

Learning to adapt to climate change: a framework for integrating adaptive governance and participatory multi-criteria methods

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Outline

1. Introduction: climate adaptation and governance
2. Adaptive governance, adaptive management and climate change adaptation
3. Participatory multi-criteria methods and climate change adaptation
4. Integrating adaptive governance principles into participatory multi-criteria methods

Introduction: climate adaptation and governance

- Climate change is linked to vulnerability, uncertainty and change
- Adaptation can be seen as a dynamic social and institutional process
- Governance of climate adaptation involves an attempt to guide society towards increased adaptive capacity and better ability to manage natural and social resilience to reduce climate vulnerability
- Governance literature refers to *adaptive management* as an approach for reducing uncertainty and managing surprise > it is recognized and even recommended as a framework for governing climate adaptation processes

Introduction: climate adaptation and governance

- In adaptive management policies and actions are designed and implemented as experiments to allow iterative learning about ecosystem dynamics and functioning
- Adaptive governance refers to the social and institutional arrangements that provide an organizing framework for adaptive management
 - It emphasizes policy and management experimentation, multi-stakeholder participation, and collaborative learning

Adaptive governance and participatory multi-criteria methods

- Adaptive governance is a continuous problem solving process that implies novel forms of interaction at the science-policy-society interface
- Need for evaluation methods enabling elicitation of stakeholders' preferences and iterative learning taking the form of experimental policies and management actions
- Participatory multi-criteria methods are used for policy evaluation (both ex-ante and ex-post) as they allow systematic integration of competing stakeholders values, perspectives and preferences in an iterative process of policy options development and evaluation

Adaptive governance and participatory multi-criteria methods (PMCA)

- Uncertainty is reduced by collectively defining and re-defining problems and solutions in the policy making process as new knowledge is generated
- PMCA can help develop and evaluate climate adaptation policies and actions that are adaptive both in process and outcomes, thus incorporating adaptive governance principles
- Adaptive governance is seen as a process to deal with uncertainty and change as it allows learning from participation and experiments while managing

Research question and methodological approach

- How can adaptive governance principles be integrated into PMCA to foster learning to adapt at the science-policy-society interface in local climate adaptation decision-making processes?
- Explore potentialities of integrating adaptive governance principles into PMCA
- Development of an integrated framework that aims to support and improve “learning to adapt” at the science-policy-society nexus in climate adaptation decision-making processes

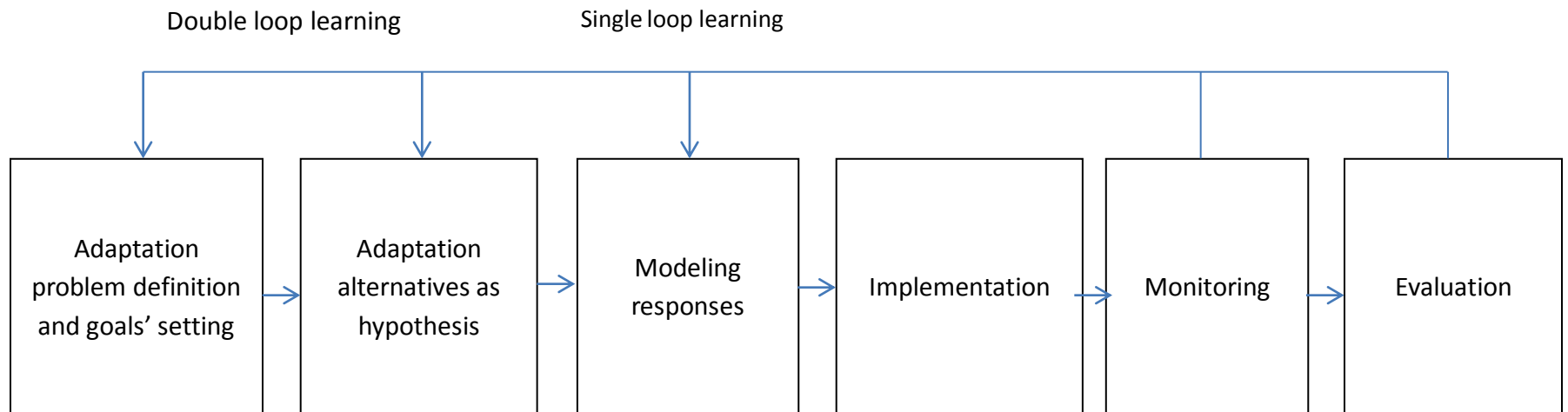
Key features of adaptive management and governance

