Assessing and Preventing Climate Conflicts and Security Risks

Universität Hamburg

KlimaCampus

Jürgen Scheffran

Institute for Geography, KlimaCampus

Universität Hamburg

ISA Panel "Peace and Security in the Anthropocene"

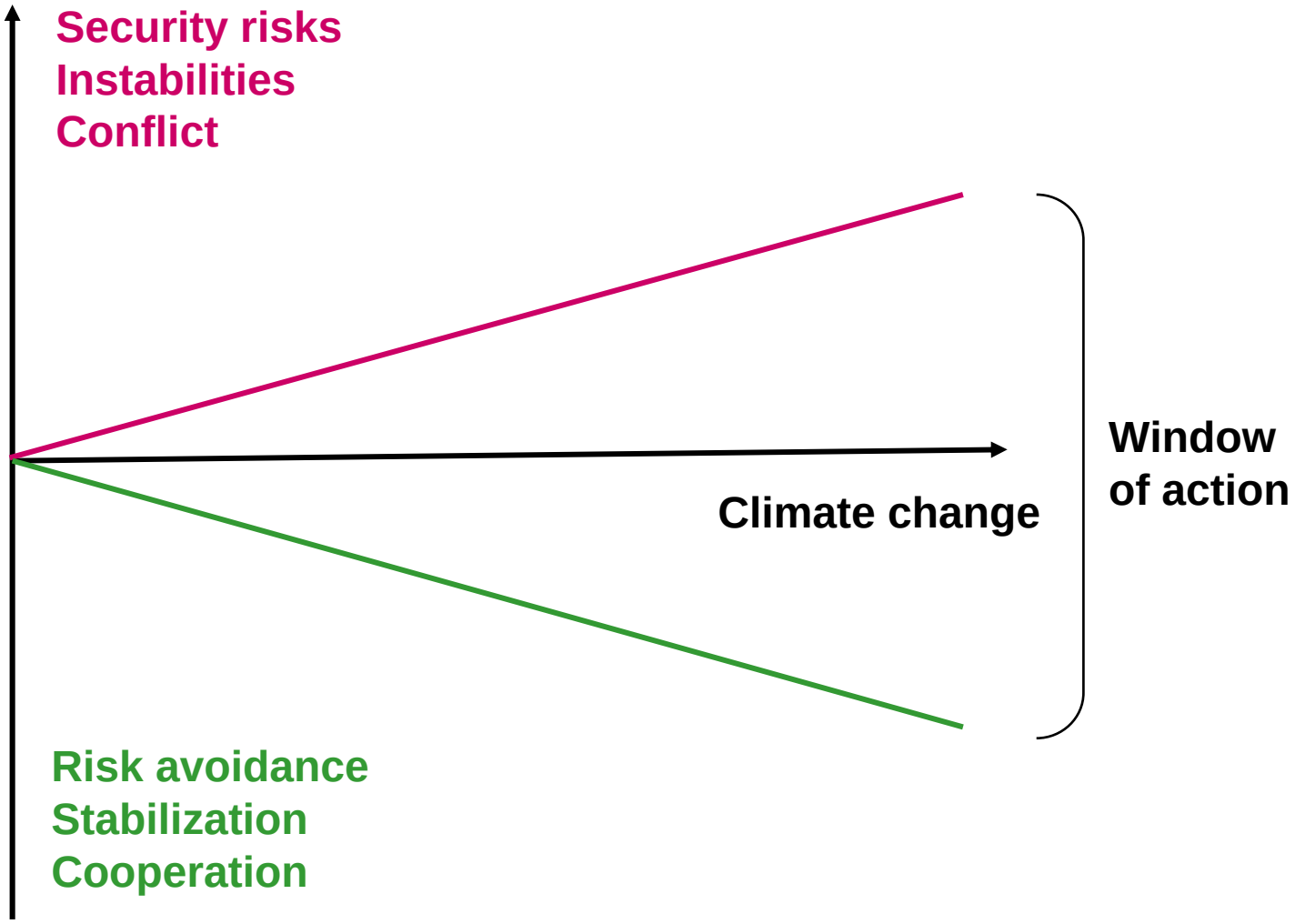
International Studies Association Convention,

New Orleans, February 17, 2010

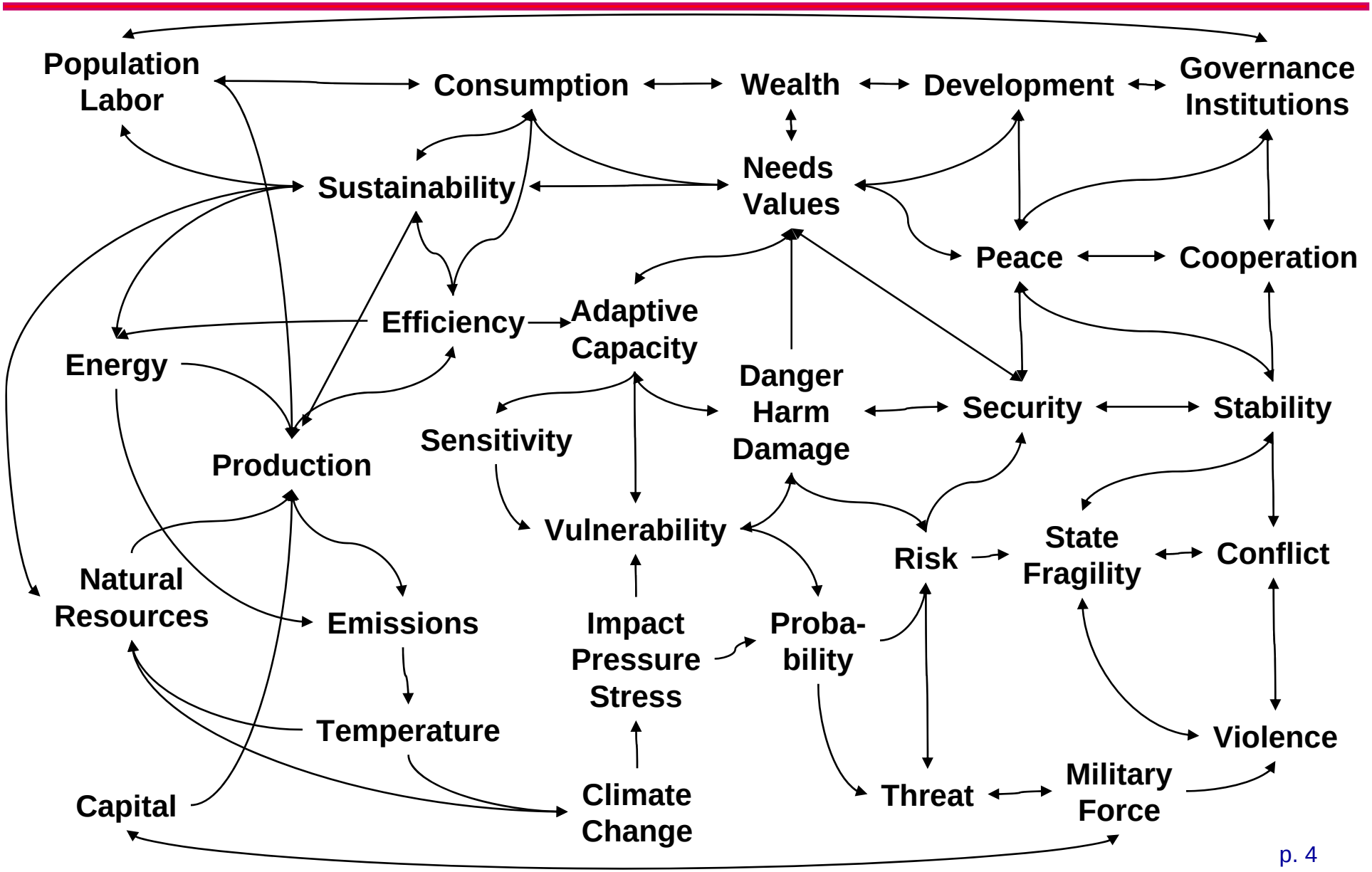
Empirical lessons on the climate-security link

