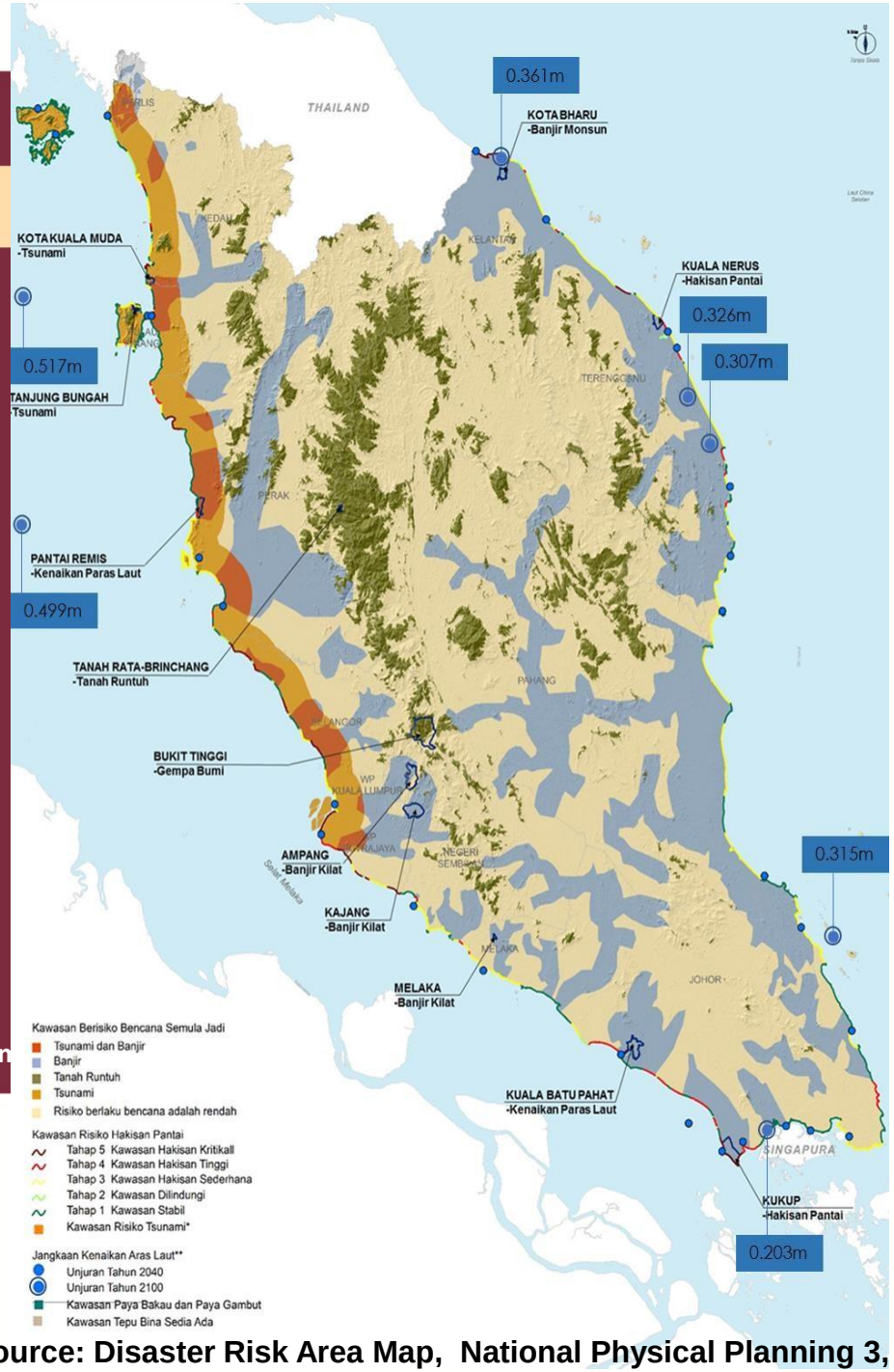
NATIONAL GUIDELINE: Development Planning for Disaster Resilient Cities, 2019

