

National Disaster Risk Assessment: moving from scenarios to the full probabilistic approach

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Outline

1. Policies for National Risk Assessment
2. Scenario-Based National Risk Assessment
3. Probabilistic Risk Assessment

Risk Assessment in Policy

- Union Civil Protection Mechanism (2014)
 - **Art. 5** :” ... to complete risk assessments at national or appropriate subnational level and make available a summary of the relevant elements by 22 Dec. 2015 and every three years thereafter.”
 - Legislation under revision- full risk assessment report
- Sendai Framework: Targets G

7 Global Targets of SFDRR are

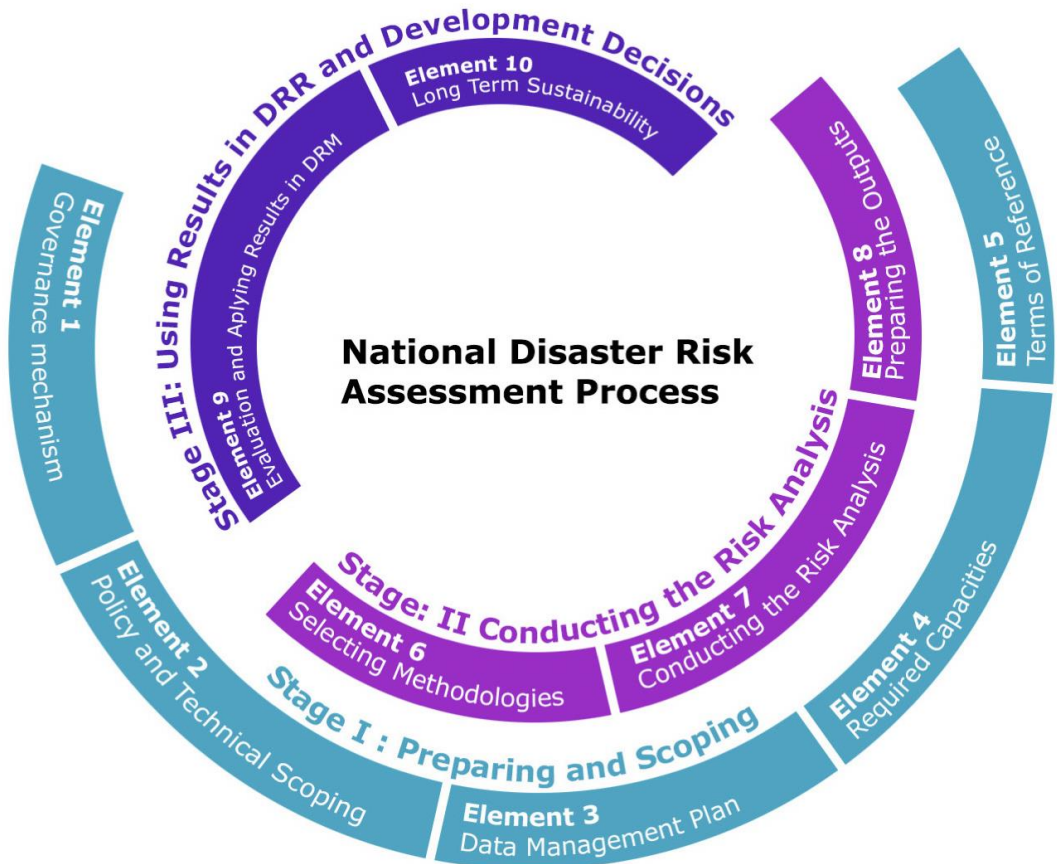
| 7 GLOBAL TARGETS | Reduce | Increase |
|------------------|---|--|
| | Mortality/ global population 2020-2030 Average << 2005-2015 Average | Countries with national & local DRR strategies 2020 Value >> 2015 Value |
| | Affected people/ global population 2020-2030 Average << 2005-2015 Average | International cooperation to developing countries 2030 Value >> 2015 Value |
| | Economic loss/ global GDP 2030 Ratio << 2015 Ratio | Availability and access to multi-hazard early warning systems & disaster risk information and assessments 2030 Values >> 2015 Values |
| | Damage to critical infrastructure & disruption of basic services 2030 Values << 2015 Values | |

