Use Case: Selecting Metrics to Measure Ecosystem Services for National Forest Planning

http://bit.ly/NI-ESCM

Context

Members of the Ashley National Forest planning team adapted an ecosystem services conceptual model to their context and chose key socioeconomic outcomes to measure (see the "Getting on the Same Page" use case). The planning team then selected metrics for these outcomes. Each member of the planning team had different expertise that contributed to the group discussion about how feasible it would be to use each suggested metric, what related data was already collected for the Ashley National Forest, and whether the metric would be expected to show a signal from the forest plan alternatives under consideration. The final metrics help to (1) clarify differences in benefits and contributions to social and economic sustainability across plan alternatives, (2) monitor social and economic impacts at plan implementation to demonstrate progress toward achieving forest plan objectives and desired conditions, and (3) provide measures for development of the required Environmental Impact Statement.

Process

Preliminary Metrics List Development

Following the selection of key socioeconomic outcomes, Travis Warziniack (U.S. Forest Service [USFS] research economist) compiled a preliminary list of suggested metrics, building from other national forest plans, the USFS Resource Planning Act Land Management Plan Data Catalogue, and data products from Forest Service research, including the National Visitor Use Monitoring Program. This preliminary list was used as a starting point for discussion during the metrics workshop.

Metrics Workshop

The Nicholas Institute for Environmental Policy Solutions at Duke University in partnership with members of the USFS hosted a three-hour virtual workshop with approximately 15 members of the Ashley National Forest planning team, including participants with expertise on recreation programming, soil and water management, and economics. The workshop participants considered the preliminary metrics suggested for each outcome and discussed whether the suggested metrics were the right ones, considering the following characteristics:

- **Attribution:** Would you expect to see a change in this metric due to the management alternatives? Is the signal greater than the noise?

- **Scale:** What spatial and temporal scales make sense to measure the metric? Would the metric work for an individual forest project or would it work better for an aggregate measure of multiple projects (cumulative effects) for the forest or watershed or region?

- **Data sources:** Is there a source for the data needed for this metric, or would new data need to be collected?

- **Feasibility:** Is this a realistic metric, given the available data and additional work that would be required to measure it?

- **SMART:** Is it a SMART metric—specific, measurable and repeatable, attainable, relevant, time bound, and at the right spatial scale?

The planning team revised the preliminary list by removing some suggested metrics, adding new ones, and proposing alternatives. During the workshop, the project team shared a Google spreadsheet with the preliminary metrics list, updating the list and information related to each metric (measurement approach, data sources, etc.) to reflect changes made by the planning team.

Finalizing Metrics List

After the workshop, the project team prepared a revised spreadsheet of metrics to share with the Ashley National Forest planning team. A follow-up call with the planning team lead, planning consultant, and Forest Archaeologist was held to review the revised metrics and get additional input on metrics related to tribal and cultural resources. When those were updated, the planning consultant identified which metrics would be useful for planning purposes (including developing an Environmental Impact Statement for the forest plan update) and which would be useful for monitoring as the plan was implemented.

Resources Used

Workshop materials: This document (pages 8–14) includes the background information that was shared with the participants before the workshop, the metrics criteria used during the discussion, an example metrics database, and example slides with preliminary metrics for discussion.

Ecosystem service conceptual model: The ecosystem services conceptual model (ESCM) adapted to the Ashley National Forest planning context, a key product of the first workshop, was used to select key outcomes for discussion during the metrics workshop.

Ashley National Forest metrics database: This database includes the final metrics selected by the Ashley National Forest planning team, information about how each metric could be measured, and whether it could be used for planning or monitoring.

Applications

Standardized metrics. ESCMs can be designed to identify key social and economic outcomes of forest plan alternatives for which metrics are needed. The direct connection from the socioeconomic outcomes in the ESCM to the metrics makes clear why certain outcomes were chosen for measurement and in some cases, why specific metrics were selected, increasing transparency for both stakeholders and the planning team.