

Integrated Coastal Management: Lessons Learned and Challenges Ahead

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Introduction

We will only make progress in the effective planning and management of marine and freshwater coastal resources and environments if we learn from experience and build the capacity of those responsible for, dependent on and/or affecting the use, quality and ultimate sustainability of coastal ecosystems around the world.

This is the mandate of the Coastal Zone Canada Association (CZCA) and the objective it pursues through its biennial Coastal Zone Canada conference series. *Managing Shared Waters/Coastal Zone Canada 2002* is the fifth international event in this series.

All too often, at coastal zone conferences or in the day-to-day practice of Integrated Coastal Management (ICM), we fail to seek out, listen to and benefit from the vast experience and learning that is available for the development of more integrated and effective coastal management programs and initiatives. This overview paper has been prepared to bring together in a concise, yet of necessity, somewhat cursory manner, the essence of the collective advice, recommendations and guidance concerning the practice of ICM. It is offered as a foundation to build on and guide our discussions in Hamilton and to enhance our human and institutional capacity to more effectively manage our coastal environments.

Building from the Baseline

The foundation for this overview paper is the consolidation of insights, advice and recommendations that have gone into and resulted from the Coastal Zone Canada Association's four biennial Coastal Zone Canada conferences held to date. Many of the key insights in this paper are derived from the outputs from these four conferences, plus several other recent international events and their resulting outputs, and in particular, from an assessment of ICM on an international basis at the turn of the century known as *Baseline 2000* (prepared for CZC 2000) and its companion document, *Baseline 2000 Background Report*. The latter, more comprehensive document (prepared by Dr. Jens Sorensen, University of Massachusetts-Boston), reflects ongoing information gathering and analysis over the past two years on ICM at the international level. *Readers are encouraged to review this evolving document at <http://www.uhi.umb.edu/b2k/index.htm>.*

The *Baseline 2000* reports were prepared to set a benchmark for the status of ICM in the year 2000 and to serve as our measuring post for progress in the years ahead. We now have a baseline from which to make periodic assessments (such as at biennial conferences) of a number of indicators to determine ICM's growth, development, achievements, and success in overcoming challenges. Such comparisons against this benchmark should improve the efficiency and effectiveness of the practice by providing the ability to learn from experience, particularly what works, what doesn't work, and why.

It is expected that participants at the Managing Shared Waters conference will use this baseline as the starting point for their discussions and through the course of the conference, further refine their insights, knowledge, tools, techniques and practical approaches — that is, their capacity — to enable ICM to more effectively address the critical issues facing our coastal areas, both freshwater and marine.

Learning from Experience

The message for ICM practitioners is simple — learn from the past and teach your neighbours. Lessons learned must be lessons shared.

Each Coastal Zone Canada international conference has produced pre- and/or post-conference documents that should be reviewed for more detailed insights that could not possibly all be included in this brief paper. Most of these documents can be accessed electronically on the CZCA web site (<http://www.czca-azcc.org/>) or as hard copies requested through the Association's Secretariat at the Bedford Institute of Oceanography in Dartmouth, Nova Scotia.

Conference delegates are also encouraged to review the conference proceedings and/or outputs from other coastal-oriented

conferences which are also proliferating internationally. Some of these coastal conference series include: the US Coastal Zone biennial series; The Coastal Society (US) biennial series; Littoral (Europe); MEDCOAST (Mediterranean); International Center for the Environmental Management of Enclosed Coastal Seas (EMECS); Australia's Coast to Coast Series.

Like many other coastal-oriented conferences around the world before and since the first CZC gathering in Halifax, these events convene hundreds of eager and well-intentioned practitioners, analysts, managers, scientists, students and those who must live with the consequences of coastal planning and decision making — good and bad. Coastal Zone Canada conferences to date have each engaged the experiences, talents and insights of 500–800 coastal zone stakeholders from over 50 nations in a series of interactive sessions designed to distill the essence of ICM and provide a clearer and more practical path forward.