Guidelines for Risk Assessment

- EU Guidelines on Risk Assessment and Mapping (2010)
- Risk management - Risk assessment technique (ISO 31010)
- National Disaster Risk Assessment (UNISDR, 2017)
- Science for Risk Management (DRMKC, 2017)

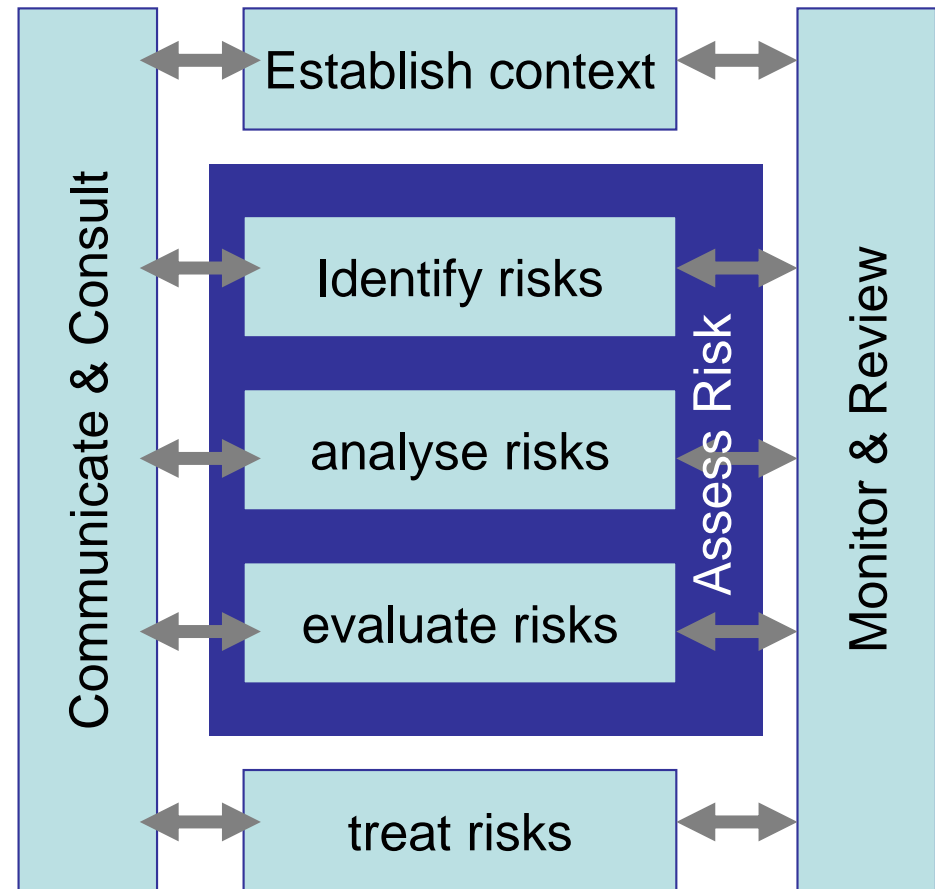


Guidelines NDRA 2017: DRA as a Process



Scenario-Based Risk Assessment

Elaboration, analysis and evaluation of **scenarios** of potential risk situations, which condense the realm of possibilities to a **limited number of identified situations**



