



SETOF

Soil Erosion and TOrrential Flood
*Prevention: Curriculum Development at the
Universities of Western Balkan Countries*

Prevenција od bujičnih poplava



Prof. dr Ratko Ristić
Prof. dr Muhamed Bajrić
Doc. dr Dejan Vasović

Goč, novembar 2021. godine

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28 October 2021

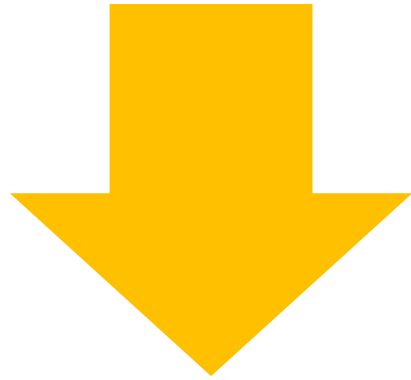
Source

United Nations Office for Disaster Risk Reduction
– Regional Office for the Americas and the Caribbean



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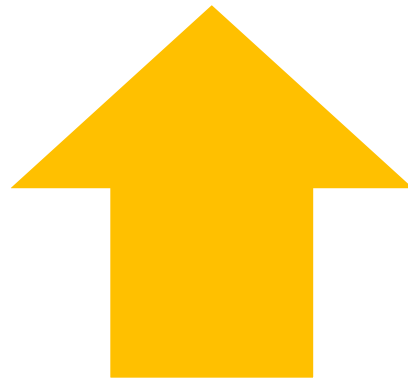




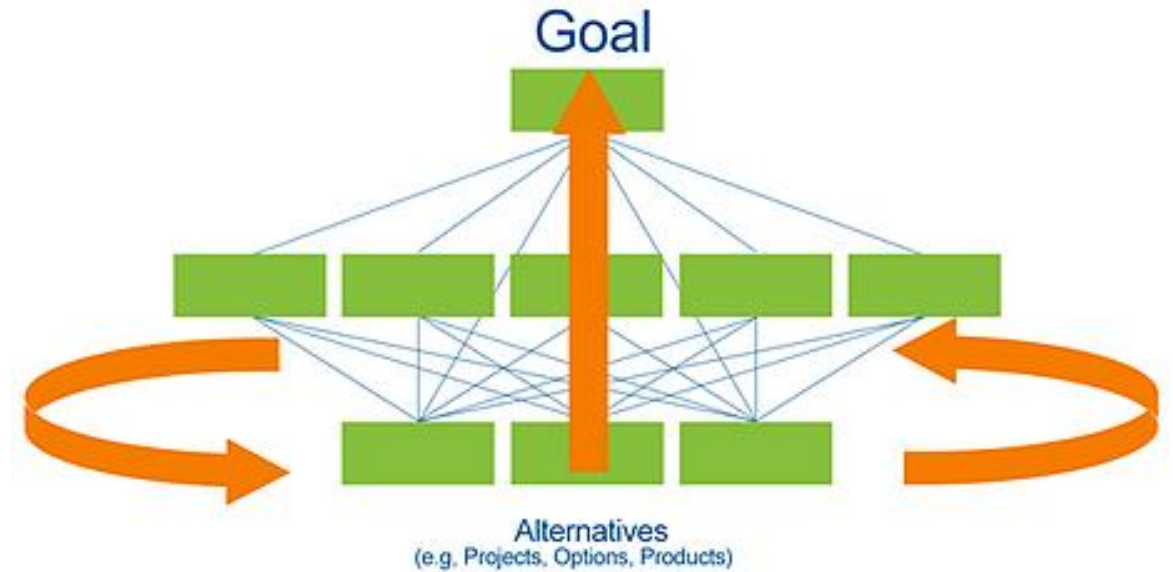
Risk factors



Safety factors



- | | | |
|--|---|---|
| 1. Structure Objectives or Criteria
<small>(May have multiple levels)</small> | 2. Measure relative importance of objectives and alternatives to objectives | 3. Synthesize and calculate results to show priorities of alternatives relative to the Goal |
|--|---|---|





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**Soil Erosion and TOrrential Flood
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1994, Yokohama Strategy
for a Safer World:
Guidelines for Natural
Disaster Prevention,
Preparedness and
Mitigation and its Plan of
Action

2005, Second World
Conference on Disaster
Reduction, Kobe – HFA –
Hyogo Framework for
Action 2005-2015

2015, Third UN World
Conference on Disaster
Risk Reduction
(WCDRR), Sendai -
Sendai Framework for
Disaster Risk Reduction
2015–2030

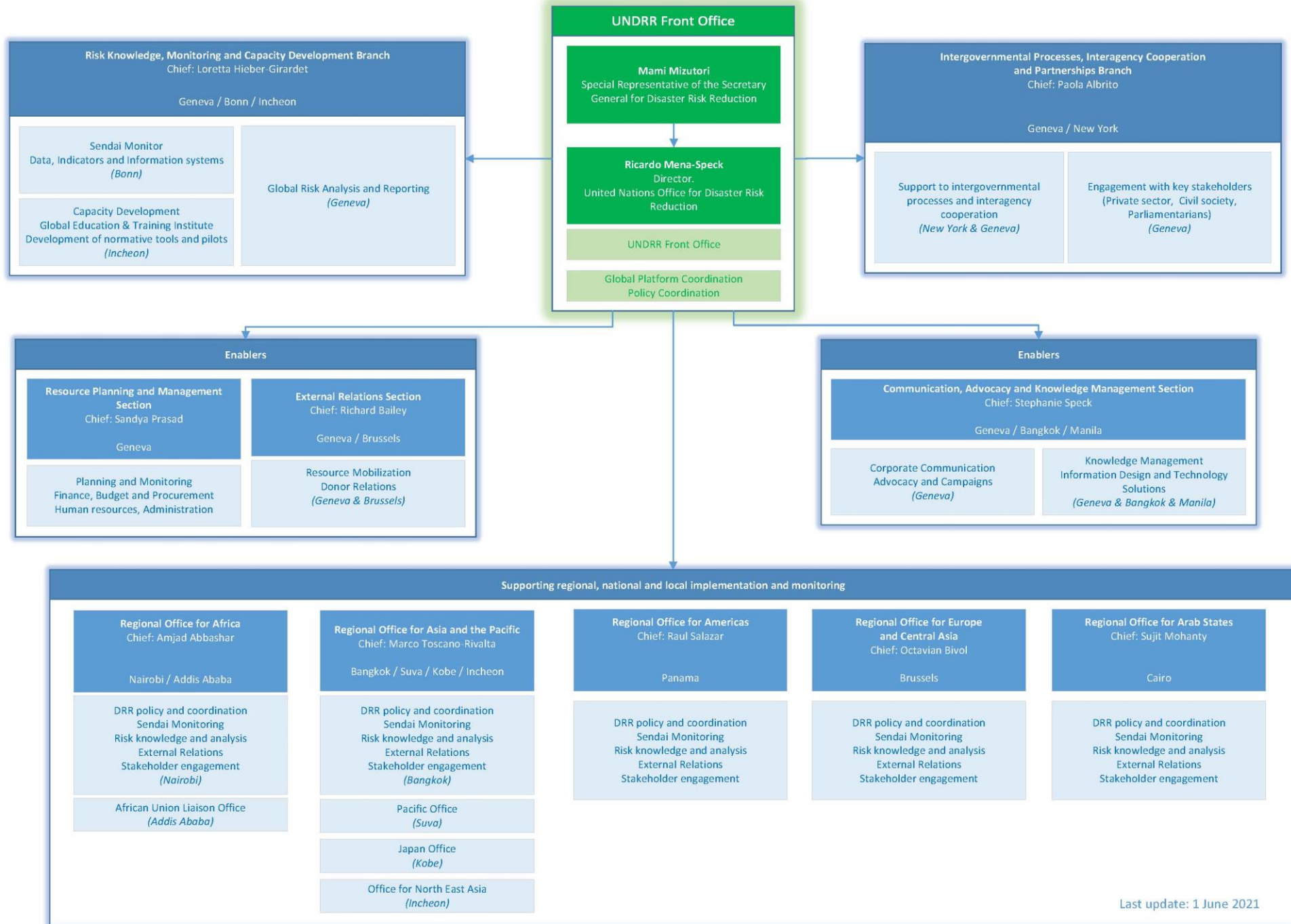


UNDRR

UN Office for Disaster Risk Reduction

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<i>Family</i>	<i>Main Event</i>	<i>Peril</i>
Geophysical	Earthquake Mass Movement Volcanic Activity	Ash Fall Fire following EQ Ground Movement Landslide following EQ Lahar Lava Flow Liquefaction Pyroclastic Flow Tsunami
Hydrological	Flood Landslide Wave Action	Avalanche: Snow, Debris Coastal Flood Coastal Erosion Debris/Mud Flow/Rockfall Expansive Soil Flash Flood Ice Jam Flood Riverine Flood Rogue Wave Seiche Sinkhole
Meteorological	Convective Storm Extratropical Storm Extreme Temperature Fog Tropical Cyclone	Cold Wave Derecho Frost/Freeze Hail Heat Wave Lightning Rain Sandstorm/Dust storm Snow/Ice Storm Surge Tornado Wind Winter Storm/Blizzard
Climatological	Drought Glacial Lake Outburst Wildfire	Forest Fire Land fire: Brush, Bush, Pasture Subsidence
Biological	Animal Incident Disease Insect Infestation	Bacterial Disease Fungal Disease Parasitic Disease Prion Disease Viral Disease
Extraterrestrial	Impact Space Weather	Airburst Collision Energetic Particles Geomagnetic Storm Radio Disturbance Shockwave

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Yokohama Strategy and
Plan of Action for a Safer World

