

Coastal Seas Governance: an International Project for Management Policy on Threatened Coastal Seas

Ian Morris

Wayne H. Bell

Follow this and additional works at: <http://digitalcommons.law.umaryland.edu/mlr>



Part of the [Environmental Law Commons](#)

Recommended Citation

Ian Morris, & Wayne H. Bell, *Coastal Seas Governance: an International Project for Management Policy on Threatened Coastal Seas*, 47 Md. L. Rev. 481 (1988)

Available at: <http://digitalcommons.law.umaryland.edu/mlr/vol47/iss2/8>

This Article is brought to you for free and open access by the Academic Journals at DigitalCommons@UM Carey Law. It has been accepted for inclusion in Maryland Law Review by an authorized administrator of DigitalCommons@UM Carey Law. For more information, please contact smccarty@law.umaryland.edu.

COASTAL SEAS GOVERNANCE: AN INTERNATIONAL PROJECT FOR MANAGEMENT POLICY ON THREATENED COASTAL SEAS

IAN MORRIS*
WAYNE H. BELL**

I. INTRODUCTION

Many individuals, agencies, and jurisdictions have recently directed extensive efforts to, in the words of the 1987 Chesapeake Bay Agreement, "protect our shared resource and restore it to a more productive state."¹ This comprehensive collection of complex projects and initiatives was assembled without any comparisons to comparable efforts around the world. This lack of comparative knowledge prompted the international project described in this paper.

Those responsible for major policy and management decisions increasingly recognize the value of good comparative studies. The seemingly unstoppable expansion of the scale and technology of today's communication networks and trends enhances opportunities for creative comparisons. Good innovative and comparative studies can highlight precise lessons to be learned and taught—lessons that can improve the decisionmaking process, alter decisions, and increase the efficiency of any resulting actions. Perhaps more importantly, comparisons *can alter a perspective*. Comparisons between different systems (of any kind) can allow people to make decisions with a perspective fundamentally different from those whose minds are bounded by their local system and its immediate issues.

The value of comparative studies and broadened perspective

* Director, Center for Environmental and Estuarine Studies, University of Maryland. B.S.C., University College, London, England, 1960; Ph.D., 1963.

** Assistant to the Director for Special Projects. B.S., University of Miami (Florida), 1967; A.M., Harvard University, 1969; Ph.D., 1976.

The authors gratefully acknowledge their colleagues on the Organizing Committee—D. Cater, C. Curtis, C. Lyons, and C. Roosevelt; the additional members of the Executive Committee planning this project—B. Bayne, M. Bewers, P. Burbridge, R. Chesselet, J. Clark, R. Costanza, W. Eichbaum, N. Kumomoto, and B. Owe-jansson; and the active participants in the various site visits—P. Burbridge, R. Costanza, C. Curtis, W. Eichbaum, E. Fraites, J. Gartlan, M. Goad, H. Hughes, N. Kumomoto, C. Leider, and C. Lyons.

1. 1987 Chesapeake Bay Agreement 2 (Dec. 14, 1987) (available at the *Maryland Law Review*).

applies to environmental management and decisionmaking. Here, comparative approaches can break away from the local- or site-specific focus frequently given to environmental issues. When comparative studies allow generalizations to cut across boundaries between apparently different systems, findings of some significance are possible.²

Such a comparative approach has already been adopted for major coastal and estuarine systems.³ In the United States, for instance, there is considerable interest in comparisons between major estuaries such as the Narraganset, San Francisco, Delaware, and Galveston Bays.⁴ Also, on an international level there have been recent attempts to compare various aspects of the Baltic Sea and the Great Lakes.⁵

The privately funded Coastal Seas Governance Project compared the way in which policy and management decisions are made on four major coastal seas: the Baltic Sea, the Chesapeake Bay, the North Sea, and the Setonai-Kai (Inland Sea of Japan). A fourteen-member Executive Committee guided the project, and the essential data gathering centered around site visits to all four systems under study. The composition of the Executive Committee and the site-visit teams, as well as the characteristics of the site-visit interviews and discussions, emphasized the crucial *trans-disciplinary* nature of the study. Members of the site-visit teams recently reconvened to identify the project's principal findings. The goal is to tell the worldwide community of policymakers what we think are the ele-

