RECIPE

Reinforcing civil protection capabilities into multi-hazard risk assessment under climate change

Funded by European Union Humanitarian Aid and Civil Protection

RECIPE Results: T2.1 Risk factors and measures

FVA 11/11/2020

CTFC PAU COSTA FOUNDATION protecció civil FVA Forest Research Institute Baden-Württemberg cima FOUNDATION BFW Austrian Research Centre for Forests INSTITUTO SUPERIOR DE AGRONOMIA ICGC Institut Cartogràfic i Geològic de Catalunya

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Objectives of task 2.1

- Test and develop a structured risk analysis for several hazards based on the concept of hazard – exposure – vulnerability
- Common method to analyse risk attributes (risk factors, mitigation measures, stakeholders involved)
- Information base for the analysis of multi-risk interactions (WP3)

Partner/s	Country/ies	Risk analysis
FVA	Germany	Storms
BFW	Austria	Landslides and Rockfalls
CIMA	Italy	Forest fires and wildland-urban interface fires and Flash foods
PCF	Spain	High intensity fires with extreme fire behaviour
CTFC, DGPC CAT, ISA	Spain and Portugal	High intensity fires in a Mediterranean context
ICGC	Spain	Avalanches

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Concept of task 2.1: risk factors

- Three dimensions of risk → risk driver factors:
  - Hazard
  - Exposure
  - Vulnerability

IPCC 2012

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Concept of task 2.1: risk reduction measures

- cross-sectoral component of Disaster Risk Management

Cross-sectoral component (adapted from Plana et al. 2019)
Risk assessment, mapping, and planning tools
Risk governance and policy
Risk culture and communication
Technical measures
Emergency management and response capacity
Recovery

4 Phases of the disaster risk management cycle

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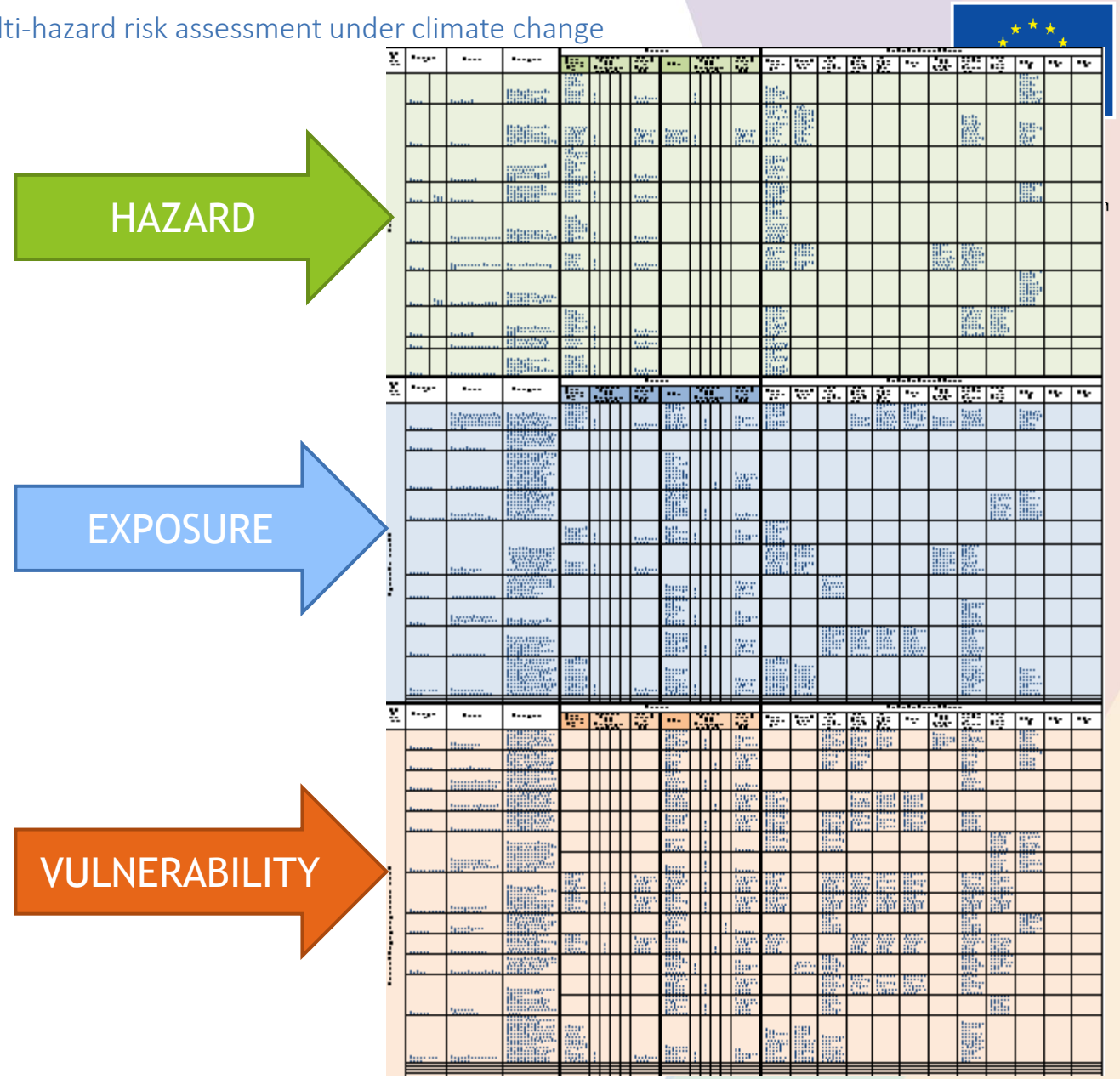
Concept of task 2.1: risk reduction measures

