



Social-Ecological System Analysis as a support to ICM:

A Mangrove Ecosystem in North Brazil

Gesche Krause & Marion Glaser



Center for Tropical Marine Ecology
Bremen, Germany

LOICZ II Inaugural Open Science Meeting 2005, Egmond aan Zee, The Netherlands



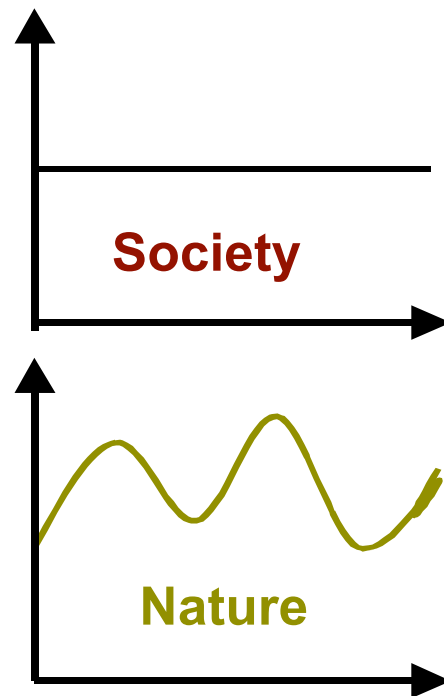
Point of Departure...

Depending on the disciplinary base of the analyst, either the social or the ecological system tends to be given

- disciplinary “blindfolds” as obstacle for successful implementation of ICM goals
- many resource management studies treat the human system as external to the ecosystem



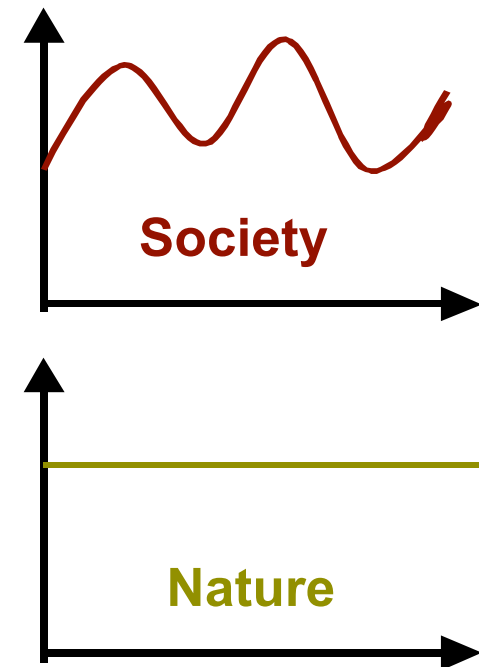
Natural Science View



Manager ??

