



# a scientist's guide to influencing decision-making



SCIENCETOACTION

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**Purpose of this guidebook**

Recognizing the importance of informed decisions and the differences between the scientific and decision-making processes, this guidebook provides practical tips on how to best bring these worlds together. In doing so, this guidebook emphasizes the roles of facilitating, synthesizing, translating, and communicating science to inform conservation action. It is geared toward the perspective of scientists and decision-makers working in tropical developing nations and focusing on marine resource management issues. However, the concepts are applicable to a broad range of scientists and decision-makers worldwide.



SCIENCETOACTION

**What is a scientist?**

A scientist—whether an anthropologist, economist, biologist or physical oceanographer—systematically tests hypotheses. Scientists may conduct research to address specific questions, such as the resilience of a population to disturbance, or conduct monitoring to determine the effects of decisions on nature and human well-being. The concept of a scientist has expanded from someone who collects new data to someone who synthesizes existing data sets from varying sources. Scientists exist in universities, government agencies, non-government organizations and the private sector. The concepts in this guidebook apply to all these scientists.

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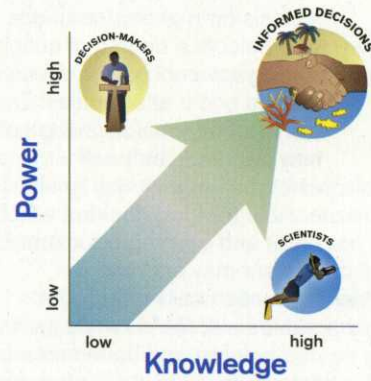


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## Why work with decision-makers?

Creating social change and solving environmental problems requires both knowledge and power. Scientists have knowledge, but typically limited authority to change behavior. Decision-makers have power, but may lack in-depth knowledge of particular problems. Linking these two groups brings knowledge together with power to make informed decisions that can drive social change.



## Why is feeding science into decision-making so difficult?

Scientists and decision-makers come from two different worlds with varying objectives, languages, and processes. While scientists are motivated by discovery and often judged by their peers based on their publication rates and journal status, decision-makers are under pressure to make immediate decisions and are accountable to their constituents on numerous issues.

In order to examine questions critically, scientists typically have a particular area of expertise, such as the carbon storage rates of mangroves or the economic cost-benefits of tourism. In contrast, decision-makers are responsible for numerous issues ranging from health care to climate change and are, therefore, typically generalists who have to consider not only the latest science on a particular issue, but also the economic, cultural, health, and political impacts of their decisions.

While scientists typically conduct research over a period of years, decision-makers often need answers within one hour to one week.

Both scientists and decision-makers are accustomed to being sought after—scientists for their expert knowledge and decision-makers for their decision-making power. As a result of their differing objectives, expertise, and timelines, scientists and decision-makers have limited capacity and time to seek each other out, understand each other, and collaborate.

### Science communication leads to conservation action

#### Abrolhos, Brazil

When a fish farming company proposed constructing the nation's largest facility along the



Abrolhos coastline, an advocacy coalition was created consisting of 21 NGOs, fishermen, community groups, and research institutions. Their concerns were regarding the ecological impacts on the mangroves. Meanwhile, a series of ecological and socioeconomic studies were under way in the region. Due to many consultations between the scientists and local stakeholders, including many of the coalition members, they were familiar with the key messages emerging, which included that 1000 families depended on the mangroves and that the mangroves played a key role in the life cycles of commercially valuable fish species. These insights were incorporated into the campaign, which succeeded in halting the farm proposal and ultimately led to President Lula declaring the mangroves the Cassurubá Extractive Reserve.

## The decision-making process



A decision-maker is someone who selects a course of action among several choices. Decision-makers occur at all scales. The owner of a global supermarket may decide to only sell

sustainable seafood. However, the family member responsible for food decides which stores to patronize and which products to buy. A nation's parliament may endorse an international convention calling for more marine managed areas (MMAs) while a village chief may set the timeline and boundaries for a MMA in his community. All these individuals make decisions that affect the sustainability of marine resources.

The decision-making process varies depending on the context, but the key components include:

- **issue identification** (e.g., fish stock depletion);
- **assessment of impacts** of alternative solutions (political, social, economic, and environmental); and,
- **implementation** of the chosen alternative (e.g., establishment of fishing regulation).

These components are the first steps in the adaptive management cycle. The cycle continues into monitoring and evaluation of the impacts of the decision. These steps provide for improved understanding, which will then feed into further issue identification creating a cyclical process.



