

Human Environment Systems' Resilience Interaction-Outcome Framework

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Analysis of Frameworks on the Basis of:

- Drivers and Pressures
 - exogenous and/or endogenous
- Dynamics of systems
 - Unidirectional, feedback loops,
- Spatial-Temporal Scale
 - Socio-economic scale vs Environmental

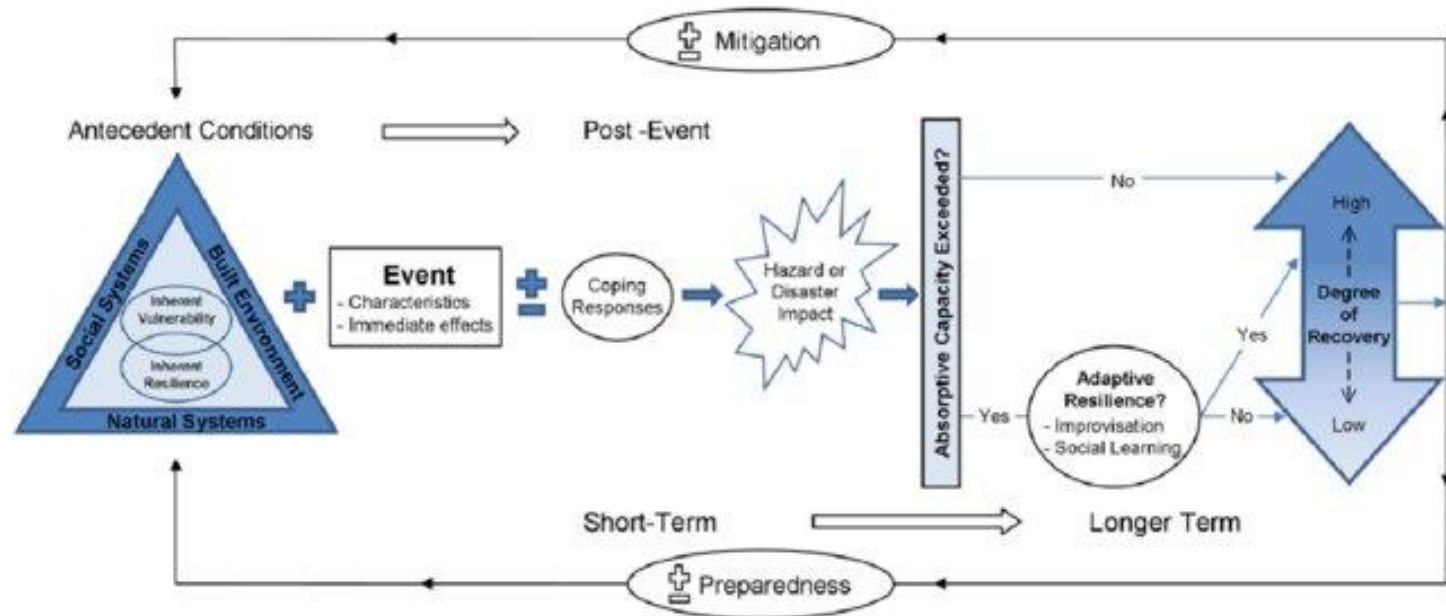
HES resilience and vulnerability frameworks

- The Driving force – Pressure – State – Impact - Response (DPSIR) framework (European Environmental Agency, 1999)
- Pressure and release framework (P. Blaikie, T. Cannon, I Davis, B. Wisner, 1994)
- Vulnerability/Sustainability Framework (Turner et al., 2003)
- Process Structure Model (Scholz and Binder, 2003)
- Disaster resilience of place (DROP) (Cutter et al., 2008)
- General Framework for Analysing Sustainability of SES (Ostrom, 2009)
- CLIMSAVE Vulnerability Framework (CLIMSAVE project, 2010)

A General Framework for Analysing Sustainability of SES
CLIMSAVE Vulnerability Framework

Disaster resilience of place (DROP)