- Disaster Risk Management Cycle divided into four phases

  - Prevention: Measures to avoid disaster risks
  - Preparedness: Measures to build/improve response and recovery capacities
  - Response: Measures directly before, during, after the hazard events to reduce impacts
  - Recovery: Restoration measures after a hazard, at best aligning with the “build back better” principle to avoid or reduce future disaster risk

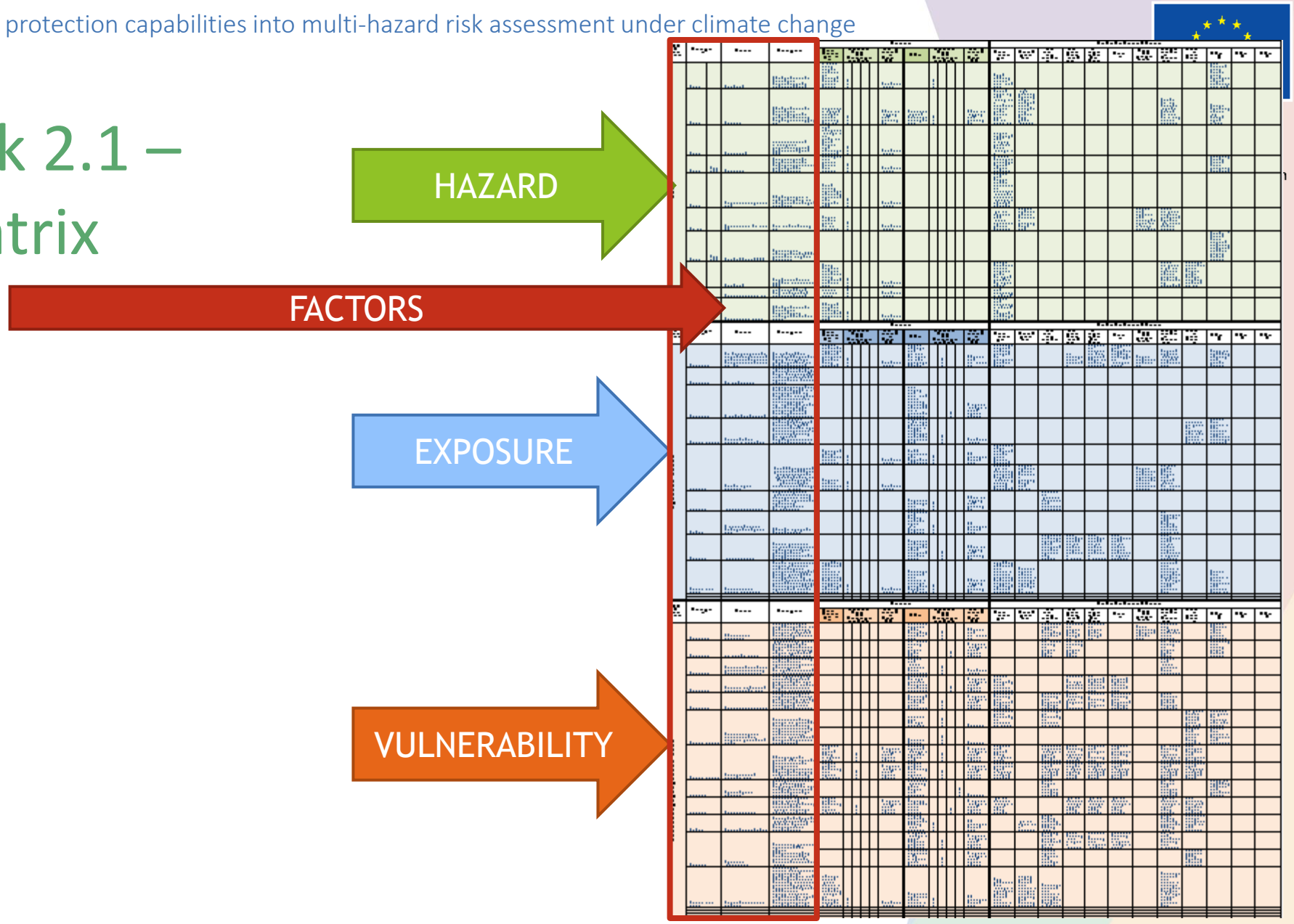
4 Phases of the disaster risk management cycle