### **Science is only one consideration in decision-making** **California, USA**

When the state of California committed to establishing a network of ecologically significant MMAs as part of the Marine Life Protection Act, a team of scientists was asked to develop a proposal. The resulting concept was strongly opposed by ocean user groups, particularly fishermen, who were concerned about the impacts on their economic and social well-being. In order to balance these concerns, the decision-making process was redesigned to solicit plans from all stakeholders, which were then vetted by scientific panels, according to scientific guidelines. By enabling greater stakeholder engagement, social and economic considerations were perceived to be better balanced with ecological priorities. Due to this shift in process and, consequently, perceptions, a network of MMAs is now being implemented.

### **Social science provides basis for focusing conservation** **Birds Head Seascape, Indonesia**

When CI began working in the Birds Head Seascape, a few scoping studies were conducted, including an analysis of tenurial rights and people's perceptions of resources. CI decided to focus initially on two villages that were identified as owning a large, remote, and pristine area covering 155,000 square kilometers. The villagers were not using the area due to its remoteness, and they were concerned that their resources were being poached by outsiders. CI discussed with the village leaders the idea of making this area into a *sasi* (no-take area) with the empowering benefit to the communities of overseeing their own resources. The resulting conservation agreement provides a means of employment, capacity building, engagement of community members through a rotating patrol system, and a boat that the community could not have otherwise afforded.

## Tip 1. Partner with decision-makers

Fundamental to influencing the decision-making process is having a strong partnership with decision-makers throughout the scientific process. The more engaged decision-makers are in the research, the more likely the results will be relevant to their needs—and, consequently, the more likely the results will be used in decision-making.

Identifying the appropriate decision-makers involves anticipating the types of management issues the science might inform. An economist conducting a national-level economic valuation of marine resources might identify ministers of tourism and fisheries. In contrast, a geneticist analyzing fish population connectivity among neighboring islands might identify the village chiefs. In many situations, an introduction through a mutual colleague can facilitate a positive relationship.

For this relationship to work, there must be mutual **respect** and **trust**, which can be enhanced by the following:

- Encourage two-way discussions to ensure mutual understanding and to identify similar interests.
- Listen to the decision-makers to understand their concerns and information needs and adapt the information provided accordingly.
- Explain points in simple, concise terms without sacrificing content.
- Start with basic concepts and then, based on interest and comprehension, advance into more sophisticated concepts (e.g., start explaining climate change mitigation and then advance into Blue Carbon).

Trust is also earned by:

- demonstrating long-term commitment to an area;
- being available for informal or spontaneous discussions; and
- showing appreciation and understanding of the cultural and political context of decisions.

These attributes demonstrate why local scientists play a critical role in linking science with decision-making. It is, therefore, highly recommended that foreign scientists partner with in-country scientists. Doing so will better ensure there is someone available to articulate the findings when relevant policy decisions arise, which could be months or even years later. Engaging in-country senior or junior scientists also facilitates access to informal knowledge and strengthens in-country capacity.

### **Scientists: portals to knowledge**

Scientists play a critical role in policy-making, not only in collecting and analyzing data to answer science questions, but perhaps more importantly, by providing expert insight into a breadth of issues. Viewed as objective critical thinkers, scientists are often called upon to speak on a wide range of issues which may, in some cases, be only marginally related to their area of expertise. As a result, scientists often serve as portals to the latest knowledge and, therefore, play important roles in drawing in other experts on key issues.

### **Trust leads to action**

#### **Phoenix Islands, Kiribati**

When Greg Stone and David Obura first visited the Phoenix Islands in 2000, their purpose was research. However, their roles quickly shifted to advisors to the Kiribati Government on the status and significance of the nation's vast marine resources. A trusting relationship emerged with the Environment Permanent Secretary, Tukabu Teroroko, who hosted numerous presentations, meetings, and receptions, and introduced the scientists to all levels of government to share their insights regarding the uniqueness of the marine ecosystems and how these resources could be conserved. With connections to other expertise including legal and financial experts, Stone and Obura brought additional knowledge to the Government, which ultimately led President Tong declaring the Phoenix Islands Protected Area—the largest marine managed area in the world at the time.



## Tip 2. Identify information needs

To be most useful, research needs to be responsive to decision-making needs from the beginning. Doing so requires understanding existing processes, clarifying relevant policy issues, and then identifying the information needs. In the case of establishing a new marine managed area, the information need may be a map of habitats and human uses of the area. Identification of information needs is best articulated by the decision-makers since

they are the ones who know their objectives. Ideally decision-makers meet and decide on these needs and then communicate these to the scientists. In reality, it is often upon the scientist to talk with decision-makers directly to understand needs. These discussions can occur one on one with the scientists talking with the decision-makers whose authority seems most relevant to their research.

