

Coastal Zone Canada 2000

Reisebericht

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Vorbemerkungen:

Die Konferenz **Coastal Zone Canada** findet seit einer Reihe von Jahren in zweijährigem Abstand jeweils in Küstennähe statt. In Verbindung mit einem Workshop einer bilateralen Arbeitsgruppe für das Thema ‚Küstenzonenmanagement‘, die sich auf der Basis eines deutsch-kanadischen Kooperationsvertrages gebildet hatte, ergab sich 1998 die Gelegenheit, an der Coastal Zone Canada 1998 in Victoria, BC, teilzunehmen.

Die damals gewonnenen, vorwiegend positiven Impressionen und Erfahrungen wurden vom Verfasser in einem Reisebericht zusammengefasst, der BEO vorliegt. Insgesamt beeindruckten das anspruchsvolle Programm, die bestehende legale Basis für ein erfolgreiches integriertes Küstenzonenmanagement (ICM), die Beteiligung der ‚Ureinwohner‘ bei den Küstenprogrammen und die geplanten Aktivitäten bzw. Visionen, die als Ergebnis der Konferenz formuliert wurden.

Es erschien deswegen sinnvoll, auch die Nachfolgekonzferenz CZC2000, die vom 17. 9.–22. 9. 2000 in St. John, New Brunswick, ausgerichtet wurde, zu besuchen, um Ergebnisse und Fortschritt nach zwei Jahren beurteilen zu können. Nach der mehr passiven Rolle des Beobachters während CZC1998 ergab sich für den Verfasser hier außerdem die Gelegenheit, Ergebnisse aus dem KFKI-Projekt MORWIN vorzutragen.

Teilnehmer und Organisation

CZC2000 war ausdrücklich als internationale Konferenz propagiert worden. Der internationale Aspekt war jedoch nicht sehr offensichtlich. Von den insgesamt mehr als 600 Teilnehmern **aus 42 Ländern** kamen fast 500 (80 %) aus Kanada, nur je 4 % aus Europa und den USA und 12 % aus anderen Ländern. Bei den letzteren fielen 12 Teilnehmer von den Philippinen und jeweils sechs aus Indien und Mexiko auf. Es kann angenommen werden, dass in diesen und anderen Ländern kanadische Entwicklungshilfe-Programme laufen, die eine Teilnahme begünstigen und ggfs. auch finanzieren.

Es fiel außerdem auf und wurde von anderen europäischen Teilnehmern bestätigt, dass die Einbindung der internationalen Besucher in den Ablauf der Konferenz in Workshops, Podiumsdiskussionen etc. und selbst im Gespräch während der ‚nutrition breaks‘ vernachlässigt wurde. Diese Haltung, die auf der Vorläuferkonferenz nicht zu spüren war, erschien mir in Hinsicht auf den multikulturellen Status Kanadas ungewöhnlich. Sie ist vielleicht aber u.a. auf andauernde und eskalierende Schwierigkeiten mit den ‚aboriginals‘, den Inuit und den Küstenstämmen der Indianer, die stark in den ICM-Prozess einbezogen sind, zurückzuführen.

Die Konferenz wurde ausgerichtet im Trade- und Convention Centre der Stadt St. John. Zusätzlich waren Vortragsräume im anliegenden Hilton Hotel angemietet worden, um die zeitweise bis zu sechs parallelen Vortragsserien und Diskussionsrunden beherbergen zu können.

Das führte einerseits zu Engpässen bei der technischen Ausrüstung, da in zunehmendem Maße Vorträge mit PowerPoint über Laptop und Beamer abgewickelt werden. Dabei wurden vielfach Qualität und Gehalt durch eine Vielzahl bunter Bilder ersetzt. Andererseits kamen ‚Doppelbelegungen‘ (derselbe Vortragende zu gleicher Zeit an zwei Orten eingeplant) und zu späte Annullierungen von Vorträgen vor. Der Verfasser erfuhr erst unmittelbar vor seinem Vortrag, wer der ‚chairman‘ der Sitzung war.

Die Zeitdisziplin der Vortragenden wurde sehr unterschiedlich durch die jeweiligen Diskussionsleiter überwacht, so dass Verspätungen bis zu einer Stunde nicht selten waren.

Jede Sitzung wurde von einem ‚rapporteur‘ begleitet, der als Kenner der Thematik eine Zusammenfassung erstellen sollte. Alle Zusammenfassungen wurden am nächsten Morgen in der Plenarsitzung in komprimierter Form vorgestellt. Dass wegen der Vielzahl der behandelten Themen hier keine schlagkräftigen Kernsätze vorgetragen werden konnten, hängt auch von der Tatsache ab, dass sich das gemeinsame Frühstück bis in dieses ‚daily summary‘ hineinstreckte und störte. Die Ergebnisse sollen jedoch überarbeitet und geordnet den Konferenzteilnehmern bis Ende des Jahres zur Verfügung gestellt werden.

Hierzu war der Gesamteindruck: Zu viele Beiträge; zu unübersichtlich; mehr Quantität als Qualität.

Zum jeweiligen Hauptthema des Tages wurde nach der Zusammenfassung des Vortrages ein Einführungs- oder ‚Schlüsselvortrag‘ gehalten. Von ein oder zwei Ausnahmen abgesehen sollte auch hier gelten: Kürzer, prägnanter und aussagekräftiger. Dass im Zuge dieser Einführungen die Sponsoren der Konferenz vorgestellt wurden und Gelegenheit erhielten, ICM aus ihrer Sicht zu erörtern, muss als lästiges aber notwendiges Beiwerk bei solch einer Konferenzkultur gesehen werden.

Gemeinsame Kaffeepausen und ein gemeinsames Mittagessen gaben ausreichend Gelegenheit zu Einzelgesprächen und zusätzlichen Fragen.

Inhalte der Konferenz

Das Motto der Konferenz war: **Coastal Stewardship – Lessons Learned and the Path Ahead.** Dies kann frei übersetzt werden, wie folgt:

Bemühungen um die Küste – was haben wir gelernt und was liegt noch vor uns.

