Interlinking ecosystem services and Ostrom’s framework through orientation in sustainability research

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Outline

• Social-ecological systems
• ES cascade & diagnostic SES Framework
• SES research in sustainability science
• Interlinking ES and SESF
Social – ecological system thinking
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DPSIR
The Natural Step (TNS)
Earth Systems Analysis (ESA)
Ecosystem Services (ES)
Sustainable Livelihood Approach (SLA)

Management and Transition Framework

ECOSYSTEM SUPPLY SIDE

SOCIAL SYSTEM DEMAND SIDE

Human Environment Systems Framework (HES)
Material and Energy Flow Analysis (MEFA)
Vulnerability Framework (TVUL)

Social-Ecological Systems Framework (SESF)
Binder et al., 2013
Social – ecological system thinking

DPSIR

The Natural Step (TNS)

Earth Systems Analysis (ESA)

Ecosystem Services (ES)

Sustainable Livelihood Approach (SLA)

Management and Transition Framework

Ecological System Supply Side

Social System Demand Side

Human Environment Systems Framework (HES)

Material and Energy Flow Analysis (MEFA)

Vulnerability Framework (TVUL)

Social-Ecological Systems Framework (SESF)

Binder et al., 2013
Diagnostic SES Framework (SESF)

Social, economic and political settings

ECOLOGICAL SYSTEM
- Resource System
- Resource Units

SOCIAL SYSTEM
- Governance
- Actors

Interactions → Outcomes

External ecosystems

adapted from Ostrom, 2007
Diagnostic SES Framework (SESF)

Second-level variables under core subsystems for analyzing social-ecological systems (Ostrom, 2007)
Number of users

Sector: forest, agriculture

Governance organizations

Harvesting levels

economic value: price

Property right system

growth rate

Conflicts

SES Framework
- Resource System
- Resource Units
- Actors
- Governance
- Action Situation

Resource System

Resource Units

Actors

Governance

Action Situation
SES research in sustainability science

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Analyze & describe: SES processes
SES research in sustainability science
SES research in sustainability science

1. Analyze & describe: SES processes

2. Define & debate: Targets, visions, perspectives, trade-offs

System knowledge

Research
SES research in sustainability science

1. Analyze & describe: SES processes
   - Research
   - Deliberation

2. Define & debate: Targets, visions, perspectives, trade-offs

Target knowledge

System knowledge
SES research in sustainability science

1. Analyze & describe: SES processes

2. Define & debate: Targets, visions, perspectives, trade-offs

3. Operationalize: Policy, decision-making, communication, education

System knowledge
SES research in sustainability science
System knowledge

Ecosystem Services

- Understanding of ecosystem/supply side
- Assessment of ecosystem services (based on ES classification, e.g. CICES)

Diagnostic SES Framework

Description of:
- Resource system
- Resource units
- Governance
- Actors
Target knowledge

**Ecosystem Services**

- identification of perceived ES benefits
- adaptation of governance process through stakeholders’ perspectives

**Diagnostic SES Framework**

- Actors’ perspectives, goals & values
Transformative knowledge

Ecosystem Services

- Policy pathways, communication paths between actors

Diagnostic SES Framework

- Reconciling trade-offs between different goals & values
- Identification of governance pathways
- Education
SES knowledge
Compatibility of ES and SESF

What **ES** can **learn from SESF**
- incorporate standardized approach to social system
- specify social system & governance stage
  - services-to-ecosystems

What **SESF** can **learn from ES**
- expand on ecosystem functioning as fundamental basis for SES
- broaden value domains: not only economic, but also biophysical & socio-cultural

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

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References