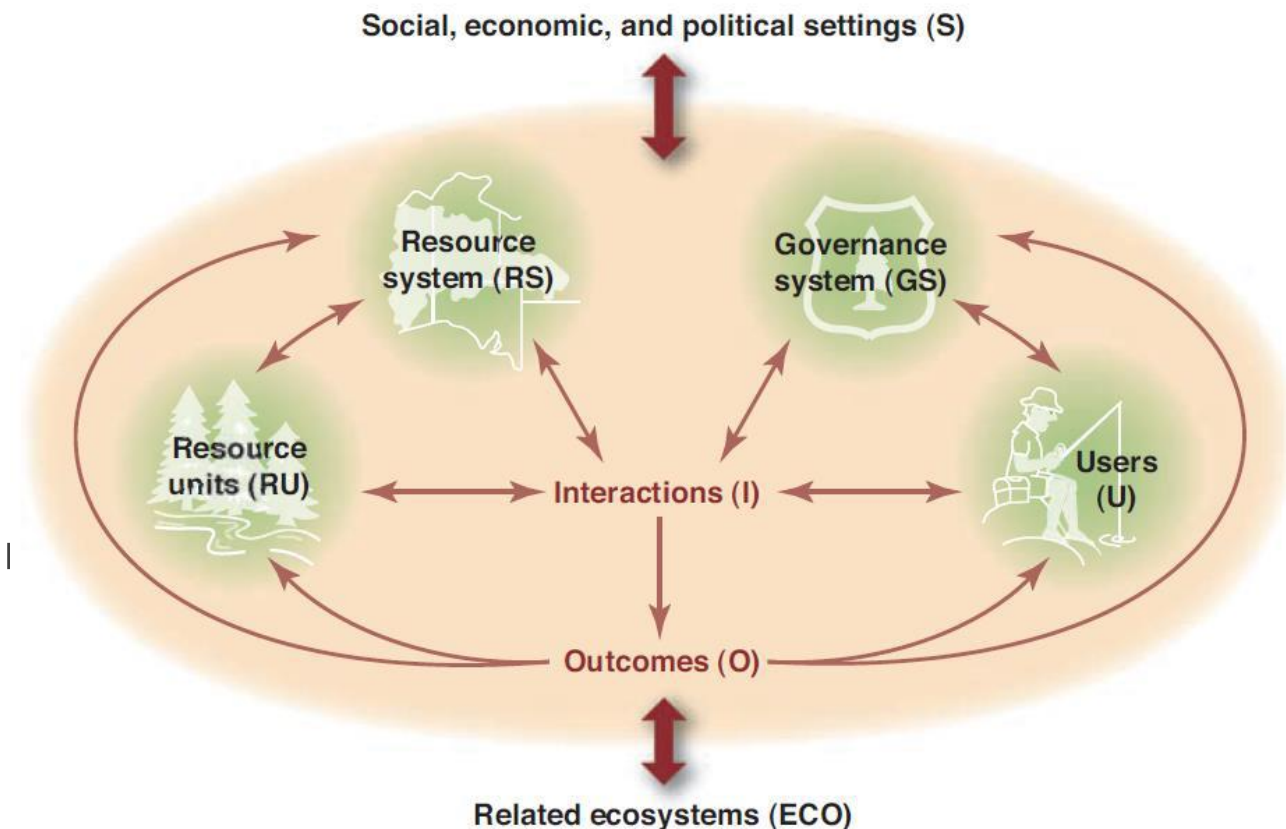
- System of:
 - Social
 - Built
 - Natural
- Inherent Resilience
- Inherent Vulnerability



General Framework for Analyzing Sustainability of SES

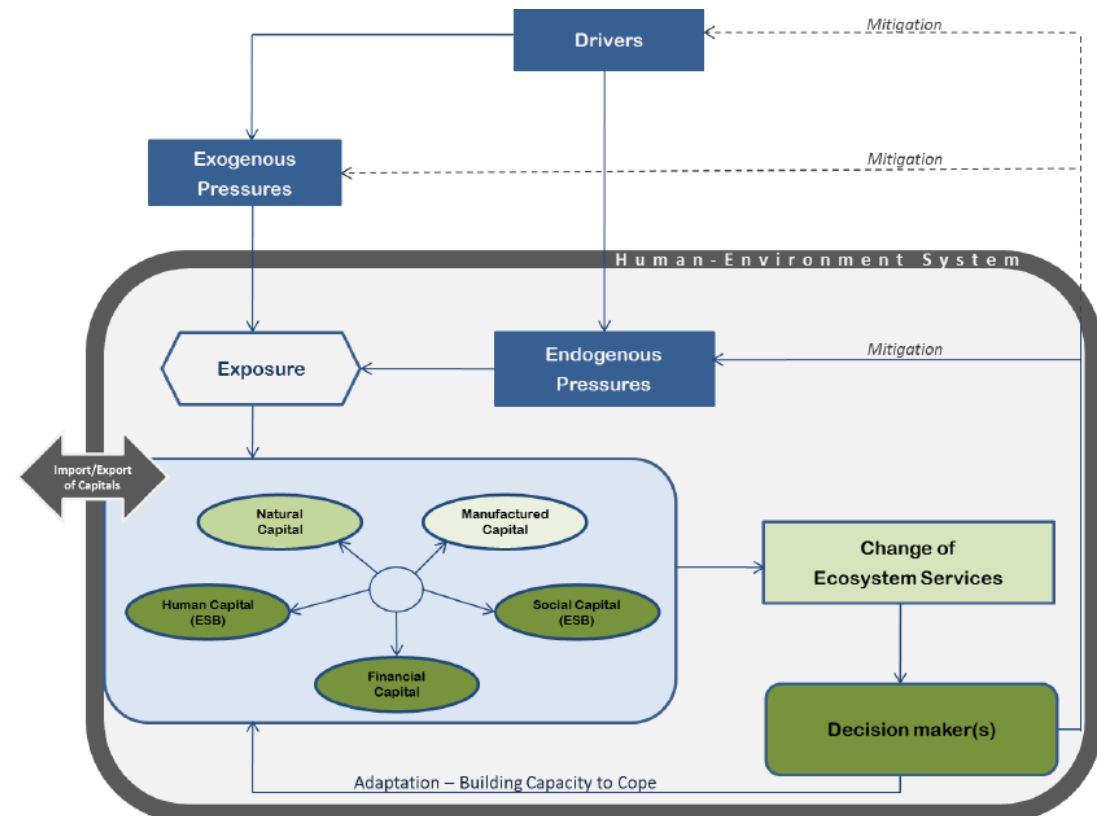
- Subsystems:
 - Resource Systems,
 - Resource Units,
 - Governance Systems
 - Actors
- Drivers and pressures:
 - Social, economic, political setti
 - Related Ecosystems