Guidelines for Natural Disaster
Prevention, Preparedness and Mitigation

*World Conference
on Natural Disaster Reduction*

Yokohama, Japan 23-27 May, 1994



Principi

Jokohama
strategija za
bezbedniji
svet

Naknadne
akcije

Planovi

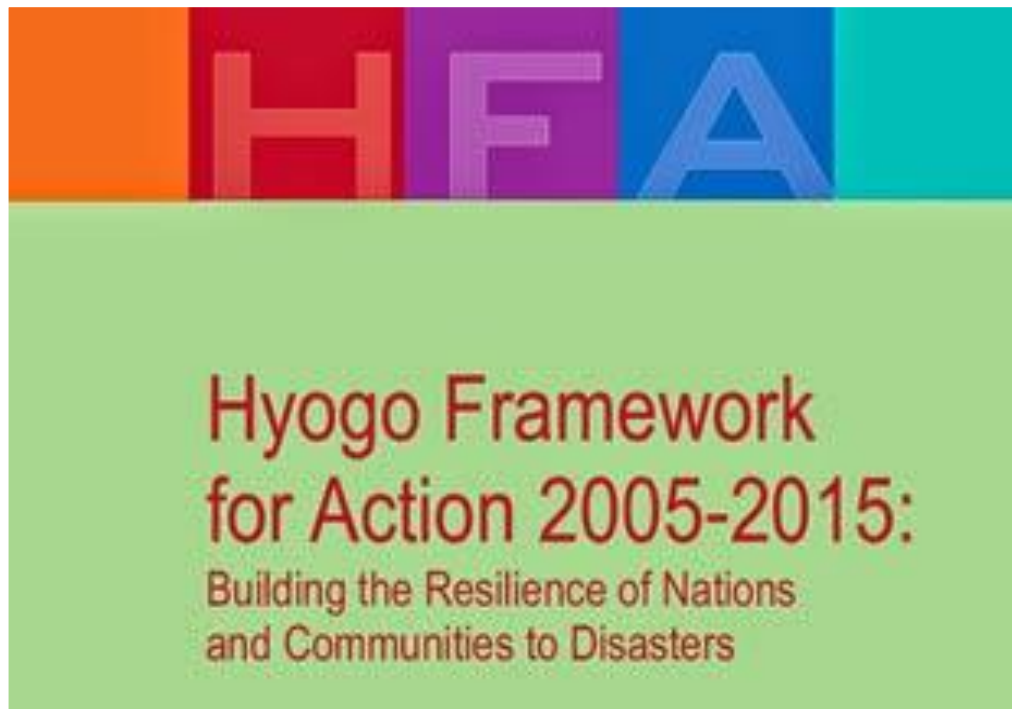
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Hyogo Framework for Action

5 prioritetnih oblasti

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1

- Osigurati da smanjenje rizika od katastrofa (DRR) bude nacionalni i lokalni prioritet sa jakim institucionalnom osnovom za implementaciju

2

- Identifikacija, procena i nadgledanje rizika od katastrofa i poboljšanje sistema ranog upozoravanja

3

- Primena znanja, inovacija i obrazovanje za izgradnju kulture bezbednosti i otpornosti na svim nivoima

4

- Smanjenje osnovnih faktora rizika

5

- Ojačati spremnost za efikasan odgovor na katastrofe na svim nivoima





Sendai Framework for Disaster Risk Reduction 2015-2030





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**SENDAI
FRAMEWORK**

**Scope and
Purpose**

**1 Global
Outcome**

1 Goal

7 Global Targets

13 Guiding Principles

4

**Priorities
for Action**

at **4** Levels

Local, National, Regional and Global

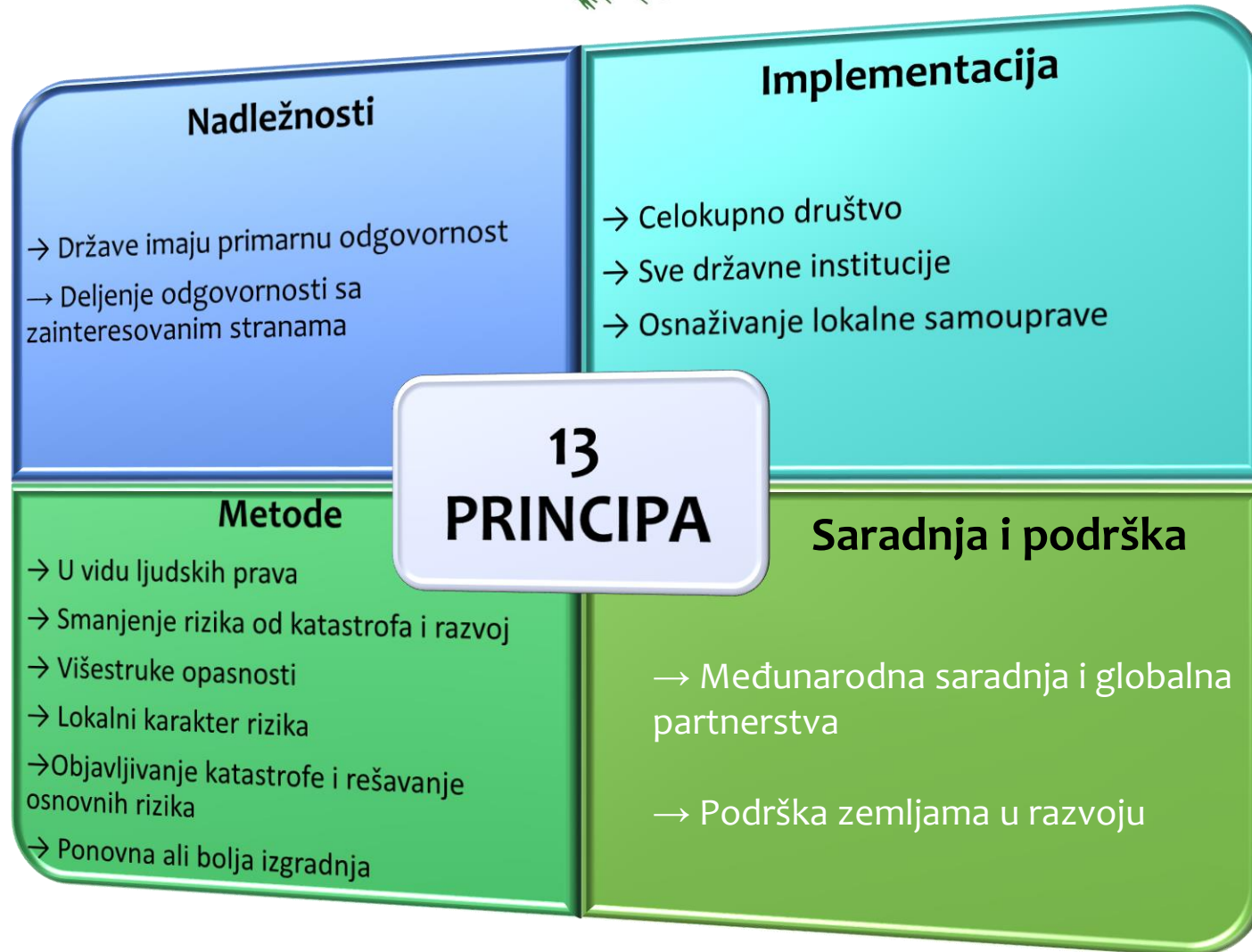
**Role of
Stakeholders**

**International Cooperation
and Global Partnerships**

Prevenција novih i
redukcija postojećih
rizika od katastrofa
kroz sprovođenje
integrisanih mera
koje sprečavaju
odnosno smanjuju
izloženost hazardima i
ugroženost od
katastrofa, povećavaju
spremnost za
reagovanje i obnovu, i
time povećavaju
rezilijentnost zajednice.

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1. Broj zemalja sa nacionalnim i lokalnim strategijama za smanjenje rizika od katastrofa

vrednost iz 2020 >> vrednost iz 2015

2. Međunarodna saradnja sa zemljama u razvoju

vrednost iz 2020 >> vrednost iz 2015

3. Dostupnost i pristup sistemima ranog upozoravanja sa multihazardima i informacijama odnosno procenama rizika od katastrofa

