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MOVING FROM VISION TO ACTION

SECTION

4

MOVING FROM VISION TO ACTION



Developing Strategies

“There is a great need for... impact assessments and such exercises to ensure that decisions made to implement sustainable environmental programmes are strategic, people focused, cost effective, and sustainable.”

— FIJI NATIONAL ASSESSMENT REPORT TO THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT, 2002

The success or failure of ecoregion conservation will ultimately be determined by the focus, quality, and effectiveness of the strategies that are developed. These strategies, referenced to a biodiversity vision and targets while shaped by stakeholder attitudes and incentives for change, will provide the framework within which action plan milestones and activities are designed.

Conservation strategies will emerge from the situation analysis. Building on an increased understanding of threats, opportunities, existing activities and policies, information gaps, stakeholder attitudes, interests, and capacities, an EAP team will be in a position to develop strategies around habitat and species protection, sustainable use and management, advocacy, communication, education, and collaboration. Ideally these strategies will look to strengthen existing frameworks or processes (e.g., a National Plan, regional process, or international protocol) as well as stimulate new initiatives.

The biodiversity vision process and the situation analysis will combine to provide an EAP and key stakeholders with a clear picture of how ecoregion conservation will proceed in an ecoregion. The processes and lessons that help create that picture of action and achievement will also serve to inspire and shape the partnerships and collaborative effort needed to realize an ecoregion vision. The development of these relationships, and the potential they hold to effect change, will be as important in the long term as the strategies themselves.

Completing a Situation Analysis

A situation analysis is a process that can help an EAP answer critical political, economic, social, and cultural questions that are connected to the state of biodiversity; based on those findings, the EAP and key partners can map out the most effective way of realizing the vision. The information, relationships, and ideas generated by this process will help shape and focus stakeholder dialogue and the selection of conservation strategies.

Ecoregion conservation encourages experimental and ambitious interventions that can help address the social, political, and economic conditions affecting the state of natural resources (positively and negatively). There is no right or wrong way to complete a situation analysis;

rather the lines of inquiry pursued, and the tools used to generate the information and understanding needed by an EAP, will be determined by the specific conditions, issues, and opportunities that exist in the ecoregion.

A situation analysis takes information and data from a range of processes and assessments (discrete studies undertaken on specific issues or questions being asked across differing scales) and helps translate them into concrete and prioritized strategies and actions. EAP teams can draw on a range of experts and tools to support the situation analysis process. The goal (of both the socioeconomic assessments and coalition building undertaken during the situation analysis) is to understand and develop strategies that respond to the critical issues, conditions, incentives, and trends that drive the human activities that will influence the scale and pace of conservation achievement.

Developing Focused Strategies

How EAPs arrive at the point where they can confidently promote specific interventions will vary from ecoregion to ecoregion. However some valuable guidance on what may or may not help an EAP move from the vision to action has emerged over recent years. Points of guidance include:

- Assemble a smart, influential team of people (internal and external) to help work through the questions that an EAP needs to answer in order to move from the development of a vision to its achievement.
- Identify the specific questions that need to be answered (about issues, opportunities, capacities, attitudes, and so on) before new and innovative actions can be taken.
- Choose tools and processes that will help *rank* (not simply *identify*) opportunities, threats, and options for intervention.
- Use experts and existing frameworks (political, economic, and social) to help develop strategies that can begin to address the threats and opportunities identified by analysis and stakeholder consultation.
- Make strategic choices about the scope of analysis needed to respond to opportunities and threats. Success (in the form of immediate action or influence) can come from limited analysis if that analysis is focused and can help organizations make defensible choices.
- Remember that, while conservation strategies and plans should be taken seriously and generally followed, a plan should not be regarded as inviolate.

The conditions, capacities, and opportunities in each ecoregion ultimately determine the scope and scale of analysis that is needed. While there is no specific formula, a good situation analysis should aspire to the overarching goals set out in the paper *Ecoregion Scale Conservation: Planning and Joint Learning* by Gordon Orians (1998). Those goals are:

- To identify the incentives and disincentives that drive human activities that generate threats to, as well as opportunities to preserve, biodiversity in the ecoregion

- To assess how the incentive structures can be influenced or altered so that it comes to be in the interests of all actors to behave in the ways that contribute to achieving the biodiversity vision
- To identify major gaps in knowledge of important socioeconomic factors in the ecoregion
- To identify and distinguish among problems for which incentives can be prescribed with confidence, those for which the best intervention is uncertain, and those for which intervention appears to be undesirable.

The “What and Why” of Socioeconomic Issues and Conditions

An ecoregion vision, objectives, and targets provide important reference points for a situation analysis. With these and the goals of a situation analysis in mind, it is useful for an EAP to work through a number of key questions. In doing so, an EAP can determine the need for additional analyses to inform the selection of specific conservation strategies and the focus of future actions. EAPs can use a combination of stakeholder workshops, expert groups, and other methodologies to work through the initial “what and why” of the situation analysis. The approach used to answer these questions and pursue subsequent analyses will vary depending (among other things) on existing knowledge, the desired level of stakeholder participation, and the availability of resources. However, irrespective of the approach used, and the ultimate scale at which the analysis results are to be applied (e.g., ecoregion, priority area, site), an EAP should pursue dialogue and analysis that will help answer the following key questions:

- What are the most serious types of destruction or degradation affecting the priority areas, species, and processes identified in the biodiversity vision?
- What are the causes behind the degradation of priority areas, species, and processes?
- What are the key social, economic, political, and cultural dynamics in the ecoregion, and how do those dynamics impact biodiversity and conservation efforts?
- What is the contribution (direct and indirect) of biodiversity to the economy of the ecoregion and specific sectors within it?
- What are the biodiversity-related attitudes and practices of different groups—from the powerful to the disadvantaged?
- What tools are available to the ecoregion team (including legal or constitutional powers, international obligations, and institutional frameworks)?
- Where do opportunities exist for creating or leveraging benefits for biodiversity and people?
- What processes, activities, and events in support of ecoregion conservation are already taking place?

Using Analytical Tools

Based on responses to the key questions, an EAP team can determine the amount of analysis required to inform the development of conservation strategies, milestones, and activities. In those instances where considerable analysis has already been completed, key stakeholders are already addressing threats, or opportunities for immediate action exist, an EAP may not need to undertake exhaustive socioeconomic analyses. Instead, based on existing information and activities, EAPs can move quickly to strategy development, coalition building, advocacy,

and action. However, in most instances (and especially where ecoregions span borders), it is likely that some new analysis will be required to systematically clarify key conditions, issues, and incentives; identify strategic opportunities for action; and inform the development of response strategies.

Once key issues, conditions, and incentives have been identified, an EAP will need to match them to the most appropriate tools or processes of analysis. (Options include root causes analyses, institutional analyses, opportunity assessments, rapid assessments, policy analyses, population analyses, economic valuations, sustainability assessments, and legal analyses.) It is important that an EAP does not become bogged down in data collection and analysis. An EAP should focus on conducting research that will help the EAP to realize the goals of a situation analysis in a timely and strategic fashion.

Finding the Levers of Change

A situation analysis should inform the development of ecoregion conservation strategies and actions. What specific socioeconomic assessments look like will depend on the issues, conditions, and connections at work in the ecoregion; the political structures and factors that influence them; stakeholder interests and needs; and cultural and political values. The following section introduces some of the tools available to EAP teams as they work through a situation analysis. Additional tools can be identified through discussion with experts and partners.

Examining Threats and Shaping Response Strategies

Before developing and implementing strategies and actions, it is important to identify and appreciate the scope and scale of the threats to biodiversity in the ecoregion. Experience has shown that the processes of identifying, assessing, and ranking threats are most useful when referenced to the biodiversity vision and conservation targets. Those references help focus any assessment on places, issues, and conditions that are directly relevant to potential conservation gains in the ecoregion.

While there are no rules about which tools or processes an ecoregion action programme should use to identify threats, there are a number of conditions that can help guide decisions about which tools to use and when. The conditions to consider include:

- **The current state of knowledge regarding threats to biodiversity across the ecoregion.**

If key threats have already been identified and assessed and if the trends associated with those threats have been explored (either by stakeholders in the ecoregion or other programmes or organizations), a detailed assessment of threats may not be required. It may be more appropriate (and efficient) to map identified threats (e.g., infrastructure development, population growth, and tourism development) against the priority areas delineated by the vision. EAP teams may also wish to explore with stakeholders the vision and values (political or economic) that they associate with those threats. These activities will help an EAP determine what options for intervention are most appropriate and at which level those interventions should be undertaken.

- **The level of understanding needed to mitigate identified threats.** An understanding of

the scope and degree of the biodiversity threat is needed to inform the design of conservation strategies and actions. It may be that, while the threats to biodiversity are well known or easily identified, the critical leverage points for change are not. In those instances, it is important that an EAP clarify and prioritize the array of factors (including processes) that are driving biodiversity loss.

■ **The level of stakeholder engagement in the ecoregion conservation process.** In many instances, ecoregion conservation will be pursued by coalitions or consortiums of individuals and organizations concerned with the state of biodiversity of an ecoregion or a priority area within an ecoregion. The collective knowledge and experience of those stakeholder groups can contribute significantly to understanding threats and the opportunities to address them. As such, capturing the instinctive or inherited knowledge of stakeholders can be an important first step towards addressing pressures and threats. Focus groups, workshops, and participatory planning techniques can generate an environment in which key stakeholders share information and experiences that can help pinpoint critical opportunities and threats at a variety of scales.

A Range of Tools

Practitioners can use a number of tools or processes to identify and rank threats to biodiversity across a range of scales and inform the development of strategic responses and planning.

Root Causes Analysis

Working at an ecoregion scale makes it all the more important to make sense of the factors that drive biodiversity loss. These root causes may exist at a distance from the actual incidences of loss, either in space or time. Therefore, they are often difficult to identify and remedy.

Where previous analysis and expert or stakeholder knowledge of threats is limited, a root causes analysis can help an EAP to identify priority threats in relation to the conservation targets; explore how issues are interlinked; and determine the scale at which those issues are operating (local, national, and international). With this information in hand, an EAP is well positioned to develop strategies of action.

A root causes analysis is completed largely through secondary data review, targeted interviews, and field studies. At each step of the analysis, a series of questions is asked to develop and follow the chains of explanation between biodiversity loss and threats. The time and resources required for conducting a root causes analysis will vary according to capacity, funding, time constraints, and availability of information.

The root causes model offers EAPs a systematic approach to information collection, focused dialogue, and analysis that can inform the elaboration of conservation strategies. This model of analysis takes EAPs through the three phases: information gathering, refined analysis, and strategic advice.

INFORMATION GATHERING. This phase of analysis calls for EAPs to:

- Identify and collate socioeconomic information (for the ecoregion or countries within the ecoregion) that has been already been compiled.

Responding to Threats: The Case of Climate Change

If climate change has been identified as a particularly serious threat in a specific ecoregion, an initial assessment can be completed at a coarse level. For example, EAP teams focusing on marine systems can assess the impact of increasing sea temperatures, sea level rise, and altered circulation patterns. And EAPs addressing coastal systems can assess the impact of sea level rise, altered extreme weather event patterns, changing land use patterns, and the potential need for migration of species along gradients. EAPs should also consider how the success and impact of invasive species may adjust to a changing landscape and how human impacts may increase.

A number of strategies are being developed and tested to increase the resilience of natural systems to current and projected threats of climate change.¹² As EAPs are assessing threats and developing response strategies, there are some basic factors that can help make ecoregions more resilient to or tolerant of the changes associated with climate change.