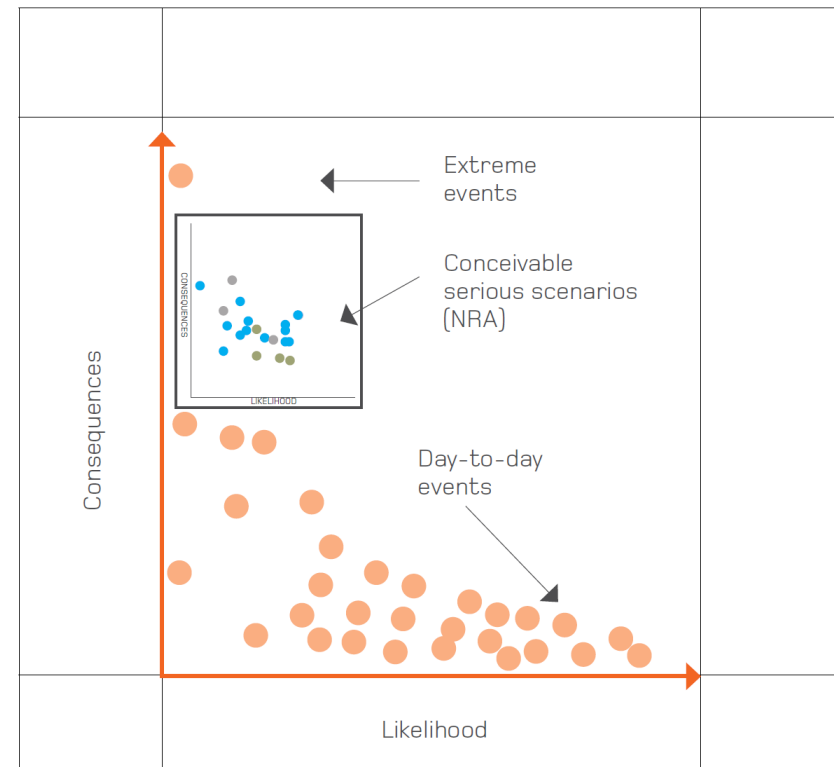
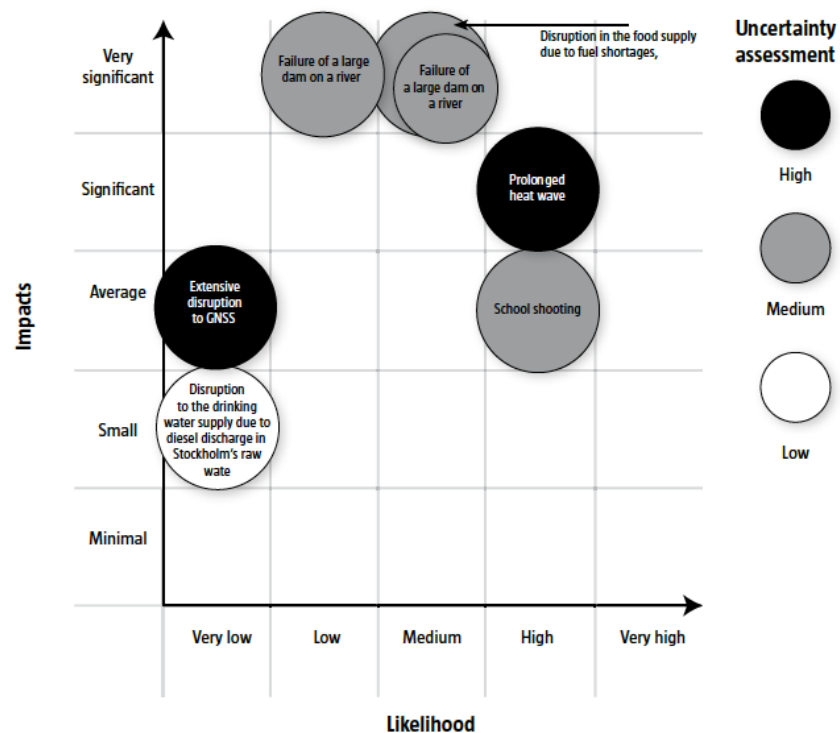
Risk Assessment – Scenario