Unter diesem Thema gliederte sich das Programm in folgende Teile:

- Aboriginal Practices (wie verfahren die [Ur]Einwohner)
- Coastal Health (eine funktionierende Küste)
- Community-Based Actions (Aktivitäten der Gemeinden)
- Oceans Governance (die Kontrolle/Verwaltung des Meeres)
- Jugendforum

Zu jedem der Teile wurden Einführungs- und Fachvorträge gehalten, Workshops durchgeführt sowie Poster ausgestellt. Das Jugendforum war vor Beginn der Konferenz abgeschlossen worden, so dass Ergebnisse und Resolutionen bereits zur Eröffnungsfeierlichkeit der eigentlichen Konferenz am 17. 9. 2000 vorgestellt werden konnten.

Bereits während der Eröffnungsfeier wurden Themenschwerpunkte und Probleme offensichtlich. Während der kanadische Fischereiminister in seiner Eröffnungsrede auf die Bedeutung der Meere und des ICM hinwies und die Rolle der Eingeborenen in diesem Prozess hervorhob, wiesen die eingeladenen Stammesälteren schroff sämtliche versöhnenden Worte

von sich und kritisierten mit scharfen Worten die Rolle des ‚weißen Mannes‘ und seine Unfähigkeit, die schwindenden Ressourcen des Meeres und der Küste zu schonen und sinnvoll zu verwalten. Verbindende und schlichtende Worte der Umweltministerin der Provinz New Brunswick, für die mit rd. 2000 km Küstenlinie ICM eine wichtige Rolle spielt, halfen, einen Eklat zu vermeiden.

Die Bedeutung des Jugendforums, in dem Vertreter der zukünftigen Generationen Themen des ICM diskutiert hatten, wurde in dem Abschlusskommuniquee deutlich. Dabei wurde die Bedeutung der **Nachhaltigkeit aller Aktivitäten** an der Küste herausgestellt, die wichtige Rolle der gegenseitigen **Information und Kommunikation** sowie der **Kooperation aller Beteiligten** (stakeholders). Gemeinsam mit dem Schlussredner wurde der Satz

Think globally – work locally

geprägt, der für ein gesundes Küsten-Ökosystem Bedeutung gewinnt.

Von den Einführungsvorträgen (invited lectures) bleibt besonders der des ersten vollen Konferenztages zu erwähnen. Er reflektiert auf das ‚baseline 2000‘-Dokument, das von einem externen Berater für die Coastal Zone Canada Association erstellt worden war. Es beschreibt nationale und internationale Anstrengungen und Aktivitäten in ICM und ist wegen seiner übergreifenden Bedeutung als Anhang beigefügt.

Der Vortrag fasste wesentliche Elemente und Forderung für ein sinnvolles ICM zusammen. Hervorzuheben ist, dass der Vortragende, Dr. A. Hanson, die Prozesse und die Meta-informationen in den Mittelpunkt stellt. Wichtig für ICM sind die in Ästuaren und Flüssen ablaufenden Prozesse und ihre Interaktion mit den Küstenprozessen. Bei der Informationsverbreitung des **WER, WAS, WARUM, WANN** (das noch ergänzt werden sollte durch das **WIE**) für den Bereich des ICM wird häufig noch mit mittelalterlichen Methoden gearbeitet. Damit ergibt sich für ICM die vordringliche Aufgabe, Datenbasen zu schaffen und den Informationsaustausch zu ermöglichen und zu intensivieren. Ein wichtiger Grundsatz sollte immer sein: **Man muss im ICM aufbauend denken (think incrementally); ein holistischer Ansatz, mit dem man alles auf einmal erledigen will, führt selten zum Ziel.**

Ohne auf einzelne Beiträge eingehen zu können, kann zu den vorgetragenen Themenkomplexen Folgendes gesagt werden:

Aboriginal Practices:

Die Ansätze der von einzelnen Indianerkommunen geplanten und z.T. durchgeführten Projekte beruhen meist auf dem holistischen Prinzip. Dies wurde in manchen Vorträgen deutlich, in denen fast immer das ‚Konzept der begrenzten Ressourcen‘ und die ‚Notwendigkeit für schonende, nachhaltige Nutzung‘ dieser Ressourcen im Vordergrund standen. Dabei kamen auch Ureinwohner Perus, Hawaiis und der Philippinen zu Wort. In einem Workshop wurden in Rollenspielen Konflikte zwischen den Ureinwohnern, den weißen ‚Siedlern‘ und den Behörden durchgespielt.

Die Konferenz wurde überschattet durch Ereignisse in Burnt Church, einer Gemeinde in New Brunswick, in der Auseinandersetzungen zwischen Indianern und den Fischereibehörden (Sachschaden und Verletzte) über die Rechtmäßigkeit von Fangbeschränkungen und -zeiten von Hummer die in Kanada offensichtlich propagierte und praktizierte Kooperation in Frage stellten.

Unter diesem Hauptthema waren insbesondere Methoden und Verfahren der Küstenbiologie, -geologie, -geographie, des Ingenieurwesens und der Umwelt (Verschmutzung, Monitoring, Erhalt, Verbesserung etc.) abgedeckt. Eine Struktur der Vortragsbündelung war häufig nicht zu entdecken. Methoden der Information und der kooperativen Bearbeitung, wie sie im Beitrag des Verfassers, von dem eine Zusammenfassung im Folgenden eingefügt ist, vorgestellt werden, waren innerhalb von Biologie- und Geologithemen versteckt. Entsprechend war die Diskussion mühsam und bewegte sich oft nicht um das zentrale Thema.

Simulation Tools in a Distributed Working Environment for Coastal Zone Management

by

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The development of numerical simulation tools for hind-and forecasting in the coastal environment has made an enormous leap within the last few years. Not only can the hydrodynamic processes such as waves and currents be reproduced with sufficient accuracy but the addition of a continuous update of the bathymetry based on sediment transport and balance calculations has yielded the morphodynamic model as an indispensable tool for the coastal manager. The complexity of such models and the further inclusion of e.g. biological, chemical and water quality components requires the expertise of more than one specialist. Generally, interdisciplinary teams of scientists carry out specific projects of integrated coastal zone management.

