

## CHAPTER 29: ADVANCING INTERNATIONAL OCEAN SCIENCE AND POLICY

*The United States has long been a leader in developing and supporting international initiatives vital to the health of the world's oceans and coasts. These include agreements to protect the marine environment, conserve whales and other marine mammals, implement responsible fishing practices, preserve coral reefs, and enhance port security. The nation can continue to protect and advance its maritime interests by actively engaging in international policy making, global scientific initiatives, and programs to build ocean management capacity in developing nations. In particular, it is imperative that the nation ratify the United Nations Convention on the Law of the Sea, the preeminent legal framework for addressing international ocean issues. Until that step is taken, the United States will not be able to participate directly in the bodies established under the Convention that make decisions on issues of importance to all coastal and seafaring nations.*

### ACTING GLOBALLY TO SAFEGUARD THE OCEANS

Just as the well-being of U.S. citizens and the productivity of the U.S. economy depend on the ocean, the same holds true for most other nations. The oceans provide vital food and energy supplies, facilitate waterborne commerce, and create valuable recreational opportunities. It is in America's interest to work with the international community to preserve the productivity and health of the oceans and to secure cooperation among nations everywhere in managing marine assets wisely.

Over the last several decades, we have seen the creation of a comprehensive body of international ocean law and policy, renewed efforts in ocean and coastal management by many nations, enhanced scientific understanding of the marine environment, and a proliferation of new actors who participate in ocean governance at global, regional, and national levels. Despite this rise in activity and scrutiny, resource depletion has continued, conflicts persist over the management of ocean uses, and many countries in the developing world lack the means to effectively manage the marine areas and resources within their jurisdictions.

International ocean challenges should be familiar to U.S. policy makers because parallel problems are found to varying degrees along our own coasts. Virtually every topic covered in this report has a corresponding international dimension and the proposed solutions are often similar, including an emphasis on sustainability, the adoption of an ecosystem-based management approach, enhanced education and stewardship, better science, smoother intergovernmental cooperation, and sufficient funding. The international aspects of living marine resources, coral reefs, pollution abatement, marine debris, vessel safety, invasive species, habitat loss, science and observations, and conflict resolution among competing users have been addressed throughout this report. The focused discussions and recommendations found in the issue-specific chapters should be considered in conjunction with the broader international themes discussed here. (A summary of all international recommendations is included in Chapter 31.)

The United States can best influence ocean management globally by enacting and enforcing exemplary policies at home. However, domestic action alone will not be enough to deal with the many challenges facing the world's oceans and coasts. Solutions at the international level will require broad participation and cooperation, taking into account the interests, rights, and responsibilities of all coastal nations. To this end, the United States must work with other nations to develop institutions and mechanisms to improve all aspects of ocean governance.

## **REVIEWING THE EVOLUTION OF THE INTERNATIONAL OCEAN REGIME**

As discussed in Chapter 2, the international ocean management regime has evolved from virtually unregulated, open access to a system of well-defined national zones of authority. Beginning in the early 1600s and continuing for almost four centuries, the dominant paradigm for governing the oceans was the principle of freedom of the seas, based on the premise that the oceans were infinite and marine resources inexhaustible. There was nothing, it was assumed, that humans could do to cause irreversible damage to such a vast and bountiful resource.

This view of the oceans began to change dramatically in the middle of the 20<sup>th</sup> century, when it became apparent that problems of overfishing and pollution threatened ocean assets that had previously been taken for granted. Coastal nations began to assert exclusive jurisdiction over ocean areas and resources off their coasts, creating a bewildering array of claims about the extent of these areas and the powers that could lawfully be exercised within them.

To restore a sense of order and predictability, the international community developed a global ocean regime that specifies the rights and duties of coastal nations in 200-mile exclusive economic zones off their coasts, while maintaining freedoms of navigation essential for security and world trade. This regime also sets forth the collective rights and responsibilities of nations in the use of ocean resources outside areas of national jurisdiction.

Today, a plethora of mechanisms and institutional arrangements exist at the bilateral, regional, and global levels to address ocean-related issues. Many of these arrangements benefit from the participation of nongovernmental organizations, scientists, the private sector, development assistance agencies, and other stakeholders, in addition to government representatives.

On June 3, 2003, the leaders of the eight largest industrialized democracies (known as the G-8), issued a joint statement declaring their intention to implement a global action plan for environmental responsibility and sustainable development of the oceans.<sup>1</sup> If carried out, this action plan could serve as a basis for more effective ocean management worldwide.

## **DEVELOPING AND IMPLEMENTING INTERNATIONAL POLICY**

The United States has traditionally been a leader in international ocean policy making and has participated in the development of many international agreements that govern the world's ocean areas and resources. That leadership must be maintained and reinvigorated. The challenges of the 21<sup>st</sup> century will require improved collaboration among policy makers everywhere to establish ambitious objectives and take the actions necessary to achieve them.

