Appendix 9. Results from coded variables

0. Bibliographic coverage

Publication type	No.	% of case studies
Journals	40	95.2
Reports	1	2.4
Unpublished manuscripts	1	2.4

Publication or journal title

	No.	% of case studies
Ecology and Society	10	23.8
Land Use Policy	4	9.5
Mountain Research and Development	4	9.5
Ecosystems	2	4.8
Journal of Environmental Management	2	4.8
Landscape and Urban Planning	2	4.8
Environmental Modeling and Software	1	2.4
Environmental Science and Policy	1	2.4
Forest Policy and Economics	1	2.4
Human Organization	1	2.4
ICIMOD	1	2.4
iForest-Biogeosciences and Forestry	1	2.4
Journal of Rural Studies	1	2.4
Procedia Environmental Sciences	1	2.4
Proceedings of the National Academy of Sciences of the USA	1	2.4
Progress in Physical Geography	1	2.4
Regional Environmental Change	1	2.4
Simulation and Gaming	1	2.4
Small-scale Forestry	1	2.4
Sustainability Science	1	2.4
Technological Forecasting and Social Change	1	2.4
The Rangeland Journal	1	2.4
USAID	1	2.4
Virtual Reality	1	2.4

Publisher

	No.	% of case studies
Resilience Alliance	9	21.4
Elsevier Sci Ltd	7	16.7
Springer	5	11.9
International Mountain Society	4	9.5
Elsevier Sci BV	4	9.5
Sage Publications	1	2.4
Sage Publications Inc.	1	2.4
Science Direct	1	2.4
SISEF-Italian Society of Silviculture and Forest Ecology	1	2.4
Society for Applied Anthropology	1	2.4
ICIMOD	1	2.4

Springer Japan KK	1	2.4
Springer London-Ltd	1	2.4
CSIRO	1	2.4
USAID	1	2.4
National Academy of Sciences	1	2.4
Pergamon-Elsevier Science Ltd	1	2.4

Open access journal articles

No	23	57.5
Yes	17	42.5

1. Initial assessment
Scenario purpose

Understanding	33	78.57
Decision support	19	45.24
Prediction	13	30.95
Learning	5	11.9
Communication	4	9.5

Goal

Exploratory	25	59.5
Pre-policy	10	23.8
Both	6	14.3
Not stated	1	2.4

Function

Process	20	47.6
Both	13	31.0
Product	9	21.4

Method(s) of initial assessment

Building on long-term research collaborations	18	42.9
Key stakeholder interviews	17	40.5
Literature review	8	19.0
Focus groups	6	14.3
Workshops	3	7.1
Field visits	1	2.4

Information given to participants beforehand

Not stated	22	52.4
Yes	18	42.9
No	2	4.8

2. Define system boundaries
Publication year

2017	6	14.3

2016	5	11.9
2015	7	16.7
2014	1	2.4
2013	6	14.3
2012	1	2.4
2011	4	9.5
2010	4	9.5
2009	1	2.4
2008	4	9.5
2007	2	4.8
2006	1	2.4

Baseline year

2015	4	9.5
2014	4	9.5
2013	3	7.1
2012	1	2.4
2011	2	4.8
2010	9	21.4
2009	2	4.8
2008	2	4.8
2007	1	2.4
2006	2	4.8
2005	4	9.5
2003	4	9.5
2000	2	4.8
Not stated	2	4.8

Midterm year

2040	1	2.4
2030	2	4.8
2025	2	4.8
2015	1	2.4
2011	1	2.4
2010	1	2.4
Not stated	34	81.0

Target year

2100	1	2.4
2080	1	2.4
2060	2	4.8
2050	12	28.6
2045	1	2.4
2044	1	2.4
2040	3	7.1
2035	3	7.1

2032	1	2.9
2030	9	21.4
2026	1	2.4
2025	1	2.4
2023	1	2.4
2020	2	4.8
Not stated	3	7.1