- Detailed (and if possible quantitative) estimation of
 - the probability of occurrence of event
 - the severity of the potential impacts
- Whenever possible, risk analysis must be based on quantitative data

Examples of Scenario

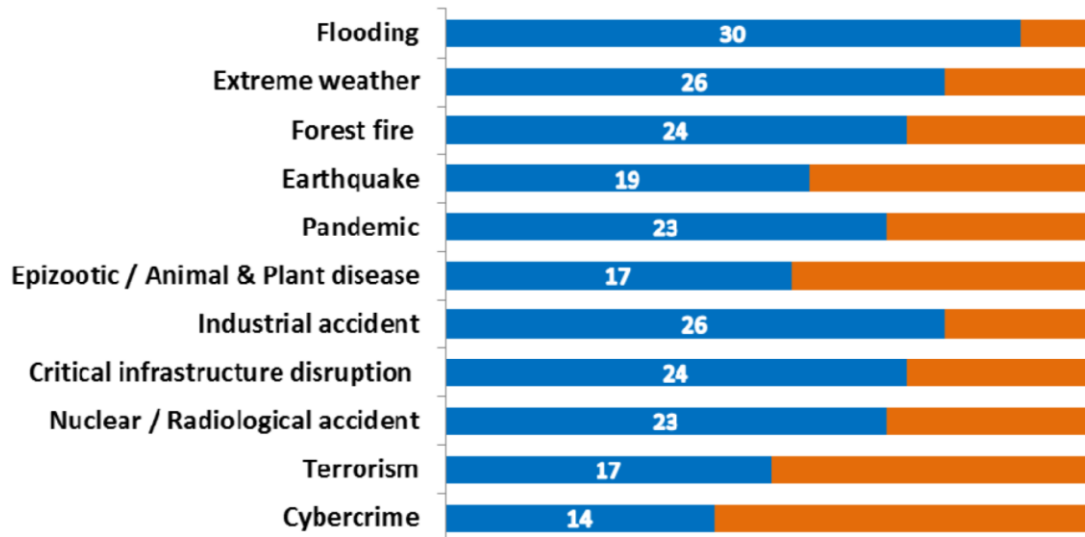
1. Top event
2. Worst case
3. Most probable
4. Low, medium and high frequent events

Risk Assessment – Examples



Overview of Risks in Europe

- Risk Summaries prepared by 34 participating states



Graph 1: number of UCPM Participating States having assessed each risk covered by the Overview of Risks



