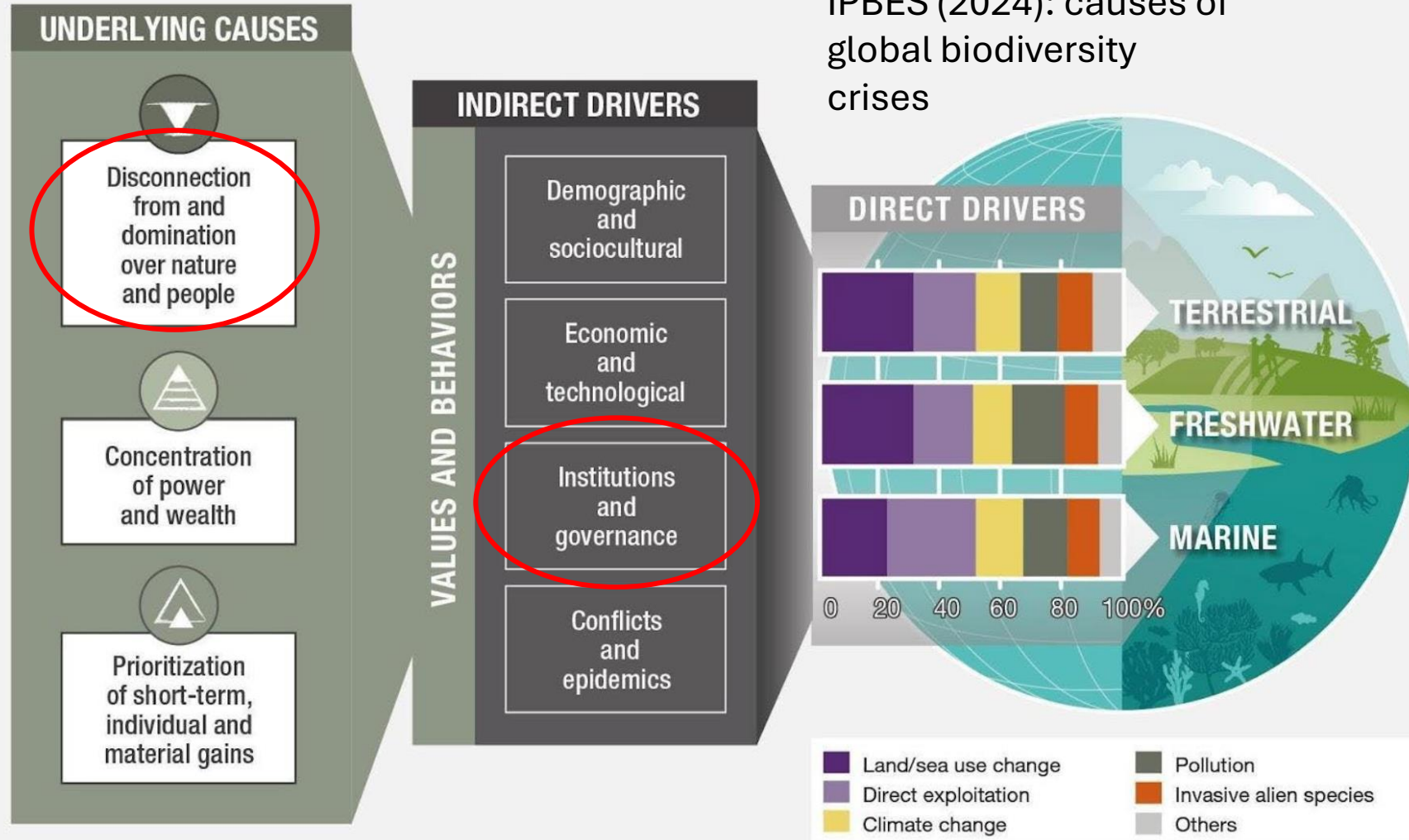


How research projects can contribute to niche co-construction for biodiversity recovery?

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Global human niche construction causing biodiversity loss??



Need to move from
human domination to
niche co-construction

Need to develop
governance inclusive for
multispecies actors

Rite of passage

Arnold Van Gennep (1909)

- Rites of passage: those rituals which mark significant life transitions of individuals in a community.
- Rite of the passage which occurs when an individual leaves one group to enter another.

Victor Turner (1969)

- "The first phase (**of separation**) comprises symbolic behavior signifying the detachment of the individual or group ... from an earlier fixed point in the social structure.
- The transition (**liminal**) phase is the period between stages, during which one has left one place or state but has not yet entered or joined the next.
- In the third phase (**reaggregation or incorporation**) the passage is consummated [by] the ritual subject." Having completed the rite and assumed their "new" identity, one re-enters society with one's new status.

