ESCAP | APDIM Asian and Pacific Centre for the Development of Disaster Information Management

مرکز پژوهش‌های توسعه و آینده‌نگری
Center for Development Research and Foresight

211th Scientific Meeting

Integrating Disaster Risk Reduction into National Development Programs

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Director

Asian and Pacific Centre for the Development of Disaster Information Management (APDIM)

Wednesday, June 11, 2025
10 AM - 12 PM (Tehran Time)

http://connect.mporg.ir/cdrf

Speakers

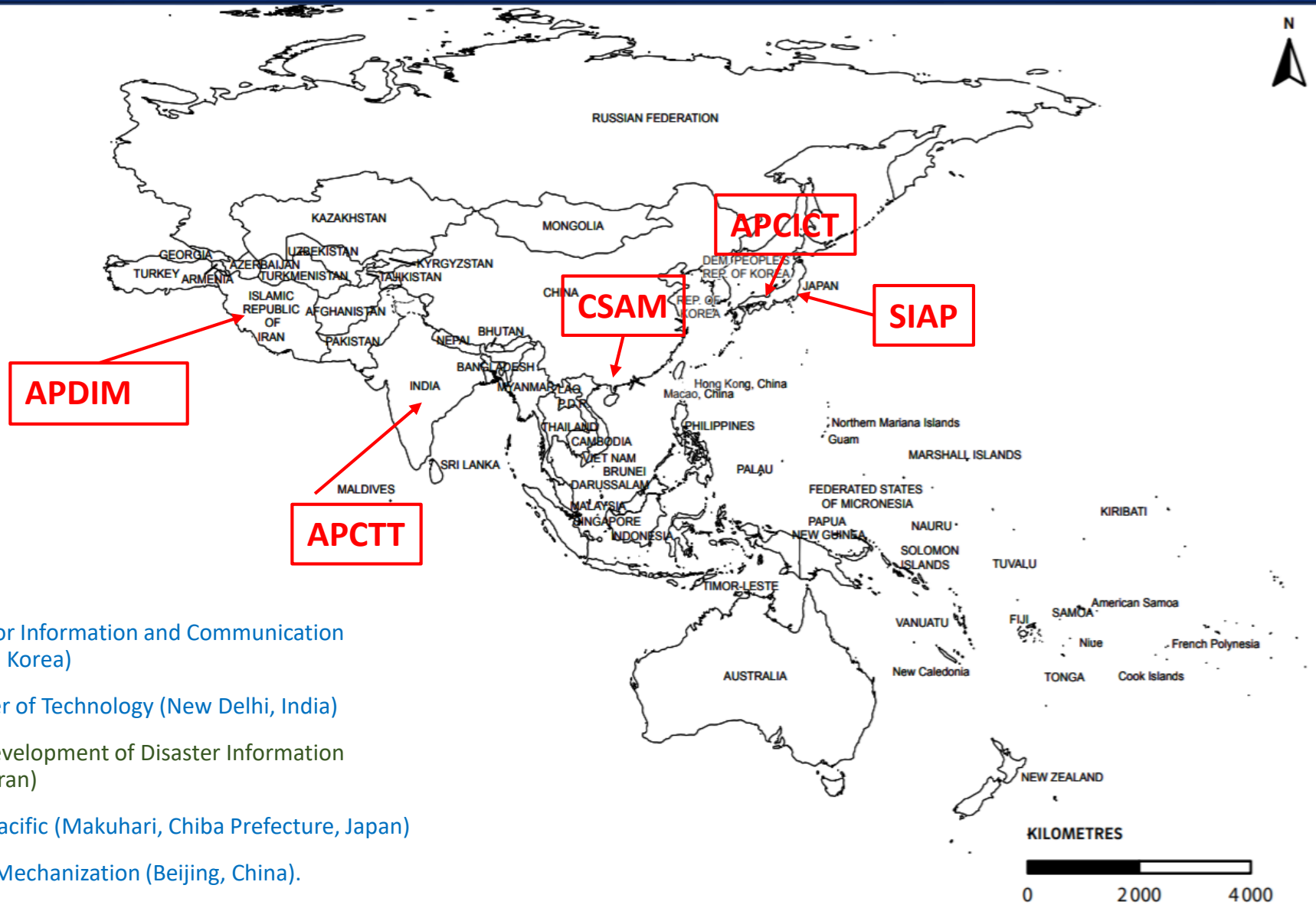
Ms. Letizia Rossano
Director, United Nations Centre for Development of Disaster Information Managememt in Asia and the Pacific (APDIM)

Dr. Abbas Ostad Taghizadeh
Faculty Member and Head of the Department of Health in Emergencies and Disasters at Tehran University of Medical Sciences, Head of the Research Center for Health and Climate Change

Scientific Chairperson

Dr. Mostafa Mohaghegh
Senior Coordinator of the United Nations Centre for Development of Disaster Information Management in Asia and Pacific (APDIM)

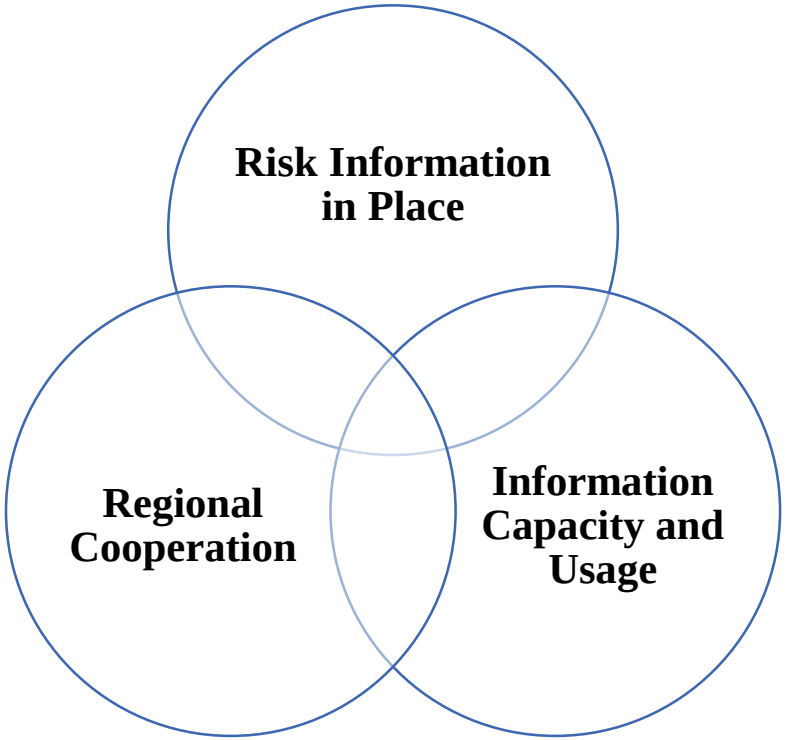
ESCAP's Regional Institutions



- **APCICT:** Asian and Pacific Training Centre for Information and Communication Technology for Development (Incheon City, Korea)
- **APCTT**: Asian and Pacific Centre for Transfer of Technology (New Delhi, India)
- **APDIM**: Asian and Pacific Centre for the Development of Disaster Information Management (Tehran, Islamic Republic of Iran)
- **SIAP**: Statistical Institute for Asia and the Pacific (Makuhari, Chiba Prefecture, Japan)
- **CSAM**: Centre for Sustainable Agricultural Mechanization (Beijing, China).

About APDIM

APDIM Long Term Outcomes



APDIM is a subsidiary body of ESCAP and is aligned with and contributes to the strategic framework and programme of work of ESCAP.

Purpose: To support the need for disaster information management to achieve disaster risk reduction and resilience building towards realization of inclusive and sustainable development in the Asia and the Pacific.

Long-term Outcome 1: Risk Information
Access to effective disaster risk information is enabled and facilitated at the regional and national level

Long-term Outcome 2. Information Capacity and Application
Country and regional organizations have the capacity to access, understand and apply disaster risk information towards risk-informed development policies and investments.

Long-term Outcome 3: Regional Cooperation
There is effective regional cooperation and coordination to compile, access and apply disaster risk information.

Definition

DISASTER RISK, CLIMATE CHANGE RISKS & DRR/CCA

DISASTER RISK

The potential loss of life, injury, or damage to assets caused by hazards, depending on exposure, vulnerability, and capacity

(United Nations, 2017)

CLIMATE CHANGE RISKS

Caused by slow-onset hazards (e.g. sea-level rise, glacial melt) and sudden events (e.g, st-orms, floods), driven by shifts in temperature and precipitation.

(UNFCCC, 2007)

DRR & CCA

Both reduce vulnerability and build resilience. DRR covers all hazards anu timescales; CCA focuses on long-term climate impacts. CCA is a subset of DRR.