2. See, e.g., NATIONAL RESEARCH COUNCIL, *ECOLOGICAL KNOWLEDGE AND ENVIRONMENTAL PROBLEM SOLVING: CONCEPTS AND CASE STUDIES* (1986) (containing case studies which offer opportunities for comparative studies); *SUSTAINABLE DEVELOPMENT OF THE BIOSPHERE* (W.C. Clark & R.E. Munn eds. 1986) (offering a perspective similar to that developed from comparative approaches).

3. See 26 *ECOSYSTEMS OF THE WORLD: ESTUARIES AND ENCLOSED SEAS* (B.H. Ketchum ed. 1983). This work provides much of the material for comparisons of the natural science of major coastal seas.

4. An interdisciplinary study at the University of Rhode Island is summarized in D.D. Robadue & T. Hennessy, *A Comparative Framework for Understanding Estuarine Governance: Theory and Examples*, presented at the Oceans '87 meeting in New Orleans, La.

5. Four papers, which are unpublished manuscripts, were presented on "Institutions and Ecosystems Redevelopment in Great Lakes America and Baltic Europe" at a symposium on the "Redevelopment of Major Ecosystems," Budapest, April 1987: H.J. Harris, D.J. Rapport & H.A. Regier, *Importance of the Nearshore Area for Sustainable Redevelopment: The Baltic Sea and Laurentian Great Lakes Compared*; A. Jansson & B.O. Jansson, *Energy Analysis of Ecosystem Redevelopment in the Baltic Sea and Great Lakes*; H.A. Regier, P. Tuunainen, Z. Russek, & L.E. Persson, *Rehabilitative Redevelopment of the Fish and Fisheries of the Baltic Sea and the Great Lakes*; R. Serafin & J. Zaleski, *Great Lakes America and Baltic Europe: Macro-Economic Trends and Redevelopment of Large Aquatic Ecosystems*.

ments of more effective coastal seas governance. The trans-disciplinary nature of this study continues to have significant implications for our findings and recommendations.

We divide this present paper into three main sections. The first is a description of the Coastal Seas Governance Project itself, followed by a brief and personal presentation of some of the preliminary findings. Last, we briefly evaluate the 1987 Chesapeake Bay Agreement from the perspective provided by the project.

II. THE COASTAL SEAS GOVERNANCE PROJECT

A. *Origins in the Chesapeake Bay*

For many in the Chesapeake Bay region, the year 1983 became known as the "Year of the Bay." It marked the culmination of a seven-year effort that began in 1976, when Congress directed the Environmental Protection Agency (EPA) to "undertake a comprehensive study of the Bay's resources and water quality, and to identify appropriate management strategies to protect this national resource."⁶ That same year state and federal governments joined in an historic agreement,⁷ and began a complex (and expensive—Maryland alone has spent well over \$250 million) program of action designed to "clean up" and "restore" the Chesapeake Bay. This program of action was the result of intensive and far-reaching discussions within the states and the region. Widely different sectors of state and federal government came together. Many different sections of society were consulted. Yet the deliberations leading to the various programs rarely included analysis of parallel efforts being undertaken on comparable systems in other parts of this country and around the world.

Such comparative analysis validly seemed to be of some significance within the general activity surrounding the Chesapeake Bay. And so the Coastal Seas Governance Project was born. Four institutions organized and coordinated the project: the University of Maryland's Center for Environmental and Estuarine Studies (headed by Director Ian Morris and his assistant, Wayne Bell), the Oceanic Society (President Christopher Roosevelt and later Clifton Curtis), Washington College (President Douglass Cater), and the Chesa-

6. See CHESAPEAKE BAY PROGRAM, U.S. ENVIRONMENTAL PROTECTION AGENCY, CHESAPEAKE BAY: A FRAMEWORK FOR ACTION, at iii (Sept. 1983).