- **Experimentation:** planned interventions and the monitoring and evaluation of their results. Any management intervention or policy can be seen as an experiment and a way of testing hypotheses on ecosystems responses to management
 - Policies become hypotheses and management actions become the experiments to test those hypotheses
 - Continuous monitoring, evaluation and adjustment of policies and management actions
 - Experiments can function as “boundary objects” for bringing in multiple stakeholders as network relations of those involved in the experiment can improve through repeated interactions

Key features of adaptive management and governance

- **Public participation:** taking part in the governing processes by individuals or their collectives who have a stake in the decision being made
- **Social learning:** property emerging from social interactions when actors collaborate in management action or participate to joint decision making exercises
 - Learning as key objective of the management process
 - Learning to adapt by continuously updating knowledge > feedback loop

Adaptive management and climate change



- Learning is considered a normative goal of experimentation and participation
- Two main typologies of learning:
 - single loop learning - improving established routines
 - double loop learning - reframing and transforming by challenging governing assumptions and values

Participatory multi-criteria methods and climate change adaptation

- Decision making process in planned adaptation as a response option or strategy which has the final objective of increasing the adaptive capacity of the system and/or reducing its vulnerability to changes
- PMCA combine participatory methods (with social preferences elicitation) with qualitative and quantitative information referring to multiple disciplines and dimensions
- Common features of PMCA and adaptive governance: participation, learning and experimentation

Participatory multi-criteria methods and climate change adaptation

- Planned adaptation is interpreted as a process of learning in which different sources of information are integrated to better deal with uncertainty and conflicting interests and values
- Alternative options have to be evaluated to check their effectiveness to meet stated objectives and their potential to respond to a plurality of values and to produce benefits for adaptation
- The evaluation process should respond to the question “How good are the adaptation options according to a plurality of values and dimensions of analysis?”

Participatory multi-criteria methods and climate change adaptation

- We refer to complex, multidimensional and adaptive socio-ecological systems
- Previous question should be answered according to a set of criteria able to represent the multidimensional performances of the alternative options in a multi-criteria setting, as well as different and sometimes conflicting interests
- The decision process will require the construction of a dialogue among stakeholders, scientists and policy makers to represent plurality of values