- **Weak empirical evidence** on climate-conflict link over recent decades (Buhaug/Gleditsch/Theisen 2008)
- **Historical studies** found statistical correlations between global temperature and frequency of war, e.g. Little Ice Age (Zhang et al. 2007, Tol/Wagner 2009)
- Projected climate-induced increase in the frequency of **civil war in Africa** until 2030 (Burke et al. 2009)
- Cases of **environmental conflict** (Carius et al. 2006)
- Climate **hot spots** and conflict constellations (WBGU 2008)
- Environmental factors do not by themselves cause conflict but are part of a **multicausal complex network** of factors that may increase the risk of conflict. Socio-economic factors and governance decisive.
- Impacts and conflicts related to scarcity and migration relevant at **local level**.
- More likely than large-scale civil and international war is **low-level violence**.
- **Risk factors** are variability, vulnerability and adaptive capacity.
- In some cases environmental degradation leads to **more cooperation**.

How will human beings and societies respond to climate change?



Landscape of climate impacts and strategies



Essential links between climate change and conflict

→

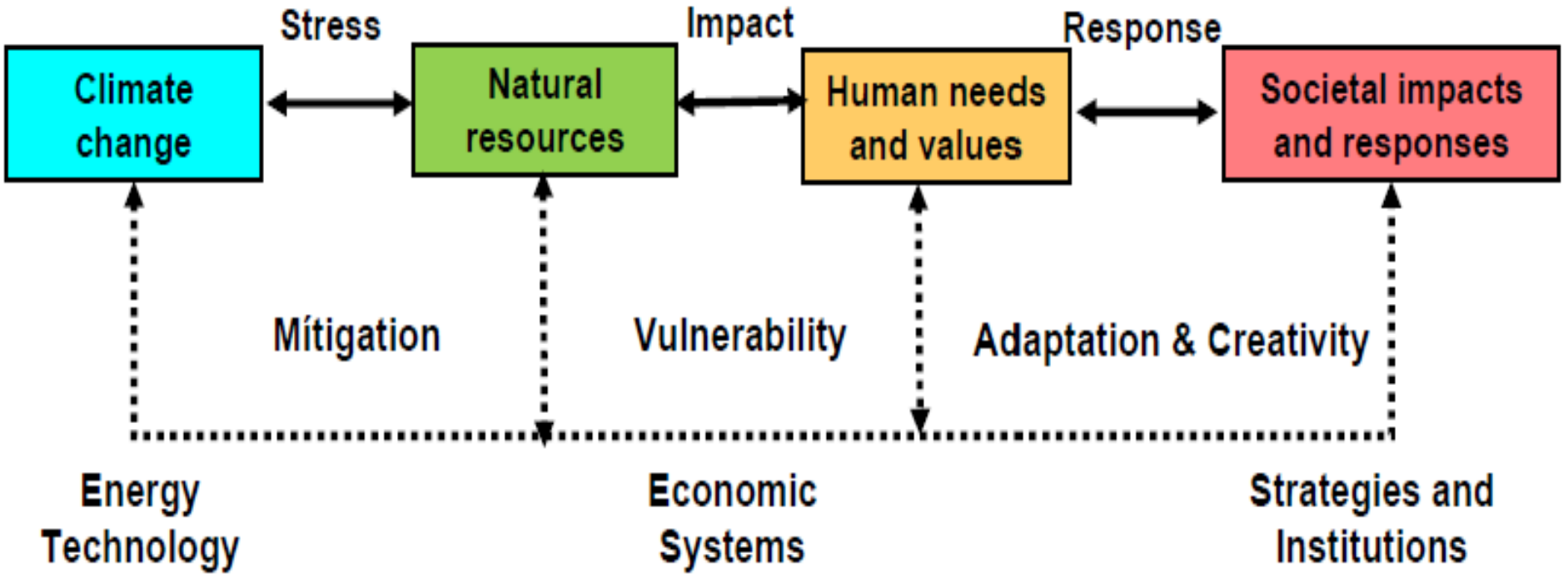
←

↓ ↑

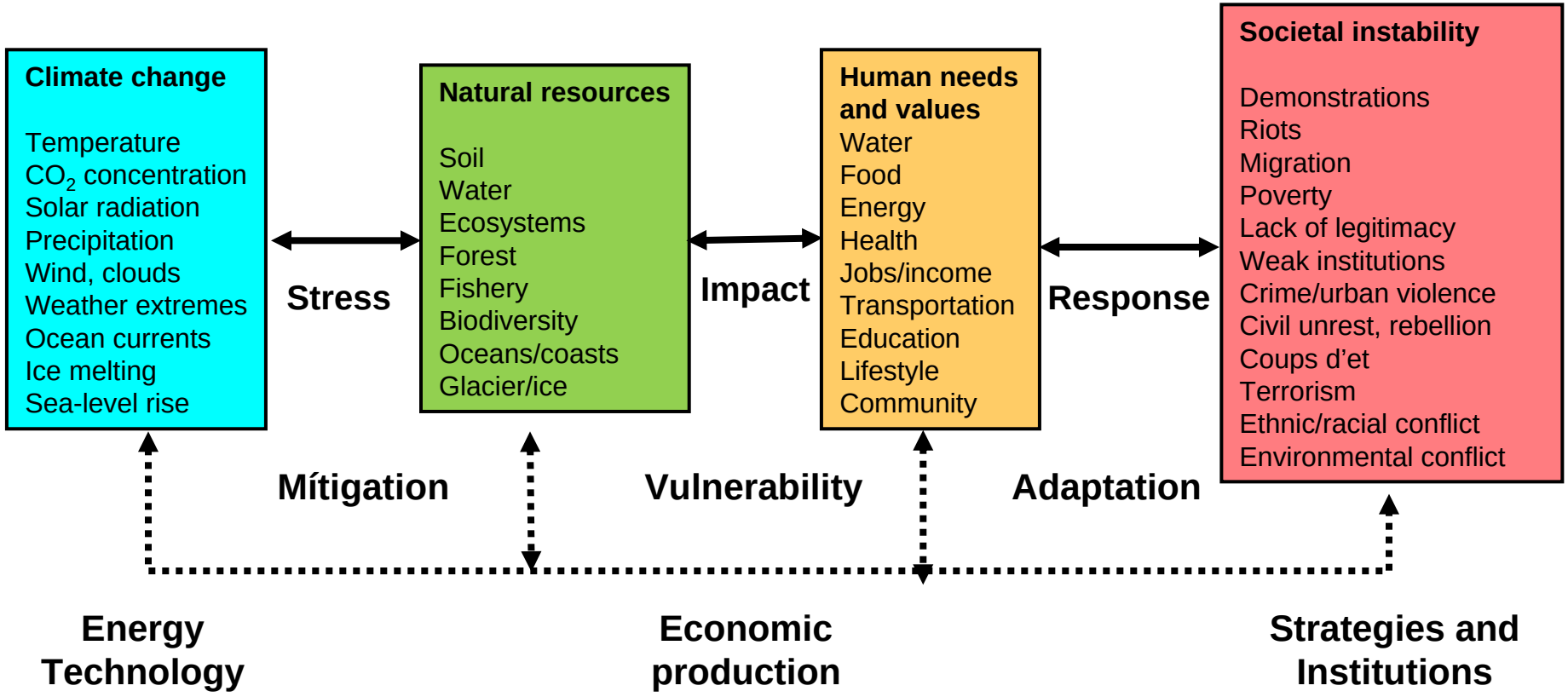
←

→

Framework of climate-society interaction



Key variables and events in the climate-society interaction



Sensitivity

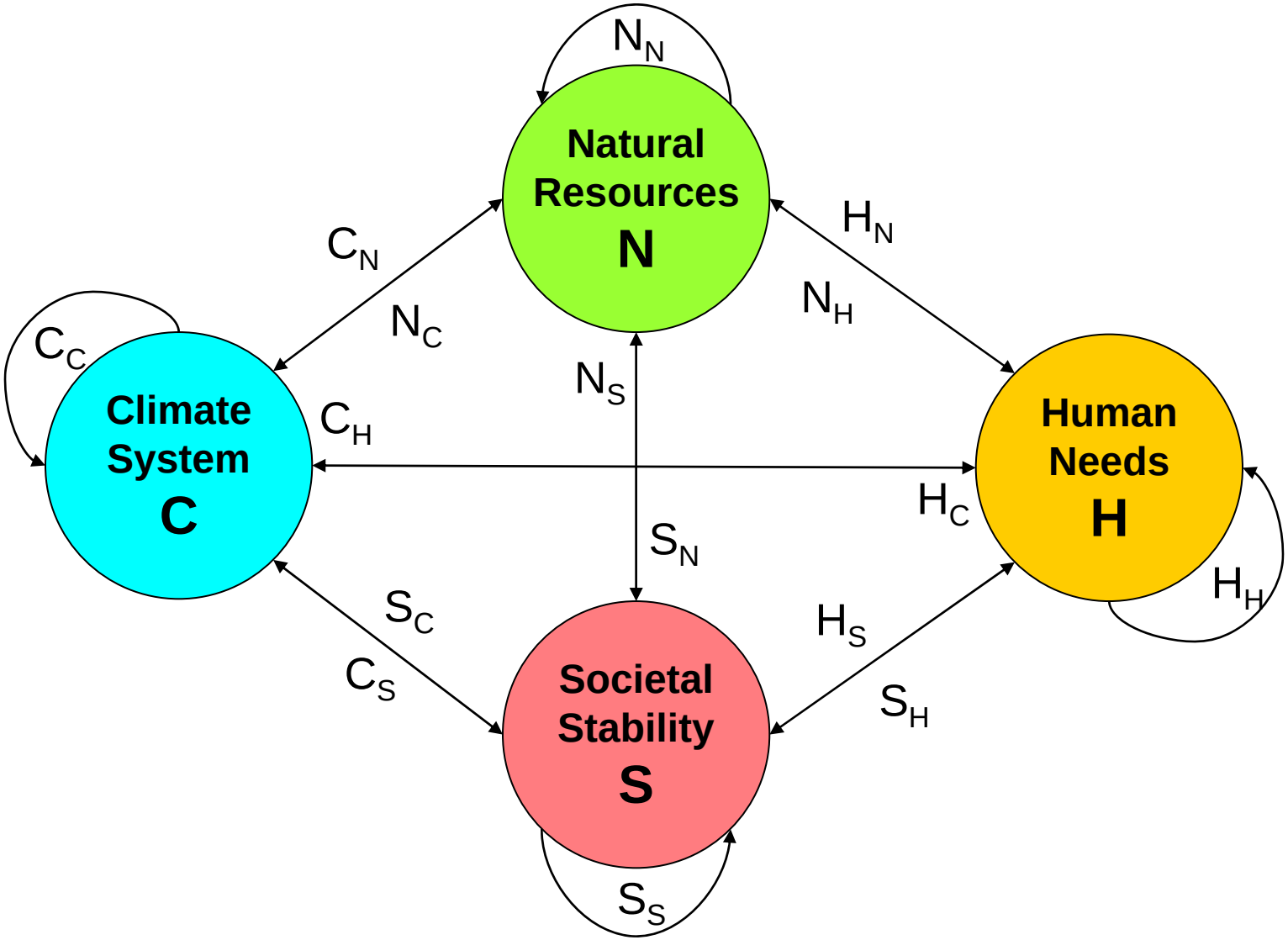
Sensitivity: how much the change in one variable is affected by the change of another variable

Sensitivity in IPCC (2007): sensitivity in the context of climate change is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise).