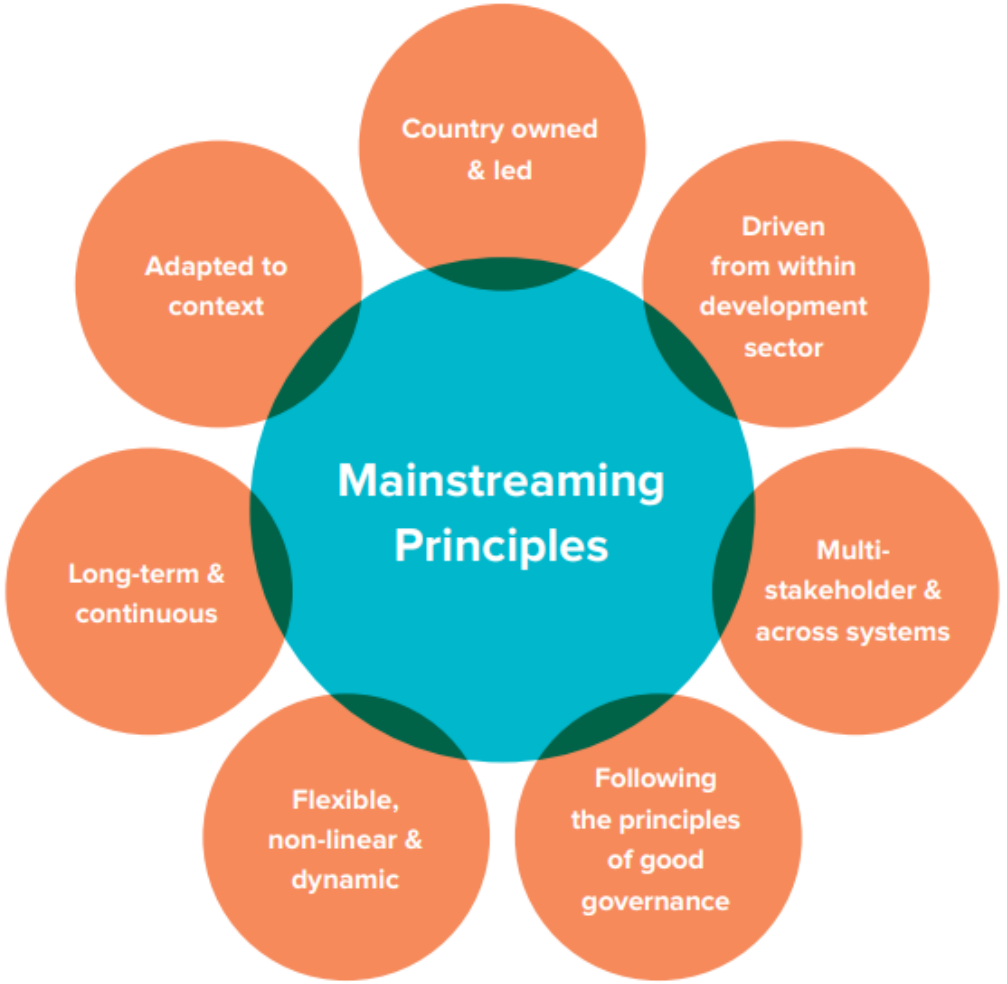
(Dr. Xu Tang, WMO)

What is mainstreaming DRR into national development plans?

Integrating DRR into all stages of development planning

Involves risk assessments, legislation, budgeting, and implementation

Key Principles of Mainstreaming DRR



Integration of DRR/CCA into National Development Plan

- Risk-informed development is an approach that integrates measures to address, and ideally **reduce, disaster risks in development planning, budgeting and decision-making**. Thereby avoiding risk to jeopardize, or worse set back, development gains.

- This approach recognizes that **development activities can generate** new **risk** or exacerbate existing risks, particularly in hazard-prone areas. For an effective Disaster Risk Reduction, countries not only need to reduce the existing risks but more importantly **need to prevent new risks** that might be generated by imbalanced development in various socio-economic sectors such as agriculture, energy, transport, etc.

- For an effective integration of risk into the development planning, **information management is an important component**. Various data sources and flowless data sharing and communication are required not only within the DRR community but also for development ministries and planning organizations.

Why integration of DRR into development plans matters?

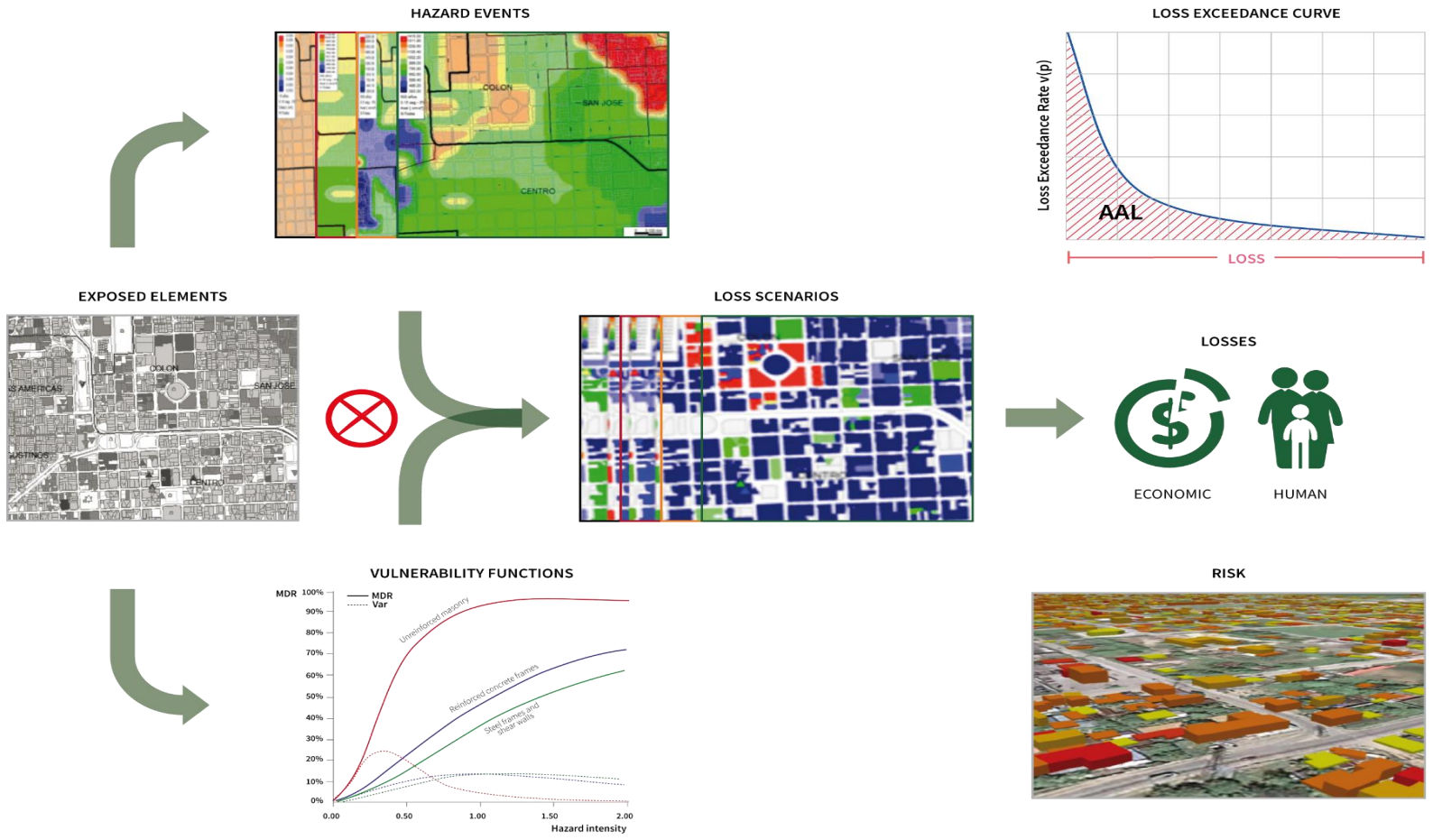
Formerly an infrastructure investment

Disaster losses cost over $200 billion annually (GAR 2025)

Every $1 in DRR saves up to $15 in recovery (UNDRR)

Climate risks, urban growth, and inequality increase vulnerability

Towards resilient infrastructure: Model the risks



Types of Hazards:
Geological, meteorological, hydrological, climatic, industrial, biological

Types of Vulnerabilities:

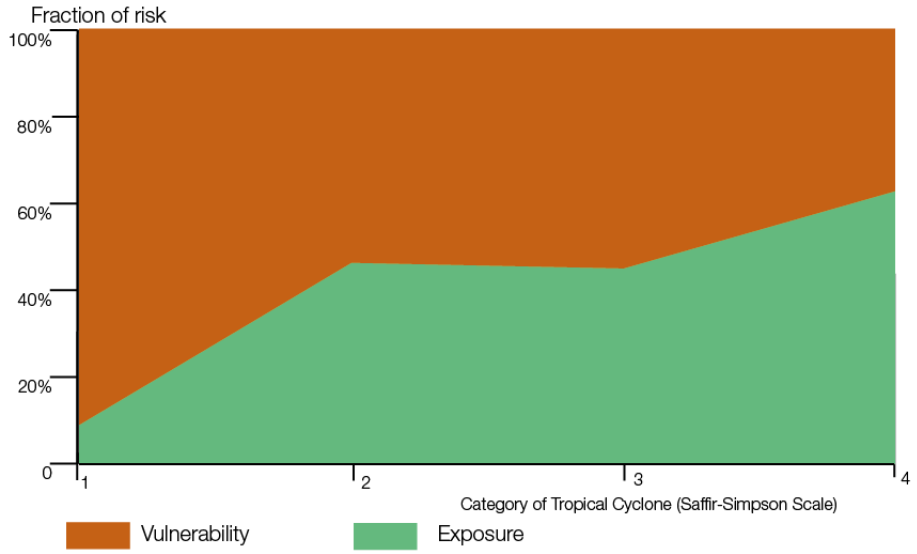
1) Physical
2) Social
3) Economic
4) Environmental

Exposure: land use planning, etc.