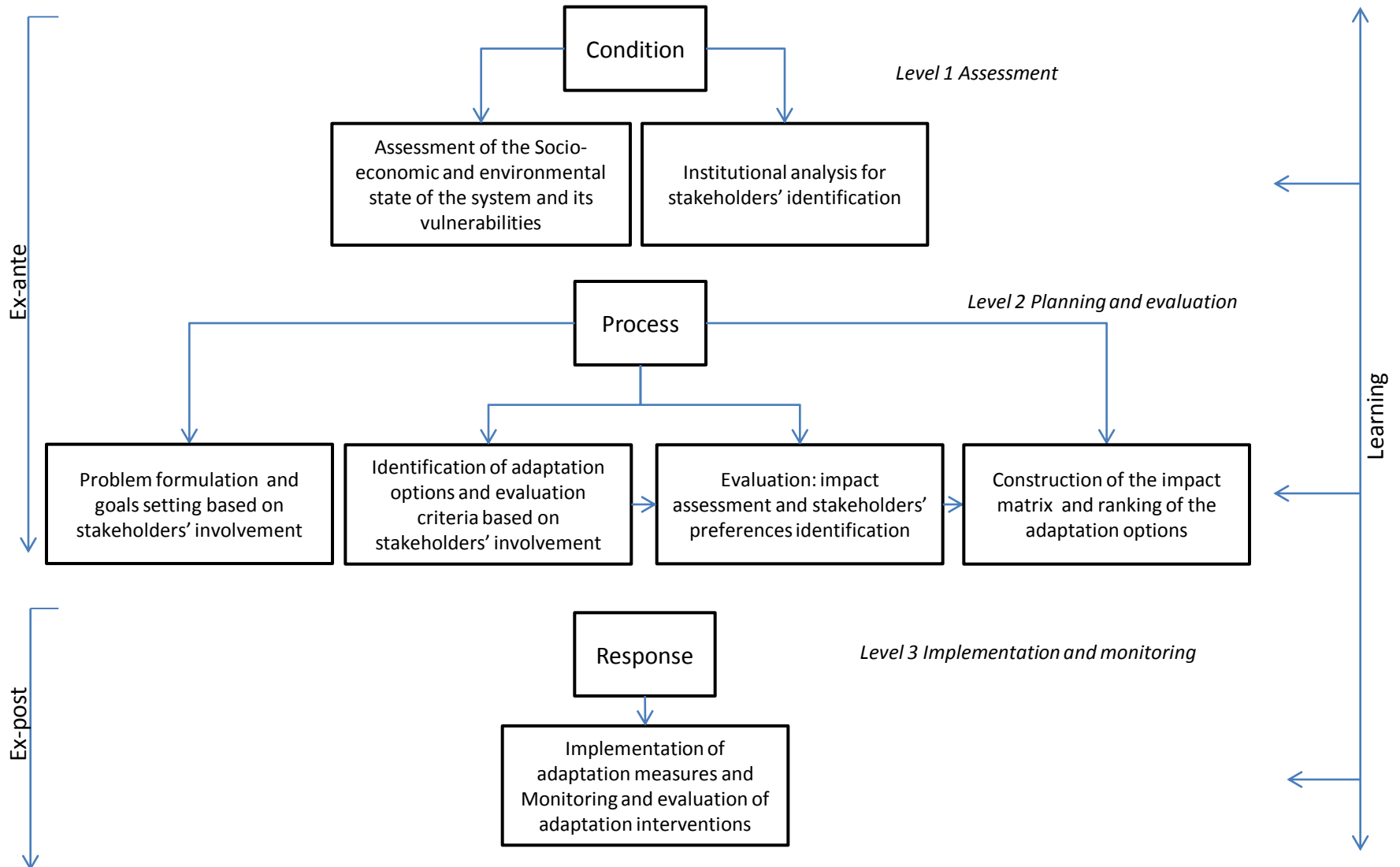


Science-policy-society nexus

Participatory multi-criteria methods and climate change

- The adaptation literature refers to:
 - starting conditions of the system (i.e. vulnerabilities, risks, socio-economic and environmental aspects) which can facilitate or constraint the development and implementation of adaptive options and strategies
 - process of adapting (identification of the plans of actions to be undertaken to adapt to changes and the prediction of the main impacts of changes)
 - responses of the system to adaptation actions
 - social values and acceptability of a plan of actions

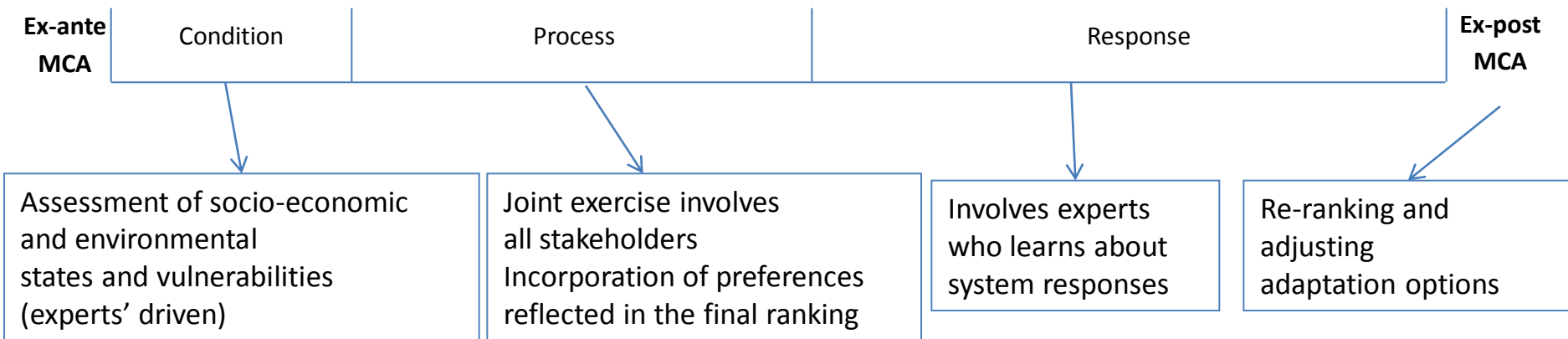
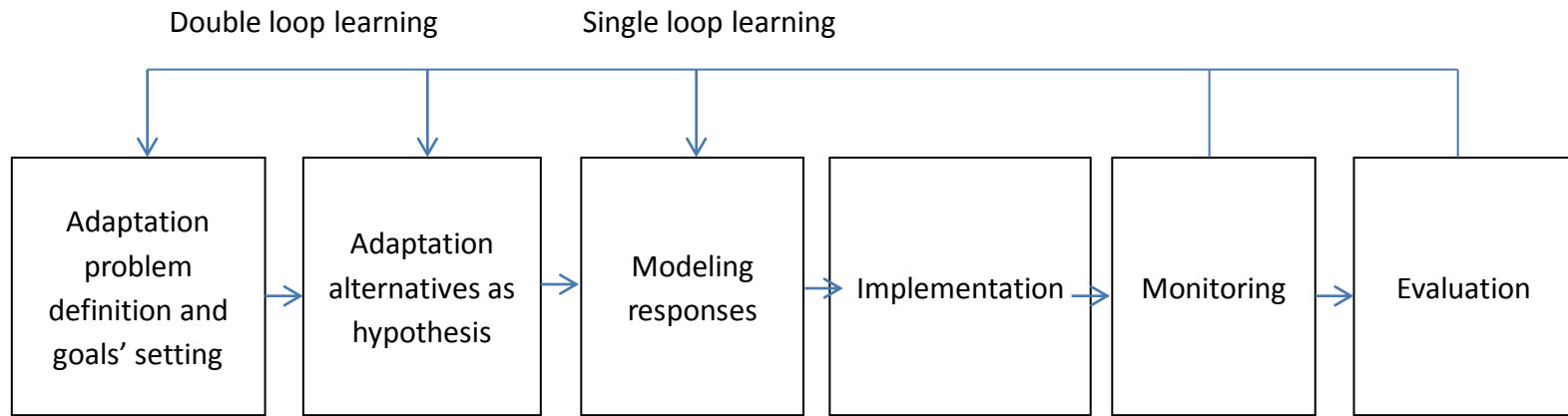
A PMCA framework for adaptation



Participatory multi-criteria methods

- PMCA is a cyclic evaluation approach > ex-post monitoring and evaluation results feed back into the adaptation policy process for generating and applying new information to continuously improve adaptation planning and implementation
- Policy evaluation becomes a dynamic learning process instead of a one-shot activity
- Changes in judgments regarding the alternatives, impacts, criteria can be taken into consideration by the incorporation of feedback loops between each step of the analysis and among the actors involved

Integrating adaptive governance principles and multi-criteria methods



Conclusions

- The strengths of the use of MCA approaches together with adaptive governance principles refer to:
 - flexibility and adaptability to changing circumstances (possibility of including information feedback loops among different actors and steps of the evaluation process)
 - the potentiality to respond to legitimacy and effectiveness (allowing inclusion and deliberation among different social actors to assure a certain degree of social acceptability)
 - the search of an optimum solution is replaced by the concept of procedural rationality (the result of the decision-making leads to the identification of compromise solutions between different dimensions of analysis and societal values)

Conclusions

- Decision making process in the definition of adaptation strategies, requires a shift to an adaptive governance approach, in which multiple perspectives and different knowledge can be integrated to capture the complexity of social-ecological systems
- Next step would be apply this framework > initiating a discussion on an adaptation plan for the Venice lagoon in Italy