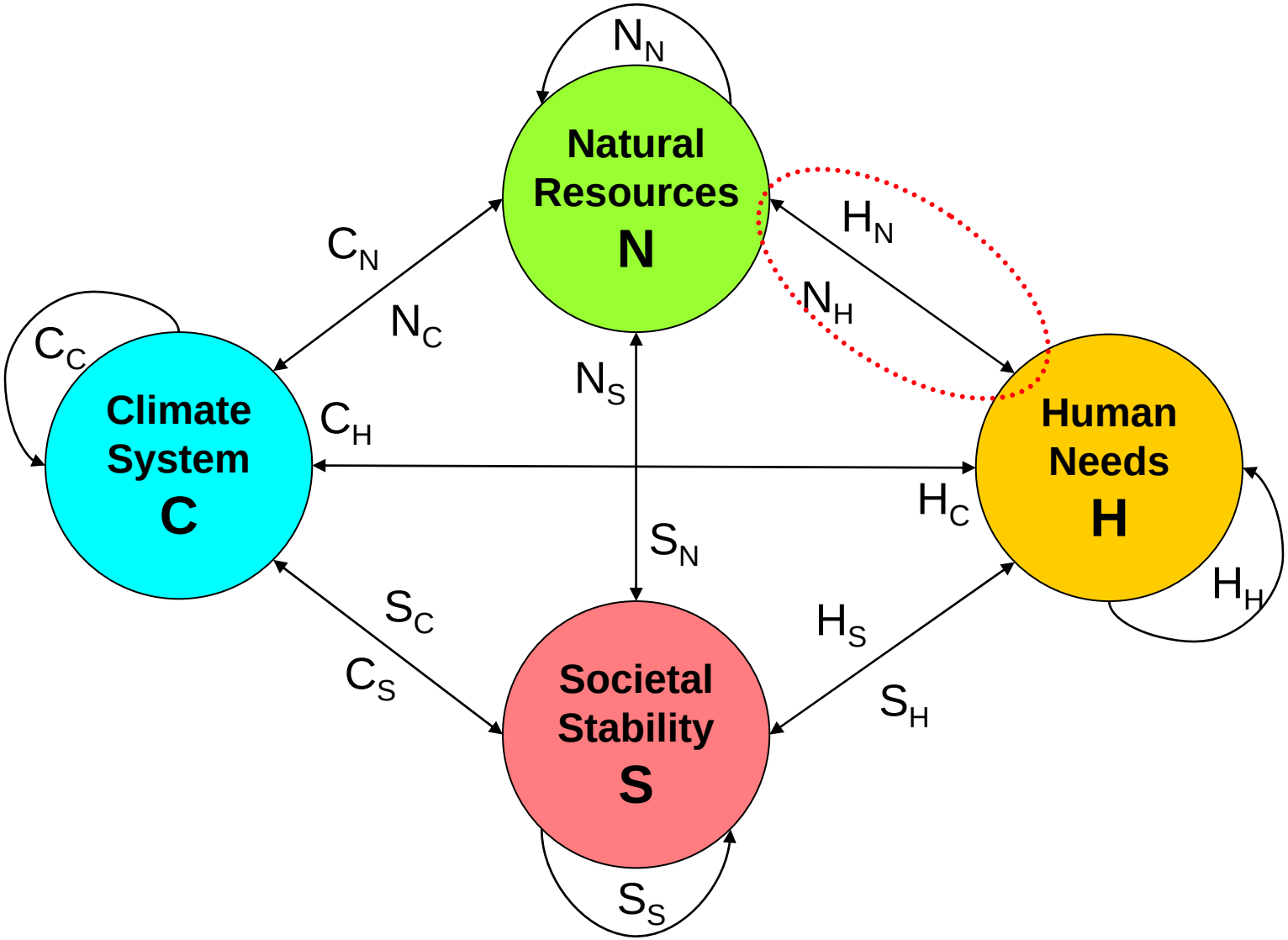
Climate sensitivity: temperature change induced by a doubling of CO2 concentration in the atmosphere.

→ Highly sensitive responses (overreactions) could affect the structure of a system and thus its stability.

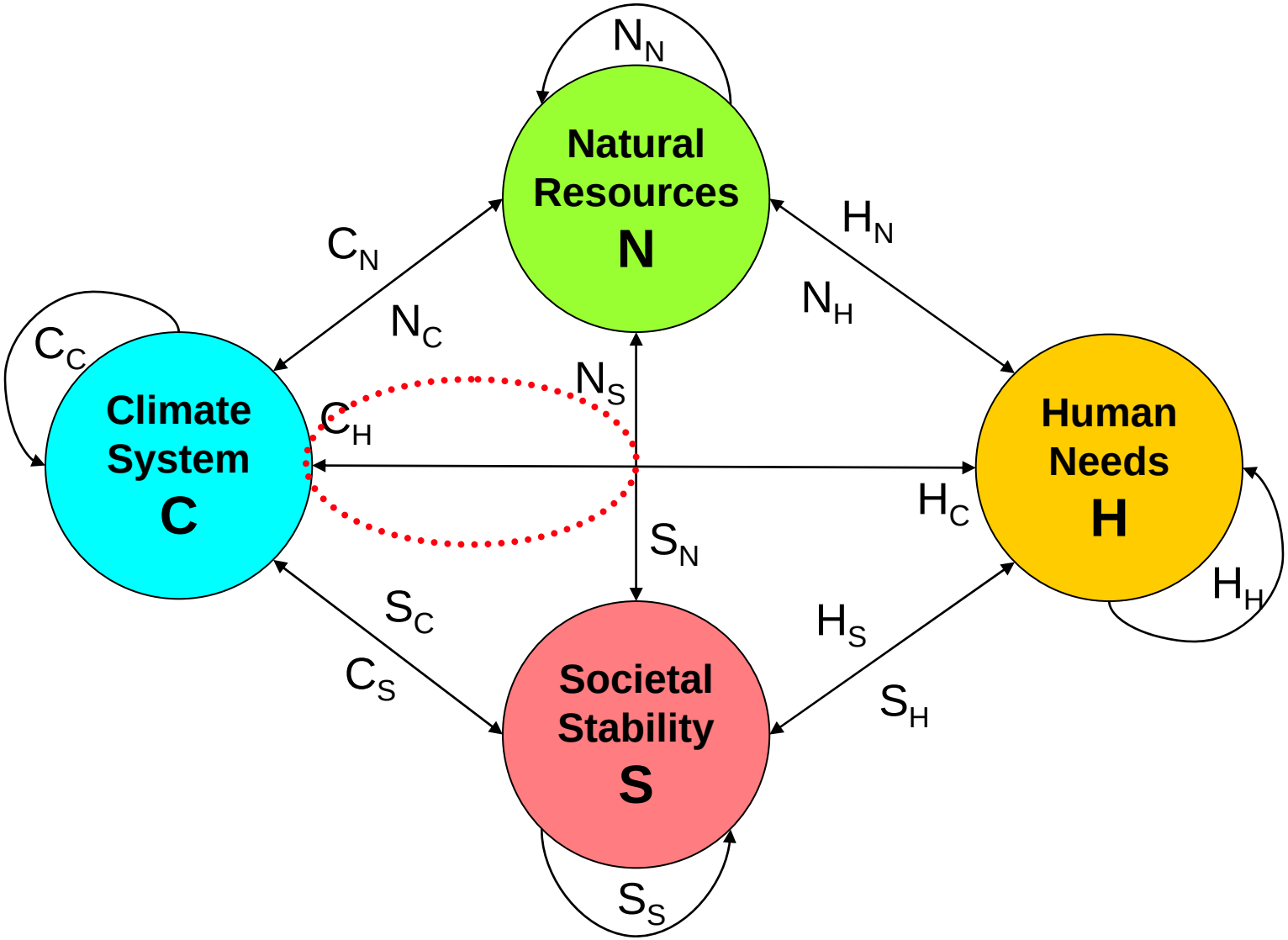
Sensitivities in climate-society interaction