Morphodynamic models, pre- and postprocessing tools and data bases have been established in a pilot study at the German Baltic coast. Coastal engineers, numerical modellers, mathematicians and information and communication technology specialists cooperate within the framework of a task force called the 'virtual institute'. Especially developed software for efficient linking of distributed data, simulation tools and web-based documentation offer an information basis for flexible structuring of expert groups according to momentary requirements for the sake of increased efficiency and low-cost-levels.

The validity of the methods, still being improved (<http://morwin.wsd-nord.de>) have already been proven for coastal evolution. The applicability for the even more complex area of coastal zone management is obvious.

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Vergleichbare Ansätze gibt es, wie aus den Reaktionen und Fragen der Zuhörer zu entnehmen war, bisher nicht. Informationsdatenbanken bzw. Metadaten-Info-Systeme werden zur Zeit in Entwicklungen beim Department of Fisheries und Oceans aufgebaut. Der zuständige Bearbeiter verspricht, Unterlagen zu versenden.

Community Based Actions

Aktivitäten in den Küstenorten in Kanada sind verhältnismäßig weit verbreitet. Eine Zusammenfassung über die vielseitig angelegten Vorträge liegt bisher nicht vor und wird nach Erhalt der Gesamtzusammenfassung nachgereicht. Der Schwerpunkt der Präsentationen der

vielen vertretenen Interessengruppen, Kooperativen und Kommunen an Ost- und Westküste lag jedoch in Verfahrensfragen, Zusammenarbeit mit den zuständigen Behörden und Finanzierungsproblemen. Hinzu kommen eine Reihe von Fallstudien.

Oceans Governance

Von der Zusammenfassung des ‚Oceans Governance Day‘ bleibt Folgendes festzuhalten:

- OG ist lediglich eine Angelegenheit einer ‚gemeinsamen Jurisdiktion‘
- Das Bewusstsein für ICM muss in allen Ebenen bis zum individuellen Küstenbewohner geweckt werden
- Die Einbeziehung der Küstenbewohner, besonders der Fischer, bringt Vorteile
- Es müssen klare Definitionen für ICM erstellt werden
- Die Schutzzonen-Bereiche müssen erweitert werden
- Gutes ICM ist abhängig von guter Kommunikation/Information
- Forschung im Bereich der Meeresverschmutzung muss intensiviert werden
- Gutes Informationsmanagement ist erforderlich
- Entwicklung von Modellen
- Visualisierung von Modellergebnissen

Die o.a. Punkte sind nicht neu gegenüber den 1998 aufgestellten. Hier fehlte eine kritische Bilanzierung.

Wertvoll ergänzt wurde die Konferenz durch eine begleitende ‚Trade Show‘. Hier waren nicht nur Firmen sondern auch verschiedene Ebenen der zuständigen Regierungsbehörden vertreten. Wegen Krankheit und eines frühen Abreisetermins konnte nur der Anfang der Abschlussveranstaltung besucht werden. Das schriftliche Kompendium bzw. das Abschlusskomunique sind im Januar/Februar 2001 zu erwarten.

Zusammenfassung und Ausblick

Die CZC2000 hat gegenüber der Vorgängerkonferenz wenig Neues gebracht. Trotz der gesetzlichen Grundlage des **Ocean Act** gibt es noch zu viele Planungen und wenig Realisierungen der ICM-Grundsätze. Wenn auch gute Ansätze für ein erfolgreiches ICM vorhanden sind, ist der Weg zu einer Durchsetzung der Vorsätze noch weit. Insbesondere fehlen Ansätze zu einer effizienten Kommunikations- und Informationsbasis. Dies war jedoch bereits 1998 moniert, in den Folgejahren jedoch nicht umgesetzt worden.

Der Verfasser dankt dem Forschungszentrum Jülich, BEO in Warnemünde und dem Kuratorium für Forschung im Küsteningenieurwesen für die finanzielle Unterstützung zur Teilnahme an der CZC2000. Trotz der verhaltenen Beurteilung der Konferenz wird empfohlen, den Kontakt zu halten und ggfs. einen Beobachter zur CZC2002 zu senden.

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BASELINE 2000 DOCUMENT

Why do we need a Baseline?

The long-range goal of the Coastal Zone Canada Association (CZCA) and its Coastal Zone Canada (CZC) Conference Series is to build understanding, commitment, leadership, and tools to improve the way we manage human activities in the coastal zone. To help make this happen, our conferences must build on the results of earlier events relative to Integrated Coastal Management (ICM).

While the CZCA's first three international conferences have helped meet these goals and led to important outcomes (i.e., CZC '94 Call for Action; CZC '96 Rimouski Declarations; CZC '98 Challenge Volume/Tool Kit), a coherent, well-researched baseline was considered necessary if we are to move ahead progressively. As a result, the CZCA prepared this Baseline Paper for CZC 2000 to establish the current 'state-of-the-art' in the international practice of ICM. (State-of-the-art in this context means both „the current stage of development of a practice“ and „newest or best practices“).

This paper first presents what we know about ICM in the year 2000 and then outlines today's major challenges to effective ICM. It also includes a review and analysis of ICM literature as it is practised internationally and an assessment of discussions with practitioners and academics who have designed and implemented ICM programs in many coastal nations. For further information, readers are encouraged to refer to the Association's Background Report, which is available upon request.

Baseline 2000 is designed to stimulate thought and discussion about all aspects of ICM. We encourage you to refer to it during the conference and to participate in the discussions. This paper, along with your input, will form the basis for a post-conference document to be called Beyond 2000. It will extract the essence of our conference discussions and help to provide direction about how ICM can proceed in a balanced and effective manner, while at the same time provide the opportunity to measure and report on our progress at subsequent conferences.