Action arena

- An **action arena** combines the action situation, which focuses on the rules, norms and biophysical context, with the participants who bring with them their individual preferences, skills, and mental models.

Ostrom, E. (2005) Understanding institutional diversity.
Princeton, NJ: Princeton University Press.

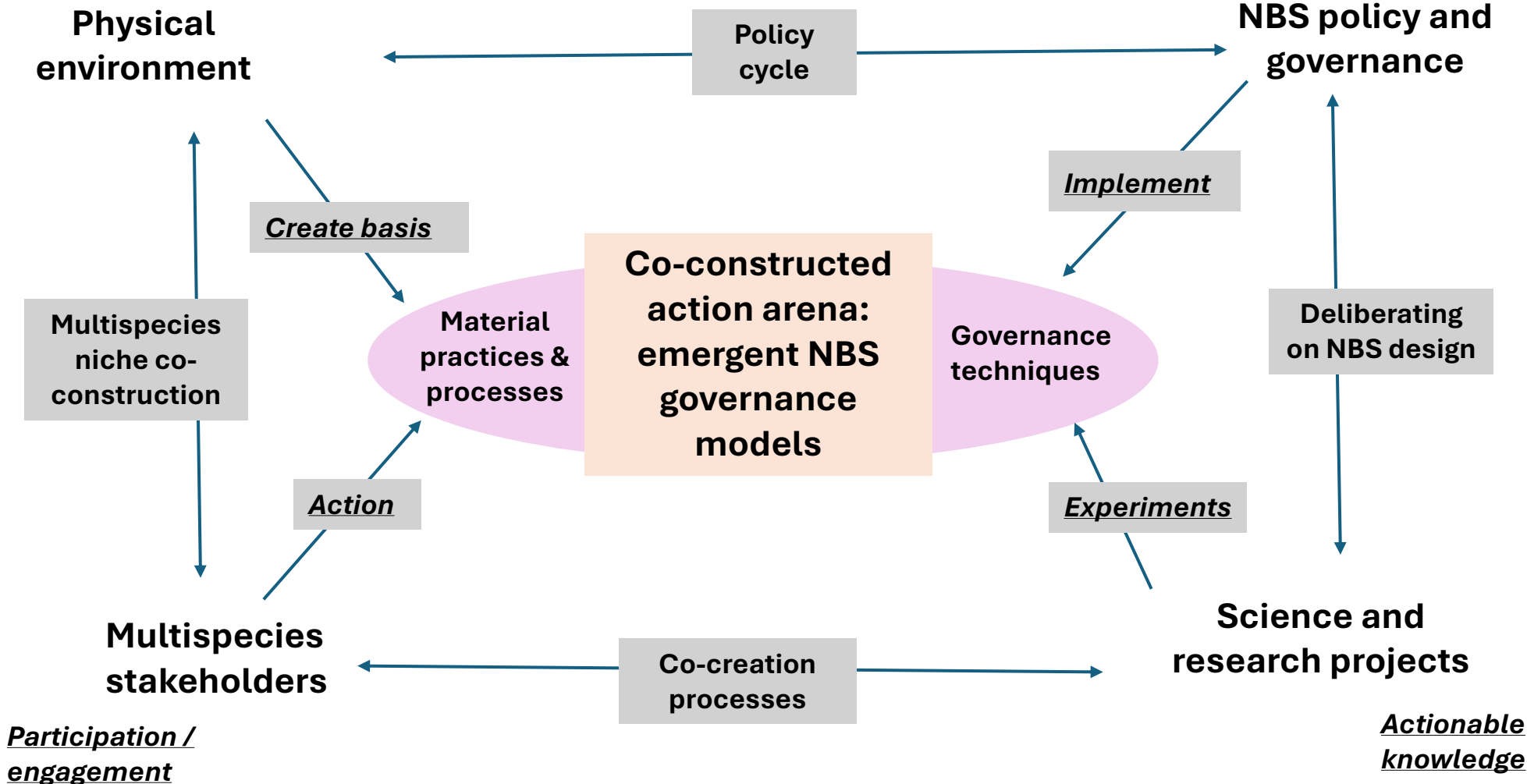


Niche and action arena

- For niche construction to affect [evolution](#) it must satisfy three criteria:
 - 1) the organism must significantly modify environmental conditions,
 - 2) these modifications must influence one or more selection pressures on a recipient organism, and
 - 3) there must be an evolutionary response in at least one recipient population caused by the environmental modification
- Action arena co-construction: 1) the organism modifies action arena, 2) the changed action arena changes conditions for organisms' action, and 3) this causes behavioural change in multispecies groups.

