

Appendix 1. Variables explored in all case studies.

Features	Variables	Description
0. Case details	Case study / Title	Please give a title to your case study.
	Contributed by	Name of person(s) who filled out this survey?
	Role of contributor	What role did the person(s) who filled out this survey have in the process?
	Reference(s)	DOI or URL of any documentation of the scenarios.
1. Context and case identity	Location	Country + area/state/region, village/city/municipality/community.
	Scale	At which scale were the scenarios created (e.g., local community, municipality, watershed, regional)? Did you explicitly include processes at multiple scales?
	Definition of scale and boundaries	How were scales and boundaries of system defined? Who defined them?
	Ecological context	Please indicate what is the ecoregion according to Olson, et al. 2001. Terrestrial Ecoregions of the world: a new map of life on Earth. Bioscience 51(11):933-938. What are the main ecosystems present in the SES? Is it included or are there protected areas? If so please indicate name and type of protection.
	Governance/ Institutional context	What are the most relevant institutions operating in the SES? (e.g. community council, community non-paid activities, guerrilla and/or paramilitaries, municipality, watershed management institution, regional government, National Park, NGOs, European Common Agricultural Policy, mining/fishery/timber/meat market, REDD+/PES schemes, etc.). This might be extremely complex but we do not seek for a detailed institutional description of the

SES, therefore please refer to the most relevant institutions within the future scenario context in the study area, taking into account this information is meant to be useful mostly to discuss which kind of approaches might be useful in which institutional contexts.

Socio-economic context	What are the main livelihoods/economic sectors in the SES?
Focus of the scenario planning	Was there a specific focus in the scenario planning? (e.g. Water management, transhumance, biodiversity conservation, problems/challenges, etc.). Distinguish between issue-based, area-based, and institution-based (van Noten et al. (20013).
Main stakeholders in the SES	What are the main stakeholders in the SES? Please specify from local/internal (e.g. the commoners, the mayor, the priest, the president of the shepherds association, the intermediaries buying the meat/timber, etc.) to external and/or global scales (e.g. external logging and mining companies, an international development cooperation agency)?
Definition of main stakeholders in the SES	How where these stakeholders identified and by whom?
Project context (Research/Action)	Was the scenario planning embedded on a wider project or a project on itself? What were the aims of the wider project? (e.g. to evaluate the ES provided by the social-ecological network related to the practice of transhumance, to identify sustainable community-based governance models for the management of natural resources, etc.) How long did the whole project last?
Resource for scenario planning	To what extent did PSP count on human and financial resources? Extensive (more than 50.000 euro, more than two people hired, more than one year) or limited (less than 50.000 euros, less than two people

hired, less than one year).

	Year	When were the scenarios created?
2. Objectives	General objective	What were the overall objectives of the project/process? Please describe. Identify as: descriptive and/or normative, exploratory and/or pre-policy, process and/or product (van Notten, 2005).
	Specific objectives	What objectives had the research team in mind? E.g. scenarios were used to get people to think about relationships and possible future they haven't been including in decisions, to evaluate the robustness of alternative policies across different futures, to give policy insights, etc. What objectives had the stakeholders? Was there any process to build shared objectives?
	Motivation for choosing participatory scenario planning tool?	Why were scenarios chosen to be applied in this case?
3. Methodological approach	Background information sources	How was background information (e.g. interviews, data bases, surveys... that support the scenario creation) obtained (sources and processes)? How was it used? What was the main reason for obtaining background information?
	Background information use	How did this information support the scenario planning? How was it integrated into the scenarios? (e.g. the drivers of change identified in previous interviews and surveys were used by the research team to select the 3/4 guidelines of each scenario, data about impact of climate change in the area was used as guidelines for scenarios,...). What motivated this choices? How long did it take from "data collection" to final scenario created?
	Guidelines or	Did the team base the process on previous

