



The Structure of Structured Decision Making: Break Decisions into Component Parts

Difficult decisions can seem like tangled balls of yarn that it will be impossible to sort out. While SDM can't make difficult decisions easy, it can make them easier. One way it does this is by breaking decisions into eight distinct elements, captured by the PrOACT framework, and tackling each element systematically. We present them here as sequential, but the steps may not happen in exactly this order. You may need to revisit some steps, or some steps may not be relevant to a particular decision. That said, if you do a poor job of framing the decision problem or capturing the objectives, it's hard to make progress on the other steps.

PrOACT

Pr: Problem
O: Objectives
A: Alternatives
C: Consequences
T: Tradeoffs, Risk, and Uncertainty, and Linked Decisions

Pr: Work on the right decision Problem

What exactly is the decision that needs to be made? The way you frame your decision can make all the difference. It guides who needs to be part of making the decision and what types of actions you consider. It can limit or expand the options available to you now and in the future. There is actually scope for a lot of creativity at this stage!

Process checkpoints

- Do you have a clear statement of the decision you need to make or the problem you need to solve?
- Have you identified all essential elements of the problem, avoiding both vagueness and excessive detail?
- Have all relevant stakeholders been active participants in framing the decision problem?
- Have you experimented with different ways of framing the decision problem, and avoided anchoring on a particular framing?

Climate considerations

- Have you considered how climate change may affect the scale of the decision, the actual or perceived constraints on the decision, and the uncertainties associated with

the decision? Experiment with different problem framings that play with these questions.

- Does your problem framing account for changing conditions over time? For example, focusing on providing a certain volume of water to a city is less responsive the changing conditions than providing a set percentage of available water or focusing on meeting water needs through a combination of delivery, treatment, and conservation.
- Are you giving climate change the appropriate level of focus? In their zeal to “do” climate adaptation or to make climate-smart decisions, groups may focus too much on climate change. Conversely, a desire to avoid mentioning climate change may lead groups to ignore critical climate-related considerations.

O: Specify Objectives and evaluation criteria

What do you most want to accomplish with this decision? What values and concerns, fears and desires are relevant? In SDM an objective includes a statement of what matters (e.g. clean water), whether all else being equal you’d prefer more or less of it, and metrics or attributes that define what matters clearly enough that everyone could agree on what it means. Objectives provide the direction needed for intentional, proactive decision-making

Process checkpoints

- Do you have a complete, structured set of objectives?
- Have key stakeholders had the opportunity express what matters to them in their own words?
- Have you separated means from ends, that is, what you want to achieve from how you want to achieve it?
- Is the meaning of each objective sufficiently captured by its metrics/attributes?

Climate considerations

- Does thinking about climate change or its effects inspire a re-examination of objectives? Consider whether you might have different concerns and desires under plausible climate changes or effects, and whether those need to be included as objectives.
- Will the assumed relationships between metrics/attributes and objectives remain unchanged by changing conditions?
- Do the objectives capture relevant spatial and temporal aspects of climate changes and effects? For example, is it important that a species continue to exist in a specific place, or is it just important that it exist somewhere? Do you care only about the costs to design and build a new road, or also about ongoing maintenance costs?



A: Create diverse and imaginative Alternatives

What alternative courses of action could you take to meet your objectives? Each alternative may be a single action or a set of actions. Having a set of alternatives that reflects distinct approaches and strategies rather than just iterations on a theme enhances the likelihood of a good decision. As the authors of Smart Choices remind us, “your decision can be no better than your best alternative.”

Process checkpoints

- Are the alternatives truly diverse, representing significantly different approaches and strategies?
- Is every objective addressed by at least one alternative?
- If continuing with the status quo or engaging in further research are possibilities, have they been included and specified along with other alternatives?

Climate considerations

- Are there alternatives addressing different scenarios of climate changes or effects?
- Do the alternatives address key climate vulnerabilities?
- What assumptions are you making about what’s possible and what’s not? Are those constraints real, and how might climate change and its effects influence them?

C: Understand the Consequences of the alternatives

How well do different alternatives satisfy your objectives? It’s easy to latch onto alternatives that seem coolest or easiest, but systematically evaluating consequences against your stated objectives can lead to surprising outcomes and insights. This requires clearly expressing how actions and outcomes are linked. In other words, you need a model of how the system works—be it visual, mathematical, or verbal—that everyone can see.

Process checkpoints

- Is it possible for interested parties to contest the science or explore uncertainty associated with how consequences have been predicted?
- Are assumptions or judgments behind consequence evaluation as well as the implications for the decision clearly stated?
- If the results from the consequence evaluations feel not quite right:
 - Have you failed to capture some essential concern or value in your objectives?
 - Do the metrics capture what matters for each of your objectives?
 - Do the models adequately capture how the system functions?
 - Have you reflected uncertainty appropriately in your expression of consequences?