National Risk Assessment In Western Balkans and Turkey

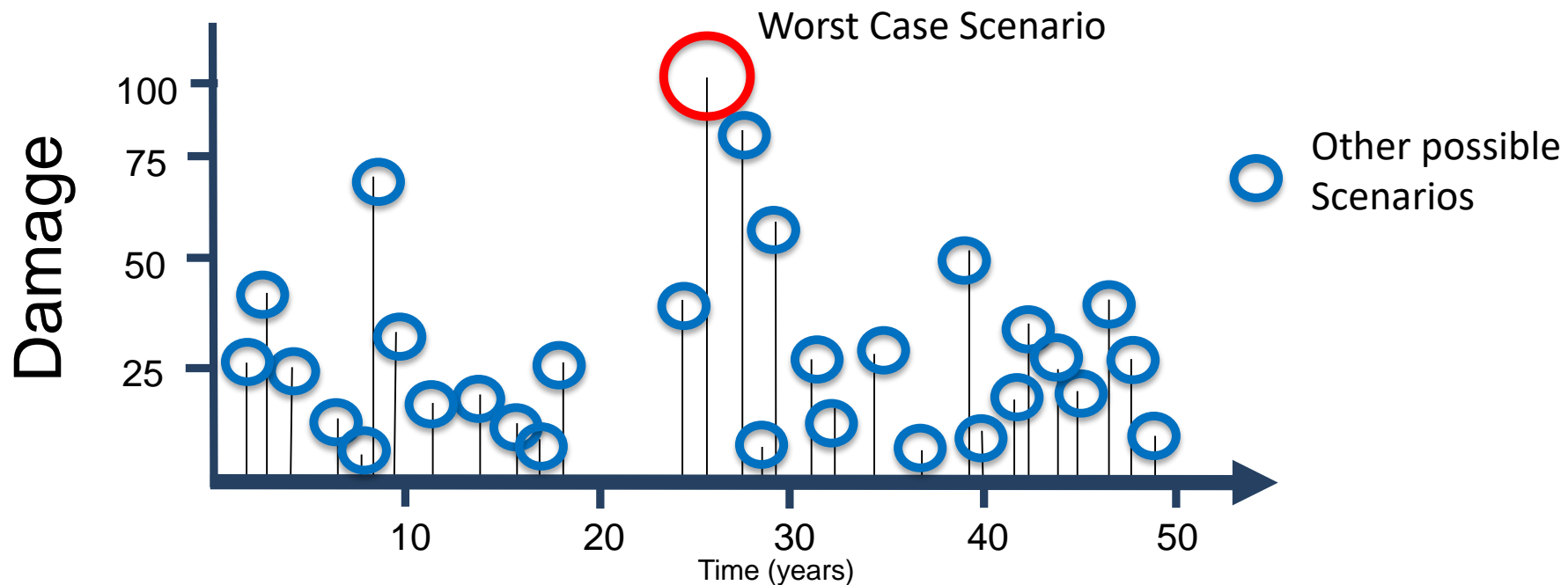


IPA DRAM
DISASTER RISK ASSESSMENT AND MAPPING IN THE WESTERN BALKANS AND TURKEY

| Partner | status |
|------------------------|---|
| Albania | Study OSCE |
| Bosnia and Herzegovina | In harmonization with EU guidelines |
| Kosovo* | Developped with UNDP and under revision |
| Macedonia | To be developped in line with EU Guidelines |
| Montenegro | To be developped |
| Serbia | Finalized |
| Turkey | Under development |

