Orienting Ecosystem Services and the diagnostic Social-Ecological Framework for holistic landscape research

Klara J. Winkler^{a,b} and Stefan Partelow^{b,c,d}

a University of Oldenburg b LUMES batch 16

c Leibniz Center for Tropical Marine Ecology (ZMT)
d Jacobs University

@kj_winkler, klara.johanna.winkler@uni-oldenburg.de

Think of your "home" land-/ seascape!



Landscape

A landscape is "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors."

(European Landscape Convention, 2000)



Ecosystem Services (ES)

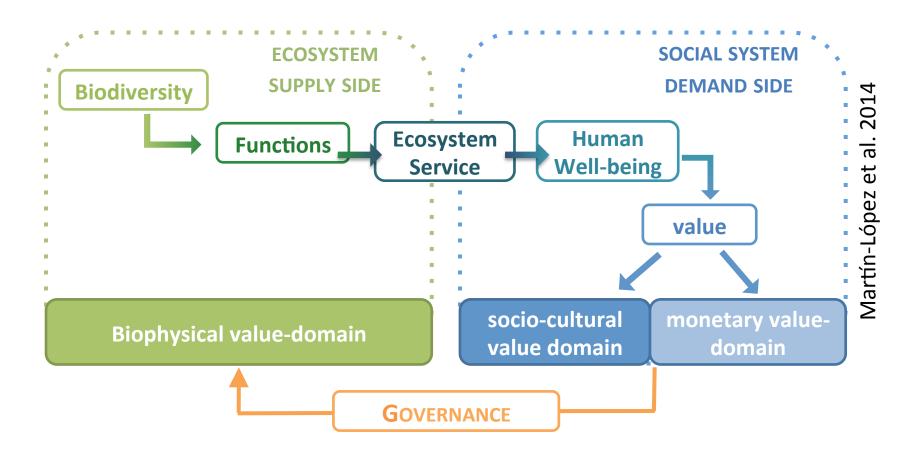
Ecosystem services are the benefits people obtain from ecosystems. (MEA, 2005)

"Firstly, ecosystem services are 'the verb of nature'. [...] They are what nature DOES. [...] what it does for people. [...] Ecosystem services are about thinking about the whole, not just the narrow bits [...]."

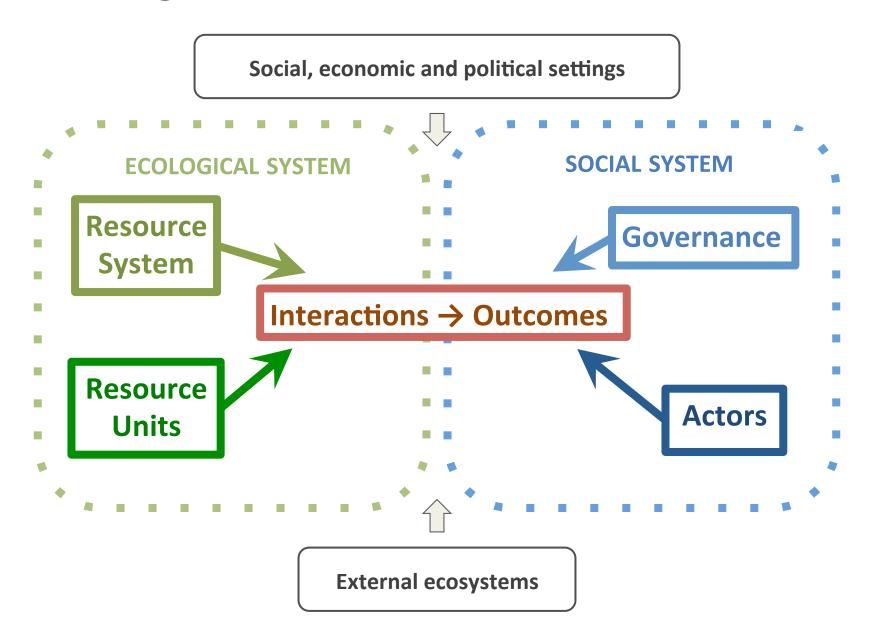
(Everard, 2015)