Co-production of
ecosystem services

Rules and
rights



Examples of liminal phases

- More or less moving towards transformative change, by reinvoking old habits or creating new ones)
- Science-policy interfacing (EU Science Service; Juha)
--> Declining linear model and searching new ways to connect
- Co-creation in Living Labs (Coevolvers, Tatiana);
Transitional Coastal Labs (EMPOWERUS, Kristina)
- → Declining view on authoritative science

Examples of liminal phases

- Multispecies relations (Gardens, Monika; Moose hunters, Laura; Organic farming, Irene)
→ Revitalising multispecies relations

- Physical environment (Salmon, Jaakko)
→ stability vs. ecosystem change.
- People (from cars to bikes in Amsterdam, Roope).

Niche for land use planners

- As part of complex constellation of things contributing to coevolution towards biodiversity recovery
- Practical task to co-construct "affordance arena" (Carsten)
- Enabling innovation (Roope)

Intorduction: coevolutionary approach to NBS

- Shift from deterministic science to co-creating spaces for action.
- Spaces for action not only for people, but multispecies actors.
- How to understand such spaces?
- Coevolutionary view on how such spaces emerge
- Coevolution of multispecies action and practice, physical environments, science and policy
- The aim here to propose a framework to understand such coevolution
- How research projects are part of coevolutionary processes and contribute to socio-environmental change for biodiversity recovery and ecosocial flourishing

Niche

- Niche construction can be characterised as “the process whereby organisms, through their metabolism, their activities and their choices, modify their own and/or each other's niches” ([Odling-Smee et al., 2003](#), p. 419).
- Niche construction is a process between an organism / actor and environmental conditions affecting on both.
- How niches are co-constructed?

WORKING WITH NATURE TO PROTECT PEOPLE

HOW NATURE-BASED SOLUTIONS
REDUCE CLIMATE CHANGE AND
WEATHER-RELATED DISASTERS



Working with nature as a solution

- IPBES value assessment highlighted values linked to people living in, as, from, and with nature (Pascual et al. 2023).
- IPBES (2024) transformative change assessment called for replacing human dominance over nature and elite dominance over less fortunate people towards with more equal and reciprocal relations.
- EU Biodiversity Strategy 2030 includes headline on the need to bringing nature back into our lives (EC 2021).
- Nature-based solutions (NBS) literature working with nature has been identified as a key strategy to approach and arrange human-environment relations (Welden 2023).

