

DISASTER RISK MANAGEMENT

Universita di Roma Tor Vergata
B.A. Global Governance

Spring 2022

Session 9 – Thursday May 12, 2022

Instructor: Erdem Ergin

RECAP

| | | |
|--------------|-----------------|-----------------------------|
| Session 1 | Introduction | |
| Session 2 | Hazards | List of hazards |
| Session 3 | Resilience | 2 types of resilience |
| Session 4 | Response | List of most common actions |
| Session 5 | Simulation | First 72 hours |
| Session 6 | Recovery | List of most common actions |
| Session 7 | Reconstruction | List of most common actions |
| Session 8 | Risk Assessment | Risk Matrix |
| Assignment 1 | Hazard profile | Hazard index or case study |

S2 – Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Fast-onset or slow onset

Natural or human-induced

Talk in terms of frequency and intensity

S2 – Hazard list

Hazards – Definition and types

Geological – Earthquakes, Landslides, Volcanic Eruption, Tsunamis

Hydrological – Coastal Erosion, Land Subsidence, Snow Avalanches, Expansive soil

Meteorological – Extreme Heat, Wildfires

Hydro Meteorological – Floods, Drought, Hurricanes, Storm surges, Winter storms, Hail, Thunderstorm, Tornadoes

Pandemics – Flu (Spanish/Avian/Swine), Covid/SARS, Ebola, Plague, Malaria

S3 – Resilience

The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to 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.

S3 – Resilience

Type 1 = Go back to normal

Type 1 resilience models systems as close to a stable steady state.

Resilience is thus defined through the speed of return to the steady state after a perturbation. For the economy, this would mean a full recovery of activities and return to the pre-disturbance state. For a business, it means being back with same products and clients.

Type 1

Efficiency of function

Single stable state

S3 – Resilience

Type 2 = Adapt to new normal

Type 2 resilience focuses on conditions far away from steady states and look for how instability can alter the behavior regime of a system towards another stability domain.

Resilience is the magnitude of disturbance that the system can absorb while preserving the same controlling variables and process. For the economy, this would mean to explore alternative activities and modes of operations while achieving similar productivity, growth, employment, etc. goals.

Type 2 Existence of function Range of states & emergence

S3 – Structural Changes

Change is not new but the pace and the quality is. There are key trends to follow as they impact society as a whole, they are structural changes:

Urbanization and Infrastructure

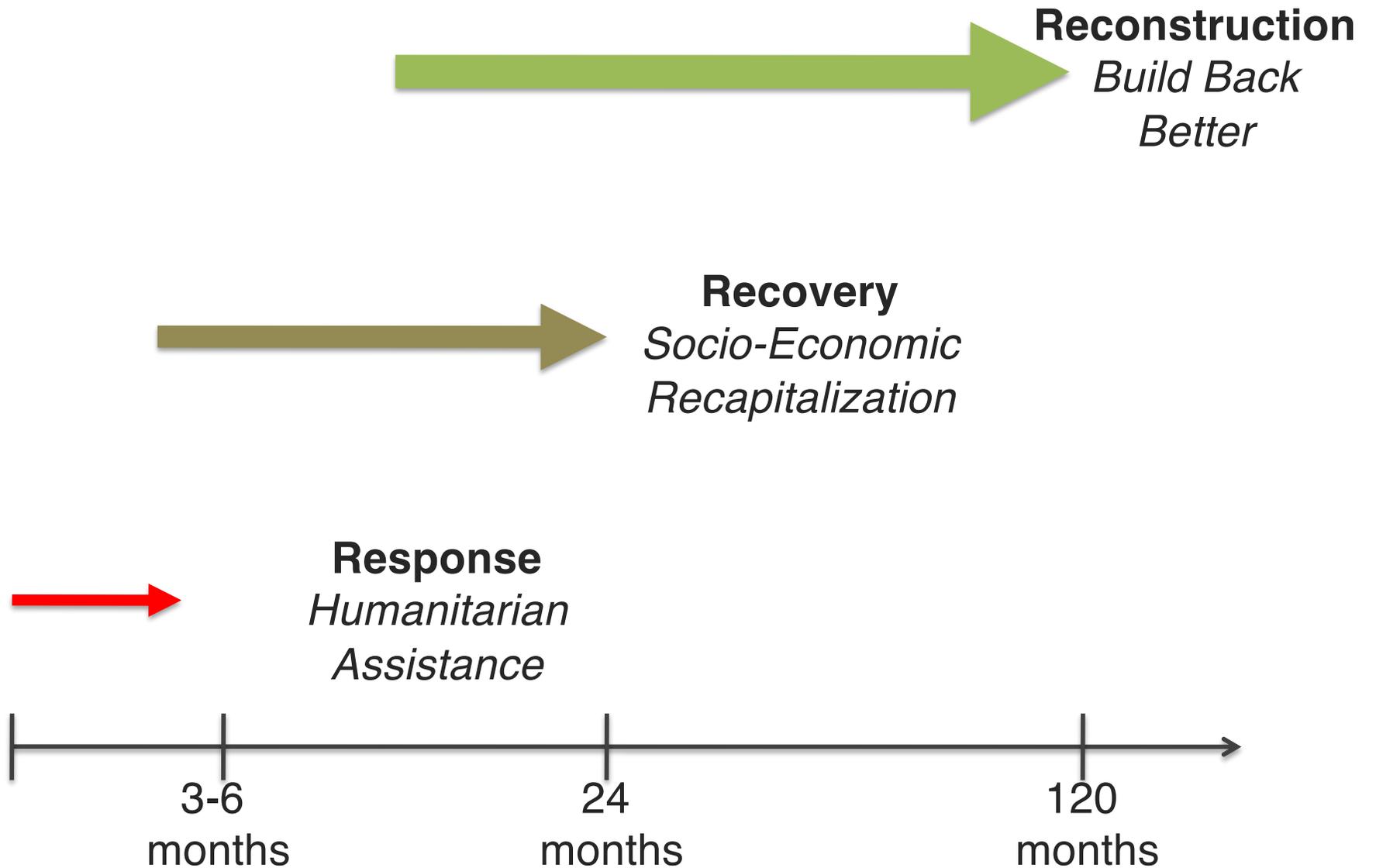
Demographic changes

Industrial to Creative economy

Technology

Climate Change

Disaster Management



System approach

RESPONSE focus is on human impact.

Save lives and provide basic needs

Unit of analysis: individuals

Timeline: 0 to 3-6 months

RECOVERY focus is on socio-economic impact.

