



Resilience for whom?

Governing social-ecological transformation in Cambodia's Tonle Sap Lake

Our key points (and presentation structure)

1. The Tonle Sap is a **dynamic social-ecological system** undergoing significant stresses and shocks
→ May lead to rapid, irreversible changes if thresholds exceeded
2. **Governing such transformations** requires a dynamic approach that incorporates characteristics such as non-linear dynamics and unpredictability.
3. **Resilience thinking can help** to understand the multi-scalar interactions of social & ecological system components
→ But requires a critical approach to consider also power and politics

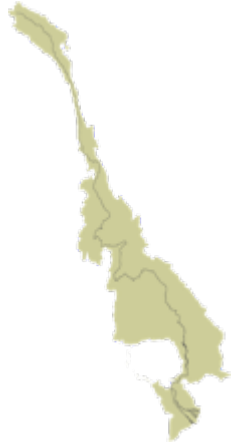
= Transformation is underway in the Tonle Sap – can it be shifted from ‘forced’ to ‘deliberate’, with a focus on social justice and remembering ‘resilience for whom’?

The Tonle Sap Lake is the "beating heart" of Cambodia,
with its **flood pulse system** fundamentally supporting
livelihoods such as agriculture and fishing



Yet, the Tonle Sap will go through major transformations, both ecologically/
hydrologically (Mekong dams & climate change) and socially (livelihood changes)
→ Social-ecological systems (SES) theory posits humans as part of the biosphere,
with emergent, non-linear interactions and high uncertainty

Nested scales



Regional: Mekong River Basin

Social: six nations with differing interests, rapid dam development

Ecological: major transboundary river, diverse and important fisheries



National: Cambodia

Social: livelihoods, politics, policies...

Ecological: diversity (from sea to the mountains), Mekong's major role in the country



Local: Tonle Sap Lake

Social: livelihoods, politics, policies...

Ecological: unique flood pulse system, but dependent on upstream

Governance of water?

- ‘Water governance’ describes how we as humans exercise our **authority** over the use of water and related natural resources
- Many interpretations of governance – we use the governance theory of ‘**critical institutionalism**’ to interpret governing activities in terms of power, processes and meaning.

Governance in more detail:

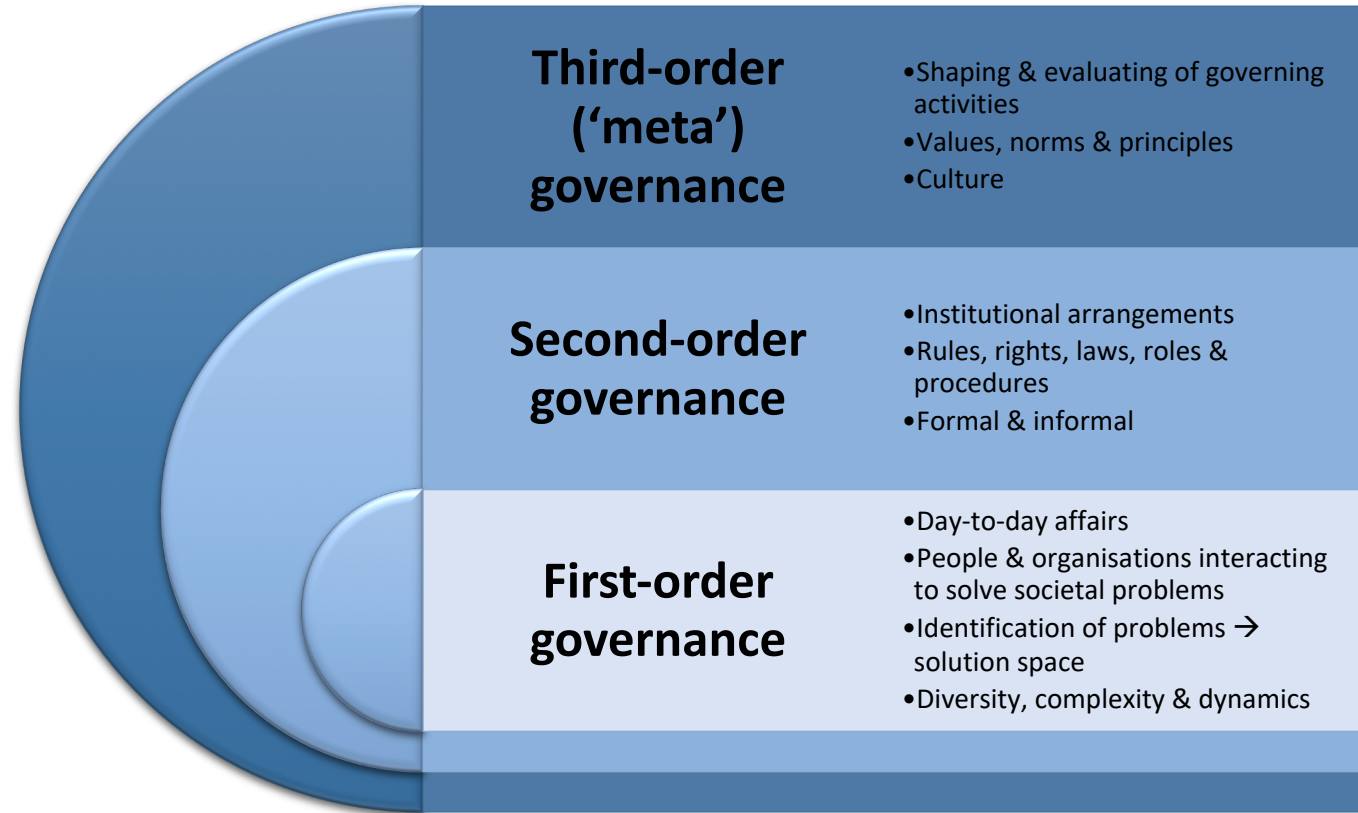
AIM: to direct the responsibilities and actions of actors in decision-making around a collective problem, such planning and implementing laws and policies (formal arrangements), and creating/upholding social norms (informal practices).

DEFINITION: Framework of political, social, economic and administrative institutions, which influence and shape water resource use and management practices across society.

Different 'orders' of governance

- Many views on governance
- Some criticised for being too 'top-down' and inflexible for certain contexts.

→ We view governance in terms of interactive and flexible levels of activities

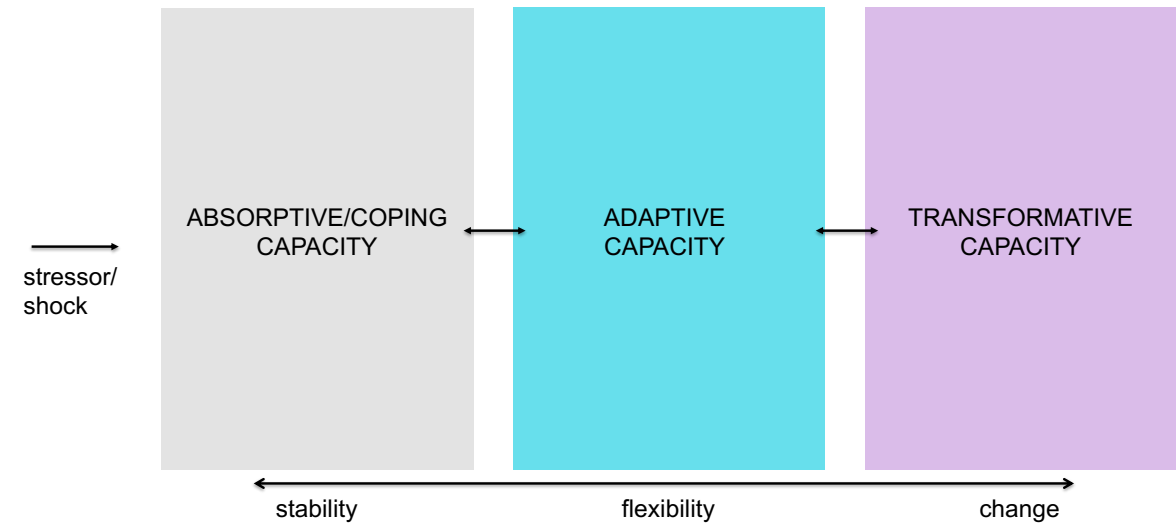


(Adapted from Kooiman & Jentoft, 2009)

Resilience as a 'bridge' for governing dynamic river basins?