Methods of task 2.1 – Assessment matrix



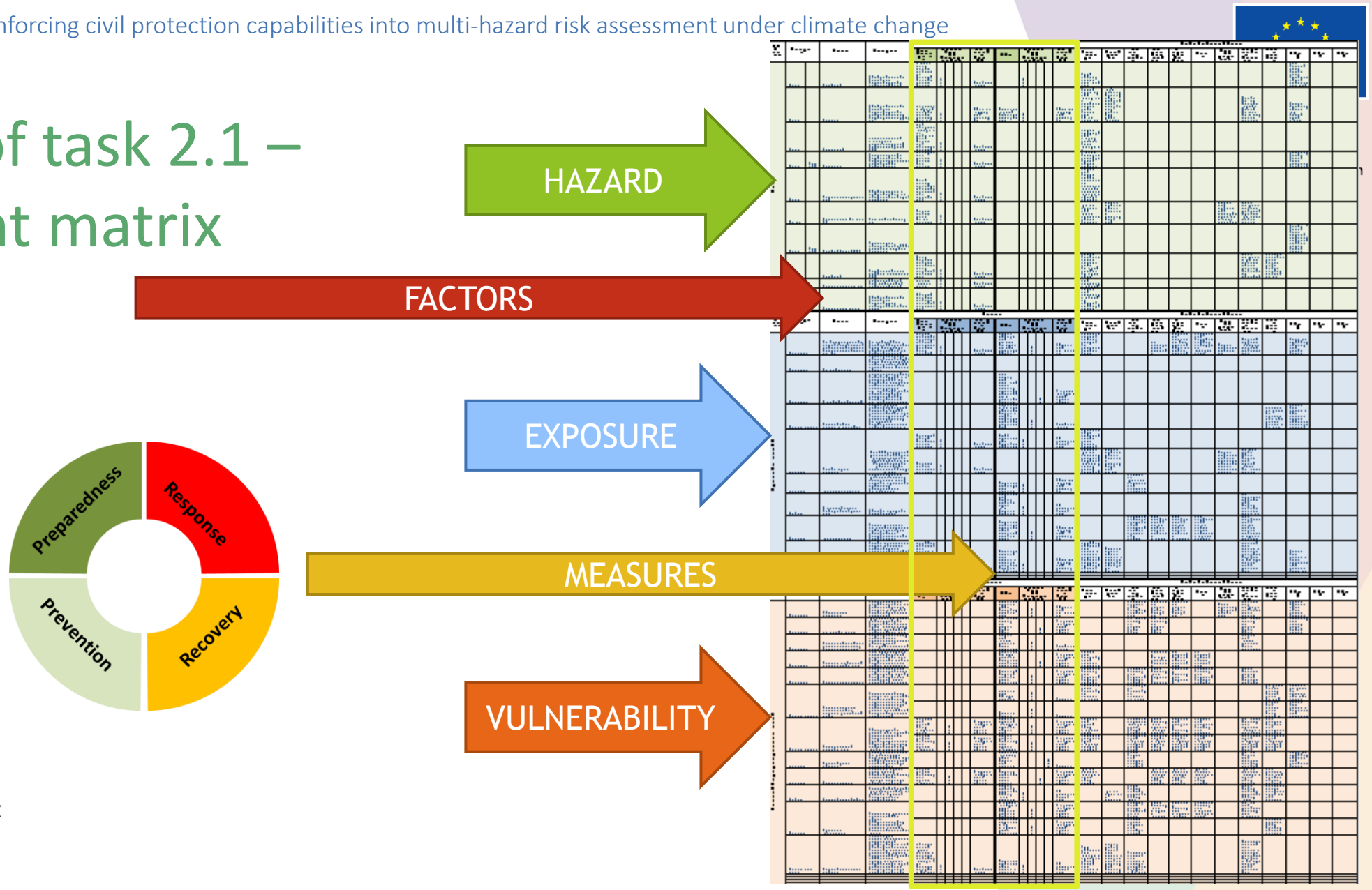
Assessment matrix

Methods of task 2.1 – Assessment matrix



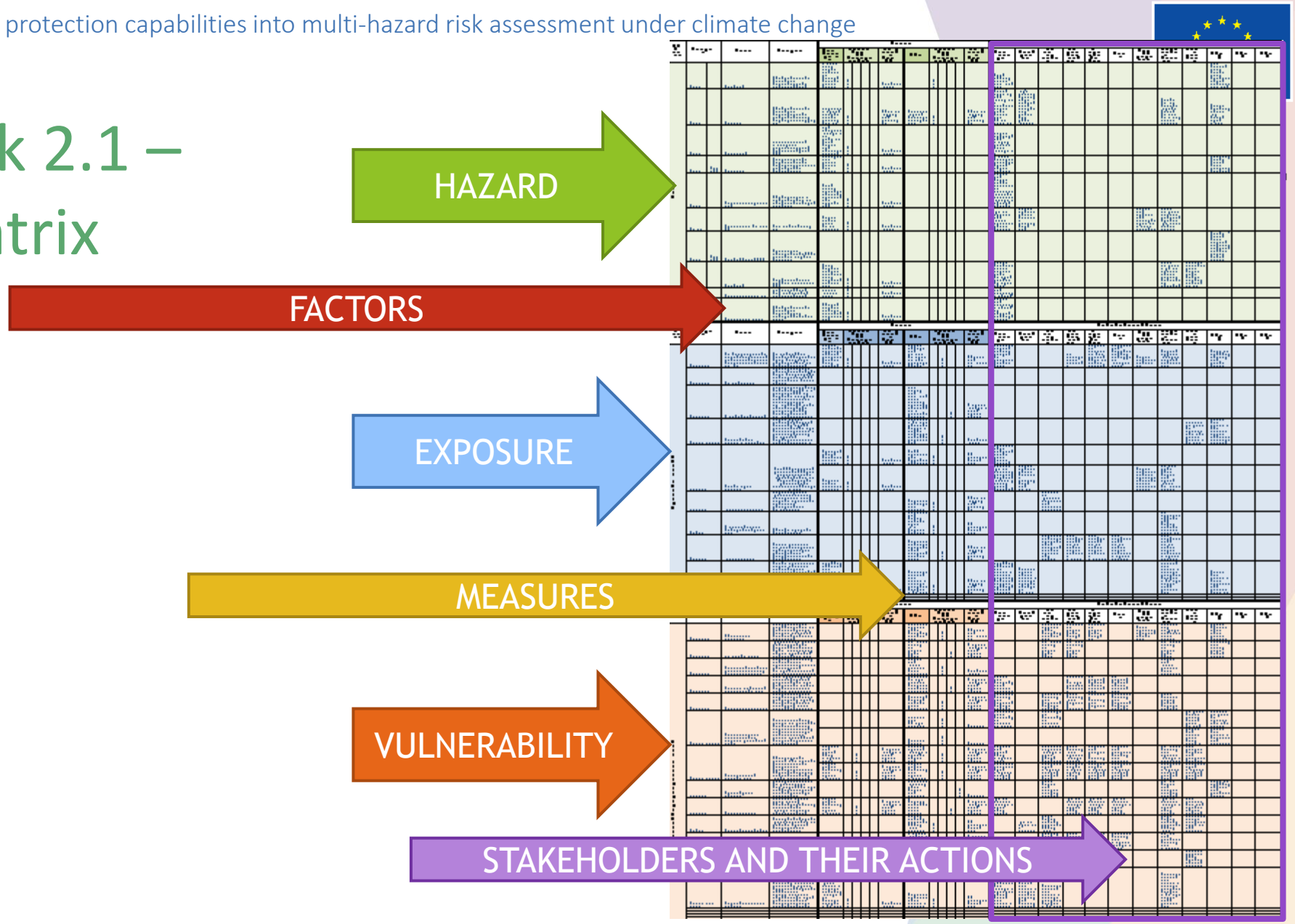
Assessment matrix

Methods of task 2.1 – Assessment matrix



Assessment matrix

Methods of task 2.1 – Assessment matrix



Assessment matrix

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Results of task 2.1

- Most common Risk Driver Factors for the risk dimension "HAZARD"

Factors for HAZARD	Windstorms	wildland-urban interface fires	High intensity fires with extreme fire behaviour	Flash floods	Landslides	Rockfalls	Avalanche
Weather conditions	✓	✓	✓	✓	✓	✓	✓
Topography	✓	✓	✓	✓	✓	✓	✓