### *Decision-makers best define needs*

#### **Coiba, Panama**

When CI received funding from the Gordon and Betty Moore Foundation for a global analysis of marine managed areas, the proposed Coiba National Park (CNP) in Panama was selected as a priority location for the research. Marrying the global program themes with the information needs for park management became the challenge. Consultations with the Department of Fisheries and other institutions provided useful insight. However, the most progress was made by co-hosting a workshop with the Smithsonian Tropical Research Institute—which was managing the CNP planning process—to bring together the major stakeholders from the communities, government, private sector, and academia to discuss the research needs given park management objectives. The resulting priorities not only helped CI scientists tailor research to the priority needs for marine conservation science and identify key science partners, but helped inform other scientists of these needs as well.



## Tip 3. Synthesize existing science

In many situations, the science already exists to address information needs, but it may not be accessible (i.e., only exists in peer-reviewed journals to which most decision-makers do not have access) or may not be articulated to

address the issue. Consequently, one of the most useful roles of a scientist is to cull through existing research, pull out the relevant findings, and synthesize these key insights as they relate to the issue.

### *Synthesis is often more powerful than primary data collection*

#### **Galapagos Islands, Ecuador**

Galapagos was the ideal location for a climate change vulnerability assessment due to the uniqueness of the natural resources and human dependence on them. The assessment actively engaged decision-makers in the process and was intended to provide insight into the likely effects of climate change on biodiversity and consequently, the impacts on ecosystem services such as tourism and fisheries. Instead of spending limited time on new research, teams of climatologists, ecologists, and social scientists located and synthesized existing information. The results showed that the Galapagos penguin, sea turtles, and giant tortoises are highly vulnerable. As a result, tourism is likely to be affected negatively, given the iconic nature of these species. This new information is now being incorporated into the Galapagos National Park management plans in an attempt to mitigate the effects of climate change on key habitats and species.



## Tip 4. Plan with decision-makers

Involving decision-makers in planning research from the beginning is an important way of ensuring that the science will be useful for decision-making. It allows for clarification of respective interests and expectations, including:

- When will the results, even preliminary, be available? Keep in mind that decision-makers need insight, not publications. Nor do they typically require a 95% confidence interval. The sooner key findings can be shared, the more relevant and useful they will be.
- Are there critical decision-making dates, such as government budget deadlines? Releasing findings to coincide with these key dates can greatly enhance decision-makers' interest and subsequently impact.

Traditionally, a research plan focuses on the hypothesis, methods, and budget. More practical is a 'workplan' that has the research as a core component, but also includes discussion of the relevance of the research to

management objectives: anticipated conservation impacts; target audiences for the results; how these audiences will be engaged; and, supportive materials beyond peer-reviewed publications. Important to include is a budget allocation for translating the science into accessible information and disseminating this information through discussions with decision-makers. For most applications, approximately fifteen percent of the budget is recommended as a minimum target for this 'science communication' component to cover return travel, the scientist's time, meeting costs, and product design and printing, most of which will be determined once results are finalized. The workplan is best written with the decision-makers.

If this joint planning process is started early enough, the scientists and decision-makers can fundraise together. Joint fundraising can be a powerful means of gaining support since donors are increasingly prioritizing the application of science to management needs, which a joint proposal demonstrates.

## Tip 5. Build capacity

An increasingly popular concept, "capacity building" refers to empowering people to achieve their own successes. Capacity building can be on multiple scales from a foreign scientist who works with an in-country colleague to share expertise to a scientist who trains community residents in monitoring protocols. Capacity building includes:

- working with senior scientists to share expertise;
- engaging and mentoring junior scientists and community members;
- giving seminars and talks to explain methods and share expertise;
- actively engaging in networks of colleagues;
- contributing to local to global databases; and,
- providing equipment and resources.

Capacity building is critical for influencing decision-making because the more people in the country and communities who appreciate the research, the more advocates there will be for the policy recommendations. In addition,

there will be more people drawing on the findings when decisions are made, which is often unpredictable. Capacity building provides a couple of additional benefits:

- Engaging local expertise demonstrates respect.
- Locals are more knowledgeable of the environment, previous research, cultural norms and political realities, and therefore, they can help ensure a smooth research process.

Closely related to capacity building is the process of continually updating and engaging stakeholders—which may include village chiefs, fisheries staff, business leaders—regarding research progress. These discussions regarding early insights can influence decision-making before the results are final.