vrednosti iz 2030 >> vrednosti iz 2015

4. Mortalitet globalne populacije

prosek od 2020 – 2030 << prosek od 2005 – 2015

5. Pogođeno stanovništvo na globalnom nivou

prosek od 2020 – 2030 << prosek od 2005 – 2015

6. Direktni ekonomski gubici

odnos iz 2030 << odnos iz 2015

7. Štete na kritičnoj infrastrukturi i narušavanje osnovnih usluga

vrednost iz 2030 << vrednost iz 2015



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PRIORITETI
SENDAI
OKVIRA

PRIORITET 1: Razumevanje rizika od katastrofa

PRIORITET 2: Jačanje sistema upravljanja rizicima od katastrofa

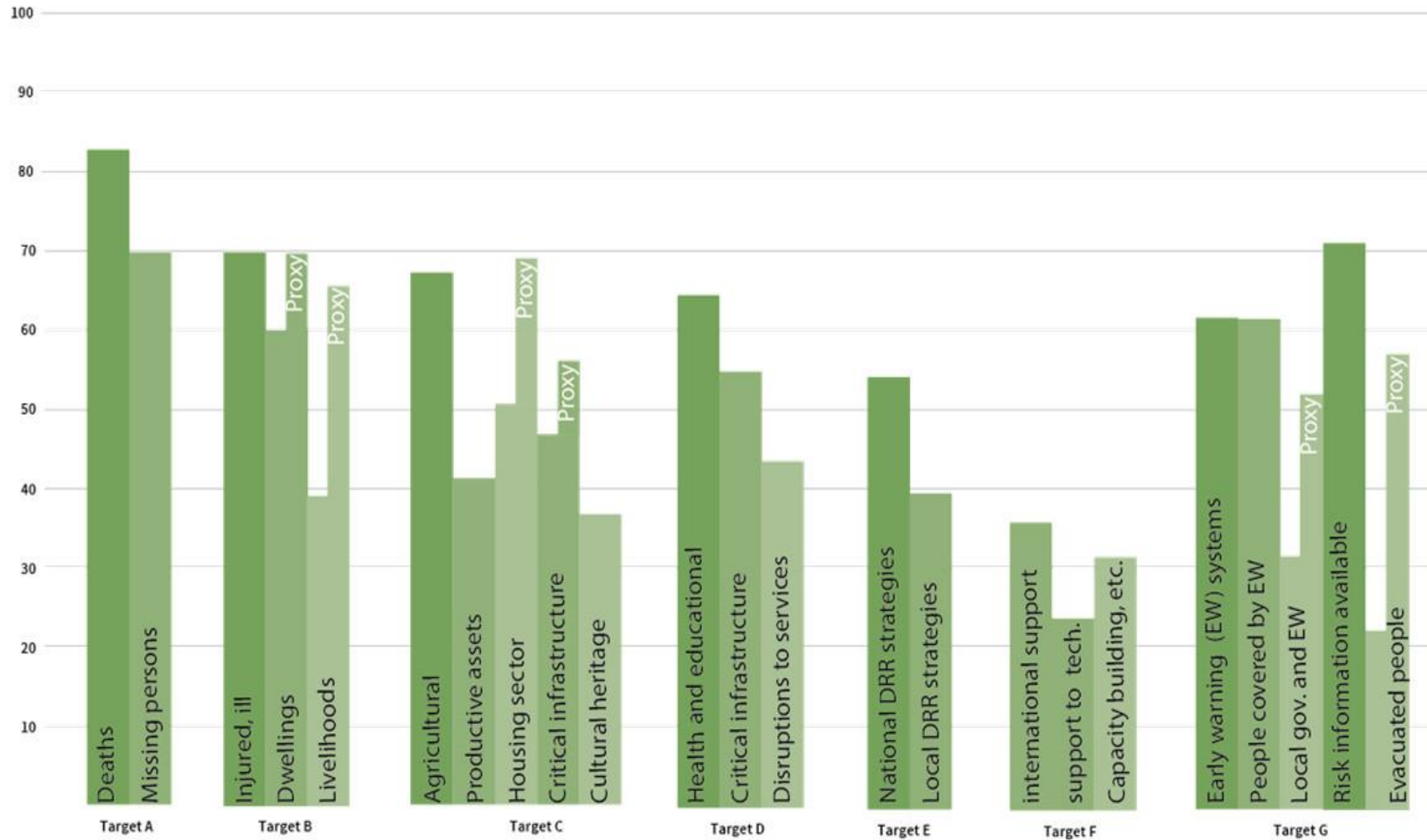
PRIORITET 3: Ulaganje u smanjenje rizika od katastrofa u cilju jačanja rezilijentnosti zajednice

PRIORITET 4: Unapređenje spremnosti za delotvorno reagovanje u slučaju katastrofe i „izgradnja boljeg sistema od onog pre katastrofe“ u toku obnove, sanacije i rekonstrukcije





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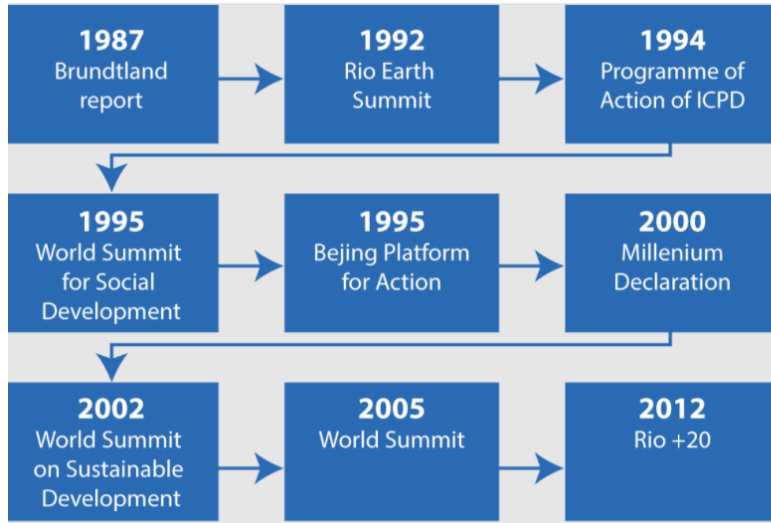


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SUSTAINABLE DEVELOPMENT GOALS



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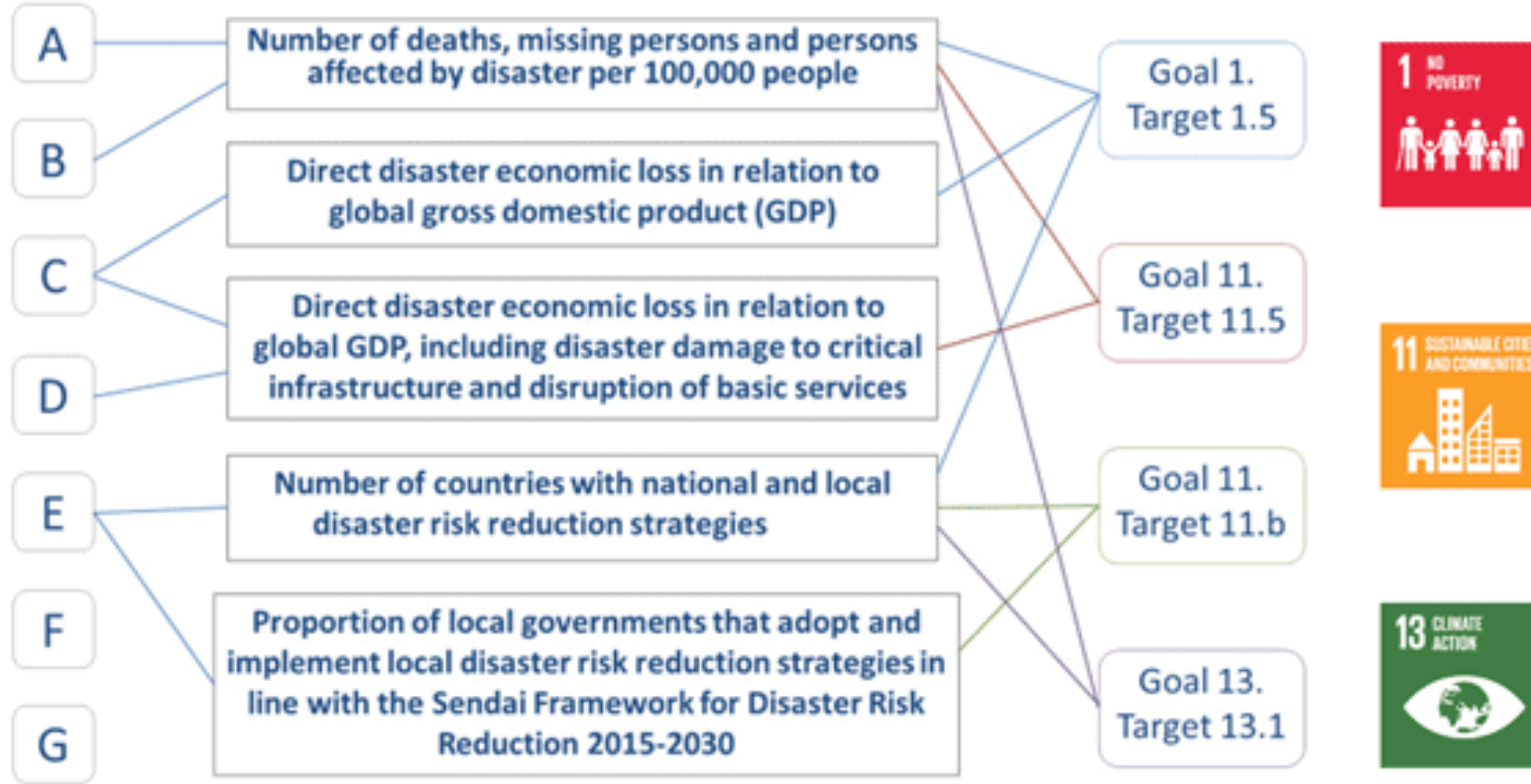




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Sendai Framework
for Disaster Risk Reduction
2015-2030

SUSTAINABLE DEVELOPMENT GOALS



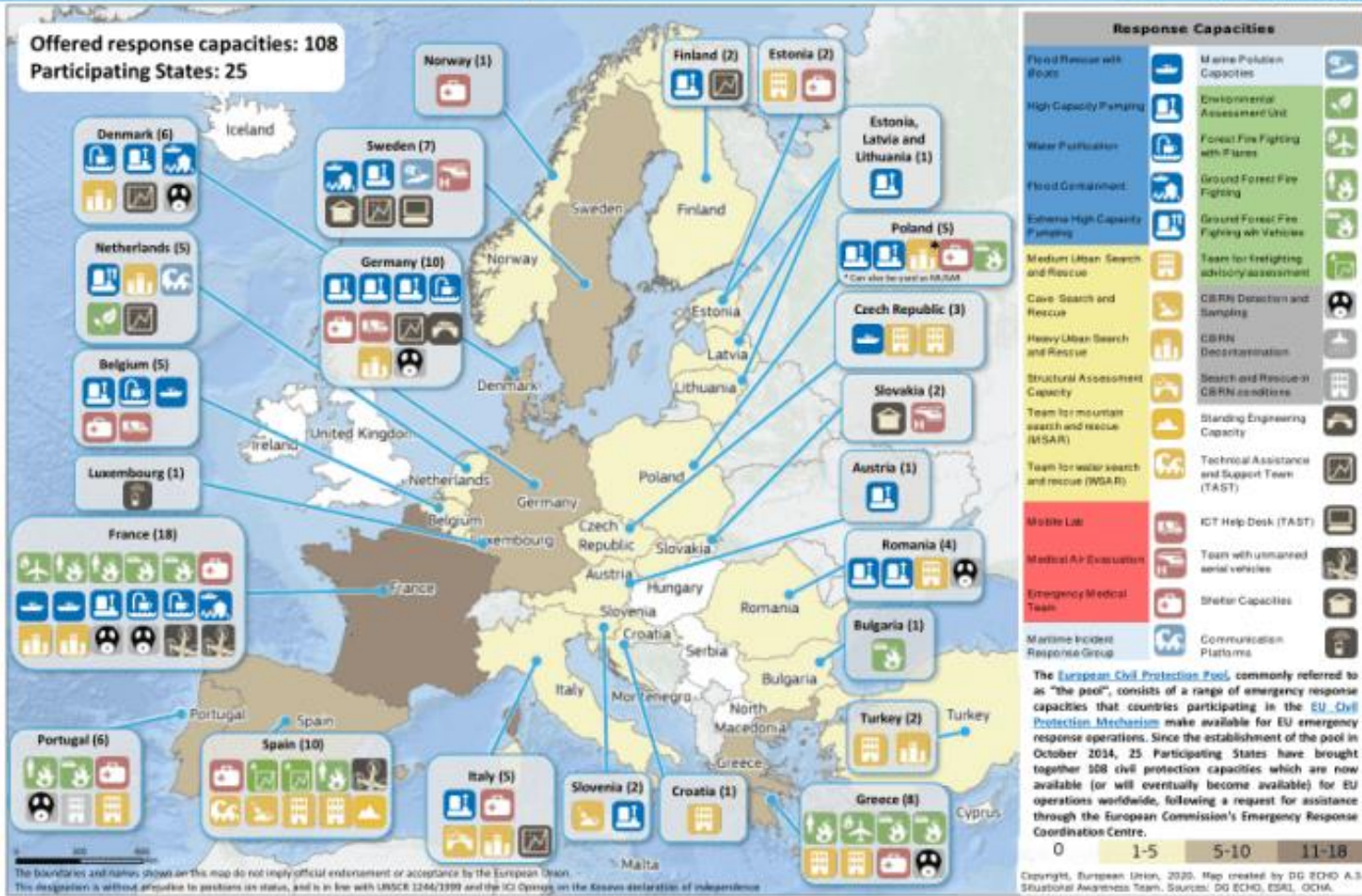
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Emergency Response Coordination Centre (ERCC) | DG ECHO Daily Map – 26/06/2020
European Civil Protection Pool - Offered capacities