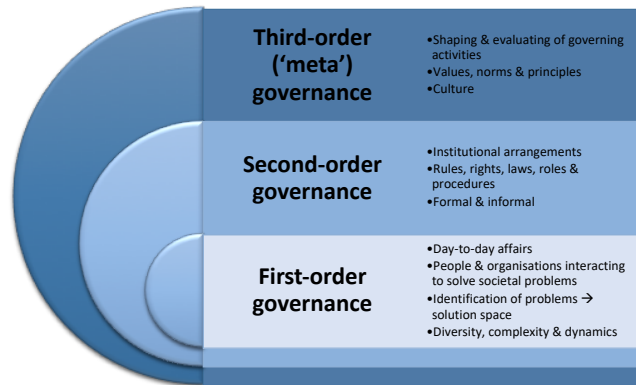
- Resilience can be used to understand and manage (unexpected) change in SESs
- Yet, many interpretations of resilience exist: has also been used in different ways within WDRG (e.g. Varis et al. 2019; Winland)

→ We take a rather critical view on resilience, and build upon several sources to conceptualise resilience in a simple way (incl. Bené et al. 2012)

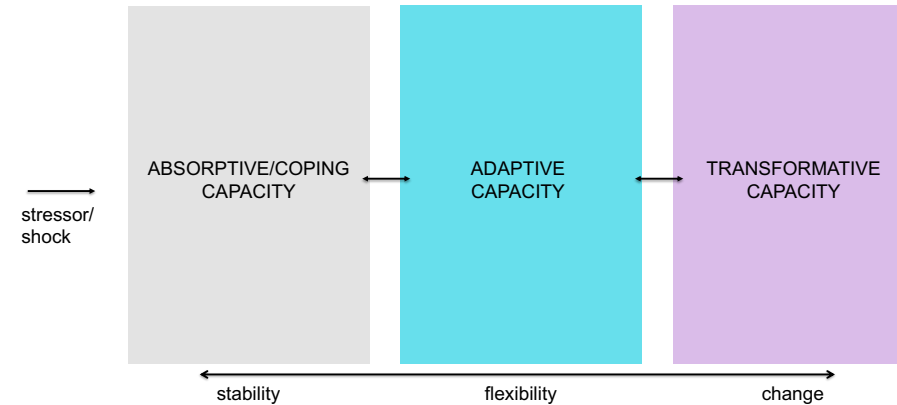


Our take: a 'combined approach' linking resilience, governance and dynamic river basins (as SESs)

GOVERNANCE FRAME:



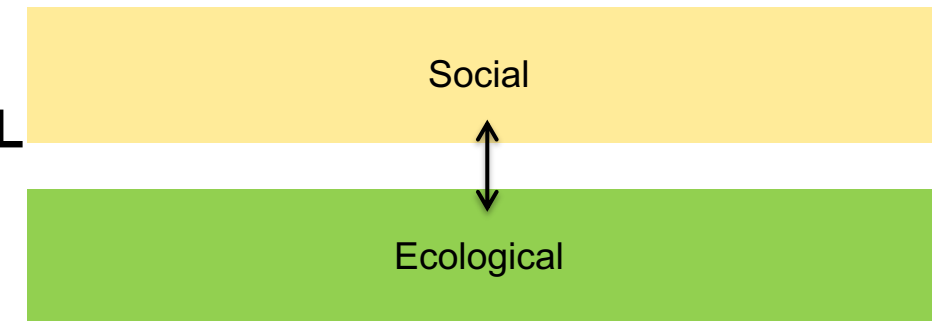
RESILIENCE FRAME:



NESTED SCALES

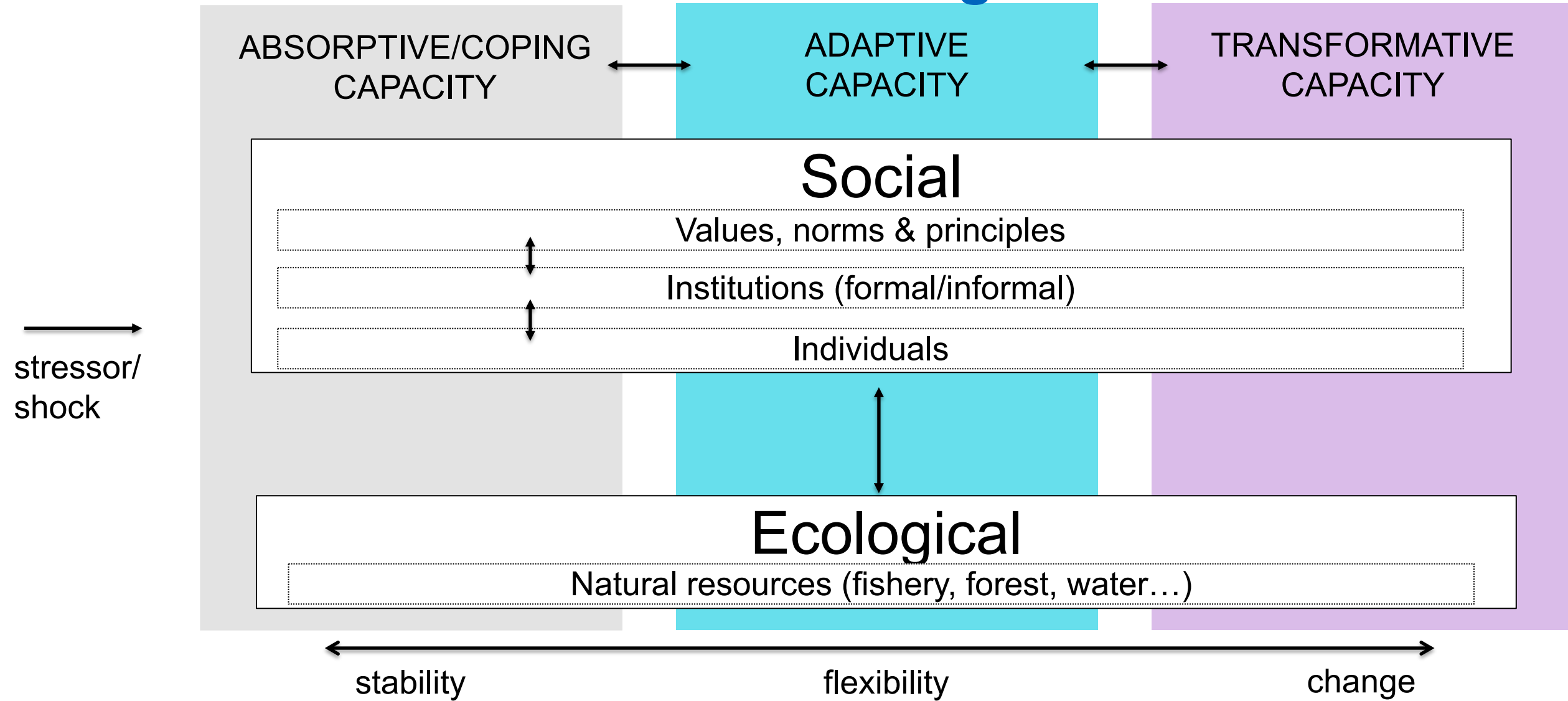


SOCIAL-ECOLOGICAL SYSTEMS FRAME:

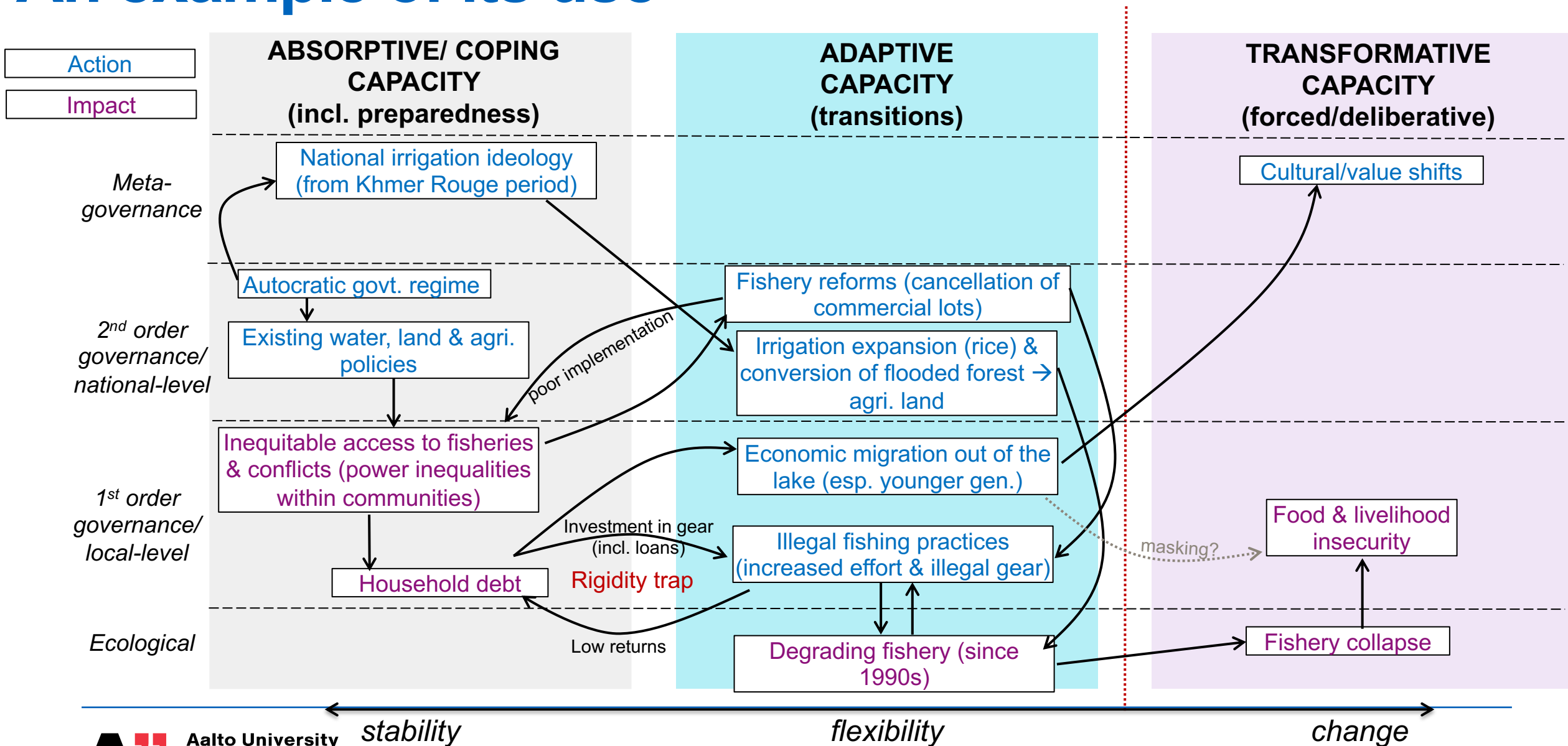


→ We view this through the 'lens of critical institutionalism' (i.e. power, politics & a more sceptical/critical view on resilience)

Our take: a resilience framework to govern transformation



An example of its use



Initial results & thoughts

This 'combined approach' helps us understand the interactions between governance and natural resources in dynamic river basins undergoing transformations.