Environmental and Socio-Economic Conditions that Influence ICM Practice and Its Achievement

- Approximately 70 % of the Earth's non-frozen land surface drains into seas and oceans. **By assuming that all lands have a critical impact on coastal waters and should be within the coastal zone, we suggest that the inland boundary of the coastal zone should include all coastal drainage basins.**
- The coastal zone has the most complex environmental, resource, and physical systems in comparison to the earth's other environments. **While at least thirteen coastal systems interact, they usually do not at the same place and at the same time. Many of these systems are very complex and difficult to model (e.g. estuaries, watersheds, littoral cells) and this makes it difficult and costly to accurately predict the environmental impacts of development proposals or public policies.**
- The coastal zone has the highest concentration of the world's natural hazards. (e.g. coastal erosion, ocean-born storms, river flooding, storm surge flooding, earthquakes and tsunamis, and volcanoes).

- A nation's coastal zone is frequently its most valued and contentious area. Because of its limited size, often high population density, competing uses, resource and coastal hazard concentrations, and sensitivity to damage, a coastal zone is the most difficult part of the earth's surface in which to prepare and implement an environmental planning and management program.
- Approximately 70 % of the world's coastal zone is controlled by developing countries or those making the transition from a centralised to a market economy. Given the obstacles that these nations face in implementing ICM, the future of most of the world's coastal resources and environments is not always optimistic. This holds true for tropical coastal resources and environments such as corals, sea grass systems, and mangroves because 95 % of the tropics are within developing nations, most of which are at the lowest end of the world's national income scale.
- Almost half of the world's population lives within 150 kilometres of a coastline. This area makes up less than 2 % of the earth's land area. In most coastal nations the population growth rate for the coastal zone is much higher than that of inland areas. In developing nations, much of the increase in coastal zone populations is in the lowest income groups. The efforts of these groups to meet their basic needs often result in the over-exploitation of natural resources and environmental degradation.
- Important tropical coastal resources and environments – specifically coral reefs, mangroves, sea grass beds and coastal-dependent fisheries – continue their downward spirals of degradation, non-sustainable levels of exploitation, elimination and extinction. In 1993 about 10 % of tropical coral reefs were damaged beyond recovery and another 30 % were likely to decline significantly in the next twenty years. No global inventory of tropical coral reefs is known to have been taken since 1993 and trend of this decline has been unpredictable since then. The coral reefs have also suffered serious decline, due in part to the bleaching related to elevated water temperatures from global warming.
- It is estimated that mangrove forests once covered $\frac{3}{4}$ of the coastlines of tropical and subtropical countries. Today less than 50 % remain, and over 50 % of this forest is degraded and unproductive. There is no current assessment of the global rate of mangrove loss and degradation.
- The catches of most coastal fisheries in tropical and subtropical nations continue to decline because of over-exploitation, habitat loss, and coastal pollution. 95 percent of the world's estimated 51 million fishers are from developing countries and over 98 percent of them are small-scale operators. Many small-scale fishery operators are in the tropics and depend on coastal stocks for family sustenance as well as income.

What Do We Know About ICM?

The Year 2000 marks the 35th anniversary of Integrated Coastal Management (ICM) as a distinct form of sustainability planning and management. Some cultures have been practising ICM activities for centuries.

A recent review and analysis of the ICM literature, and discussions with its experienced practitioners and academics, indicate a **general consensus** about many aspects of ICM practice:

- ICM is a general term for 'coastal management', 'coastal zone management', 'integrated coastal zone management', 'coastal area management and planning', 'coastal resources management', and 'integrated coastal zone planning and management';
- ICM involves the planning and management of coastal waters, the adjoining intertidal area, and the coastal lands inland to at least the maximum highest tide.
- **Integrated Coastal Management** is a multidisciplinary process integrating levels of government and community, science and management, sectoral and public interests, to provide programs for the protection and the sustainable development of coastal resources and environments.
- ICM's overall goals are:
 - *to improve the quality of life of communities that depend on coastal resources while maintaining the biological diversity and productivity of their coastal ecosystems;*
 - *to achieve and maintain desired functional and/or quality levels of coastal systems; and*
 - *to lower the costs of coastal hazards to acceptable levels.*
- The interacting elements of all coastal nations and semi-sovereign states that influence the allocation of coastal resource, environments and uses among competing interests can be grouped under the following five headings: [1] **coastal systems**, [2] **issues**, [3] **uses and stakeholders**, [4] **institutional arrangements**, and [5] **planning and management approaches and techniques** (Figure 1).
- ICM's primary purpose is to plan and manage **coastal resources and environments** in a way that reflects their physical, biological, socio-economic, and political interconnections.