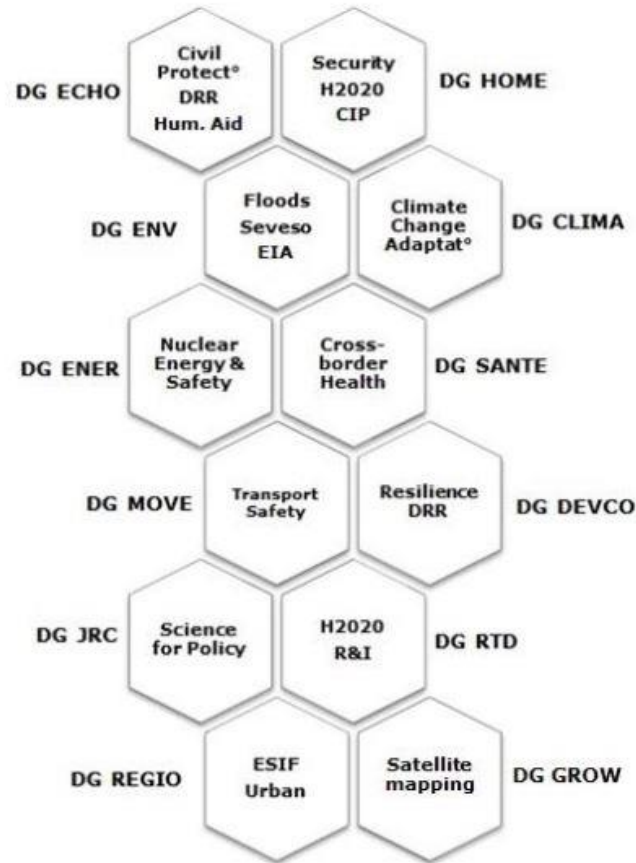
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Sendai Framework ► EC Action Plan

Purpose: "A disaster risk-informed approach for all EU policies"





4 KEY AREAS

(1) Build **RISK KNOWLEDGE** in EU policies

(2) An **ALL-OF-SOCIETY** approach in disaster risk management

(3) Promote **EU RISK INFORMED INVESTMENTS**

(4) Support the development of a **HOLISTIC DISASTER RISK MANAGEMENT** approach

21 PRIORITIES

For example:

2. Use **foresight, scenarios and risk assessment** for better preparedness to existing, emerging and new types of risks

5. Facilitate exchange of good practices and improvements in disaster management policy and operations through **mutual learning and expert review**

8. Strengthen the links between **disaster risk management, climate change adaptation and biodiversity strategies**

19 Facilitate **capacity building of local & national authorities and communities** in managing disaster risk

51 ACTIVITIES

For example:

3.2 Strengthen the role and scope of the Disaster Risk Management Knowledge Centre (DRMKC) as the European Commission's main point of reference for disaster risk management network-building, knowledge building and sharing

10.1. Ensure regular exchange of good practices on design and implementation of all-inclusive local and national strategies and plans for disaster risk reduction

11.2 Support projects strengthening the disaster risk management capacities of regional inter-governmental organisations





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European
Commission

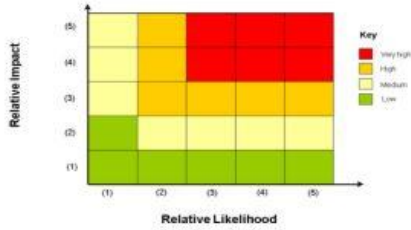


image courtesy jscoriatonaz / FreeDigitalPhotos.net



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Serbia - Europe - Countries & R X +

https://www.preventionweb.net/english/countries/europe/srb/

The knowledge platform for disaster risk reduction

DISASTER RISK SENDAI FRAMEWORK COUNTRIES & REGIONS THEMES HAZARDS KNOWLEDGE BASE

HOME > COUNTRIES & REGIONS > EUROPE > SERBIA

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- Serbia
- News
- National Platform
- National Policy, Plans & Statements
- Disaster & Risk Profile
- Meetings & Conferences
- Training
- Academic Programmes
- Educational Materials
- Organizations
- Documents & Publications
- Maps
- Multimedia
- Jobs in Europe

Serbia

Why is eastern Europe's second wave so much worse than its first?

1 Dec 2020, Conversation Media Group, the Eastern Europe was praised for being exceptional during the first wave of the pandemic but its pandemic experience has been dramatically different this autumn.



View all >>

Sendai Framework

Sendai Focal Point:
International Cooperation Protection and Rescue Sector, Ministry of Interior

Website:
Contact: International Cooperation and Public Relations Coordinator
Phone: +381 64 8929 722

National Platform

National Platform Focal Point:
Ministry of Interior of the Republic of Serbia (MI SRB)

Website: http://www.mup.gov.rs/cms_eng/home.nsf/i
Contact: Assistant Minister and Head of Sector
Phone: +381 112 282 916 +38 164 892 125 2 (mob)

Hyogo Framework for Action

HFA Focal Point:
Ministry of Interior of the Republic of Serbia (MI SRB)

Website: http://www.mup.gov.rs/cms_eng/home.nsf/i
Contact: Assistant Minister and Head of Sector
Phone: +381 112 282 916 +38 164 892 125 2 (mob)

View full national platform profile >>

Policy, Plans & Statements

Neighbouring Countries

- Albania
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Hungary
- Montenegro
- North Macedonia

National Platforms

Officially declared national coordinating multi-sectoral and inter-disciplinary mechanisms for advocacy, coordination, analysis and advice on disaster risk reduction.

View all maps for Serbia >>

<https://www.preventionweb.net/english/countries/europe/srb/>

DRR Organizations in Serbia

- Balkans Institute for Risk Assessment and Emergency Management (BIEM)
- City of Niš
- University EDUCONS

View all >>

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City of Niš Strategy for Safety

Analysis of the Safety Situation in the Territory of the City of Niš

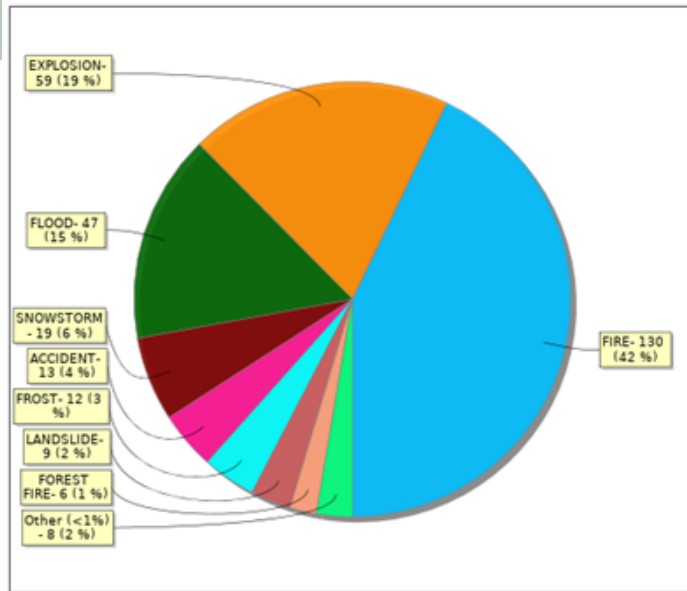
Maintenance and reconstruction of the water management structures is a preventive measure for providing the necessary conditions for the flow of large volumes of water in the interest of defense against floods and ice. However, investing in the investment maintenance and retrofitting of the flood defense systems is still insufficient.

A particular problem is posed by erosion areas and torrents. The torrents cause degradation of the erosive surfaces, movement of the sediments and clogging of the riverbeds and accumulations, endangerment of the settlements and traffic infrastructure. Therefore it is necessary to regulate the torrents and decrease erosion. The full protective effects are achieved through the optimal combination of biological, biotechnical and construction-torrential works in the riverbed.