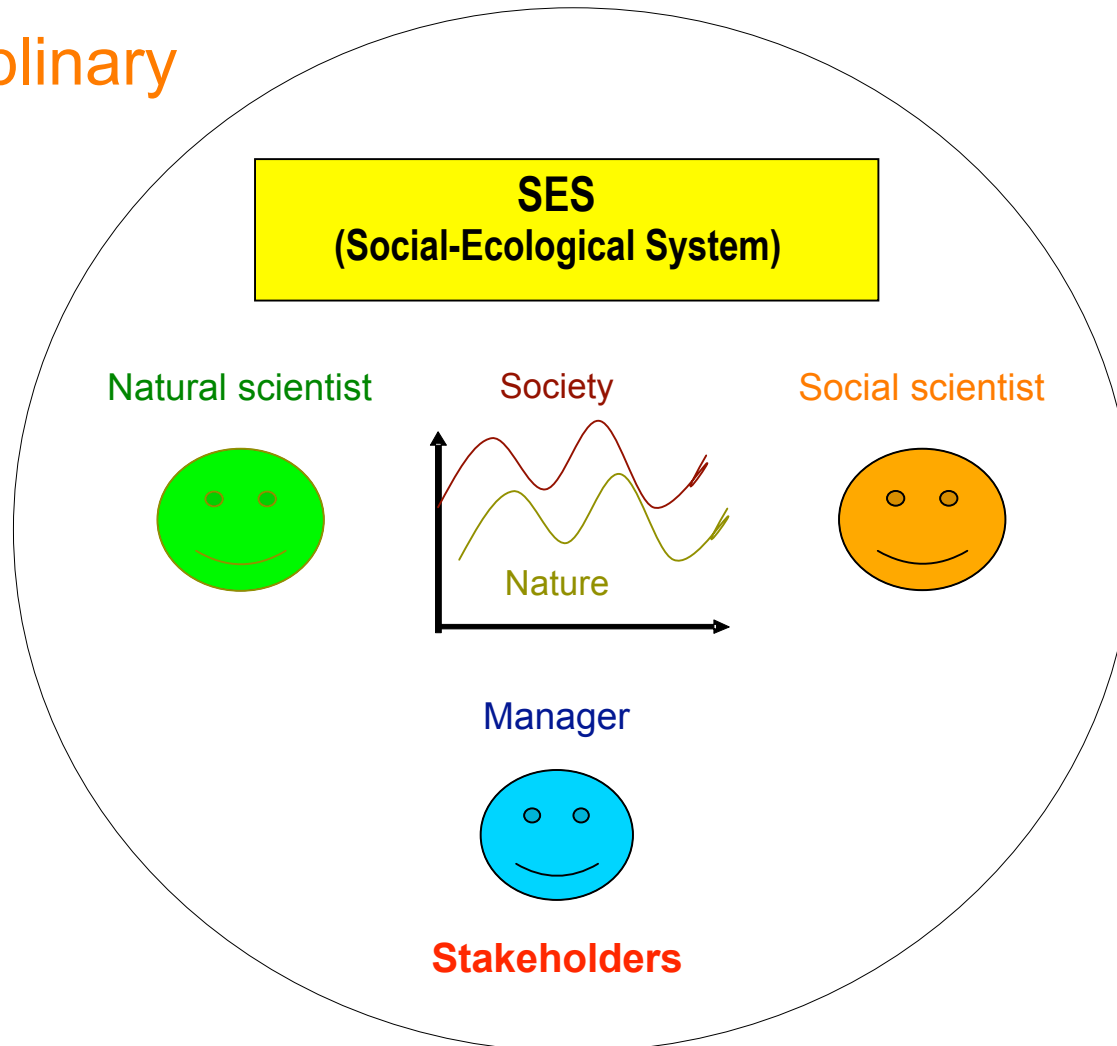


Social Science View





Transdisciplinary Approach



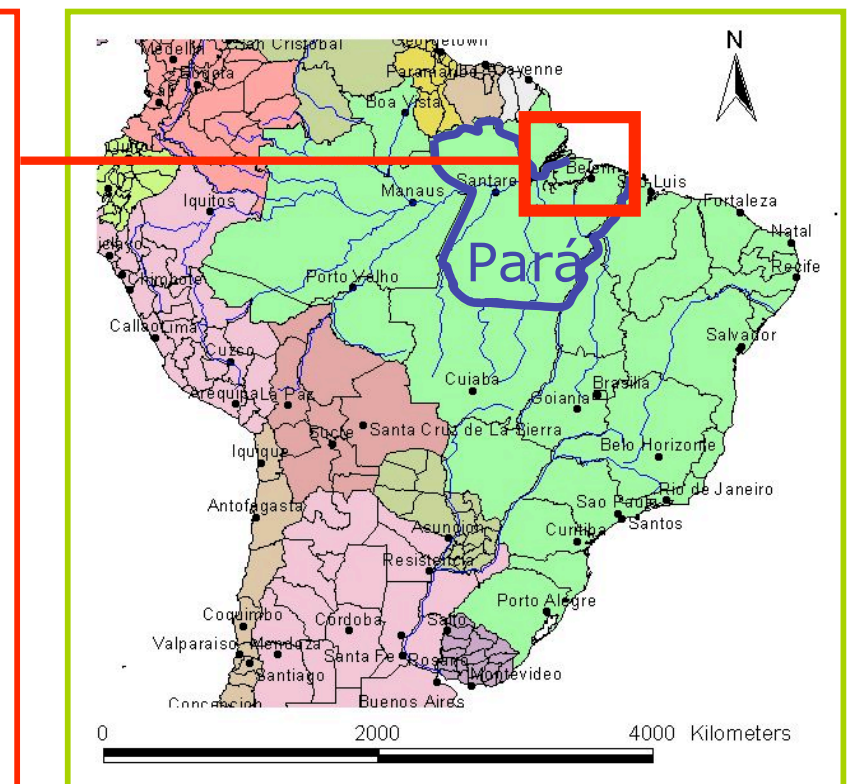
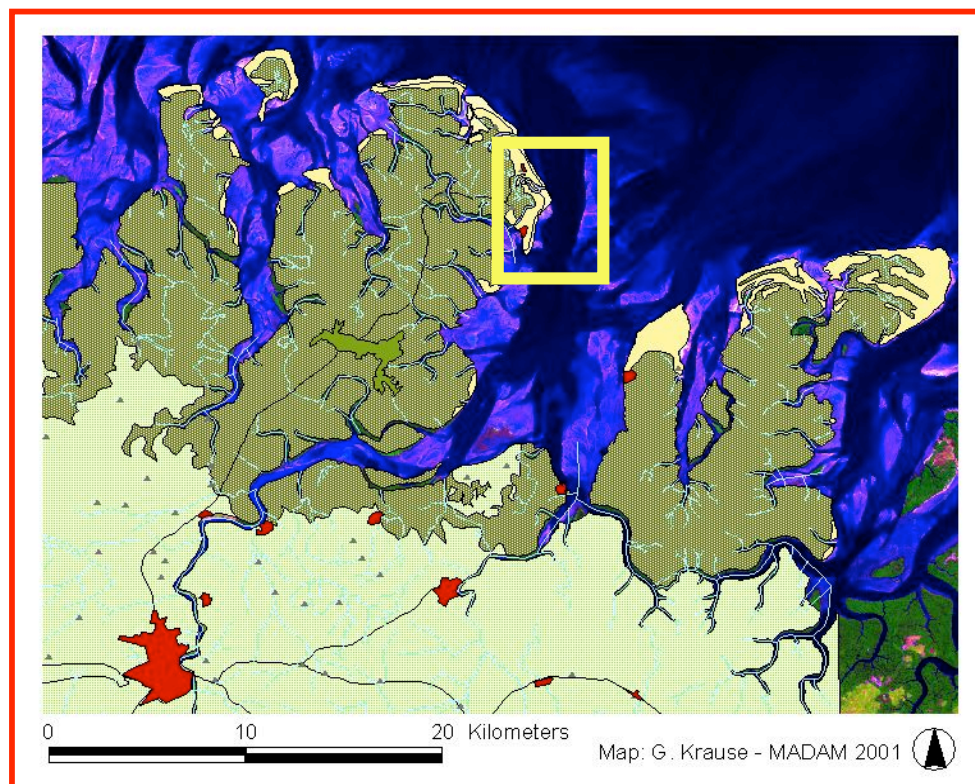


Major Objectives

- Is there a common theoretical foundation for how ecological, economic and social systems work?
- How has the social system developed management practices dealing with the dynamics of coastal ecosystems?
- What are the social mechanisms behind these management practices?