- Shows how resilience is not inherently 'good' or 'bad'
- Cross-scale linkages: resilience at one scale enhance/undermine resilience at another
- Considers the cost of transformation more critically
- 'Rigidity traps' in governance arrangements (e.g. nationalistic irrigation ideologies)

Limitations:

- Resilience is subjective, and has many 'moving pieces' that are difficult to pin down.
- Temporal scales and slow vs fast-changing variables are difficult to quantify & present in this framework.

Things to consider:

- Possible potential of medium-term transitional responses 'masking' underlying transformation?
- How to better integrate 'ecological' side into this analysis?

ADDITIONAL SLIDES

Key references

Bené, C., Godfrey Wood, R., Newsham, A., Davies, M., 2012. Resilience: New Utopia or New Tyranny? Reflection about the Potentials and Limits of the Concept of Resilience in Relation to Vulnerability Reduction Programmes. IDS Working paper, 2012 (405); CSP Working paper 006.

Cleaver, F. and Whaley, L. (2018) Understanding process, power, and meaning in adaptive governance: A critical institutional reading. Ecology and Society, 23 (2). 49. DOI: <https://doi.org/10.5751/ES-10212-230249>

Keskinen, M. et al. (2013). Tonle Sap now and in the future? Final Report of the Exploring Tonle Sap Futures study, Aalto University and 100Gen Ltd. with Hatfield Consultants Partnership, VU University Amsterdam, EIA Ltd. and Institute of Technology of Cambodia, in partnership with Tonle Sap Authority and Supreme National Economic Council. Water & Development Publications WD--11, Aalto University, Espoo, Finland.

Kooiman, J. and Jentoft, S., 2009. Meta-governance: values, norms and principles, and the making of hard choices. Public Administration 87(4): 818–836. DOI: 10.1111/j.1467-9299.2009.01780.x

Varis, O., Taka, M., Kummu, M., 2019. The planet's stressed river basins: too much pressure or too little adaptive capacity? Earth's Future, 7 (10):1118-1135. DOI: <https://doi.org/10.1029/2019EF001239>