Primary region

Europe	23	54.8
Asia	8	19.0
Africa	5	11.9
North America	4	9.5
Oceania	2	4.8
South America	0	0.0

Country study sites (n =127)

Tanzania	17	13.4
Spain	9	7.1
Slovakia	7	5.5
Norway	6	4.7
Switzerland	6	4.7
Greece	5	3.9
Italy	5	3.9
UK	5	3.9
USA	5	3.9
Austria	4	3.2
Bulgaria	4	3.2
China	4	3.2
France	4	3.2
Czech Republic	3	2.4
Finland	3	2.4
Germany	3	2.4
Sweden	3	2.4
Thailand	3	2.4
Ukraine	3	2.4
Slovenia	2	1.6
Australia	2	1.6
Laos	2	1.6
Myanmar	2	1.6
Nepal	2	1.6
Portugal	2	1.6
Romania	2	1.6
Russia	2	1.6
Afghanistan	1	0.8
Bangladesh	1	0.8
Bhutan	1	0.8

Cambodia	1	0.8
Iceland	1	0.8
India	1	0.8
Ireland	1	0.8
Mongolia	1	0.8
Pakistan	1	0.8
Serbia	1	0.8
South Africa	1	0.8
Vietnam	1	0.8
Landscape delineated by watershed	11	26.2

Spatial scale

Regional	9	21.4
Multi-scale	8	19.0
Farm, village or community	6	14.3
International	5	11.9
District	4	9.5
National	4	9.5
Landscape delineated by terrestrial area (e.g., national park)	3	7.1

Define geographic boundaries

Determined by political/administrative units (e.g., district)	19	45.2
Determined by natural features (e.g., forest, mountain)	12	28.6
Determined by both	9	21.4
Determined by neither - selected for research	2	4.8

Elevation minimum (meters above sea level – m.a.s.l. defined by study or stated mountain range)

2500-2999	1	2.6
2000-2499	1	2.6
1500-1999	3	7.7
1000-1499	4	10.3
500-999	16	41.0
0-499	14	35.9

Elevation maximum (m a.s.l.)

8000-8999	2	4.4
7000-7999	0	0.0
6000-6999	0	0.0
5000-5999	5	11.1
4000-4999	4	8.9
3000-3999	7	15.6
2000-2999	13	28.9
1000-1999	7	15.6
0-999	7	15.6

Climate

Temperate	22	52.4
Dry land or semi-arid	8	19.0
Tropical or sub-tropical	7	16.7
Multiple	6	14.3
Alpine, inner-alpine, cold continental or subarctic climate	5	11.9

Biome(s)

Grasslands, shrub lands, savannah	21	50.0
Forested protected	14	33.3
Various	12	28.6
Forested unprotected	11	26.2
Peri-urban or urban	5	11.9
Tundra	3	7.1

Land use(s)

Tourism / recreation	21	50.0
Agropastoral	18	42.9
Timber / logging	14	33.3
Pastoral	11	26.2
Crops	9	21.4
Non-timber forest products	7	16.7
Residential (incl. business)	4	9.5

Main livelihood(s)

Small scale and commercial agriculture	24	57.1
Service sector (incl. trade and tourism)	23	54.8
Private sector or resources industries	21	50.0
Pastoralism	3	7.1
Administration	1	2.4

Socio-demographic profile

Stated	34	81.0
Not stated	8	19.0

Main subject

Issue-based	31	73.8
Area-based	6	14.3
Institution-based	3	7.1
Institution- and area-based	1	2.4
Issue- and area-based	1	2.4

Main theme

Governance arrangement change, policies presses/pulses	42	100.0
Land use change	39	92.9
Markets, income and employment	39	92.9