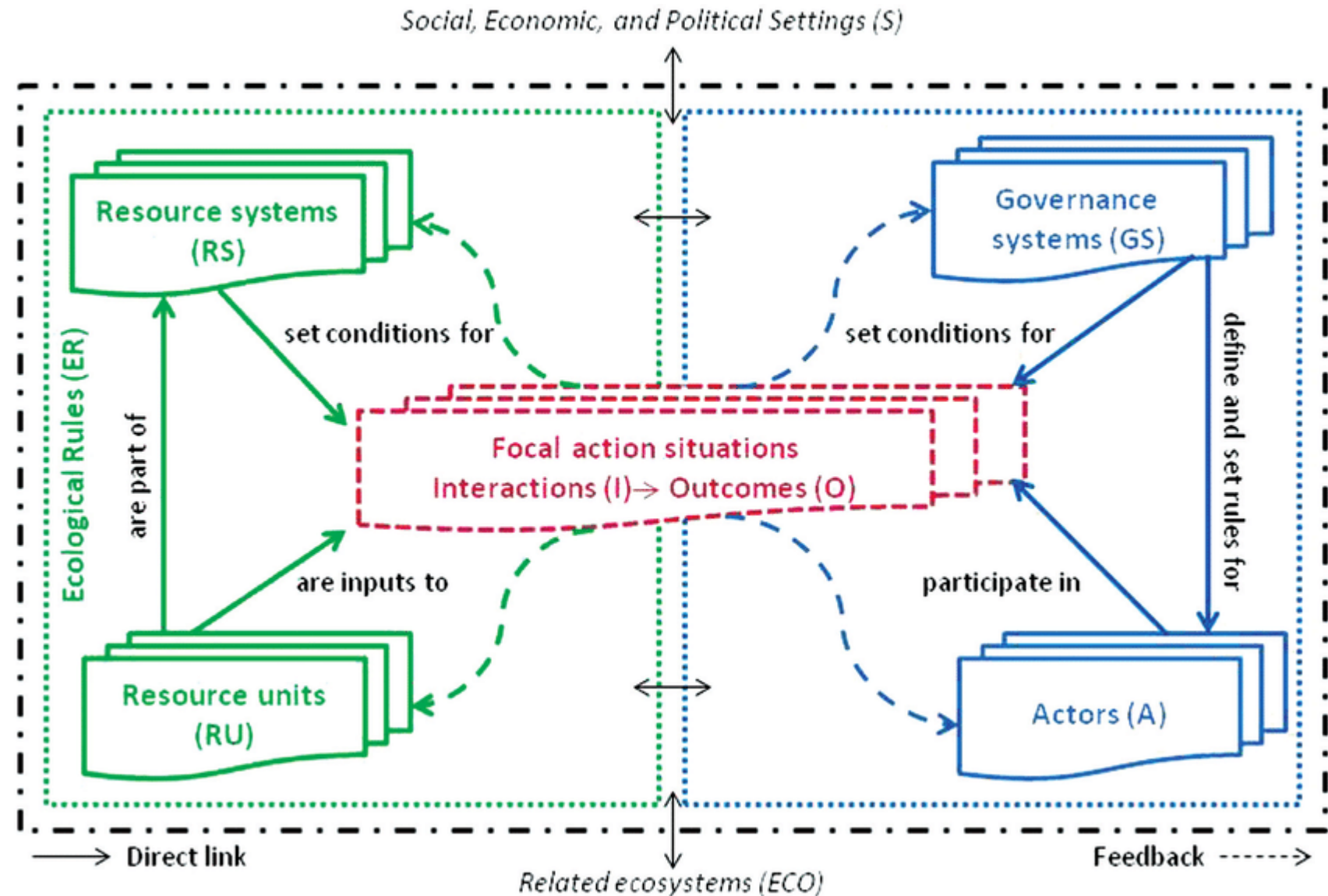
Nature-based solutions

- NBS is an **umbrella concept**
- European Commission (2021): nature-based solutions are “*Solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience*”
- NBS: solutions to protect, sustainably manage, and restore natural or modified ecosystems (IUCN 2020), or to create new ecosystems to enhance delivery of ecosystem services
- NBS may adopt solutions from nature to maximize benefits provided by nature (European Commission, 2015; Sowińska-Świerkosz and García, 2022).



Elinor Ostrom. 2009. A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science* **325**, 419-422 (2009). DOI: [10.1126/science.1172133](https://doi.org/10.1126/science.1172133)

- Biased governance
- Domination of social system over ecosystem
- Actors act often in self-fish way
- Resource system decline leading to biodiversity loss



- **Niche related application**
- Components of multispecies niche as action arena (red)
- Human behavior defined by actors, governance and enviornemntal resources
- Resulting outcomes explain biodiveirsty loss
- Niche as dynamic and co-constructed action arena
- How research projects can manipulate multispecies action arenas

Roles of science in niche co-construction

- **Loop 1. Determinism:** from science via governance / policy design to changed physical environment shaping niches and action arena for diverse multispecies actors
- **Loop 2. Engagement:** from science via co-creation to multispecies behavior to niche co-construction.
- **Loop 3. Emergent co-construction:** Science experimenting, informing and employing governance techniques shaping the action arena

Action situations

- For niche construction to affect evolution it must satisfy three criteria: 1) the organism must significantly modify environmental conditions, 2) these modifications must influence one or more selection pressures on a recipient organism, and 3) there must be an evolutionary response in at least one recipient population caused by the environmental modification
- Action arena co-construction: 1) the organism modifies action arena, 2) the changed action arena changes conditions for organisms' action, and 3) this causes behavioural change in multispecies groups.

ESG paper

- Intor
 - IPBES trans chnage
 - Govenrance and institutions imporant, and doination
 - We address these by discussing need for NBG inlcuding multispeciies actors as key parts of governance instead of passive recipients.
 - NBG as a new governance mode.
- Material & methdos
- Results:
 - Oriana & Ferninando: nature connectedness results: People feel part of nature..-> reciprocity
 - Vulnerability??
 - Seven emerging governance models:

- Ecological engineering as expectant, function and flourishing
- Governance design as rights and voice

Relational niches for multispecies stakeholders

- Niche as rightst
- Niche as functions
- Niche as opportunities to flourish
- Niche as agency and voice

- Niche as emergent potential (affordancing)
- Niche as predetermined functions and flourishing (Expectant).
- Cultural niche construction vs. evolutionary niche construction
- Governance niche construction: