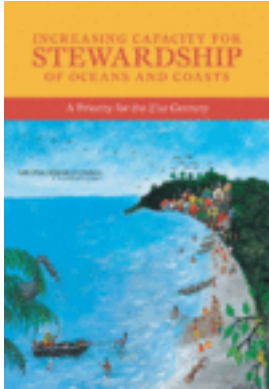


Free Executive Summary



Increasing Capacity for Stewardship of Oceans and Coasts: A Priority for the 21st Century

Committee on International Capacity-Building for the Protection and Sustainable Use of Oceans and Coasts, National Research Council

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Marine environments support the livelihoods, economies, and quality of life for communities around the world. But growth of coastal populations and increasing demands on marine resources are putting the future of ocean and coastal resources at risk through impacts such as overfishing, wetland drainage, climate change, and pollution of coastal waters. Given these demands, it is vital to build capacity--the people, the institutions, and technology and tools--needed to manage ocean resources. Unfortunately, many capacity building efforts focus on specific projects rather than on capacity building as goal unto itself, resulting in activities that are not funded or sustained past the typically short project lifetime. This report finds that the most successful capacity-building efforts meet the needs of a specific locale or region based on periodic assessments and include plans to maintain and expand capacity after the project ends. The report recommends ways that governments and organizations can help strengthen marine protection and management capacity, including conducting periodic program assessments, making plans to sustain funding, and developing leadership and political will. The report was produced at the request of Gordon and Betty Moore Foundation, the President's Circle of the National Academies, the David and Lucile Packard Foundation, the National Oceanic and Atmospheric Administration, the National Science Foundation, the Marisla Foundation, and the Curtis and Edith Munson Foundation.

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SUMMARY

The rapid decline of many ocean and coastal ecosystems and the global implications of current trends in oceans and along coasts have captured the attention of governments, national and international organizations, and many private organizations. A wide variety of projects, programs, and international conventions include capacity-building to strengthen the effectiveness of ocean and coastal governance and increase awareness of the benefits of maintaining ecosystem goods and services. Capacity-building, however, is not usually the primary focus. Capacity-building efforts typically are fragmented, lack standards for monitoring and evaluation, and are planned for too short a period to achieve and sustain effective ocean and coastal management.

WHAT IS CAPACITY-BUILDING?

Capacity-building describes programs designed to strengthen the knowledge, abilities, relationships, and values that enable organizations, groups, and individuals to reach their goals for sustainable use of ocean and coastal resources. It includes strengthening the institutions, processes, systems, and rules that influence collective and individual behavior and performance in all related endeavors. Capacity-building also enhances people's ability to make informed choices and fosters their willingness to play new developmental roles and adapt to new challenges. Capacity is about more than potential; it harnesses potential through robust programs to make progress in addressing societal needs and is fundamental to fostering environmental stewardship and improving the management of ocean and coastal areas and resources.

WHY IS THE NEED TO BUILD CAPACITY URGENT?

Globally, ocean and coastal ecosystems are under great stress because of the effects of human settlements and activities. Nearly 40% of the world's population lives within 100 km of coasts, and this proportion is expected to increase to 50% by 2015. The coasts and the oceans yield tremendous benefits to society through the extraordinary productivity of many marine habitats and the strategic benefits of a coastal location to trade, defense, industry, and food production. More than a billion people rely on the oceans and coasts as their primary source of food protein, and ocean and coastal environments support the livelihoods, economies, and quality of life of many communities.

Many alterations of ocean and coastal ecosystems have brought substantial benefits to society and improved the lives of billions of people. However, the density of development and intensity of resource use have also had serious impacts, including the conversion of habitat; modification of flows of water, sediments, and pollutants to the sea; changes in biological diversity; climate change; and drainage of excess nutrients into coastal waters. Those changes have in many instances weakened the ability of ecosystems to generate current and future ecosystem services. Continuing alterations affect ecosystem functioning and often impair the delivery of valuable services, such as nutrient recycling. Some 60% of global ecosystem services are degraded, and only a few services are increasing. When capacity to promote stewardship and practice ecosystem-based management is insufficient, the sustainability of ocean and coastal ecosystems is at risk.

CURRENT STATUS OF CAPACITY-BUILDING FOR OCEANS AND COASTS

This report examines the characteristics of existing capacity-building efforts by drawing on the expertise and observations of the members of the National Research Council's Committee on International Capacity-Building for the Protection and Sustainable Use of Oceans and Coasts and the presentations and discussions at a committee-led workshop in Panamá. The report assesses the strengths and weaknesses of past and current efforts to build the capacity required to improve the effectiveness and efficiency of ocean and coastal conservation and development. It recommends how such governance capacity can be strengthened. It discusses approaches to capacity-building that can bridge the gaps between planning and the implementation of effective management policies and plans of action. A major emphasis is placed on sustaining investments in capacity-building over the long term and on identifying how international partnerships can instigate and collaborate in long-term programs.

The study was funded by the Gordon and Betty Moore Foundation, the President's Circle of the National Academies, the David and Lucile Packard Foundation, the National

Oceanic and Atmospheric Administration, the National Science Foundation, the Marisla Foundation, and the Curtis and Edith Munson Foundation. The statement of task of the committee is shown in Box S.1.

Most capacity-building activities have been initiated to address particular issues, such as overfishing or coral-reef degradation, or to target a particular region or country in the developing world to address issues of sustainability and poverty. That pattern has resulted in ocean and coastal capacity-building activities that consist largely of fragmented, short-term training and education programs. There is little coordination among efforts that have similar goals or overlapping geographic coverage, and programs become isolated geographically and temporally. That fragmentation inhibits the sharing of information and experience, reduces opportunities to maintain new programs through consecutively funded efforts, produces gaps in governance, and makes it more difficult to design and implement management approaches that are consistent with the scale of the affected ecosystems. Fragmentation of efforts at multiple levels is an underrecognized barrier that needs to be overcome to improve capacity-building.

Box S.1 Statement of Task

The study will identify barriers to effective management of coastal and marine resources encountered in coastal nations, particularly in the developing world. The committee will examine current and past efforts to build the scientific, technological and institutional capacities required for countries to develop and implement effective coastal and marine resource policies. This review will include analysis of strategies for sustaining the benefits of capacity-building efforts over the long term. In carrying out its task, the committee will:

- (1) Identify the types of information that would be required to form a foundation for policy decisions affecting the long-term health of coastal and marine ecosystems;
- (2) Examine the roles of human resource development, establishment of appropriate institutions and infrastructure, and creation of a favorable policy environment in building legitimacy across a broad spectrum of society into oceans-related programs; and
- (3) Identify measures to link investment in capacity-building to “on-the-ground” results, using such analytical tools as economic cost-benefit, environment and development indicators, and transboundary diagnostic analysis.

The committee will recommend ways in which the United States and partner organizations, including governments, international bodies, and stakeholders, can help strengthen the marine protection and management capacity of other countries. This will include recommendations on how capacity-building activities can be translated into sustainable environmental and economic programs.

Other barriers have limited the effectiveness of capacity-building programs: (1) lack of an adequate needs assessment before program design and implementation, (2) exclusion of targeted populations from decision-making, (3) poor management structures that can lead to mismanagement or corruption, (4) incomplete or inappropriate evaluation procedures, and (5) the paucity of long-term programmatic monetary support and the lack of a coordinated and strategic approach among donors.

THE GOVERNANCE DIMENSIONS OF ECOSYSTEM STEWARDSHIP

Effective and long-lasting ocean and coastal stewardship can occur only when a predictable, efficient, and accountable governance system is in place. Successfully executed governance initiatives establish dynamic processes that are maintained by the active and sustained involvement of the public and stakeholders who have an interest in the allocation of coastal resources and the mediation of conflicts. The processes of governance are expressed by three mechanisms: markets, governments, and the institutions and arrangements of civil society. How those mechanisms interact with one another is complex and dynamic and needs to be a focal point of future capacity-building.

Many tasks are necessary to develop and sustain ocean and coastal ecosystem governance initiatives, and they require expertise in a variety of disciplines. However, most professionals are trained in a single discipline and have little exposure to or experience in other fields. Growing capacity for the stewardship of ocean and coastal ecosystems requires an ability to integrate across diverse perspectives and disciplines. Analysis of the condition and dynamics of an ecosystem, the forces of change, and ecosystem resilience requires a broad knowledge base and the ability to integrate what is known into a framework that addresses problems, builds on opportunities, and takes into consideration the area's culture and traditions. Capacity-building programs therefore need to instill the tools, knowledge, skills, and attitudes that address:

- How ecosystems function and change.
- How the processes of governance can influence the trajectories of societal and ecosystem change.
- How strategies can be tailored to the history and culture of the place.
- How to assemble and manage interdisciplinary teams.

The report explains how that combination of capabilities could and should be imparted through future capacity-building investments.

FEATURES OF FUTURE CAPACITY-BUILDING

The success of future capacity-building programs will require education and training opportunities, effective governance structures, and sustained economic support. The committee has identified the following attributes that would increase the effectiveness and efficiency of future capacity-building programs:

- **Documentation of changes in capacity through assessments that use a consistent set of criteria.** Regular assessments will be needed to help programs to adapt to changing needs in long-term capacity-building efforts. Some common criteria will facilitate comparisons through time and across programs, but assessments will need to be tailored to fit the circumstances and characteristics of specific programs.
- **Funding of capacity-building through diverse sources and coordinated investments by local, regional, and international donors.** Building sustainable programs requires longer-term support than is typically provided by individual donors.
- **Support of dynamic and committed leaders, usually local, to develop a culture of stewardship and to work with the community to develop and implement a plan of action to sustain or improve ocean and coastal conditions.** Effective leaders also serve as mentors and role models that can motivate future leaders.
- **Development of the political will to address ocean and coastal management challenges.** Political will requires building a base of support for ocean and coastal stewardship through greater awareness of its long-term societal benefits. Public discussion of the costs and benefits of environmental sustainability—stimulated by the mass media, information campaigns, and educational programs—will heighten awareness of and build political will for necessary changes in the processes of planning and decision-making.
- **Establishment of continuing-education and certification programs to build the capabilities of practitioners.** This will enable current and future generations of professionals to adapt and apply the best practices to ocean and coastal management in diverse settings.
- **Networking of practitioners to increase communication and support ecosystem-based management along coastlines, in estuaries, and in adjoining large marine ecosystems and watersheds.** The networks will facilitate collection and integration of information and knowledge, new technologies, and Web-based data management systems in support of locally implemented, regionally effective, ecosystem-based management.

- **Collaboration among programs in neighboring countries through the founding of regional centers to encourage and support integrated ocean and coastal management.** The centers would link education, research, and extension to address issues of concern in the region and provide an issue-driven, problem-solving approach to capacity-building.

RECOMMENDATIONS

Seven critical actions are recommended to establish sustained capacity-building that can adapt to the changing conditions in ocean and coastal ecosystems.

RECOMMENDATION: Future investments in capacity-building should be anchored by periodic needs assessments used to develop regional action plans.

A recurring theme among experienced practitioners in capacity-building programs is the importance of anchoring capacity-building in thorough needs assessments. Such assessments should refer to a baseline of environmental, social, and economic conditions and analysis of the existing governance structure. Periodic assessments will be required every three to five years to update priorities to address changes in the ecosystem and responses to them.

Assessments will be required for each region because the maturity, capabilities, challenges, and traditions of governance differ from one place to another. For example, capacity-building priorities in Southeast Asia and the best strategies for meeting them will be quite different from those appropriate to East Africa or Central America. The credibility of the periodic needs assessments will depend on the participation and buy-in of the major investors in capacity-building in that region. Each assessment should be designed to attract high-level attention to high-priority issues. The findings should form the basis of regional action plans to guide investments in capacity and set realistic milestones and performance measures. Action plans should include concrete agreements on roles and responsibilities of donors, who provide financial support, and doers, who share their tools, knowledge, skills, and attitudes to strengthen capacity.

RECOMMENDATION: Capacity should be built to generate sustained funding for ocean and coastal governance.

Capacity is grown through the cumulative efforts of doers and donors to develop self-sustaining programs for knowledge-based ocean and coastal ecosystem-based management. Ecosystem-based management requires a long time to yield the greatest societal benefits and to adapt to the rapidly changing conditions of ocean and coastal ecosystems.

In developing countries, however, where ocean and coastal change and the loss of critically important goods and services is most rapid, the dominant mode of investment in ecosystem-based management is the 2- to 10-year project, and most initiatives are funded for 5 years or less. That applies to initiatives on scales ranging from community-based projects to the large marine ecosystem programs supported by organizations, such as the Global Environment Facility.¹ Many promising efforts wither and die when external funding from the donor community or development banks ends. There is an urgent need to build awareness of this problem so that future programs can be designed and implemented with strategies for sustained financing. Guidelines should be developed to provide practitioners with the knowledge and skills required to apply market-based mechanisms, such as user fees, regulatory fees, beneficiary-based taxes, and liability-based taxes.

RECOMMENDATION: Capacity-building programs should include programs specifically designed to develop, mentor, and reward leaders.

One of the most commonly cited reasons for failure and lack of progress in ocean and coastal governance initiatives is the lack of political will. One strategy for building project momentum and broadening support is to identify, develop, mentor, and reward leaders. Leaders are gifted communicators who play a central role in navigating the process of assembling support for a course of action. Leaders are not necessarily practitioners who have technical skills, but they may emerge from any of the various doer communities. The capabilities of leaders should be built through specific programs designed to enhance leadership skills. Investments in leadership will be most effective when they are associated with a regional network of programs that facilitate sharing of new information and ideas and build solidarity among people working to achieve common goals.

RECOMMENDATION: Networks should be developed to bring together those working in the same or similar ecosystems with comparable management or governance challenges to share information, pool resources, and learn from one another.

Networks are cost-effective and efficient mechanisms for maintaining and building capacity. They foster the creation of learning communities on the basis of trust and mutual respect. Well-structured networks help communities to envision the bigger picture and reduce members' sense of isolation by building solidarity and a common purpose with each other. Networks associated with periodic regional assessments of needs and progress

¹The Global Environment Facility is used here only as an example of a large organization, not to single it out.

can encourage discourse on and critical examination of what works and does not work and can thereby promote implementation of successful practices.

Networks are enhanced by periodic personal contacts, but much can be accomplished through well-structured and adequately maintained Web-based systems. Information systems designed to support the creation, capture, and dissemination of knowledge and directed specifically at enhancing capacity in the practices of ecosystem-based management to overcome the “implementation gap” could provide practitioners with the material to analyze successes and failures, to identify and resolve specific technical and policy issues, to recognize opportunities for transboundary collaboration, and to gain access to public education materials and meeting summaries produced by participating programs.

RECOMMENDATION: Regional centers for ocean and coastal stewardship should be established as “primary nodes” for networks that will coordinate efforts to fulfill action plans. These centers will require a contingent of experience-based professionals and infrastructure to serve as a resource for the entire network.

Decentralized networks and centers that combine research and education with outreach and extension are most effective in fostering discussion and implementing new approaches in the surrounding communities. In the United States, the Land-Grant University System and the National Sea Grant College Program illustrate how a network of institutions can foster the adoption of new practices in agriculture, aquaculture, public health, and education when there is a long-term, sustained effort. The adaptation and application of the integrated education-research-extension model on national and regional scales as a primary strategy for developing capacity for ocean and coastal governance would offer a powerful alternative to the current pattern of investment in expensive short-term and disconnected “projects.”

RECOMMENDATION: Progress in ocean and coastal governance should be documented and widely disseminated.

The effectiveness of future capacity-building programs could be enhanced by careful examination and analysis of traditions of governance, of prevailing societal and environmental conditions, and of how the context influences the structures of and strategies for environmental stewardship. Periodic needs assessments should be used to document and analyze the evolution of selected ecosystem-based management initiatives in each region. It will be particularly important to integrate the often rich but scattered information and experience on ecosystem change and governance initiatives in linked watersheds, estuaries, and large marine ecosystems. The analysis should document changes in societal and environmental benefits generated by the application of ecosystem-based management

principles and practices. A common conceptual framework should be used to document and analyze ecosystem-based management initiatives in diverse cultural, geographic, and biophysical settings to inform future capacity-building efforts and potentially help to build political will for new initiatives.

Regional programs build on successes achieved on smaller spatial scales. Large marine ecosystems adjoin coastal zones; both are influenced by the rivers, wetlands, and estuaries that transmit the effects of land-based activities to the sea. Hence, goals for the stewardship of marine areas will require efforts beyond traditional sector-by-sector planning and decision-making and beyond experience with ocean and coastal protected areas. Each sector of governance, from local community-based management to national ocean policies and from inland to offshore areas, should be coordinated and efficient.

RECOMMENDATION: A high-level summit should be held on capacity-building for stewardship of oceans and coasts. This summit should be held to demonstrate political will, with commitments to end fragmentation, and to build action plans for capacity-building based on regional needs assessments that integrate with other programs that address ocean and coastal stewardship issues.

Strengthening and coalescing political will among institutional leaders in government, nongovernmental organizations, and industry will be required to overcome the problem of fragmentation through the critical actions identified above. Political will is required to establish programs that focus specifically on capacity. One factor that has limited past efforts is that capacity-building is usually treated as an ingredient of programmatic efforts on specific topics. It has been identified as an ingredient of plans for the Global Ocean Observing System and is addressed in Agenda 21 of the United Nations Conference on Environment and Development and in the Millennium Ecosystem Assessments. In each case, the identification of capacity-building as a critical ingredient is valid, but the uncoordinated calls for increased capacity on specific topics result in the fragmentation of capacity-building efforts that typically have a lower priority than the other aspects of a program. What is lacking is a high priority for capacity-building in a program in its own right.

The committee calls for a high-level summit on growing capacity for stewardship of oceans and coasts to demonstrate political will, to commit to ending fragmentation, and to build an agenda for capacity-building that cuts across other programs that address ocean and coastal stewardship issues. Many meetings have been held and continue to be held, but often they are not at a high enough level to demonstrate political will and do not dedicate their agendas to capacity-building and the need to reduce fragmentation of efforts.

The phrase *high-level summit* is used to emphasize the importance of a meeting at an appropriately influential level to demonstrate political will. Various types of meetings

could serve that function. It might be a follow-up to the World Summit on Sustainable Development, it could build on the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea, or other venues may be appropriate.

Key leaders with a regional stake in stewardship of oceans and coasts should form the core of the summit, and people in capacity-building communities (doers and donors) should be engaged. The summit should involve governments, nongovernmental organizations, intergovernmental organizations, academe, and the private sector.

CONCLUSION

Ending the fragmentation of current programs that seek to grow capacity for ocean and coastal management and to improve stewardship will require a new, broadly adopted framework for capacity-building programs that emphasizes cooperation, sustainability, and knowledge transfer within and among communities. The condition and sustainability of the vital resources and services of oceans and coasts that are valued by societies around the world depend on increasing the global capacity for good stewardship. Developing nations face a steeper challenge to develop more sustainable ecosystem-based management practices that can be met in part through capacity-building. But all nations share a responsibility to develop the capacity and institutions for more sustainable management of the oceans and coasts that connect nations and continents around the globe.

INCREASING CAPACITY FOR STEWARDSHIP OF OCEANS AND COASTS

A Priority for the 21st Century

Committee on International Capacity-Building for the
Protection and Sustainable Use of Oceans and Coasts

Ocean Studies Board

Division on Earth and Life Studies

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PREFACE

Ocean and coastal ecosystems are inextricably linked with humans. Nearly 40% of the world's population is concentrated in the 100-km-wide coastal zone of the continents, and many coastal residents in developing and developed countries depend directly on ocean and coastal ecosystems for their livelihood. Seafood is the primary source of protein for over a billion people, mostly in developing countries. The extraordinary natural productivity of ocean and coastal waters and the strategic benefits of a coastal location for trade, defense, industry, and food production have made oceans and coasts uniquely important.

The needs for the ocean and coastal ecosystems' goods and services are likely to increase substantially as the human population continues to grow, as more people move to coastal areas, and as people strive to improve their standard of living. As a consequence, the degradation of coastal and marine ecosystems is expected to worsen. That degradation necessitates the building of capacity, especially in developing countries, to ensure the future of ocean and coastal communities, the cultural heritage of indigenous peoples, and ecosystem-based services. Capacity-building for stewardship of the oceans and coasts is a complex multidimensional challenge and needs to be addressed as such. It requires interdisciplinary and multidisciplinary approaches to ensure that stakeholders develop the proper knowledge, skills, and attitudes to be effective stewards of the environment.

Capacity for ocean and coastal stewardship has been growing around the world as governments, development banks, donors, and the private sector have funded projects on various scales to address many issues. Those efforts have infused knowledge in people, transferred technology, and strengthened institutions. However, it is clear that the efforts need to be increased and be more effective in the future. Stewardship of ocean and coastal ecosystems that include people require highly interdisciplinary, flexible, and adaptive approaches to deal with transboundary issues in situations fraught with logistical, political, and conflict-resolution issues.

The study reported here was funded by the Gordon and Betty Moore Foundation, the President's Circle of the National Academies, the David and Lucile Packard Foundation, the National Oceanic and Atmospheric Administration, the National Science Foundation, the Marisla Foundation, and the Curtis and Edith Munson Foundation. To conduct this study, the National Research Council assembled a committee of international experts to examine current and past efforts in building the scientific, technological, and institutional capacities that countries need for developing and implementing effective ocean and coastal resource policies and to identify barriers to effective management that coastal nations encounter. This report presents the committee's deliberations and findings with respect to special challenges in achieving sustainable use of oceans and coasts, the evolution and limitations of past and current capacity-building, barriers to and constraints on effective capacity-building, and the way forward to increase capacity for effective governance and stewardship.

The committee is indebted to the staff of the Ocean Studies Board for their valuable services and willingness to work out complex meeting and workshop arrangements, obtain additional background material, and provide report editorial services. Frank Hall served as study director. His valuable insights, perspective, and lively sense of humor were much appreciated. We are especially indebted to Jodi Bostrom, who provided the day-to-day support of the committee and through her can-do attitude ensured that the deliberations of this international committee, spread across many time zones, were fruitful and constructive.

Mary (Missy) H. Feeley and Silvio C. Pantoja, *Committee Co-Chairs*

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This report has been reviewed in draft form by persons chosen for their diverse perspectives and technical expertise in accordance with procedures approved by the

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National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards of objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We thank the following for their participation in their review of this report:

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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations, nor did they see the final draft of the report before its release. The review of this report was overseen by **Michael K. Orbach**, Duke University, Beaufort, North Carolina, appointed by the Division on Earth and Life Studies, and **John E. Dowling**, Harvard University, Cambridge, Massachusetts, appointed by the Report Review Committee, who were responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the National Research Council.

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