Maintenance of cultural and/or biological diversity	34	81.0
Biodiversity loss	33	78.6
Demographic change (in/outmigration)	33	78.6
Tourism and recreation	31	73.8
Technological or infrastructure change (incl. transportation)	30	71.4
Climate change	28	66.7
Freshwater use	27	64.3
Land tenure change	23	54.8
Food security	20	47.6
Education	19	45.3
Energy	18	42.9
Timber	18	42.9
Forage	17	40.5
Natural hazards (incl. landslide/avalanche/floods)	17	40.5
Fire	15	35.7
Biological invasions and pest outbreaks	14	33.3
Social equity and voice	11	26.2
Healthcare	10	23.8
Minerals	8	19.1
Chemical pollution	6	14.3
Glacier melt	6	14.3
Non-timber forest products	3	7.1
Global P and N cycles	2	4.8
Gender equality	2	4.8
Ocean acidification	0	0.0
Stratospheric ozone depletion	0	0.0
Atmospheric aerosol loading	0	0.0
Sanitation	0	0.0
Permafrost thaw	0	0.0
Medicinal resources	0	0.0

Number of participants

Not reported	14	33.3
120-240	3	7.1
71-80	3	7.1
61-70	2	4.8
51-60	3	7.1
41-50	0	0.0
31-40	1	2.4
21-30	4	9.5
11-20	11	26.2
<10	0	0.0

Types of stakeholder(s)

Government offices	24	57.1
Resource users	22	52.4

Conservation groups, park authorities or NGOs	20	47.6
Private sector	13	31.0
Municipal councils, community or indigenous organizations	14	33.3
Research institutes	9	21.4
Not stated	5	11.9
Bilateral or multilateral institutions	0	0

Diversity of stakeholders (i.e., number of types)

One	5	11.9
Two	8	19.0
Three	10	23.8
Four	6	14.3
Five	4	9.5
Six	1	2.4
Seven	1	2.4
Eight	1	2.4
Nine	0	0.0
Ten	1	2.4
Not stated	5	11.9

Duration of stakeholder engagement

> 1 year	20	47.6
1 - 4 years	10	23.8
Not stated	9	21.4
< 1 year	2	4.8
> 10 years	1	2.4

Scenario process embedded into a larger research program

Yes	17	40.5
Not stated	14	33.3
No	11	26.2

3. Envision futures

See forthcoming publication

4. Identify drivers of change
Method(s) of data collection

Workshops	14	33.3
In depth interviews	12	28.6
Defined in the project scope	11	26.2
Focus groups	9	21.4
Literature review	7	16.7
Storylines	5	11.9
Not stated	4	9.5
Surveys	3	7.1

Field visits	1	2.4
Role-playing games	1	2.4
Land use mapping analysis	1	2.4

Rank drivers

No	26	61.9
Yes	16	38.1

Address synergies

No	25	59.5
Yes	17	40.5

Address trade-offs

No	25	59.5
Yes	17	40.5

5. Construct scenario storylines
Number of scenarios created

Four	16	38.1
Three	13	31.0
Two	7	16.7
Six	3	7.1
One	2	4.8
Five	1	2.4

Data type

Both	20	47.6
Qualitative	14	33.3
Quantitative	7	16.7
Semi-quantitative	1	2.4

Forecasting or backcasting

Forecasting	38	90.5
Backcasting	2	4.8
Both	2	4.8

Method(s) of developing the scenarios

Participatory stakeholder workshops	27	64.3
Desk research incl. literature review and computer simulations	21	50.0
Stakeholder and expert in-depth interviews	17	40.5
Focus group discussion	10	23.8
Building on previously existing scenarios	2	4.8
Role-playing games	2	4.8

Global, place-based or hybrid scenarios

Place-based scenarios	24	57.1

Both	13	31.0
Global or regional scenarios	5	11.9

Number of workshops

None	5	11.9
One	11	26.2
Two	6	14.3
Three	10	23.8
Four	0	0.0
Five	2	4.8
Six	3	7.1
Seven	1	2.4
Eight	2	4.8
NA	3	7.1

