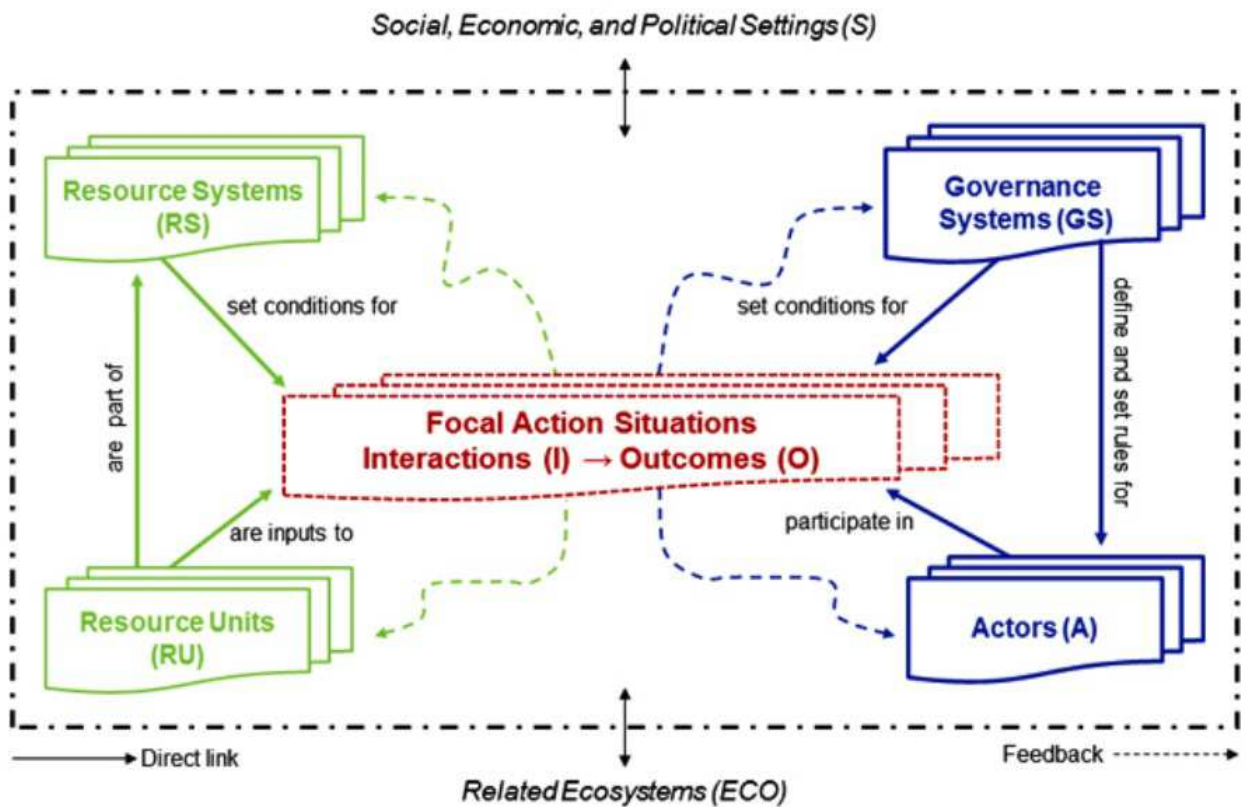


Appendix 1

Table A1.1 The SES framework with second-tier variables alternative structure for Governance Systems (GS) proposed by McGinnis & Ostrom (2014) in table format. Followed by the visualization of the conceptual interactions between first-tier variables (McGinnis & Ostrom, 2014).

Social, Economic, and Political Settings (S)	
S1- Economic development. S2- Demographic trends. S3- Political stability. S4- Other governance systems. S5- Markets. S6- Media organizations. S7- Technology.	
<p style="text-align: center;">Resource Systems (RS)</p> RS1- Sector (e.g., water, forests, pasture) RS2- Clarity of system boundaries RS3- Size of resource system RS4- Human-constructed facilities RS5- Productivity of system RS6- Equilibrium properties RS7- Predictability of system dynamics RS8- Storage characteristics RS9- Location	<p style="text-align: center;">Governance Systems (GS)</p> GS1- Policy area GS2- Geographic scale of governance GS3- Population GS4- Regime type GS5- Rule-making organizations GS5.1- Public sector GS5.2- Private sector (for profit) GS5.3- Non-governmental (non-profit) GS5.4- Community-based GS5.5- Hybrid GS6- Rules-in-use GS6.1- Operational choice rules GS6.2- Collective choice rules GS6.3- Constitutional rules GS7- Property-rights systems GS8- Repertoire of norms and strategies GS9- Network structure GS10- Historical continuity
<p style="text-align: center;">Resource Units (RU)</p> RU1- Resource unit mobility RU2- Growth or replacement rate RU3- Interaction among resource units RU4- Economic value RU5- Number of units RU6- Distinctive characteristics RU7- Spatial and temporal distribution	<p style="text-align: center;">Actors (A)</p> A1- Number of relevant actors A2- Socioeconomic attributes A3- History or past experiences A4- Location A5- Leadership/entrepreneurship A6- Norms (trust-reciprocity)/ social capital A7- Knowledge of SES/mental models A8- Importance of resource (dependence) A9- Technologies available
<p style="text-align: center;">Interactions (I)</p> I1- Harvesting I2- Information sharing I3- Deliberation processes I4- Conflicts I5- Investment activities I6- Lobbying activities I7- Self-organizing activities I8- Networking activities I9- Monitoring activities I10- Evaluative activities	<p style="text-align: center;">Outcomes (O)</p> O1- Social performance measures O2- Ecological performance measures O3- Externalities to other SESs
<p style="text-align: center;">Related Ecosystems (ECO)</p> ECO1- Climate patterns ECO2- Pollution patterns ECO3- Flows into and out of SES	

Figure A1.1 The SES framework first-tier variables in visual form (McGinnis & Ostrom, 2014).



McGinnis, M.D., and E. Ostrom. 2014. Social-Ecological System Framework: Initial Changes and Continuing Challenges. *Ecology and Society* 19 (2). <https://doi.org/10.5751/ES-06387-190230>