### **Guiding Principles**

The guiding principles for sound ocean management discussed in Chapter 3 of this report are also relevant to U.S. policies in the international arena. These include an emphasis on sustainability, good stewardship, ecosystem-based management, preservation of biodiversity, use of the best available science, and international responsibility. This last principle calls for the United States to act cooperatively with other nations in

developing and implementing ocean policy, reflecting the deep connections between U.S. interests and the world's oceans.

U.S. interests internationally can be most effectively advanced through coordinated global, regional, and bilateral initiatives. International regional forums, such as those dealing with issues in the Great Lakes, Pacific islands, and Arctic and Caribbean regions, provide excellent opportunities to identify and address ocean issues on a regional ecosystem basis and to implement broad international objectives regionally. Bilateral agreements, such as the Great Lakes Water Quality Agreement, also provide opportunities to enhance ecosystem- and watershed-based management. The participation of U.S. states, territories, and indigenous peoples within each region provides important perspectives, and builds on established ties and shared interests and experiences.

In developing and implementing international ocean policy, the United States should:

- Use multilateral approaches, including participation in international forums, to achieve solutions to global ocean issues where coordinated action by many nations is required.
- Use regional and bilateral approaches, with input from U.S. states, territories, and tribes in those regions, to address regional ecosystem-based ocean and coastal management problems.
- Provide technical and financial assistance to build ocean science and management capacity in developing nations and small island states.
- Engage in partnerships with nongovernmental organizations, the scientific community, the private sector, regional institutions, and others to combine government and nongovernmental resources and expertise.

## The Law of the Sea Convention

For more than two centuries, the United States participated in the formation of customary international ocean law, a set of uniformly applied rules that nations accepted as binding. The 1982 United Nations Convention on the Law of the Sea (LOS Convention) codified much of this body of law, and created new rules to address unresolved issues, such as the balance between freedom of navigation and expanding claims of coastal state jurisdiction.

The LOS Convention is, in essence, an international constitution for the oceans. It provides a comprehensive delineation of the rights, duties, and responsibilities of each nation within its territorial sea, exclusive economic zone (EEZ), continental shelf, and on the high seas. It addresses specific subjects such as marine scientific research, seabed mining, and environmental protection. The LOS Convention also creates institutions for managing ocean issues and provides mechanisms for settling disputes.

The United States is not among the 145 parties to the LOS Convention, despite having been at the forefront of its development. When the Convention was adopted in 1982, the United States and other industrial nations had concerns about the regime established to govern deep seabed mining in areas outside national jurisdiction. To address these concerns, an agreement was reached in 1994 that substantially modified the provisions that the United States and others found objectionable.

Today, the LOS Convention enjoys widespread backing within the United States across a broad range of stakeholders in government, industry, environmental groups, and academia, and bipartisan support in Congress. There are many compelling reasons for the United States to expeditiously accede to the Convention. International bodies established under the LOS Convention are in the process of making decisions that directly affect important U.S. interests. For example, the Commission on the Limits of the Continental Shelf is considering jurisdictional claims over resources on the continental margin, an area of particular importance to the United States with its broad continental margin rich in energy resources. Measures to guide the future exploration and exploitation of deep seabed resources under the Convention are also being developed.

The Convention will no doubt continue to evolve. In 2004, the Convention will be open for amendment by its parties for the first time. If the United States is to ensure that its interests as a maritime power and coastal state are protected, it must participate in this process. The best way to do that is to become a party to the Convention, and thereby gain the right to place U.S. representatives on its decision-making bodies. Participation in the Convention would also enhance America's prestige and credibility as a leader on global ocean issues.

**Recommendation 29–1. The United States should accede to the United Nations Convention on the Law of the Sea.**

**Other Ocean-related International Agreements**

There are many international agreements in addition to the LOS Convention that address either ocean management generally, or specific issues such as fishery regulation, species protection, cultural heritage, vessel safety, and coral reefs. Here again, the United States has played a major role in designing and gaining support for many of these agreements, which are briefly summarized in Table 29.1.

Binding international agreements signify a commitment by participating nations to carry out specific actions, often allowing measurable progress to be made in meeting objectives. For example, parties to the International Convention for the Conservation of Atlantic Tunas must abide by catch limits placed on tunas and related species.

Nonbinding agreements can also prove useful in influencing nations to act responsibly. These agreements establish goals toward which nations agree to work and sometimes serve as a preliminary step to binding action. They are often preferable for addressing a problem where scientific uncertainty or temporarily insurmountable economic costs make firmer commitments unobtainable.

In addition to international agreements that directly address ocean and coastal management issues, international trade agreements also have indirect but significant consequences for ocean management. The impacts of these agreements on ocean and coastal policies need to be carefully considered, and efforts made to review each agreement to ensure that its provisions and U.S. ocean policy objectives are consistent and mutually supportive.

***Agreements Stemming from the Earth Summit***

Several major nonbinding agreements were reached at the 1992 United Nations Conference on Environment and Development held in Rio de Janeiro, Brazil, known as the Earth Summit. This event built on the U.N. Conference on the Human Environment held in Stockholm twenty years previously. The Stockholm conference placed environmental matters on the global agenda for the first time and led to the creation, among other landmark outcomes, of the U.N. Environment Program and of environmental agencies and associated legislation in many countries, including the United States.