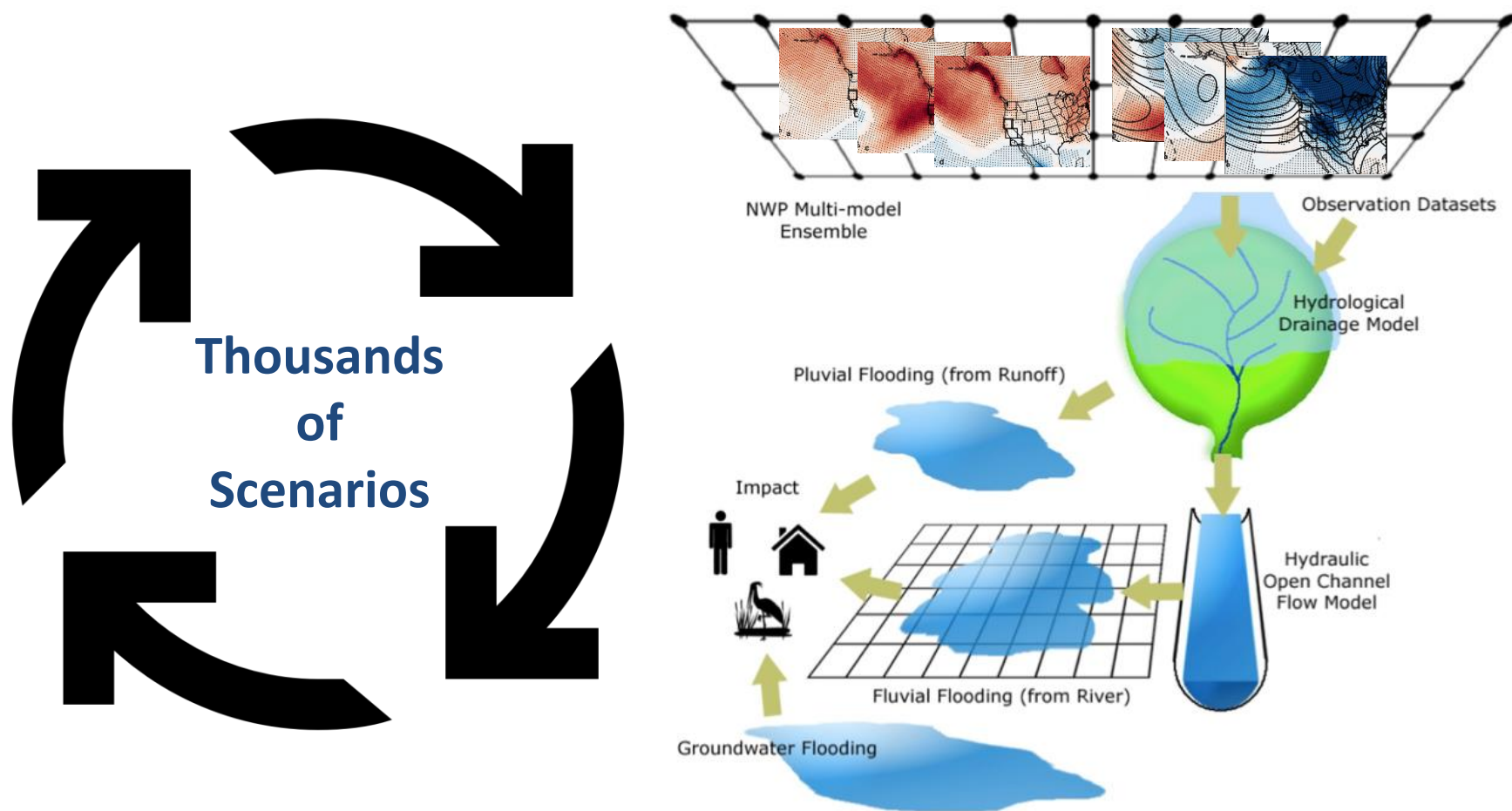
Risk Assessment – Probabilistic Risk Assessment

Considers a large number of possible scenario, their likelihood and associated impacts



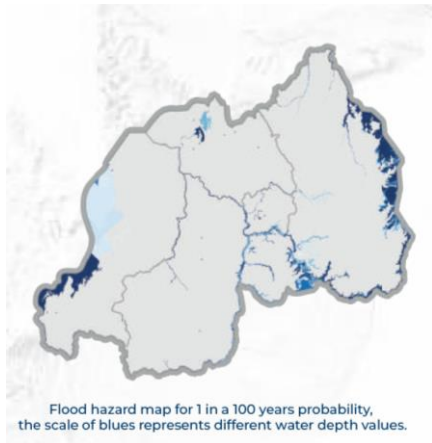
Conceptual modelling framework: Floods

Full Scale Weather generator (current and future Climate)



