ERASMUS-EDU-2023-CBHE
Project number: 101129032

Duration: 36 months
(01/01/2024 – 31/12/2026)

LESLIE
LAND MANAGEMENT
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Πανεπιστήμιο Κύπρου
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MICRO-CREDENTIAL

Climate Change of Sustainable Land Management in Central Asia

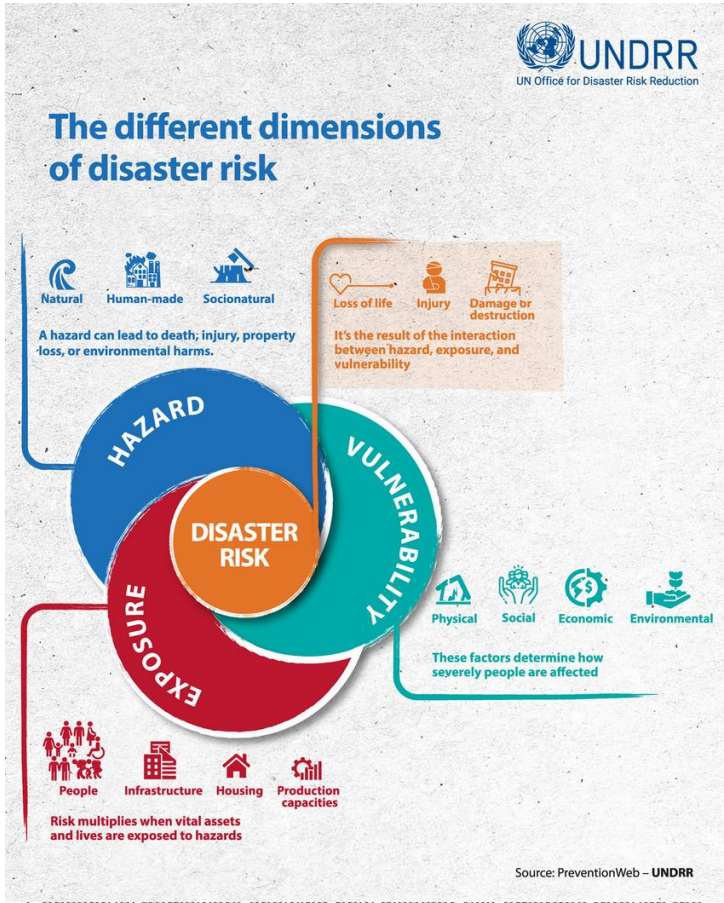
5.- Climate Extremes, Hazards and Risk

Exposure, Vulnerability and Adaptive Capacity

CC-W05-V19



RISK AS MORE THAN HAZARD ALONE



Conceptual framework showing how disaster risk emerges through the interaction of hazard, exposure, vulnerability, and coping capacity. Source: UNDRR / PreventionWeb.

- Hazard refers to the potentially damaging physical event or trend, such as flood, drought or extreme heat.
- Exposure identifies the people, infrastructure, ecosystems and assets located in harm's way.
- Vulnerability describes the conditions that make those exposed elements more susceptible to damage.
- Adaptive capacity is the ability to cope, learn, adjust and reduce future harm.



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EQUAL HAZARDS PRODUCE UNEQUAL OUTCOMES

- A flood of a given magnitude is more damaging where settlements occupy floodplains and warning systems are weak.
- A drought becomes more severe where livelihoods depend on rain-fed agriculture and households lack irrigation or insurance.
- Infrastructure quality, recovery finance and institutional coordination strongly influence post-event losses.
- Risk analysis must therefore ask not only what the hazard is, but who is exposed and why they are vulnerable.



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EXPOSURE AS LOCATION AND DEPENDENCE

- Exposure includes populations, infrastructure, ecosystems and economic activity situated in risk-prone areas.
- It also includes dependence on climate-sensitive systems such as irrigation, hydropower and mountain runoff.
- In Central Asia, exposure is often shaped by floodplain settlement, drought-sensitive agriculture and downstream dependence on mountain water.
- Reducing risk can therefore involve changing land use, infrastructure placement and patterns of dependence.



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VULNERABILITY AS A PRODUCT OF SOCIAL CONDITIONS

- Poverty, weak infrastructure, limited services and fragmented governance all increase vulnerability.
- Households with fewer savings, less mobility and lower access to information are more likely to suffer lasting losses.
- Vulnerability is therefore not a natural attribute of people; it is shaped by unequal conditions and institutions.
- This is why the chapter links climate risk directly to development and governance.

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ADAPTIVE CAPACITY AS A SOCIAL, INSTITUTIONAL AND TECHNICAL CONDITION

- Adaptive capacity depends on storage, data quality, planning, coordination and access to finance.
- In cryosphere-dependent regions, resilience differs sharply according to infrastructure and cross-border agreements.
- Learning, institutional trust and the ability to convert information into action are part of adaptive capacity.
- The key message for policy, is that resilience is built rather than given.



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WHY THIS FRAMEWORK MATTERS FOR CLIMATE POLICY

- Hazard centered policy is incomplete because it overlooks who is most at risk and why.
- Risk centered policy supports targeted adaptation, fairer resource allocation and more realistic preparedness planning.
- The framework helps identify where investment in data, infrastructure or social protection will reduce losses most effectively.
- It therefore connects climate science to practical governance.



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