Structured Decision Making for the Resilience Ecosystem: Training Materials and Overview

These materials are intended to support people putting on a Structured Decision Making for the Resilience Ecosystem workshop. This document provides overviews, objectives, and key messages for each module; the slides and their associated presenter notes provide more detailed content.

This curriculum is designed in a modular fashion so that it can be easily adapted. The introductory module sets the stage for other modules and should be included in all trainings. Anyone is welcome to use any of these materials free of charge, provided they credit the source.

- If you are interested in bringing our one-day training to your region, organization, or community, please contact jennie@adaptationinsight.org. We can also work with you to create longer versions that include other tools and topics or support decision making around specific issues or problems.
- If you want more intensive training, we recommend the National Conservation Training Center's Decision Analysis curriculum.
- If you're looking for more reading, we've provided a list of a few of our favorite SDM texts below.

The curriculum package includes:
- Powerpoint slides with extensive presenter notes.
- Problem framing worksheet (for Module 2)
- SMART table spreadsheet (for Module 4)

This curriculum consists of four modules.

MODULE 1: SDM for the Resilience Ecosystem

Module overview

This module will introduce participants to the basics of Structured Decision Making (SDM), and how applying the philosophy, tools and frameworks of SDM can lead to better, more resilient

decision making. This includes an introduction to the steps of the PrOACT process: frame the Problem, identify Objectives and measures, develop creative Alternatives, evaluate Consequences of each alternative, and clarify and negotiate Tradeoffs and risk.

Objectives

- Participants will be able to apply inquiry-based rather than advocacy-based approaches to decision making.
- Participants will be able to generally describe each step of the PrOACT process.
- Participants will be able to identify common decision challenges or impediments, and how they come into play in resilience decision making.
- Participants will be able to identify when to apply the SDM framework.

Key messages:

- Decision quality depends on context, process, and science
  - Depending on the decision, any of these elements may be more important than the others. Don't assume that science matters most! Evaluate all of the elements.
- SDM is a philosophy, a framework, and a set of tools
  - Key elements of the philosophy include: a focus on inquiry rather than advocacy; using values-focused thinking; and recognizing that values and science play important and distinct roles in good decision making.
  - Key elements of the framework include: breaking the problem into its component parts; identifying key impediments and focusing on those first; scaling the level of analysis to decision complexity.
  - Tools: there are qualitative and quantitative tools to address every step of the decision process
- Making resilient, climate-informed decisions may not require new tools and approaches.

MODULE 2: Problem Framing: setting yourself up for implementation

Module overview:

This module focuses on the basics of problem framing, the first and arguably the most important step in good decision making. Doing a good job with problem framing can increase buy-in, set the stage for equitable and resilient decisions, and increase the likelihood of actually taking action.

Objectives:

- Participants will be able to articulate the core elements of problem framing.
- Participants will have experience with simple problem framing tools and questions.
- Participants will understand the connection between problem framing and getting to action on the ground.

Key messages:

- Doing a good job with problem framing is essential to making a good decision
- Don't assume everyone sees the problem to be solved or decision to be made in the same way.
- When it comes to climate change adaptation, there are two basic problem frames:
  - **climate-focused**: "what are all the problems related to climate change and how can I address them", and
  - **climate-informed**: "how do I make a particular decision in a climate-informed manner").

Supporting materials:

- Problem Framing worksheet

MODULE 3: Objectives—operationalizing resilience, sustainability, and other concepts

Module overview:

This module covers the basics of objectives in the context of SDM and how they can be used to increase understanding and operationalization of resilience and equity.

Objectives:

- Participants will be able to articulate the meaning and role of objectives in SDM, and how resilience and equity can be incorporated.
- Participants will have experience translating values into objectives.
- Participants will have experience developing measurable attributes for various objectives.

Key messages:

- Building time horizons into objectives is a key tool for climate-informed decision making
- Including all relevant values in the decision and letting people articulate their values for themselves is essential for understanding, buy-in, resilience, and equity.