■ **Consider how actions responding to climate change may alter what is currently considered adequate.** Ecoregions will still require core reserves and networks between key sites, but conservation strategies will also need to consider how those landscapes or seascapes may change.

■ **Increase efforts to limit non-climate threats on the ecoregion.** When multiple stresses are applied to a natural system, the system becomes less tolerant of additional perturbations. Because climate change represents a major perturbation with few options for local-level control, it will be important to limit non-climate stresses to increase the tolerance or resilience of the local system to the likely climate stresses. Some stresses to consider may include: habitat fragmentation, extractive uses, invasive species, and pollution (from nutrients and contaminants).

■ **Identify naturally resilient populations for added conservation vigour.** Certain studies have identified, for example, coral reefs that have been less prone to bleaching despite locally high sea temperatures. Such populations may be genetically unique in their ability to respond to or tolerate those stresses. Identification of such populations for inclusion in protection schemes may provide a source population for recolonization of less-successful populations.

An EAP facing the threat of climate change is likely to need to engage experts, processes, and programmes beyond the geographic and programmatic boundaries of the EAP to develop the strategies and actions needed to address or mitigate the identified threats. The extent of this outreach will be determined by the gaps in knowledge, level of priority, and incentives for change that the situation analysis identifies.

¹² WWF's Climate Target Driven Programme (TDP) has developed a guidebook for assessing and responding to climate change within the context of ecoregion conservation. To obtain this guide, visit www.panda.org/climate/pa_manual.

- Initiate dialogue (through a workshop or other appropriate means) with partners and researchers to map out a mutually agreeable process for assessing conservation threats.
- Involve researchers representing multiple disciplines in the analysis, using previously compiled information, existing information, interviews, and any other relevant approaches. The researchers should identify key information gaps and associated questions.
- Complete assessments and identify priority threats, opportunities for mitigation, and areas where more focused analysis is needed. The resulting picture should illustrate how different socioeconomic factors work in conjunction with, and have an impact on, the conservation objectives and targets.

In completing this first phase of analysis, it is important for EAP teams to determine the appropriate level of information needed at different scales. This can be done by considering the scope of socioeconomic inquiry required (information gathering, workshops, dialogue, and assessments) relative to:

- The immediacy and extent of overarching threats to priority areas in the ecoregion
- The potential roadblocks raised by certain stakeholders vis-à-vis key overarching threats (including roadblocks that may prevent the achievement of the vision and targets)
- The key strategic and institutional elements influencing decision making and investments across the ecoregion.

REFINED ANALYSIS. The broad understanding of threats gained during the first information-gathering phase can help identify where more focused analyses is needed. It can also identify immediate opportunities for action (through collaboration, advocacy, or field action).

The socioeconomic issues identified by the root causes analysis for further investigation may be sector specific (e.g., tourism or agriculture) or thematic (poverty or economics). The kind of questions or gaps identified in the initial analysis can help an EAP identify the analytical tool best suited to a specific issue, such as a sustainability assessment of a tourism policy or economic valuation of a particular natural resource service. Assessments at this more focused level should be coordinated by the EAP team, but undertaken by a resource person with the relevant expertise (e.g., economics or policy analysis).

STRATEGIC ADVICE. The information gathering phase of a root causes analysis is likely to reveal a wide variety of factors effecting priority areas, while the focused analysis will provide a more detailed look at key issues. Together, these phases will create a foundation of information from which an EAP can begin to develop response strategies to address specific issues. They will also provide a baseline of socioeconomic information against which the impact of interventions (on attitudes, policies, and behaviour) can be measured over time. Root causes analysis is best used when:

- Priority areas and targets have been identified
- There is a limited understanding of the scope and nature of threats to biodiversity in the ecoregion

- There is clear value to be derived from understanding the connections between identified threats and their root causes (e.g., the opportunity to influence multilateral agency investments in dams or regional policy frameworks driving unsustainable migration patterns).

Map Overlays as an Analytical Tool

Map overlays, developed using geographic information systems (GIS), are designed to bring together biodiversity and socioeconomic data. Maps can help an EAP team identify critical areas where high-priority biodiversity, significant pressures, and volatile socioeconomic conditions meet. The identified overlaps and intersections can also help guide subsequent planning and action for a range of conservation, social, and development interventions across an ecoregion.

Map overlays have been used in a number of ecoregions to explore the intersection of priority areas of biodiversity, conservation targets, and identified threats. For example:

- In Madagascar, a population-environment mapping project helped identify the connections and interactions between increasing human population (an identified threat) and priority areas (identified by the vision). By presenting those connections, conservation, health, and education organizations have been able to initiate an informed dialogue about how and where they can individually and collectively respond to the population pressures driving biodiversity loss and poverty across priority areas.¹³
- The Cape Floral Kingdom of South Africa is a data-rich ecoregion where conservation practitioners have a detailed knowledge of the threats to biodiversity. With that knowledge as background, the ecoregion team undertook a mapping exercise to overlay priority biodiversity areas with demographic and land-conversion data (human population growth and habitat transformation having been identified as among the main threats to biodiversity). The resulting map series graphically communicates the biodiversity–threat relationships and impacts across the ecoregion. The maps are now helping to inform and lobby local and regional planners, policy and advocacy partners, the private sector, and conservation organizations about critical threats across the ecoregion.

Map overlays are best used when:

- Priority areas for biodiversity have been identified
- A connection has been made between the state of biodiversity and socioeconomic factors that can be spatially represented (e.g., population, land-use change, sacred sites)
- The mapping of conservation and socioeconomic connections can help build or strengthen understanding and motivations for collaboration among key stakeholder groups.

Identifying Opportunities

At the same time that an EAP is exploring the threats and sources of threat associated with the achievement of conservation targets, the question of whether the conservation and restoration of large-scale ecosystem processes is feasible and timely (at scale and in accordance with the biodiversity vision) will also arise. This question requires an EAP to go beyond the identification

¹³ For more on this case study, see: *Mapping the Connections: The Population–Environment Lessons from Madagascar* by WWF Conservation Strategies Unit. 2002. WWF: Washington, DC.

of threats to an understanding of the opportunities that will facilitate the achievement of large-scale conservation.

A rapid assessment of actual and anticipated opportunities can help EAPs identify those conditions, trends, attitudes, processes, or events that can provide significant opportunities for conservation. Using the reconnaissance and the results of stakeholder interactions as a guide, an opportunity assessment can help EAPs determine the potential that exists to leverage behaviour, investment, or decision making in support of conservation targets; assess the potential impact of identified opportunities on proposed interventions; and estimate the effectiveness of ecoregion conservation efforts.

An opportunity assessment is highly complementary to stakeholder, threat, and policy analyses. While an analysis of threats can lead to the identification of opportunities to mitigate those threats, an opportunity assessment can identify opportunities that lie outside the conservation sphere but provide a chance to leverage key leaders, constituencies, investors, and decision makers in support of conservation. For example, payment for environmental services is an opportunity that can lead to more sustainable use of natural resources because a market is created, thereby contributing to conservation. Another opportunity might be butterfly farming or beekeeping, activities that provide alternative sources of income to local communities that can decrease their dependence on natural resources, thereby contributing to conservation. The strategies that are developed to take advantage of these opportunities are unlikely to directly address an identified threat—but they can go a long way towards establishing partnerships and models of sustainability that will support the ecoregion conservation agenda.

Opportunities can also come in the form of political processes and events that will influence actions and behaviour across and EAP. For example, in the Yangtze Basin ecoregion a rapid opportunity assessment identified a number of significant political and policy processes that could help deliver on ecoregion conservation targets. These included: the preparation process for the *Eleventh Five-Year Plan for China* (the blueprint for national development); the Communist Party Central Committee and State Council's *Principles and Guidelines for Sustainable Forest Management* (which requires provincial forest departments to develop implementation plans); and donor intentions to develop and fund a \$30-million¹⁴ river basin management initiative. And in the South Pacific, where whales are a focal species in no less than six marine EAPs, general political support for a Southern Ocean Whale Sanctuary was identified as an opportunity to formalize a regional mandate for ambitious whale conservation efforts. The combined efforts of the South Pacific EAPs, WWF Species Programme, national offices, and partner organizations around this opportunity led to the establishment of a Pacific Leaders Taskforce (reporting to the South Pacific Forum) that will support whale conservation efforts (and therefore EAP whale targets) over the next two years. As in these cases, it is likely that many of the opportunities identified in an assessment will coincide with or complement the issues emerging from other EAP or thematic programme efforts.

In most instances an EAP will be able to complete an initial opportunity assessment by gathering a group of key practitioners and information resources together. Based on their knowledge

¹⁴ Unless indicated otherwise, all dollar amounts represent U.S. dollars. In cases where other currencies are used, the U.S. dollar conversion is also provided.

and experience, a wide ranging list of opportunities can be identified—from specific meetings, to policy initiatives, high profile events, and donor programming.

An opportunity assessment should be an integral component of any situation analysis. It will provide greatest value if:

- The ecoregion vision has been completed (priority areas, conservation objectives, and targets have been identified)
- External conservation processes, plans, and frameworks have been identified
- Local expertise and information is readily available to the EAP.

In Action: Assessing Opportunities in the Northern Great Plains

The Northern Great Plains ecoregion of the United States completed an opportunity assessment as part of the ecoregion conservation process. By reviewing and building on a variety of available data sets and assessments, consultants helped the EAP team identify the leading economic and social factors that are likely to support the vision and conservation targets.¹⁵ Through analyses of economic conditions and incentives for change, the Northern Great Plains EAP determined that a number of factors provide substantive opportunities for future conservation efforts:

- Cultural restoration on Indian lands, which will change the current pattern of management across Native American reservations
- Landowners moving away from traditional livestock ranching to bison ranching and pursuing the adoption of conservation easements
- Low land prices providing openings for land acquisition, purchase easements, and alternative land uses
- Communities searching for alternatives as economic and demographic decline takes hold across the ecoregion
- The growing demand for recreational opportunities in the United States
- Income for the region coming from tourism and hunting
- Significant financial resources shifting away from “land retirement” toward conservation of working lands
- The growing popularity of the private land conservation movement in the United States and its models for development
- The growing interest in public–private ventures to restore prairie ecosystems for conservation and tourism.

With opportunities identified and assessed, the Northern Plains Conservation Network (of which WWF is a member) has been able to design specific actions that will contribute to the achievement of the conservation vision for the Northern Great Plains.

The Northern Great Plains EAP did not commission new data generation or need to commit huge resources to gather any of the data reviewed during their opportunity assessment. Rather, they derived most of the necessary data by going to public information sources, including the U.S. Department of Commerce. They also used some obscure sources to gather data on topics such as road density. This information was then pieced together and used to inform the Northern Plains Conservation Network discussions around priorities and strategies. >>>

¹⁵ For more information, see *Population, Employment, Earnings, and Personal Income Trends* by Ray Rasker and Ben Alexander. 2000. WWF-US, Northern Great Plains Ecoregion Office: Bozeman, Montana.

Understanding Socioeconomic Dynamics

In addition to understanding threats and opportunities, it is important to understand the values, needs, and incentives (economic, political, and social) that drive stakeholder behaviour in an ecoregion. Indeed, it is those factors that will have a strong influence on whether ecoregion conservation targets and strategies will be adopted and promoted by a wide group of stakeholders or remain limited to the conservation community. Social and economic valuations, sustainability assessments of trade and policy agreements and processes, and rapid community assessments can all be used to help an EAP profile the actual and likely patterns of stakeholder values and behaviour across the conservation and development landscape.