Results of task 2.1

- Most common Risk Driver Factors for the risk dimension "EXPOSURE"

Factors for EXPOSURE	Windstorms	wildland-urban interface fires	High intensity fires with extreme fire behaviour	Flash floods	Landslides	Rockfalls	Avalanche
Population size in affected areas		✓	✓	✓	✓	✓	✓
Presence of people in the area (tourists, recreationists, etc.)	✓	✓	✓	✓	✓	✓	✓
Presence and importance of infrastructure (e.g. critical infrastructure)	✓	✓	✓	✓	✓	✓	✓
Presence and importance of buildings	✓	✓	✓	✓	✓	✓	✓
Time of the day / week	✓	✓	✓			✓	✓
Presence of critical environmental services	✓	✓	✓	✓			
Presence of cultural or recreational values	✓	✓	✓	✓		✓	✓
Presence of hazardous elements (e.g. power plants, chemical industry)		✓	✓	✓			

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Results of task 2.1

- Most common Risk Driver Factors for the risk dimension "VULNERABILITY"

Factors for VULNERABILITY	Windstorms	wildland-urban interface fires	High intensity fires with extreme fire behaviour	Flash floods	Landslides	Rockfalls	Avalanche
Risk awareness in the population	✓	✓	✓	✓	✓	✓	✓
Information dissemination / early warnings	✓	✓	✓	✓			✓
Quality and functionality of buildings	✓	✓	✓	✓	✓	✓	✓
Functionality of protective structures	✓	✓	✓	✓	✓	✓	✓
Response capacity	✓	✓		✓			✓
Civil protection plans	✓			✓			✓
Integrity of the ecosystem (forest stands etc)	✓	✓		✓	✓	✓	

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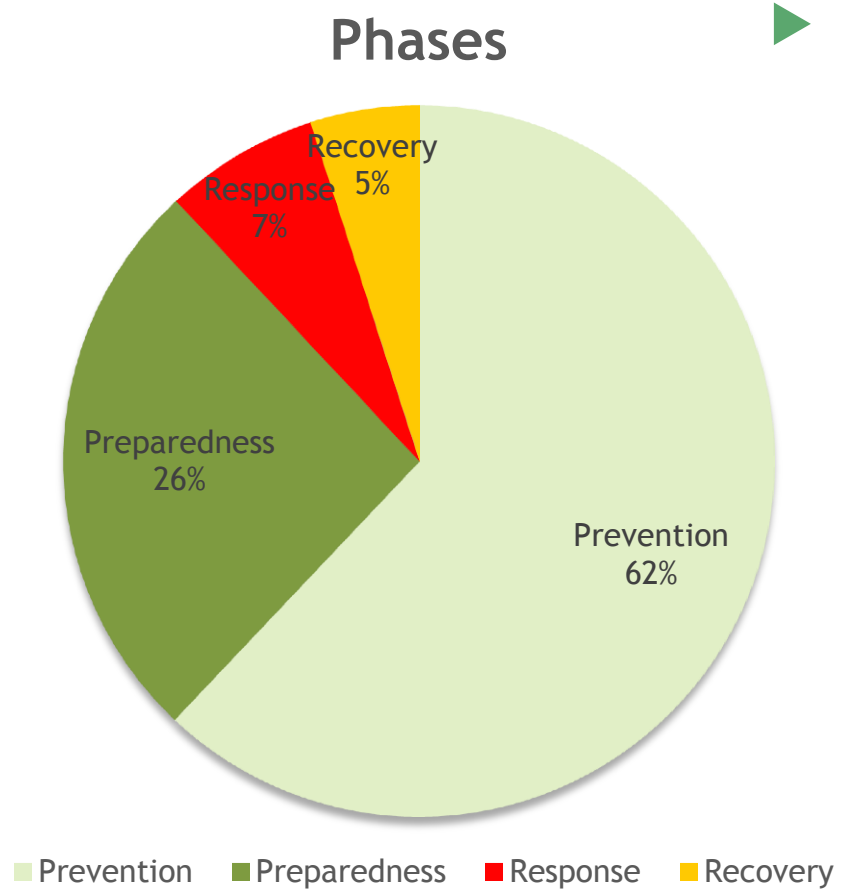
Results of task 2.1



- Disaster Risk Reduction Measures
  - Most activities are possible in the phases before the hazard

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Results of task 2.1

- Most frequently named disaster risk reduction measures sorted by risk dimensions

HAZARD

- Risk informed land use change
- (Climate Change) adaption
- Enhancing the protective function of forests
- Technical mitigation measures (e.g. barriers)

EXPOSURE

- (Early) warnings
- Insurance
- Mapping tools to identify exposure
- Zoning concepts
- Road blockings and prohibition orders

VULNERABILITY

- Information dissemination strategies
- Awareness raising campaigns
- Mapping tools to identify vulnerabilities
- Fast reaction protocols
- Cooperation strategies
- Emergency Trainings
- Improvement of building structures
- Improvement of infrastructure

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Summary

- Disaster Risk Factors are hazard-specific but often overlap in the risk dimension “exposure” and “vulnerability”
- Most measures are linked to the “prevention” and “preparedness” phases of the disaster risk management cycle
  - *Indication for the improvement and prioritization of disaster risk management*

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Summary

- Disaster Risk Factors are hazard-specific but often overlap in the risk dimension “exposure” and “vulnerability”
- Most measures are linked to the “prevention” and “preparedness” phases of the disaster risk management cycle
  - *Indication for the improvement and prioritization of disaster risk management*
- For detailed hazard-specific results , visit https://recipe.ctfc.cat/results

RECIPE

REINFORCING CIVIL PROTECTION CAPABILITIES INTO MULTI-HAZARD RISK ASSESSMENT UNDER CLIMATE CHANGE

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Thank you!

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