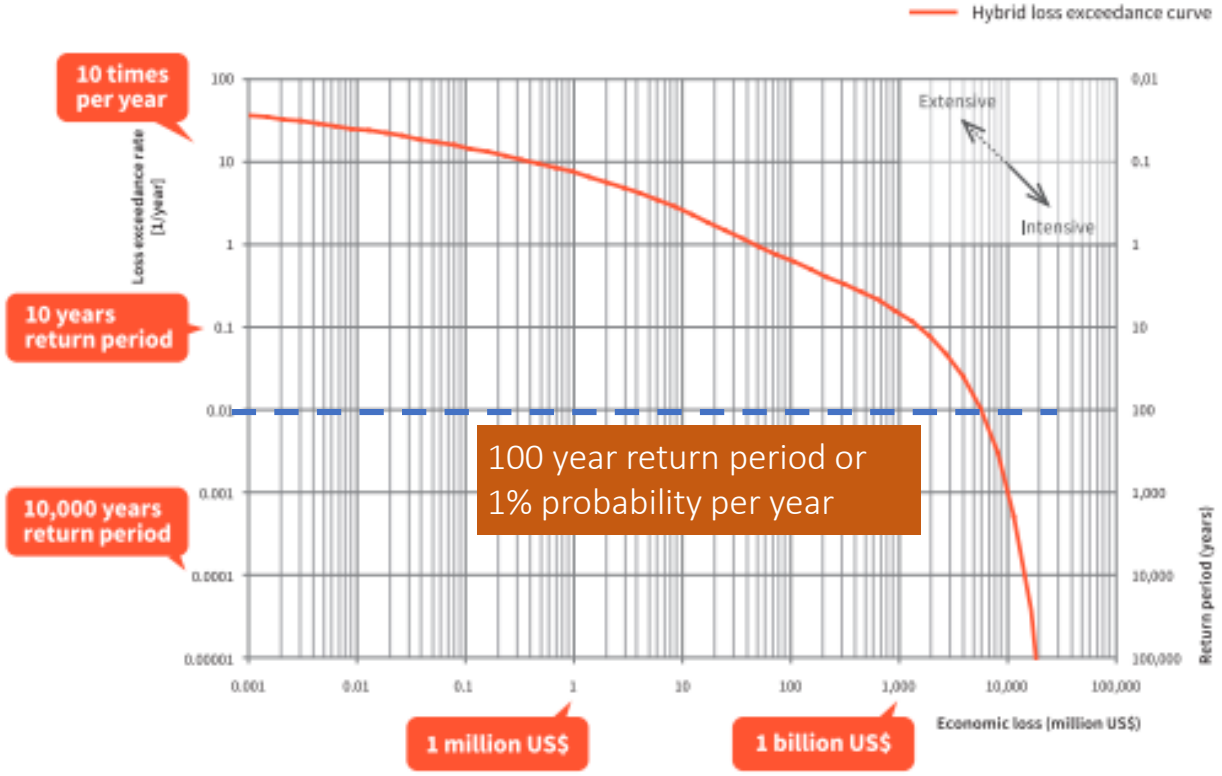
Disaster risk reduction factors and drivers

Disaster Risk = (Exposure) X (Vulnerability) X (Hazard)

Identify risk layers



As hazard increases in intensity it becomes more difficult and costly to reduce risk.

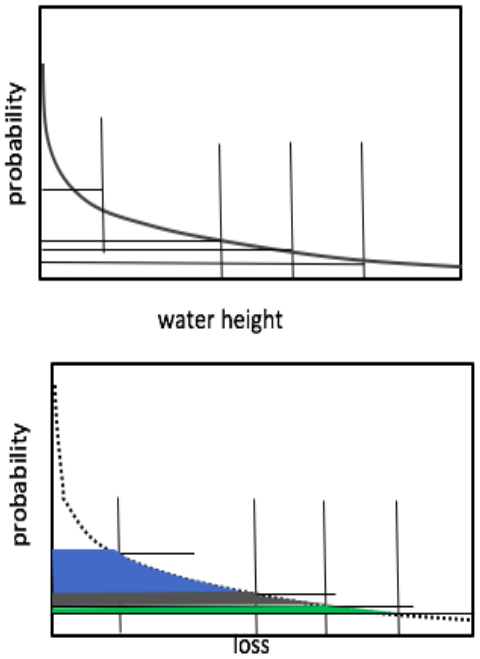


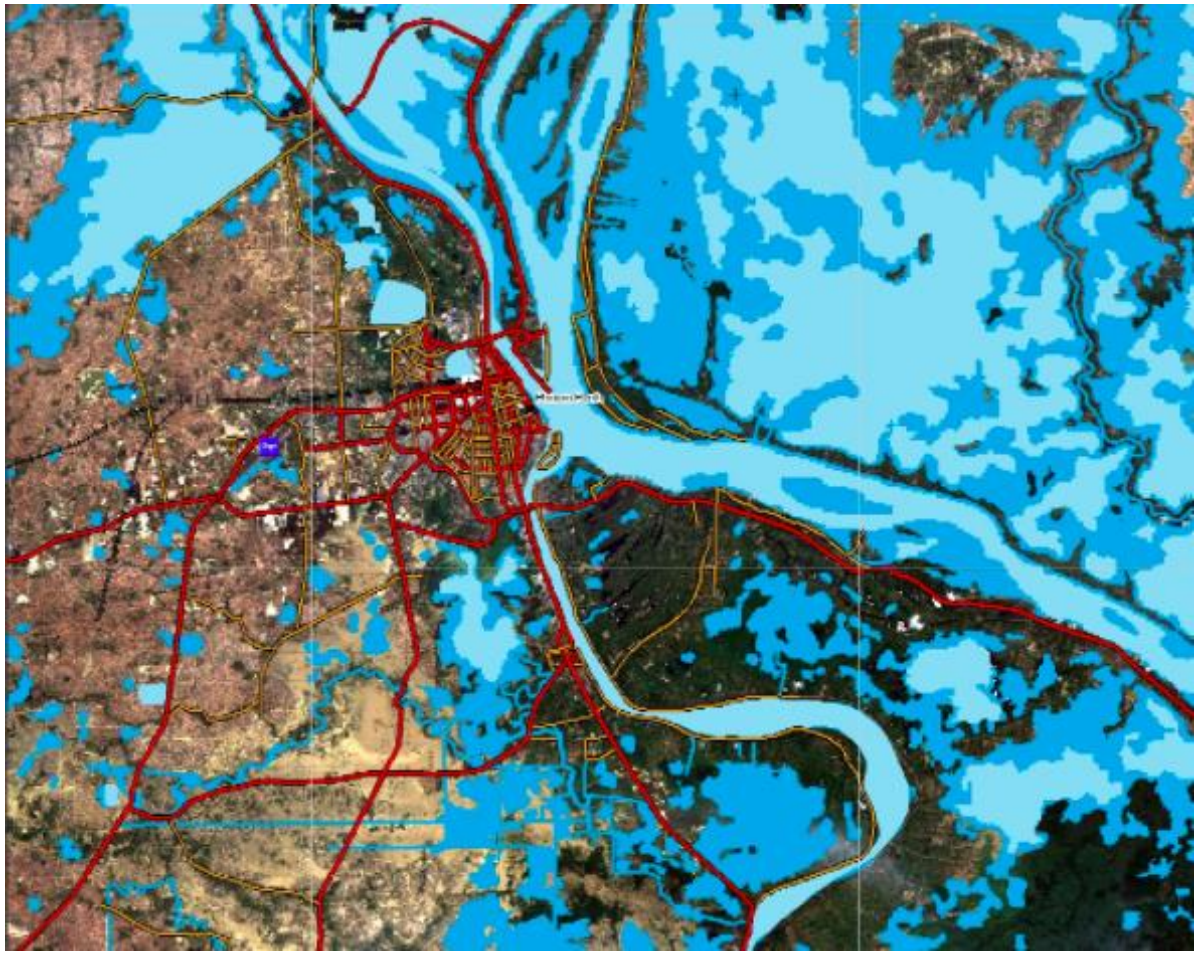
Defining a reasonable level of resilience

Adopt appropriate standards

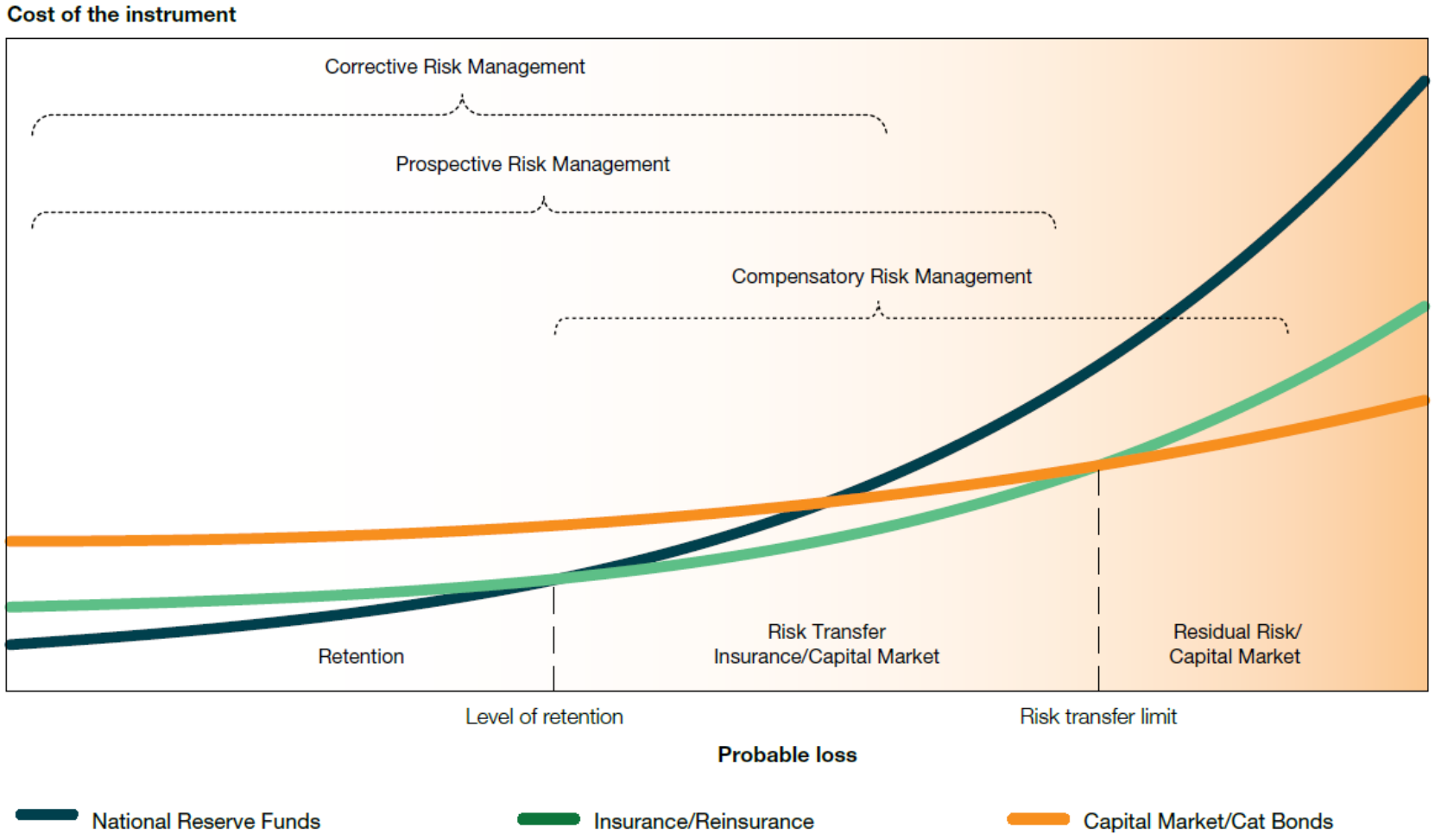
Disaster mitigation infrastructure:

- Currently 1m flood defense wall
- 2m wall – cost $30M reduction in AAL = $10M
- 2.5m wall - cost $60M reduction in AAL = $15M
- 3m wall cost $120M reduction in AAL = $20M





Transfer the risk that is not reduced



Risk transfer may be more cost effective than risk reduction for the more intensive layers of risk

From risk metrics to resilient infrastructure

National multi-hazard risk profile

AAL / PML values
Loss exceedence curve
Financing gaps
Sustainability
Extensive risk

Define national resilience targets
AAL < 0.5% GDP
AAL < 2% GFCF

High resolution infrastructure sector risk model

AAL / PML values for sector (energy, transport etc)
Identification of critical risks in networks and nodes
Modelling of indirect losses

Identification of risk layers: calculation of cost-effectiveness of risk reduction investment

Risk management applications

Adoption of standards for new infrastructure investments

Engineering assessments to retrofit critical infrastructure

Estimation of costs of risk transfer

Contingency plans and early warning systems

What we have done at APDIM (at a glance)

Risk informed development strategies and plans (ref. APDIM Evaluation Report)

Activity	Result
Partnered with the Plan and Budget Organisation to provide technical inputs on DRR to the 7th five-year national development plan of the Islamic Republic of Iran (2022–2026)	The highest level development body of the Islamic Republic of Iran, the Plan and Budget Organization brought key sectoral ministries under the assertion for disaster integrated planning, budgeting, and implementation
Co-facilitated the Common Country Assessment (CCA) process in the Islamic Republic of Iran with UNOCHA	DRR and Environment pillars included in the UNSDCF, the Islamic Republic of Iran (2023-2027)
Technical support provided to the Maldives National Disaster Management Authority (NDMA) as a member of UN interagency mission (CADRI), to the Maldives replicating the experience of DRR integration with the PBO in the Islamic Republic of Iran	Facilitated removing existing barriers for institutional connections and data sharing critical for DRR, Eg. between the Statistics Centre and the Ministry of Urban Development, Maldives
Training provided to National Emergency Management Agency (NEMA) Mongolia on disaster data governance: risk assessment data for planning, data disaggregation, women's engagement, data dissemination to local authorities	Awareness and capacities of the NEMA officials built on effective data governance (using risk assessment on sand and dust storms, reporting to the Sendai Monitor), gender inclusion, engaging the local authorities
Provided advisory services for formulating the Strategy for Development of Cooperation of Countries of Central Asia in Disaster Risk Reduction for 2022–2030, and the Regional Disaster Risk Profile of Central Asian Countries	Guidance of the normative global frameworks applied in formulating disaster risk informed sub-regional development strategies
Technical advice provided for formulating the ECO Regional Framework for DRR 2021-2025, and developing the Road map for DRR	Sub-regional intergovernmental DRR frameworks contributory to the 2030 Agenda for Sustainable Development

Initial Collaboration with PBO - 2020

- Workshop on Disaster Risk Reduction Mainstreaming in Development Plans 15 September 2020
- Collaboration with **CIMA Research Foundation** (*Centro Internazionale in Monitoraggio Ambientale*)

APDIM Long Term Outcome 1: Risk Information

Access to effective disaster risk information is enabled and facilitated at the regional and national level

Collaboration at country level

- Collaborated with government agencies in **Iran to integrate DRR into development plans** through capacity-building initiatives, including a **workshop on the science-policy-action nexus** (Feb 2024) **and an orientation course on integrating DRR into development plans** (July 2024), with ongoing support planned.

February 2024, Iran

July 2024, Iran

Data Governance and Policy Development

- Engaged with **Nepal, Maldives, Tajikistan, and Iran** in regional consultations to evaluate and promote **the role of information management in mainstreaming DRR into development plans**, with findings to be shared in 2025.

Key Recommendations from workshop on the science-policy-action nexus (Feb 2024)

- The Plan and Budget Organization to establish a dedicated department or unit for disaster risk reduction and management to develop the required standards and guidelines for the integration of disaster risk reduction into national, local and sectoral development planning and budgeting.
- Initiate a national-level programme on impact-based multi-hazards monitoring, forecasting, and early warning within the framework of United Nations Sustainable Development Cooperation Framework for Iran (UNSDCF, 2023-2027) and the UN global initiative on Early warning for All (EW4ALL).

Key Recommendations from workshop on the science-policy-action nexus (Feb 2024)

- Develop a comprehensive national-level strategy or policy on disaster data and information governance and establish the protocols for information and data sharing among institutions and disaster databases.
- Develop periodically updated “national disasters risk index or map” to guide and inform development planning and investments and disaster risk reduction, preparedness, response and recovery.
- Balance budget and resource allocation from a focus on disaster emergency response and recovery to disaster risk reduction and preventive measures.

Conclusion & Call to Action

- 🌍 **Integrate DRR at Every Level**

Embed disaster risk reduction into national, subnational, and sectoral development plans.

- 📊 **Invest in Risk-Informed Development**

Prioritize DRR funding across planning cycles—prevention saves lives and reduces future losses.

- 🤝 **Strengthen Coordination Across Sectors**

Ensure collaboration among ministries, local governments, and civil society to mainstream DRR.

- 📈 **Leverage Data and Technology**

Use new technologies, AI, geospatial data, and risk models to inform planning and decision-making.

- 📣 **Enhance Capacity and Awareness**

Train policymakers and practitioners on DRR integration and promote public awareness.

- 🔄 **Align with Global Frameworks**

Ensure coherence with the Sendai Framework, SDGs, and climate agreements (e.g., Paris Agreement).

- ⏳ **Act Now—Time is Limited**

The 2030 deadline for the Sendai Framework is approaching—mainstreaming DRR is urgent and non-negotiable.

Thank you

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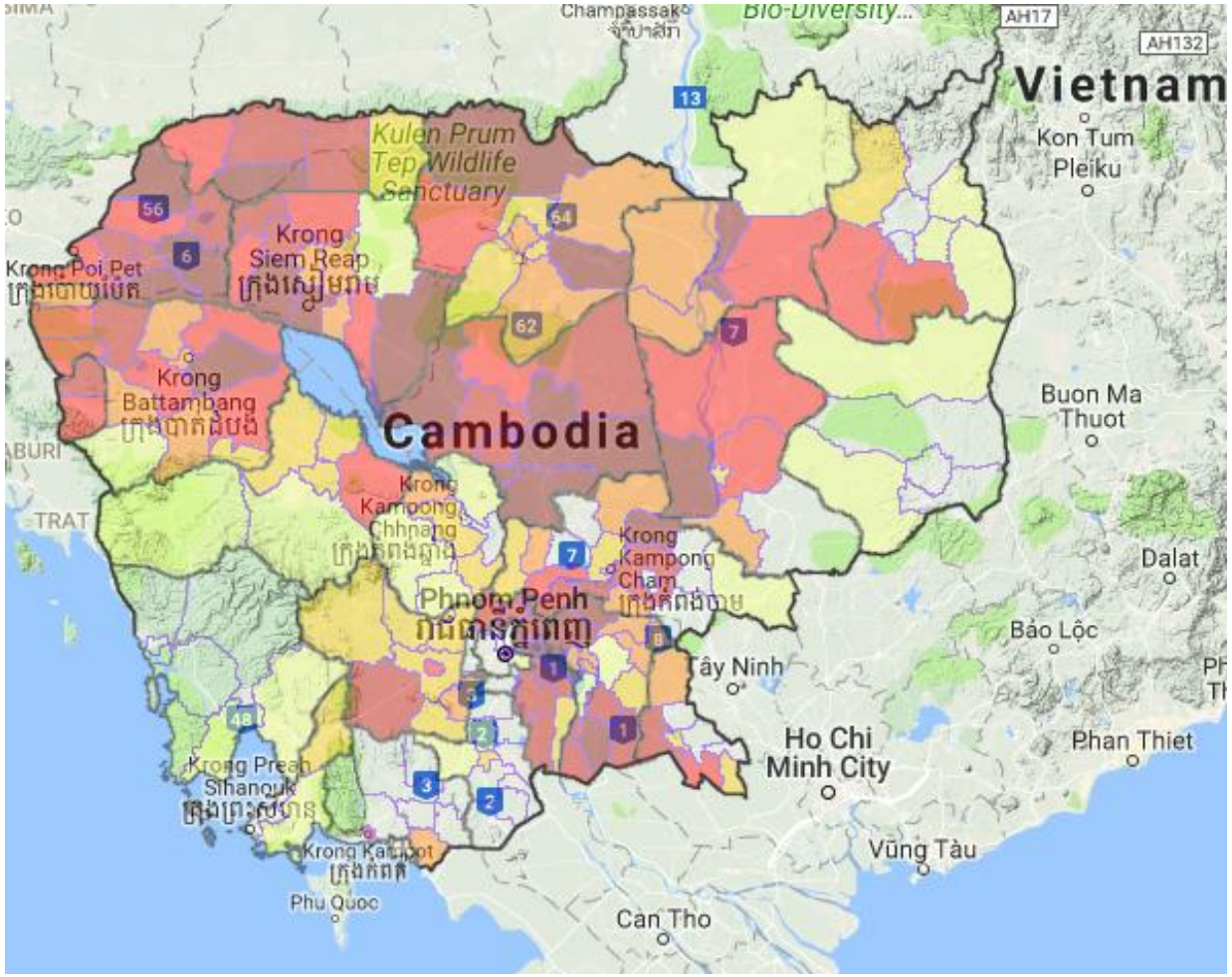
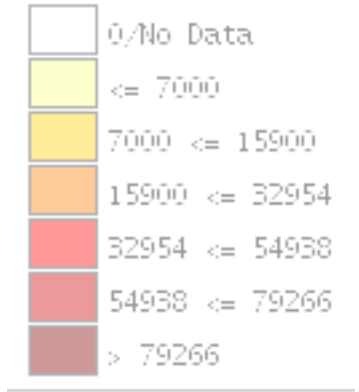
Direct losses