The level of clarity that exists in relation to key threats and opportunities will influence the selection of a specific valuation or assessment process for an ecoregion. Detailed assessments are best focused on the specific and should build on the state of existing knowledge around social, economic, and policy issues.

Based on the level of clarity and knowledge around socioeconomic issues, an EAP team can identify what additional knowledge and understanding is needed to help move the conservation agenda forward.

Community Jury

In Indonesia's Bunaken National Park—a priority area identified within the Sulu-Sulawesi Sea ecoregion—the threats to the marine resources were well documented. However, it was unclear how local communities, dive tour operators, fishers, and management agencies valued the regional biodiversity relative to their own interests and needs or, more importantly (in terms of future conservation efforts), how they would respond to an extension of protection measures within the existing management regime. To learn more about these values at the priority-area scale, the Bunaken team (working with experienced practitioners) chose to use the Community Jury tool to clarify local values and explore options for resource management across the priority area. (See the “*Indonesian Community Jury*” case study for more on this approach.)

Strategic Environmental Assessment

In the Fiji Island Marine ecoregion (FIME), tourism is the fastest growing industry, with potentially significant impact on the natural and social environment. As part of a process to guide the development of strategies for mainstreaming environmental dimensions into economic and social development interventions in Fiji, WWF and the Asia Development Bank entered into a partnership agreement to undertake a Strategic Environmental Assessment (SEA) of Fiji's Tourism Development Plan.¹⁶ The SEA was designed to extend understanding of the likely environmental and social impacts of the Tourism Development Plan. This was achieved by comparing the current environmental, social, and economic baselines and anticipated trends under the Tourism Development Plan against sustainability objectives. The comparison allowed an assessment to be made of whether or not the Tourism Development Plan is sustainable and how the FIME conservation planning process can respond and contribute to it.

¹⁶ For more on this initiative, see: *A Strategic Environmental Assessment of Fiji's Tourism Development Plan* by Roger Levett and Richard McNally. 2003. WWF South Pacific Programme: Suva, Fiji.

In Action: Indonesian Community Jury

A community jury workshop (CJW) is an innovative method of community consultation in which community members form a community jury (CJ). The jury comes together under the guidance of an expert facilitator to hear presentations (“evidence”) from stakeholders or representatives who are chosen to provide a balanced picture of the situation under consideration. Following presentations, jury members are asked to answer certain questions, which may include whether resources should be allocated to a particular cause, the nature of those resources, where the resources should come from, how the resources should be used, and who should be asked or lobbied to provide the resources. Respondents must provide reasons and qualifying statements with each answer. Essentially a CJW is designed to be like a court of law, with the CJ asked to listen to and consider evidence about a certain situation and then make a group decision. The way in which these issues are discussed—by providing people free and open access to information—is as important as the decision that the CJ reaches.

In what is believed to be the first-ever community jury in Indonesia, a team comprised of representatives from WWF and the University of Queensland worked with local stakeholders to consider whether more resources should be allocated to support conservation and cleanliness in the **Bunaken National Park in North Sulawesi**. The Bunaken National Park CJW was held over four days in August 2002. The aim of the CJW was to get community input into decision making about the Bunaken National Park and build understanding (among WWF and researchers) of how opinions and values change as people hear information from a range of experts and community representatives. In the case of Bunaken, the jury heard presentations from national park representatives, mangrove users, fishers, scientists, NGOs, and dive tour operators.

Based on the information provided, the Bunaken CJ agreed that:

- Financial and human resources should be allocated to the conservation and cleanliness of Bunaken National Park as soon as possible
- The resources should be used to increase the intensity and amount of work already underway to protect Bunaken and to help initiate new programmes to address the rubbish problem
- A multi-stakeholder approach was essential.

The jury also decided that their recommendations should be written up and sent to various stakeholder bodies, including resource managers, relevant government departments, and NGOs. Two members of the jury offered to write articles for local newspapers.

Following the workshop, the Bunaken CJ independently decided to form a local group to organize similar workshops on issues that residents believed to be important for North Sulawesi (such as the rubbish problem and preserving the Tondano watershed). The jury also appointed coordinators to arrange future meetings. >>>

Ethnoecology Assessment

Ethnoecology is a way of looking at the relationship between humans and the natural world that emphasizes the role of cognition in framing behaviour. It provides a powerful perspective from which to understand resource management and considers the schemas, scripts, and action plans that orient people in the world and determine the productivity, equity, and sustainability of their practices. Using a participatory approach, a rapid ethnoecological assessment can help an EAP to better understand local people's level of ecological and cultural knowledge. In addition, it can help involve locals in ecoregion conservation through dialogue and information sharing. The assessment uses a number of participatory concepts, including mapping, classification, matrices, transects, timelines, and facilitated group discussions. The participatory approach requires a structured framework, which is shaped by the ecoregion vision, priorities, and objectives.

The Transfly ecoregion (spanning Papua New Guinea and Papua, Indonesia) has trialled a methodology for a rapid ethnoecology assessment within the ecoregion conservation context.¹⁷ Focused on a number of key areas and issues, the Transfly methodology was designed to incorporate a systematic assessment of local knowledge and management issues in villages in relation to important landscapes and focal species. The approach proved to be very successful. As the assessment team moved from village to village, the local participation and level of knowledge being imparted by community members increased significantly—so much so that village requests to participate and the level of information being provided became almost unmanageable. The assessment process also helped local people to understand that the EAP team was committed to helping locals articulate their vision of the landscape. This vision will be one of the building blocks of the conservation plan for the Transfly.

How to Choose?

Whatever tool is used to analyse priority issues, it is important that the EAP team accesses the best available advice to complete the work. In most instances, this will require an EAP to contract with experts or enter into partnership agreements with external agencies. The nature and scope of these relationships should, at all times, be guided by the issue at hand and the goals of ecoregion conservation—not by the desire of experts, institutional partners, or donors to pursue specific research agendas.

¹⁷ See *The First Map: An Ethnoecological Method for Rapid Assessment of Community Perceptions and Values of Landscape and Biodiversity in the Transfly* by Marc Wohling. 2003. (Unpublished.)

Leveraging Policy to Support Ecoregion Conservation

“Lasting solutions rely on the participation of key stakeholders, such as governments and donor institutions, who have an interest, positive and negative, in the biodiversity of the region.”

— GORDON ORIAN, ECOREGION CONSERVATION: PLANNING AND JOINT LEARNING, 1998

The conservation connections and possibilities offered by government frameworks and policies are something that an EAP should begin considering from the outset of the ecoregion conservation process. A reconnaissance should be the first instance in which to identify those government or policy elements that are likely to offer ecoregion conservation support, leverage, or opposition. It is more likely, however, that government and policy-based opportunities and threats (in the sense of environmentally “negative” policies) will be identified during the situation analysis. It is during this phase—when threats to biodiversity and opportunities for change are being explored—that the real potential of government frameworks to support conservation action are likely to emerge.

As key stakeholders come together to shape a biodiversity vision, develop conservation strategies and targets, or implement actions, it is important to consider how policy frameworks (e.g., national policy processes, protocols, and conventions) can influence conservation planning and action across the ecoregion. It is also important to recognize the potential those frameworks (existing and proposed) provide to leverage and magnify opportunities for achieving ecoregion conservation targets and milestones.

The policies, agreements, and political processes that are likely to provide points of leverage for ecoregion conservation will vary considerably from ecoregion to ecoregion given national interests and issues, political history, and economic realities. However, there is little doubt that a range of national and transboundary policies or political frameworks will exist in all ecoregions and that, within these, ecoregion conservation targets may be promoted or formalized over time. In addition, there may be a regional or international framework (such as the Convention on Biological Diversity) that is relevant to the ecoregion and provides an incentive for government to manage natural resources in a sustainable manner. Where policy frameworks do not exist, experience shows that the visioning and planning elements of ecoregion conservation can generate the awareness and political will needed to bring new conventions into force.

Just as the frameworks and policies of ecoregions will vary, so too will the opportunities they provide EAPs to engage with them. How an EAP engages with these processes will depend to a large extent on the prominence of government agencies in conservation planning, the degree to which government frameworks operate or have evolved around natural resource management issues, and the influence of policy frameworks on key stakeholder decision making across the ecoregion. An EAP will need to decide whether and how it should factor government and policy frameworks and processes into ecoregion conservation planning and action. In some instances, EAP partners may decide to use the ecoregion conservation process to inform or initiate policy initiatives that will support ecoregion conservation efforts.

How to Engage?

While government and policy frameworks can offer significant opportunities to ecoregion conservation, they can also present barriers to conservation action. This will most often be the case when environment and conservation are considered to be secondary to economic development or security agreements and policies. In these instances the key is to find—through identification, prioritization, dialogue, and analysis—those government frameworks, policies, or processes that offer the greatest support and impetus to ecoregion conservation efforts—whether it is a regional framework offered by the European Union (like the Africa Caribbean and Pacific agreement), a national framework (such as that offered by the New Zealand Government’s ocean policy process), or a political process (such as the annual meeting of the 11 provinces of the Yangtze River). Once frameworks have been identified it is important to access the technical capacity and experience needed to realize their potential. For an EAP this will, in all likelihood, require linking up with expertise that exists beyond the immediate EAP team—whether from wider networks, partner organizations, or other institutions.

The potential return on EAP engagement in policy processes is significant—both in terms of conservation investment and impact. When planning and acting at the scale of an ecoregion, it is important to recognize that no single organization will ever have the capacity or resources needed to achieve an ambitious vision. But government and the private sector are likely to have within their power the ability to leverage the resources and influence needed to realize, stall, or destroy a vision. For an EAP vision to be achieved, the power of government and the private sector will need to be marshalled in support of ecoregion conservation objectives and targets. This may be as direct as lobbying to have EAP targets included within national biodiversity action plans, or as subtle as influencing a government’s decision to recognize biodiversity baselines and priorities as the foundation of resource management policy making. Either way, understanding political and policy making opportunities and constraints will be key to ecoregion conservation success.

Education for Ecoregion Conservation

“For ecoregion conservation to succeed, we need to build the capacity of ecoregion teams to plan, implement, and evaluate the social strategy side of the equation. A biodiversity vision is critical to guide us, but people are the key to successful conservation achievements. And if we don’t know how to engage people in this process, we’ll never have sustained success.”

— JUDY BRAUS, DIRECTOR OF EDUCATION, WWF-US

A critical element of conservation planning and action is a strategy for engaging people—as influential stakeholders, long-term stewards, and strategic allies—in the protection of an ecoregion. One of the best tools for engaging people is education. When done well, education can increase understanding, build skills, and enhance the motivation and capacity of people to actively participate in efforts to protect and restore the environment. Coupled with policy, market incentives, scientific research, and other initiatives, education has the power and potential to create the type of societal change and support needed to sustain conservation efforts and protect and restore biodiversity.