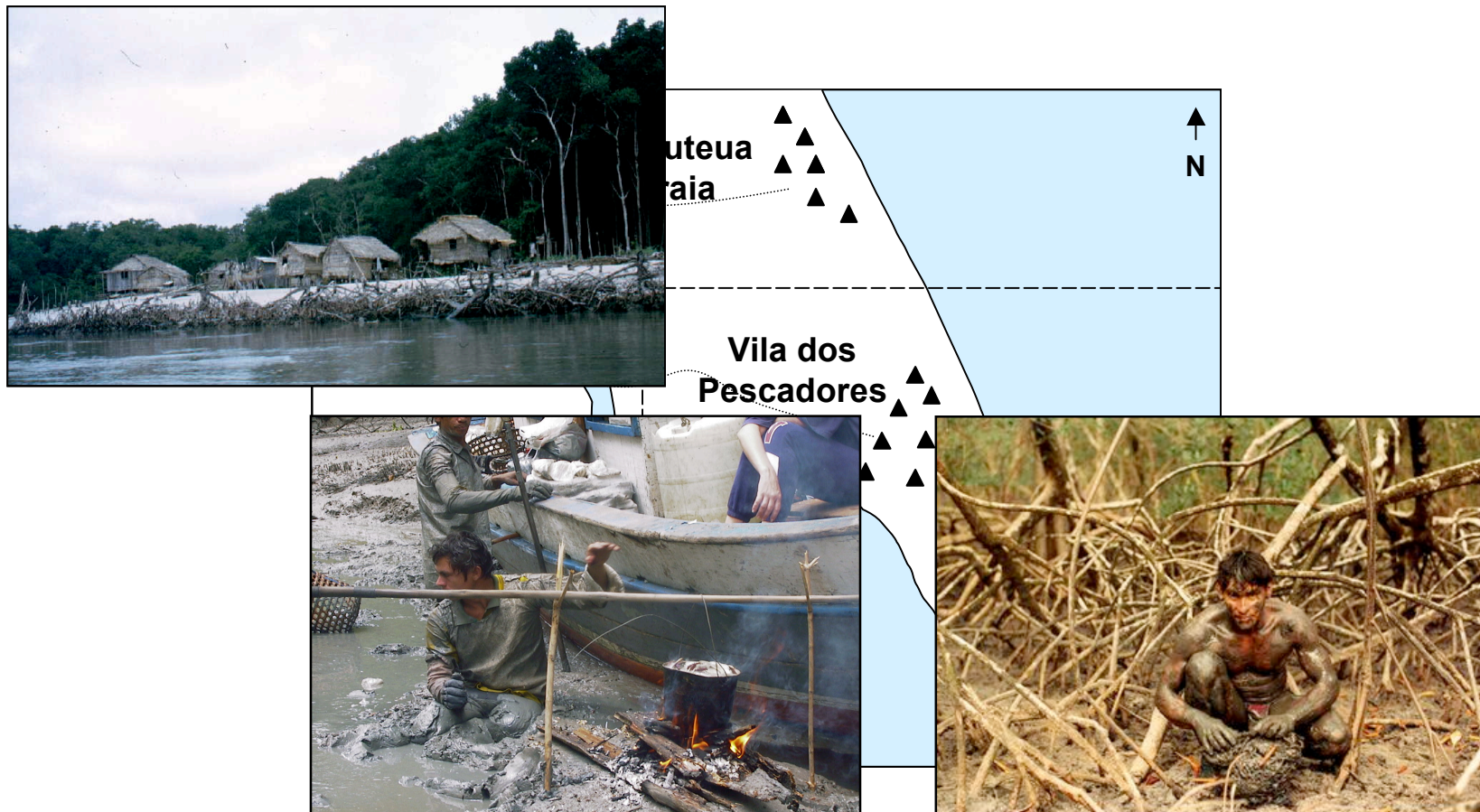
Coastal Zone of the State of Pará (North Brazil)