At the center of the Earth Summit's agenda was a commitment to advancing sustainable development—the principle that economic development and the environment are inextricably linked and must be addressed together. Summit negotiations were intense, requiring the resolution of differences among developed and developing nations. The Summit was also characterized by the inclusion of an unprecedented number of representatives from nongovernmental organizations. Among the major international agreements forged at the Summit were the Rio Declaration of Principles, the Framework Convention on Climate Change, and Agenda 21—a comprehensive set of international guidelines for achieving sustainable development in all areas, including the oceans and coasts.

Another product of the Earth Summit was the Convention on Biological Diversity (CBD), which aims to conserve biological diversity worldwide while providing guidance for the sustainable use of its components and the equitable sharing of any benefits derived from the use of genetic resources. In 1995, the parties to the CBD issued the Jakarta Mandate, which initiated a marine and coastal resource work program focused on five topics: integrated ocean and coastal area management; ocean and coastal protected areas; sustainable use of ocean and coastal living resources; marine aquaculture; and non-native species.

Most nations have ratified the CBD, but the United States has not, largely because of divergent views regarding the ownership of genetic resources. Many coastal nations regulate access by foreign scientists and explorers to genetic resources in waters under their jurisdiction. These nations often seek royalties from the commercialization of these resources, including pharmaceutical products resulting from bioprospecting. The United States has expressed concerns about balancing legal protections for private biotechnology investors with the rights of sovereign nations to their resources.

Because the United States is not a party to the CBD, the nation cannot directly participate in the development of the CBD regime or in negotiations on its protocols. For example, the Cartagena Protocol on Biosafety, which provides a framework for the safe transfer, handling, and use of living modified organisms, has important implications for U.S. economic sectors. Other CBD areas of interest to the United States include efforts to combat invasive non-native species, creation of compilations of marine scientific data, and facilitation of member nation negotiations concerning access and collection agreements for scientists.

**Recommendation 29–2. The National Ocean Council should coordinate an expedited review and analysis of the ocean-related components of the United Nations Convention on Biological Diversity and recommend to the U.S. Department of State whether, from an ocean perspective, ratification of this treaty would be beneficial to U.S. interests.**

### *Meeting International Obligations*

Although the next decade will undoubtedly see new international agreements on ocean issues, the main challenge for the world community will be wider ratification and more effective implementation and enforcement of existing agreements. To achieve their goals, the international organizations charged with carrying out these agreements must also be adequately funded. This will require every participating nation, including the United States, to fully meet its financial commitments, consistent with relevant treaty obligations.

### **Collaboration for International Ocean Policy**

To lead in the international ocean arena, the United States must maintain a vigorous national discussion about global ocean issues. Enhanced communication, coordination, and collaboration among U.S. government agencies, scientific institutions, the private sector, and other stakeholders will strengthen U.S. performance at international negotiations and enable the nation to be more influential in shaping and executing world ocean policy. Similarly, at the international level, governments, agencies, United Nations bodies, and scientific associations must work closely together to achieve success.

### *U.S. Coordination*

Within the U.S. government, the U.S. Department of State is the lead agency for most international negotiations. However, the role of more specialized agencies is extremely important due to the scientific and resource focus of many multilateral ocean issues. For example, living marine resources are primarily the responsibility of the National Oceanic and Atmospheric Administration; the U.S. Coast Guard generally takes

the lead in developing and enforcing vessel safety and environmental protection regulations; the U.S. Environmental Protection Agency does the same in mitigating pollution from land- and water-based sources; and the U.S. Trade Representative has a role in the interface of international trade and ocean policy.

Consistent application of a wide range of expertise is essential both to establish international ocean standards that reflect U.S. interests, and to make certain that subsequent actions by the United States and others are in accordance with those standards. A new mechanism is needed to provide improved coordination among U.S. agencies that share responsibility for, and knowledge about, international ocean issues. Since the early 1970s, various interagency groups have attempted to address these issues, most recently as a subcommittee under the National Security Council's (NSC's) Global Environmental Affairs Policy Coordinating Committee. While the NSC subcommittee should continue to focus on specific security-related issues, the National Ocean Council will be a better home for a broad interagency committee dealing with all facets of international ocean policy.

**Recommendation 29–3. The National Ocean Council (NOC) should establish and oversee an interagency committee to support the development and implementation of ocean-related international policy.**

*The international committee of the NOC should:*

- *be chaired by the U.S. Department of State.*
- *make recommendations to the Assistant to the President, the Secretary of State, and other agency heads as appropriate, on international ocean policy.*
- *assess the implementation status of ocean-related treaties to which the United States is a party and recommend appropriate actions and funding required to fulfill U.S. treaty obligations.*
- *provide technical assistance to the NOC on international ocean issues.*

### ***International Ocean Governance***

Numerous global institutions exist to coordinate the development and implementation of international ocean policy. These include the U.N.'s Intergovernmental Oceanographic Commission, International Maritime Organization, Environment Program, Food and Agricultural Organization, and many others. (For a description of these and other international institutions, see Box 29.1.)

