Training in developing targeted adaptation indicators and metrics

Susi Moser, Ph.D.
Overview of Training

• Introduction to toolkit

• Exercise 1 – Orientation, finding your place to start

• Q&A period 1

• Overview of indicator development/use process

• Exercise 2 – Digging deeper, finding what you need

• Q&A period 2

• Resources
Introduction of the Resilience Metrics Toolkit
The Resilience Toolkit: Drawing on 4 Projects over 10 Years

Identifying the Key Dimensions of Adaptation Success

SAIM Project with 5 Reserves: Indicators & Metrics

Catalyst project: Toolkit Development

What do we know about successful adaptation?

- Wells
- Hudson
- Jacques Cousteau
- Tijuana River
- Kachemak Bay

Book:

Successful Adaptation to Climate Change:Linking Science and Policy in a Rapidly Changing World

Edited by Susanne C. Moser and Maxwell T. Boykoff
INDICATORS FROM THE BOTTOM UP:
Working with National Estuarine Research Reserve System

Wells
Hudson River
Jacques Cousteau
Tijuana River
Kachemak Bay
10 Lessons Learned from Practice

1. Searching for indicators and metrics is a **difficult, time-intensive, value-laden, not apolitical conversation** (but see #10)

2. There is a tendency to focus only on inventories of adaptation actions while neglecting outcomes and other dimensions

3. Existing incentives and structures for tracking, evaluation may be a productive starting point (e.g., CRS, existing reporting), but often not enough

4. Capacity limitations (money, time, know-how, data, institutional context) are very real but there are ways to minimize effort and cost

5. Identifying “good” indicators depends on having a clear vision of success, being cognizant of the audience who needs/wants them, and deliberate about how they will be used.
10 Lessons Learned (cont.)

6. Of the large universe of possible indicators, only a small set of purpose-driven, decision-relevant and meaningful indicators usually matter......but which set of indicators meets those criteria will vary greatly across users, contexts & capacities.

7. To be usable, adaptation indicators & metrics must embrace learning from actionable information, effective decision support, evaluation science & practice, scenario planning, etc.

8. Indicators are not a panacea (bec. we can’t measure everything that is important; we can’t act on everything we can measure; we don’t know all that we maybe should measure). Thus, use judiciously.

9. Don’t bother with indicators and metrics unless you think hard about how to make it happen.

10. Careful development of indicators makes adaptation better.

Goals of Toolkit

• Integrate, share and embody insights and lessons learned from all prior projects

• Provide lots of tools, job aids and resources to make it as easy as possible
  • Assume various levels of expertise/experience
  • Entry from many different angles
  • Provide resources, case studies, indicator examples

• Highlight work of NERRS but make toolkit applicable to all contexts (coastal and non-coastal)

INPUT INTO DESIGN
• Professional sharing sessions at NERRS Annual Meeting
• Sessions with NERRS CTPCs
• Social Coast Forum 2018
• National Adaptation Forum 2018
• RAE 2018
• Feedback on beta version (NERRS Annual Meeting, Social Coast Forum 2020, RISA teams, etc.)
What You’ll Find

- **Basic introduction/overview**
  - Adaptation and resilience
  - Adaptation success
  - Evaluation
  - Indicators and metrics

- **Resources**
  - Our own work
    - Facilitation Guides, Job Aids, Case examples, Publications, Webinars, sample lists of indicators
  - Others’ work
    - Publications, Websites, Data sources

- **Examples of what developing indicators and metrics looks like**
  - Coastal regions (Maine, New Jersey, New York, S. California, Alaska)

- **Testimonials**
- **Background information**
- **Contact information to get/give help**

Photo: chanellife.com.au
Will add resources over time. Updates ca. every 3-6 months.
“No Wrong Door” Design:
Where to start? What to find where?