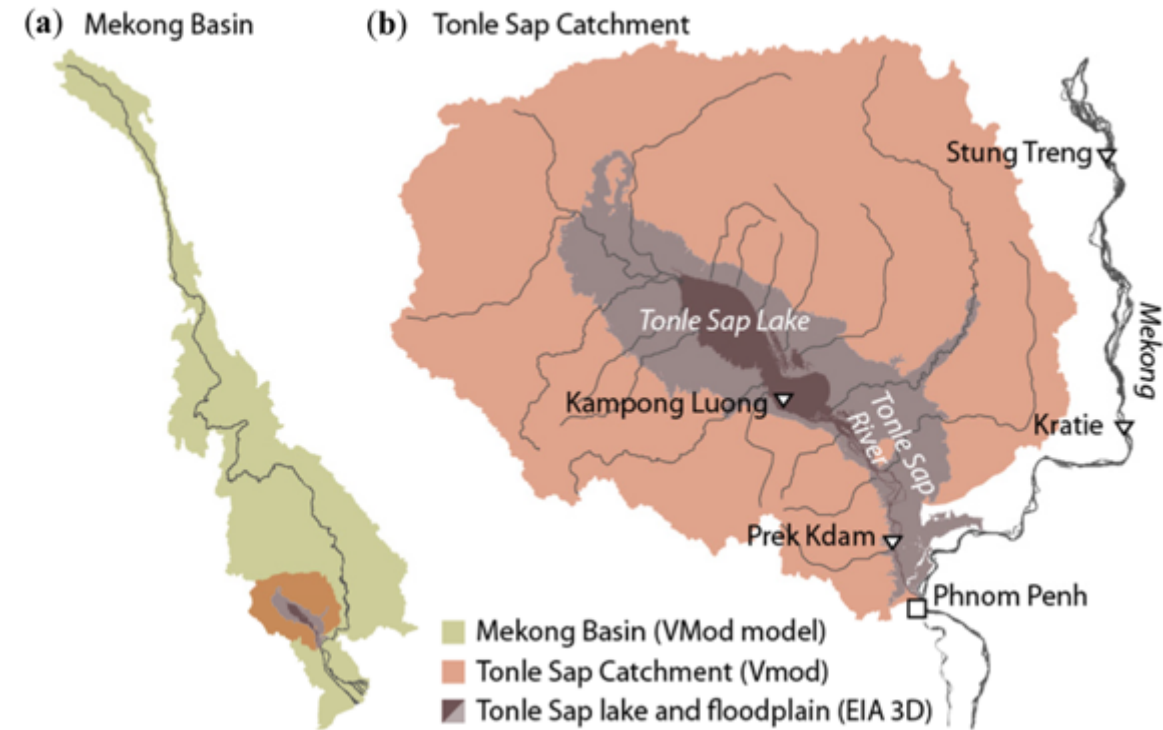
Cambodia's Tonle Sap Lake

Located in the Mekong River Basin, the world's largest inland fishery, with 500,000 tons of fish produced by the lake → forming the backbone for Cambodian food security & up to 80% of protein consumption.

The complex ecosystem is driven by a flood pulse system, whereby the lake expands more than 5 times its dry area during the monsoon season (flows support fish)

The lake and its 1.2 million inhabitants are facing mounting pressures and increasing vulnerability, internally and externally.

→ unpredictability and alterations in the wet season & flood pulse, due to climate change, hydropower development, & irrigation dams.



(Source: Keskinen et al., 2015.)

Study Aims

- To build a theoretical framework for studying and describing resilience for the analysis of freshwater governance that incorporates societal dimensions more fully.
- Apply the framework to the Tonle Sap Lake in Cambodia, identifying key thresholds/tipping points and addressing both positive and negative components of resilience:
 - Put current research and actions on the lake's management into the broader context of resilience and change.
 - Demonstrate absorptive and adaptive responses of people living on and around the lake.
 - Identify rigidity traps (inflexible system components).
 - Find windows of opportunity for transformative change, focusing on the role of local, largely informal institutions in facilitating sustainable and equitable governance outcomes.

Methodology & Data

For this study, we are using a qualitative approach, utilising the huge wealth of data already available on the Tonle Sap, Cambodia & Mekong (thanks, WDRG!).

Methods:

- Discourse analysis
- Semi-structured interviews; etc.
- Some statistics

Key theory:

- Political ecology
- Environmental/water law & governance
- Resilience & SES theory
- Critical institutionalism
- Environmental justice
- Power

Data:

- Key scientific literature, 'grey' literature (e.g. national policies, laws & decrees relating to water/fisheries/agriculture/land; media articles; reports)
- (Secondary) household survey data
- Interview data
- Other? (e.g. irrigation data)

Resilience in Social-Ecological Systems

Resilience broadly refers to “the capacity of people to learn, share and make use of their knowledge of social and ecological interactions and feedbacks, to deliberately and effectively engage in shaping adaptive or transformative social-ecological change” (SEI and SRC 2016).

Key (normative) traits:

- Diversity
- Connectivity
- Managing slow-changing variables
- Complex Adaptive Systems thinking
- Foster learning
- Participation
- Polycentricity

(Assumption that resilience is desirable)

‘Institutional resilience’ traits:

- Adaptability
- Legitimacy
- Functionality
- Endurance
- Power

*Asking ‘resilience for whom?’
(social justice)*

3 Dimensions of Resilience

Absorptive capacity: 'ability to cope'

- **Leads to persistence**
- Short-term
- Safety nets in place, household-level immediate responses to cope

Adaptive capacity: ability to adjust with change

- **Leads to incremental adjustment** (may eventually lead to transformation)
- Medium-term
- Policy adjustments, microcredit, etc

Transformative capacity: ability to create fundamentally new regime

- **Leads to transformational response**
- Current system untenable – e.g. issues of social justice
- Typically longer timescale, but can be sudden
- Most difficult, due to issues of shifting status quo & challenging existing power structures