(Source: Ostrom, 2009)



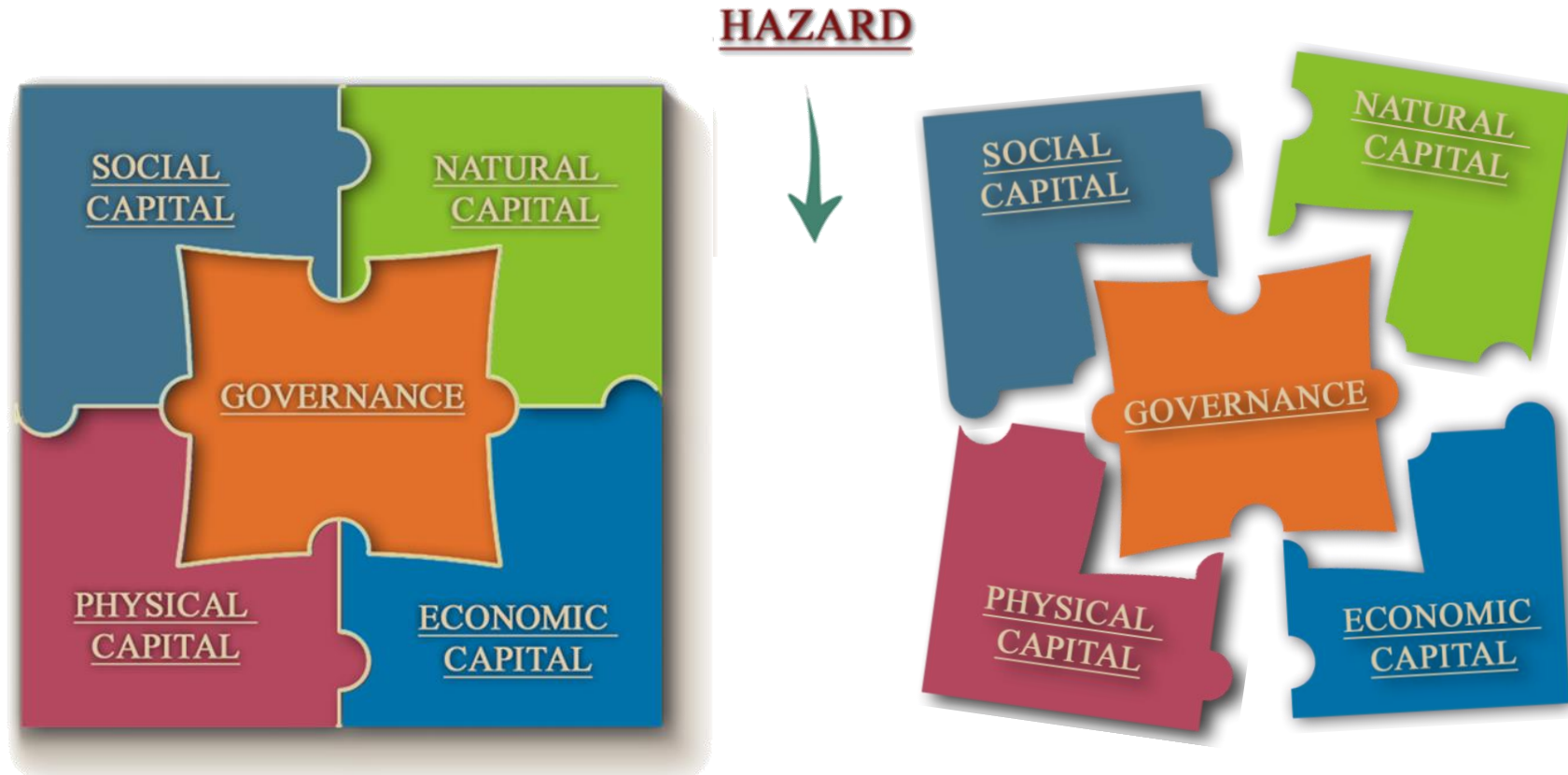
CLIMSAVE Project: Vulnerability Framework