Restore autonomy and generate revenue

Unit of analysis: the household

Timeline: early to 24 months

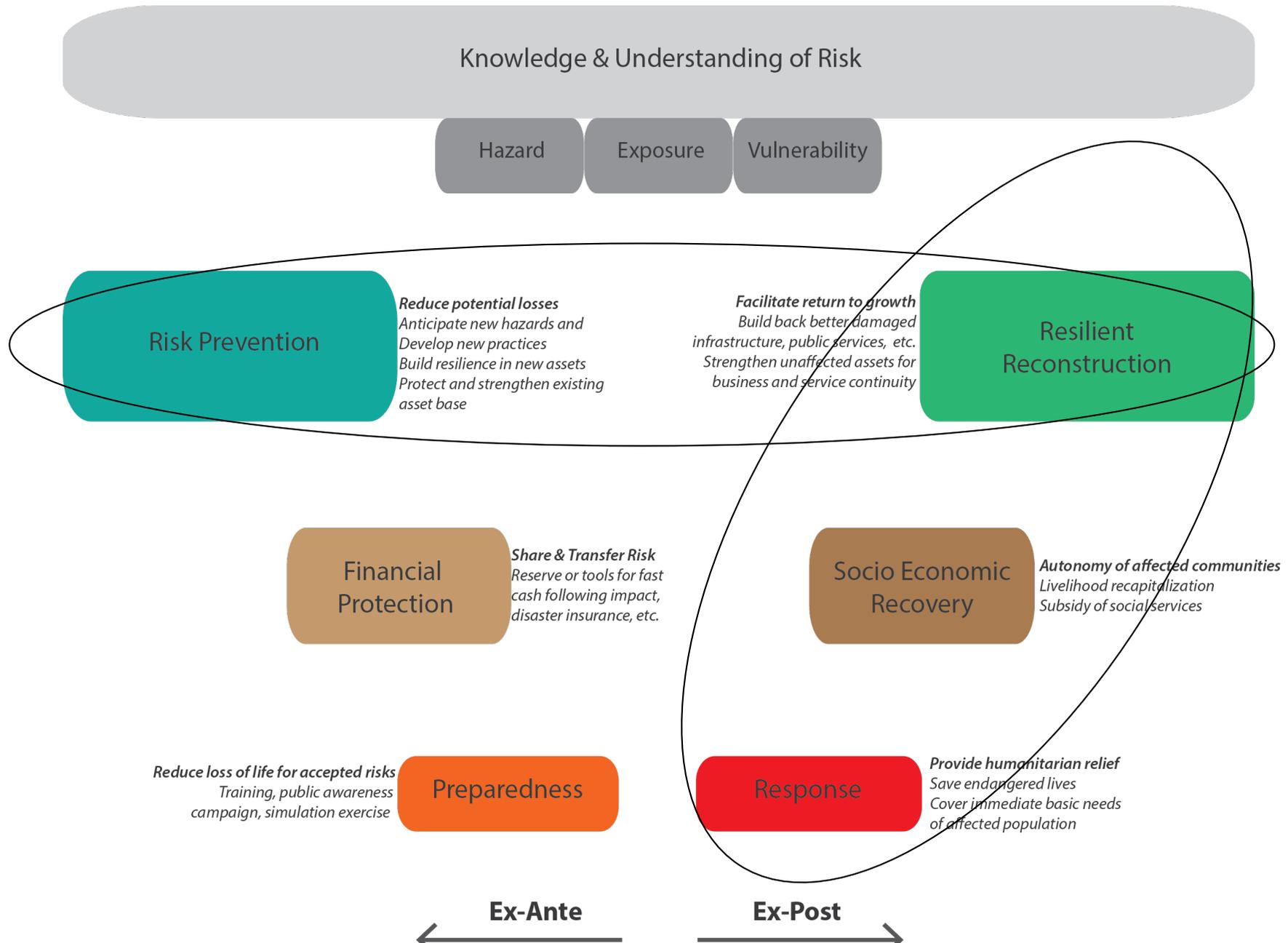
RECONSTRUCTION focus on buildings and infrastructure.