In Action: Thinking Strategically from the Start

Embracing government frameworks and policies can be an important contributor to ecoregion conservation success. Information on relevant government policies and frameworks can be used to inform early action and identify opportunities for EAP engagement and influence at a political level. The ERC process brings together biological information, priorities, and targets that enrich and extend the conservation impact of a wide range of political processes. Examples of building on previously existing frameworks and policies include:

- The **Fiji Island Marine ecoregion** surrounds the entire country of Fiji. As a result, the ambitions of the EAP overlap entirely with a number of national agendas related to the reef system, including conservation, tourism, and fisheries. Fiji already has a National Biodiversity Strategic Action Plan (NBSAP) that represents a national expression of how Fiji sees the status of its biodiversity. Because the groundwork is already in place, the EAP adopted the NBSAP as the guiding framework for ecoregion conservation. To this end, the EAP team positioned ecoregion conservation as a process that will add value to the NBSAP and other national planning processes. This positioning has been informed by a point-by-point review of the NBSAP and its links (actual and potential) to the core elements of ecoregion conservation.
- In the **Yangtze Basin ecoregion**, a number of political and policy processes were identified as important points of reference for the Yangtze Basin EAP. For example, the EAP was able to dovetail its work with that of the China Council Integrated River Basin Management Taskforce. The taskforce will work over two years to shape recommendations on better governance for the Yangtze Basin, the integrity of river basin management, and the achievement of river basin environmental management through information sharing and public participation. This externally generated and promoted initiative provides the Yangtze Basin EAP with a significant opportunity to influence future government decision making and action across the Yangtze Basin. This influence, while framed by an external process, will be informed and motivated by the core elements of ecoregion conservation, namely the Yangtze Basin vision, objectives, and conservation targets.
- In the **East Africa Marine ecoregion** (EAME), the past eight years have brought a sharp acceleration in the declaration of Marine Protected Areas, particularly in Tanzania and Mozambique. From 1995 to 2003, 4,395km² of marine protected areas have been added across the ecoregion—2.5 times the total of the previous century. Two significant drivers have been identified as contributing to this impressive rate of MPA designation in the ecoregion. First, the increase in East African MPA designations accelerated sharply around the time that East Africa countries joined the Nairobi Convention in 1995. Second, a further acceleration occurred when WWF and other regional agencies began facilitating the marine prioritization process for EAME. This combination of good science, stakeholder commitment, and political will (given a voice through the Nairobi Convention) is proving to be a powerful force for marine conservation in East Africa. > > >

So how do EAP teams decide what to do with education and when to do it? The best time to consider the role education can play in an ecoregion strategy is after conservation objectives and targets have been developed. Once the EAP team knows what it is working to protect, it is easier to identify those audiences that are crucial stakeholders in efforts to conserve biodiversity—at the local, regional, and global levels, as well as in the short term and long term. Reviewing local education systems during the situation analysis to find out more about how people learn and interact with each other can help in deciding how to best use education in achieving conservation targets.

What Exactly Is Education?

Although many people limit their thinking about education to young people and formal (or school-based) learning, education is much broader—it encompasses how people obtain and process information, engage in understanding complex issues, learn in a community, and take an active role in managing their own resources. It is a lifelong learning process that involves educators, journalists, decision makers, employers and employees, adults, senior citizens, resource users, consumers, young people, and all of the other members of a community.

When integrating education into conservation strategies and actions, it is important to note that education is one of several strategies in a spectrum of approaches designed to inform and engage people. Other strategies include information dissemination, social marketing, campaigning, and general communication activities. Using education in combination with complementary strategies is essential in achieving long-term conservation objectives and involving a range of people in the process of conserving biodiversity. What makes education so important and unique within this mix is its role in helping people think critically about issues. By taking part in facilitated learning opportunities, people in an ecoregion can internalize experiences that help clarify thinking processes, influence attitudes, and potentially lead to sustained behaviour change.

Making Strategic Decisions

In most ecoregions, education can play a critical role in helping to inform and engage target audiences. However, it can be difficult to know when to use it, how to use it, and how to evaluate success. It is equally important to know when education is not appropriate. With many environmental problems, education does not represent the best option, and often education cannot work well in isolation. Education should be the choice when EAPs want to help people develop an awareness and understanding of issues, and then take action to address those issues. However, if problems are largely caused by external forces, have a ready technical solution, or involve trying to get people to take actions that are not in their best immediate interest, education might not be the best solution on its own. In those cases, education can be most effective when coupled with some type of enforceable policy, an effective social marketing campaign, or a reward or incentive for environmentally friendly behaviour.

Because many EAP teams do not have education specialists on staff, it can be difficult to know how to move forward with education in the most strategic and efficient way. The following points discuss a few steps that can help an EAP team decide when to use education, how to develop the most effective strategy, and how to evaluate education's role in helping achieve conservation targets.

In Action: A Political Framework for Ecoregion Conservation

During the Summit on Environment and Sustainable Development in the Danube and Carpathian Region in 2001 (co-organized by WWF and the Government of Romania in Bucharest, Romania), a call was made for the development of a Carpathian Convention. In 2003, negotiations were completed for the new “Framework Convention on the Protection and Sustainable Development of the Carpathians.” The Carpathians Convention was signed at the fifth “Environment for Europe” conference in Kiev, Ukraine, on May 22, 2003.

The new convention provides an important political framework for realizing conservation actions at the ecoregion level. The preamble to the convention recognizes the value of the Carpathians’ biodiversity, forests, endangered species, and major river headwaters. It also highlights the ecological, economic, cultural, and recreational importance of the region.

The new convention builds on the following basic principles:

- The Precautionary Principle
- The “Polluter Pays” Principle
- Public participation and stakeholder involvement
- Transboundary cooperation
- Integrated planning and management of land and water resources
- The need for using an ecosystem approach
- The importance of undertaking a programmatic approach for implementation.

Specific articles of the convention make reference to important conservation objectives, such as the development of ecological networks, the establishment of a Carpathian Network of Protected Areas, protection of endemic species and large carnivores, restoration of degraded habitats, development and implementation of management plans, and prevention of the introduction of alien invasive species. The convention also recognizes the importance of transboundary spatial planning; integrated water/river basin management; and the integration of conservation and sustainable-use objectives into sectoral policies (especially agriculture; forestry; transportation and infrastructure; tourism; and industry and energy).

The convention requests the establishment of a comprehensive monitoring system, region-wide scientific assessments, and an early warning system, including consultation on projects of transboundary nature—all of which a secretariat will be established to oversee and implement.

To stimulate the development of conservation action linked to the new convention, WWF initiated negotiation of a number of bilateral agreements with Bulgaria, Romania, and Slovakia. These agreements identify specific conservation commitments for forest management (such as certification and high conservation value forests [HCVF]), the establishment and management of protected areas (e.g., certification according to the PAN Parks Principles and Criteria), and conservation and restoration of the Lower Danube. >>>

Education, Information, and Communication: What's the Connection?

An explanation of the differences among information, communication, and education can be confusing. One way to understand the differences is to think about the EAP objectives associated with various audiences.

Information: In some cases, it is necessary to give people information so that they can better understand an issue and learn more about it. Information may take the form of posters, brochures, public service announcements, and magazine or newspaper articles. While research has shown that information alone doesn't usually lead to lasting behaviour change, it is an important tool that can help increase awareness and concern.

Communication: In many cases, when trying to engage a target audience, it is important to establish a dialogue as the audience might have questions or concerns that need to be discussed. That is how many people differentiate communication from information: Communication represents a two-way dialogue about a subject or issue. For example, forums and community meetings can provide opportunities to establish two-way dialogue about an issue and encourage ongoing exchanges.

Education: If there are complex issues involved or disagreements about the best path forward, education represents a more appropriate approach than information or communication. Education provides an in-depth, facilitated learning process (often mediated by a teacher, mentor, parent, or community leader) that helps people better understand complex issues and explore underlying beliefs, attitudes, and worldviews. Education is also cumulative. People learn throughout their lives (in formal and nonformal settings) and, although some activities are more meaningful than others, educational processes help individuals blend together a range of experiences to influence how they understand and view the world.

It is critical to note that an effective plan of engagement should make use of all three strategies as they are complementary and reinforce each other.

1. Assess the Educational Playing Field

Once the biodiversity vision and conservation targets are in place, it is appropriate to think about how to most effectively use education to achieve them. If the conservation objectives and targets focus on a number of environmental issues and specific target audiences are still being identified, it can be helpful to conduct a general education assessment to find out what education activities are currently underway, who the key players are, what the gaps are, and how EAP conservation efforts might link to existing communication and education strategies in the region. The assessment can be accomplished by conducting informal surveys and interviews, which can be organized internally by the EAP team or externally, by hiring a local expert to help with the assessment process.¹⁸

However, in many cases a focused education and communication needs assessment can more accurately address an EAP's target audience. The needs assessment may seek to answer some of the following questions:

¹⁸ For more information on conducting a needs assessment, see: *How to Plan a Conservation Education Program* by David Wood and Diane Wood. 1997. The International Institute for Environment and Development, USFWS: Washington, DC.

- How do people learn in the community? Every community, region, and country is different. In some places, people obtain most of their information from radio or television. In other places, schools, parents, newspapers, computers, community education institutions, and social activities provide a more direct form of information dissemination. Finding out where to reach the target audience and how people learn and gather information can help in sorting out ways to convey messages or approaches.
- Are there leaders who care about the environmental issues addressed by the conservation objectives and targets and who also care about education? Would those leaders be willing to partner or help reach other audiences with key messages? How might the community's social norms affect the conservation strategy and the EAP's ability to engage people?
- What's the education and communication competition? What other organizations are doing conservation education activities, and which ones seem to be leaders in the region? Which audiences are those groups targeting? What specific issues are they addressing? How have they been successful? What do they say are the most important gaps and do they see a role for an ecoregional approach to education and communication?
- What are the opportunities and challenges in working with the formal education system? Should an EAP pursue a strategy that entails long-term education reform and integrates environmental issues (and specifically information about the ecoregion) into teaching and learning? Are there niche opportunities and funding for ecoregion-scale initiatives?
- What nonformal education opportunities exist in the ecoregion? Are there community education organizations that are already implementing high-quality educational programmes, but that may be lacking in an area that has been identified as important? Is there a possibility of partnering with organizations that are already active in nonformal educational efforts?
- Would a social marketing campaign around a specific critical issue (identified by the EAP team) be helpful? In this particular ecoregion, have social marketing campaigns based on specific issues worked in the past? What media strategies were most effective and what were the lessons learned? (For example, other groups in the ecoregion may have undertaken campaigns targeting teen pregnancy, clean water, or other health-related issues.)
- What are the partnership opportunities with government, business, other conservation groups, and so on? What nontraditional partner opportunities (such as alliances with health-related organizations or religious groups) are present?

2. Hold an Education and Communication Workshop

After completing an education needs assessment (possibly as part of a stakeholder analysis), there will most likely be a number of audiences that should be targeted with education efforts to achieve conservation objectives. To help sort through what to do, EAP teams may consider holding an education and communication workshop, inviting local and global experts to discuss what has been learned from the assessment, and develop a strategy for incorporating education and the other social strategies into conservation efforts. For example, after identifying the threats and their causes, questions to ask might include:

- Which audiences and issues are immediate priorities for an education initiative and why? Which are secondary priorities?
- What should each audience learn and do? (What are the messages that need to be sent? What actions or behaviours need to be influenced?)
- What approaches will work most effectively and efficiently in reaching or engaging each audience?
- What are potential barriers to success, and how can they be overcome?
- What partnering opportunities exist?
- With the educational programme, how will the EAP define success and how will the programme's success be measured?

Another approach would be to focus on what needs to change over time, using specific temporal benchmarks (such as changes the EAP would like to see in the state of biodiversity or the behaviour or people in the next year or in the next three, five, or ten years). The EAP team should also identify the critical audiences that need to be engaged over time to achieve those targets.

3. Set Milestones

Before choosing what approaches to use, it is important to set milestones for what education will accomplish and what the outcomes will be. For example, if the milestone is to launch a marine-related education programme targeting fishers working in an area where there is an endangered species of dolphin, the EAP should begin by mapping out what education activities will accomplish (in this case, it might be a change in the attitude of fishers toward dolphins and new dolphin-exclusion fishing devices). The EAP will also need to define what key information fishers should know to help accomplish conservation targets. If the education milestones are designed to improve aquaculture practices, one target audience might be shrimp farmers, and the team will need to map out what information and skills are necessary for shrimp farms to reduce pesticide use and runoff.

4. Determine the Messages and Content

Once the initial homework has been completed the EAP team needs to map out what should be done. As an integrated part of an ecoregion conservation strategy, education can operate at several different scales—both geographically and temporally. For example, there may be a need for some local education initiatives in priority areas, but there may also be a need for complementary work undertaken at the national level to influence decision makers, industries, or the national formal education system. Therefore, an education workplan should include short-term interventions coupled with longer-term initiatives.

One important tip is to make sure that local education professionals are included in decisions so that content and messages are appropriate for the immediate context. An education advisory board can help provide input and guidance. Board members can also help with articulating the specific objectives of an education programme and highlighting the messages that are most important. Additionally, an advisory group can generate local and regional buy-in.

There are several ways to think about education initiatives and how they fit within an EAP. To decide among the following strategies—or to decide how best to combine them—EAPs must consider the desired outcomes of the educational programme. It is also important to address how the educational efforts support larger-scale conservation undertakings in the ecoregion.

GENERAL EDUCATION INITIATIVES are designed to integrate environmental content and citizenship skills into programmes. They are often aimed at the formal education system and school curriculum, in addition to providing professional development activities or programmes for the general public.

Pros:

- Open doors in the wider community
- Help build a conservation constituency over time
- Build credibility for conservation
- Reach large segments of the population
- Instill a general conservation ethic by addressing individual values and beliefs

Challenges:

- Can be difficult to measure success (especially in terms of conservation outcomes)
- Represent an ongoing, long-term investment
- Can be expensive
- Often involve multi-year assessment

ISSUE-DRIVEN INITIATIVES are designed to target a specific set of audiences based on key environmental issues. The EAP team should select the issues based on conservation targets and in consideration of the actions that need to be undertaken (in both the short term and long term) to help address threats or realize opportunities. Often, this approach considers how education and other strategies might help in promoting particular concepts to a variety of audiences.

Pros:

- Link more directly to immediate conservation goals
- Can sometimes achieve more measurable conservation impacts
- Information and communication are more likely to be used with education

Challenges:

- Often more focused on short-term goals versus long-term change
- Can blend education and advocacy, sometimes compromising educational integrity
- Might miss important audiences and issues
- May not be sustainable

5. Sort Out the Best Approaches

After selecting the target audience, identifying strategies, and focusing on the content to deliver, the EAP team must choose the approach (or combination of approaches) that will most effectively achieve the desired results. Because many different approaches can work, a team should select methods that best fit the available resources (including money, staff, time, and expertise). The possibilities are almost endless. Some ideas include:

- Outreach activities and special events (such as speaker programmes, debates, and festivals)
- Targeted seminars
- Curriculum materials
- Flyers, books, posters, videos, and other multimedia materials
- Professional development workshops or training
- Extension programmes (often for direct resource users)
- Mass media programmes (such as television, radio, and Web sites)
- Clubs and after-school groups
- Exhibitions
- The arts (such as music, theatre, and fine art)
- Education components of a social marketing campaign
- Promotional materials (such as games and stickers)

6. Measure Success

Like many activities, it is a challenge to measure the impacts of education activities, particularly given temporal and financial constraints. Trying to show direct links between education interventions and the achievement of conservation targets—such as the number of forest hectares protected, number of species saved, or pounds of CO₂ prevented from being released into the atmosphere—can be particularly difficult. But there are many ways to evaluate education activities, as specific interventions or in combination with other conservation tools. The most critical element is to know which specific conservation targets the education activities are designed to help achieve.

Some of the things that an EAP team might want to consider in the evaluation of activities might include:

- **Numbers** (How many people were reached?)
- **Materials** (How useful were the materials? How did the target audience rate them against certain criteria? How many materials were disseminated? How often and in what way were the materials used?)
- **Training** (How many people participated? How did participants rate the training against certain criteria? How did participants use the training in their regular activities?)
- **Knowledge** (What did the target audience learn? How long did they retain the information? How useful was the information?)

In Action: A Focus on Learning

In the **Galapagos Islands**, the EAP team wanted to integrate education into the long-term conservation strategy. They started with an education needs assessment, talking with key players in formal and nonformal education, as well as experts in conservation, science, and policy. Since the conservation strategy focused on protecting marine resources, the education plan included marine education initiatives, coupled with broader education activities. One key activity included revising and updating the main exhibition at the Charles Darwin Research Station, which educates tourists and residents about why the Galapagos Islands are so biologically special, the threats to biodiversity, what the science behind conservation is, and how people can help protect the islands. The strategy also incorporated a plan for promoting sustainable fishing practices (by working with community leaders, restaurant owners, tour boat operators, consumers, and fishers); integrating environmental concepts into the curriculum through a national school reform effort; and providing opportunities for young people, educators, and other residents to see the biodiversity of the islands through educational outreach programmes so that they would better understand why the ecoregion is important as a local, national, and global resource.

In the **Bering Sea ecoregion**, EAP activities have included an initial education assessment (in Alaska) and formation of an education advisory board to identify gaps and needs to integrate into the ecoregion's conservation strategy. Education experts have also worked with the EAP team to engage communities in projects and activities focusing on toxics and marine issues. Several education projects have been undertaken in partnership with the Alaska SeaLife Center to encourage the public (including tourists) to take an active interest in marine biodiversity issues.

In Mexico's **Gulf of California ecoregion**, the EAP team is working with local educational partners to adapt U.S.-developed biodiversity resources to reflect the uniqueness of Gulf of Mexico habitats and species. A local NGO, known for creating high-quality educational materials, is leading the adaptation efforts using the structure and activities from the original curricular resources. Those resources, supplemented and strengthened through the adaptation process, highlight species, habitats, and issues that are of particular importance to this focal ecoregion. The process of adapting education resources is also serving to revitalize a network of educators and organizations across the eight states of the ecoregion. It is hoped that the educators who have been involved with the adaptation from the outset will become champions of the resources and their messages. > > >

- **Attitudes** (Did the activities help influence the target audience's attitudes? How? How might changed attitudes influence conservation targets?)
- **Skills** (How effectively did the activities teach new skills, such as safer application of pesticides, sustainable harvesting of fish, and integration of biodiversity concepts into all educator trainings? How could skills development be improved?)
- **Actions** (Did the activities result in specific behaviour changes or actions?)
- **Conservation Impacts** (How did the education activities contribute to specific conservation improvements? Were more trees planted? Were habitats restored? Were fish catches voluntarily limited?)

For more information on evaluating education programmes, see: *Evaluating Environmental Education* by H. Stokking, L. van Aert, W. Meijberg, and A. Kaskens. 1999. IUCN Commission on Education and Communication: Gland, Switzerland and Cambridge, England.

Ten Tips for Developing an Education Strategy to Support Ecoregion Conservation

- Do your homework.
- Involve local experts as advisors and partners.
- Create strategic alliances, including non-traditional partnerships.
- Integrate education with other EAP efforts so that educators, communicators, scientists, and policy experts are encouraged to work together.
- Build education and the other engagement activities into fund-raising proposals to create more integrated programming.
- Think big, but also be careful not to take on too much at once.
- Set priorities carefully by choosing key audiences and sticking with them.
- Develop an evaluation strategy and identify measures of success from the outset.
- Select messages and approaches that are appropriate for the community, culture, and issues.
- Revise the education strategy as more information, additional funding, partners, and new stakeholder perspectives become available.

The background of the page is a light beige, textured surface resembling aged paper. A faint, golden-brown outline map of Southeast Asia and Oceania is visible across the entire page. A tiger's head is faintly illustrated in the background, partially obscured by the text box.

CALCULATING INVESTMENT AND MEASURING IMPACT

SECTION

5

CALCULATING INVESTMENT AND MEASURING IMPACT



Creating a Funding Plan

“You need to know and feel ecoregion conservation in your mind, heart, and soul. When you do, you will create a level of excitement in partners that will make them want to be part of it and take on some of the responsibility for its implementation.”

— KESAIA TABUNAKAIWAI, WWF SOUTH PACIFIC PROGRAMME,
ADDING VALUE TO THE NATIONAL BIODIVERSITY STRATEGIC ACTION PLAN, 2003

Ecoregion conservation is a process that, over a period of decades, will require the investment of a significant amount of funding (and time) by a range of stakeholders. It is therefore critical that an EAP take the time to identify and plan for the evolving pattern of funding that will be required to develop and implement ecoregion conservation strategies and actions.

Much of the discussion around ecoregion conservation tends to focus on the availability of resources—either to undertake the planning process or implement the actions needed to achieve its ambitious targets. Some ecoregion action programmes have calculated their resourcing needs—that is, the people and funds needed to achieve their ecoregion vision—at a level in the millions of dollars, while others have focused on the amount needed to support the process (for example, an average of \$250,000 annually). Either way, the discussion of funding is based on the question of whether and how an EAP team can generate or leverage the resources needed to make ecoregion conservation a reality.

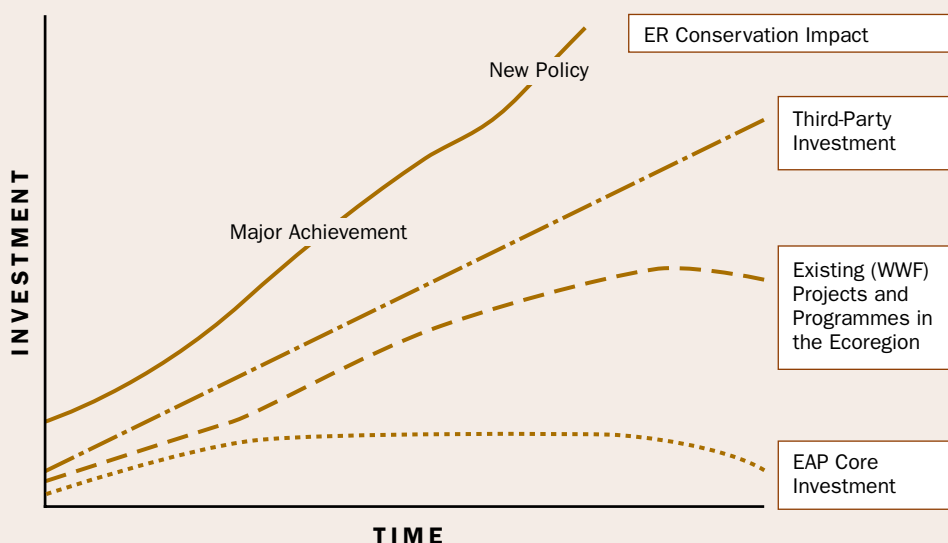
An EAP team should be able to calculate the investment required to move from the development of a biodiversity vision to the achievement of biological targets and milestones. The “EAP Funding Model” (also described as the “Red-to-Black Funding Model”) illustrates the layers of investment that an EAP will need to raise or leverage to achieve ecoregion conservation. (See Figure 3 on page 68.) EAPs need to consider and plan for these investment requirements as they move through the ecoregion conservation process.

EAP Core Investment

All discussions around EAP development and achievement start with the **core investment**. The “core investment” line in Figure 3 represents the level of core support that an EAP team requires to initiate and sustain ecoregion conservation efforts. The offices or organizations responsible for an EAP require this investment in leadership, planning, early action, information sharing, capacity building, coalition building, fund-raising, and monitoring and evaluation.

While the amount required will vary among EAPs (depending on the size and profile of the ecoregion, level of previous engagement, and phase of ecoregion conservation development),

FIGURE 3: EAP Funding Model



the consistent lesson is that an EAP requires guaranteed core support for leadership (including staff and consultants), stakeholder engagement (workshops and participation), communications (outreach materials and processes), and technical assistance for at least three years if it is to be effective. Activities supported by core funding will include the promotion and initiation of action, the pursuit of outstanding opportunities (to secure “protected areas” designations or new protocols for resource use and management), and the leveraging of external influence and investment in a comprehensive conservation strategy. The core support provides a platform upon which an EAP, and associated conservation programme, activities and achievements are built.

Existing Projects and Programmes

The provision of core support to EAP teams will help build a framework and constituency for the achievement of ambitious conservation targets. With this foundation in place, the EAP can begin to implement a programme of activities that, collectively, will contribute to the achievement of conservation targets and milestones.

At the early visioning phase of ecoregion conservation, the diagram’s **existing projects** line represents the existing body of work being undertaken in the ecoregion by the organization leading the EAP (e.g., WWF) and core partners. It describes EAP activities associated with initial stakeholder engagement, biodiversity assessments, GIS mapping, and workshops (all possible through strong core funding), as well as complementary projects or programmes that will ultimately become part of the single EAP framework.

Later in the process, the amount of activity supported under the project and programmes line will increase to include a range of model projects and programmes, communications, policy, and advocacy initiatives. Within this line will be initiatives that are undertaken by coalitions—hence the expanding profile. (It is also important to note that this line will rise and fall as

projects and programmes are initiated or concluded throughout the life of an EAP.) The projects and programmes supported at this level of funding should have the explicit objective of achieving immediate conservation wins and stimulating or leveraging the decision-making processes and actions of others. They might be model projects with the potential for magnification; policy or advocacy initiatives that will influence external processes; campaigning efforts that will build constituency support; or education efforts designed to generate support for specific conservation targets. While the funding for these initiatives can be generated on a project-by-project basis, it is critical that both the EAP team and donors recognize that each activity will only achieve maximum leverage if conceived and supported within the larger EAP framework (i.e., funds to support one protected area project may be wasted if efforts to address wider policy and communications processes are not also supported).

Third-Party Investment

The diagram's **third-party investment** line represents the level of support provided by organizations other than those directly engaged with the EAP (e.g., government, private sector, multilateral processes) towards the achievement of the ecoregion conservation targets. Leveraged in part by the model actions, advocacy, or socioeconomic incentives, the line represents third-party investment that is supporting decision making, action, and behavioural change consistent with ecoregion conservation objectives and targets (through a policy initiative, national programme, or commercial endeavour such as certification). EAPs can assume that the investment in conservation will become more efficient over time (based on learning or the identification of methods of conservation that are more cost efficient). Therefore, it is possible to imagine that, at some point (off the graph), the investment line (along with the "projects and programmes" line) will level off or decrease while the conservation impact line continues to rise.

ER Conservation Impact

The **conservation impact** line indicates the actions and outcomes that an EAP aspires to achieve or leverage across an ecoregion. Equivalent to the ambition of the biodiversity vision, this line represents the collective achievement of any number of organizations. The curve and scale of the impact line should increase as awareness raising, education, increased stakeholder participation, and policy initiatives provide EAP partners and external agencies with tangible options and approaches to conservation, natural resource management, and development across large landscapes. As EAPs move along the time continuum, the impact line will come to represent the shape and ambition of the ecoregion vision.

Securing Support for Ecoregion Conservation

Fund-raising will also be a major focus of EAP efforts. Raising support for the core team and early vision process will require an initial burst of fund-raising activity. Once the vision and targets have been generated, funds will need to be sought to support stakeholder engagement, conservation strategy development, and capacity building—not to mention projects that, if implemented immediately, may result in the mitigation of a threat or realization of an opportunity that can bring substantial rewards.

There is no magical approach to EAP fund-raising. It will always take considerable time and energy, and it will always require the concerted effort of the EAP team and its partners. The distinguishing feature of EAP fund-raising is that all efforts are undertaken with a view to the

In Action: Ecoregional Funding Equations at Work

The Valdivia EAP

In the Valdivia ecoregion, the calculation of EAP investments and impacts has proved challenging given the diversity of actors engaged in the ecoregion conservation process. However, using the EAP funding model, it is possible to begin to calculate the investment-to-impact ratios that have been achieved by the Coastal Coalition, a key promoter of ecoregion visioning priorities and targets in Valdivia.

- WWF has invested approximately US\$82,000 of core funding (over 3 years) in the Coastal Coalition. (WWF helped establish the coalition and is now an active member.) The coalition has dedicated a significant portion of its time and effort to addressing the threat of the proposed Valdivia Highway to priority areas of the ecoregion.
- Project funding of US\$55,000 has been spent by WWF on activities that have informed advocacy and communications around the highway issue.
- As a direct result of the work of the Coastal Coalition (and therefore of WWF's investment in its establishment and operation), the Ministry of Planning has established two new units dedicated to environmental issues—the cost of those units is calculated to be US\$175,000 annually. The government has funded five environmental impact assessments, at an estimated cost of US\$375,000, and funds have been committed to environmental rehabilitation of the original highway route (US\$300,000). The potential value of these government investments to future conservation achievements in the Valdivia ecoregion is unable to be measured at this time, but it is likely that they will have a positive influence on future planning decisions in priority biodiversity areas.
- To date, the most significant conservation impact leveraged by investment in the Coastal Coalition has been the designation of 50,000km² of roadless area, more than 10,000km² of which are likely to have been penetrated (for logging and settlement purposes) had the highway gone ahead. In combination, these achievements represent realization of key aspects of the biodiversity vision—namely protection of the priority biodiversity of the Valdivia ecoregion Coastal Range.

The Great Barrier Reef EAP

The Great Barrier Reef (GBR) conservation team has used the EAP funding model to visualize and measure its impact on conservation across the ecoregion.

- The core funding investment (the basic GBR core budget) is approximately AU\$250,000 (US\$171,177) annually. This baseline investment supports the coordinator and the EAP's programme of activities.
- The WWF Action Plan expenditure includes an investment of AU\$100,000 (US\$68,471) in the analysis and promotion of water-quality issues across the GBR. Water quality was identified as a key issue in the original scoping and biodiversity assessments.
- The combination of the core and project funding has subsequently contributed (through awareness raising and advocacy efforts) to third-party investment in (1) a government-

supported water-quality plan, and (2) an AU\$31 million (US\$21 million) contribution by federal and state governments towards coastal wetlands conservation.

Taken together, core, project, and leveraged funding is combining to deliver on the second target of the GBR conservation strategy: To halt and reverse the decline of water quality on the GBR within ten years.

The Northern Great Plains EAP

In completing its vision and conservation plan, the Northern Great Plains network has developed a strategy that ultimately looks to leverage more than US\$1 billion in investment in conservation of the ecoregion. The strategy is based on the following calculations:

- The Northern Plains Conservation Network requires US\$400,000 over 2 years to support the core costs.
- Over the next 10 years, the EAP team projects spending of US\$4 million directly on contributions to conservation efforts as well as to programmes that create an environment for third-party interest and conservation investments.
- Over the next 15 years, US\$1 billion will be invested (75 per cent by government programmes and 25 per cent by the private sector) in activities that will contribute to and support achievement of the biodiversity vision for the ecoregion.

Making funding calculations and projections such as these provides an EAP with important benchmarks that allow them to project the potential of the EAP to deliver on its ambitious agenda. They also provide a useful point of reference for EAP communication with key stakeholders and partners in terms of programme aspirations, opportunities, and needs. >>>

larger context. For example, while funds may be easily secured for a single large project (such as a protected area project), the rationale for that project should be linked to the larger ecoregion context (namely the vision and targets). By embedding single projects (e.g., the Great Barrier Reef water-quality analysis) within the larger EAP framework, an EAP can offer donors a return on their investment that is many times greater than the outcome of the single project (in the case of the Great Barrier Reef, the EAP realized a AU\$31 million [US\$21 million] return for conservation on a AU\$100,000 [US\$68,471] investment).

The key then is to build a long-term EAP funding strategy around the core, project, and leveraging needs. In doing so, it is critical to ensure that opportunities to leverage funding for activities that will support the EAP process are pursued (even if they will not be delivered by the EAP team). For example:

- A number of multilateral and bilateral donors are currently supporting or looking to support natural resource management efforts in the Western Pacific. While the agenda of the EAPs in the region will make up only a small portion of the funding themes of the donors, their ability to influence the shape and focus of the wider investment portfolio (by a factor of five times greater than what the EAP team can hope to secure) cannot be overlooked by the EAP. Activities to influence the full donor investment portfolio should be factored into the core support and project and programme strategies and budgets of the EAPs.
- In China more than €50 million (US\$58 million) will be invested by one donor in biodiversity and river-basin support projects. The Yangtze Basin EAP may be able to secure one-tenth of that amount for its own activities, but the opportunity to influence the full programme of funding must be a strategic objective supported by core funding. The EAP can make the case for such core support based on the projected impact that influencing the full package of donor funding can have on the achievement of clearly articulated objectives and targets.

It is important that an EAP recognize that securing big-dollar support for a single project—or even several large projects—will never be enough to secure the full breadth and ambition of ecoregion conservation. For an EAP to be successful, projects that receive funding need to be proposed and implemented within an ecoregion conservation framework that links the outcomes of the project to higher-level targets and objectives. Without that connection, the funds secured for large projects in an ecoregion may amount to no more than a large project budget that will make significant managing and reporting demands on the EAP team.

In seeking funds to support ecoregion conservation efforts, an EAP should:

- Conceive of proposals within the wider EAP context (reflecting the EAP funding model)
- Promote the potential for partnership and magnification (across themes and sectors)
- Identify and optimize points of leverage
- Make connections between the biological, political, economic, and cultural aspects of ERC
- Match funding requests to the capacity to deliver (in technical and management terms)
- Set out clear measures of success.

Ideally, an EAP should not:

- Pursue funding just because it is available (it may not support or contribute to EAP interests and needs)
- Pursue funding at a level that exceeds large programme management capacity and experience (unless you have a capacity-building or large programme management initiative in place)
- Significantly compromise conservation objectives and targets (to secure funds)
- Build up a portfolio of well-funded projects in the ecoregion that do not contribute to targets (but that keep everyone fully occupied in their delivery).

Sources of Information

A wide variety of fund-raising information resources and tool kits are available to EAPs. For those looking to secure support for EAP initiatives or explore ways to help sustainably finance conservation, several references include:

- **www.worldwildlife.org/conservationfinance/pubs/finance_resources.pdf**
This site provides information on: (1) publications by WWF's Conservation Finance department, (2) a categorized summary of conservation finance techniques, and 3) links to other conservation finance databases.
- **www.gdnet.org/online_services/toolkits/proposal_writing**
The Global Development Network's Web site includes a proposal-writing and fund-raising "toolkit." The toolkit may be helpful to those who are seeking start-up funding or wish to augment their current portfolio.

Monitoring and Evaluation

Tracking progress toward the biodiversity vision and targets, as well as constantly improving ecoregion conservation strategies and actions, are key features of ecoregion conservation. They require an EAP to develop and implement a comprehensive monitoring and evaluation (M&E) framework.

Because EAPs often cross the boundaries of countries, organizations, sectors, and programmes, EAP monitoring will often be required across multiple levels. However not all of the levels of monitoring (such as an ecoregion conservation plan or its local equivalent) are likely to be the responsibility of one organization given the partner-oriented nature of an EAP.

The basic goals of an M&E framework for an EAP are to:

- Assess progress in meeting the biodiversity objectives and targets of each ecoregion
- Provide early indicators of emerging issues
- Understand how certain actions influence society's attitude and response to biodiversity loss so that conservation initiatives can react accordingly

- Improve performance by EAP teams through an adaptive management approach
- Enhance communication with the public, donors, and other stakeholders regarding ecoregion conservation.

Designing a Monitoring-and-Evaluation Framework

A common framework for M&E is the “pressure-state-response” (PSR) model. When applied to the EAP context, PSR indicators allow an EAP to track changes in:

- Human activities that affect the environment (the “pressure” or “driving force”)
- The condition of the environment (the “state”)
- How society or some segment of society is responding in a way that changes the pressure or driving force (the “response”).

Periodic monitoring allows an EAP to see if and how the state of the environment is affected by societal response. For example, housing developments and road construction on private ranch lands surrounding Yellowstone National Park in the United States represent “pressures”; the resulting “state” caused by that pressure is a fragmented landscape and reduced wildlife numbers; and a recent “societal response” was the approval of a \$10-million bond issue by local citizens to fund private land acquisition and conservation easements. Monitoring of the “state” of the Yellowstone landscape’s fragmentation over time, along with the pace and scope of new housing developments on ranch lands surrounding the national park, will help assess the effectiveness of the \$10-million bond strategy. If fragmentation does not increase and land development ceases (or proceeds in other directions), local citizens will have a clear measure of the success of their strategy.

The inclusion of socioeconomic value as a fourth indicator can provide an understanding of how changes in the environment are affecting socioeconomic conditions, which in turn elicit societal responses to improve those conditions. In the above example, housing developments on private ranch lands reduce populations of elk on those lands and preclude access by hunters. The socioeconomic impact is evidenced by both a lower satisfaction by the hunting public (non-monetary measure) and loss of revenues by outfitters who guide hunters (monetary measure).

Experiences from around the world have shown that the PSR model is well suited to monitoring progress against ecoregion targets and the action plan. The model helps an EAP to track four sets of indicators in an ecoregion:

- Drivers of biodiversity change
- The state of biodiversity
- The socioeconomic value of biodiversity
- The societal response to the state and socioeconomic value of biodiversity.

The terms are defined as follows:

- **Drivers (or driving forces)** create or act on stresses that directly affect biodiversity. Drivers can either increase or decrease stress. The monitoring and evaluation of drivers should focus on the changes in human behaviour and activities that are expected to greatly affect

progress toward meeting the goals of the biodiversity vision. Examples of drivers and resulting stresses include industrial activities (driver) that lead to environmental pollution (stress) or increased rates of road building and human immigration (drivers) that fragment intact habitats (stress). Examples of drivers that decrease stress are improved technologies that reduce industrial wastes in an area of important habitat. (The Nature Conservancy has similarly divided this concept into two distinct steps—stresses and sources—in their Five-S framework; TNC’s “sources” are equivalent to “drivers.”)¹⁹

- **The biodiversity state** refers to the goals (focal biodiversity elements) identified in the biodiversity vision. Monitoring the state enables an EAP to assess progress toward meeting the biodiversity vision and the biodiversity conservation targets for the ecoregion. A key task is to determine if (and to what extent) changes in the state of biodiversity are a consequence of changes in the identified drivers and resulting stresses.
- **Socioeconomic value** is a measure of how biodiversity (the “state”) interacts with the welfare of society both within and beyond the ecoregion in monetary and non-monetary terms. Values may be positive (e.g., revenues from fisheries) or negative (e.g., illness from pollution). Monitoring helps track the natural capital of, and the products and services that flow from, biodiversity and ecological processes. Where possible, these values will be monetized, but many values, such as human health or the spiritual value of biodiversity, cannot and should not be reduced to only monetary measures; therefore, other indices will be needed. As such, the socioeconomic values can be tracked against a monetary ledger and social (non-monetary) ledger.
- **Societal response** refers to how key segments of society (e.g., government agencies, citizens and citizen groups, and WWF and other nonprofits) are acting to change the drivers. (These groups may be undertaking action because of concerns about the biodiversity state and resulting socioeconomic impacts.) There is often no distinct difference between drivers and societal response; in some cases, the same indicator may track both the driver and the response to that driver. To judge if and to what extent ecoregion conservation efforts are making a difference, an EAP must be able to differentiate between the changes in drivers that are induced by ecoregion conservation and changes that are brought about by other factors. An EAP’s action in an ecoregion, for example, can be considered one of several societal responses, and an EAP needs to be able to determine if its interventions (responses) are in fact changing drivers in ways that benefit biodiversity (over the short and long terms).

Several important considerations are key to designing an M&E framework for EAPs. They include:

- The M&E process should be an effective learning tool for ecoregion conservation.
- The M&E process should be easy to understand, implement, and communicate (e.g., in simple graphs and graphics).
- The cost of M&E implementation should not exceed ten per cent of the EAP budget.

¹⁹ For more on The Nature Conservancy’s 5-S process, see: *The 5-S Framework for Site Conservation: A Practitioner’s Handbook for Site Conservation Planning and Measuring Success* by The Nature Conservancy. 2000. TNC: Washington, DC. Available on line at www.conserveonline.org.

- The M&E should be open to internal and external evaluation so that partners, investors, and beneficiaries can follow progress, advise on “course corrections,” and upgrade their commitments over time.
- The M&E outcomes should be crafted in such a way so as to provide for comparability among EAPs.
- The M&E process should feed into other reporting timetables and monitoring systems (e.g., regional programme reporting).

Getting Started

It is strongly recommended that EAPs start M&E from the earliest stages of the ERC. There are two main reasons to include M&E from the outset: (1) obtaining baseline information is important in helping the EAP to assess progress from the beginning, and (2) examining what factors need to be monitored and how they will be monitored forces a deeper probing during the conservation-planning stage. Thus, M&E should not be a separate exercise, but rather it must be integral to the conservation-planning process.

Time and resources impose real constraints on how quickly and comprehensively an M&E framework can be developed and implemented. And while it might seem necessary to monitor a wide range of issues (to serve various stakeholder and donor interests and needs), it is more realistic to focus on a single subset of critical indicators. EAPs should start small and consider testing different approaches. What seem like simple and easy-to-collect indicators may turn out to be difficult and unreliable, but in the process other, more appropriate indicators may emerge. It may make sense to focus on one category of indicators in the early stages, as the Gulf of California EAP team did in concentrating its efforts on pressure indicators. *(For more on this case study, see Appendix F on page 112.)*

The initial step is to construct a simple table that describes the drivers, biodiversity features, socioeconomic values, and societal responses the EAP team thinks are important to monitor. The table should also include potential indicators of those categories. A brainstorming session will usually create a fairly comprehensive list of ideas. Then the list should be narrowed, following the guidelines for indicator selection. At this stage, the framework for M&E will begin to emerge.

Levels of Monitoring

The monitoring of an EAP (as well as the ecoregion strategies and action plans that it generates) will most likely occur at a number of levels, determined by what needs to be monitored, for whom, and why.

An ecoregion vision and objectives are central to EAP monitoring. They are usually articulated in terms of conserving or improving the state of biodiversity in the ecoregion and reducing the threats to that biodiversity (later articulated as targets). Monitoring progress towards the vision and objectives will require the measurement of large-scale biodiversity and socioeconomic indicators that emerge during elaboration of conservation targets and strategies. Because of the scale of these indicators, monitoring may require the use of proxy indicators, be dependent on secondary information (e.g., government statistics), and require a sharing of responsibility for primary data collection with partners. As pressure and state-level processes tend to change

slowly, most ecoregion-level indicators will only require periodic monitoring (i.e., every three to five years). Despite the challenges associated with monitoring the state of biodiversity and pressures at the ecoregion scale, it is this level of monitoring that will ultimately provide an EAP, partners, and stakeholders with a rigorous “measure of success” of their collective efforts across the ecoregion.

Another level at which an EAP is likely to undertake monitoring is that of the action plan. As action-plan milestones are short term (five years), the monitoring required is likely to be similar to that needed for traditional conservation projects and country strategic plans. The information gathered will tend to focus on the delivery of specific activities (e.g., setting up a protected area; training park rangers; and educating communities), and will take place at different scales. Action plan indicators will need to be monitored at a frequency required by relevant programmes and donors.

As a complement to vision and action plan monitoring, an EAP may also choose to monitor and evaluate whether strategies and actions have contributed to changes in stakeholder behaviour that are “logically consistent with supporting development changes in the future.”²⁰ By focusing on the changes in attitude and behaviour of those individuals and organizations with which the programme works, it is possible to explore the link between EAP interventions, behavioural change, and conservation or development successes or failures. This form of monitoring and evaluation is best suited to initiatives (milestones and activities) through which an EAP can identify key groups that will be engaged or influenced.

Adaptive Management

As an adaptive management tool (and action designed to maximise learning), M&E enables EAPs to evaluate and thereby improve the effectiveness of actions to meet targets. An EAP can continually improve its strategies, plans, and performance by identifying miscalculations and faulty assumptions in terms of how EAP actions will affect drivers, stresses, and, ultimately, biodiversity. In addition, high-quality monitoring of both biodiversity and the socioeconomic values of biodiversity enables an EAP to understand why and how different sectors of society respond to changes in biodiversity. With this knowledge, an EAP can more effectively focus or adjust its actions.

Indicators

Figure 4 (*see page 81*) shows potential M&E indicators for the fisheries pressure identified in the marine ecoregion example. The “Pressures” column (in the upper right-hand corner) identifies indicators of stress as well as factors (drivers) causing that stress.

Indicators are needed for two major categories in the “Biodiversity State” box: one to track how well the specific targets are being met (e.g., recovery of an overfished stock) and one to track progress toward objectives as dictated by the vision and targets (e.g., restoration of an intact ecosystem in two areas of 5,000km² for habitat type A). Note that, given the difficulty of directly estimating fish population size, it may be necessary to use indirect means such as catch

²⁰ For more information on this form of monitoring and learning, see: *Outcome Mapping: Building Learning and Reflection into Development Programs* by Sarah Earl, Fred Carden, and Terry Smutylo. 2001. IDRC: Ottawa, Ontario.

In Action: Monitoring and Evaluation for a Marine Ecoregion

In developing an M&E programme for an EAP, it is useful to outline a general model of the key questions that need to be answered and the indicators that will help answer them. The questions will emerge from ecoregion planning efforts and are as useful to broad EAP planning efforts as they are to M&E. The hypothetical example set out below illustrates how an EAP can logically bring together the state, pressure, and response elements of a conservation plan to clarify relationships and interactions.

TABLE 1: Framework for Ecoregion Planning: Marine Ecoregion Example

Objectives	Targets	Pressures	Drivers (proximate to root)	Opportunities	Actions and Desired Responses	Costs, Risks, and Assumptions
Large, intact habitats with natural processes	Two areas of 5,000km ² each of priority Habitat A protected	Three species overfished and large amount of bycatch	Too many fishers			
			Subsidies to fishing industry	Election of pro-environment candidates		
				Decline of seal and seabird populations because of overfishing (scarcity of seal/seabird food)	Partner with seal industry; eliminate subsidy by 2002; 40 per cent decrease in fishers by 2005	Low cost; risk is that WWF is labelled as aligned with "seal killers"; potential alienation from animal rights groups
			Poor balance of payments			
	Two areas of 10,000km ² each of Habitat B protected	Bottom trawling destroying benthic habitat				
Habitat representation						
Unique species assemblages						
Ecological and evolutionary processes						

In this case, the ecoregion has two major habitat types. For habitat type A, the milestone is to protect two 5,000km² areas. The two main stresses affecting this habitat type are: (1) overfishing of three stocks or species of fish and a large amount of bycatch, resulting in greatly reduced numbers of both target species and non-target species, and (2) bottom trawling, which is destroying the benthic habitat. Focusing on the overfishing problem, three major causes emerge. The proximate cause is that there are too many fishers going after too few fish. The large number of fishers, however, is the result of a deeper problem: government subsidies that keep the price of fishing vessels and gear low, thereby allowing many more people to engage in fishing than would otherwise be the case. Upon further analysis, the deeper cause of the nation's poor balance of payments emerges, which the government is trying to address by increasing the number of fishers via subsidies and, consequently, hoping to increase the export of fish products. As the declining fish stocks suggest, this is a short-term solution at best.

Based on this type of information, EAPs can ask where the best opportunities are for intervention. Within the context of ecoregion conservation, an EAP and its partners may decide that there is little, if anything, that can be done to change the balance-of-payments problem. However, there are two possible mechanisms for reducing or stopping the subsidy for fisheries equipment. The first is to support pro-environment candidates in the upcoming election because of their platform to eliminate fisheries subsidies. The second opportunity is represented by the fact that the depleted fish stocks are causing a rapid decline in populations of fur seals and seabirds, both of which feed on the fish stocks. Subsequently, the sealing industry is concerned about overfishing and thus is a potential ally in working to eliminate the subsidies. Engaging both the Green Party and the sealing industry may be actions worth pursuing. The EAP can conclude that, if it partners with the sealing industry, there is a good chance of eliminating the fishing subsidy by 2002. Based on some assumptions about the effect of subsidies on entry and exit from the fishing industry, it can be predicted that elimination of the subsidy will cause a 40 per cent reduction in the number of fishers by 2005.

The cost/benefit and risk analyses of an EAP–sealing industry partnership indicate that this would be a low-cost action with a strong potential for influencing the upcoming legislative bill on subsidies. The risks, however, are that this partnership may lead some to label the EAP as “seal killers” (because of the alliance with the sealing industry). The partnership may alienate the EAP partners from animal rights groups and their constituency, with some minor consequences for EAP fund-raising.

Assume that EAP partners decide that the benefits outweigh the risks. Based on the best models and predictions of fisheries biologists, and identifying key assumptions regarding how fish populations will respond to reduced fishing pressure, an EAP can calculate that a 40 per cent reduction in fishers will permit a 50 per cent recovery of fish stocks and 75 per cent reduction in bycatch by 2007. These calculations can then be used to inform the development and delivery of response strategies and activities. > > >

per unit effort for an indicator. As the arrow shows, changes in the biodiversity state may directly affect responses by an EAP, its partners, and other sectors of society.

Indicators for the “Value of Biodiversity” are also divided into two categories: one for non-economic social values and one for economic (monetary) values. Again, it can be expected that changes in these values, caused by changes in the state of biodiversity, will stimulate various societal responses.

Finally, response indicators are separated into two categories, one representing actions (and reactions) by the EAP and its partners and the other representing reactions by other sectors of society to changes in the biodiversity state and values. Also, in some instances, it can be anticipated that society will respond directly to interventions by the EAP.

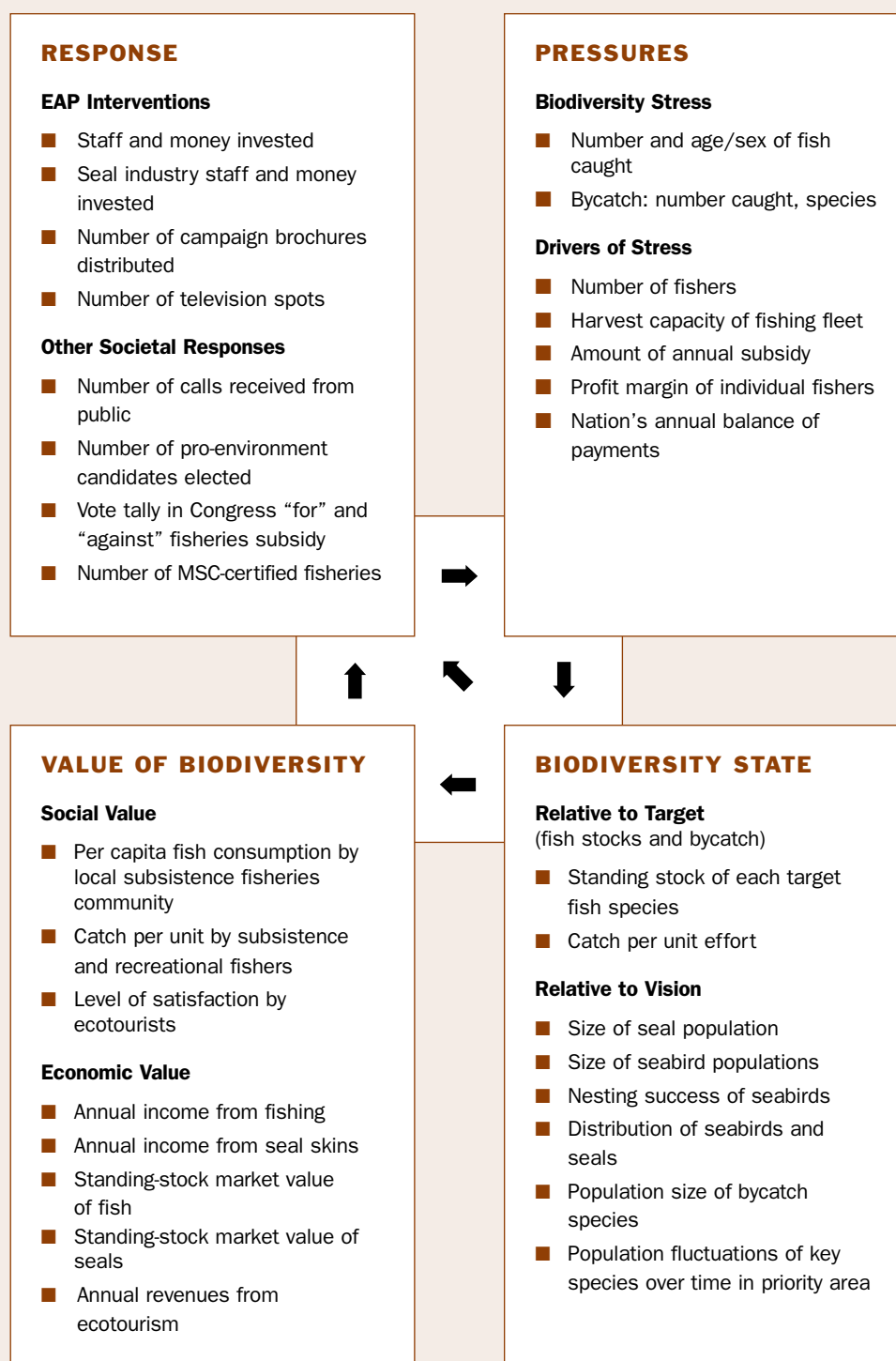
As this example illustrates, there may be cases where good indicators are easy and inexpensive to track. For example, the number of fishers and harvest capacity of the fishing fleet, which are direct and accurate indicators of fishing pressure, may be tallied and presented annually on the government’s fisheries department Web site. In other cases it may be difficult and expensive to find a good indicator; for example, although the quality of experience and level of expenditures by ecotourists in the marine area may be very important social and economic values to track, collecting this information can be extremely expensive.

Developing and Implementing a Framework: Lessons Learned

EAP M&E experiences have varied around the world. However, a number of lessons have consistently emerged. They include:

- If the M&E efforts are not directly linked to conservation objectives and targets, then an EAP can end up monitoring the wrong indicators.
- The M&E framework should be developed in conjunction with the development of conservation targets and strategies.
- Ecoregion-level indicators should be the focus of an EAP. Other targets (such as the operational or project milestones set out in an action plan) are likely to be picked up by other monitoring systems (including those initiated at programme, regional, and donor levels).
- One person needs to be ultimately responsible for M&E otherwise the process is unlikely to be successful. This responsibility should be built in to the phases of the ecoregion conservation process.
- Monitoring should be made as simple as possible, using a few key indicators and not striving for scientific perfection.

FIGURE 4: Potential M&E Indicators for Fisheries Example



In Action: Reflections on EAP Monitoring

The **Spiny Forest ecoregion** consists of a portfolio of projects (some of which are site-based) that contribute to goals and objectives expressed in the biodiversity vision. The EAP team wants to monitor:

- The state of biodiversity and current trends at an ecoregional scale
- The state of each priority site for conservation and how those sites are affected by the EAP's actions. Eventually the results of this monitoring will feed into a more generalized understanding of ecoregional threats and opportunities.
- The impacts of other non-site based activities.

Site-Based Monitoring

At the scale of the site, the Spiny Forest EAP team uses The Nature Conservancy's (TNC's) 5-S Framework.²¹ The objective of the TNC monitoring methodology is to provide information on the state of biodiversity at a given site. This review is accomplished by measuring biodiversity health (size, condition, and landscape context), threat status (severity, geographic scope, and relative contribution), and conservation capacity.

However, the level of scientific and socioeconomic data available is still not sufficient to ensure reliable planning, and the team needs to test hypotheses to learn from the data. Therefore, the site-based monitoring programme aims to provide information on the ecological health of target sites and the appropriateness of EAP actions. The following indicators are gathered for each conservation target at each site:

- An indicator of pressure or threat status (measuring the severity, geographic scope, and relative contribution, as appropriate)
- An indicator of the state of biodiversity (measuring size, condition, and landscape context)
- An indicator of WWF and partner responses (measuring how each activity is performed in relation to threats)
- Indicators of the level of conservation capacity (or management effectiveness). In the case of Madagascar, the EAP will use the Association Nationale pour la Gestion des Aires Protégées (ANGAP) management effectiveness assessment system adapted from the World Commission on Protected Areas (WCPA).

Ecoregion-Level Monitoring

Monitoring at the ecoregion level is needed so that WWF and its partners can decide on strategies and actions that are needed in light of biological and socioeconomic trends. This monitoring is more proactive than site-level monitoring and can be used as a communication tool for decision makers operating outside of the EAP programme.

²¹ For more information on TNC's ecoregion conservation strategies, visit www.conserveonline.org, which provides access to a range of ecoregion conservation-related documents.

The types of factors that the EAP monitors are:

- Biodiversity status and representativeness across the ecoregion (researched by WWF and cooperating scientists)
- Viability of key species (researched by WWF and cooperating scientists)
- Health status and trends of key ecological processes (gathered by WWF and other organizations, such as the local or regional meteorological service)
- Population dynamics, such as population growth rates, levels of urbanization and migration, health-care opportunities, and educational levels (provided by governmental agencies and nongovernmental organizations focusing on population, health, and education services)
- General levels of revenue per activity (gathered through governmental agencies and for-profit entities involved in resource-intensive ventures)
- Trends in key economic sectors depending on natural resources, including agriculture, livestock, tourism, and mining (details provided by the interested and involved sectors).

Because this level of monitoring will serve audiences and stakeholders beyond WWF, the indicators and data must be widely used and understood. The Madagascar Office for the Environment has the responsibility of issuing an annual *Tableau de Bord Environnemental* for each province (similar to a “State of the Environment” for each province). Since the Spiny Forest ecoregion falls within the province of Tulear, WWF is working with the Madagascar Office for the Environment to integrate the results from its ecoregional monitoring efforts with the *Tableau de Bord*. > > >