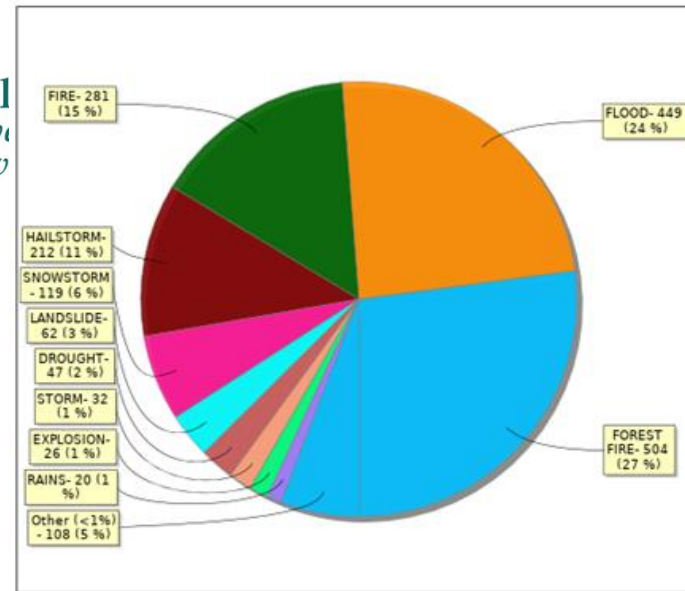
Regulation of the torrential flow beds in the territory of the City has not yet been conducted. Heavy precipitation brings about the overflowing of the Kutina, Gabrocac and Toponca Rivers, as well as the Suvodol, Humski and Rujiški Springs.

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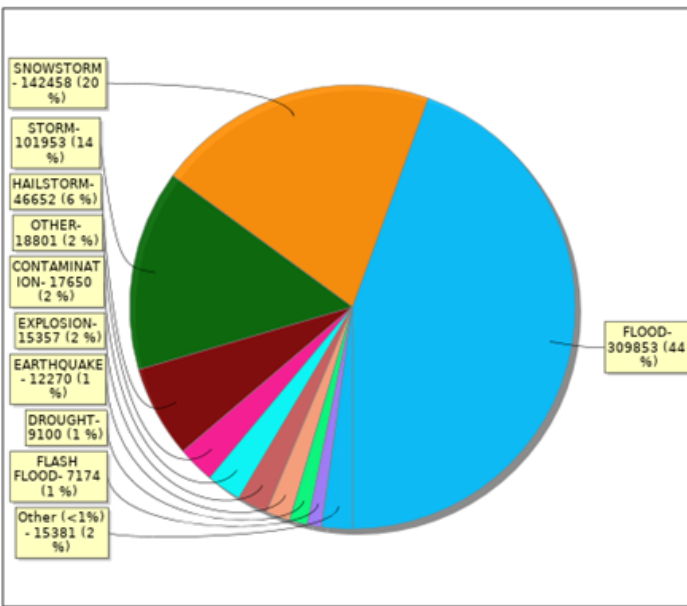




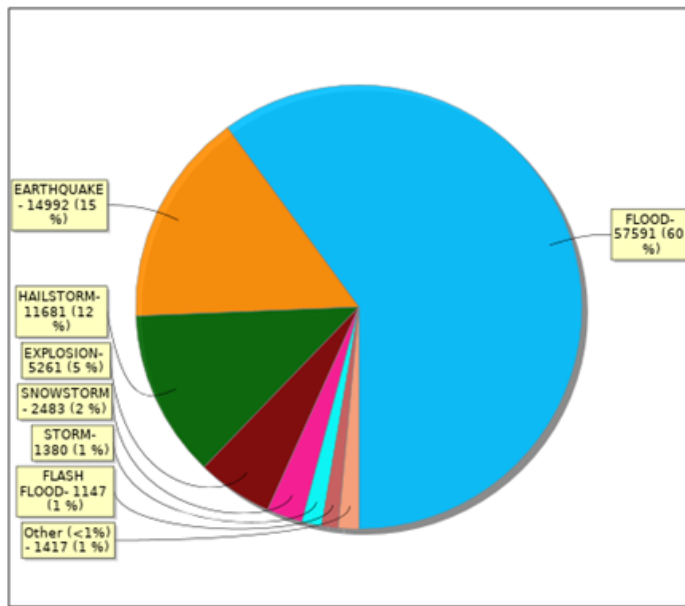
Total deaths



Losses



Affected population



Houses damaged





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Latest additions in the knowledge base



DOCUMENTS AND PUBLICATIONS

Climate change and natural hazards in Bosnia and Herzegovina: a gender equality, social equity and poverty reduction lens

This discussion brief explains how climate change and natural hazards in Bosnia and Herzegovina (BiH) are related to gender inequality, social inequity and poverty.

Stockholm Environment Institute

UPDATES 11 October 2021

Schools in BiH act to establish safe school environments for a more effective response to emergencies

The goal of the "Safe School Environment" model is to assist schools in BiH in providing a better response to natural and other disasters, reducing or completely avoiding their negative effects.

United Nations in Bosnia and Herzegovina



UPDATES 7 July 2021

Travnik, Bosnia and Herzegovina, steps up building resilient and healthy communities through the MCR2030 initiative

Travnik, Federation of Bosnia and Herzegovina – On 5 June 2021, a workshop for finalisation of the Preliminary Disaster Resilience Scorecard for Cities (and Public Health Scorecard Addendum) took place in Travnik, Capital of Central Bosnia Canton.

DRR Community in Bosnia and Herzegovina

Upcoming meetings

→ [View all](#)

📄 [Submit your own](#)

Upcoming training

→ [View all](#)

📄 [Submit your own](#)

Academic programs

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Jobs

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Organizations

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**National
Scale**

**International
scale**

EPA

MoD

MoH

Mol

HMI

GEM

INFOT
ERRA

GRID

Prevent
ionWeb

EIONET

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142 countries, more than 4 million
entries, 4000 stations,

GEMStat

INFOTERRA, GRID

Inaugurated in
1975, it monitors
weather and
climate changes
around the world,
as well as
variations in soils,
the health of plant
and animal
species, and the
environmental
impact of human
activities.

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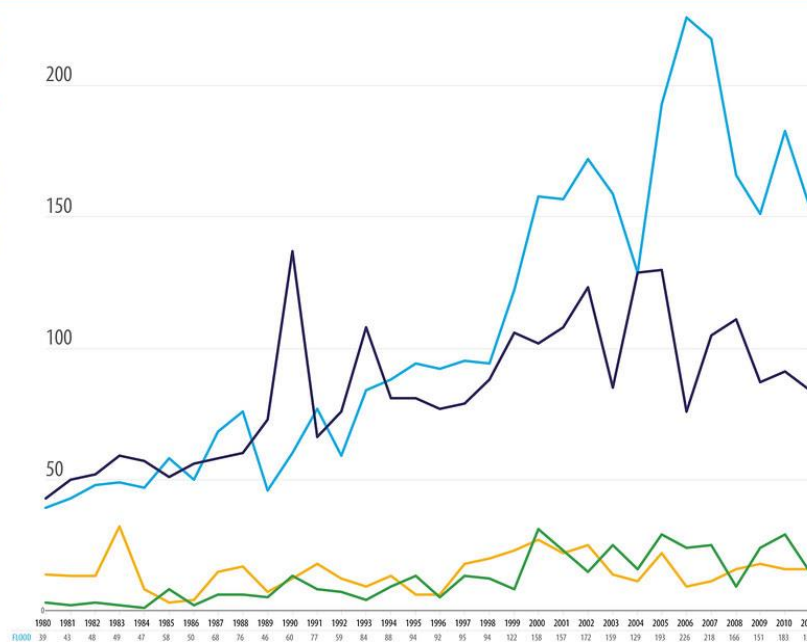
 **3455
FLOODS**

 **2689
STORMS**

 **470
DROUGHTS**

 **395
EXTREME TEMPS**

 **UNISDR**
The United Nations Office for Disaster Risk Reduction
<http://www.unisdr.org>
Version: 13 June 2012
DATA SOURCES



A global knowledge base with over 45000 entries updated daily, Daily and weekly alerts, Terminology, Trainings...

Collaborative knowledge sharing platform on disaster risk reduction (DRR), managed by the UN Office for Disaster Risk Reduction (UNDRR). The site offers a range of knowledge products and services to facilitate the work of DRR professionals. It was launched in 2007. under the Hyogo Framework for Action.

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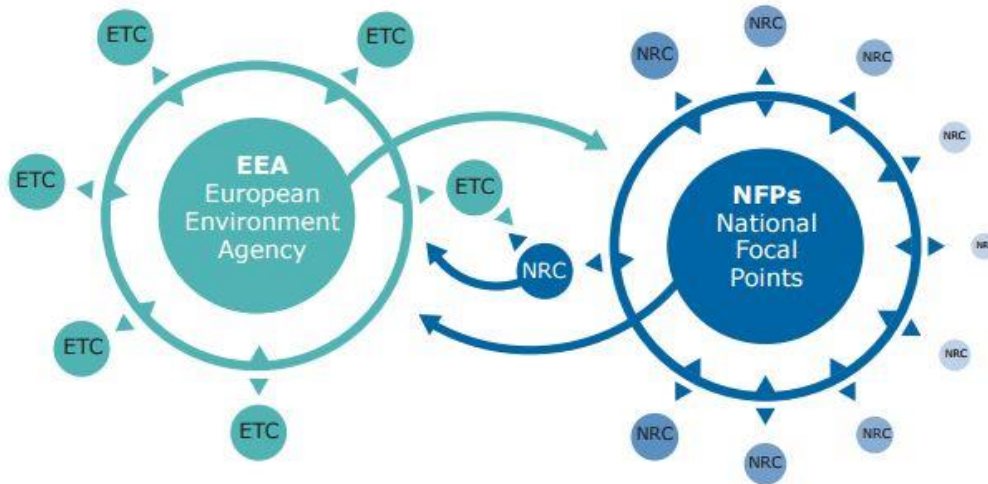




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European environment information and observation network (Eionet)



European Network for Environmental Information and Monitoring (EIONET) is a partnership network of the European Environment Agency (EEA) and its 38 member and cooperating countries.