6. Quantify scenarios
Quantify scenarios

No	35	88.3
Yes	7	16.7

Method of data analysis

Semi-quantitative model (e.g., criteria cluster analysis of heterogenous rank data)	17	40.5
Participant surveys	12	28.6
Geospatial Information Systems	11	26.2
Situational and narrative analysis	4	9.5
Qualitative coding	3	7.1
General linear models, Markov, stepwise discriminant analysis	3	7.1
Multi-Agent Systems	2	4.8
InVEST 3.2 scenario generator	1	2.4
Vensim software	1	2.4
Network analysis	1	2.4
Qualitative content analysis of recorded discussions	1	2.4
Economic valuation	1	2.4
Graphical timeline	1	2.4
Non-parametric tests	1	2.4
Causal loop diagram	1	2.4

Inform other models

Not used for other models	23	54.8
Agent-based models	7	16.7
Other models	5	11.9
Debris flow, mass balance or hydrological models	4	9.5
Bayesian models or dynamical models	3	7.1

7. Consistency and plausibility analysis

Test for plausibility

No	28	66.7
Yes	14	33.3

Test for consistency

No	34	81.0
Yes	8	19.0

Uncertainty explicitly addressed

Agree	13	31.0
Disagree	10	23.8
Neutral	7	16.7
Strongly disagree	7	16.7
NA	3	7.1
Strongly agree	2	4.8

8. Co-communication of PSP process and results
Dissemination

Yes	22	52.4
Not stated	19	45.2
No	1	2.4

Adaptation pathways

Yes	37	88.1
No	5	11.9

Maladaptation pathways

No	36	85.7
Yes	8	19.1

Outreach material

Scientific publication	36	85.7
Report	12	28.6
Drawings / illustrations	8	19.0
Maps	7	16.7
Posters	3	7.1
Videos	2	4.8
Photographs	2	4.8
Recordings	1	2.4
Meetings	1	2.4

Tools

Combination of tools	17	40.5
Knowledge representation diagrams (i.e., represent system entity, processes and interactions)	15	35.7

Spatial representation tools (e.g., hand-drawn maps, ArcGIS maps, or three-dimensional landscape visualizations)	14	33.3
Storylines / narratives	7	16.7
Simulation tools	7	16.7

Target audience

Stakeholders involved	19	45.2
Scientific audiences	18	42.9
Not stated	10	23.8
External public incl. private sector	9	21.4
Subnational / national decision makers	2	4.8

9. Monitoring and evaluation of process and outcomes

Monitoring

No	41	97.6
Yes	1	2.4

Duration of monitoring

Not stated	41	97.6
One year	1	2.4

Reason for not monitoring

Not stated	40	95.2
Time or financial constraints	2	4.9

Evaluation

No	25	59.5
Yes	15	35.7

Method(s) of evaluation

NA	24	57.1
Focus group discussion(s)	6	14.3
Interviews	5	11.9
Surveys	4	9.5
Not stated	4	9.5
Qualitative, self-reflexive assessment by participants	2	4.8
Expert meeting to investigate possibilities of implementation	1	2.4
Secondary information	1	2.4
Observation	1	2.4

Reason for evaluation

NA	25	59.5
Assess usefulness of process	9	21.4
Provide feedback	5	11.9
Not stated	2	4.8
Assess social connection created	1	2.4
Determine steps going forward	1	2.4

Assess degree of learning		2.4
Assess framings, generalizations, rhetoric of paradigms		2.4

Who defined the boundaries and scale of the research?

Researchers	22	52.4
Researchers, literature	9	21.4
Stakeholders	6	14.3
Stakeholders, researchers	4	9.5
Stakeholders, researchers and literature	1	2.4

Evidence of outcomes in the short-and long-term

Yes	21	50.0
No	21	50.0

Inform future research

No	39	92.9
Yes	3	7.1