7. The Chesapeake Bay Agreement of 1983, *reprinted in* CITIZENS PROGRAM FOR THE CHESAPEAKE BAY, CHOICES FOR THE CHESAPEAKE: AN ACTION AGENDA—1983 CHESAPEAKE BAY CONFERENCE REPORT 17 (Jan. 1984).

peake Publishing Corporation (President Charles A. Lyons). Grants from private sources entirely supported the project. Planning began in November 1985; site visits and data gathering commenced in June 1986 and ended in May 1987; and a working session to formulate the project's preliminary findings was completed in January 1988.

B. *Project Design and Purpose*

A fourteen-member Executive Committee consisting of scientists, lawyers, land-use planners, environmental economists, and journalists guided the project. The Executive Committee embraced the concept that *intensive* comparison between the Chesapeake Bay and a *few* selected systems was preferable to more superficial comparison with a large number of systems.

The initial task was to identify the coastal seas most suitable for comparison with the Chesapeake Bay. Table 1 summarizes the criteria used to rank the various systems being considered. From this listing four marine systems were initially selected: the Arabian Gulf, the Baltic Sea, the Inland Sea of Japan, and the North Sea. As the project proceeded, consideration of the Arabian Gulf was discontinued. Thus, the project focused on the Chesapeake Bay, the Baltic Sea, the Inland Sea of Japan, and the North Sea.

Throughout our discussions, we increasingly came to think that the findings of our study might be of major significance to developing countries. For this reason, we included three additional systems: the Straits of Malacca, the South China Sea, and the estuary-lagoon complex off Sao Paulo, Brazil. We obtained only written information for these systems (no site visits), but even at this superficial level comparison provided valuable insights.

The overall purpose of the project was *not* to examine the various environmental issues facing the different systems. Rather, the project attempted to question how policy and management decisions are made, *whatever* the issues involved. In its early deliberations the Executive Committee attempted to translate this general overall purpose into a series of questions to pose as part of the information-gathering effort. It is instructive to review these questions:

1. What information is deemed essential for the adequate resolution of policy and management issues with respect to individual coastal seas?
2. What are the essential components of the matrix of issues upon which policy may be formulated, and in what form is the perti-

TABLE 1
 COASTAL SEAS OF CONCERN TO THIS PROJECT, RANKED ACCORDING
 TO ARBITRARY INDICES*
 USING THE CRITERIA LISTED.

System	Multiple jurisdictions	Research base	"Stress" index	Level of policy activity	Access of information	Sum
North America:						
Chesapeake Bay	5	5	5	5	5	25
Great Lakes	4	4	5	5	5	23
Gulf of St. Lawrence	1	4	2	1	5	13
South America:						
Gulf of Guayaquil	1	1	5	5	3	15
Europe:						
Baltic Sea	5	5	5	5	5	25
North Sea	5	5	3	5	5	23
Adriatic Sea	4	3	3	4	4	18
Black Sea	4	2	5	2	1	14
Middle East:						
Arabian (Persian) Gulf	5	3	5	4	4	21
Far East:						
Inland Sea of Japan	1	3	5	4	4	17
Gulf of Thailand	2	1	4	4	4	15
Pearl River Estuary	1	2	4	5	3	15
Gulf of Papua	1	1	3	4	3	12
Bay of Bengal	1	2	3	2	3	11

*Scale: 1 (low) → 5 (high)

ment information best made available to the scientist or decisionmaker?

3. Where do the greatest uncertainties and inadequacies lie relative to the information required for definition and resolution of the above issues, and how may these be overcome?

4. In those cases where satisfactory resolution of policy issues has been achieved, which features of the adopted mechanism(s) accounted for the success and why?

5. Is there a willingness to move from a crisis-reaction mode towards a more predictive-preventive approach in formulating policy for management of coastal seas?

C. *Site Visits*

Data gathering in the project centered around site visits to the four major systems. Selected members of the Executive Committee, with additional persons of professional backgrounds appropriate to the system under study, conducted the site visits. These visits focused on meetings between members of the site-visit team and selected representatives of national and regional government, politicians and political analysts, citizen groups, scientists, lawyers, and members of the academic communities. The site visits were held as follows—(1) Chesapeake Bay: June 27-July 5, 1986; (2) Baltic Sea: October 23-November 1, 1986; (3) North Sea: January 20-28, 1987; and (4) Inland Sea of Japan: April 23-May 1, 1987.

In its early deliberations, the Executive Committee constructed, then discarded, a questionnaire that posed the original questions in more detail. We finally adopted a process of informal review—at least as informal as meetings with such individuals as the Executive Secretary of the Helsinki Commission, senior executives of Britain's National Environmental Research Council, and the governors of two Japanese prefectures would allow. Even the more formal presentations quickly evolved into frank, often off-the-record exchanges of perceived problems and attempted solutions. It soon became clear to all site-visit participants that the Chesapeake Bay was not the only coastal sea in which policy was being formulated in the absence of comparable information from other systems.

The site-visit approach seemed remarkably successful for a number of different reasons. First, the interdisciplinary composition of the site-visit teams and those interviewed became increasingly valuable as the project proceeded. Active participants in the site-visit teams included five scientists, three journalists, four environmental lawyers, two land use analysts-planners, one environmental economist, and three politicians-political aides. About 125 people were interviewed in the course of the 4 site visits; they included scientists, managers-administrators, politicians-political analysts, citizen groups, and lawyers.

Second, membership on the various site-visit teams sufficiently overlapped (two members went on all four, four others went on three, four others on two of them) to allow intense discussion of a few selected themes that ran through all the systems under study. These common themes form the basis for the preliminary findings reported.

Third, the intensive discussions characteristic of the site visits provided an invaluable perspective for analysis of any written mate-

rial. Approximately 260 written submissions were provided to the site-visit teams from all 4 systems combined. The perspective gained from the site visits enhanced any insight and creative analysis of this written information.

III. SOME PRELIMINARY FINDINGS

While synthesis and analysis of data and information from the site visits by members of the various teams are continuing, a review session recently took place in January 1988. The following comments are necessarily preliminary. They reflect the personal opinions of the authors in lieu of further review and analysis by all Executive Committee members.

A. *The Need for an "Event"*

All four systems under study are the objects of relatively intensive activities designed to "protect," "clean up," or "restore" the particular coastal sea (one of the criteria for including them in the study). We were interested in the question: Why? What was it that made the various policymaking and management individuals feel the need to address issues in their particular system?

Our discussions suggested that some kind of "event" was needed. Events caused the various levels of government and society to identify a concern and address it through some kind of action. The more interesting question, however, surrounds the *nature* of the event. For the Setonai-Kai, for example, very obvious "acute" problems such as increasing red tides, fish kills, and oil spills prompted major actions taken during the 1970s. For the Baltic Sea a very general answer to our question was the publication of *Silent Spring* by Rachel Carson.⁸ For the Chesapeake Bay "the event" appeared to be somewhere between these two extremes. Completion of the \$27 million 1983 EPA Bay study appeared to provide the rallying call for the recent years of action. To some, the *fact* of the study, as much as or perhaps more than its actual findings, seemed to be the important event leading to subsequent actions.

An issue for further analysis in our study is the question of the link (if any) between the nature of the event needed to prompt concern and action, and the overall "environmental ethic" of the people and the government. Also, we hope to relate the nature of any event to the success of any subsequent action and the overall wisdom of the decisionmaking process.

8. R. CARSON, *SILENT SPRING* (1962).

B. *Public Participation and Pressure*

Many of those interviewed emphasized the crucial importance of involving people and mobilizing public opinion. Some persons linked the importance of public opinion to the somewhat cynical view that politicians respond to only one thing—pressure. A less cynical approach emphasizes the need for and value of the scientific community, which frequently detects subtle, advance warnings of environmental change, communicating with concerned citizens. Those citizens can then participate effectively in a democratic process designed to influence government.

Again, however, the interesting question surrounds the *scale* and the *nature* of public involvement, participation, and pressure needed to influence governments and policy. Is it possible to relate the degree of public pressure needed to “make things happen” to the environmental ethic of the nations and regional jurisdictions, and their governments? What is the nature of this relationship?

For the Chesapeake Bay, public participation in the cleanup efforts has been, and continues to be, superior to that encountered elsewhere in our study. Committed state and federal officials have pursued their efforts against a backdrop of supportive publicity and pressure from citizens and citizen organizations. Citizen groups sometimes feel they are trying to influence reluctant governments and elected officials. For the most part, however, the Chesapeake Bay component of our study indicated a close and very active working relationship between concerned citizens and government officials working toward the same goal.

In Europe the emergence of “Green Parties” as part of the normal democratic process provides the basic backdrop for all public participation. In discussions about the North Sea, representatives of citizen groups suggested that Green Parties influence the environmental sensitivities of governments even when not winning elections and holding seats in the various parliaments. Nevertheless, we had less of an impression that different segments of society and government were working closely together toward a common goal than is true for the Chesapeake Bay. Our discussions in Japan indicated a focus of public pressure on immediate and acute phenomena such as red tides, fish kills, and oil spills. Also, in Japan the greatest public influence comes from the fishing community (not unexpected in a country devoted to the consumption of fresh fish). For example, leaders of the fishing industry threw dead fish on the desk of an executive of a pulp-and-paper company, an “event” that quickly led to some of the more basic cleanup measures.

The situation in the Baltic Sea, with regard to public participation and pressure, is less clear to us. In one sense the involvement and influence of citizens is all-pervasive, given the heightened "environmental ethic" present, particularly in the Scandinavian countries. Yet leaders of the region's scientific communities appear to possess greater opportunities to influence policy directly, without the need to create massive pressure to sway the political process.

C. Independent and Relevant Science

Our study confirms the view that factors other than the quality and quantity of technical and scientific information limit and constrain much of the policy and management decisionmaking in coastal sea systems. Forces operating in the economic, political, and social sectors frequently overwhelm the technical links between precise scientific information and management decisions.

Yet the availability of good technical information and scientific advice can enhance considerably the quality of the decisions. The issue is how best this can be achieved. Our study suggests that there is a great temptation for decisions to be made at various levels in government on the basis of information generated by the technical staff of those same governmental agencies. Little relevant work in the academic and independent research communities is incorporated into the decisionmaking process, and those scientists do not feel part of that process.

To a large extent, this polarization of the scientific community is inevitable. Decisionmakers require that information be immediately relevant to their needs. Much of the work in the academic and independent research communities does not meet such needs. But this polarization hardly seems optimal. It is desirable to have a community of scientists enjoying the independence to pursue their work unhindered by bureaucratic influence, yet occupying some position relevant and influential to the difficult decisionmaking process. Our site visits revealed different degrees of that polarization.

In the North Sea area, for example, references to "objective" scientific evidence justify vastly different positions taken by national governments over issues such as dumping and effluent standards. This evidence relies heavily on "government scientists." In the Baltic Sea area the independent scientific communities of some of the nations can influence the decisionmaking process through the prestigious academies of science and the various scientific societies. In Japan, by contrast, the academic scientists feel distant from the decisionmaking process, which strongly depends on technical advisors

providing information to the prefectural and central governments. In the Chesapeake Bay region certain research institutions (for example, the University of Maryland's Center for Environmental and Estuarine Studies and the Virginia Institute of Marine Sciences of the College of William and Mary) are associated with academic institutions, yet are charged with being of service to those agencies responsible for management action on the Bay. Potentially, this is an excellent arrangement.

D. Trans-disciplinary Thinking and the "Big System"

Our study suggests that a sound and effective decisionmaking process for a particular system depends on recognizing and understanding the "system as a whole." The Chesapeake Bay system is more than the aquatic ecosystem we often identify. It is more than the geography of its drainage basin. The system includes its people, its economics, its history, its politics, and its culture. Failure to recognize this system in its entirety can reduce significantly the effectiveness of any decisionmaking process.

Our study recognizes the necessity of considering the total system as a general expression of a deficiency that cuts across all the systems we investigated, including those in the Third World. Further analysis is needed before we can use our comparative approach to recommend how we might address this deficiency.

Within this context, however, our study does offer one overwhelming conclusion. Any approach to address this deficiency must be *genuinely trans-disciplinary*. This approach must not simply receive lip-service. When preparing this study, our friends in the oceanographic community encouraged us to make the project "interdisciplinary." They meant that the project should include physical, chemical, geological, and biological oceanographers. (Perhaps this explains why we have come to prefer the term "trans-disciplinary" instead.) Yet the *truly* interdisciplinary nature of the group—the scientists, lawyers, politicians, managers, planners, and economists, working together—became a dominant characteristic of the project. This trans-disciplinary nature caused us to highlight and emphasize the need to identify the "big system."

Mechanisms must be found and forums established whereby the scientists, lawyers, economists, planners, and politicians can work through issues *together*. Currently, such mechanisms are rare. For example, the present Scientific and Technical Advisory Committee of the Chesapeake Bay Program focuses largely on a body of expertise concerned with water, fish, and chemicals. Other councils con-

tain the management and political expertise. Still others focus on economics and development. Policymakers must determine how these separate bodies can be brought together.

E. Courts and a Social Contract

The perspective gained by undertaking an international comparative study helps clarify some aspects of environmental management and policy in the Chesapeake Bay region and in the United States as a whole. Frequently, during our site visits, we tried exploring the extent of litigation and the effectiveness of the courts in resolving issues and enforcing environmental laws. Throughout our discussions, these questions frequently gave our hosts the greatest difficulty. It seems important to realize that our own heavy reliance on precise laws enforced by courts within a litigation framework is hardly an approach adopted around the world.

Two examples may illustrate the point. Both examples are taken from the Setonai-Kai. They are *not* presented to suggest that policy in Japan leads to improved environmental decisionmaking, or that economic development issues do not dominate decisions in that region. Rather, they offer examples of a thought process of which we might need to be aware as we struggle with our own problems.

Example 1: The prefectures surrounding the Setonai-Kai have a ban on phosphorus-containing detergents. The ban is patterned on a similar ban originating in the regions surrounding the lakes of Japan. The ban is voluntary. The Japanese suggested to the site-visit team that a voluntary approach was preferred because had they tried to pass a law, they would have had to prove a cause-and-effect relationship between the phosphorus in detergents and particular environmental problems—which they could not do.

Example 2: Yellowtail fish farming in the Setonai-Kai can cause major water quality problems due to excretion of nitrogen compounds. These problems occur when the fish are farmed at too high a density. No law was passed to dictate densities. Rather, those who farm at, or below, the mutually agreed upon “optimal” density receive state-subsidized insurance; others do not.

If we relate these two examples to the current Chesapeake Bay efforts, we might learn something. The pressure on “Phase II” of the Chesapeake Bay Program calls for increasingly precise laws with standards that can be enforced more effectively by the courts.⁹ Such a movement is understandable. It is understandable *because that is the*

9. CHESAPEAKE BAY PROGRAM, U.S. ENVIRONMENTAL PROTECTION AGENCY, PHASE II

way we do things. Yet there might be another way—not because increasingly precise laws are not *necessary* (or desirable) but because they are not *sufficient*.

The Chesapeake Bay Agreements of 1983 and 1987 do not in and of themselves have the force of law. They represent an agreement between regional states and the federal government to implement management strategies for governance of this important coastal sea. Perhaps this approach needs to be extended to actions undertaken by the participating jurisdictions as well.

IV. THE 1987 CHESAPEAKE BAY AGREEMENT AND COASTAL SEAS GOVERNANCE

We conclude this review with a brief examination of the 1987 Chesapeake Bay Agreement in light of the preliminary findings of the Coastal Seas Governance Project. The first words of the 1987 Chesapeake Bay Agreement acknowledge an important perspective: "The Chesapeake Bay is a national treasure and a resource of worldwide significance."¹⁰ Project site visits revealed again and again the importance of coastal seas as "life support systems" for both coastal resources (such as fisheries) and the social and economic systems built thereon. This is even more pronounced in the Third World where it is common to find more than 15 percent of a nation's economy directly dependent upon coastal resources.

Significantly, the Bay Agreement adds the perspective of aesthetics. Industrialized nations may develop economic alternatives to the resources formerly provided by their coastal waters, but aesthetic and recreational pleasures are difficult to replace. A cultural appreciation of coastal waters—expressed not only in leisure sports but also in art and folklore—is an important element in the will to govern coastal seas more effectively. In Sweden this aesthetic appreciation of natural systems is an all-pervasive national ethic wherein the people consider themselves custodians of the environment. Interestingly, in the United States we need to formalize our commitment through ceremony and the printed word.

A. *Restoration and Sustained Use*

The signatories agreed to "[p]rovide for the restoration and

IMPLEMENTATION (Feb. 1986). For a good example of the legal approach, see Glotfelty, *Getting Tough*, CHESAPEAKE CITIZEN REPORT (Spring 1986).

10. 1987 Chesapeake Bay Agreement 1 (Dec. 14, 1987) (available at the *Maryland Law Review*).

protection of the living resources" of the Chesapeake Bay.¹¹ Project participants continue to debate the goal of "restoration" versus "sustained use development" of coastal resources. With well over half of the world's population already living within coastal watersheds, the pressures to use coastal resources are already severe, and restoration is probably an unrealistic goal. Early in the project we hypothesized that the goal of restoring coastal seas to near pristine conditions might be an effective means of rallying public support for environmental action. This hypothesis has not survived close examination, especially from the viewpoint of the Third World. The Bay Agreement's actual provisions regarding finfish and shellfish suggest that "sustained use" is in fact the actual goal.¹²

B. Water Quality

Provisions for improving water quality receive major attention in the Bay Agreement, with recommendations to reduce the system-wide nutrient load by 40 percent and to develop a Basin-wide strategy for the control of toxic pollutants.¹³ These provisions concur with one of the Coastal Seas Governance Project's major conclusions—that is, a system-wide approach is essential. The emphasis on both point (municipal and industrial discharges) and nonpoint (runoff from agricultural land) pollution has been one of the strongest aspects of Chesapeake Bay management strategy since the 1983 Agreement was signed.

In addition, the focus on toxic chemicals is part of a rapidly developing global concern that the project identified in each of the industrialized coastal seas visited. In Sweden this concern appears to have been precipitated by publication of Rachel Carson's *Silent Spring*¹⁴—an apparently catalytic event for environmental action in that part of the world. More recently, sustained concern has developed as sensitive new analytical techniques detect contaminants in parts per billion concentrations in natural waters. Not only are we uncertain what these concentrations mean, but in many cases we are not sure of the actual source of the compounds being detected. Development of effective policy to prevent the introduction of these compounds into natural environments is likely to become a major multijurisdictional governance problem in the years ahead. Pro-

11. *Id.* at 3.

12. *See id.* at 3-4.

13. *See id.* at 4-6.

14. R. CARSON, *SILENT SPRING* (1962).

grams initiated in the Chesapeake Bay region are certain to be watched closely by managers and researchers in other regions.

C. *Socioeconomics*

The 1987 Agreement takes a bold step in its provision "[t]o plan for and manage the adverse environmental effects of human population growth and land development in the Chesapeake Bay watershed."¹⁵ The Coastal Seas Governance Project would include social and economic concerns as part of the *complete* Chesapeake Bay environmental system.

Under the 1983 Agreement the Bay was viewed strictly from a natural sciences' point of view. The Bay Program's Scientific and Technical Advisory Committee (STAC), for example, included the senior administrative officials of prominent research institutions but not one economist. This natural science approach fails to recognize that socioeconomic pressures are major causes for coastal sea degradation in the first place. Even Maryland's innovative Critical Area Law,¹⁶ which restricts development in a 1000-foot buffer zone around Chesapeake tidal waters,¹⁷ was initiated to improve water quality rather than to influence the economic consequences of development.

Provision for management of population growth and land development in the governance agreement of a coastal sea is as revolutionary as it is necessary, according to the findings of the project. Significantly, STAC recently voted to recognize economics as "hard science" and is moving to expand its membership to include prominent economists and sociologists from the Chesapeake Bay region.

D. *An Informed Public*

The importance of public participation and pressure is a significant finding of the Coastal Seas Governance Project. This finding was particularly marked during the Chesapeake Bay site visit, and it has survived critical comparison with all other coastal seas. The public information section of the 1987 Bay Agreement¹⁸ continues and expands one of the strongest aspects of Chesapeake Bay gov-

15. 1987 Chesapeake Bay Agreement 6 (Dec. 14, 1987) (available at the *Maryland Law Review*).

16. Chesapeake Bay Critical Area Protection Program, MD. NAT. RES. CODE ANN. §§ 8-1801 to -1816 (Supp. 1987).

17. *Id.* § 8-1807.

18. 1987 Chesapeake Bay Agreement 8-9 (Dec. 14, 1987) (available at the *Maryland Law Review*).

ernance. While public participation was found to take many forms in different systems and cultural backgrounds, the long-term governmental commitment needed to maintain progress toward "restoration" or "sustained use" of coastal resources cannot be maintained without fully informed public support.

E. Research and Monitoring

The issue of science is included with a number of other management topics in the "governance" section of the 1987 Chesapeake Bay Agreement.¹⁹ The institutional structure of the Bay research community satisfies the Coastal Seas Governance Project's concern for independent and relevant science; this structure is not threatened by any provision of the Bay Agreement. Our sense is that the project members would applaud the continued implementation of a Bay-wide monitoring program (which includes the watershed) as being the only feasible means of evaluating progress toward established goals. It is our hope that monitoring will one day track socioeconomic changes, as well as changes in water chemistry and resource abundance. Similarly, the provision for a "coordinated Bay-wide research program"²⁰ should recognize social and economic problems as integral components of the system.

V. CONCLUSION

This paper has reviewed, from an admittedly personal point of view, some of the preliminary findings of the project. These are summarized as follows: (1) an "event" is needed to lead to some action; (2) the scale of public participation and pressure varies considerably between systems but appears to be an important component of successful governance; (3) a body of independent science applied to decisionmaking is important; (4) identifying "the system" in the broadest sense is crucial; and (5) social contracts are needed to complement any approach that depends on the courts and litigation.

We then examined some of the provisions of the 1987 Chesapeake Bay Agreement in light of specific findings gleaned from the project site visits and ensuing discussions. Our impression, on the whole, was that Bay management policy conforms well to many of the preliminary findings of the Coastal Seas Governance Project. One would expect that things should be improving in this "land of

19. *See id.* at 10-12.

20. *Id.* at 11.

pleasant living." In fact, recent headlines about the collapse of the oyster industry, a continuing striped bass moratorium, and a growing concern for toxins suggest they are not. Why?

Of the four coastal seas visited, the Chesapeake Bay can be considered unique in the *Basin-wide* change of its water quality and principal resources. Most other systems are larger and their problems are more localized. The Bay is also unique in being quite small relative to its total watershed, and the region is now experiencing population growth that exceeds the rate in many Third World nations. Also, institution of what we believe to be an effective governance policy in this region is a very recent event. Thus, while the elements of policy are in place, the *mechanisms* still require evaluation in terms of both timeliness and effectiveness. These are continuing concerns of the Coastal Seas Governance Project.

Everyone connected with this project hopes that our findings will be helpful to those involved in formulation of new policy. We are optimistic that the future of our irreplaceable coastal resources will indeed be brighter as a result of more effective coastal seas governance.