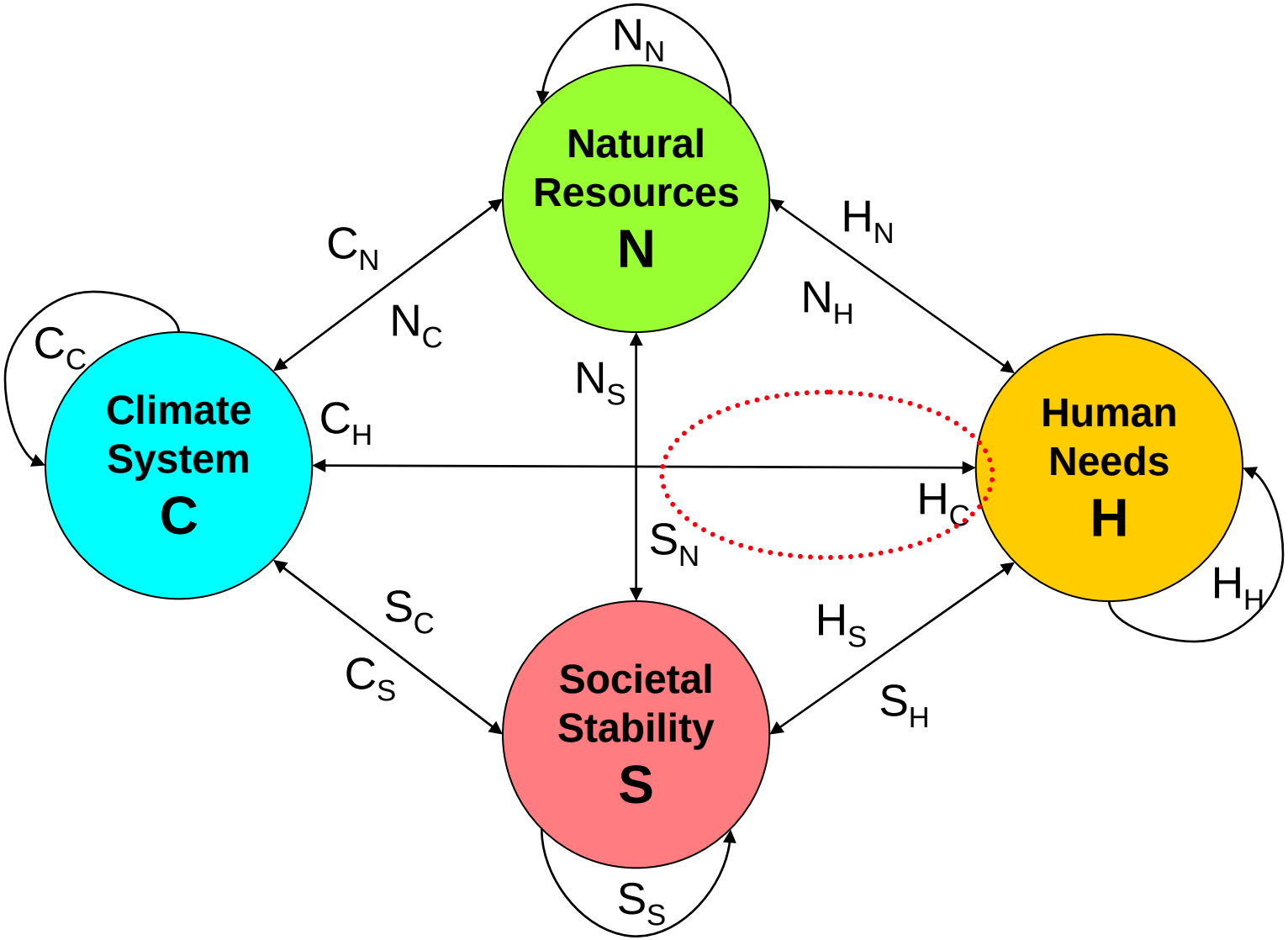
Interaction natural resources and human needs



Impact of human needs on climate change



Impact of climate change on human needs



Vulnerability and adaptation

Impact of climate change on systems, persons or social groups:

Impact = Vulnerability x Intensity of climate change

IPCC (2007): Vulnerability is the “degree, to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.”

Ionescu/Klein/Hinkel/Kumar/Klein 2009: vulnerability depends on:

(1) **entity** that is vulnerable

(2) **stimulus** to which it is vulnerable and

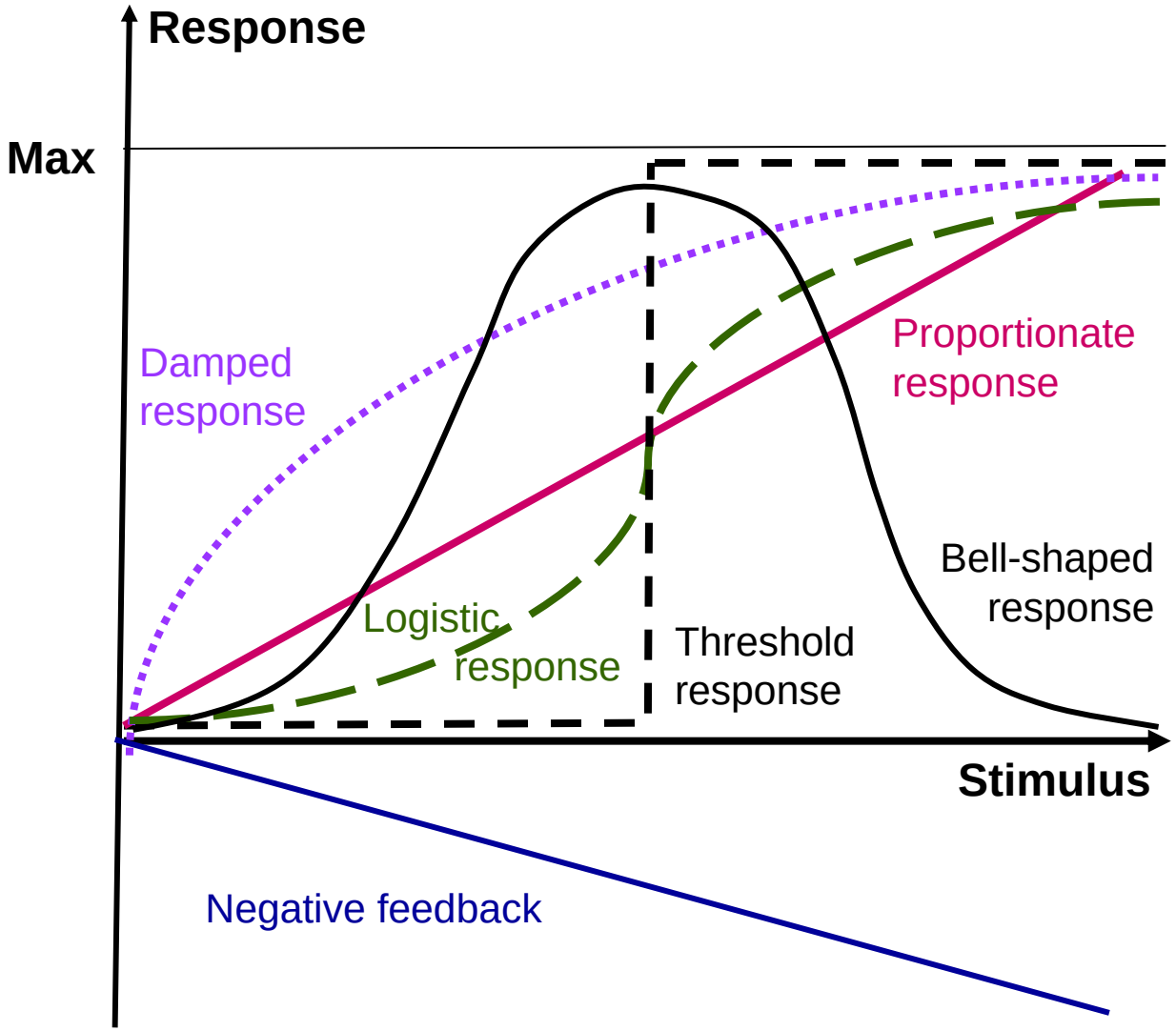
(3) **preference criteria** to evaluate the outcome of the interaction between entity and stimulus.