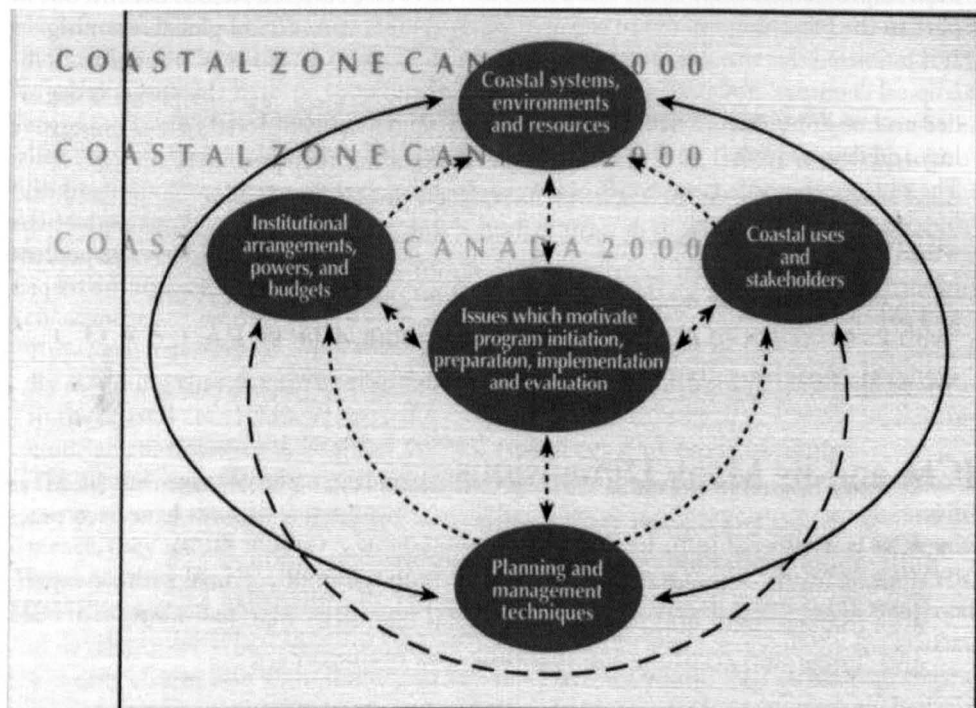


Fig. 1: Elements involved in managing coastal resources and environments

- The precise boundaries for an ICM program activity depend on the type of issues it is designed to resolve.
- Coastal systems do not plan and manage themselves **directly**. The planning and management of coastal systems is related **directly** and **indirectly** to the activities of each coastal system's stakeholders.
- The specific problems and opportunities that have influenced international ICM program development are similar despite the different socio-economic and environmental conditions, geographic and climatic factors, laws, and institutional arrangements of many coastal nations. These problems and opportunities are commonly identified as **issues** (Annex A).
- These issues are linked directly to the goals and objectives of an ICM initiative, the identification of stakeholders who should be involved, the determination of information and research needs, and the design of its institutional arrangement and its evaluation framework.
- **Coastal uses** are the different ways that coastal resources or environments can be used: economic, recreation, aesthetic, education, science, religion, and culture.
- **Stakeholders** are individuals, organisations, or groups that have a vested interest (i.e. a social, economic or regulatory/decision-making stake) in the outcome of an issue.
- An **institutional arrangement** is a combination of a nation's laws, customs, budgets, staffing, and governance structure that are established by a society to allocate resources among the competing interests of stakeholders. If a nation, or sub-national unit, has set out a plan to manage even one of its coastal resources (e.g. fisheries, beaches, sub-tidal lands, port areas) it has entered into an institutional arrangement.
- ICM has a set of: 1) **common aspects** (e.g. inter-sectoral and interdisciplinary), 2) **principles** (e.g. individuals, groups, or institutions significantly influenced by a policy should be a part of its development and implementation), 3) **components** (e.g. applied research), 4) **approaches** (e.g. flood plan management) and 5) **techniques** (e.g. impact assessment).
- ICM has many valuable **outputs** which include publications, web-sites, international and national conferences and meetings, peer-reviewed journals, education and training/capacity-building efforts, guidelines and models, and management plans.
- ICM programs produce various **outcomes** which are linked to a program's specific objectives, such as the reduction of coastal pollution or the development of sustainable mariculture.
- A good deal of ICM practice deals with conflict resolution and environmental mediation. Many ICM techniques, such as impact assessment, permit letting, and land-use plans are used to resolve conflicts among stakeholders and mitigate adverse environmental consequences.
- Effective conflict resolution requires public policy and decision-making that allows key stakeholders (including donor institutions, governmental agencies, and non-governmental organisations) to negotiate. The goal here is to develop a strategy of policy and decision-making that.

The Growth and Composition of ICM Activities

- ICM has grown steadily over the past three decades in terms of the total number of activities of participating nations and semi-sovereign states. It is now practised internationally and is generally accepted as the way to realise the goals of coastal conservation and the sustainable development of coastal resources.

- While approximately 57 coastal nations and semi-sovereign states undertook some 180 ICM efforts at the national and/or sub-national levels in 1993, by the year 2000 95 coastal nations or semi-sovereign states had initiated 345 efforts by 2000. There has been almost a doubling of ICM efforts in seven years (Table 1).

Table 1: ICM Efforts and Composition to the year 2000

Number of coastal nations and semi-sovereign states*	207
Number of coastal nations and semi-sovereign states* participating in international ICM efforts	197
Number of coastal nations and semi-sovereign states* that have or have had national and/or sub-national ICM efforts	95
<i>Number of developing nations or semi-sovereign states</i>	70
<i>Number of nations or semi-sovereign states in the tropics</i>	45
<i>Number of island nations or semi-sovereign island states with national or sub-national ICM efforts</i>	21
Total number of international, national and sub-national ICM efforts	380
Number of international regional ICM effort	25
Number of national and sub-national ICM efforts	345
<i>At the sub-national level</i>	284
<i>In developing nations</i>	156
<i>On island nations or semi-sovereign states</i>	65
<i>Focusing on estuaries, bays, lagoons</i>	138

* includes the nations and semi-sovereign states that border on international lakes and international land locked seas.

- Since 1973, almost all of the world's 207 coastal nations and semi-sovereign nations have participated in one or more ICM programs. To date, there have been 25 initiatives for the planning and/or management of international open seas, international landlocked seas, international gulfs, and international lakes.
- ICM initiatives at the national and/or sub-national levels and international regional ICM efforts are quite different. Many of the former represent a high level of commitment to prepare and implement ICM programs; international programs often have less commitment because they are consensual agreements with weak enforcement powers and inadequate budgets. As a result, many international ICM programs are ineffective at resolving their motivating issues.
- In many larger coastal nations, the ICM focus is at the sub-national level. The delegation of a national ICM program to one or more sub-national units had advantages. The program can be adapted to national policies and guidelines to reflect local variations in environmental and socio-economic conditions and to address the specific concerns of local stakeholders in order to encourage their preparation and implementation of local coastal plans.
- Approximately 40 percent of the ICM efforts are focused on estuaries, lagoons or bays that are adjacent to major metropolitan areas. This focus is an expression of stakeholder concern over conflicting uses and degradation of enclosed coastal water bodies.

Die Küste, 64 (2001), 283-302

- Since 1990, developing countries have largely accounted for the increased number of ICM activities at the national and/or sub-national levels. Seventy developing countries have now started one or more ICM initiatives at the national and/or sub-national levels.
- Almost all of the seventy developing countries have received substantial support from the group of multilateral and bilateral international assistance institutions (e.g. World Bank, Inter-American Development Bank, Canadian International Development Agency) to develop an ICM effort, and often times, to implement it.
- Approximately 55 % of the 241 ICM efforts at the national and sub-national levels (excluding the 104 efforts in the U.S.A.) have been implemented. The U.S.A. have a higher implementation rate of 95 % because of the twenty-six year time-period it has had to develop and implement its efforts and the Federal support it continues to receive for both program preparation and implementation.
- There is very little information about whether ICM activities are meeting their stated objectives. The fact that a particular ICM activity has led to the issuance of permits, the approval of local land-use plans, and the designation of marine protected areas does not necessarily mean that these actions have resolved all of the underlying issues.

ICM is not appropriate for all countries

- A set of political, environmental and socio-economic conditions needs to be in place before a country develops and implements an ICM program; without them, ICM would not be a prudent investment in resources for many coastal nations or sub-national units.
- Many coastal nations or sub-national units do not have sufficiently compelling socio-economic links to coastal resources (e.g. coastal-dependent fisheries, mariculture development potential, coastal tourism and recreation and coastal forestry), environments (e.g. wetlands or coral systems of international importance) or hazards to justify the costs and time-period required to prepare and implement an ICM program.
- The destructive political, social, and economic conditions of some developing countries (such as civil war or financial corruption) seriously weakens their capacity to implement ICM.
- In most nations or sub-national units, ICM requires democratic institutions for the successful preparation and implementation of a program, especially if they are funding their own ICM efforts because international donor support is significantly reduced or terminated.
- Democratic institutions may also facilitate community-based management as an approach for the preparation and implementation of plans, policies, and programs.

ICM Literature

- There is an increase in international ICM literature. At least 218 topic areas relate directly to ICM and most of them have their own information exchange networks (e.g. Web-sites, periodicals, conferences).
- There are between three and four thousand books, documents and articles on ICM. ICM literature is not only growing in size but it is also dividing internationally into more specialisations and regional collections. These three factors make it more difficult for ICM

- practitioners to locate relevant information and for any one ICM program to benefit from the experiences of others.
- There is sufficient general guidance literature on ICM as an international practice. At least twenty-nine key guidance documents have been produced over the past decade and a body of knowledge about important ICM principles now exists.

Major Challenges to ICM?

ICM practice has developed a good understanding of the approaches, key principles and guidelines, frameworks and techniques for organizing and implementing programs, and is beginning to benefit from collective experience. However, when it is compared to other forms of planning and management, ICM must meet many challenges before it becomes a distinct form of sustainability planning and management and produces the necessary outcomes for our coastal areas.

There are six groups of these challenges which will help focus discussions at CZC 2000, and at later international and national workshops, conferences and academic sessions:

Defining the Challenges Facing ICM

Improving Information Exchange

Guidance Literature

Model Planning and Management Approaches

Education and Training

Measuring the Performance of ICM Efforts

Each section is organised into (i) a Baseline Statement; (ii) Key Challenges; and (iii) Questions. The questions are intended to stimulate discussion and develop consensus about ways to meet the ICM challenges.

Defining the Challenges Facing ICM

Baseline:

ICM takes considerable time to design and implement; it involves a long-term commitment and can therefore be difficult to reconcile with shorter-term political agendas. A review of the literature on ICM, environmental planning, and international development, suggests that there are many barriers to the implementation of any integrated plans, particularly in developing nations.

Weak governance in public sectors (e.g. health care or education) is an impediment to effective ICM. The list below summarizes some of the key challenges.

Challenge:

Impediments to all nations:

Information and predictability

- Modelling complex systems in order to make adequate impact assessments.
- Inadequate or missing baseline data/information and the time-series data/information needed to make impact assessments as well as to evaluate programs and projects.
- Objectives in laws and programs are not sufficiently specific to establish indicators for monitoring and evaluating programs and projects.

Costs, benefits and their incidence among stakeholders

- Many coastal resources are considered common property (such as fish, coastal aquifers, and coastal waters) and are exploited with little concern for other users or for maintaining a sustainable use level.
- Placing socio-economic values on indirectly measurable qualities (e.g. rare and endangered species, bio-diversity, aesthetics). These values are typically benefits and are compared to directly measurable costs such as employment and income generation.
- The incident and significance of benefits and costs among stakeholders. Usually the costs are significant and confined to a small number of influential stakeholders, while the benefits are spread widely to the larger public and/or to relatively non-influential stakeholders.
- The disparity in costs over time (usually immediate) and benefits (usually takes years to become evident).
- Governments' reluctance, in most cases to consider the long-term costs and benefits.
- Lack of high-level support for ICM (particularly in terms of powers and budget) because the socio-economic benefits of ICM are ineffectively communicated to the majority of voters and their elected officials.

Institutional arrangements

- Inadequate laws and regulations fail to provide the ICM program with an institutional arrangement that can be integrated and with clear, measurable and non-conflicting objectives and the necessary powers and budget to resolve the outstanding issues.
- The ICM institutional arrangement and resources cannot break through the competitive strategies of government sectors and their supporting stakeholders who perceive ICM as a threat to their vested interests.
- Weak institutional arrangements for cross-sectoral integration.
- Reliance on command-and-control approach to implement the program.
- Planning is fragmented into disconnected geographic areas.
- The government's budget-making process provides the ICM program with inadequate funding.

The distribution of power and access to power

- Pro-development institutions are often better connected to decision and policy-makers than pro-conservation interests.
- Pro-development institutions are usually better represented than pro-conservation institutions in public fora because they can afford to pay staff and experts to continually represent their interests.
- Laws to protect private property rights constrain planning and implementation options.
- Laws, procedures, and costs deter public interest groups from lobbying to enforce environmental protection laws.

Demographics

- The nation's governance capacity is severely constrained by many and often deep divisions among its population (e.g. race, religion, ethnic group, linguistic group, socio-economic class, or desire for regional autonomy).
- Basic human survival needs (food, security, adequate shelter) often outweigh the need to conserve and protect coastal resources.
- Increases in population impede gains achieved by planning, management and development improvements.

The culture of decision-making

- Governance is often controlled by a relative small group and carried out with little public involvement.
- Relatively little decentralisation 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.
- Environmental issues are often a low priority when compared to development opportunities.
- Corruption can influence government decisions made in „the public interest“. Government service is often perceived as an opportunity to gain wealth and power.
- Absence of a free press as well as access to „public“ information.
- High illiteracy rates that limit public understanding of, and involvement in, governance.
- Limited ability of non-government institutions to effect changes in governance in some countries.
- Weak enforcement of and compliance with laws and regulations.

