

Appendix 1

Table A1.1 Variables of the Social-Ecological Systems Framework (after Ostrom 2009) applied to common village pasture use

Variables	Definition of variables for common village pastures	Variables directly relevant for archetype...*		
		Tragedy of the Commons	Shifting the Burden	Success to the Successful
RS Resource systems	Pasture			
RS1 Sector (e.g., water, forests, pasture, fish)	Pasture			
RS2 Clarity of system boundaries	Administrative maps of pasture area			
RS3 Size of resource system	Size of pasture area	A	A	
RS4 Human-constructed facilities	Stables, water places on pastures			
RS5 Productivity of system	Pasture fodder production	A	A	
RS6 Equilibrium properties	Coefficient of variation of precipitation			
RS7 Predictability of system dynamics	Seasonality of fodder supply			
RS8 Storage characteristics	Seasonality, durability of grass			
RS9 Location	Altitude, distance of plots from village			A
RU Resource units	Fodder/Grass			
RU1 Resource unit mobility	N/A			
RU2 Growth or replacement rate	Fodder growth rate	A		
RU3 Interaction among resource units	Relative abundance of species, reforestation			A
RU4 Economic value	Profitability of livestock keeping			
RU5 Number of units	Fodder supply, potential stocking rate	A	A	
RU6 Distinctive markings	N/A			
RU7 Spatial and temporal distribution	Seasonality and spatial distribution of fodder supply			A
GS Governance system	Common use			
GS1 Government organizations	Administrations relevant for village pastures	S		
GS2 Nongovernment organizations	N/A			
GS3 Network structure	Neighborhoods, informal networks			
GS4 Property-rights systems	Property rights for pasture resource	S		S
GS5 Operational rules	Rules on grazing and stocking	A, S	S	
GS6 Collective-choice rules	Rules on self-organization in villages			
GS7 Constitutional rules	Rules for self-administration			
GS8 Monitoring and sanctioning processes	Pasture monitoring			S
U Users	Farm-Households and other livestock keepers			
U1 Number of users	Households, livestock	A	A	
U2 Socioeconomic attributes of users	Socio-economic information on households	A	A	
U3 History of use	Changes in land use in post-socialist transition period			
U4 Location	Village of origin of pasture users		S	
U5 Leadership/entrepreneurship	Leadership with regard to pasture use	S		
U6 Norms/social capital	Social capital with regard to pasture use			
U7 Knowledge of SES/mental models	Knowledge on pasture condition	A		S
U8 Importance of resource	Importance of pasture use for livelihoods	A	A	
U9 Technology used	Livestock management			A
I Interactions	Pasture access, management and cooperation			

I1 Harvesting levels of diverse users	Livestock possession per household, mobility			
I2 Information sharing among users	Communication	S	S	S
I3 Deliberation processes	N/A			
I4 Conflicts among users	Conflicts on pasture access and use		S	
I5 Investment activities	Investment in livestock			
I6 Lobbying activities	Influence of villagers on administrations			S
I7 Self-organizing activities	Self-organization in pasture use, rule design on pasture use in villages			S
I8 Networking activities	N/A			
O Outcomes	Sustainability of pasture use			
O1 Social performance measures (e.g., efficiency, equity, accountability, sustainability)	Levels of cooperation			
	Farm performance	A		
	Equity measures			
O2 Ecological performance measures (e.g., overharvested, resilience, biodiversity, sustainability)	Pasture condition according to ecological investigations	A		A
	Pasture condition in the view of pasture users	A	A	A
O3 Externalities to other SESs	Levels of mobile livestock keeping			
S Social, economic and political settings	Background of Caucasus countries			
S1 Economic development	Economic development in Azerbaijan and Georgia in post-socialist transition	A		
S2 Demographic trends	Population and livestock number development in Azerbaijan and Georgia	A		
S3 Political stability	Political systems			
S4 Other governance systems	Background of post-socialist transition			
S5 Markets	Markets for livestock products			
S6 Media organizations	N/A			
S7 Technology	N/A			
ECO Related Ecosystems	Other pasture resources			
ECO1 Climate patterns	Climate in case study villages			
ECO2 Pollution patterns	N/A			
ECO3 – Flows into and out of focal SES	Other pasture resources on regional level		A	

*: A: directly relevant for archetype, S: directly relevant for solution of the archetype