Stimulus → Entity → Evaluation → Response

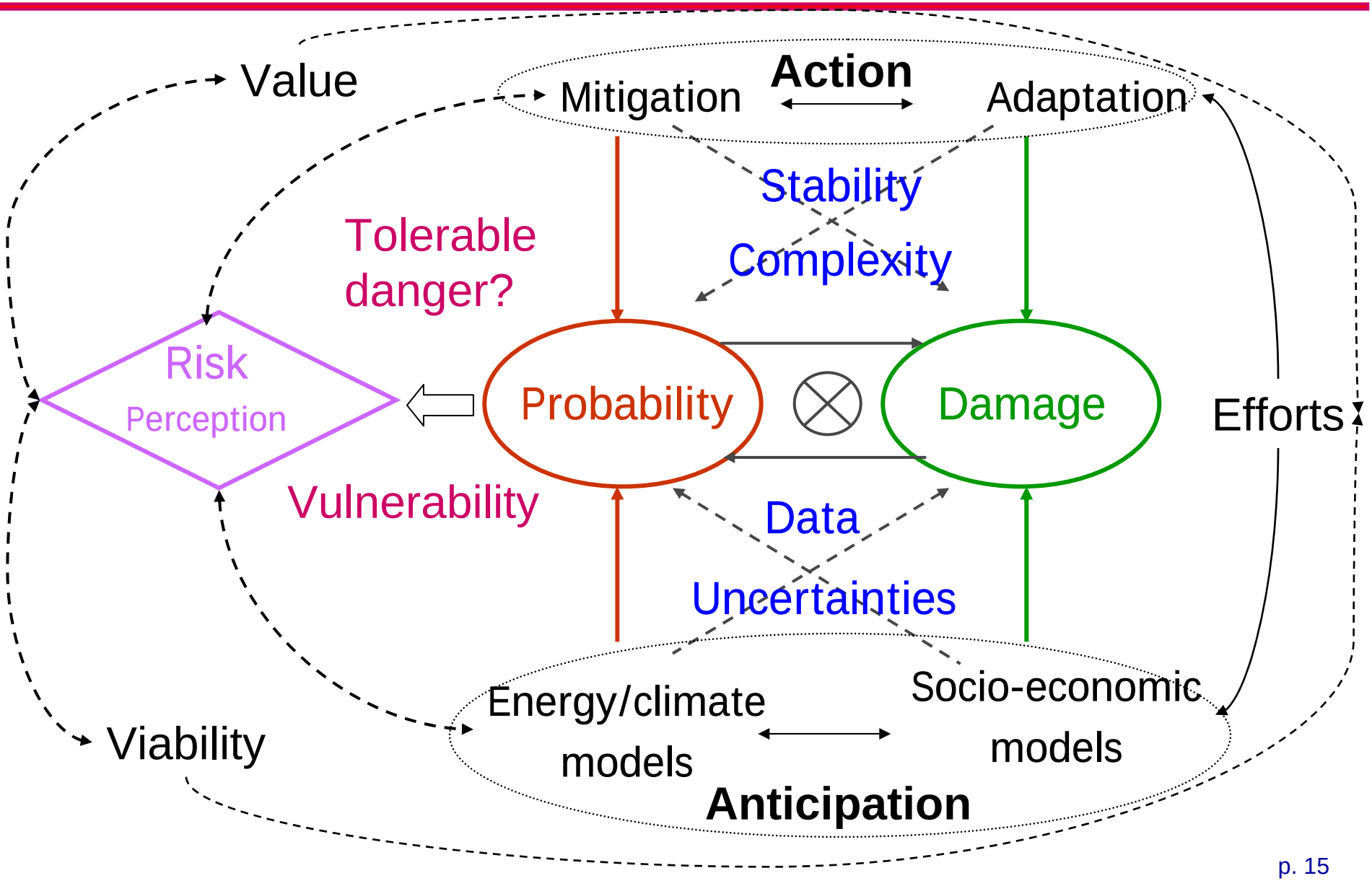
Adaptation: To adapt, a system must have the capacity to respond to a climatic stimulus and take actions that either diminish harm or compensate for it by establishing positive values.