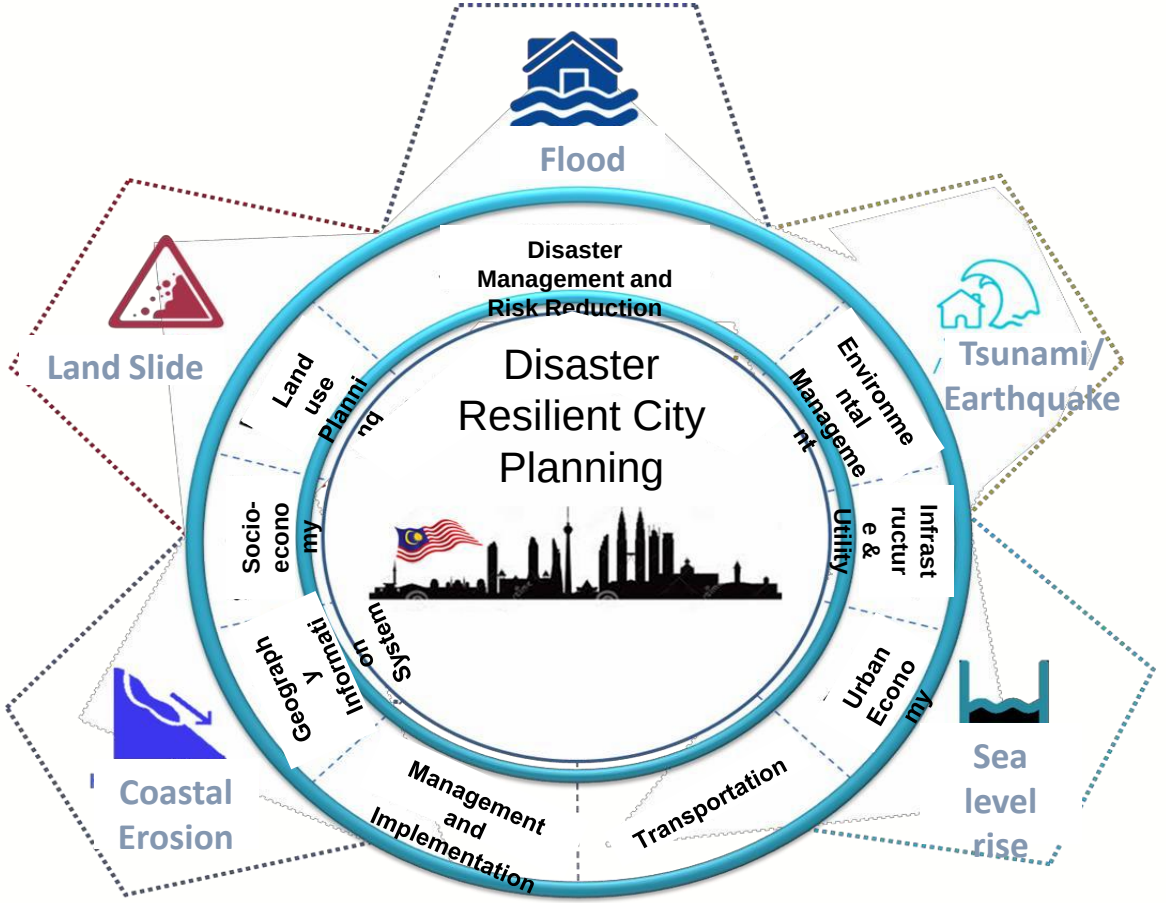
PLANMalaysia



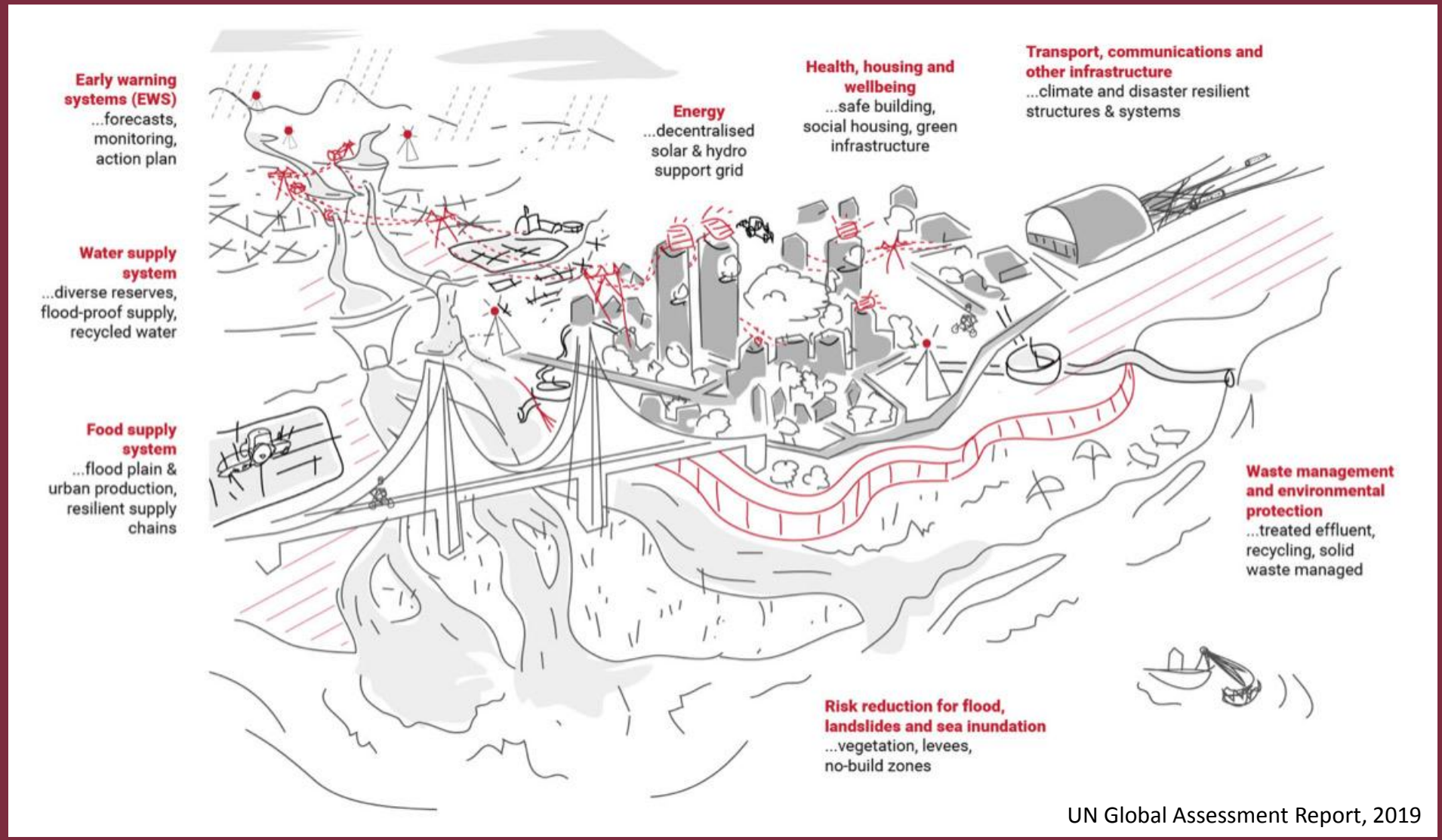




Source: Disaster Risk Area Map, National Physical Planning 3, 2016



Mainstreaming DRR into development planning and investment



UN Global Assessment Report, 2019

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NEHAP MALAYSIA
National Environmental Health Action Plan

Multi-Hazard Impact Based Early Warning System

10 Important components for successful early warning

1. Institutional arrangement
2. Earth data observation
3. Data and information collection
4. Hazard detection
5. Hazard assessment
6. Impact based forecasting/warning
7. Warnings and other products
8. Dissemination and notification
9. Risk Communication
10. Community connection and response

Sendai Framework for Disaster Risk Reduction
2015 - 2030

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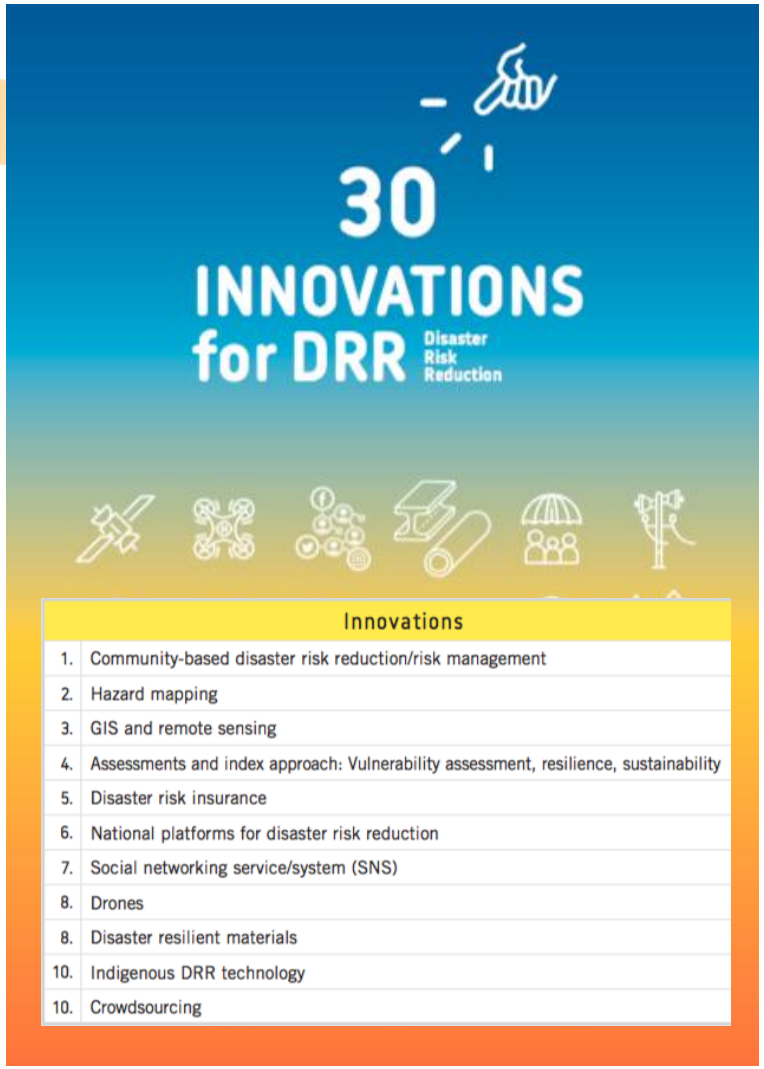


	Innovations
1.	Community-based disaster risk reduction/risk management
2.	Hazard mapping
3.	GIS and remote sensing
4.	Assessments and index approach: Vulnerability assessment, resilience, sustainability
5.	Disaster risk insurance
6.	National platforms for disaster risk reduction
7.	Social networking service/system (SNS)
8.	Drones
8.	Disaster resilient materials
10.	Indigenous DRR technology
10.	Crowdsourcing

30 Innovations for DRR

(14 products and 16 approaches)

Community-based Disaster Risk Reduction (CBDRR) – the most effective innovation in DRR

This guidelines is to identify the most important, most suitable, and innovative DRR tools that can contribute to reducing disaster risks and preparing for future disasters in the readers' own countries or regions.

Izumi, T., Shaw, R., Ishiwatari, M., Djalante, R., Komino, T. 2019 30 innovations for disaster risk reduction by IRIDeS, Keio University, the University of Tokyo, UNU-IAS, CWS Japan, Japan, 80 pages.

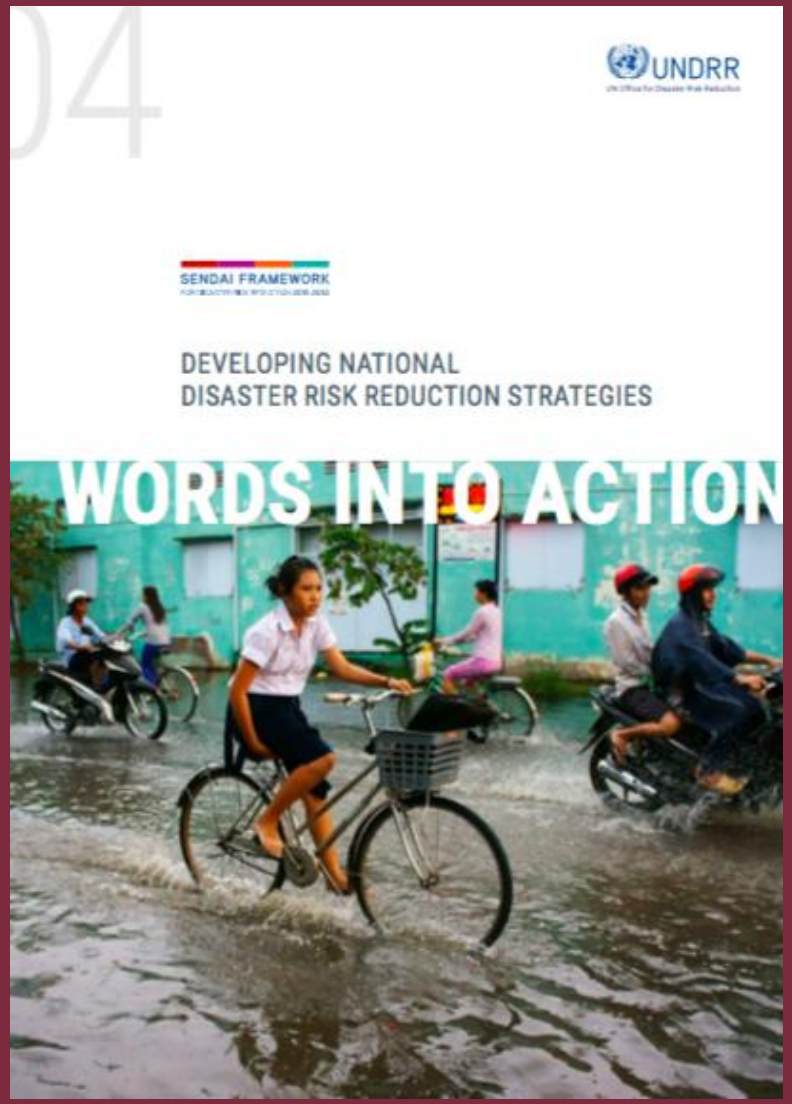
"The innovations introduced in this report are **not only high-tech products** but also provide **contextual approaches, traditional ideas and social science insights**, offering solutions that do not require large budgets or the use of advanced technology"

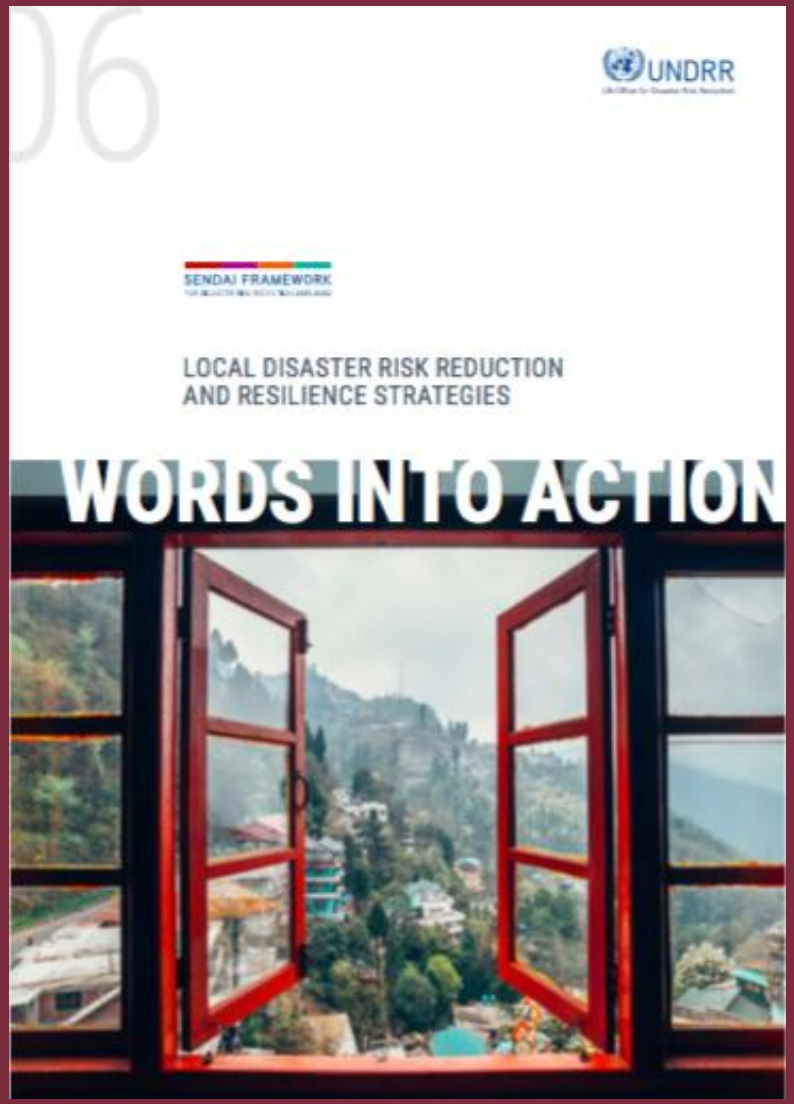
Christopher Tremewan, Secretary General, Association of Pacific Rim Universities &
Fumihiko Imamura, Director of IRIDeS, Tohoku University Japan

"the approach matters just as much as technical innovation; our efforts must be people-centered and inclusive if we are to make progress on reducing disaster risk and disaster losses"

Mami Mizutori, United Nations Special Representative of the Secretary-General for Disaster Risk Reduction

Words into Action: National & Local DRR Resilience Strategies





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Local disaster risk reduction and resilience strategy

Local disaster risk reduction plan

Low frequency, high magnitude

A local disaster risk reduction and resilience strategy is a planning tool that defines general goals and objectives across different timescales, considering the short- and mid-term while simultaneously embracing a long-term perspective. It provides a common vision and includes certain guiding principles and priorities. It aims to prevent the creation of (new) risks, reduce existing risks, recover from realized risks and strengthen economic, social, health and environmental resilience. It needs to incorporate certain flexibility and periodic evaluation mechanisms to adjust course, evolve and adapt to changing circumstances, while continuing to provide DRR guidance.

A local disaster risk reduction plan provides operational guidance for implementing the strategy. It sets out the specific goals and objectives for reducing disaster risks, together with related actions to accomplish them. A disaster risk reduction plan goes into more detail by specifying timeframes, defining responsibilities and the sources of funding. It also outlines indicators and mechanisms for monitoring progress. Linkages to sustainable development and climate change adaptation plans should be made whenever possible.

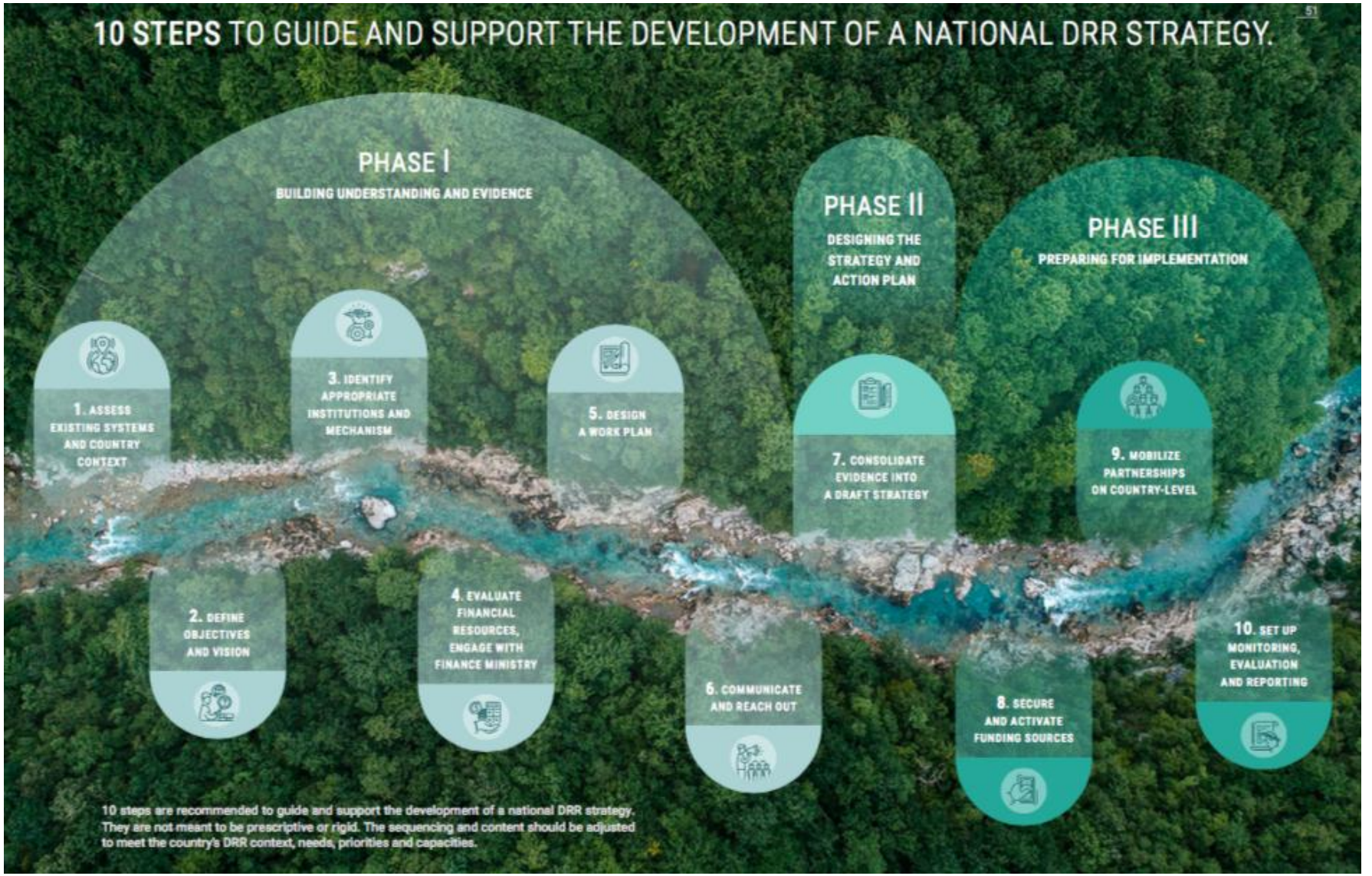
Disaster managers,
Emergency responders,
Head of community
Local champions
Community-at-risk
Vulnerable people
Tourists & outsiders

A plan / action plan /roadmap / framework is a document that provides operational orientation for implementation of the strategy by defining priority actions, timeframes, budget and resources, roles and responsibility of various entities in delivering results, identifying indicators and modalities for review and monitoring progress. It may be developed as one comprehensive national DRR plan, as risk-sensitive development plan, as sector-specific plans, or addressing specific hazards (UNDRR, 2019)

Phase 1
Building Understanding and Evidence

Phase 2
Designing strategy and action plan

Phase 3
Preparing for implementation



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Guiding questions for drafting local DRR and resilience action plans

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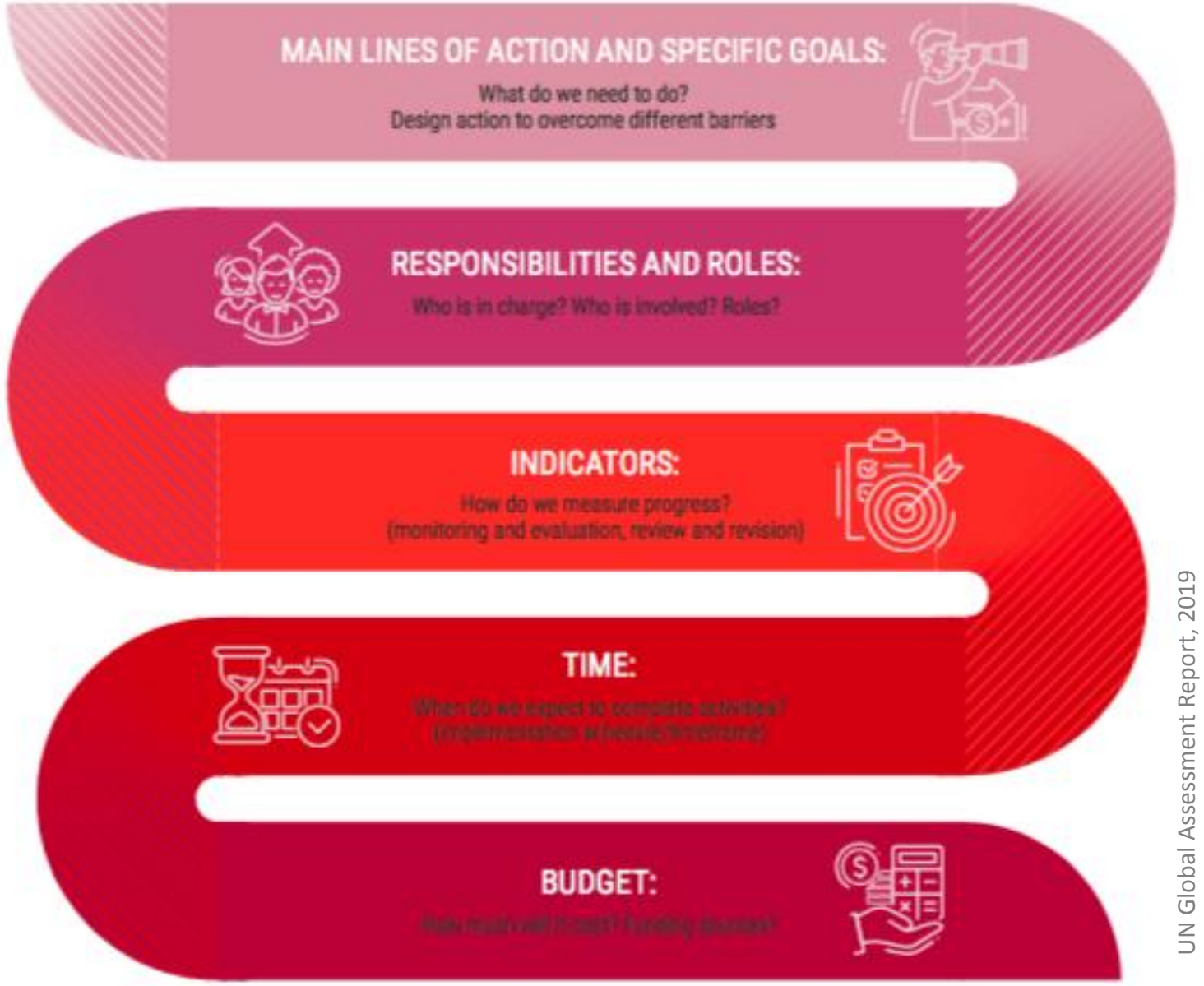
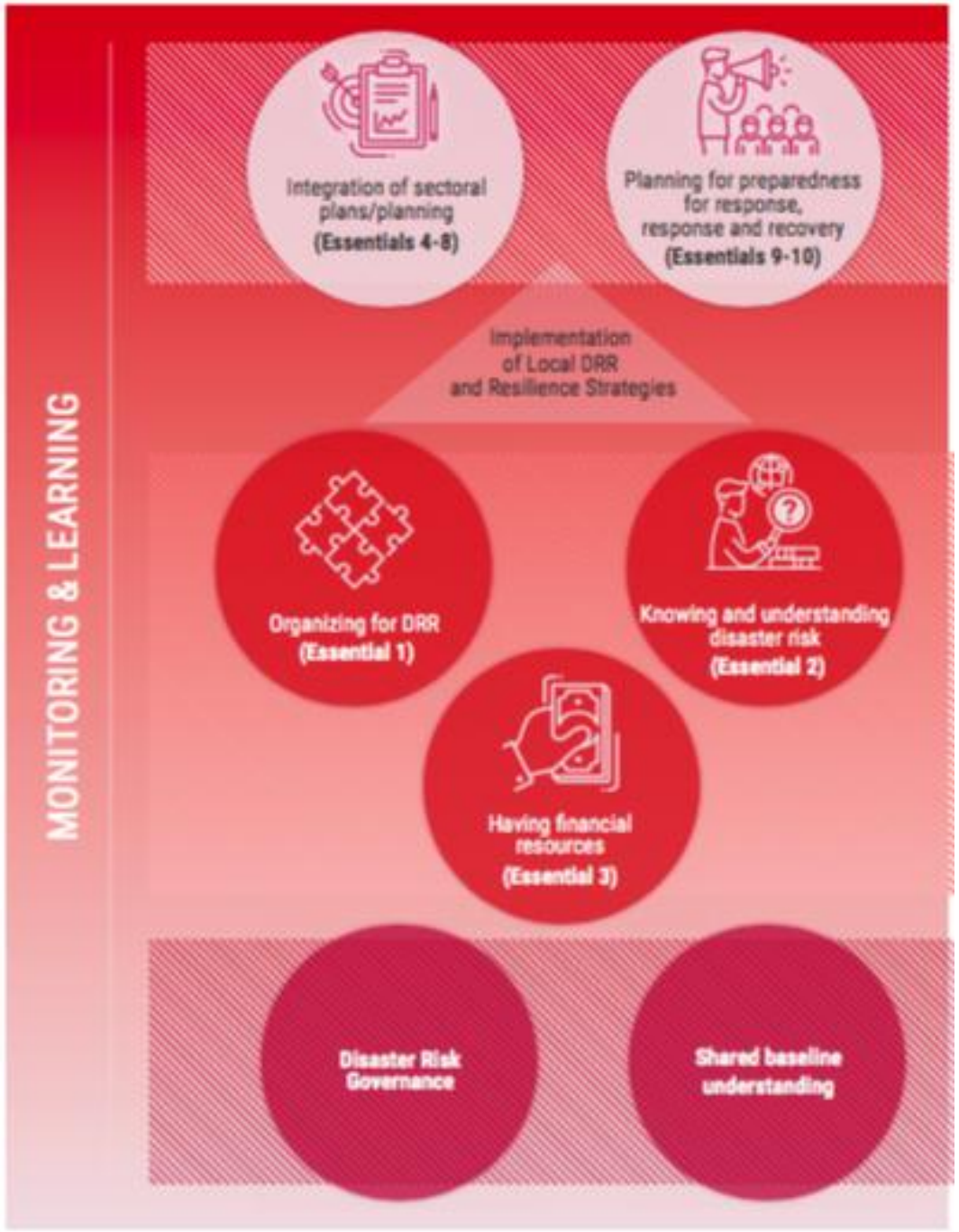


