IC 10 Frame-based guide to situated decision-making on climate change

Climate change adaptation and mitigation requires decision-making that is highly sensitive to the specifics of a situation. It calls for "situated decision-making" that can stand in the service of adequate action. However, guides to decision-making generally ignore the specifics, focusing largely on methods and tools that abstract information out of situations without any reflection on the context.

Situated decision-making is based on strategies that enable a decision-maker to be informed by a rich store of information and, at the same time, ensure a degree of flexibility and adaptability.

The development of a decision-making strategy can be supported using Thompson's two basic dimensions of decision. The first dimension refers to beliefs about the cause/effect relations that are instrumental for what the decision might actually accomplish; the second refers to preferences regarding the possible outcomes of the decision. Accordingly, there can be certainty or uncertainty regarding causation and certainty or uncertainty regarding outcome preferences. Figure 1 presents the patterns of uncertainty of the two dimensions.

Figure 1. The two basic dimensions of decision combined

Beliefs about cause/effect relations	Preferences regarding possible outcomes: Certain	Preferences regarding possible outcomes: Uncertain
Certain	Causation and outcome preferences are certain – data are voluminous **Computational strategy**	Uncertain due to - opposing preferences - external constraints **Compromise strategy**
Uncertain	Uncertain due to - incomplete knowledge - inherent uncertainty - competition with rival decision-makers **Judgmental strategy**	Uncertain due to - a combination of reasons **Inspirational strategy**

Computational strategy

Most relevant tools
- Cost-benefit analysis tools
- Multi-criteria analysis tools
- Accounting tools and physical analysis tools

Most appropriate setting
- Bureaucratic structure (every issue should be routed to the appropriate specialist)

Judgmental strategy

Most relevant tools
- Scenario analysis tools, expert panels, simulation gaming
- Model tools (biophysical, socio-economic, or integrated)
- Checklists for judging model quality and uncertainties

Most appropriate setting
- Collegial structure (self-governing voluntary group)

Compromise strategy

Most relevant tools
- Participative tools, e.g. stakeholder analysis and focus groups
- Argumentation support tools
- Negotiation tools

Most appropriate setting
- Representative structure (each stakeholder group should be represented)

Inspirational strategy

Most relevant tools
- Problem structuring methods
- Cognitive aids, e.g. checklists for prompting new ideas
- Development of learning-scenarios

Most appropriate setting
- Informal structure (collective problem-solving stimulated by charismatic leader)

The pattern of uncertainty in Figure 1 depends on how the specifics of the situation are perceived. For example, discussions may frame the problem as: "How can we reduce uncertainty in our estimates of future climatic conditions and how climate change will impact us?" (e.g. choose a judgmental strategy?) In contrast, the discussion may focus on: "Given that there is considerable uncertainty about our future, how can we best manage this coastal area to increase system resilience?" (e.g. choose an inspirational strategy?)

It is the contrasting impact of these questions that explains why situated decision-making may gain by making frames more explicit. Frames are generally conceived as organizing principles that enable a person to predict and qualify the continuous changes in his or her environment as a basis for action
Our objective is to make the role of frames in climate-related interactions more transparent for all the actors involved (e.g. scientists, practitioners, policymakers) by providing guidelines and practical tools.

Dr Joop de Boer, Institute for Environmental Studies, Vrije Universiteit Amsterdam.
Dr Jeroen van der Sluijs, Drs. Arjan Wardekker, Copernicus Institute for Sustainable Development and Innovation, Utrecht University.
Dr Karen Buchanan. Dr Rien Kolkman, Prof. Dr A van der Veen, Water Engineering & Management group, University of Twente.