The EEA is responsible for developing Eionet and coordinating its activities together with National Focal Points (NFPs) in the countries

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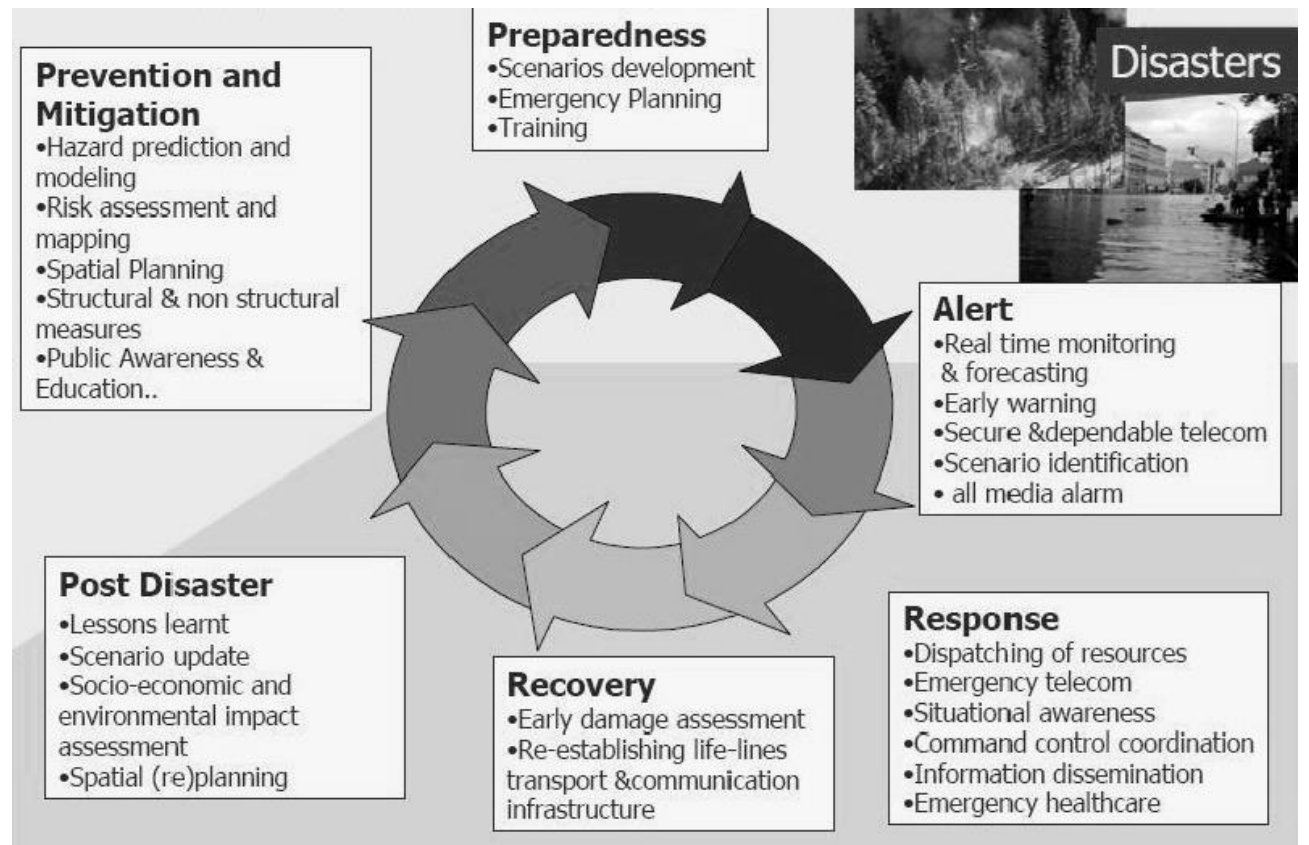
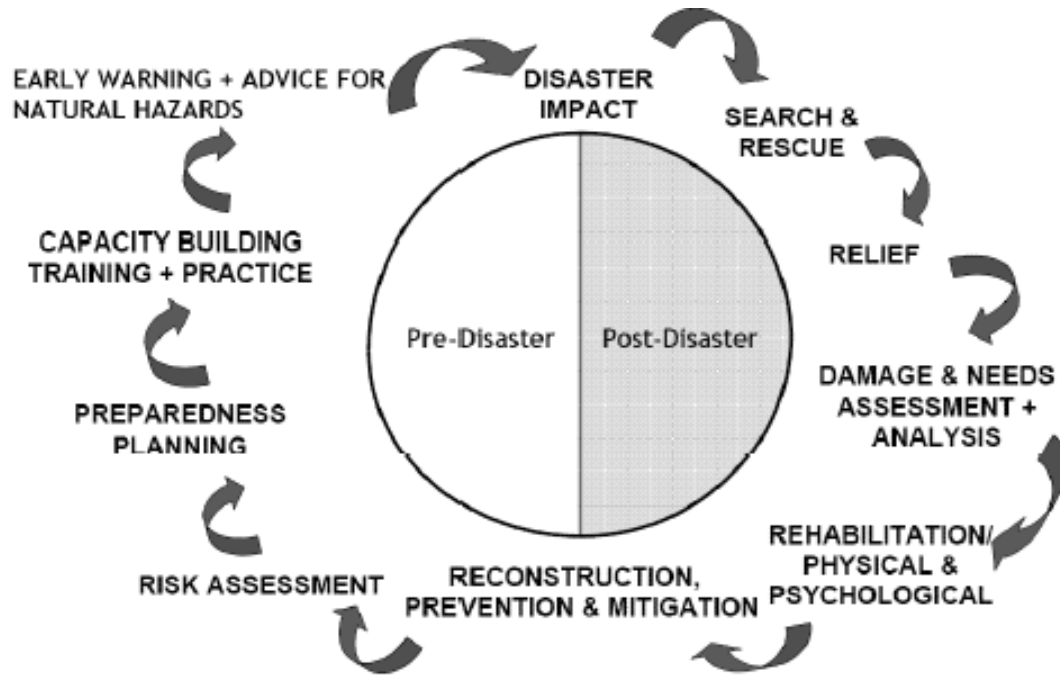
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Model	Characteristics
Integrated community-based disaster management model (Chen et al., 2006)	Community-based disaster mitigation based on cooperation or experts or specialists, planning team, and public agencies, with participation of inhabitants, NGOs, and community organizations. As sources of resources, public agencies are identified.
Traditional model of disaster risk management and mitigation (Ahmed, 2008)	Defines pre-disaster and post disaster activities. Resources are included in every phase, without identifying different stakeholders. It is based on a risk management.
Disaster management cycle (Urlich, 2008)	Defines phases of prevention and mitigation, preparedness, alert, response, recovery, and post-disaster phase. Every phase is described by a set of activities. As important resource, information is identified.
Disaster risk management cycle diagram (Khan et al., 2008)	Defines pre-disaster phase (risk reduction through mitigation and preparedness), disaster strike phase, disaster response phase (emergency response), and post-disaster recovery phase (reconstruction and rehabilitation). Some most important resources are identified for every phase.





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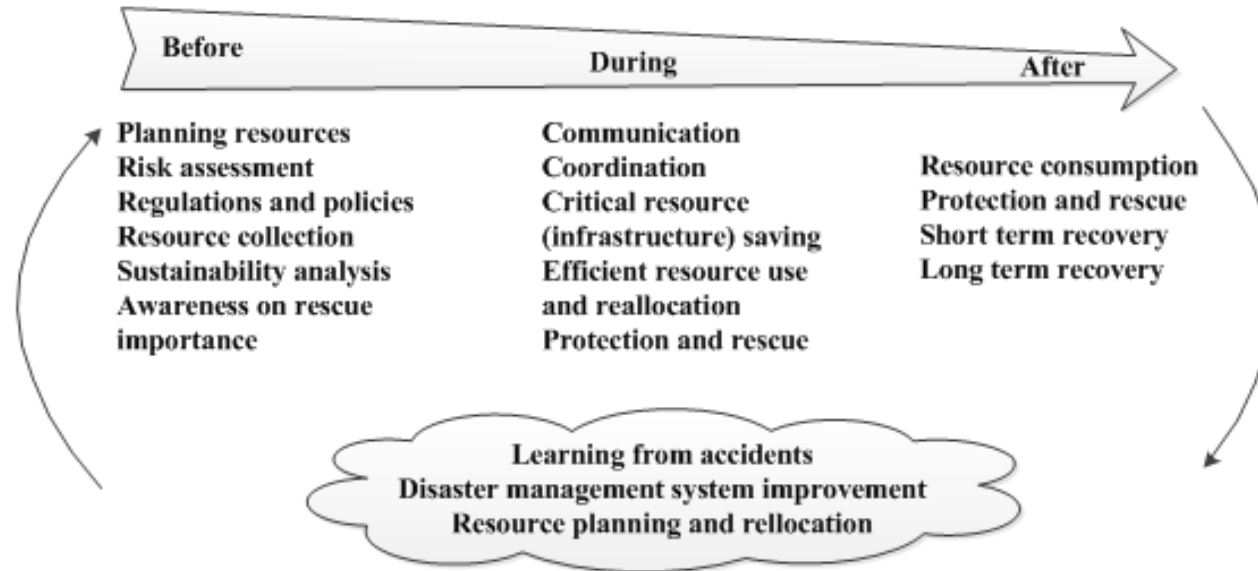
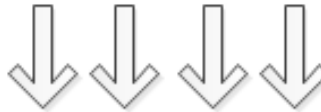