Enhanced coordination is needed among international ocean governance institutions to avoid the piecemeal, sectoral, and unstructured development of ocean policy. One possible approach is to develop a mechanism for coordinating all U.N. entities that have jurisdiction over ocean and coastal issues. Recent steps in this direction by the U.N. are encouraging.

A number of nations have recently developed new initiatives for ocean management in their waters. These new approaches have important implications both for the United States and the international community. The results of emerging management regimes elsewhere can provide important lessons for U.S. ocean management. Moreover, policy changes by nations that share borders or marine ecosystems with the United States may have direct impacts on our nation. New ocean management strategies may also impact the evolution of international ocean law, potentially shifting the balance between interests in freedom of navigation and effective ocean resource management. It is important for the United States to monitor, study, and learn from ocean management initiatives undertaken by other nations.



### Box 29.1 Selected International Bodies with Ocean-related Responsibilities

**FAO:** The *Food and Agriculture Organization* (FAO) of the United Nations (U.N.) leads international efforts to defeat hunger, to raise levels of nutrition and standards of living, to improve agricultural productivity, and to better the condition of rural populations. The Committee on Fisheries is a subsidiary body of the FAO Council. It provides a forum to examine and make recommendations on major international fisheries and aquaculture issues, to negotiate international fishery agreements, and to periodically review international fisheries programs and their implementation.

**IMO:** The *International Maritime Organization* (IMO) is the U.N. agency responsible for improving maritime safety and security and preventing pollution from ships, through adoption and implementation of international standards, guidelines, and agreements. The IMO also has developed a number of conventions creating liability and compensation regimes for damages arising from vessel-related pollution and other vessel incidents.

**IOC:** The *Intergovernmental Oceanographic Commission* (IOC) is a semi-autonomous body within the U.N. Educational, Scientific and Cultural Organization. It assists governments in addressing ocean and coastal problems through sharing of ocean science information and technology, including oceanographic data and information. As part of this effort, IOC has a fundamental interest in the development of earth observing and global ocean observing systems.

**UNDP:** The *United Nations Development Program* (UNDP) helps countries strengthen their capacity to address challenges related to energy, environment, and sustainable development. The Strategic Initiative for Ocean and Coastal Management is a global initiative to harness the knowledge and skills of UNDP, other U.N. Agencies, donors, and other external support agents to enhance the effectiveness of ocean and coastal management projects in promoting sustainable human development in developing countries.

**UN Division for Ocean Affairs and Law of the Sea:** As secretariat for the U.N. Convention on the Law of the Sea (LOS Convention), the mandate of the U.N. *Division for Ocean Affairs and Law of the Sea* is to fulfill the functions associated with the LOS Convention, including assistance to states in implementing it. The Division monitors and reports annually to the U.N. General Assembly regarding both the LOS Convention and general ocean affairs, and works to promote better understanding, uniform and consistent application, and effective implementation of the LOS Convention.

**UNEP:** The *United Nations Environment Program* (UNEP) is dedicated to enhancing global understanding of environmental issues and helping nations address those issues. Its work includes assessing global, regional, and national environmental conditions and trends; developing international and national environmental instruments; strengthening institutions for the wise management of the environment; facilitating the transfer of knowledge and technology for sustainable development; and encouraging new partnerships. UNEP oversees a number of activities in marine and coastal areas. A few examples include: the U.N. Atlas of the Oceans, the Global Program of Action for the Protection of the Marine Environment from Land-based Activities, and the Coral Reef Unit, which implements the International Coral Reef Action Network.

**WTO:** The *World Trade Organization* (WTO) deals with the rules of trade between nations. The WTO's primary mission is to facilitate global trade while ensuring that such transactions are conducted in a fair and predictable manner. The WTO administers trade agreements, serves as a forum for trade negotiations, settles trade disputes, and reviews national trade policies. The WTO can become involved in environmental policy when an international environmental agreement has an impact on free trade, or when a nation's environmental policies may be interpreted as discriminatory trade practices.

## Emerging International Management Challenges

Wise management requires good planning and proactive approaches. New ocean-related problems and opportunities are sure to arise as populations grow, technologies improve, and knowledge increases. Several prominent emerging ocean and coastal management issues, some of which are beginning to be acknowledged at the national level, also have international dimensions.