➤ Contrast between legislative intentions and enforcement reality



Development of the Coastal Area of Ajuruteua from 1972-2002





Development of the Coastal Area of Ajuruteua from 1972-2002



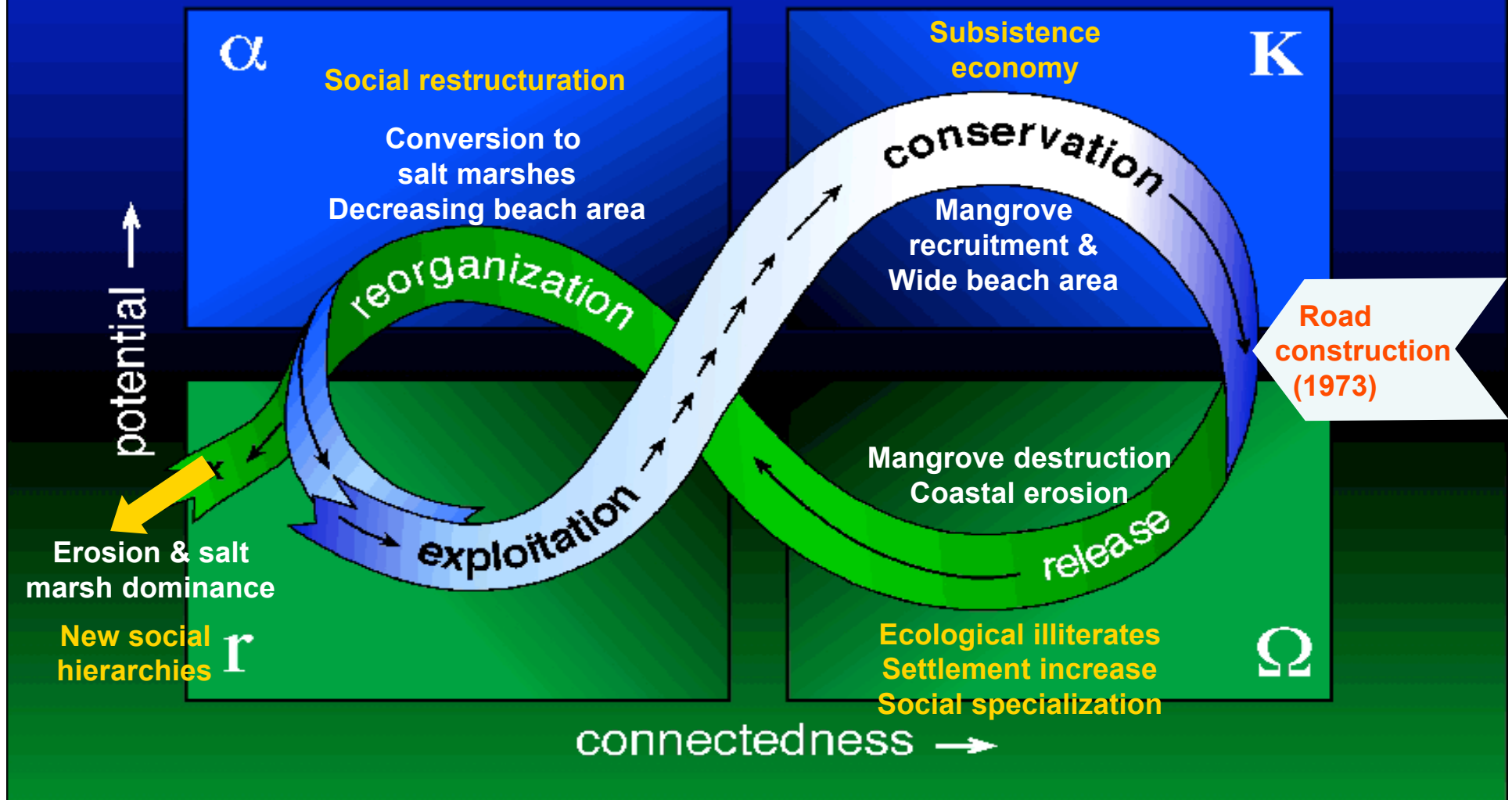


Properties of the Socio-Ecological System (SES)

- Neo-traditional system
- Ecologically illiterate system actors
- Emerging conflicts and problems due to coastal erosion, lack of defined user-rights, legislation not reflecting social reality
- Inequitable distribution of “benefits of illegality”