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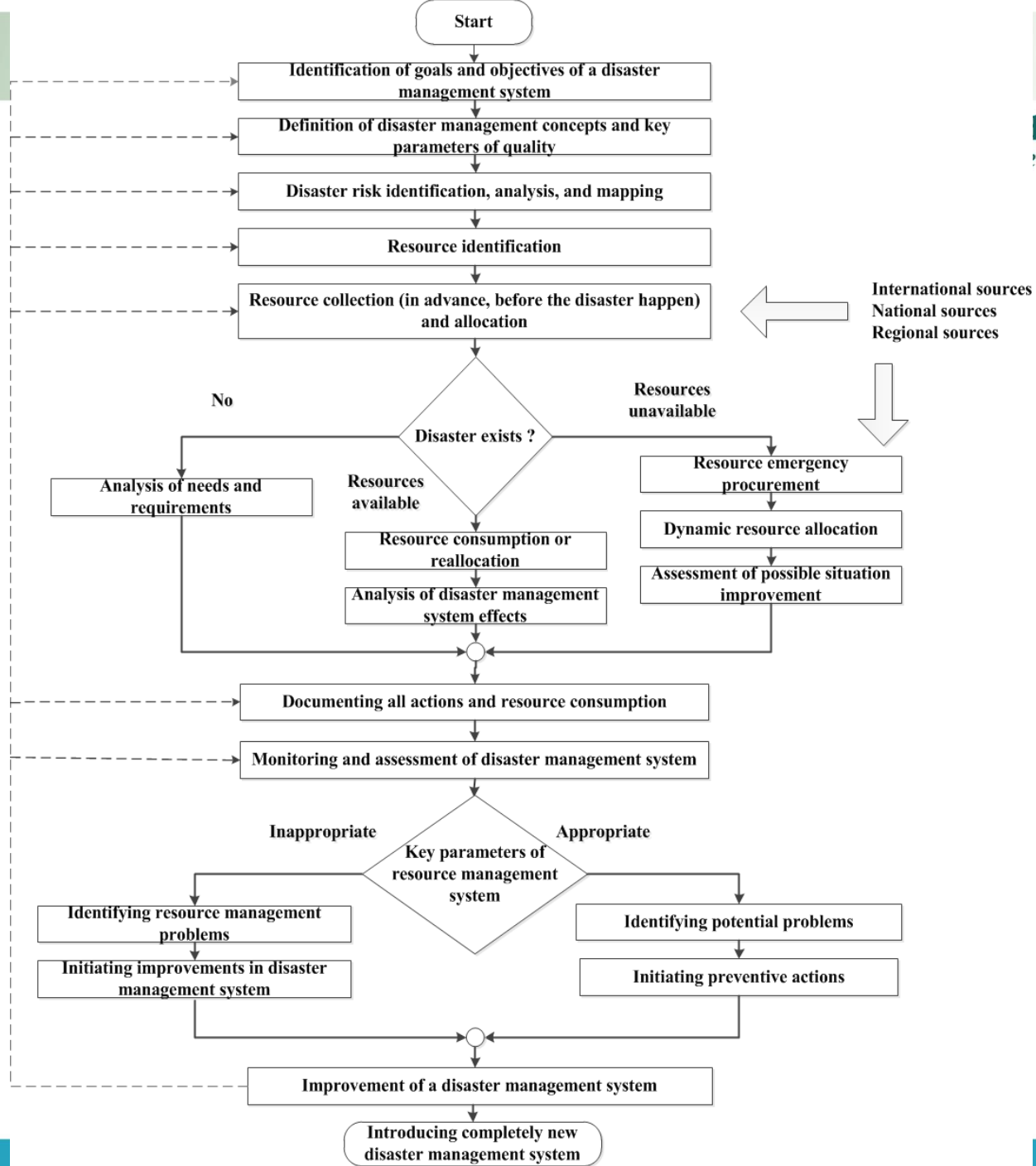


Disaster



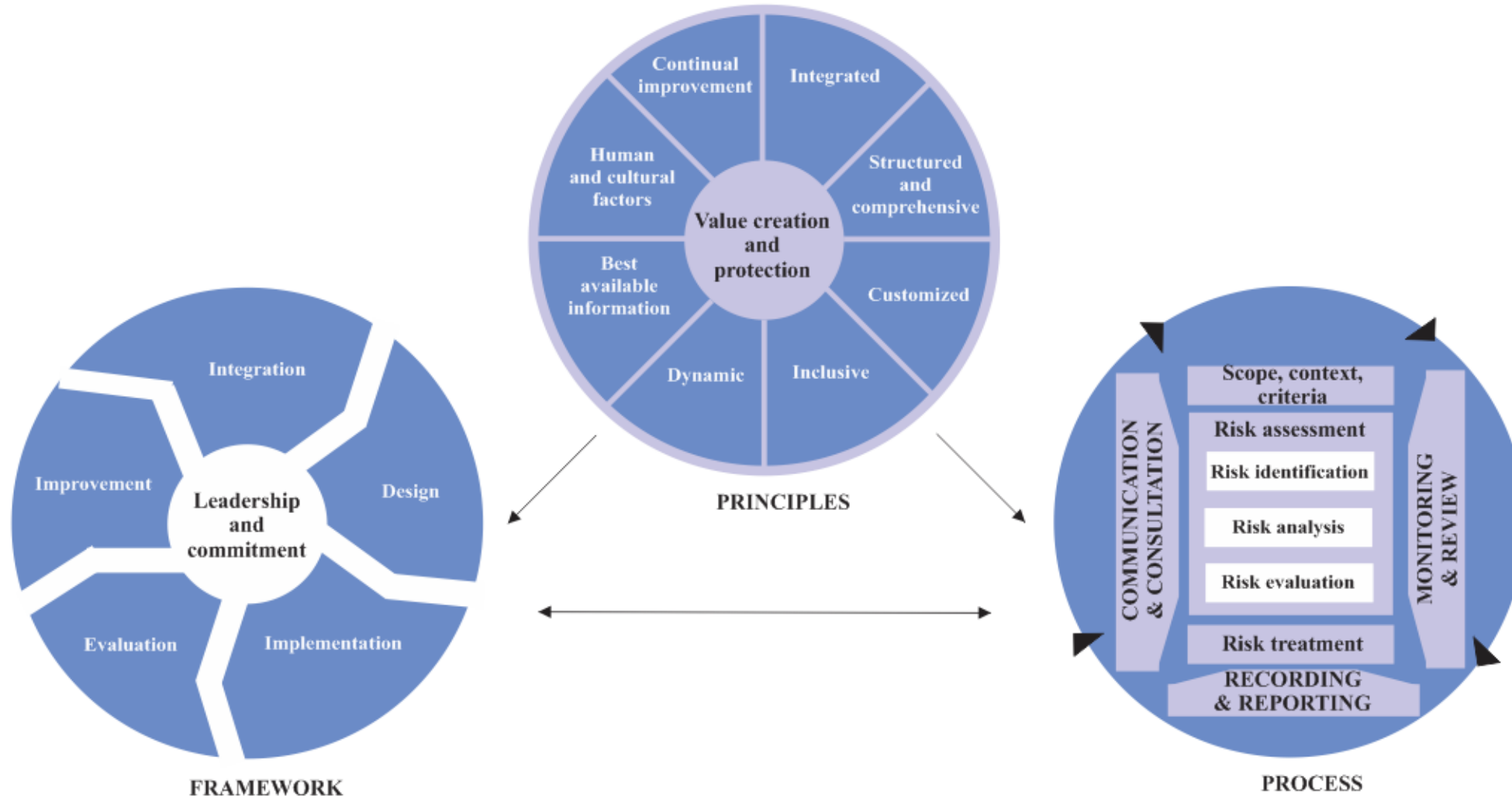
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<i>Abbrev.</i>	<i>Full name</i>	<i>Type</i>	<i>Subtype</i>
IRPA	Individual risk per annum	Individual risk	Loss of life
LIRA	Localized individual risk	Individual risk	Indirect danger or loss
IR	Individual risk of dangerous dose	Individual risk	Indirect danger or loss
FIE	Frequency of intermediate events	Individual risk, Group risk	Indirect loss
PLL	Potential loss of life	Group risk	Loss of life
FAR	Fatal accident rate	Group risk	Loss of life
SRI	Scaled risk integral	Group risk	Loss of life
PEF	Potential equivalent fatality	Group risk	Loss of life
FN	FN diagram	Societal risk	Loss of life
RI	Weighted risk integral	Societal risk	Loss of life
TR	Total risk	Societal risk	Loss of life
FE	FE diagram	Societal risk	Economic loss
EL	Expected economic loss	Societal risk	Economic loss
CED	Conditional expected damage	Societal risk	Overall loss
MCR	Monetary collective risk	Societal risk, Group risk	Combined loss