examples used by team	processes or published guidelines? Where did they get inspiration from? Please add references if possible/necessary. What motivated this choice?
Process for the identification of drivers of change	E.g. Surveys, workshop, data bases, experts, research team, etc. (non exclusive). What motivated this choice?
Use of the drivers of change to create the scenarios	How were the drivers identified used? What motivated this choice?
Number of drivers of change identified	How many drivers of change were identified? Were they ranked (e.g. according to their relevance, to the probability that they affect the SES, to the vulnerability of the SES to them, etc.)
Specific drivers of change identified	Please specify (direct and indirect). A direct driver unequivocally influences ecosystem processes. Important direct drivers include climate change, pollution, overexploitation, land conversion leading to habitat change, overexploitation, and invasive species and diseases. An indirect driver operates more diffusely, by altering one or more direct drivers. Important indirect drivers are changes in population/demography, economic activities, socio-political, scientific and technological, and cultural and religious factors (Millennium Ecosystem Assessment definitions).
Type of scenario design	E.g. A priori, driven by participants, with a modelling component, mixed approaches, etc. What motivated this choice?
Criteria for prioritization of drivers of change as guidelines for scenarios	E.g. Vulnerability towards the driver, impact of the driver, likelihood of the driver, uncertainty of the driver, capacity to exert influence on the drive. What motivated this choice?
Time span (year projected)	What year was the end projection of the scenarios? What was the timespan of the

		scenarios? What motivated this choice?
	Number of scenarios designed	How many scenarios were created? Where were scenarios that were not used in the end? Why? What motivated these choices?
4. Methodological process	Previous information given to participants involved in scenario design	Yes/ no. How/when was the information given? E.g. potential modelled impacts of climate change or depletion of resources in the area, influence of the focus practice (in the case of transhumance for instance) on the social-ecological system, brief history of scenario planning and its uses, etc.
	Previous relation of researchers with participants	What engagement did research team have with participants beforehand (e.g. information, scenario co-design, planning co-design with scenarios as part, etc.)
	Duration of the process	How long did the whole scenario process last? How long did the participatory scenario activity last? How many workshops were carried out? How many hours of work of participants? How much time passed between workshops if several? Did the same participants come to all the workshops (continuity)?
	Phases/structure of the participatory design of scenarios (scenario activity)	At what point were stakeholders brought into the process? In which stages of the process were participants involved? E.g. only envisioning, past+envisioning, envisioning+back-casting.
	Methodological tools for each phase during the scenario creation	E.g. Individual reflections, small group discussions, maps, miniatures, cards, collages, drawings, mental models, quantitative models...
	Back-casting	Yes/no. If yes, how was the back-casting developed?
	Presentation of results to participants	Yes/no. If yes, when and how were the results presented to participants?

Feedback (Validation)	Yes/no. Was there a validation of scenarios outputs by participants? I.e. were scenarios checked to see if participants/stakeholders thought they were credible? If so, how was it carried out? Who did it? Was this taken into consideration (e.g. scenarios updated)?
Storyline type	Qualitative/quantitative/mixed? How were the narratives built?
Storyline spatially explicit	Yes/no. If yes, how was this done?
Storyline with intermediate time-frames	Yes/no. If yes, what was the timing?
Conflicts emerged	Were there any conflicts during the participatory process? Did conflicts emerge within/between commissioners/researches/participants/etc.? Was the process designed to address conflicts? Did the participatory process help handling the conflicts? How were they handled? Were these conflicts recognised for the first time, or were there any previously acknowledged conflicts? Did these conflicts affect the outcomes?
Process of participant's selection	How were participants selected (any specific method)? Who decided whom to invite? How were participants invited (email, telephone, letter, personal contact, news advertisement)? Did participants receive any compensation/reward for their participation? If so, what was it? Was there a limit to the number of participants?
Number of participants	How many participants were invited? How many participated? Min/Max group size.
Types of participants	Who was (not) invited to participate? Governance level of participants (e.g. primary/secondary stakeholders, resource users or managers). Was any key stakeholder missing from the process? If so, why?

