

2003

## Challenges For Managing The Coastal Zone Of North America

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### Recommended Citation

Alfred M. Duda, *Challenges For Managing The Coastal Zone Of North America*, 9 *Ocean & Coastal L.J.* (2003).

Available at: <http://digitalcommons.maine.maine.edu/oclj/vol9/iss2/2>

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# INTEGRATED COASTAL MANAGEMENT IN NORTH AMERICA: AN INTRODUCTION TO CHALLENGES FACING OUR PLANET'S OCEAN-LAND INTERFACE

*Alfred M. Duda\**

## I. INTRODUCTION

Water covers almost three-quarters of the surface of the Earth. It nourishes our ecosystems, powers our industry, grows our food, and makes life on Earth possible. Yet the image of our tiny "Blue Planet" is deceptive. Beneath the surface, a crisis of global proportions is building. The water environment hides another world of wetland, aquifer, river and ocean ecosystems that provide trillions of dollars of benefits to humankind each year. These life support systems are now being impaired by overfishing, conversion of wetland habitat, pollution discharges from agriculture, municipal, and industrial sources, filling of rivers with mud from deforestation and land erosion, and flow reductions caused by wasteful irrigation diversions and flow alterations from dam releases.

Nowhere is the degradation as evident as in the coastal zone, where forty percent of humanity lives and millions more arrive each year as climate change, desertification, and soil erosion force migrations from the interior to the peri-urban areas of mega cities. Reversing the destruction of coastal zones toward a new ethic of sustainable use may be the single greatest challenge facing humankind. We can suppress wars, prop up monetary systems, replace elements of global trade, educate the masses about HIV/AIDS, and support university education if governments really want to do so. However, the jury is still out on whether coastal degradation can be stopped and sustainable use can really be achieved.

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This paper provides an introduction to the following series of six research papers authored by scholars who focus on the management of North America's coastal zones. Key features of the papers are identified in order to underscore the significance of the North American experience to the rest of the world. While the case studies cover predominantly the western coasts of the continent, some contrasts are drawn with the eastern coasts as well as the North American Great Lakes. Finally, comparisons are made with similar challenges facing the rest of the world in the coastal margins of our planet's marine ecosystems.

## II. CHALLENGES FACING THE NORTH AMERICAN COAST

The following series includes *Challenges for Managing the North American Coastal Zone*, which describes the coastal setting of North America, particularly the socioeconomic asymmetries among the United States, Canada and Mexico, population pressures, and varied eco-regions representing fragmented space among political jurisdictions. This paper points out the common failure to recognize that coasts are special and demand special attention. When coupled with the realities that coastal problems are often felt in a downstream jurisdiction with little control of upstream activities and that awareness is hindered by what happens out-of-sight and under the water, the trend toward increased population growth in coastal cities is quite worrisome.

In order to understand the variations in coastal management among the three nations, a legal and institutional comparative analysis is presented. *Integrated Coastal Management (ICM): A Brief Legal and Institutional Comparison Among Canada, the United States, and Mexico* analyzes the current legal framework for integrated coastal management (ICM) in Canada, Mexico, and the United States, and identifies key gaps in the way that ICM is being understood and applied. Confounding any such analysis is the difficulty in defining the term ICM. There are three different definitions, implications, and basic legal structures in the three nations that constrain analysis. The common feature among all three countries is the existence of strong federal laws that frustrate local implementation and enforcement and slow the implementation of the laws' mandates by national agencies. When coupled with a lack of public awareness, database gaps, multiplicity of jurisdictions, and weak programs for joint management of cross-border systems, achieving basic elements of ICM, even in North America, seems to be a challenging undertaking.

The series of papers clearly outlines the complexity of the natural and social systems at play, particularly along the Pacific coast of all three nations. Fragmented institutions and lack of attention in the capital cities

is made worse by the existence of large transboundary river systems that drain into the coastal zones. *Transboundary Water Management: An Institutional Comparison Among Canada, the United States, and Mexico* undertakes comparative analysis of transboundary water management institutions along the borders. Bilateral institutions have been established over the years to deal with issues arising in these international basins. The Mexico-United States and Canada-United States institutions are described, and their effectiveness as model institutions is evaluated.

A case study of Oregon is also presented in terms of its experiment with integrated land use management. Oregon is one of two West Coast states with the longest history of environmentally progressive land use controls. *Preservation of Coastal Spaces: A Dialogue On Oregon's Experience with Integrated Land Use Management* covers how Oregon makes use of state and local partnerships, input from the public, and the federal coastal law to manage its coastal zone. In the early 1970s, Oregonians saw their farmland and beaches being lost to development and responded by enacting landmark legislation in 1973 (the Oregon Land Use Plan). Through the lens of interviews with local leaders, this paper recounts the struggle to implement the law and the gaps, challenges, and remaining obstacles to effective coastal management in Oregon. As the paper illustrates, state and local programs are still faced with difficult tradeoffs: health, safety, and environmental protection over economic growth, jobs, and property rights.

*Desiderata for Public Policy Requirements for the Mexican Coastline* contrasts Mexico's regime with the regime existing in Oregon. In Mexico, the coastline is considered as a social space, with a different culture in the north than that which exists in the south. State borders, municipal borders and local structures magnify the challenge of managing this interface among freshwater, estuaries, marine waters, and the land. This slice of land has been ignored, and its unique situation has gone unrecognized. Even though conflicts like the Cozumel Quay case have been taken to the CEC-NAFTA, ICM problems persist. This is not surprising given that the Mexican coastal contribution to the national GNP is only 3.7 percent compared to the United States, which is 32 percent.<sup>1</sup> It is only human nature to ignore such areas when the economic activity is located elsewhere.

With respect to the global sanitation crisis, the problems also extend to North America, where conventional "flush-and-discharge" systems continue to be approved for use despite their contribution to coastal

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1. See NORTH AMERICAN COMMISSION FOR ENVIRONMENTAL COOPERATION, *available at* [www.ccc.org/citizen](http://www.ccc.org/citizen) (last visited Aug. 4, 2004).

pollution. *A Human Waste Treatment System for Coastal Settlements on the Bahia de Navidad, Jalisco State, Mexico* focuses on the Mexico situation, particularly the sanitation and waste treatment needs facing the Pacific coast and, in particular, Jalisco State. The flush-and-discharge system is described as a failed technology for the coastal belt. Ecologically-based sanitation is described as a viable alternative for incorporation into ICM planning. A project in Bahia de Navidad is presented as an alternative for addressing this situation. The authors rightly point out that globally, and even in the United States, traditional systems remain a major source of coastal contamination and present a very real human health risk.

Taken together, this series of six papers on North American's coastal zone illustrates the continuing coastal challenges that must be overcome by even mature institutions and rich nations. These are not just problems for developing countries, but for all countries with coastal waters.

### III. OTHER COASTS OF NORTH AMERICA

Much of the analysis included in this collection of papers focuses on the Pacific coast of North America – the continent where the authors have the most experience. While they present a sobering forecast for the coast's invaluable resources, the challenges for North America are even greater than described when the Gulf of Mexico, Atlantic coast, and the Great Lakes are considered. This has great relevance to the coasts of the planet because the variety of settings closely mirrors the variety of North America's coasts.

While the Pacific contains rugged topography and relatively small bays and inlets, the East and South contain more gradual, semi-enclosed systems that are more vulnerable to degradation while at the same time they are required to support the types of economic activities and population pressures that contribute to enhanced degradation. Good examples include the "Dead Zone" in the Gulf of Mexico, a result of too much nitrogen used on agriculture in the Mississippi Basin, to the pollution in the enclosed estuaries of the mid-Atlantic, to the thirty-year attempt to restore and protect the nation's largest estuary in Chesapeake Bay. The North American Great Lakes represent the ultimate in enclosed bodies of water and are considered part of the coastal zone under U.S. legislation. These Sweetwater Seas – shared with Canada – reflect the point made in *Transboundary Water Management: An Institutional Comparison Among Canada, the United States, and Mexico* that much more remains to be done in addressing concerns of the transboundary water systems of North America that contribute to coastal degradation. They have concentrated

toxic substances to the point of posing risk to environmental and human health, and remedial efforts continue to move slowly.

#### IV. SCALING UP GLOBALLY – LEARNING FROM NORTH AMERICA

Can the world learn from these relatively mature experiences of three to four decades in duration? Does the world need to learn from North America? The second question is the easier one to answer. Similar to the socioeconomic, institutional and environmental problems of the Pacific coast, the longstanding degradation in the Gulf of Mexico and large Atlantic estuaries and their root cause in public policy failures, when taken together, are highly representative of the situation being faced in other nations. Global assessments undertaken by the Food and Agriculture Organization for fisheries, the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) for coastal zones and land-based pollution, and for the sixty-five Large Marine Ecosystems of the world utilized by the Global Environment Facility to integrate riverine, coastal, and marine concerns all show depletion of living resources, conversion of coastal habitat, accelerated pollution of coastal waters, and fragmentation of management institutions, if they even exist.

The situation in other nations is quite similar to the situation in North America despite greater levels of economic activity in North America. What is different is the lack of options for coastal residents, especially the billions of poor. Coastal degradation in North America does incur extra social costs and does reduce the economic activity when resources collapse, such as the fishing industry in the Atlantic or excessive pollution in the Gulf of Mexico. However, there are still choices: people have the ability to move elsewhere and to pursue other types of income-generating opportunities, even when these are located in adjoining countries.

In developing countries, this coastal degradation becomes a matter of life and death, of stability and security for the social order. The coasts are the last migration point for many people in the interior, where policy failures lead to resource depletion as well. The poor migrate to peri-urban areas of mega-cities. Coastal areas represent the last frontiers for society and must be sustained in order to keep societies going. The resulting social unrest and loss of hope can lead to the downward spiral of joining terror organizations as the only alternative to failed local and national policy. The problem of degraded coastal belts globally is not just one of lost nature, lost vistas, and lost economic opportunities. It represents a threat to global security and stability that seems hardly recognized by foreign affairs ministries. This inadequately addressed concern is pointed out in the papers as illustrating the failure of international policy and application

of international instruments. Yes, other countries should examine the North American experience and learn from the positive features, as well as continuing frustrations.

The world community is trying to grapple politically with the situation of lost assets and improve the sustainability of coastal zones. Various global conventions addressing the sea, biodiversity, and climate change do represent some measure of political commitment. As is pointed out in this series, inadequate national political commitments to application and enforcement of these lofty international instruments remain a root cause of degradation to coastal ecosystems. One advance on this front was adopted by Head of State at the World Summit on Sustainable Development (WSSD) in Johannesburg in September 2002. The WSSD Plan of Implementation contains multiple, measurable targets and paragraphs of commitments related to coastal and marine resources and the integration of freshwater basin management where needed to sustain those coastal systems.<sup>2</sup> The declaration recognizes that all countries, both rich and poor, have essential work to do on policy, legal, and institutional reforms and investments to secure these coastal belts.

The United States led the way in the early 1970s on coastal zone management when it passed the Coastal Zone Management Act of 1972. That law and related instruments led to innovative programs focused on the coast, but their flaw was that they were sectoral programs—one set for oil development, one set for fisheries, one set for pollution reduction, one set for marine mammals, and so on. This sectoral approach and the failure to ratify major global conventions continue to frustrate coastal management and make it more difficult for the United States to provide leadership and influence actions before the international bodies established by these conventions. The six papers in this series cogently point out the fragmentation and need for governance reforms so that each coastal use is not handled separately but as part of an interconnected whole.

The world community could learn much from this experience and avoid the fragmentation that ultimately fails to sustain coastal resources in the face of economic conflicts. New strategies utilizing ecosystem-based approaches to coastal space that include the incoming water basins, land, and marine waters and adaptive management philosophies have been tested in North America. Not only does the world need to learn from these tests because the stakes are just so much higher in developing countries, but North America needs to replicate the pilots to improve effectiveness here.

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2. See UNITED NATIONS COMMISSION ON SUSTAINABLE DEVELOPMENT, *Johannesburg Plan of Implementation* (2002), available at [http://www.un.org/sustdev/documents/WSSD\\_POI](http://www.un.org/sustdev/documents/WSSD_POI) (last visited Aug. 4, 2004).

Heads of nations have adopted targets. It is time for the three North American nations to stand up and provide leadership and meet those targets domestically. The barriers to doing so, aptly covered by the six papers, must be overcome as the countries make strides toward the illusive global goal of sustainability. The six papers suggest that improvements can be made – the matter is now one of political will in rich countries. Even if rich countries continue to degrade their coasts, the cost of inaction in developing countries is unthinkable in terms of security and stability. Maybe this risk to stability will trigger a new commitment to the coast.

## ACKNOWLEDGEMENTS

The authors of the following six papers wish to thank the Secretariat of Public Education of Mexico and its Inter-Institutional Research Program for North America (PIERAN), administered by El Colegio de México, for a grant under the auspices of its Research Project on Mexican-U.S.-Canadian Relations. This generous support allowed us the time to write these articles and enabled us to meet in Mexico and Canada, where we gained valuable on-location experience. We also would like to express our appreciation to Maaria Curlier of Vancouver, BC, and Sylvia Platt of Port Townsend, WA, who generously served as early readers, advisors and editors.

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