UN Global Assessment Report, 2019



Enabling factors, development and implementation of local DRR and resilience strategies

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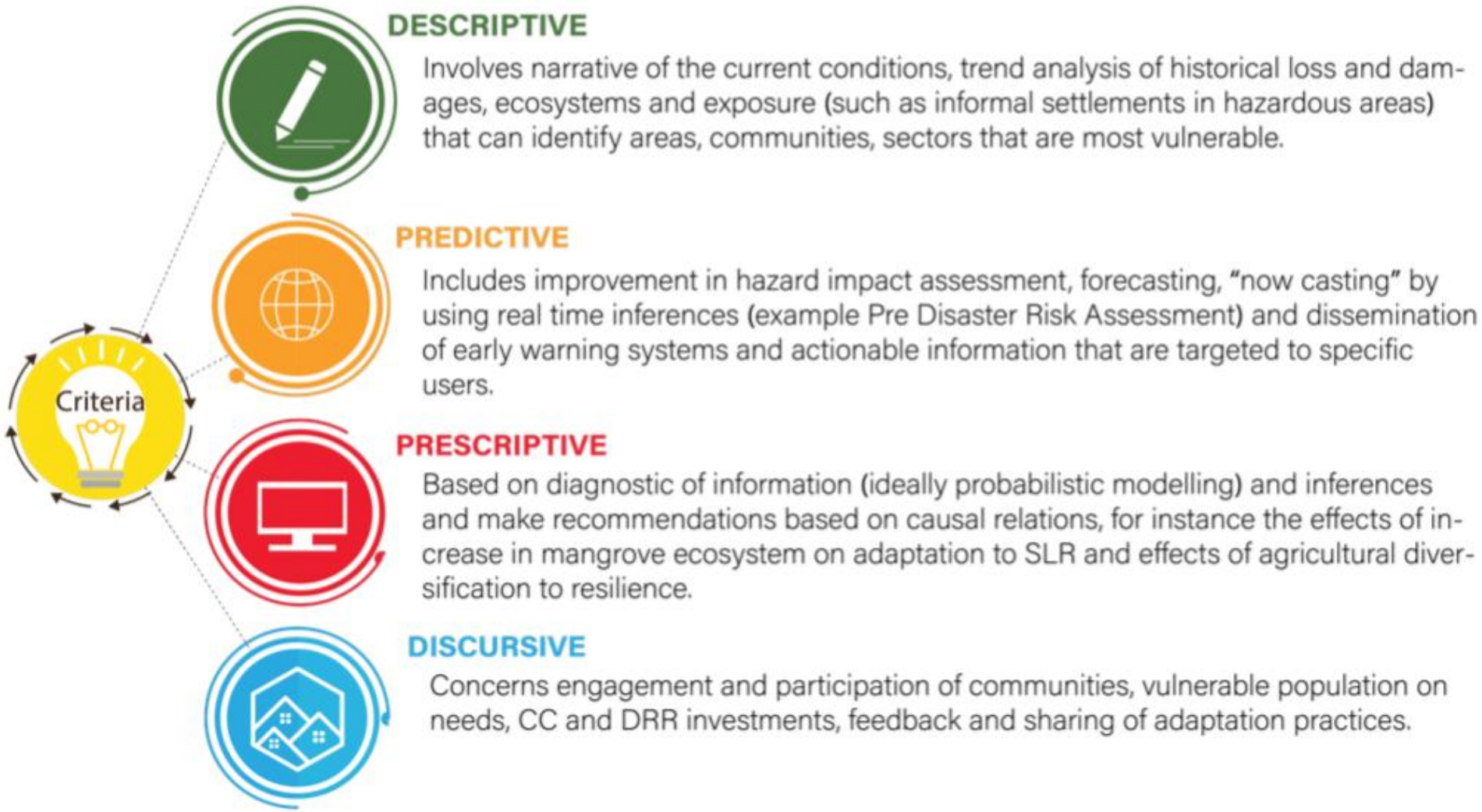
"Access to information is critical to successful disaster risk management. You cannot MANAGE what you cannot MEASURE"

"Access to information is critical to successful disaster risk management. You cannot manage what you cannot measure."
– Margareta Wahlström, United Nations Special Representative of the Secretary-General for Disaster Risk Reduction

The need for systematic data for disaster mitigation and prevention is an increasing concern of both development and response agencies. In the past, data needs were addressed on an ad hoc basis, which included collecting the information at the time of the emergency. However, there is a growing importance and understanding that data collection, analysis, and management can help both short and long-term development goals and help to identify and address disaster risks.

UNISDR is supporting countries to develop disaster loss databases.

https://www.unisdr.org/we/inform/disaster-statistics



Data Ecosystem for Resilient Development

Source:
Twelfth Malaysia Plan
Kick-Off Conference 2019
1-4 July 2019 in Putrajaya
Organized by Ministry of Economic Affairs Malaysia
In preparation of
RMK12 (2021-2025)

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OFFICIAL STATEMENT
@ UNDRR GLOBAL PLATFORM FOR DISASTER RISK REDUCTION

global platform for disaster risk reduction
Geneva, Switzerland, 13-17 May 2019

UNDRR
UN Office for Disaster Risk Reduction

DATO' SERI DR. WAN AZIZAH DR.WAN ISMAIL, DEPUTY PRIME MINISTER OF MALAYSIA
15 MAY 2019 | GENEVA, SWITZERLAND

"Although, Malaysia is not usually affected with disaster on a catastrophic scale, we nonetheless face a number of high frequency, low impact disasters such as floods, landslides, storms and haze throughout the year.

We also have to deal with **man-made disasters** such as fires and most recently, **gaseous chemical pollution**.

In handling this, Malaysia has adopted **multi-stakeholder approaches by engaging government agencies, states and local authorities, technical experts, private sectors and civil societies**.

We are a key actor in regional and international disaster risk reduction initiatives such as, ASEAN Ministerial Meeting on Disaster Management, ASEAN Committee on Disaster Management, ASEAN Regional Forum and the Sendai Framework for Disaster Risk Reduction

https://www.bharian.com.my/berita/nasional/2019/05/563672/tpm-ketuai-delegasi-malaysia-ke-gpdrr-di-geneva

Sg. Kim-Kim Disaster, March 2019 (Pasir Gudang, Johor)

Industrial- and Chemical based Disaster (Air Pollution)
More than 2000 factories (360 km2)
More than 100,000 residents
More than 111 government schools

SCIENCE-BASED COMMUNITY DISASTER RISK REDUCTION
13 OCTOBER 2019
PASIR GUDANG

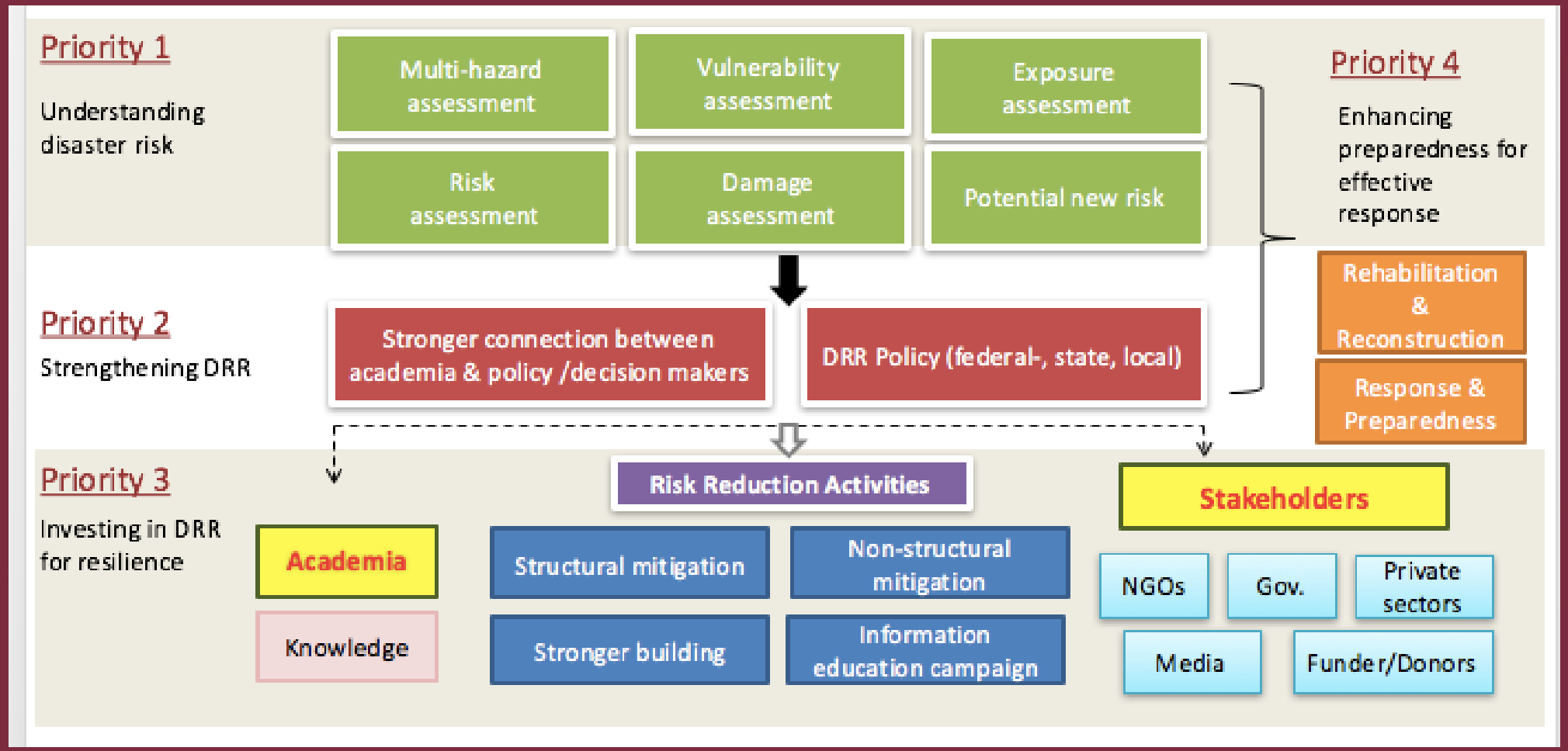
Stakeholders Meeting and Technical Visit to Pasir Gudang, Johor | 9-11 July 2019

HIGH IMPACT PROGRAM FOR SCIENCE- BASED COMMUNITY DISASTER RISK REDUCTION

13 October 2019 I Stadium Pasir Gudang (Johor Bharu District), Johor

In conjunction to UNDRR International Day for Disaster Risk Reduction 2019
13 October 2019 @ Pasir Gudang, Johor

Sendai Framework for Disaster Risk Reduction 2015-2030: Progress & Challenges



Complexity of disaster – multisectoral & disciplinary group - special need & interest

Action oriented program – scientific-based decision support – transdisciplinary approach

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