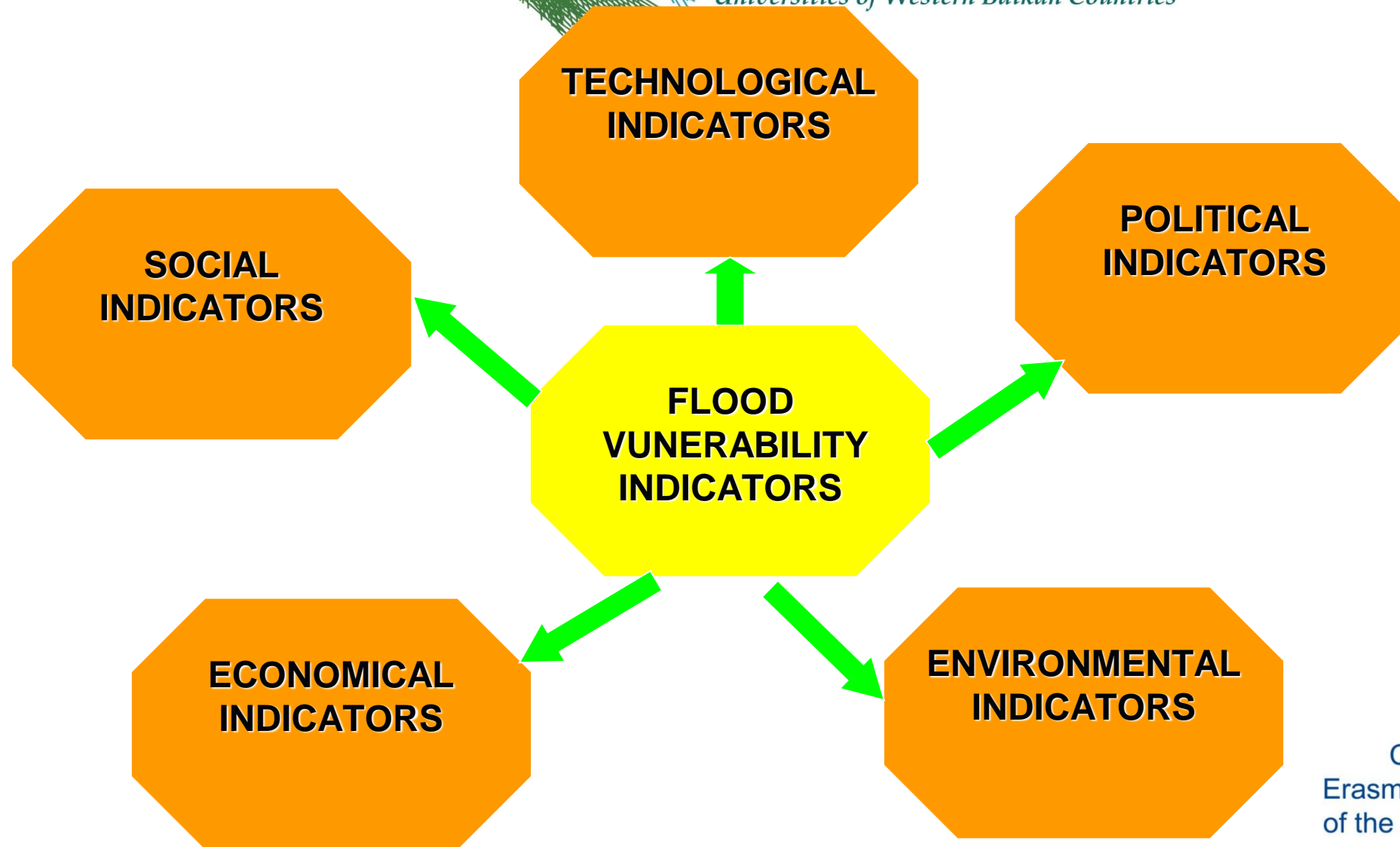
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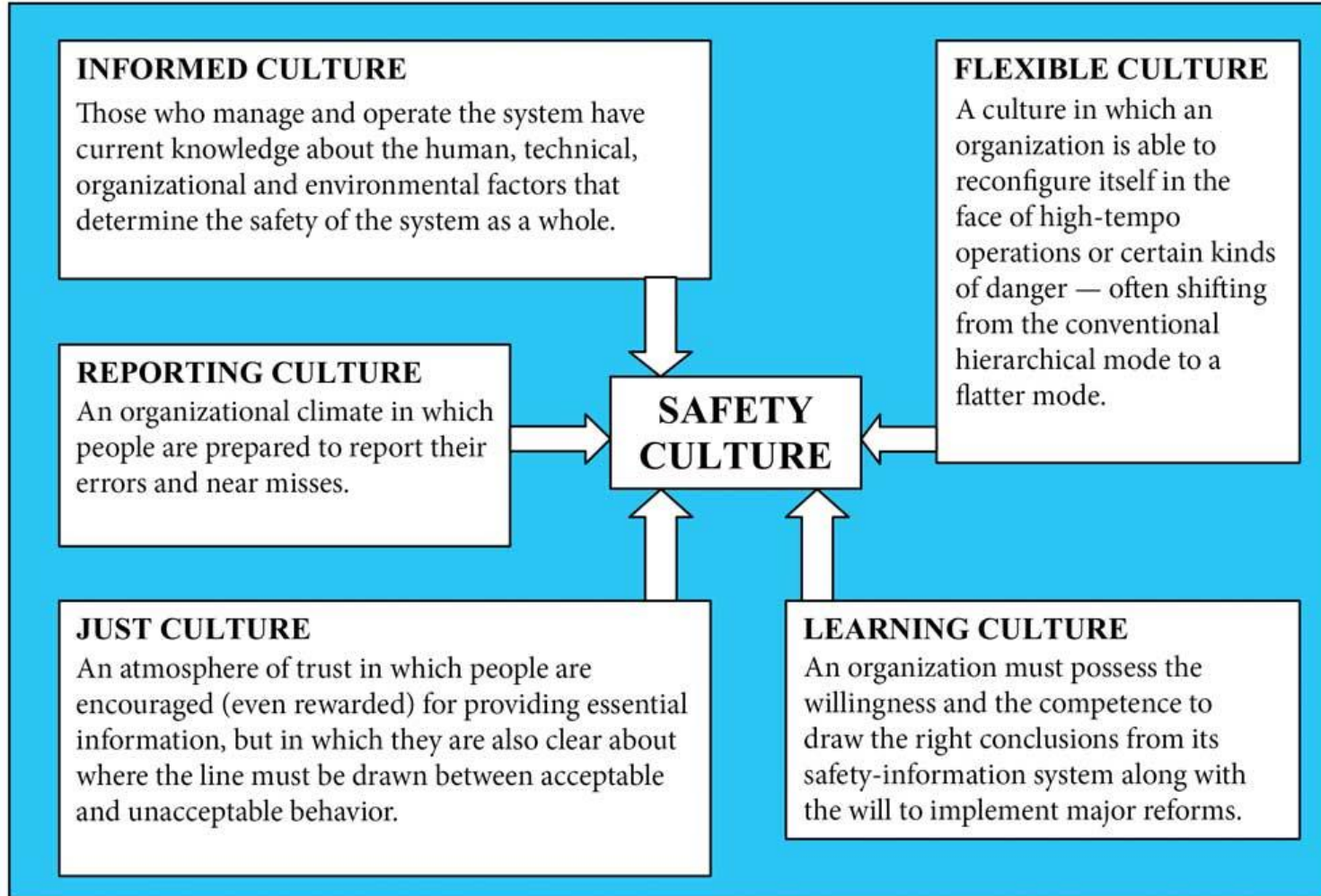
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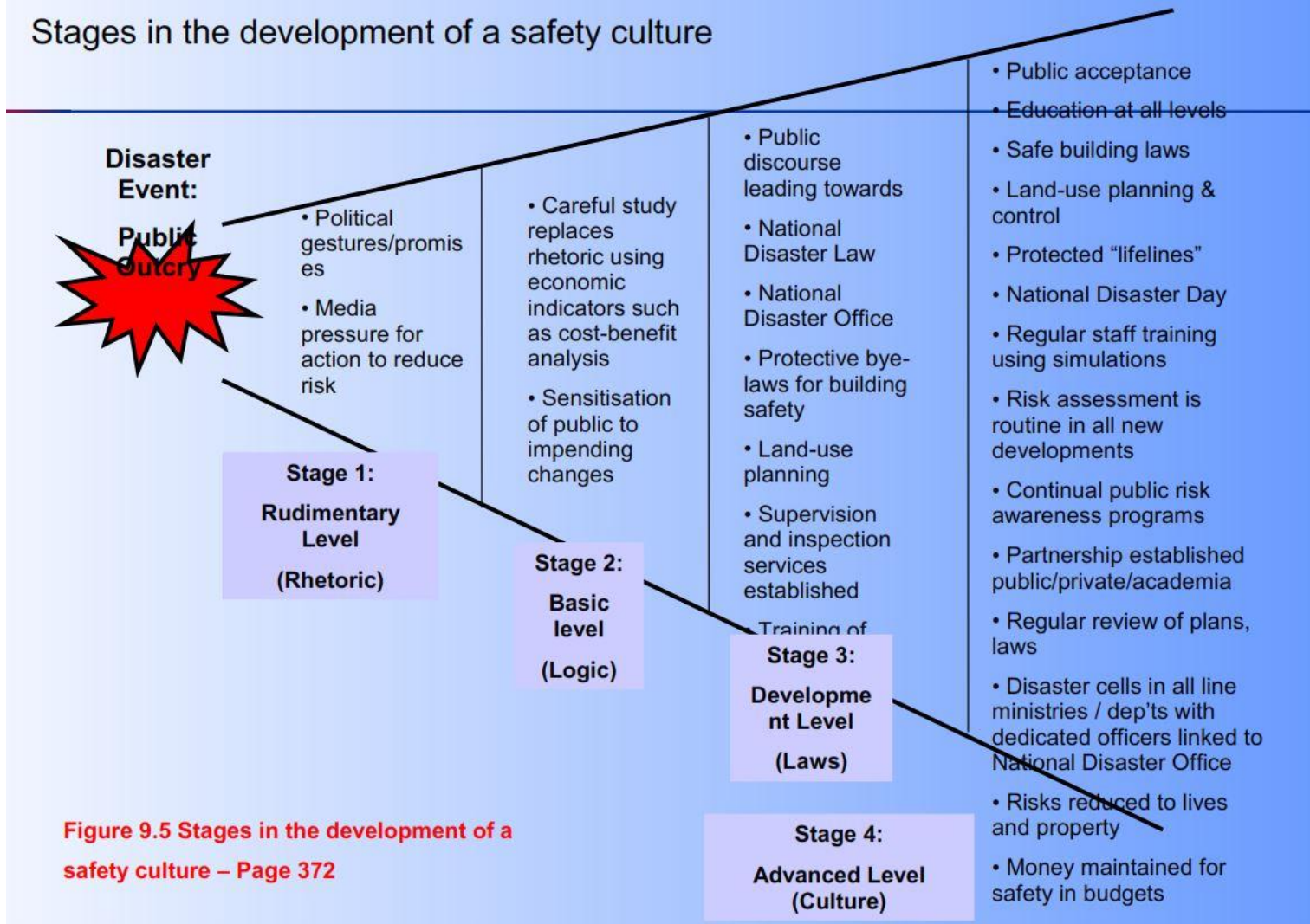


Figure 9.5 Stages in the development of a safety culture – Page 372





SETOP Soil Erosion and **T**orrential Flood
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The screenshot shows the UNDRR website header with the logo and navigation menu (HOME, INFORMATION, WHAT IS UNDRR?, FAQ, PRESS). Below the header is a large banner for the 'STOP DISASTERS!' game. The banner features an isometric illustration of a village with a river and a large brown field. The text 'Play and learn to STOP DISASTERS!' is overlaid on the illustration. A red button labeled 'LAUNCH GAME' is positioned in the bottom left corner of the banner.

https://www.stopdisastersgame.org/stop_disasters/

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Soil Erosion and TOrrontial Flood
Prevention: Curriculum Development at the
Universities of Western Balkan Countries



Hvala vam na pažnji,
pitanja...

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