

# The National Climate Assessment: Indicators

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Meeting

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# Developing Indicators

- Desired as part of the ongoing NCA process
- But also a part of many natural resource management processes
- And often derived in research environments to track economic, social, institutional, development, and governance issues

# Developing Indicators

- Need consensus on what we need indicators for
- Process has explored three dimensions so far
  - Ecological indicators of change
  - Physical indicators of change
  - Socioeconomic indicators
- Other processes have long experience with the development of sets of indicators – from ecosystems to climate and beyond

# Ecological Indicators Charge

- Outline a **process for selecting indicators** that represent the **impacts** of climate change on the nation's ecosystems. The intended use of this set of indicators is the ongoing assessment of impacts of climate change. These indicators would be incorporated in the National Climate Assessment (NCA), including in the next report, to be issued in 2013.
- **Identify opportunities for collaboration and coordination** among existing and potential future observational networks that could be used to improve the understanding of the impacts of climate change on the nation's ecosystems.

# Ecological Indicators Recommendations

- Using indicators to understand **attribution or cause-and-effect relationships**;
- Tying indicators to a **conceptual model of ecological function and ecosystem services**;
- Achieving **buy-in from users** and establishing the indicators' association with **management decisions**;
- **Data requirements, management, and interoperability** are omnipresent challenges;
- Support and buy-in from **data collectors** are critical in determining **continued support/longevity**;
- **Integration/Coordination** efforts can take the form of “building from the ground up” new observational platforms or combining output from existing networks;
- The **scope and purpose** for a set of indicators should be determined;
- The **audience** for a set of indicators should be identified.

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# Physical Indicators Charge

- comment on elements of the **general NCA framework**,
- identify **broad physical climate categories** that could be used in the NCA report (i.e. that fit the framework),
- provide suggestions of **candidate metrics** that inform each objective, and
- assess the **feasibility of using the identified indicators given the current data sources** available and note what additional resources would be needed to implement these indicators.

# Physical Indicators Recommendations

- There is a need to **leverage existing work** on indicators.
- Efforts must be made to relate **climate change and impacts** in a manner that **people can readily perceive**.
- Indicators must be developed using **high-quality data sources**.
- The NCA needs to work on **clarification of its vision**.
- **Communicating the indicators** will require careful consideration.

# Societal Indicators Charge

- **Categories** of societal indicators for the NCA;
- **Alternative approaches** to constructing indicators and the better approaches for NCA to consider;
- Specific **requirements and criteria** for implementing the indicators; and
- **Sources of data** for and **creators** of such indicators.

Climate-focused questions that could be addressed with the indicators:

- Are important **climate impacts and opportunities** occurring or predicted to occur in the future?
- Are we **adapting successfully**?
- What are the **vulnerabilities and resiliencies** given a changing climate?
- Are we **preparing adequately** for future climate change?

# Societal Indicators Recommendations

- Be clear about what we want of our indicators efforts: 1) Notice and Pay attention, 2) Believe the information, 3) Do something about it;
- Start with the questions to be answered and work backward to the Indicator set and approach (Don't feel compelled to pick one approach for all.);
- Start with what is doable ("low hanging fruit") where important issues that can be mapped onto data;
- Leverage existing efforts when possible;
- Indicators must be scientifically defensible;
- Engage stakeholders early and often, and maintain a 2-way conversation;
- Find ways to include "citizen science" and "experiential knowledge";
- While can't be everything to everyone, remember that not all stakeholders are the same;
- Indicator set (esp. 2013) should be representative not comprehensive;
- Negative and positive indicators impacts and vulnerabilities/resiliencies; and
- Evaluate the indicator system over time.

# Issues for NCA

- For what purpose are we imagining indicators are necessary?
- To document change: trailing indicators?
- To forecast change or stimulate considerations of action: leading indicators?
- To track both physical and socioeconomic factors?
- To track costs and effectiveness of decisions?

# Issues for NCA

- For whom are we developing indicators?
  - General public information?
  - Specific stakeholders?
  - Public sector managers?
  - Private sector managers?
  - Policy and decision-makers?

# Issues for NCA

- What's our theory of change?
- Are we trying to establish cause and effect?
- Are we trying to provide information that is more general on status and trends, but that can then be related to climate change?
- How do we best take advantage of what we are already doing?
- How do we engage relevant stakeholder communities and then move forward?

# Issues for NCA

- What's an appropriate timetable for indicator development?
- What should we be able to say in the 2013 report?
- What can we institutionalize as an ongoing process?

# Some Observations from Experience

- Are at a crossroads, and can't necessarily take the Yogi Berra approach
  - Intensive stakeholder-driven processes can be very effective in developing broad consensus, but are time and resource-consuming – an important lesson from the Heinz Center effort
  - An expert-driven process can be effective in developing a coherent system of indicators, but doesn't necessarily bring stakeholders along – an equally important lesson from an NRC report on ecosystem indicators
  - There are many examples of societal indicators from other institutions – e.g. Human Development Index
  - Of course, a long experience with economic indicators
  - And a National Academy-originated effort, Key National Indicators for the Nation, developing a system of national indicators of nearly everything in response to legislation, and supported by a recent GAO report

# Some Observations from Experience

- There is a lot of experience in ecosystems with extensive stakeholder-driven processes
- But there is no effort that I'm aware of that potentially has as broad a scope as the NCA is considering
- Like the Research Needs chapter, this is an effort that requires substantial buy-in from the agencies if we want to have an ongoing process

# Some Observations from Experience

- In either case, what will actually be delivered as a “product” for the 2013 report might be limited
  - A review of existing efforts
  - An explanation of the approach that is being taken
  - Perhaps a few indicators in each broad category fleshed out
  - A plan for moving forward
- But we need to have some leadership specifically from the agencies, and perhaps also from private sector and/or NGO’s to have a good path forward for implementation in the longer process

# Questions that Require Feedback

- How stakeholder driven do we want to be?
- Do we ultimately envision implementing a program of national/regional/sectoral indicators that will inform future assessments and the nation?
- Indicators of what? Impacts? Changes in physical climate? Adaptation? Adaptive capacity/resilience?
- How do we think about the multiple stress challenge?

# Questions that Require Feedback

- Systems of indicators almost inevitably have to confront the fact that what we would like to have is more than we do have
- What's the response strategy when we also discover this to be true?
- What is the potential role for non-Federal partners?
- What is a reasonable governance approach for an indicators activity? Are the research components of the agencies in a position to do this?
- How do we provide some assurance that results and measurements from an indicators activity are relevant to decisions without advocating or requiring decisions?

# Questions and Comments?

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