1. Explore via drop-down menus (and hyperlinks throughout text)
2. Navigate by always-present side menu
3. Use “Getting started” page
4. Jump right to indicator development/use via indicator icons
5. Click on various overview Job Aids:
   • Diagnostic Questions (simplified version of interactive diagnostic tool)
   • 2-page overview of tools, job aids, and case studies available on this site
6. Search the Resources page: by topic, sector, type of resources, key words
7. Search any page using the Search bar
8. Dip in randomly and discover
9. Brief “orientation video” (to come)
10. Work through interactive tool (“Quiz”)
Start From Wherever You/Your Partners Are

Step 2: Visioning

Job Aids

Facilitation Tools

Examples
Interactive Diagnostic Tool

Quiz

Use this quiz to figure out where you stand in regard to adaptation, resilience-building and indicator development. We'll set you on the right path.

1. Bound and assess context
2. Vision success
3. Explore and identify indicators
4. Select indicators and identify metrics
5. Monitor indicators
6. Use indicators

- We have done some visioning of what our adaptation efforts are meant to achieve.
  - Help to achieve this
- We have clearly defined adaptation goals.
  - Help to achieve this
- All involved share the goals we are working towards.
  - Help to achieve this
- Stakeholders agree on what would constitute "success" or at least progress.
  - Help to achieve this

Based on your response, we recommend you start at Visioning Success.
Work in Break-out Groups

• In each group, briefly introduce yourself and share what you are working on, from where you are coming to questions of:
  • Adaptation/resilience
  • Adaptation success and progress
  • Indicators and metrics

• Go to interactive quiz: https://resiliencemetrics.org/quiz
  • Navigate to what may be useful to you, in your process
  • Explore the resources that come up at the step where you are at
  • Discuss together how they may be useful to you, wherever you’re at

15 minutes total
Whole-Group Debrief and Q&A

- What are the places from which people come to the issue of indicators/metrics?
- What did you find that was helpful?
- Any challenges?
Indicator Development & Use
Step-by-step explanation and guidance through the process

Do-it-yourself facilitation tools, job aids, resources

Case examples: How we did it

Lists of indicators

---

**Six Key Steps in the Process of Indicator Development & Use**

The purpose and key considerations for each step in the process of indicator development and use are described below. Users can read them all in sequence or click on the relevant links of interest for their current work:

- Bounding and Assessing Context
- Visioning Success
- Exploring & Identifying Indicators & Metrics
- Selecting Indicators & Metrics
- Monitoring Indicators & Metrics
- Using Indicators & Metrics

---

**Overview of tools, job aids, and case studies available here**

Whether you are a...
- Planner
- Natural resources manager
- Engineer
- Business supply chain manager

---

I recently began new collaborative research about building a more resilient...
Resilience Indicators & Metrics for What?

• **Goal 1: Tracking the performance of the adapting entity**
  - Is Agency A doing what it said it would do in its adaptation plan?
  - Is Politician B doing what she promised when she ran for office on climate resilience?
  - Is Country C delivering on its pledge to pay $x billion for adaptation projects

  **Performance** (whether?) • Input and Action-focused

• **Goal 2: Tracking the effectiveness of adaptation strategies**
  - Is the natural buffer working as designed/expected?
  - Was the setback sufficient to protect against expected storms?
  - Are disadvantaged communities receiving any benefits from x,y,z program?
  - Has public engagement improved?
  - Are we better prepared now?

  **Effectiveness** (how well?) • Process, Action, Output and Outcome-focused

• **Goal 3: Tracking the extent of adaptation finance and actions**
  - Do communities have access to the funding, capacity, assistance they need?
  - Are we doing enough?
  - Are we focusing on all key risks/vulnerability hotspots?
  - Are we ready for the unexpected, cascading disasters, and/or compounding crises?