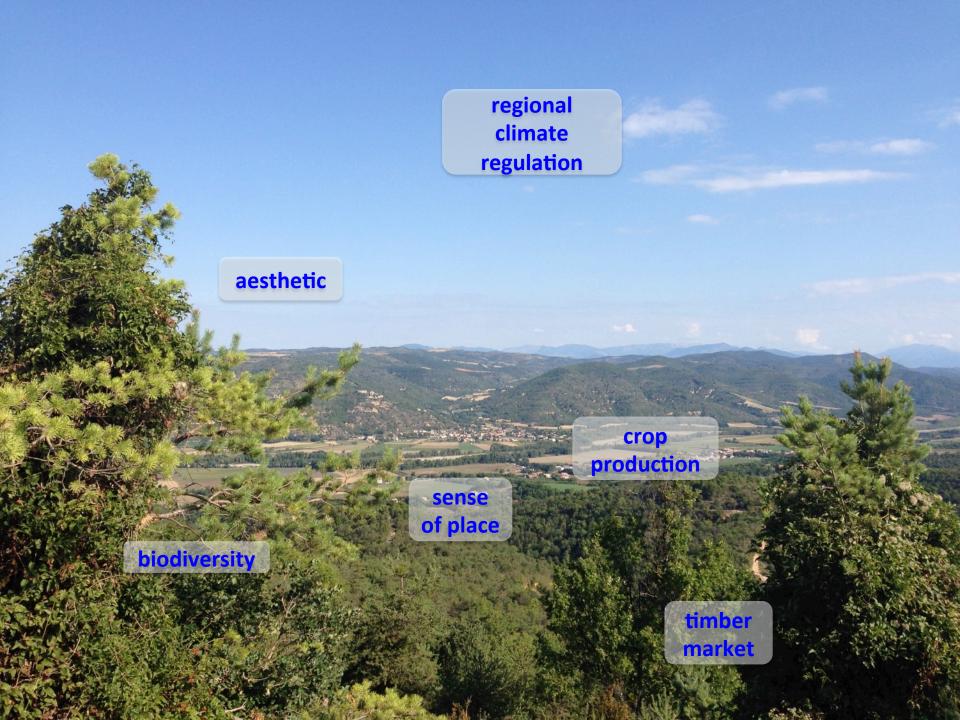


ES cascade

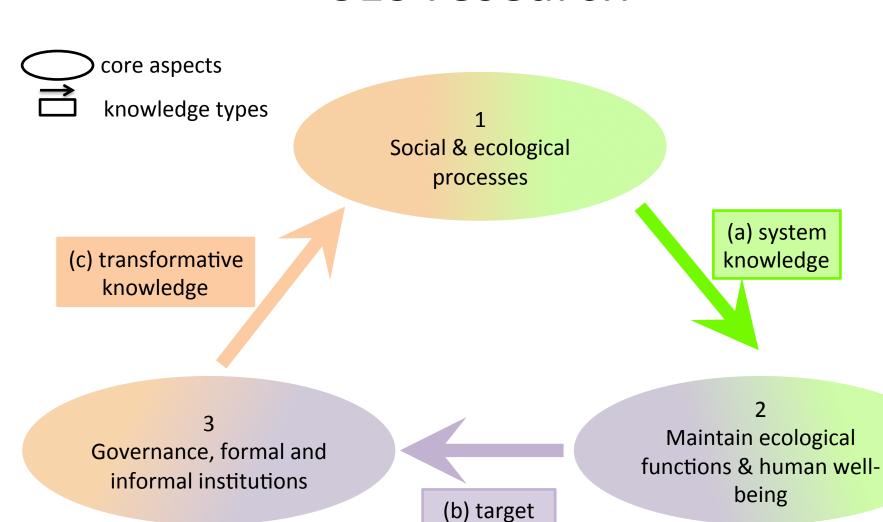


Diagnostic SES Framework (SESF)