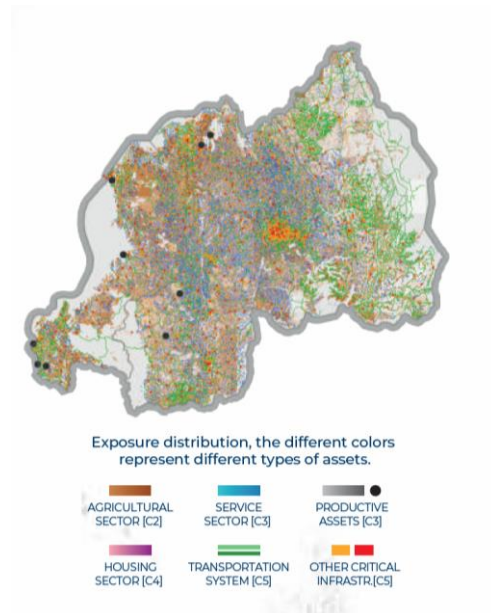
Probabilistic Risk Analysis

All Possible Flood
Scenarios with
different frequencies



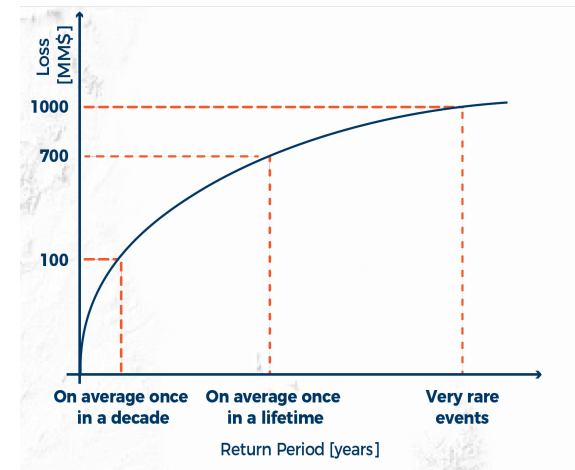
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Vulnerability of
exposed assets

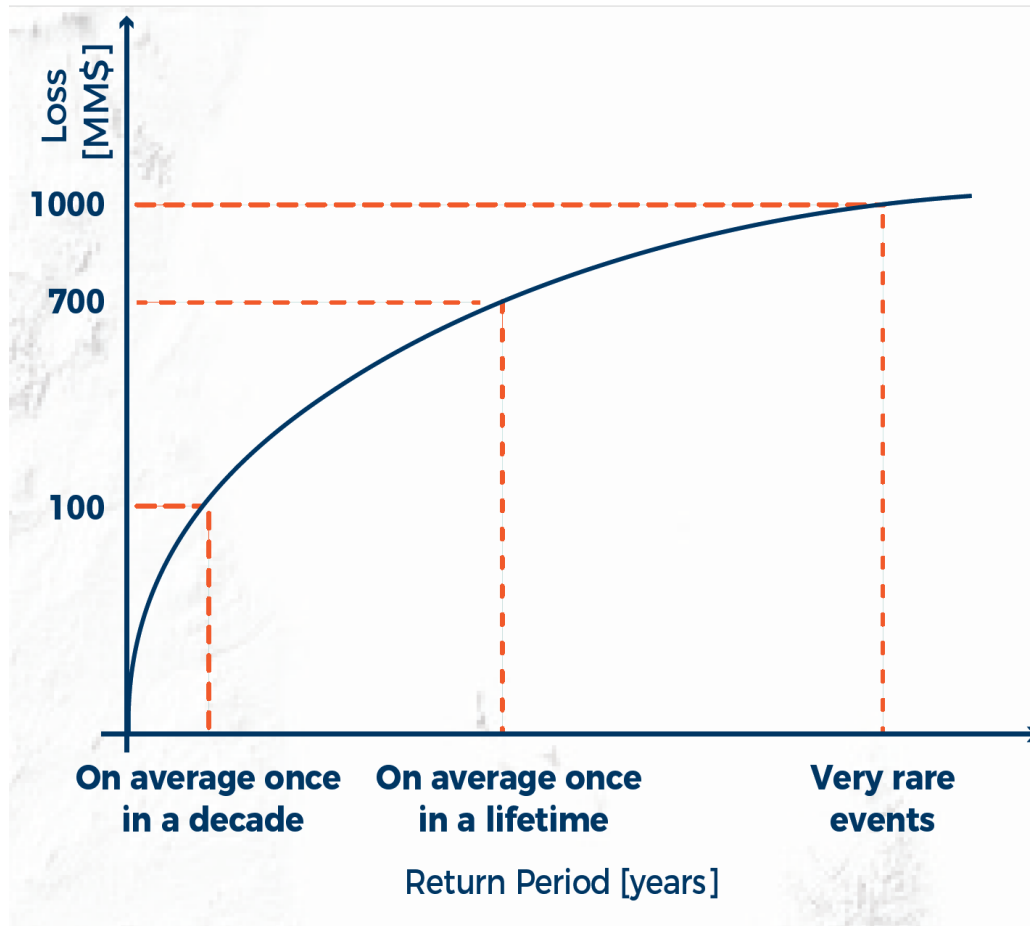


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All Possible Loss
Scenarios with different
frequencies