While this wealth of material speaks well to the interest in and application of the field, and participants are proud to produce pronouncements on the importance of ICM and recommendations for action, there is an unfortunate trend to cover old ground and repeat the same recommendations year after

CZC Event	Conference Outputs	
	Pre-conference	Post-conference
Coastal Zone Canada '94 Halifax, Nova Scotia	5-Volume Set of Proceedings	Conference Statement and Call for Action Conference Summary (Vol. 6)
Coastal Zone Canada '96 Rimouski, Quebec		Rimouski Declaration (Canadian) Rimouski Declaration (International) Special Issue of the Journal of Ocean & Coastal Management (V. 39 (1-2), 1998)
Coastal Zone Canada '98 Victoria, British Columbia		Conference Report Tool Kit
Coastal Zone Canada '2000 Saint John, New Brunswick	Baseline 2000 Report (State-of-the-art assessment of ICM on an International Basis)	Beyond 2000 Report Baseline 2000 Background Report (ongoing development and updating)

year. The result is that the field is not advancing as readily as it could and must. A look at the outputs from the four Coastal Zone Canada conferences, the post-conference documents produced by the dozen or so large coastal zone conferences that are convened around the world each year, and the latest peer-reviewed literature in key ICM journals (e.g., *Ocean & Coastal Management*, *Coastal Management*, *Marine Policy*), reveals that consensus is building among practitioners on a core set of principles, concepts, definitions, approaches and techniques.

But we have to ask — has this collective wisdom and advice resulted in policy and program changes within those agencies with an ICM mandate? Is there on-the-ground change that can be tied back to these conference outputs?

What is Integrated Coastal Management (ICM)?

In recent years, ICM has become the umbrella term for the various names for the practice including: 'coastal zone management,' 'integrated coastal zone planning and/or management,' 'coastal area planning and/or management,' and 'integrated coastal resources planning and/or management.'

ICM is a multi-disciplinary process that unites levels of government and the community, science and management, sectoral and public interests, the preparation and implementation of a program for the protection and the sustainable development of coastal resources and environments. The overall goal of ICM is to improve the quality of life of the communities that depend on coastal resources as well as providing for needed development (particularly coastal-dependent development) while maintaining the biological diversity and productivity of coastal ecosystems. This objective is pursued to achieve and maintain desired functional and/or quality levels of coastal systems, as well as to reduce the costs associated with coastal hazards to acceptable levels.

ICM can include the planning and management of just the ocean-side or just the land-ward side of the coastal zone. Integrated coastal zone management (ICZM) requires that the planning and management area must include a zone comprised of coastal and estuarine waters, the adjoining and complete inter-tidal areas, and the supra-littoral coastal lands. The coastal lands should extend inland to at least the maximum highest tide and include directly connected coastal environments such as wetlands and dune systems. Ideally, ICZM efforts would include the entire watershed or catchment area affecting the coastal zone.

Various forms of and approaches to the management of coastal areas — sectoral and integrated — have been practiced in various parts of the world for centuries. At CZC'2000, we learned that fourteen centuries ago, the native peoples of Hawaii practiced sustainability planning and management. This ancient, integrated land-use system called Ahupua'a, was applied to territory extending from the mountain ridges to several miles offshore; no distinction was made between land and sea for resource management. In comparison, Western cultures have just begun the task of building these kinds of strategies into their management practices. The Year 2000 marked just the 35th anniversary of ICM as a distinct and clearly described form of sustainability planning and management in the West. Now, ICM is practiced all over the globe and is part of the rhetoric for sustainable development.

Some of the Basics of ICM

A basic concept of ICM is that the planning and management of coastal resources and environments should be done in a manner that is based on the physical, socio-economic and governance inter-connections both within and among the dynamic coastal systems.