Among these issues are the impacts of global climate change, such as thinning polar ice due to rising temperatures or coral reef damage caused by elevated carbon dioxide concentrations. Other emerging international management challenges are directly associated with the use of ocean resources. In each case, the challenge is to find appropriate global mechanisms—whether new or existing—to ensure that emerging issues are dealt with in accordance with sound management principles. A clear international regime is vital to provide consistency and certainty to users, maximize the benefits of these resources, and reduce possible negative environmental impacts. The following examples describe just a few emerging issues that will require international attention:

- ***Polar regions.*** Many studies indicate that by mid-century the Earth will probably have substantially less ice cover in polar regions. This may lead to major changes in commercial and military transportation routes, ecosystem conditions, resource exploitation, and social and economic conditions. It is not too soon to begin discussions about the ramifications and appropriate management of burgeoning activities in polar waters.
- ***Carbon sequestration.*** Due to concerns about the rising level of carbon dioxide in the atmosphere, experiments have been conducted to transfer some of the excess carbon into the oceans. One method is to inject carbon dioxide directly into deep ocean waters or under the seafloor, where it forms frozen gas hydrates. Another approach is to fertilize the surface of the ocean—typically with iron—thereby accelerating the uptake of carbon dioxide by organisms in surface waters. The long-term effectiveness and potential environmental consequences of either approach remain unknown and urgently require further study. Furthermore, no process is in place to determine whether or not these activities should be allowed to proceed, or what body would make that decision.
- ***Marine protected areas.*** Numerous international agreements support the establishment of protected areas to improve the management of fragile coastal and marine ecosystems and certain submerged cultural resources. These protected areas may restrict other activities depending on the level of protection necessary to sustain particular resources. (For a discussion of marine protected areas, see Chapter 6.) Difficult international decisions loom over the appropriate balance between environmental protection and high seas freedoms.
- ***Seamounts.*** Worldwide concerns have been expressed about over-fishing around underwater mountains on the high seas. These ocean features, referred to as seamounts, typically attract robust fish populations that are not subject to the jurisdiction of any country. Without binding international agreements, there is a great potential for these areas to be overfished.

**Recommendation 29–4.** The National Ocean Council should assess emerging international ocean-related management challenges and make recommendations for either incorporating these activities under existing management regimes or developing appropriate new ones. The U.S. Department of State should work with the international community to implement these recommendations.



## Scientific Input to U.S. Policy Makers

Successful national and international ocean policies depend on sound scientific information. It is essential, therefore, to ensure that U.S. policy makers benefit from timely advice and guidance from the U.S. marine scientific community. This, in turn, requires regular avenues of communication that allow scientists the opportunity to provide input and policy makers the chance to carefully consider their recommendations.

A 1999 report by the National Research Council introduced the concept of “science for diplomacy”—an approach for improving the ability of the State Department to incorporate scientific expertise into the foreign policy process.<sup>2</sup> The State Department has since taken several significant steps to strengthen its scientific capabilities, including the establishment in 2000 of a Science and Technology Advisor to the Secretary of State. Continued progress is needed to increase knowledge and enhance understanding within the department about the complex scientific basis of many international ocean policy issues.

**Recommendation 29–5. The U.S. Department of State should improve its integration of ocean-related scientific expertise in policy and program development and implementation.**

*These improvements can be accomplished by:*

- *conducting State Department staff training about the relevance of scientific considerations to international ocean policy.*
- *increasing scientific support throughout the department to address current and emerging ocean-related issues, particularly through the use of borrowed personnel from resource agencies or academic institutions.*
- *creating mechanisms to facilitate input from the scientific community on complex ocean-related issues.*

## ENHANCING INTERNATIONAL OCEAN SCIENCE

The United States has been a leader in ocean science and research since creation of the U.S. Commission on Fish and Fisheries in 1871. Eleven years later, the 234-foot *USS Albatross* entered service as the first U.S. research vessel built exclusively for fishery and oceanographic research. On land, major centers of activity included the Woods Hole Oceanographic Institution, which has attracted scientists from around the world for more than a century, and the Scripps Institution of Oceanography, an innovator in marine science and technology since 1903. Over the last fifty years, dozens of other top-tier U.S. oceanographic institutions have developed. If the United States is to maintain its leadership status, it must build on this tradition by strengthening international scientific partnerships and expanding the world’s understanding of the oceans.

### International Ocean Science Programs

International ocean research is conducted and coordinated by a variety of entities including the U.N. Intergovernmental Oceanographic Commission, which has sponsored conferences and meetings on an array of topics in this field. These programs include efforts to understand El Niño, the role of the oceans in the global carbon balance, climate variability, and algal blooms. The Scientific Committee on Oceanic Research (SCOR), an interdisciplinary body of the International Council for Science, focuses on large-scale ocean research projects for long-term, complex activities. SCOR also promotes capacity building in developing countries by encouraging scientists from such countries to participate in its working groups and other activities. Other institutions, including the World Meteorological Organization, the U.N. Environment Program, and the International Hydrographic Organization, are doing valuable work on climate change, coral reefs, and ocean surveys.

The United States participates in and contributes to collaborative international ocean research both to fulfill our global obligations and because it is in our national interest to do so. The more we know, the better we can protect our long-term stake in healthy and productive oceans.

**Recommendation 29–6. The United States should continue to participate in and support major international ocean science organizations and programs.**

### **The Global Ocean Observing System**

An international effort is underway to gain a better understanding of the current state of the world’s oceans, and to revolutionize the ability to predict future ocean conditions. When fully realized, the Global Ocean Observing System will use state-of-the-art technology to integrate data streams from satellites and globally-deployed ocean sensors. These data will then be made available in useable form to resource managers, businesses, and the general public. This initiative is part of a larger international effort to create a system that integrates ocean, atmosphere, and terrestrial observations.

One of the most important functions of the Global Ocean Observing System will be to better understand the ocean’s critical role in climate and climate change. The oceans store tremendous amounts of heat, water, and carbon dioxide, transport them around the globe through ocean circulation, and exchange them continually with the atmosphere. A better understanding of the interactions between oceans and climate will assist scientists in analyzing and predicting short- and long-term climate changes. Improved information from the Global Ocean Observing System will also help scientists predict changes in the oceans themselves, such as sea-level rise, elevated carbon dioxide concentrations, and variations in water temperature, and assist in planning for the potential impacts of such changes. Enhanced observations of ocean-atmosphere interactions may also help assess the potential for abrupt climate change, and suggest ways to mitigate its impacts.

The U.S. role in development of the Global Ocean Observing System is closely linked with efforts to improve ocean data collection nationally. The U.S. Integrated Ocean Observing System (discussed in Chapter 26) will be the link between the global system and the regional ocean observing systems in the United States. Improving international coordination on ocean observations, and integrating these observations into the broader suite of atmospheric and terrestrial observations, is a cornerstone of the ongoing effort to strengthen the role of science in international policy making.

### **U.S. Scientific Activities Abroad**

In the past, marine scientific research was protected as a “freedom of the sea” and largely unregulated outside territorial seas. However, under the LOS Convention, coastal nations generally can assert greater legal jurisdiction than before over various types of research conducted in their exclusive economic zones and extended continental shelves. Coastal nations can require researchers to obtain prior approval before conducting research in their waters and to share research data, samples, and results. The extent of the coastal nation’s authority depends on the location and purpose of the research (e.g., scientific, archaeological, historical, or economic) and must be exerted in accordance with provisions of the LOS Convention that promote international cooperation in this field. There is variability in the extent to which coastal nations choose to exercise the authority available to them. For example, for now the United States has chosen not to assert jurisdiction over marine scientific research in the U.S. EEZ. This policy is intended to encourage good international relations, and through reciprocity, to benefit the U.S. marine scientific community by easing access to foreign waters.

The State Department is the primary federal agency charged with facilitating the international programs and activities of U.S. scientists. Since 1972, the department has processed about 6,000 requests to coastal nations around the world seeking permission to conduct U.S. oceanographic research in their waters. However, support for facilitating U.S. science abroad has declined over time. While modest improvements have been made in the last few years, growing interest in marine scientific research will require continued attention to this function.

Strong partnerships between U.S. and foreign scientists facilitate agreements on how international science initiatives should be conducted and how results should be shared. An example of this type of collaborative effort is the Ocean Drilling Program, which is implemented through a memorandum of understanding among the United States and several international partners. Such partnerships can also be used to build scientific capacity in other nations. Collaborations between the United States and Mexico, for example, show the benefits of integrating scientific research with education and training, building and sharing infrastructure, participating mutually in large-scale programs, planning joint events and publications, and developing sources of binational funding.<sup>3</sup>

**Recommendation 29–7. The U.S. Department of State should offer strong support for U.S. scientists conducting research programs around the world. Existing international partnerships should be strengthened and new partnerships promoted to facilitate the conduct of international research.**

## **BUILDING INTERNATIONAL CAPACITY IN OCEAN SCIENCE AND MANAGEMENT**

Implementation of international ocean policy and improved management of ocean and coastal resources worldwide are affected by the adequacy of the science and management capacity of every coastal nation. Well-trained scientists and high-quality laboratories and equipment around the world will contribute to our understanding of the oceans. Ecosystem-based management can only succeed if all nations with management responsibility for some component of the ecosystem work together to sustain its health.

There are a variety of U.S. programs designed to assist in international capacity building, including several related to ocean and coastal science and management capacity. The U.S. Agency for International Development, as part of its mission to expand democracy and improve the lives of citizens in the developing world, sponsors programs that promote natural resource management and that stress sustainability of resources through sound environmental and management practices. Other agencies also have programs that assist developing countries with ocean and coastal science and management efforts (Box 29.2).

### **Box 29.2 U. S. Involvement in International Capacity Building Efforts**

The United States is helping to build the capacity of other nations to implement ecosystem-based management through the White Water to Blue Water initiative, which focuses on land-based sources of pollution and their impacts on the marine environment. White Water to Blue Water is currently developing pilot programs with partners in the Caribbean region. The United States also helps to finance the U.N. Environment Program, which in 2002 launched the Hilltops to Oceans (H2O) initiative, with a similar focus, as part of the Global Program of Action for the Protection of the Marine Environment from Land-Based Sources. (For additional discussion of these initiatives, see Chapter 14.)

This report recommends a number of measures aimed at strengthening U.S. capacity in ocean and coastal science and management. But to maintain progress on a global scale, the United States and other wealthy nations will need to assist coastal nations of more limited means. This assistance can be in the form of funding, human resource development, technology transfer, information sharing, or other advisory and consultative services. To be most effective, assistance should be science-based and developed within the context of an ecosystem-based approach. Efforts should be concentrated on issues that have been identified as particularly critical for the health of an ecosystem or marine species, and have the greatest potential for positive impacts. In most instances, effective capacity-building will require long-term efforts to change detrimental practices and build support for new, sustainable management approaches. These efforts will require long-term funding commitments sufficient to make the changes needed to preserve or rebuild healthy ecosystems.

Many developing nations are particularly dependent on ocean and coastal resources; however poverty and unhealthy conditions still predominate in many of their coastal communities. U.S. assistance will not only benefit ocean and coastal science and management, but also result in meaningful economic gains to the developing nations, thereby creating goodwill and strengthening U.S. international ties.

**Recommendation 29–8. The United States should increase its efforts to enhance long-term ocean science and management capacity in other nations through grants, education and training, technical assistance, and sharing best practices, management techniques, and lessons learned.**

**Table 29.1 U.S. Participation in International Ocean Agreements**

An examination of ocean-related international treaties and agreements reveals the wide range of international ocean policy issues, including fisheries management, species protection, vessel safety, and coral reef preservation. (Note: some of the listed agreements are not formal treaties or conventions, and thus, ratification is not applicable.)

| Agreement Name  | Description   | Date of Agreement | Date Entered Into Force | Has the U.S. Signed? | Has the U.S. Rati-fied? |
|---|---|-------------------|-------------------------|----------------------|-------------------------|
| <b>United Nations Convention on the Law of the Sea and Related Agreements</b>   |   |                   |                         |                      |                         |
| <b>United Nations Con-vention on the Law of the Sea (LOS)</b>   | LOS is a comprehensive regime of law and order for the world’s oceans and seas. LOS is comprised of 320 articles and 9 annexes and governs all aspects of ocean space, such as delimitation, pollution control, scientific research, resource management, technology transfer, and dispute settlement.                          | 12/10/82          | 11/16/94                | No                   | No                      |
| <b>Agreement on Part XI of the LOS Conven-tion (Deep Seabed Mining Agreement)</b>   | Amends the LOS regime governing the deep seabed. Reflects a shift to more free-market oriented policies. Modifies decision making to reflect political and economic interests and financial contributions of states, while retain-ing the principle that the seabed is the “com-mon heritage of mankind.”                       | 07/28/94          | 07/28/96                | Yes                  | No                      |
| <b>Fisheries-related Agreements</b>   |   |                   |                         |                      |                         |
| <b>Agreement for the Implementation of the LOS Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (FSA)</b> | The FSA sets out principles for the conserva-tion and management of straddling stocks and highly migratory fish on the high seas and places new regulatory authority in the hands of regional fishery bodies.   | 08/04/95          | 12/11/01                | Yes                  | Yes                     |
| <b>Agreement to Pro-mote Compliance with International Conservation and Management Mea-sures by Fishing Ves-sels on the High Seas</b>                           | The Compliance Agreement promotes compli-ance by fishing vessels on the high seas with international conservation and management measures. It requires a party to make all efforts to ensure that vessels flying its flag do not engage in any activity that undermines the conservation or management of biological resources. | 11/24/93          | 04/24/03                | Yes                  | Yes                     |
| <b>International Con-vention for the Con-servation of Atlantic Tunas</b>  | The International Convention is a fishery treaty for the conservation of tunas and tuna-like species in the Atlantic Ocean and its adjacent seas.   | 05/14/66          | 03/21/69                | Yes                  | Yes                     |
| <b>Marine Environment</b>   |   |                   |                         |                      |                         |
| <b>Convention on the Prevention of Marine Pollution by Dump-ing of Wastes and Other Matter (London Convention)</b>  | The London Convention regulates the disposal of waste materials into the sea. It establishes “black- and gray-lists” for wastes that can be considered for disposal at sea according to the hazard they present to the environment.   | 12/29/72          | 08/30/75                | Yes                  | Yes                     |

Table 29.1 (continued) U.S. Participation in International Ocean Agreements

| Agreement Name   | Description   | Date of Agreement                     | Date Entered Into Force | Has the U.S. Signed? | Has the U.S. Ratified? |
|--|---|---------------------------------------|-------------------------|----------------------|------------------------|
| <b>Marine Environment (continued)</b>  |   |                                       |                         |                      |                        |
| <b>Protocol to the London Convention</b>   | The Protocol is more restrictive than the Convention and in principal part creates a "reverse list," which implies that all dumping is prohibited unless explicitly permitted.  | 11/08/96                              | Not in force            | Yes                  | No                     |
| <b>International Convention for the Prevention of Pollution from Ships (MARPOL 1973/1978)</b>              | MARPOL is concerned with the prevention of accidental and operational vessel-source pollution. It is implemented through six technical annexes. Annexes I (oil) and II (noxious liquids carried in bulk) are mandatory. Annexes III (harmful substances carried in package form), IV (sewage), V (garbage from ships), and VI (air emissions) are optional. | <b>MARPOL</b>                         |                         |                      |                        |
|  |   | 10/02/83                              | Yes                     | Yes                  |                        |
|  |   | <b>Annexes I and II</b>               |                         |                      |                        |
|  |   | 10/02/83                              | Yes                     | Yes                  |                        |
|  |   | <b>Annex III</b>                      |                         |                      |                        |
|  |   | 07/01/92                              | Yes                     | Yes                  |                        |
|  |   | <b>Annex IV</b>                       |                         |                      |                        |
|  |   | 09/27/03                              | No                      | No                   |                        |
| <b>Annex V</b>   |   |                                       |                         |                      |                        |
| 12/31/88   | Yes   | Yes                                   |                         |                      |                        |
| <b>Annex VI</b>  |   |                                       |                         |                      |                        |
|  |   | Scheduled to enter into force 5/19/05 | Yes                     | No                   |                        |
| <b>Global Plan of Action for the Protection of the Marine Environment from Land-based Activities (GPA)</b> | The GPA is designed to be a source of conceptual and practical guidance to be drawn upon by national and/or regional authorities in devising and implementing sustained action to prevent, reduce, control, and eliminate marine degradation from land-based activities.  | 11/03/95                              | Not a treaty            | Supported            | Not applicable         |
| <b>Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)</b>                        | CCAMLR established a Commission with the authority to adopt measures for the conservation of Antarctic marine living resources, including the designation of protected species, open and closed seasons and areas for harvesting, and catch limits.   | 04/07/80                              | 05/20/80                | Yes                  | Yes                    |
| <b>Antarctic Treaty</b>  | The Treaty provides that Antarctica shall be used for peaceful purposes only and for scientific investigation and cooperation. It prohibits nuclear explosions and disposal of radioactive waste.   | 12/01/59                              | 06/23/61                | Yes                  | Yes                    |
| <b>Protocol on Environmental Protection to the Antarctic Treaty</b>  | The Protocol provides for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems.  | 10/04/91                              | 01/14/98                | Yes                  | Yes                    |



Table 29.1 (continued) U.S. Participation in International Ocean Agreements

| Agreement Name  | Description  | Date of Agreement | Date Entered Into Force | Has the U.S. Signed?  | Has the U.S. Ratified? |
|---|--|-------------------|-------------------------|---|------------------------|
| <b>Marine Environment (continued)</b>   |  |                   |                         |   |                        |
| <b>Declaration on the Establishment of the Arctic Council</b>                                       | The Arctic Council is a high-level forum that promotes cooperation, coordination, and interaction among Arctic states, with the involvement of Arctic indigenous communities on common issues (except military security), in particular, sustainable development and environmental protection in the Arctic. | 09/19/96          | Not a treaty            | Supported   | Not applicable         |
| <b>Boundary Waters Treaty</b>   | The treaty established the International Joint Commission between the United States and Canada to prevent and resolve disputes relating to the use and quality of the boundary waters (such as the Great Lakes).   | 01/11/1909        | 05/05/1910              | Yes   | Yes                    |
| <b>Biodiversity and Wildlife</b>  |  |                   |                         |   |                        |
| <b>International Convention for the Regulation of Whaling (ICRW)</b>                                | The ICRW establishes the International Whaling Commission, which regulates commercial and aboriginal subsistence whaling.  | 12/02/46          | 11/10/48                | Yes   | Yes                    |
| <b>Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (RAMSAR)</b> | RAMSAR provides the framework for national action and international cooperation for the conservation and wise use of wetlands. The system currently includes 1368 wetland sites, totaling 120 million hectares (about 296 million acres).  | 02/02/71          | 12/21/75                | Yes   | Yes                    |
| <b>Convention on International Trade in Endangered Species (CITES)</b>                              | The goal of CITES is to ensure that international trade in wild animals and plants does not threaten their survival. Trade in listed species is regulated through a permit system.   | 03/03/73          | 07/01/75                | Yes   | Yes                    |
| <b>Convention Concerning the Protection of the World Cultural and Natural Heritage</b>              | The World Heritage Convention defines the kind of natural or cultural sites which are eligible for inscription on the World Heritage List, and sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them.  | 11/23/72          | 12/17/75                | Not applicable (UNESCO treaties are not opened for signature) | Yes                    |

---

<sup>1</sup> 2003 G8 Summit. "Marine Environment and Tanker Safety: A G8 Action Plan."  
<[http://www.g8.fr/evian/english/navigation/2003\\_g8\\_summit/summit\\_documents/marine\\_environment\\_and\\_tanker\\_safety\\_-\\_a\\_g8\\_action\\_plan.html](http://www.g8.fr/evian/english/navigation/2003_g8_summit/summit_documents/marine_environment_and_tanker_safety_-_a_g8_action_plan.html)> Accessed March 2, 2004.

<sup>2</sup> National Research Council. *The Pervasive Role of Science, Technology, and Health in Foreign Policy*. Washington, DC: National Academy Press, 1999.

<sup>3</sup> National Research Council. *Building Ocean Science Partnerships: The United States and Mexico Working Together*. Washington, DC: National Academy Press, 1999.