Probable Maximum Loss curve



- the likelihood of a \$US 100 million loss occurs, on average, once in a decade
- loss of \$US 1 billion occurs is a very rare event.

Risk Metrics: Average Annual Losses

Sectoral Economic Losses

Average Annual Loss AAL



Annual Average Loss and average capital stock (%)

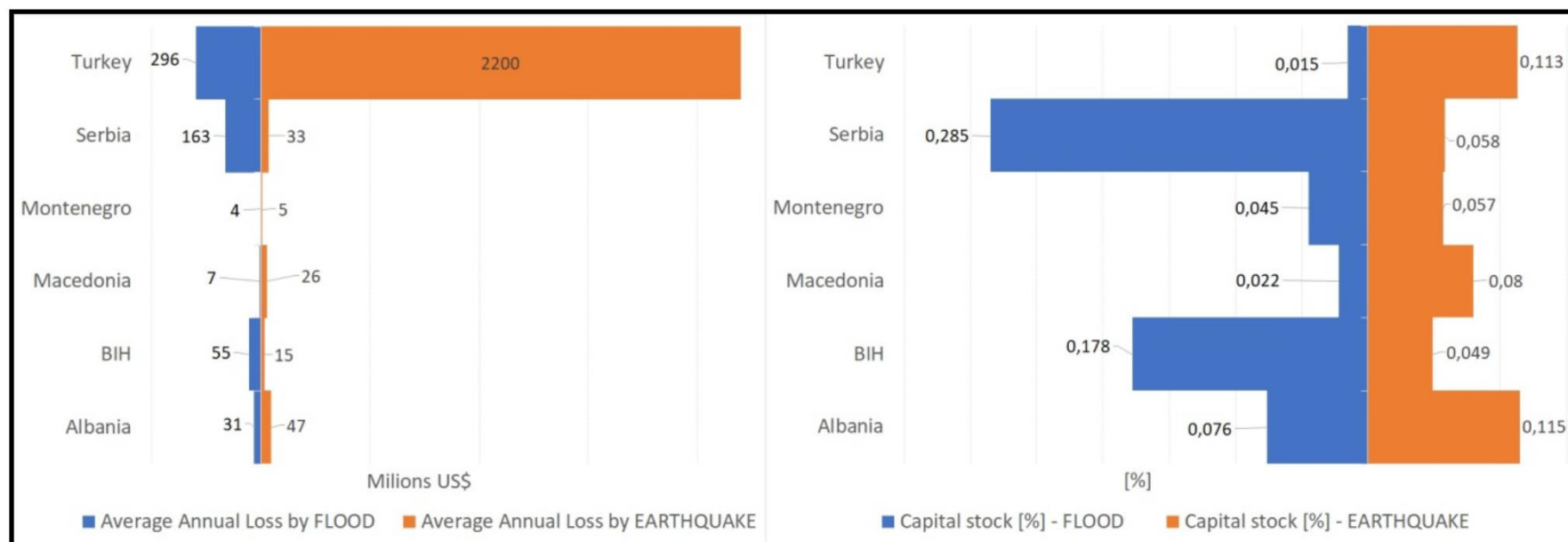


Figure 2. Source-Global Assessment Report on Disaster Risk Reduction 2015.

Conclusion

- Governance of NDRA process
- Scenario-Based NDRA is widely used and greatly improved availability of risk information
- Probabilistic Risk Assessment can provide a more comprehensive understanding of the complex disaster risk



THANK YOU

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