Institutional capacity

- Government institutions responsible for environmental quality and natural resources conservation are often powerless when compared to the more established pro-development government organisations.
- Difficulty hiring competent indigenous staff and program managers because of low pay, poor working conditions, and inadequate education/training.
- Reliance on foreign consultants does not build an adequate local infrastructure capable of sustaining the program when donor assistance is decreased or withdrawn.

Information base

- Land tenure is often difficult to establish.
- Absence of basic planning and management information (e.g. topographic contour maps).
- Lack of appropriate technology (e.g. GIS) and/or staff capable of using and/or maintaining it.

Questions:

1. How many of these obstacles have you encountered in your country and its ICM program?
2. Have you encountered other barriers in the preparation and/or implementation of ICM programs?
3. Which obstacles could be most easily overcome in the near future?

Baseline:

Almost all public policy programs base their arguments for significant budget increases on the achievement of program objectives. When compared to national and international budgets for natural resources planning and management or city and regional planning, the ICM program often has a small budget.

Challenge:

There is a number of reasons for ICM's budget disparity:

- The ICM community has not made a convincing socio-economic argument to the individuals and organisations that control ICM program funding.
- The ICM community has not developed a performance assessment process that can compare ICM favourably with competing programs.
- At a national or a sub-national level, it is very difficult to organize and sustain widespread support for ICM.
- It will always be a challenge to find common ground between stakeholders with vested interests in non-sustainable development and pro-conservation stakeholders.
- There are also deep conflicts within many coastal-oriented sectors:
 - among different types of fishing operations;
 - between industrial and artisan fisheries;
 - between commercial and sport fishing;
 - among various approaches to coastal erosion and/or flood control;
 - among different types of coastal tourism; and
 - among uses allowed in protected areas.

Questions:

1. Are ICM initiatives sustainable (i.e. supported by governments after initial assistance efforts end)?
2. How can the international donor community and developed nations be persuaded to invest sufficient financial and non-financial resources in the preparation and implementation of ICM programs so that the efforts do become cost-effective and can achieve their primary objectives?

Improving Information Exchange

Baseline:

ICM practice could take greater advantage of the 35 years of experience in over 380 international ICM initiatives with different political regimes, environments, and levels of national economic development. ICM practitioners often lack the time and the facilities to gather ICM information and, as a result, do not benefit from the rich and varied history of ICM efforts.

Challenge:

- One of the greatest challenges is how to exchange ICM information more effectively and efficiently on a national and international level.

- To make practitioners realize that information from one nation or sub-nation may have direct relevance to their situation.
- To provide literature that presents lessons learned in specific ICM activities.

Questions:

1. *What information exchange networks do you use?*
2. *Do you search the Internet for Web-sites that are relevant to your information needs?*
3. *Do you think a searchable data base of ICM topics would be a more effective Internet search system than that which you currently use?*
4. *Do you think that international ICM initiatives could be made more effective by the development of a global data base of ICM efforts that would focus and facilitate the exchange of international and national information?*
5. *Do you think that all aspects of the Internet, particularly Web-site development and the new generation of GIS technology with its application to policy, planning and decision-making could help resolve many of the challenges to ICM practice (e.g., learning from experience; building effective and efficient information exchange networks; developing and sustaining a supportive constituency; and achieving broad-based and lasting consensus among stakeholders for the allocation of coastal resources and uses among competing interests)?*

Guidance Literature

Baseline:

During the 1990s, a considerable amount of guidance literature on the international practice of ICM was published. Much of this literature was produced with the support of international ICM assistance institutions.

There are at least twenty guidance documents for ICM as an international practice and an additional nine dealing with such topics as institutional arrangements, science applied to ICM, and lessons learned from ICM in the tropics (Annex B).

Challenge:

- International assistance institutions and domestic organisations have developed most of the guidance principles.
- In general, the principles are not based on hypotheses that can be tested and many have not been evaluated.
- While additional **general guidance on ICM as an international practice** appears unnecessary, most coastal countries, particularly developing countries, need the guidance for the following:
 - Development, such as coastal tourism, mariculture, urban expansion, second-home subdivisions, coastal forestry, agricultural practices in coastal watersheds, and oil and gas exploitation, that, if not carefully planned and managed, can lead to adverse environmental or socio-economic impacts within the coastal zone.
 - The need to control coastal erosion and protect the coast from storms can, if not carefully addressed, result in coastal engineering works which have negative environmental impacts.
 - Planning and management of common types of ecosystems (eg. coral atolls, mangroves, beaches and dunes) or development types in typical environments, such as harbours, bays or estuaries adjoining large metropolitan areas.

Questions:

1. *Do we need guidelines on types of development and coastal engineering? The guidelines could be connected to current examples that illustrate how development and engineering can be usefully deployed to enhance the successes of ICM.*
2. *Should guidelines be prepared for common types of coastal ecological systems and their typical types of development? The guidelines could be connected to current examples that illustrate how they have been successfully applied in the real world.*
3. *Should nations with coastal zones containing extensive resource development, natural resources, and a highly varied coastal geography prepare their own set of guidelines?*
4. *In what areas could guidance literature be made useful to you or your program? Does your country or state have a set of ICM guidelines?*

Model Planning and Management Approaches

Baseline:

Thirty-five global issues have been grouped to serve as an index to organize information exchange networks and prepare model planning and management approaches to resolve issues (Annex A).

Challenge:

Let us assume that there is a manageable number of common international coastal management issues and that their coastal systems which generate each common international issue follow the same physical rules (eg. water always runs downhill) despite their different geographical locations and levels of development.

Questions:

1. *Should a model planning and management approach be prepared for each "global" coastal issue? Each common planning and management approach would involve a multi-step process and each step would provide the appropriate techniques and information. Some steps may require a specific institutional arrangement and the approach could be linked to real-life examples.*
2. *Do you know of any model planning and management approaches for resolving one of the common types of ICM issues?*

Education and Training

Baseline:

Effective involvement of interested parties in ICM is being hampered by a lack of understanding and awareness. Institutions such as the Canadian and American Marine-Affairs Professionals Association (MAPA) have been created to improve marine-affairs education in institutions of higher learning.

Challenge:

The challenge is to educate and train interested parties from a variety of backgrounds to participate in ICM

Questions:

1. *Should MAPA and/or other similar organisations construct a data base for information about all higher-education courses in marine affairs (which would include ICM) and about short-term, non-degree training courses? Should aids for ICM education be prepared for an interactive video disk to store images of the major types of coastal development, resources and environments; a case Training series; and a documentary film on ICM „success“ stories?*

Measuring the Performance of ICM Activities

Baseline:

Evaluating the performance of ICM programs against their objectives is important if we are to demonstrate their effectiveness. The practice of program evaluation always makes three distinctions in respect to programs and projects – inputs, outputs and outcomes.

- Most ICM evaluations emphasise outputs (e.g., plans, permits, meetings, publications) rather than outcomes (e.g., reaching desired levels of coastal water quality, providing adequate public access, affording sufficient protection of rare and endangered species, maintaining sustainable fisheries or tourism, or empowering local communities to manage their natural resources.)

There are a number of reasons why outcome assessments of ICM efforts are done infrequently:

- No consensus on appropriate indicators for measuring specific outcomes;
- Absence of good quality baseline and time-series data on the indicators;
- The inherent difficulty in modelling many types of cause-and-effect relations;
- The number of years needed for the effects of human activities to become apparent;
- Determining causation (e.g., determining the extent to which the ICM effort, rather than other factors, caused the outcome being measured);
- The time and money required to assess the performance;
- Frequent absence of structured approaches to measure the effectiveness of an ICM initiative;
- Case studies, surveys and anecdotal information are often the only means used to measure the effectiveness of an ICM initiative;
- The non-rigorous and easily biased information derived from these techniques is having less and less impact upon decision-makers who determine the fate of an ICM effort;
- Managers of ICM initiatives are, on occasion, reluctant to being evaluated by independent institutions. However, such assessments can be more objective and lead to improvement in most aspects of a program or project.

Challenge:

Performance assessment should be used to evaluate programs and determine appropriate changes. Management capacity assessment is used to determine whether management structures and governance processes meet generally accepted standards and international experience. The purpose of these assessments is to improve project design or a program internally.

The challenge in the development of a system for monitoring and evaluating ICM performance is the lack of consensus on:

- Specific and measurable national and/or sub-national objectives (which in turn depends on consensus on the specific issues that ICM effort should address);

- Valid and cost-effective indicators that should be used to measure the extent to which an objective is being achieved; and
- National or sub-national standards (or targets) and time-tables (milestones) that should be achieved.

Questions:

1. *What are the inputs, outputs, and intended outcomes of your ICM program or project?*
2. *What indicators would you suggest should be used to measure these outcomes?*
3. *What other programs or projects could influence each of the outcomes?*
4. *Has the ICM program changed how day-to-day business is conducted?*
5. *Can we reach agreement on specific ICM indicators and standards?*
6. *Can national or state governments and international donor agencies investing in ICM, develop an evaluation and reporting system that responds to and learns from performance assessments?*
7. *Should a co-ordinated and adequately funded program of workshops, surveys and analyses reports be prepared for the ICM community to reach consensus on specific measurable objectives? The goal would be to develop a monitoring and evaluation system for national, sub-national, international-regional ICM programs that can be used for performance assessment, could such a system be linked to a report card system that is accessible to all stakeholders by Web-site and periodicals.*
8. *Should a national and international „state-of-the coast“ report card system(s) be developed to help elected officials, public policy and decision makers, and coastal stakeholders manage coastal areas more effectively?*

Concluding Points

The purpose of this paper was to review the global status of ICM and to establish a baseline for improving ICM international practice at the beginning of the new Millenium. It also provides evidence that ICM is a well-advanced approach for coastal conservation and sustainable development.

While consensus is building among practitioners on principles, concepts, definitions, approaches, and techniques, new ICM initiatives are forming at all levels of governance. Well-established programs are improving and becoming more effective, efficient and equitable. The growth in performance assessments of ICM programs should further strengthen ICM initiatives.

Noticeable progress has been made to resolve ICM's motivating issues in developed coastal nations and some developing countries; coastal waters are less polluted; there are fewer toxic spills; fish stocks are stabilising; the public has improved access to the coast; coastal and marine protected areas have preserved many formerly threatened coastal and marine habitats and populations; wetland and estuary systems have been restored and expanded; derelict and under-utilised waterfronts have been redeveloped; and many hazard-prone areas now have appropriate development restrictions. However, few ICM report systems are in place to record these improvements and it is not always possible to measure the extent to which an ICM program contributed to an improvement.

Advancement in ICM practice depends largely on improving the quality of ICM's global and national information exchange. The following six frameworks may enhance ICM's information exchange and international practice:

1. A global database for ICM efforts;
2. A global database of ICM topics;
3. An index of common impediments to ICM (was well as other types of sustainability planning and management),
4. An index of the common issues that have motivated ICM efforts;
5. Model planning and management approaches for resolving common issues;
6. The application of performance assessment to evaluate and improve ICM programs.

The future for successful ICM programs in most developing nations appears to be less than optimistic. ICM, as a comprehensive and rational decision-making approach that is designed to allocate resources effectively and equitably among competing interests, requires many elements of good national and/or sub-national governance for it to work. Those affected by policy and decision-making need to have an opportunity to have meaningful involvement in the process. Such involvement means an open and transparent policy and decision-making process, freedom of speech, freedom to assemble, and adequately informed stakeholders.

Reversing the degradation and loss of most of the world's tropical coastal resources and ecosystems remains a difficult process. Ninety-five percent of tropical coastal habitats and resources are in developing countries and the data on coral reefs, mangroves, sea grass beds, and coastal fisheries continue to demonstrate patterns of degradation and loss.

It is possible to sustain successful ICM programs in developing coastal nations if international assistance institutions support programs that improve governance practices. Nonetheless, creating good governance practices is a costly and long-term process which may be resisted by some governing bodies.

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