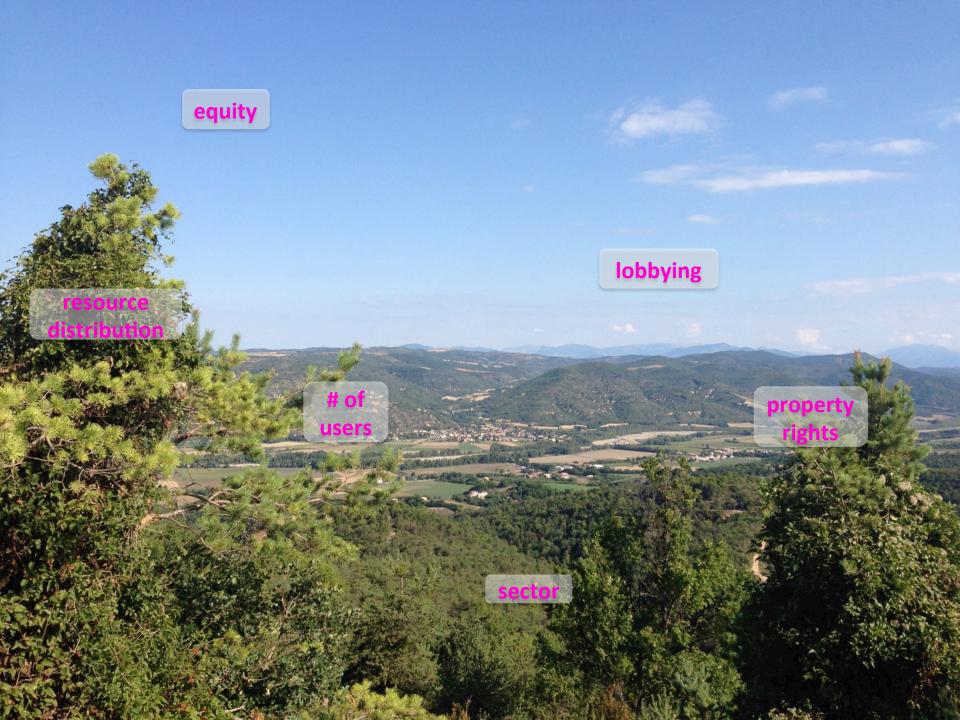




SES research



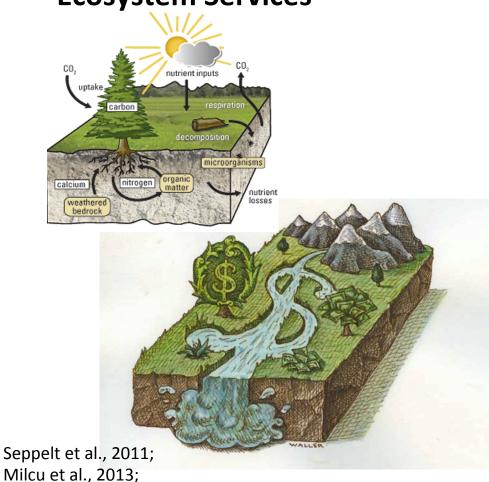
knowledge



System knowledge

Ecosystem Services

Luderitz et al., 2015



Diagnostic SES Framework

```
Social, Economic, and Political Settings (S)
          S1- Economic development. S2- Demographic trends. S3- Political stability.
     S4- Government settlement policies. S5- Market incentives. S6- Media organization.
           Resource System (RS)
                                                        Governance System (GS)
RS1- Sector (e.g., water, forests, pasture, fish) GS1- Government organizations
RS2- Clarity of system boundaries
                                               GS2- Non-government organizations
RS3- Size of resource system
                                               GS3- Network structure
                                               GS4- Property-rights systems
RS4- Human-constructed facilities
RS5- Productivity of system
                                               GS5- Operational rules
RS6- Equilibrium properties
                                               GS6- Collective-choice rules
RS7- Predictability of system dynamics
                                               GS7- Constitutional rules
RS8- Storage characteristics
                                               GS8- Monitoring & sanctioning processes
RS9- Location
            Resource Units (RU)
                                                                 Users (U)
RU1- Resource unit mobility
                                               U1- Number of users
RU2- Growth or replacement rate
                                               U2- Socioeconomic attributes of users
RU3- Interaction among resource units
                                               U3- History of use
RU4- Economic value
                                               U4- Location
RU5- Size
                                               U5- Leadership/entrepreneurship
                                               U6- Norms/social capital
RU6- Distinctive markings
RU7- Spatial & temporal distribution
                                               U7- Knowledge of SES/mental models
                                               U8- Dependence on resource
                                               U9- Technology used
                            Interactions (I)
                                              →Outcomes (O)
I1- Harvesting levels of diverse users
                                               01- Social performance measures
I2- Information sharing among users
                                                    (e.g., efficiency, equity, accountability)
13- Deliberation processes
                                               O2- Ecological performance measures
I4- Conflicts among users
                                                    (e.g., overharvested, resilience, diversity)
I5- Investment activities
                                               03- Externalities to other SESs
I6- Lobbying activities
```

Related Ecosystems (ECO)
ECO1- Climate patterns. ECO2- Pollution patterns. ECO3- Flows into and out of focal SES.