A Simplified Social-Ecological System Cycle





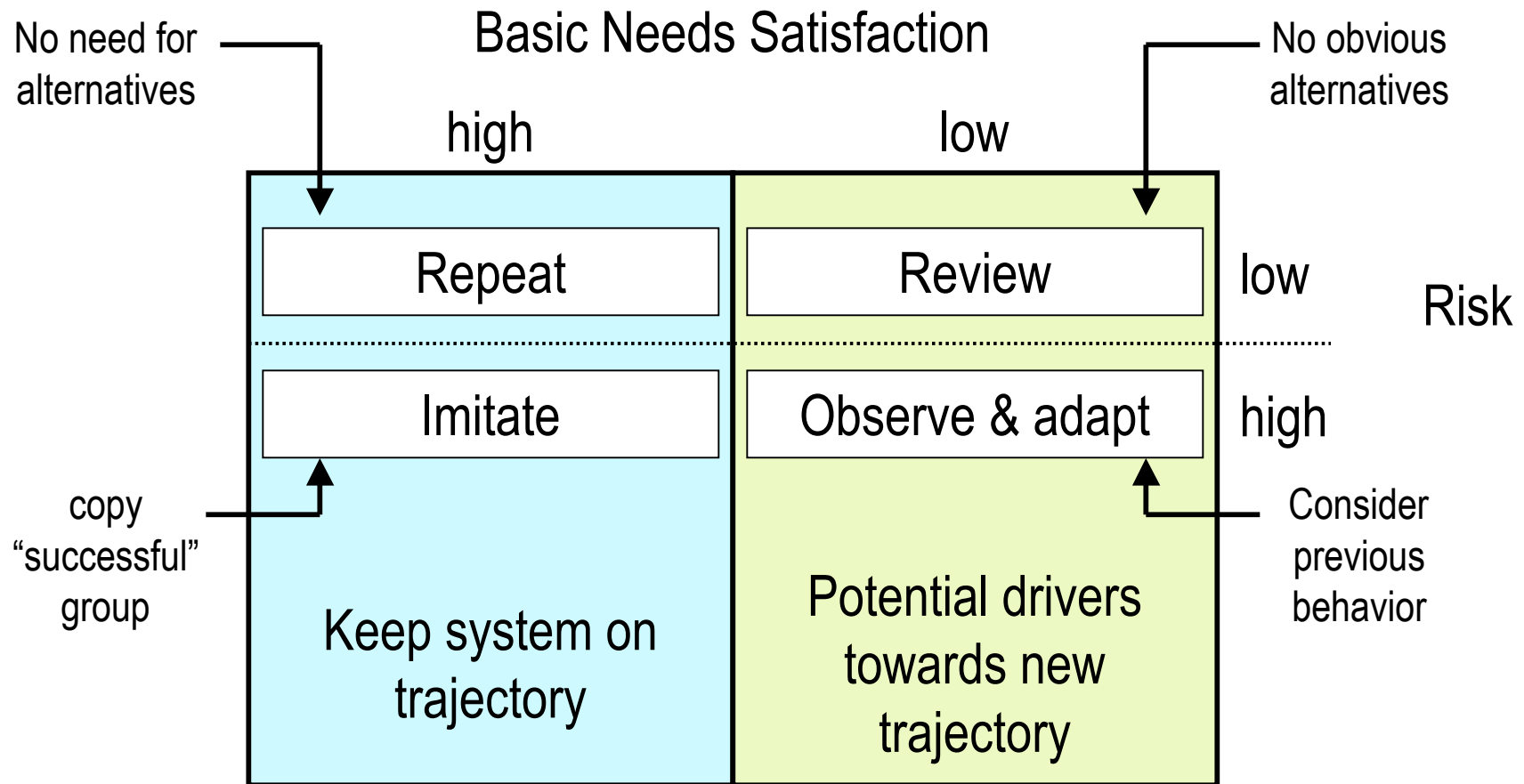
ICM goal: A sustainable and resilient SES

A key question:

What are the underlying motivations, values and incentives for change towards the desired system configuration?

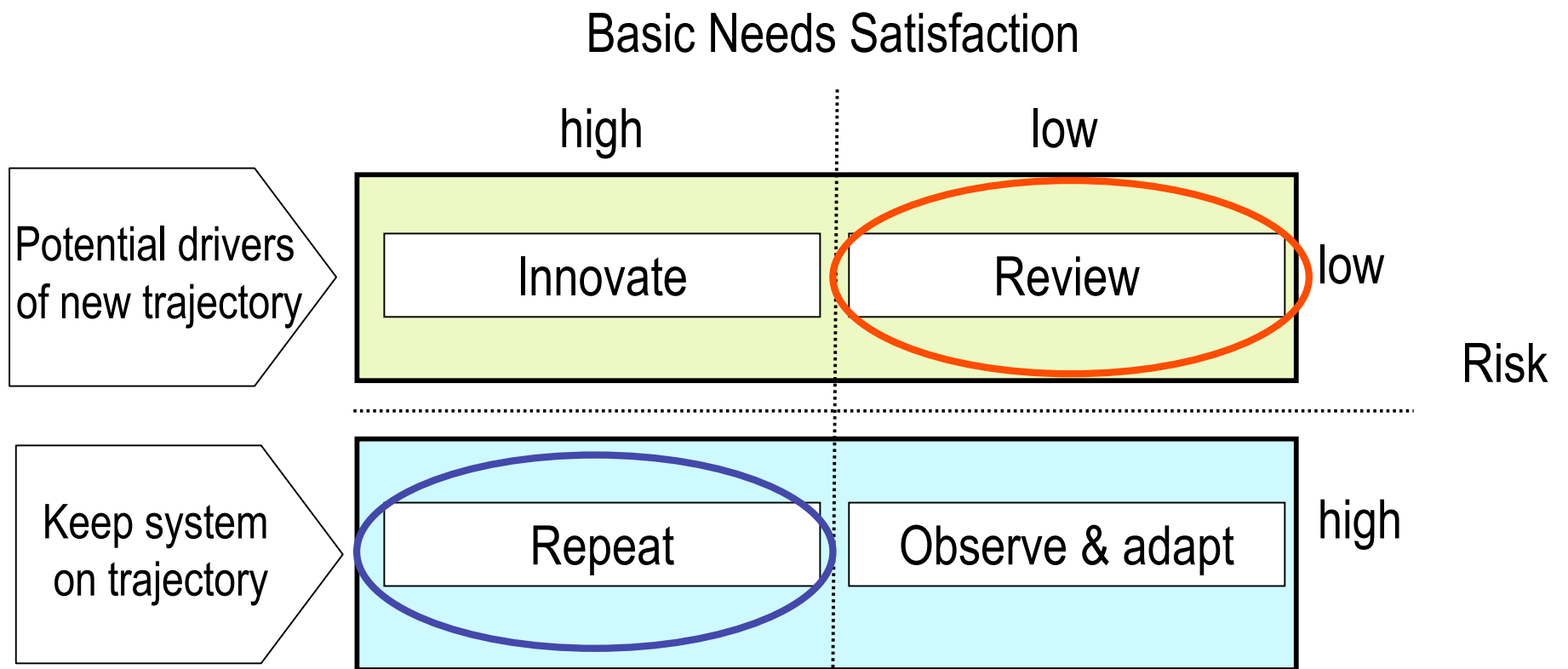


Possible Motivations for System Changes.... **Option I**





Possible Motivations for System Changes.... **Option II**





Implications for ICM....

- Management needs to consider linked ecological and social systems in their co-evolutionary interaction.
- Policies need to incorporate stakeholders rationales and values.
- The analysis of motivations for system change supports the tailoring of ICM strategies to actor groups.



Thank You!