- Developing measurable attributes is essential for making sure everyone defines resilience, equity, and other high-level goals and objectives in a common frame.

MODULE 4: Overcoming analysis paralysis

Module overview:

This module covers the basics of evaluating the consequences of proposed alternatives. This includes how Simple Multi-Attribute Rating Technique (SMART) tables can be used for decision sensitivity screening and how decision sensitivity and value of information analyses can help limit "analysis paralysis," the condition where decision makers get stuck in endless rounds of analysis and information-gathering without getting closer to a decision.

* Presenting this module requires understanding and being able to use SMART tables. For a description of SMART tables and associated methods, see Edwards and Barron, 1994. SMARTS and SMARTER: Improved simple methods for multiattribute utility measurement. Organizational Behavior and Human Decision Processes *60, 306–325.*

Objectives:

- Participants will feel more comfortable working with uncertainty in decision making.
- Participants will be able to walk through the "uncertainty checklist" (Does this uncertainty matter for this decision? Can it be reduced? Is it worth reducing?) and use it to inform information-gathering and analysis.

Key messages:

- If you have not framed your problem and properly specified your objectives and alternatives, it can be hard to know what information you need or how important it is.
- Not all uncertainties that matter a lot to the system in question will matter for the decision you are making.

Supporting materials:

- The Excel file *SMART table demo*

Problem Framing Worksheet for Module 2

Adapted from National Conservation Training Center SDM materials

Trigger — What triggered the desire to make a decision? Why does a decision need to be made? Why does it matter? What's wrong with the current situation, or what are you ultimately trying to achieve?

Challenges — What makes this decision difficult?

Action — Roughly, what is the decision and what kinds of actions or alternatives are being chosen from?

Decision Maker — Who has the authority to commit to action? Who funds the actions? Who implements the actions? Who authorizes the actions?

Stakeholders — Who will be affected by the decision and how? Who can affect the decision and how?

Constraints — What constrains the decision— legal, financial, political, "minimum performance"? Are these constraints perceived or real?

Frequency & Timing — When does the decision have to be made? How often will it be made? Are other decisions linked to this one?

Scope and scale — How broad or complicated is the decision? What is the spatial and temporal scale of jurisdiction? Of the desired outcome? Of influences on the outcome?

Other Considerations — Legal, financial, political considerations? Linked decisions? History? Risks?

Recommended Resources

Gregory, R., Failing, L., Harstone, M., Long, G., McDaniels, T., and D. Ohlson. 2012. *Structured Decision Making: A Practical Guide to Environmental Management Choices*. Wiley-Blackwell.
- This is a well-written but more academic book focused on natural resource decisions. It has some interesting examples.

Hammond, J.S., Keeney, R.L., and H. Raiffa. 2001. *Smart Choices: A Practical Guide to Making Better Decisions*. Crown Business
- A quick and easy but methodologically sound read that lays out the PrOACT process. The examples it uses are all from personal life decisions.

Keeney, R.L. 2004. Making Better Decision Makers. *Decision Analysis* 1(4): 193–204
- A short article with the key message: "more emphasis must be placed on structuring decisions worth thinking about, and less emphasis must be placed on analyzing structured decisions." It's an academic paper, so not as readable as the *Smart* Choices book.

National Research Council. *Understanding Risk: Informing Decisions in a Democratic Society*. Washington, DC: The National Academies Press, 1996.
http://www.nap.edu/openbook.php?isbn=030905396X

National Research Council. *Informing Decisions in a Changing Climate.* Washington, DC: The National Academies Press, 2009.
http://www.nap.edu/openbook.php?record_id=12626

Wedell-Wedellsborg, T. 2017. Are You Solving the Right Problems? *Harvard Business Review* January-February 2017
- A relatively short easy read focused on creative and effective reframing of decision problems. It has several examples and some concrete practice suggestions.

On-line resources
Structured Decision Making website: http://structureddecisionmaking.org/

National Conservation Training Center *Introduction to SDM* course lectures and handouts
http://training.fws.gov/courses/ALC/ALC3183/resources/index.html