→Climate impact = Vulnerability x Intensity – Adaptive capacity

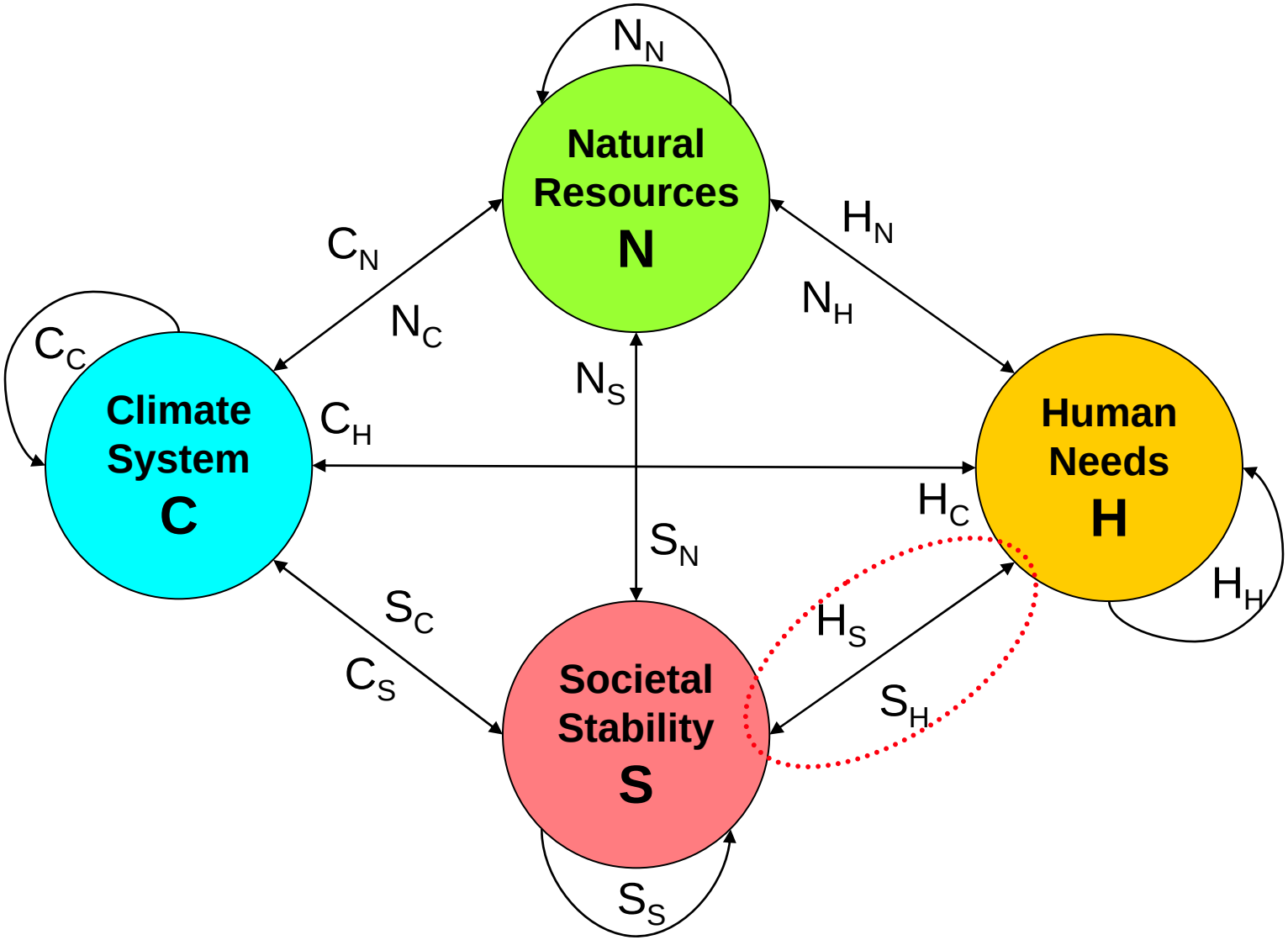
Possible response functions



Factors of climate security risk assessment



Interaction between human needs and society



Stability and instability

General sense of stability: “minor disturbances will not be magnified into a major disturbance, but on the contrary, dampened so as to have only a small and disap-pearing impact” (Ter Borg 1987: 50).

→Change between **qualitatively different system conditions:** from peace to war, from conflict to cooperation, from environmental destruction to sustainability

Ecosystem and economic stability: tolerable windows for admissible speed and magnitude of climate change.

→Adaptive capacities prevent break down against disruption.

Crisis stability: reduce the motivation to use violence and pre-emptive actions, prevent threats to the survival of people.

→ Strengthen mutually beneficial cooperation (win-win solutions), e.g. by resource sharing and joint risk management

Human, societal and political stability: Societies require rules, regulations and institutions that maintain social order and make cooperation beneficial, effective and predictable.

Personal instability ← → societal instability

State fragility, instability and conflict

Failing states: cannot guarantee the core functions of government

- Law and public order
- Welfare
- Basic public services (e.g. infrastructure, health and education)
- Participation
- Monopoly on the use of force

Climate change

- may undercut the ability of governments to satisfy the needs of citizens and to provide opportunities for wealth and prosperity,
- could add to other problems, such as growing populations, inadequate freshwater supplies, strained agricultural resour-ces, poor health services, economic decline and weak political institutions.

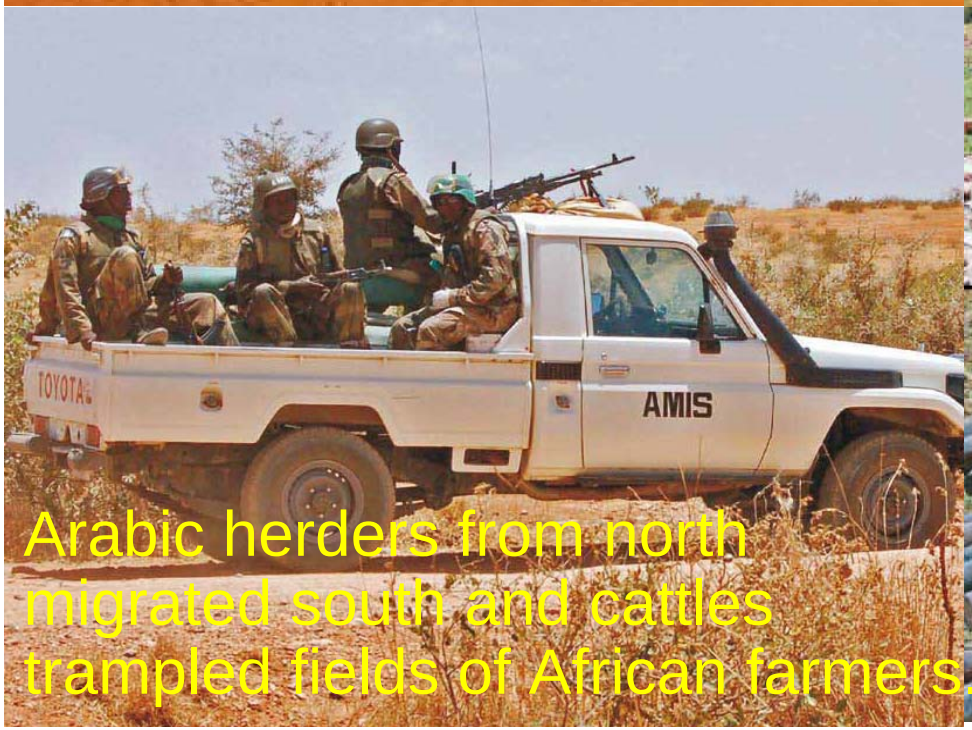
→ Marginal impact of climate change could undermine problem-solving capacity of societies in climate hot spots, contributing to their collapse.

→ Instability could spread to neighbour states, e.g. through migration, ethnic links, resource flows, black markets or arms exports.

Case study: Farmer-herder land use conflicts in Africa

Boundary semi-desert to desert moved southward by 50 to 200 km since 1930s. Significant drop in food production (20%)

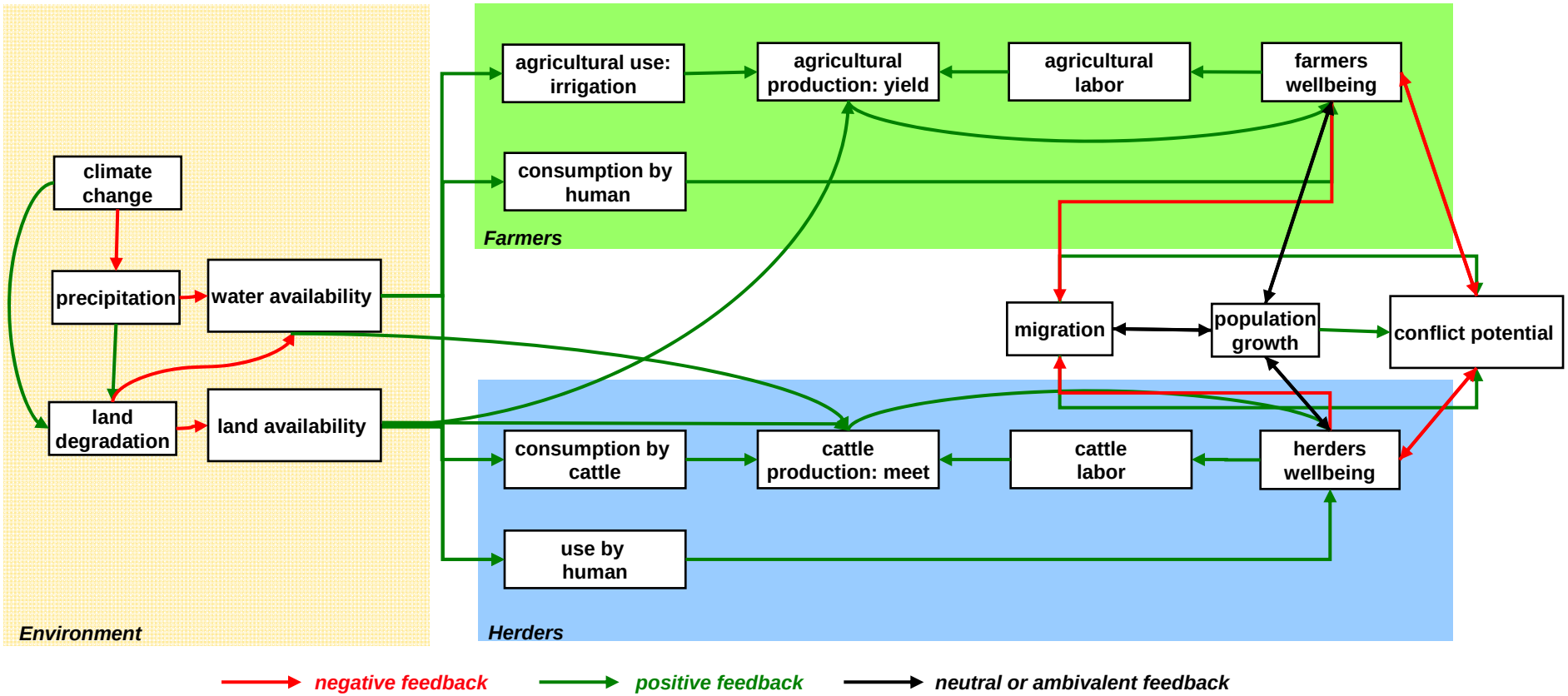
Drought & desertification in Sahara increased migration of nomadic groups into more fertile areas of farmers.



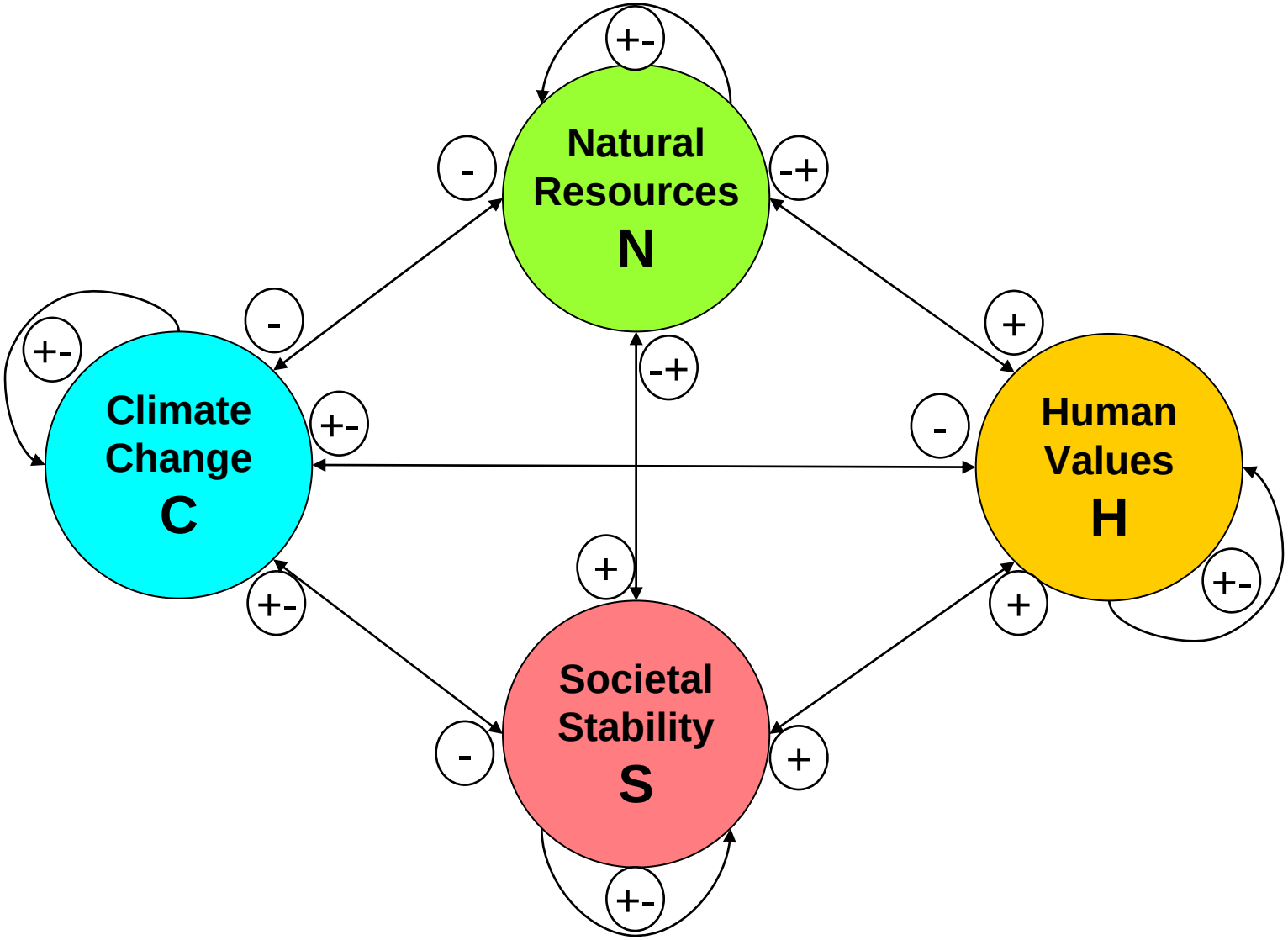
Arabic herders from north migrated south and cattles trampled fields of African farmers.

Darfur is considered a "tragic example of the social breakdown that can result from ecological collapse" (UNEP 2007).

Systemic overview of the farmers-herders land use conflict in North Africa



Possible signs of sensitivities in climate-society interaction



Strategies for preventing climate risks and conflicts