Climate considerations

- Have you accounted for possible differences in consequences across scenarios of climate changes and effects?
- Do the models (mental, visual or mathematical) include assumptions that may not be valid under some plausible climate futures?
- Have consequence evaluations been unduly influenced by “worst-case” thinking? Humans tend to focus on the negative, particularly when faced with unfamiliar risks. Assuming that all species will do worse or that no species can adapt to climate change leads to poor decisions.

T: Explore and negotiate Tradeoffs

Note: the next four steps address considerations that come into play once consequences have been assessed. Although all fall under the “T” of PrOACT, we treat them separately for clarity’s sake.

How can we negotiate or minimize tradeoffs between different objectives? If no one alternative is best for all objectives, we will need to give up something from one objective to gain something on another. Ignoring tradeoffs doesn’t make them go away. It can make stakeholders themselves feel ignored, leading to loss of trust and community support. It may even mean you miss an opportunity to reduce tradeoffs by coming up with creative new alternatives!

Process checkpoints

- Was the process for assigning relative importance to different objectives transparent to all interested parties?
- Did the process allow different stakeholders to prioritize objectives without being influenced by groupthink or worrying about how others would judge their priorities?
- Have you considered ways to reduce tradeoffs by adjusting alternatives, coming up with creative new alternatives, and questioning constraints?

Climate considerations

- Have you considered possible trade-offs across time and space? For example, there may be trade-offs between near-term coping strategies and long-term adaptation.
- Have you considered how stakeholders’ feelings about the relative importance of objectives may be different under different scenarios?



Uncertainty

What is uncertain, and how much does it matter for the decision in question? There is a background level of variation and randomness in many aspects of the world. There's uncertainty about how the world works—how sure are we that doing X would lead to Y? There may be uncertainty about what happened in the past, or in the state of the world right now. There is even uncertainty in what is meant by particular terms—what does “very certain” mean? What about “a good outcome”? Clarifying the types, sources, and relevance of uncertainty for any given decision is a huge help for dealing with it effectively.

Process checkpoints

- Have you considered all relevant sources of uncertainty, not just the most familiar ones?
- Have you distinguished uncertainties that affect the decision from those that don't?
- Have you accounted for the degree to which different uncertainties can be reduced, and how much that reduction is worth?

Climate considerations

- Are you giving the appropriate level of attention to uncertainty around climate projections vs. the (often greater) uncertainty around how ecological and social communities will respond to those changes?
- Are you focusing too much on climate-related uncertainty, allowing it to distract you from more fundamental aspects of the decision problem?
- Conversely, are you focusing too little on uncertainty, accepting model outputs as more reliable than they are?

Risk Tolerance

What risks are decision makers and stakeholders willing to take, and how much risk will they tolerate in the context of this decision? This depends not just on people's overall risk aversion or acceptance but on what is at risk, how much it matters, and how likely the different consequences are. Consciously exploring risks and the willingness of stakeholders and decision makers to accept them can lead to further insight and perhaps approaches to mitigating some of the risk.

Process checkpoints

- Are you discounting the probability or magnitude of negative outcomes?
- Conversely, are you focusing too much on the negative and discounting the probability of positive outcomes?
- Have you explored options for managing risk?

Climate considerations

- Have you over-emphasized risks related to climate change relative to other sources of risk? This may happen because you've gotten used to pre-existing sources of risk, or because public concern about climate change has heightened your focus on this source of risk.
- Conversely, are you under-emphasizing risks related to climate change? This may happen because other risks are more tangible.

Linked Decisions

What other decisions are influenced or will influence this decision? The decisions you make now influence what options are available to you in the future, and may influence decisions made by others. Likewise, decisions other people are making may influence what decision you make now or in the future.

Process checkpoints

- Have you systematically thought about future goals that may be affected by current decision options?
- Have you considered how alternatives you are considering would affect other people, species, or places?
- If you're considering gathering more information before taking other actions, have you explicitly balanced possible gains from having that additional information against possible costs of putting time, money, and effort into research rather than other types of action?

Climate considerations

- Have you considered taking an active adaptive management approach in order to better understand and model relatively untested adaptation approaches?
- Have you considered ways to collaborate beyond your usual sphere of influence or jurisdiction to increase the likelihood of positive outcomes under changing conditions?

That was just a snapshot of each element, and the ways climate change can come into play. For further details and guidance on each step, review the resources sheet and the workshop materials.