Ostrom, 2007

Target knowledge

Ecosystem Services

- cultural ES allow more subjective view on ES (Schröter et al., 2014; Daniel et al., 2012)
- socio-cultural valuation: assessment of individuals' perspectives (Scholte et al., 2015)



Diagnostic SES Framework

- emergent aspect: move beyond system knowledge production (Fischer et al., 2015)
- action situations: understand interactions and attributes of involved actors (McGinnies & Ostrom, 2014)

Transformative knowledge

Ecosystem Services

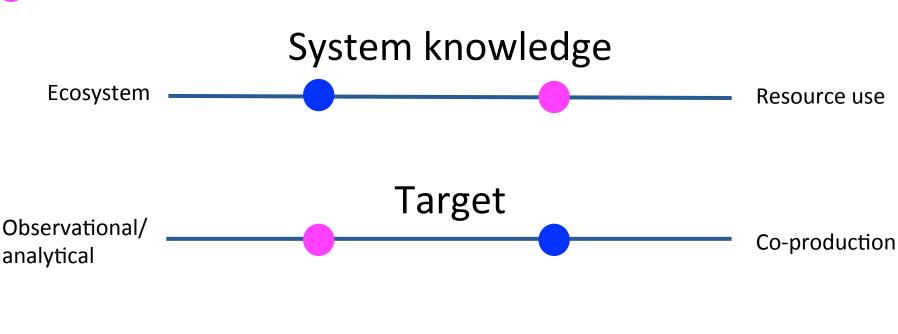


Diagnostic SES Framework



SES knowledge

- Ecosystem services
- SESF



Conceptual — Actionable

Transformative

Compatibility of ES and SESF I

- pure SESF or ES-based analysis would not capture the whole problem complex
- alleviate biases towards resource focus or danger of monetization
- linking epistemology (knowledge types) of both concepts through ontological structures ES & SESF)

Compatibility of ES and SESF II

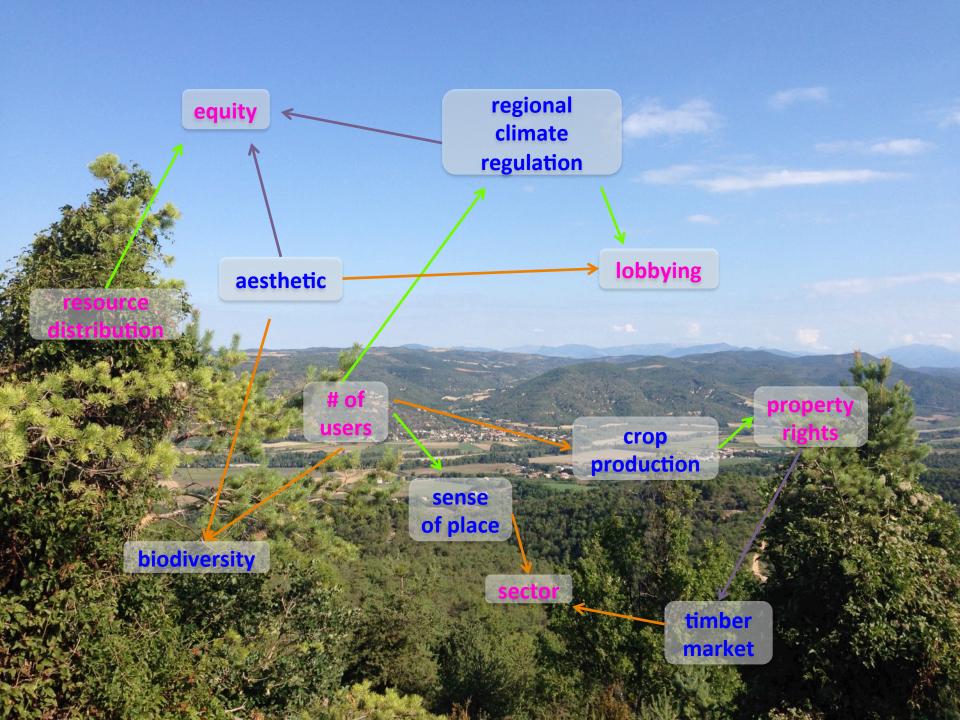
What ES can learn from SESF

- incorporate SES tier scheme
- analyze governance
 - services-to-ecosystems

What **SESF** can **learn from ES**

- broaden considered values: not only economic, but also biophysical & socio-cultural
- consider biodiversity & ecosystem functioning as fundamental basis for SES

What **ES** & **SESF** both can **improve** engage more with transformative knowledge application



THANK YOU!

Orienting Ecosystem Services and the diagnostic Social-Ecological Framework for holistic landscape research

Klara J. Winkler and Stefan Partelow

@kj_winkler klara.johanna.winkler@uni-oldenburg.de