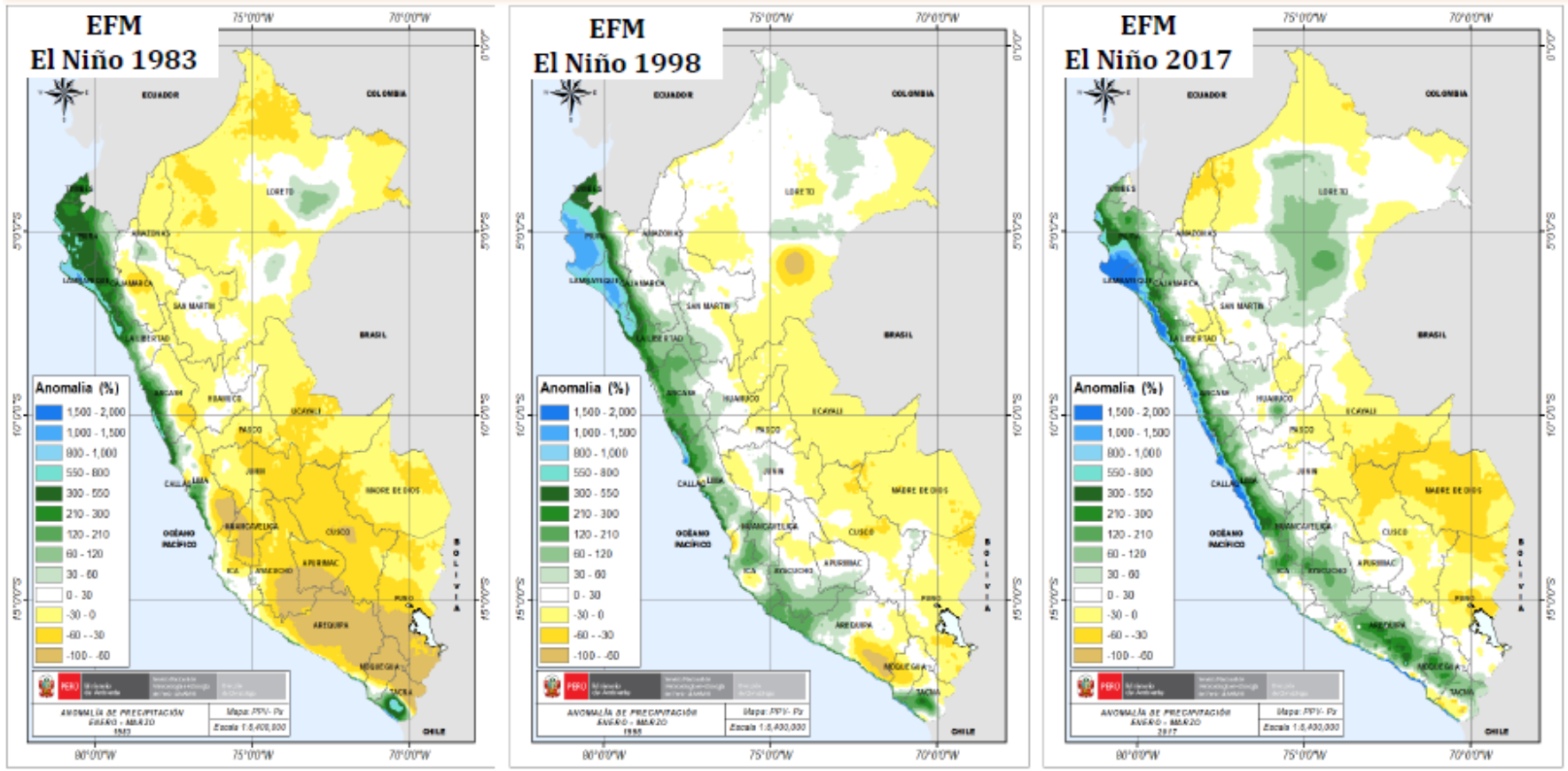


Transport sector

Cambodia: 7164 km of road damaged since 2000 (42% of national road network)

Indonesia: over 100,000 km damaged since 2000

Intensive disasters

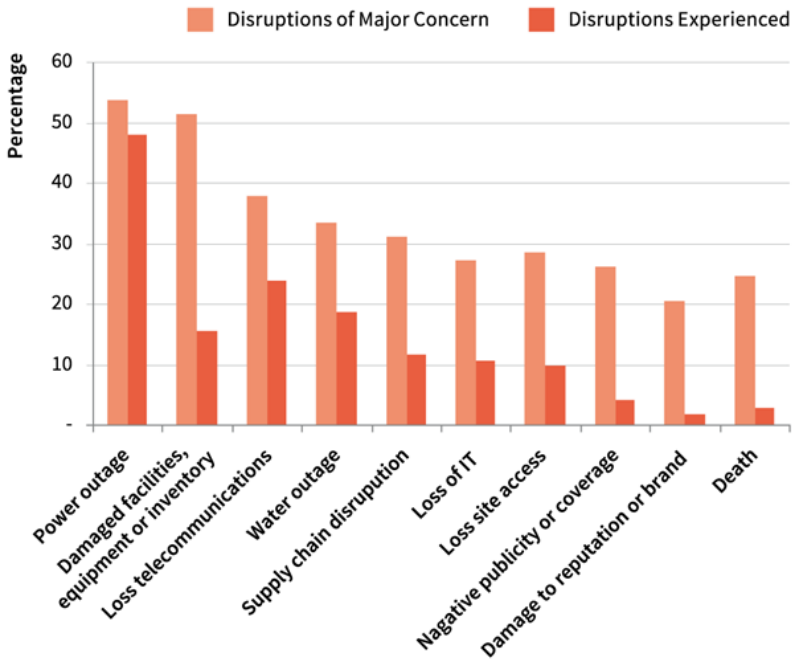


Peru: 2017 Coastal ENSO event

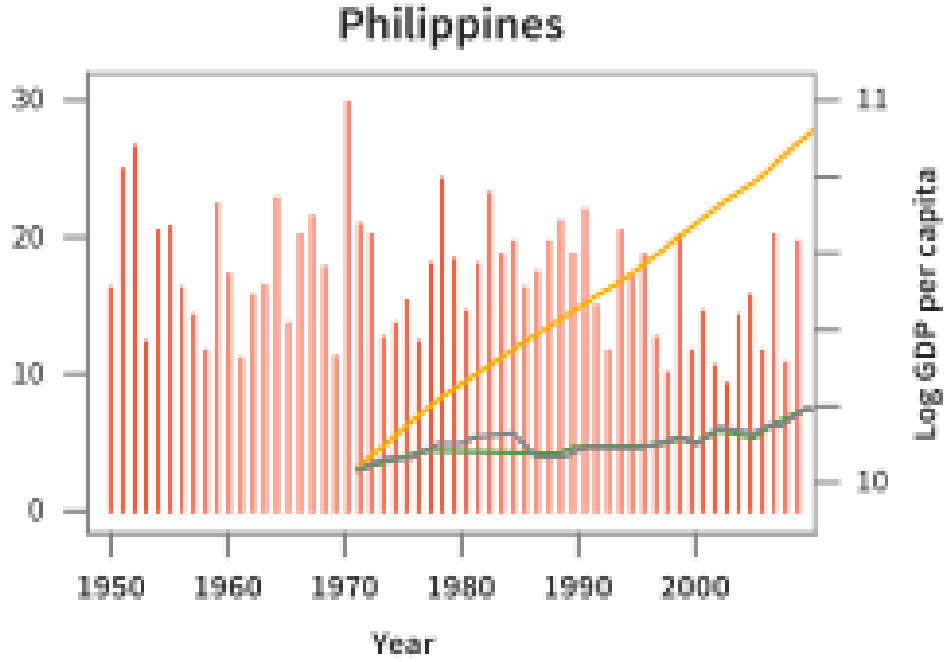
3000 km roads damaged, 323 bridges destroyed

Total direct losses approximately USD 7 billion equivalent to 72% of the public investment executed in 2016

Indirect losses

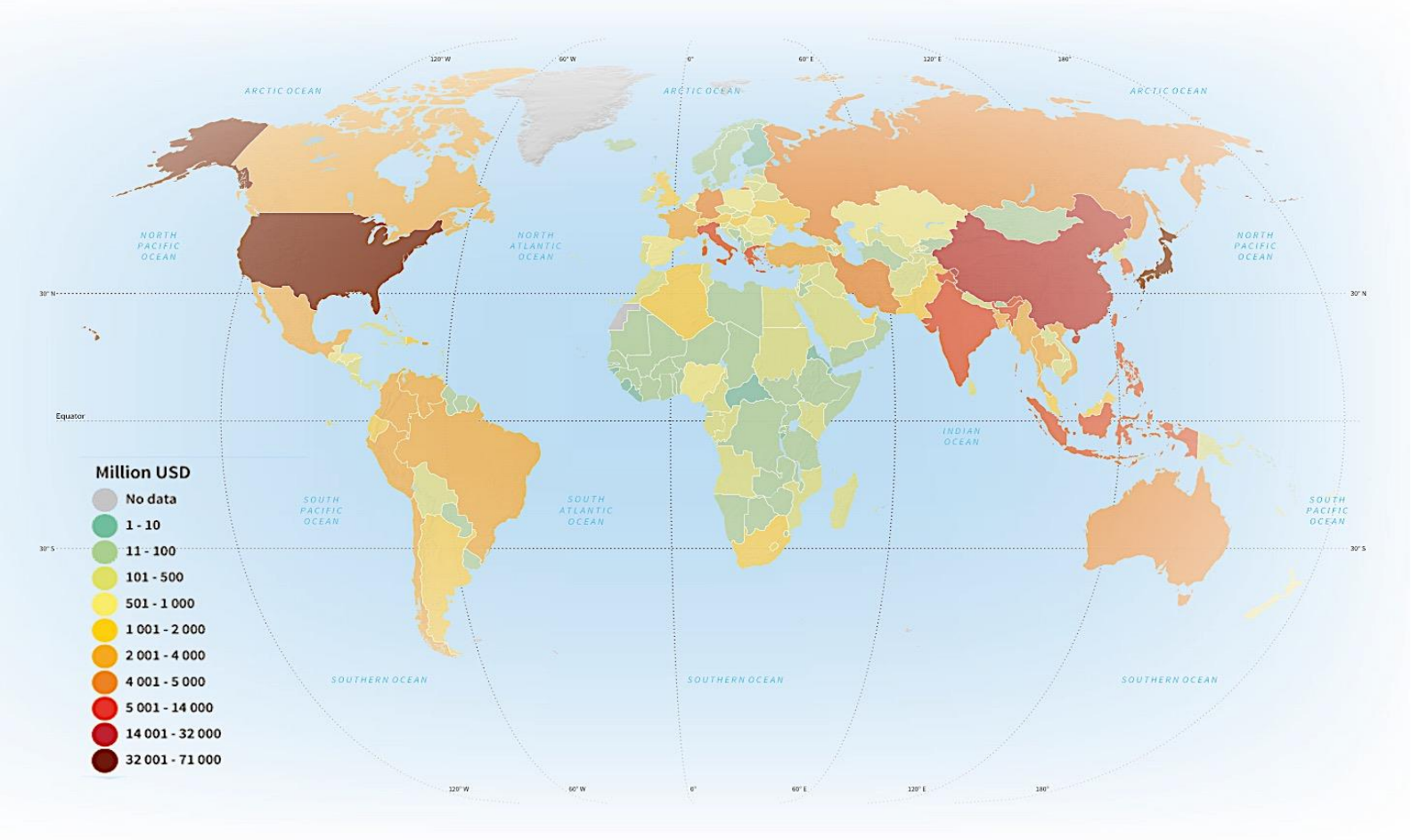


Extensive risk: power, water, telecommunications outages, supply chain disruption affect business



Intensive risk: Negative impact on GDP (tropical cyclones

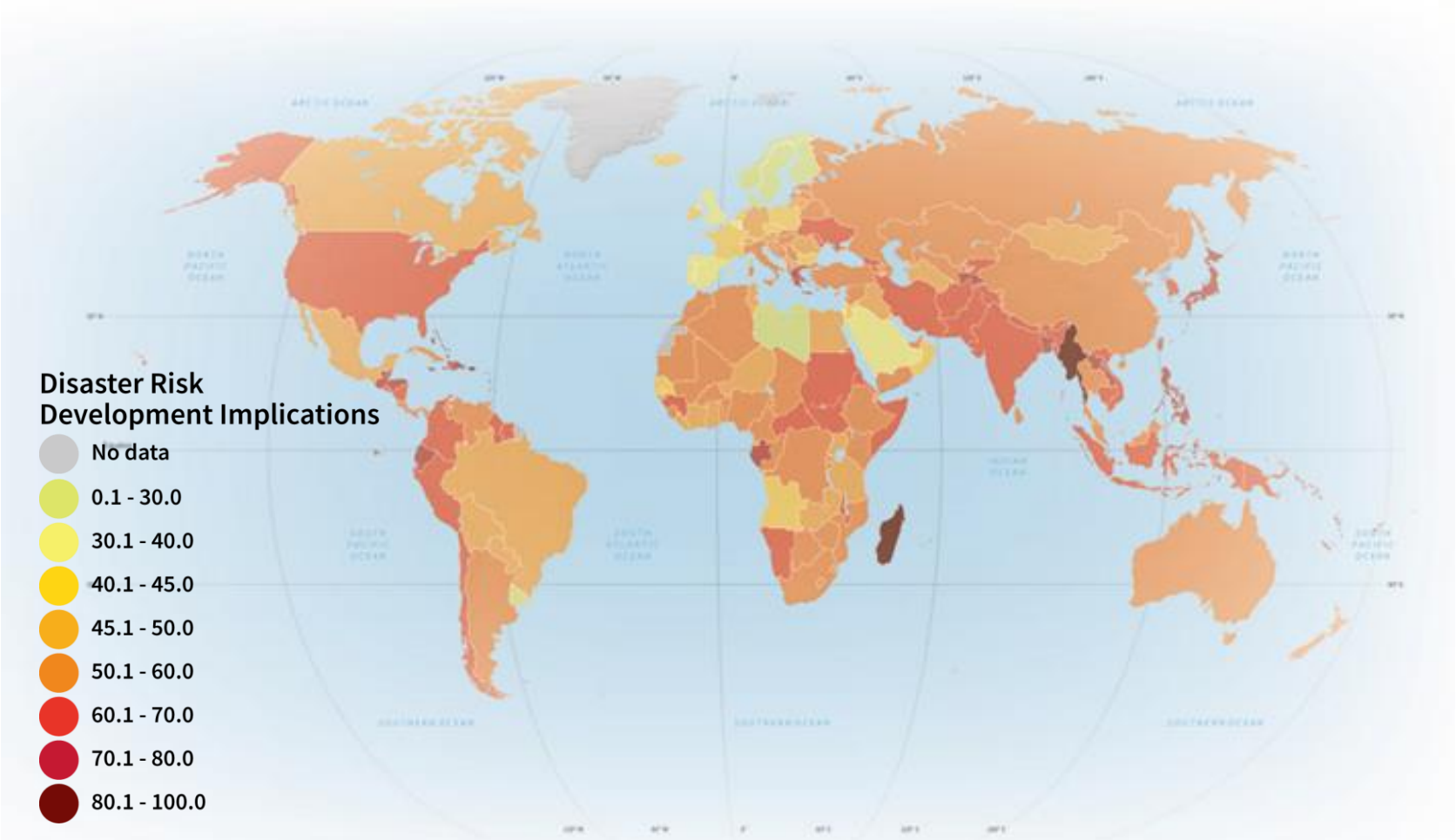
Understand risk patterns



Global Annual Average Loss (AAL) = USD 293 billion (2017)

More than annual social expenditure in South Asia and sub-Saharan Africa combined

Examine the implications for sustainability



The higher the ratio of AAL to social expenditure or capital investment, the lower the sustainability of development

National risk metrics

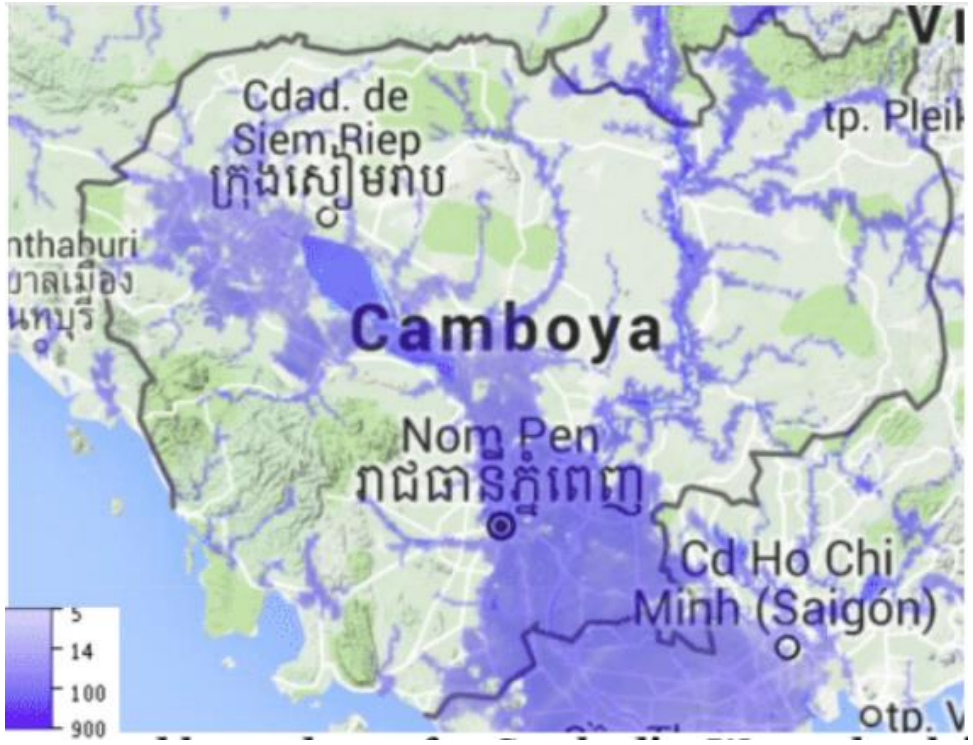
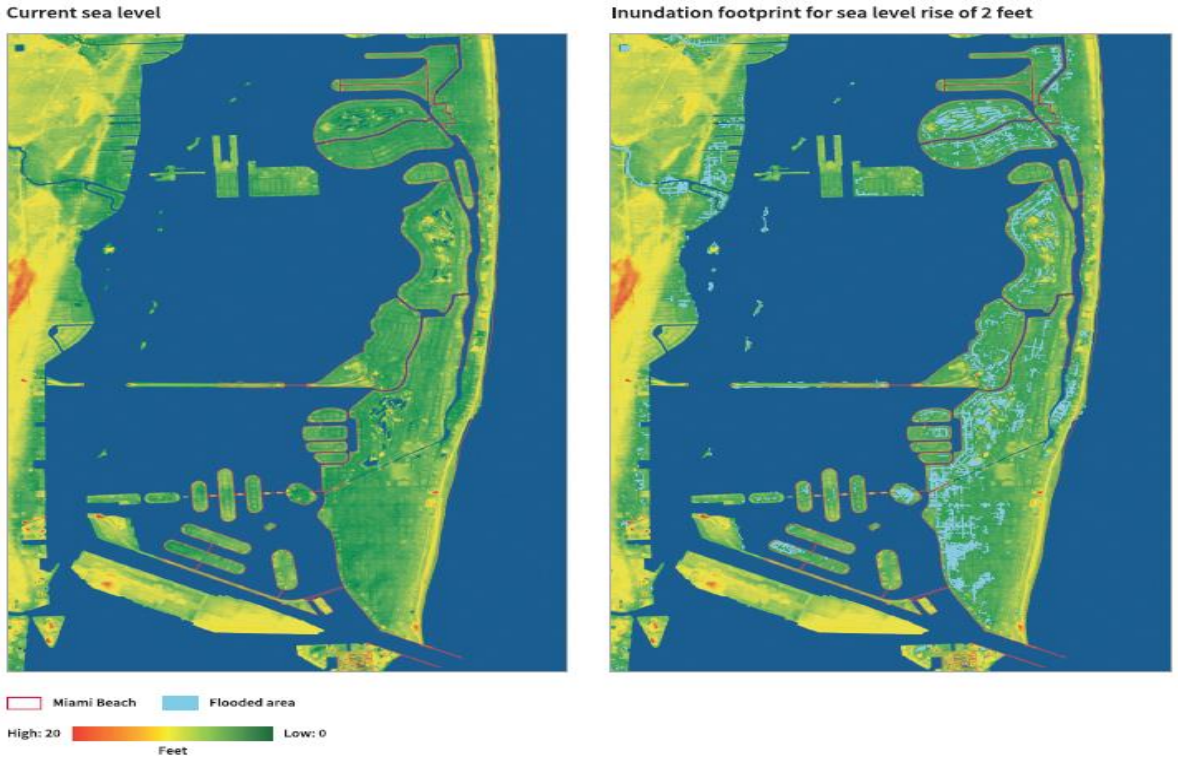


Table A.20. Risk results for TC winds and riverine floods

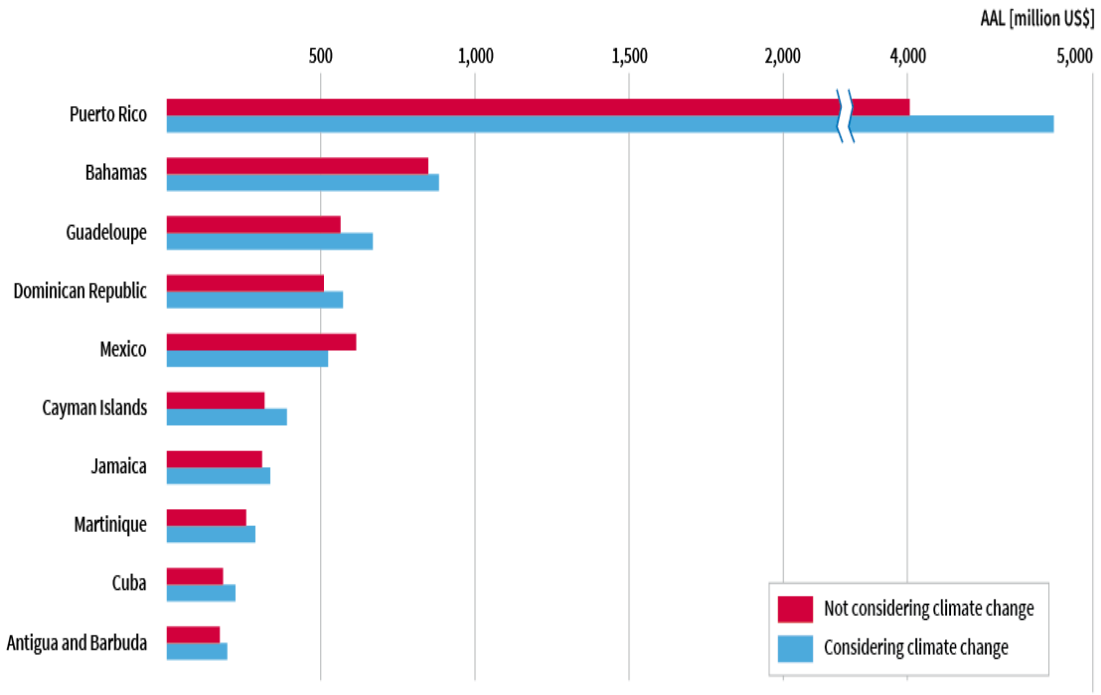
		TC - Winds	Riverine floods
Exposed value	Million US$	83,767	67,333
Average annual loss (AAL)	Million US$	0.13	379.07
	‰	0.002	5.63
PML			
Mean return period	**Loss**		
Years	Million US$	%	Million US$	%
50	2.1	0.0025	4,466	6.63
100	2.6	0.0031	6,159	9.15
250	3.2	0.0038	10,779	16.01
500	3.5	0.0042	12,963	19.25

AAL = 2% GDP; X% of social expenditure; Y% of capital investment; financing gap for any event over 20 year return period.

Factor in climate change



Increase in flooded areas due to sea level rise



Increases in wind AAL in the Caribbean by 2050

RISK NEXUS INITIATIVE

www.risknexusinitiative.org

Metrics, Indicators and Knowledge for sustainability and resilience.

Mainstream risk informed public and private investment planning and evaluation

Disasters that need never happen

Tools and Methodologies

- Risk assessments and hazard mapping

- Cost-benefit analysis (CBA)

- Environmental and Social Impact Assessments

- DRR-sensitive monitoring and indicators

Sustainable development, disaster risk reduction, climate change adaptation and resilience

Sustainable Development Goals

Reducing existing and preventing future disasters risk and climate change impacts

Building and enhancing resilience of people, systems and society against disasters

International Frameworks of Disaster Risk Reduction

Three important global agreements and frameworks adopted in 2015:

1) Sustainable Development Goals (SDGs)

2) Paris Agreement on Climate Change

3) Sendai Framework for Disaster Risk Reduction

Disaster risk reduction factors and drivers

Disaster Resilience

1) Individual/ Behavioral
2) Physical
3) Systemic
4) Organizational/Institutional
5) Functional

Disaster risk reduction factors and drivers

Disaster Risk = (Exposure) X (Vulnerability) X (Hazard)

Types of Hazards:

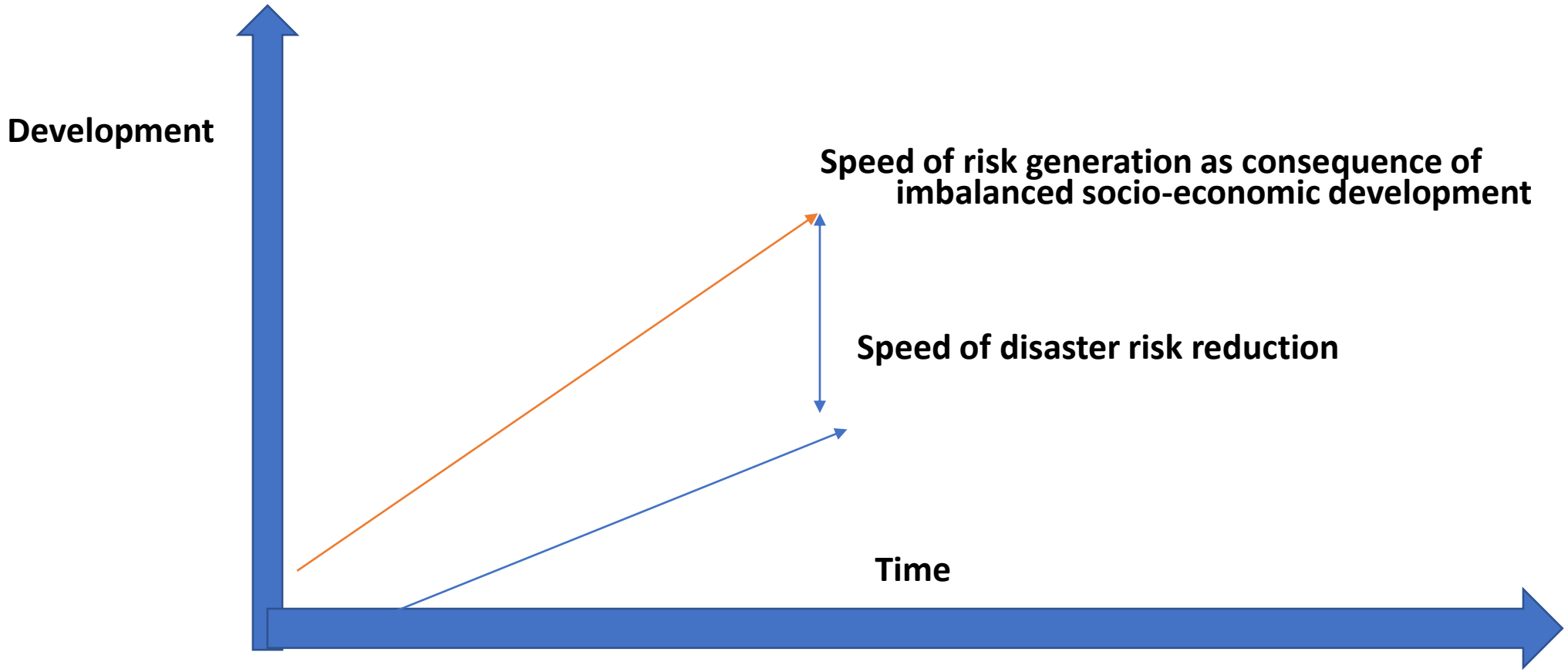
Geological, meteorological, hydrological, climatic, industrial, biologic

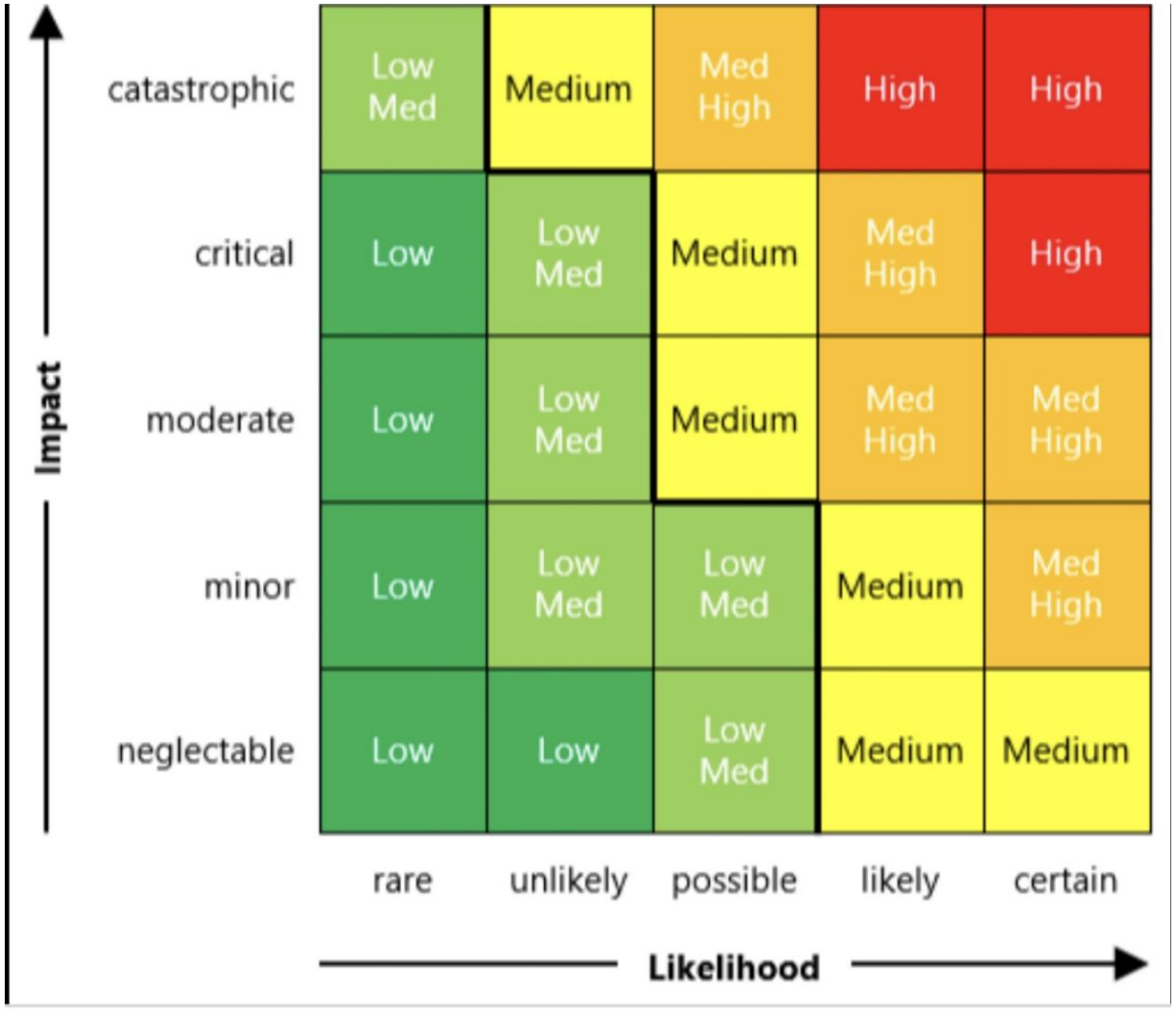
Types of Vulnerabilities:

1) Physical
2) Social
3) Economic
4) Environmental

Exposure: land use planning, ect.

Reciprocal relation between disasters risks and development polices and programmes





Risk Assessment Matrix

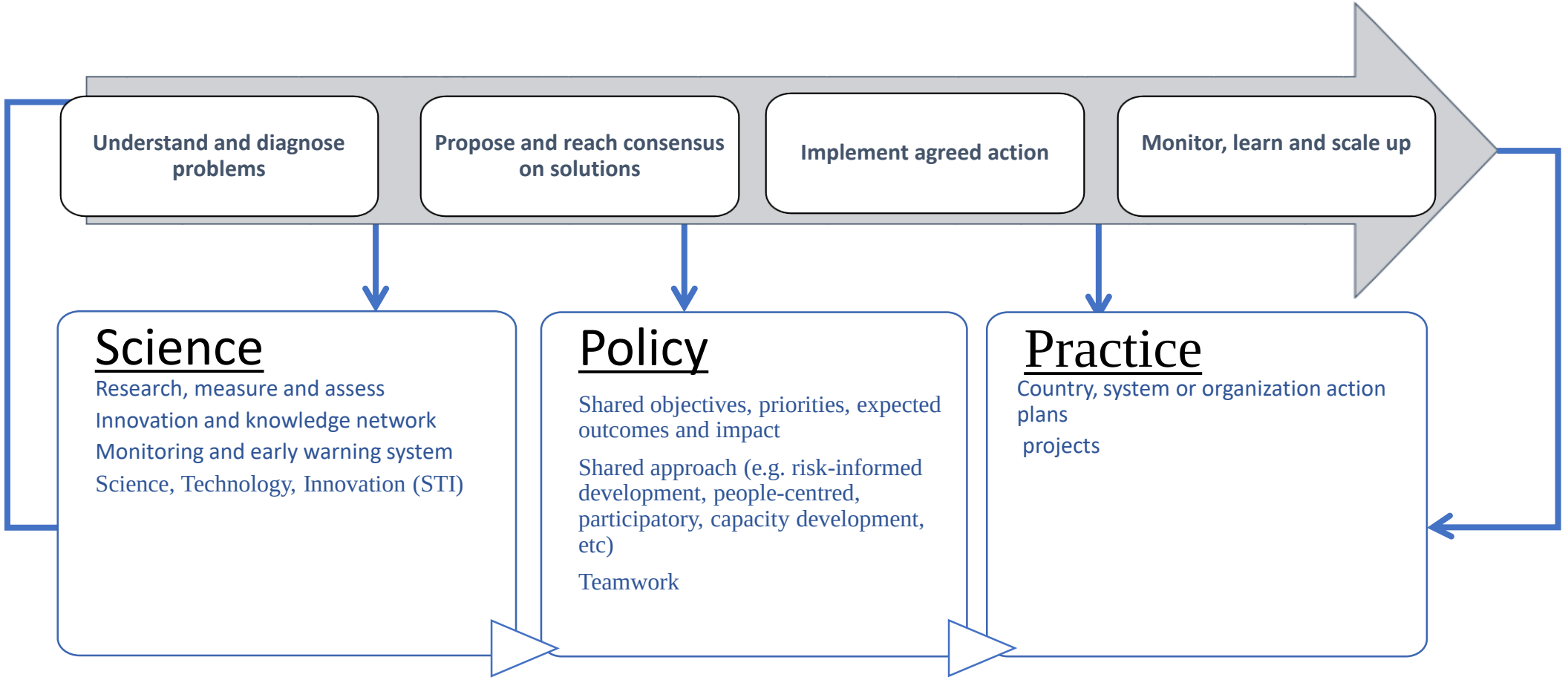
Integrating DRR & CCA

	DRR mainstreaming	CCA mainstreaming	Integrated mainstreaming
Knowledge	**Considers all hazards** (e.g. biological, geological, water, climate, weather) and impacts to/from development.	**Focuses on climate variability and long-term change, including future scenarios** and impacts on development.	**Joint data collection, risk assessments, research, knowledge and M&E** covering all natural hazards and their historical timescales, as well as climate change projection (e.g. rapid-onset change and gradual, long-term change).
Policy	**Links DRM/DRR** policies, legislation and plans to development.	**Links CCA** policies, legislation and plans to development.	**Links both DRR and CCA legislation, policies, plans** to development policymaking and planning to ensure joint implementation.
Finance	**Mobilizes budget** for proactive DRR as part of the development agenda, not just for preparedness, response and recovery.	**Links climate finance** options to the development agenda.	**Involves joint expenditure analysis, budgeting, funding and risk financing opportunities** to more explicitly allocate and monitor resources for both DRR/CCA as part of national, subnational and local development financial management.
Organization	**Strengthens DRR** coordination, capacity and procedures within the development sphere.	**Strengthens CCA** coordination, capacity and procedures within the development sphere.	**Builds joint risk capacities, coordination, responsibilities, procedures, tools, programmes and projects** from within the development sphere.
Stakeholders	**DRM practitioners** take the lead.	**CCA practitioners** take the lead.	**Development practitioners take the lead** with technical advice from DRM and CCA practitioners.

Mainstreaming spheres of action

Spheres of action	Entry points	Sub-entry points
Knowledge	Awareness and education	Advocacy and awareness-raising; school curriculum; professional education.
	Research and local knowledge	Scientific research and technology; local knowledge; translation and communication of technical knowledge; knowledge-sharing platforms.
	Assessment and analysis	Risk assessment and analysis; risk tools; analysis of underlying root causes.
	M&E, compliance and reporting	Enforcement, quality control, compliance; reporting; monitoring, evaluation; mainstreaming baseline and progress.
Policy	Leadership and advocacy	Ownership; political will; political commitment; champions; community leadership; vision.
	Legislation and regulation	Laws, codes, regulations; custom law; enforcement, incentives.
	Policy, strategy and plans	Global/regional policy commitments; national and subnational policy frameworks; national and sectoral development; DRR/CCA strategies and plans.
	Standards	ISO standards or professional association technical standards (i.e. architects, builders or engineers, etc.); Sendai Framework minimum standards.

Science , Policy , Practice Nexus



Topics to be considered

- Methodology
- Legal and Policy Framework
- National Coordination Mechanisms
- Information Management Systems
- Public Accessibility of Information
- Early Warning Systems