  **Adequacy** (how much?) • Barriers, Input, Capacity, Outcome-focused
Six Key Dimensions of Adaptation Success

Adaptive Capacity
- Establish enabling conditions
- Build up social, technical, human, financial etc. capacities

Adaptation Process
* Conduct the assessment and planning process “right”
* Engage in continual assessment of adaptation needs

Adaptation Decision-Making
* Select a “good” adaptation option
* Make a “good” adaptation decision

Adaptation Implementation
* Successfully implement specific adaptation actions, next step
* Set up ongoing process

Adaptation Outcomes
* Find adaptation outcomes to be “good”, or “acceptable”
* Avoid maladaptation

Adaptation Barriers
- Identify and develop effective strategies to overcome barriers to adaptation (institutional, motivational, political, financial, scientific etc.)

Source: Moser et al. (forthcoming)
Two Key Definitions

Indicators

• Qualities, traits, or states of a system that suggest ("indicate") or hint at something one is interested in. Here, in the effectiveness, progress, or success of adaptation.

  • Example:
    • Find an indicator for a “good” or “successful” adaptation decision-making process.
    • “Transparency”
      • Process is open and accessible
      • Stakeholders can know how decision-makers come to decisions
    • Crucial for building trust

Metrics

• A variable that can be measured (if quantifiable) or otherwise tracked (if qualitative) that represents the indicator.

  • Example:
    • Find a way to measure “transparency”
    • Qualitative metric: Availability of relevant documents/information at free and accessible websites (yes/no/partially)
    • Quantitative metric: Proportion of people who perceive a process as transparent (% of surveyed group)

There is typically more than one indicator for the item of interest. There is typically more than one metric per indicator. There is – as yet – no list of “preferred” or “best” indicators and metrics for adaptation.
### Social Aspects

This list constitutes a sample of possible indicators and metrics that point to climate adaptation success and/or progress. It is derived from work with communities in Iowa, New York, New Jersey, California, and Alaska. For a larger list of indicators and possible metrics synthesized by these communities, seek for a downloadable Excel spreadsheet in the Resources section of [www.resiliencemetrics.org](http://www.resiliencemetrics.org), called “SAF Project_Indicator Brainstorm, October” (status January 2020). Indicators can be searched by adaptation strategy, location, sector, or the six dimensions of adaptation success described at [www.resiliencemetrics.org](http://www.resiliencemetrics.org). This list is not refined, ranked, or voted by any scientific or governance entity although some indicators are in use. The list is solely offered to support other users’ creative thinking and brainstorming of indicators and metrics that suit their unique situations.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Indicator</th>
<th>Metrics</th>
<th>Dimension of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build capacity of stakeholders to carry out specific adaptation-related tasks</td>
<td>Adaptive capacity</td>
<td>Degree of training (self-assessed, post-training surveys), retention to use learned knowledge/skills (expressed in post-training surveys); frequency of training communiques with rate of staff turnover</td>
<td>x</td>
</tr>
<tr>
<td>Improve pace and completeness of disaster recovery</td>
<td>Availability of sufficient emergency shelters</td>
<td># and type of shelters used if not needed for speedy recovery (e.g., use of schools can delay recovery); # of shelter evacuees</td>
<td>x</td>
</tr>
<tr>
<td>Increase community engagement ( lorem ipsum dolor )</td>
<td>Awareness of flood risks and response options</td>
<td>Awareness of flood risks and response options</td>
<td>x</td>
</tr>
<tr>
<td>Increase community engagement ( lorem ipsum dolor )</td>
<td>Community preparedness</td>
<td># of participants in emergency preparedness trainings</td>
<td>x</td>
</tr>
<tr>
<td>Incorporate adaptation strategies ( lorem ipsum dolor )</td>
<td>Comprehensibility (or absence of</td>
<td># of actively maintained flood insurance policies; rate of adaptation efforts; downstream priority of adaptation actions (e.g., need for a citizen council)</td>
<td>x</td>
</tr>
<tr>
<td>Develop adaptation strategies for restored ecosystems that are sensitive to cultural preservation needs</td>
<td>Culture-sensitive adaptation planning</td>
<td>Cultural group interested in planning with cultural group (yes/no), engagement; significance of cultural sites (amongst); rate of adaptation design meetings attended; rate of adaptation implementation (yes/no)</td>
<td>x</td>
</tr>
</tbody>
</table>
Applications