In looking at the world's coasts, we know that:

- Approximately 70% of the Earth's non-frozen land surface ultimately drains into coastal waters and oceans (i.e., coastal waters and the oceans are the planet's ultimate sink).
- In general, the coastal zone of any nation is one of its most valued and its most contentious areas of real estate.
- The coastal zone has the greatest aggregation of environmental, resource, and physical systems in comparison to any of the earth's other types of bio-geographic units.
- The coastal zone has the highest concentration of natural hazards in the world (e.g., coastal erosion, landslides, river or estuary flooding, storm surge flooding and winds from ocean-borne storm events (hurricanes, cyclones, typhoons, earthquakes, tsunamis and volcanic eruptions).
- There are, at present, 173 sovereign nations that either open on an ocean, sea, gulf, bay or land-locked sea or lake of international significance. Twenty-seven land-locked nations have shared boundaries in large lakes or landlocked seas.
- Approximately 50% of the world's population lives within 150 kilometers of a coastline and it is compressed into an area that consists of only 8% of the world's terrestrial surface that is habitable.
- Approximately 70% of the world's coastal zone is under the jurisdiction of developing nations or nations in transition from a centralized to a market economy.

With respect to the global practice of Integrated Coastal Management, we know that:

- ICM has proliferated over the past almost four decades in respect to the total number of efforts, the total number of nations and semi-sovereign states practicing ICM, and the extent of global distribution.
- At the mid-point of the year 2002, there are approximately 700 ICM efforts in existence around the world; (*this number continues to be refined as current inventories are further developed and reviewed by ICM practitioners and international assistance agencies*). Delegates are directed to the Baseline 2000 Background Report inventories of ICM efforts — National/Sub-National, USA, Canada, International — <http://www.uhi.umb.edu/b2k/index.htm>.
- These ICM efforts exist at all levels of governance, in all parts of the world, in all types of political regimes, in all types of environments, and at all levels of national economic development.
- There are over three times as many ICM efforts at the sub-national level as there are at the national level.
- The specific problems and development opportunities that have motivated the initiation and the preparation of the great majority of ICM programs are very similar around the world. This similarity in motivating issues occurs despite the considerable variation among coastal nations in respect to socio-economic and environmental conditions, geographic and climatic factors, laws and institutional arrangements.
- Since 1990, developing nations as well as developing semi-sovereign states have accounted for the great majority of the increase in the number of nations and semi-sovereign states involved in ICM at the national and/or sub-national levels.

- With very few exceptions, developing nations or states received substantial support (usually as non-reimbursable grants) from the cadre of multi-lateral and bilateral international assistance institutions (e.g., World Bank, GEF, Inter-American Development Bank and Canadian International Development Agency) for the initiation and preparation of an ICM effort. Support for implementation, however, usually is provided as a loan and not as a grant.

Key Challenges in ICM

Constraints to building human and institutional capacity

With centuries of application and several decades of development and formal practice, Integrated Coastal Management should by now be a well-defined and finely-honed field of practice or discipline to address and solve the critical issues and challenges faced in coastal areas around the world.

Yet those intimately involved in the practice and analysis of ICM have, at best, guarded optimism about what ICM can accomplish in developed and developing nations alike. In all

nations, long-time practitioners have learned from experience that ICM is a very long and tiring swim against a continuous current of political and socio-economic interests with short-term visions strongly tending to protect the status quo.

After almost 40 years of ICM efforts around the world, the practice has developed a reasonably good understanding of the approaches, key principles and guidelines, frameworks and techniques for organizing and implementing programs, and it is beginning to benefit — to a degree — from collective experience. However, ICM is faced with a rather extensive list of challenges that must be overcome if ICM, as a distinct form of environmental planning and management, is to produce desired outcomes that are essential in our coastal zones.

The following section presents some of the key capacity challenges faced by coastal nations and the field of ICM. Against each key ICM challenge are presented other more specific challenges to the participants at the *MANAGING SHARED WATERS (MSW)* conference, to consider and address during our deliberations. Some of the challenges are political, institutional and societal, while others result from not learning from experience. They include:

1. Our Capacity to Evaluate Success

ICM Challenge:

Not all ICM efforts are created equal. Some are very large and well-funded institutions with legal and regulatory mandates and capacities, while others are informal or consensual arrangements designed to achieve the same objectives, but obviously with a much lower capacity to directly achieve the objectives espoused in ICM.

Conference Challenges:

- Should one approach be preferred over the other?
- What are the respective strengths and weaknesses?
- Both types of ICM efforts exist in transboundary coastal ecosystems. What new insights can MSW bring to better understand and improve these types of arrangements?

ICM Challenge:

Measuring the performance of ICM efforts. ICM has an impressive array of **outputs** (e.g., plans, permits, meetings, publications), but there is very little focus on the desired **outcomes** or results of these efforts (e.g., reaching targeted levels of coastal water quality; providing adequate public access; affording sufficient protection for rare and endangered species; maintained sustainable fisheries or tourism; or empowering local communities to manage their resources).

ICM Challenge:

Case studies, surveys and anecdotal information are, at present, the predominant means used to measure on-the-ground effectiveness of ICM efforts. The non-rigorous and easily biased information derived from these techniques is having less and less direct impact upon decision makers who determine the fate of an ICM effort's institutional arrangement, powers, and budget in light of demands from other efforts that compete with ICM efforts for powers and budgets.

ICM Challenge:

Placing socio-economic values on not-directly-measurable qualities (e.g., rare and endangered species, biodiversity, aesthetics). Non-quantifiable benefits are usually at a disadvantage, or dismissed, in public policy and decision-making fora when they are compared with the costs that are usually measurable and have evident political implications (e.g., employment, income generation).

ICM Challenge:

Modeling complex systems in order to make adequate impact assessments. There is often inadequate time-series data as well as an absence of appropriate accurate predictive models to assess with reasonable certainty the potential impacts of development proposals or to monitor and evaluate completed or ongoing programs or projects.

Conference Challenges:

- What are the desired results that should be given priority and focus in ICM efforts?
- How can we clearly and effectively link ICM 'inputs' to 'outputs' to 'outcomes'?
- What are the easily and cheaply measured indicators of success of ICM efforts that can be used?

Conference Challenges:

- Can we develop a rigorous and performance-based evaluation framework to evaluate the relative successes and shortcomings of ICM efforts around the world?
- What would it look like?
- How do we link this body of descriptive information on ICM needs and successes into tangible program support?

Conference Challenges:

- How do we re-balance this equation?
- What can we do to convince decision makers that ecological and societal values must be given equal consideration to economic and social values in our coastal areas?

Conference Challenges:

- Are there good examples of success in this regard?
- Are there ways to proceed in the absence of such information?

2. The Distribution of Costs and Benefits

ICM Challenge:

Water — salty or fresh — is not a glue that can join all the stakeholders that have a vested interest in coastal resources and environments. It will always be a challenge to find common ground between stakeholders with vested interests in the non-sustainable development and exploitation sectors (e.g., ports, oil and gas, intensive tourism, mariculture, large-scale commercial fisheries, and hazard-protection works) and pro-conservation stakeholders that promote sustainable development and protected areas.

ICM Challenge:

The incidence and significance of benefits and costs among stakeholders. Usually the costs of ICM are large and significant to a small number of influential stakeholders and the benefits are usually spread broadly to the public at large and/or to relatively non-influential stakeholders. Further, costs must often be met in the short term, whereas benefits are only realized over the long term.

Conference Challenge:

- What will it take to bring these divergent interests together?
- What are the shared objectives and results (the glue) that will form the common ground?

Conference Challenges:

- How can these costs and benefits be more evenly shared?
- Should they be shared?
- Should those whose income and livelihood are impacted by ICM decisions for the collective good be compensated for their loss?
- How do we secure support for this longer-term view?

3. Governance Capacity Constraints

ICM Challenge:

There is relatively little decentralization of power to lower levels of governance, particularly the local communities and/or resource users who usually determine the success or failure of sustainable development efforts.

ICM Challenge:

Many nations' governance capacity is severely constrained by many and often deep divisions among their populations (e.g., race, religion, ethnic or linguistic group, socio-economic class or desire for regional autonomy).

Conference Challenges:

- Are there successful examples of effective decentralization?
- Which ICM functions can be more effectively assumed at more local levels? Which are most appropriately left where they are?

Conference Challenges:

- Can ICM efforts be successfully launched and sustained before addressing these dramatic and underlying constraints?

4. Societal Capacity Constraints

ICM Challenge:

Basic human survival needs (e.g., adequate food and shelter) for the most impoverished populations often preclude almost any attempts to conserve coastal resources and protect coastal environments. Furthermore, these impoverished classes often can only find space to build their shelters in hazard-prone areas.

ICM Challenge:

Increases in population among the lowest income groups nullify socio-economic and environmental gains achieved by planning, management and development improvements.

ICM Challenge:

High illiteracy rates limit public understanding of and involvement in governance.

Conference Challenges:

- Are there steps that can be taken to address these underlying constraints as part of an ICM effort?
- Can ICM be successful in these circumstances?
- Will addressing this issue divert attention and effort from the problems we can effectively address?

Conference Challenges:

- Can ICM play a role in addressing this challenge, or is it insurmountable or beyond the somewhat narrow scope of ICM?

Conference Challenges:

- Are there examples of non-traditional communication and educational techniques that could explain and gain support for ICM in these circumstances?

5. Institutional Capacity Constraints

ICM Challenge:

Difficulty in hiring and retaining competent in-country program managers and staff in developing nations because of low pay and poor working conditions. Individuals with needed skills and education go abroad for education and experience and usually stay abroad (brain drain).

ICM Challenge:

Over-reliance on the skills and inputs of foreign consultants. Many foreign assistance programs or projects do not build adequate local capacity to sustain the program when donor assistance is decreased or withdrawn, and the foreign consultants leave the country.

Conference Challenges:

- How can we build the capacity of developing countries for ICM and retain that capacity in-country?
- Are there successful examples?
- What should international assistance agencies be doing to address this challenge?

Conference Challenges:

- How can nations retain in-country capacity and reduce reliance on outside, temporary professional assistance?
- What can developing nations do in this regard?

ICM Challenge:

There are few successful self-sustaining ICM efforts in developing nations, particularly after international assistance is phased down or terminated. One true test of the worth of an ICM effort is the willingness of government units (national, state/provincial, regional, and/or local) to fund the program if and when external assistance funds are terminated or phased out.

ICM Challenge:

Capacity building takes time, particularly if it is community based. Capacity building usually requires a long-term involvement of ICM practitioners with the local stakeholders so that they 'own' the ICM planning and management arrangement that was built on community consensus, and they have a very good understanding of why their local ICM effort is in their families' and communities' best long-term interests.

ICM Challenge:

Finding the appropriate balance, given limited resources, between building local capacity and resolving key issues in the coastal zone.

Conference Challenges:

- Why is this so? Does ICM not really make sense in these circumstances?
- Can we cite any of these few successes?
- What would it take for governments to assume the support for ICM efforts over the long term?

Conference Challenges:

- Are there examples of successful approaches?
- How do we encourage this longer-term perspective?

Conference Challenges:

- Where should we put limited resources — into capacity building or resolving key coastal zone issues?

6. (Not) Learning from Experience

ICM Challenge:

Various forms of and approaches to integrated planning and management in coastal areas — both marine and freshwater — are in practice around the world, presenting a wealth of theory and practice. The field is not benefiting from and applying the lessons learned from its 35+ years of experience and hundreds of efforts — both successful and failed — to the extent that it should.

ICM Challenge:

This situation has two evident consequences: the ratio of failed or ineffective programs to successful programs is much higher than it could (or should) be; and the same well known and — for the most part — avoidable mistakes are continuously being repeated.

Conference Challenges:

- How can we better learn from experience and each other?
- What kinds of processes can be put in place to enhance information exchange?

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- How can we better learn from experience and each other?
- Should we be looking more closely at failed ICM efforts and the reasons therein, or at those that are merely plodding along?

ICM Challenge:

Concomitantly, ICM efforts continually fail to incorporate the information from other efforts with analogous situations on the specifics that they need for building successful programs, particularly the means to overcome the challenges confronting each stage and aspect of ICM program development and implementation.

ICM Challenge:

The failure to learn from experience is exacerbated by the fact that many practitioners don't appear to believe that information from one nation or sub-national unit is of direct relevance to the practitioner's own situation.

ICM Challenge:

ICM practitioners and ICM specialists and/or coordinators in international assistance institutions appear to have little time (and often facilities) for information searches and reading to find answers to specific questions they have to design or improve their program.

ICM Challenge:

The literature of direct relevance to all aspects of ICM continues to grow and proliferate around the world. It is estimated that there are between four and five thousand books, documents and articles on the topic of ICM and each day, this number grows. The literature relevant to ICM is not only growing in size; it is also dividing into more and more specializations, as well as separating into regional collections around the world. These factors make it more difficult for ICM practitioners to locate information that is directly relevant to their needs and for any one program to learn and benefit from the experiences of others.

Conference Challenges:

- MSW is unique in having brought together the freshwater and marine coastal communities. What do we have in common? What are our differences?
- Are we more alike than different?
- Can we benefit from each others' experiences and approaches?

Conference Challenges:

- How can we connect ICM practitioners who are working on similar issues and/or in similar geographic or socio-political situations so that they can benefit from experience elsewhere?

Conference Challenges:

- What techniques can we develop and/or apply that will encourage practitioners to use information search techniques and sort their way through the growing and diversifying body of literature?

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- What techniques can we develop and/or apply that will encourage practitioners to use information search techniques and sort their way through the growing and diversifying body of literature?
- Can we create a global ICM information base that is broadly relevant and accessible?
- Who should take the lead on such an effort?

ICM Challenge:

The literature presents relatively few lessons on overcoming challenges common to ICM. The relatively few means to overcome challenges are built mostly on non-systematic observation or hypothesis testing; observer/reporter bias is common. There is almost a complete lack of independent assessments of ICM programs.

ICM Challenge:

At present, there are only a few on-line information exchange networks devoted to ICM — all with limitations — that can expedite finding specific information needed by practitioners and international assistance coordinators, to design, build, revise or otherwise improve a program or project.

Conference Challenges:

- Who should conduct such independent assessments of ICM efforts?
- How can we encourage the development of best practices and readily-available resources for overcoming ICM's key challenges?

Conference Challenges:

- Can we, from this conference, agree to develop an ongoing information-exchange network on transboundary coastal ecosystem management initiatives?

Conclusions

The coastal zones of the world — those that border both freshwater and marine areas — are clearly under serious stress and in need of an integrated and effective planning and management regime. Integrated Coastal Management is gaining growing acceptance as the logical approach to facilitate vertical and horizontal integration within governments and convening the stakeholders that must be intricately involved in identifying and working toward resolving critical issues.

Yet there is a long list of challenges and needs that must be addressed if ICM is to have a chance to be successful. Some of these challenges are firmly rooted and entrenched in fundamental social, economic and political realities, perhaps beyond the scope or purview of ICM. Other challenges are inherent to the design and practice of ICM itself.

The Managing Shared Waters conference should be bold enough to identify the full suite of challenges faced in coastal areas worldwide,

but focused enough to identify and reach consensus on a set of practical steps that delegates and those we hope to influence, can commit to undertake after this conference. We should also commit to report back on our progress at Coastal Zone Canada 2004 (St. John's, Newfoundland).

We have learned that one of the greatest needs — if not *the* greatest need — for advancing ICM's state-of-the-art, is improving the effectiveness and efficiency of information exchange (particularly in respect to learning from experience) on the international, national and the sub-national levels. Every ICM effort can be a learning opportunity; not just for the participants involved in the particular effort, but also for ICM practitioners elsewhere who are in similarly situated circumstances, as well as ICM specialists in the international assistance community.

*Learn from the past and teach your neighbours
— Lessons learned must be lessons shared.*

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