Build back better and avoid creation of new risk

Unit of analysis: buildings, infrastructure

Timeline: up to 120 months

Disaster Risk Management



S4 – Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

S4 – Response Actions

1- Scenario

2- Evacuation

3- First Aid

4- Basic Needs

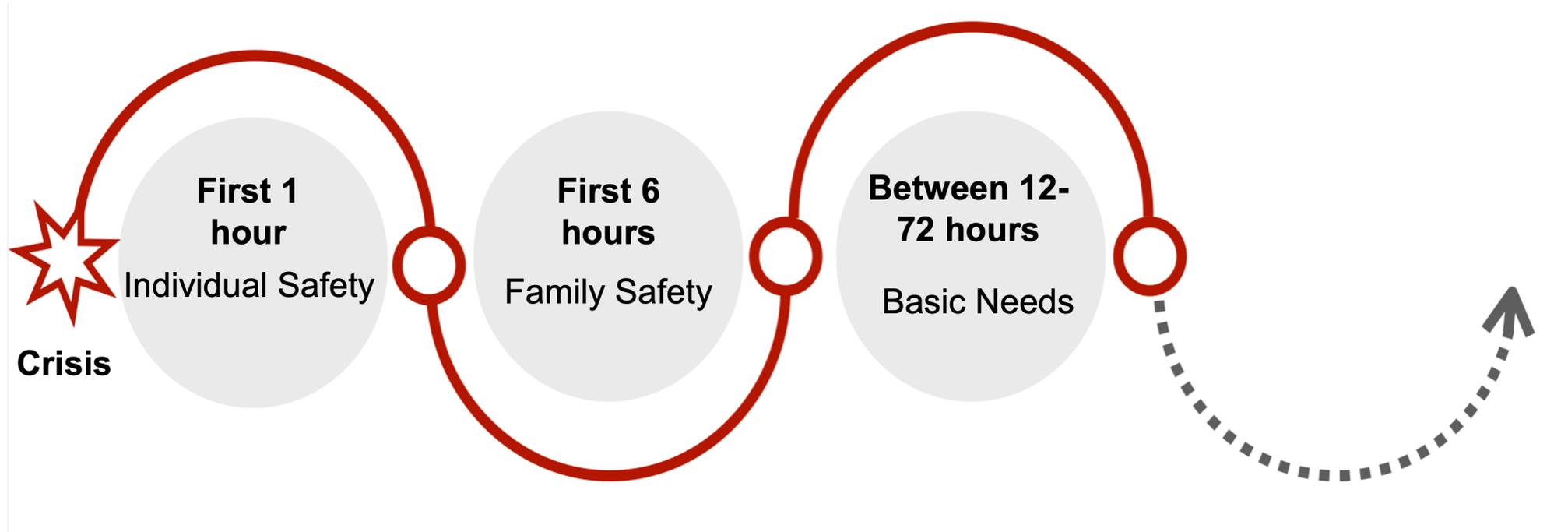
5- Communication

6- Debrief

7- Crisis Management

8- Simulation

S5 – First 72 hours*



S6/S7 – Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

S6 – Recovery Components

1 – Household survey

2 – Work

3 – Training

4 – Recapitalization

5 – Loans

6 – Subsidies

7 – Bail out

S6/S7 – Recovery

The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

S7 – Reconstruction Actions

1 – Development Agenda

2 – Impact Assessment

3 – Risk Reduction

4 – Sectoral strategies

5 – Regulations & policies

6 – Financing

7 – Implementation

S8 – Risk Assessment

Risk assessment is the structured process that identifies how objectives may be affected and analyses the risk in term of consequences and their probabilities before deciding on whether further treatment is required.

Risk assessment attempts to answer the following fundamental questions:

What are we trying to protect? (A person, a job, a house, etc.)

What can happen and why? (Hazards)

What are the consequences? (Impact)

What is the probability of their future occurrence?

Is the level of risk tolerable or acceptable and does it require further treatment?

S8 – Risk Assessment

The structured process of risk assessment consists of 3 steps:

Risk Identification

Identify what is there to protect
Understand the hazard and its dynamics
Learn past history of events

Risk Analysis

What can go wrong?
What is the likelihood and the consequences of the risk scenarios?

Risk Evaluation

How high is the risk?
Decide whether risk is acceptable or not

ISO 31010:2009 (Risk Management – Risk Assessment Techniques)

Contains 31 different techniques, from pure qualitative to pure quantitative
The technique you use depends on your needs and available resources
Is the accepted reference of best practice for the EU

Source: ISO 31010

S8 – Risk Matrix

| | | | | | | | |
|--|--------------|---|-------------------|--------|------------|----------|----------|
| S e v e r i t y | Catastrophic | 5 | 5 | 10 | 15 | 20 | 25 |
| | Significant | 4 | 4 | 8 | 12 | 16 | 20 |
| | Moderate | 3 | 3 | 6 | 9 | 12 | 15 |
| | Low | 2 | 2 | 4 | 6 | 8 | 10 |
| | Negligible | 1 | 1 | 2 | 3 | 4 | 5 |
| | | | 1 | 2 | 3 | 4 | 5 |
| | | | Improbable | Remote | Occasional | Probable | Frequent |
| | | | Likelihood | | | | |



S9 – Elements of Risk

Hazard (Danger/Threat)

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Exposure (People/Asset)

People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

Vulnerability (Condition)

The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.





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