Indicator Development & Use in the Real World

This website offers indicator development tools and lessons learned that stem from specific real-world examples of adaptation. Researchers and practitioners worked closely in thinking about adaptation success and progress and developing locally relevant indicators and metrics. If you wish to learn more about each of these case examples, you will find the following for each:

- Facilitation agendas
- Workshop agendas
- Facilitation slides
- Workshop hand-outs (if applicable)
- A brief write-up of the case study
- Facilitation tools and job aids developed from that case
- Contact information for local leads

As we collaborate with others in other geographies and sectors over time, we will add these examples here, so you can continue to learn from these applications of adaptation indicator development and use.

For case examples of working with various reserves of the National Estuarine Research Reserve System, click here.

Dan Brumbaugh
Coastal Training Program Coordinator
Elkhorn Slough NERR
Why Think About Adaptation Success? - Why Measure Progress?

Overarching: Responsibility for safeguarding people, economy, infrastructure, cultural assets, environment

1. Communication and public engagement
   • Communicating hope and desirable goal to work towards
   • Defining a common vision among diverse stakeholders

2. Deliberate planning and decision-making
   • Setting clear goals, aligning means and ends (internal consistency)
   • Best fit with other policy goals (external consistency)

3. Justification of adaptation expenditures

4. Accountability/good governance

5. Support for learning and adaptive management
In Break-out Group

3 Tasks:

1. Share and become clear with others in your group what your goal is, what exactly you want to measure/track over time (5 mins).

2. Go to the Indicators & Metrics page: https://resiliencemetrics.org/indicators-metrics and click on “Selecting”. Then read the section on “Importance of and Need for Indicators” (~5 min).

3. Brainstorm ONE indicator each for what you want to measure and discuss with each other why it would be important/why it’s needed (~5 min).

15 minutes total
Challenges in Measuring Success

• **Methodological**
  - No standard set of indicators/criteria
  - Context-specificity
  - Cause-and-effect relationship extremely difficult to establish
  - Input metrics alone are inadequate
  - Outcome indicators alone are insufficient (time delays)
  - Need to look at distributional effects
  - High-quality data, data gaps
  - Double-counting
  - Need for multiple approaches to triangulate

• **Conceptual**
  - Lack of agreement on adaptation, finance, capacity building
  - Different understanding/use of key terms (e.g., performance, effectiveness, adequacy, success)

• **Empirical/practical**
  - Lack of adaptation databases, use of M&E
  - Capacity constraints
  - Frequency of monitoring
  - Lack of funding

• **Political**
  - Values informing “success” are inevitably subjective and contested
  - Limited disclosure of M&E results
  - Political sensitivities
  - Selection/manipulation of results
  - Handling of trade-offs
  - Professional image of “succeeding” or “failing”
In closing: A few cautionary notes

1. Indicators can be important signals, but they’re not the only thing to watch

2. “We need indicators” may be the latest version of “we need more information” (but then not using it)

3. Indicators may give misleading certainty, obfuscating the need to deal with uncertainty and to do the hard work of becoming adaptive
Some Resources: Outputs to Date
More in the Works...

Core Dimensions of Success

Stakeholder-driven framing of what successful adaptation looks like

Telling the story of successful adaptation to climate change

Arnott, Moser, & Goodrich 2016
*Environmental Science & Policy*

The basics... some theory ....... A practice-driven framework ........ Learning how to develop I&M ...... What are “good” indicators?...
Thank you!

For additional comments, thoughts, questions, please contact me at:

**Susi Moser, Ph.D.**

Email: promundi@susannemoser.com

Web: www.susannemoser.com

LinkedIn: https://www.linkedin.com/in/susanne-moser-ph-d-8686943a/