- **Capital:**
 - Natural, Human, Social, Manufactured and Financial
- **Pressures:**
 - exogenous and endogenous



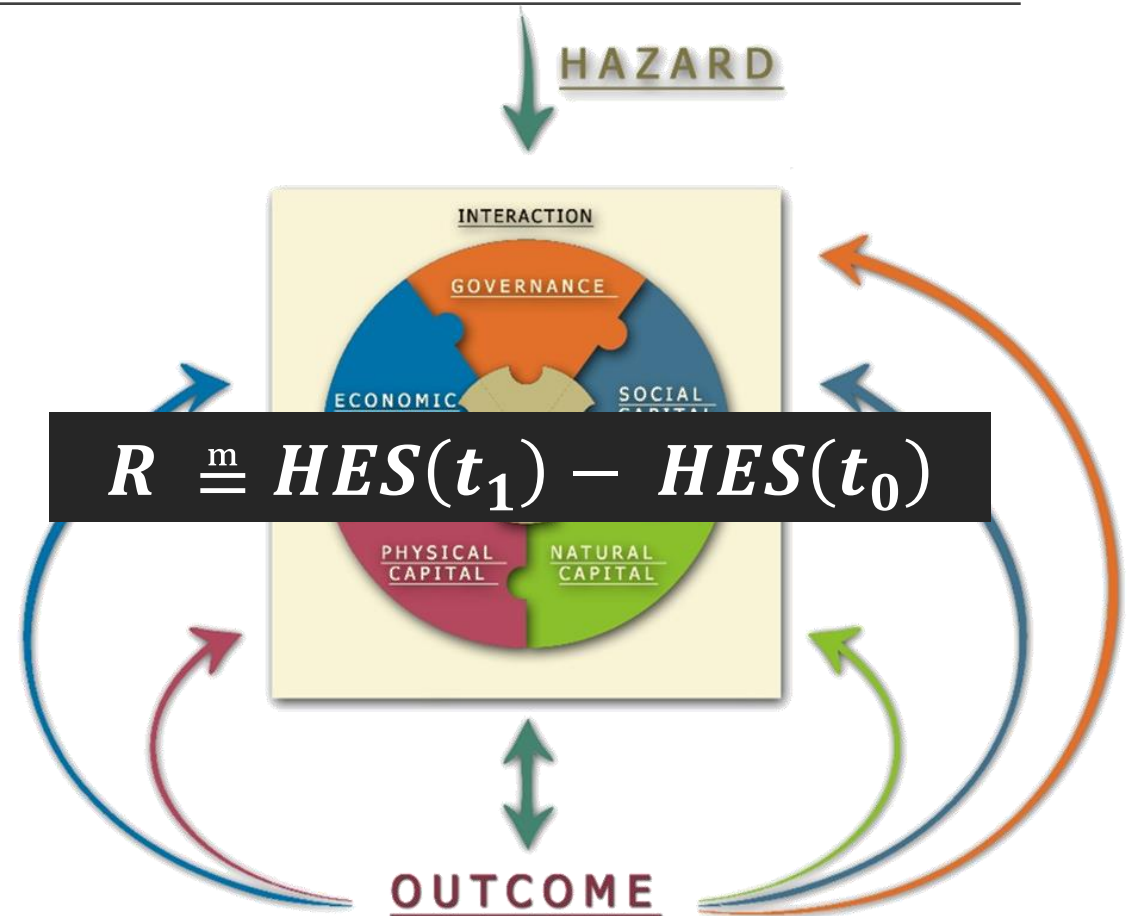
HES Resilience Framework: Interaction-Outcome

HES as a System of Five Capital



HES Resilience: Interaction-Outcome Framework

- Drivers and Pressures
 - Hazard and internal relationship between the capitals
- Exogenous and/or endogenous
 - Hazard: Exogenous
 - Internal relationship: Endogenous
- Described dynamics
 - feedback loops and internal dynamics



Thank you for your attention!

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