

## Appendix 1

Table A1.1. Codes used for qualitative analysis of environmental knowledge and drivers of environmental change. Groundedness indicates how many times each code was applied throughout all interviews, and density indicates the frequency with which they co-occurred with other codes. Personal observations were often implied throughout interviews, but this code was only applied to explicit references to personal observations of phenomena. “Cosmological” explanations are related to the resource management family of codes because of the way that they causally link human behavior and environmental conditions.

Code	Groundedness	Co-occurring codes (density)
<b>CLIMATE</b>		
Rain	83	Meadows (31), Wetlands (17), Livestock (15), Traditional knowledge (13), Snow (9), Lichen (7), Toxic plants (6), Temperature (5), Lake (4), Learning (4), Weather (4), Mountains (2), Personal observation (2), Shrubs (2), Soil (2), Fences (1), Teaching (1)
Snow (mostly severe snowstorms)	66	Mobility (27), Livestock (24), Meadows (14), Traditional knowledge (12), Rain (9), Wetlands (7), Weather (6), Learning (2), Personal observation (2), Fences (1), Teaching (1), Temperature (1), Toxic plants (1), Village leaders (1)
Temperature	25	Mountains (14), Lake (9), Rain (5), Traditional knowledge (4), Personal observation (3), Learning (2), Livestock (2), Meadows (2), Snow (1), Wetlands (1)
Weather	109	Meadows (56), Livestock (24), Wetlands (18), Men (9), Traditional knowledge (9), Snow (6), Rain (4), Shrubs (4), Toxic plants (4), Fences (3), Conflict (2), Learning (2), Mobility (2), Mountains (2), Village leaders (2), Women (2), Lake (1), Lichen (1), Teaching (1)
<b>ECOSYSTEM</b>		
Ice	3	Lake (3)
Lake	49	Mountains (10), Temperature (9), Rain (4), Wetlands (4), Ice (3), Meadows (3), Cosmology (2), Livestock (2), Personal observation (2), Mobility (1), Village leaders (1), Weather (1)
Mountains (“snow mountains”)	34	Temperature (14), Lake (10), Personal observation (3), Rain (2), Weather (2), Cosmology (1), Meadows (1)
Wetlands	88	Learning (26), Meadows (24), Livestock (18), Weather (18), Rain (17), Fences (10), Personal observation (7), Snow (7), Lake (4), Conflict (3), Mobility (3), Toxic plants (3), Village leaders (3), Cosmology (2), Soil (2), Lichen (1), Traditional knowledge (1), Temperature (1)

Meadows	152	Weather (56), Livestock (42), Rain (31), Learning (25), Wetlands (24), Fences (16), Snow (14), Mobility (10), Personal observation (10), Men (9), Conflict (4), Lichen (4), Traditional knowledge (4), Lake (3), Soil (3), Toxic plants (3), Temperature (2), Village leaders (2), Women (2), Cosmology (1), Mountains (1), Shrubs (1)
Toxic plants ( <i>Oxytropis</i> )	52	Learning (20), Livestock (13), Rain (6), Personal observation (4), Weather (4), Meadows (3), Wetlands (3), Mobility (1), Snow (1), Traditional knowledge (1)
Lichen	12	Rain (7), Meadows (4), Cosmology (1), Livestock (1), Soil (1), Weather (1), Wetlands (1)
Shrubs	10	Weather (4), Rain (2), Learning (1), Meadows (1), Personal observation (1)
Soil	3	Livestock (3), Meadows (3), Rain (2), Wetlands (2), Cosmology (1), Learning (1), Lichen (1), Traditional knowledge (1)
<b>RESOURCE MANAGEMENT</b>		
Conflict	19	Fences (19), Livestock (9), Mobility (5), Meadows (4), Wetland (3), Weather (2)
Fences	69	Livestock (36), Mobility (23), Conflict (19), Meadow (15), Wetlands (10), Weather (3), Village leaders (2), Traditional knowledge (1), Learning (1), Rain (1), Snow (1)
Livestock	169	Meadows (42), Fences (36), Mobility (31), Snow (24), Weather (24), Wetlands (18), Rain (15), Toxic plants (13), Women (11), Conflict (9), Men (9), Village leaders (8), Learning (6), Traditional knowledge (5), Personal observation (4), Cosmology (3), Soil (3), Lake (2), Temperature (2), Lichen (1)
Mobility	75	Livestock (31), Snow (27), Fences (23), Meadow (10), Conflict (5), Traditional knowledge (4), Village leaders (4), Wetlands (3), Learning (2), Weather (2), Lake (1), Toxic plants (1)
Village leaders	24	Livestock (8), Mobility (4), Wetlands (3), Fences (2), Traditional knowledge (1), Lake (1), Meadows (2), Weather (2), Snow (1)
Cosmology	6	Livestock (3), Lake (2), Wetlands (2), Learning (1), Lichen (1), Meadows (1), Mountains (1), Personal observation (1), Soil (1), Traditional knowledge (1)
<b>KNOWLEDGE</b>		
Formal education	17	Traditional knowledge (2), Learning (1), Personal observation (1), Teaching (2), Women (1)

Traditional knowledge	46	Learning (16), Rain (13), Snow (12), Weather (9), Livestock (5), Meadows (4), Mobility (4), Teaching (4), Temperature (4), Personal observation (3), Formal education (2), Cosmology (1), Fences (1), Men (1), Soil (1), Toxic plants (1), Village leaders (1), Wetlands (1), Women (1)
Learning from others	55	Wetlands (26), Meadows (25), Toxic plants (20), Traditional knowledge (16), Livestock (6), Personal observation (6), Teaching (6), Rain (4), Formal education (2), Mobility (2), Snow (2), Temperature (2), Weather (2), Cosmology (1), Fences (1), Shrubs (1), Soil (1)
Teaching others	10	Learning (5), Traditional knowledge (4), Personal observation (3), Meadows (2), Weather (2), Formal education (1), Livestock (1), Men (1), Rain (1), Snow (1), Toxic plants (1), Wetlands (1), Women (1)
Personal observation	22	Meadows (11), Wetlands (7), Learning (6), Livestock (5), Toxic plants (4), Mountains (3), Teaching (3), Temperature (3), Traditional knowledge (3), Lake (2), Rain (2), Snow (2), Cosmology (1), Formal education (1), Shrubs (1), Men (1), Weather (1), Women (1)
Men	13	Livestock (9), Meadows (9), Weather (9), Women (2), Formal education (1), Personal observation (1), Traditional knowledge (1), Teaching (1)
Women	19	Livestock (11), Meadows (2), Weather (2), Men (2), Formal education (1), Personal observation (1), Traditional knowledge (1), Teaching (1)

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