Number of facilitators	Number of facilitators and ratio of facilitators/participants.
Type of facilitators	Were they the researchers or professionals? If the researchers acted as facilitators, were they trained? Did they have previous experience in scenario planning?
Post-workshop data analysis	How was the data obtained from the scenario exercise analysed? What role did the research team play? What role did the participants play? E.g. summaries of storylines (when necessary, for example for a paper), analysis of semi-qualitative information such as trends of ES in the scenarios analysed (e.g. represented in graph), weighted ranking of measures/actions suggested in the back-casting according to the quantitative priority participants have given them, etc.
Uncertainty	Was uncertainty explicitly addressed during the process? If so, how?
Vulnerability	Was vulnerability explicitly addressed during the process? If so, how? E.g. In the evaluation of the scenarios, we addressed the trend followed by ES the trend in different dimensions of human well-being, the food security of the SES and the vulnerability of the SES in each scenario.
Desirability	Was desirability explicitly addressed during the process? If so, how? (E.g. was there a completely desired scenario, without guidelines?)

5. Content of scenarios	Guidelines given	If you gave a few guidelines of each scenario from which the participants had to develop the rest of it, what were the guidelines of each of the scenarios? Or, if you were inspired ("hardly or softly") by previous general/high-level scenarios, please also refer to them.
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Scenario names	Names of each scenario. If there were names given by the research team and names given by participants, please mention both making the difference. How were the names chosen?
Characteristics of storylines	Briefly summarize each scenario (50 words per scenario).
Ecosystem Services	Were ES explicitly discussed or was the ES framework somehow used? Yes/no. If so, how?
Biodiversity	Was biodiversity explicitly addressed? Yes/no. If so how (E.g. conservation, challenges...)?
Human well-being	Was human well-being explicitly addressed? If so, how?
Trade-offs and synergies	Did the process explicitly explore trade-offs and synergies with participants? Of what (e.g. between action/policy insights, ecosystem services, human well-being dimensions)?

6. Outputs	Collages	Yes/no. How? If yes, why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process; b) external stakeholders relevant to the system e.g. policy; c) scientific audiences?
	Drawings	Yes/no. If yes, how? Why (motivation to do it)? Who?
	Leaflets/postcards	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?

Posters	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?
Scientific publications	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?
Reports	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?
Illustrations	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?
Videos	Yes/no. If yes, how? Why (motivation to do it)? Who did them? Did participants collaborate in the production? If so, how? Who was the target: a) the community/stakeholders involved in process? b) external stakeholders relevant to the system e.g. policy? c) scientific audiences?

7. Outcomes	Monitoring of evolution/impacts	Yes/No. If yes, how was/is/will be the monitoring developed? What are/were/will be the metrics of success? Who does/has done/will do the monitoring?
	Short-term impacts on local and wider scales	What are/have been the impacts on the local/wider scales in the short term? How were the scenarios used by participants? Has there been any implementation of the scenario results (and therefore an impact in decision-making)? Has there been a process of learning by stakeholders (e.g. making them more oriented to long-term thinking or willing to integrate uncertainty in future thinking/planning)?
	Long-term impacts on local and wider scales	What are/have been the impacts on the local/wider scales in the long term? How were the scenarios used by participants? Has there been any implementation of the scenario results (and therefore an impact in decision-making)? Has there been a process of learning by stakeholders (e.g. making them more oriented to long-term thinking or willing to integrate uncertainty in future thinking/planning)?
	Evaluation	Was there any evaluation of the approach/process of scenario planning? What were the criteria/questions used to evaluate? How was the evaluation done (methods used)? Who did the evaluation (only internal within researcher or with participants)?

8. Lessons learnt	Weaknesses/ Limitations	Please mention at least five weaknesses of your approach and process.
	Strengths/Potentials	Please mention at least five strengths of your approach and process. E.g. Did the scenarios act as an effective boundary object? Did they lower knowledge asymmetry? Did they build community cohesion?
	General reflections on	Free text field that might flag up some

what scenarios added to this process/project	fruitful ideas for the discussion. E.g. Has the project enabled system thinking? Did it help build consensus? Changes on collective thinking on the governance system?
Key insights	Please think of any insightful comments that might contribute to improve future PSP practice.
Other comments	E.g. Did the scenarios act as an effective boundary object? Did they lower knowledge asymmetry? Did they build community cohesion? Was there a tendency for scenarios to gravitate to extremes/simplifications, perhaps due to cognitive biases?
