Systems Approaches and Community Approaches for Coastal Planning

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Five Themes for Coastal Planning

1. Coastal Systems
2. Sustainability, Resilience & Indicators
3. Community-Based Coastal Management
4. Integrated Impact Analysis
5. Networking: The OMRN
#1. Coastal Systems

- **The Natural System:**
  - Natural Resources
  - The Coastal Ecosystem
  - The Biophysical Environment

- **The Human System:**
  - Coastal Resource Users
  - Households and Communities
  - Social/Economic/Cultural Environment

- **The Resource Management System:**
  - Policy and Planning
  - Integrated Coastal Management
  - Development and Research
An integrated view of sustainability in coastal areas requires that we pay attention to a range of ecological, socio-economic, community & institutional factors. An assessment process can use checklists or sets of indicators...
(a) Sustainability Indicators

- Ecological Indicators
- Socioeconomic Indicators
- Community Indicators
- Institutional Indicators

see www.gpiatlantic.org
(b) Resilience Indicators

- Resilience is the capability of a system, such as a coastal zone (including ecological, human and management components) to persist or ‘bounce back’ following unexpected shocks to the system.

- Desired ingredients of a resilient coastal system:
  - Resilient ecosystem
  - Resilient communities
  - Resilient socioeconomic structure
  - Resilient management institution
Resilience Indicators (cont’d)

- Debt, Bankruptcies
- Age Structure of Fishers
- Diversified Landings
- Multi-Fishery Access
- Diversified Employment
- Econ. Diversification
- Biodiversity
- Benthic Integrity
#3. Community-based Coastal Management

- The idea: local resource users and their communities should have significant responsibility for management.
- “a nested system that reflects in social and policy terms a similarly nested relationship of organisms, species, and associations that is found in ecosystems” (Uphoff 1998).
- W. Coast Vancouver Island Aquatic Management Board
- Annapolis Basin, St. Mary’s Bay Working Groups (Bay of Fundy)
CBCM : Aboriginal Connections

• Community-based management is the traditional approach in many aboriginal communities;
• But while access to coastal resources is improving, many First Nations in the Maritimes also seek recognition of the right to involvement in managing local resources;
• A focus on CBCM can help to rectify this, for First Nations as well as non-aboriginal communities...
With support from the Pew Fellows Program in Marine Conservation, efforts are underway in Canada’s Maritimes to support grass-roots community-based fishery and coastal management, linking aboriginal & non-aboriginal fishers, communities; and connecting with B.C. communities.

www.turningthetide.ca
#4. Integrated Impact Analysis: The Example of Climate Change

- Physical Changes (e.g. Sea Level, Temperature)
- Biological Implications (e.g. Fish Distribution)
- Direct Human Impacts (e.g., Fishing, Tourism)
- Induced Human Impacts (e.g., Socioeconomic)

The following chart indicates possible climate change impacts related to coastal areas and fisheries in Canada, from biophysical to fish stock to socioeconomic impacts...
<table>
<thead>
<tr>
<th>BIOPHYSICAL / FISH IMPACT</th>
<th>⇒</th>
<th>SOCIOECONOMIC IMPACT</th>
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</thead>
<tbody>
<tr>
<td>Important salmon stocks from Fraser and southern rivers may decline. In northern BC rivers, salmon productivity may increase.</td>
<td>⇒</td>
<td>Distributional impacts: south communities may suffer versus north ones, and capital-intensive fishers may also do relatively well.</td>
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<tr>
<td>Pacific cod abundance likely will be reduced. Exotic species will be introduced into the Pacific area from the south.</td>
<td>⇒</td>
<td>Lower profits, new opportunities. Fishers and communities that are adaptable will do well. Multi-species licensing policy crucial.</td>
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<td>Changes to salinity of the Bras d’Or lakes may impact Cape Breton’s oyster culture industry.</td>
<td>⇒</td>
<td>Highly local impacts on fisheries, aquaculture imply the need to avoid ‘one-size-fits-all’ policies, to encourage local management.</td>
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<tr>
<td>Environmental changes could lead to increased catchability for lobster, scallops and other Atlantic invertebrates.</td>
<td>⇒</td>
<td>Higher profits. Management changes (e.g., decreased trap limits, capacity limits) will be needed to avoid over-exploitation.</td>
</tr>
<tr>
<td>Some Arctic species (e.g., sea otter, warmer water fish) could move into new territories.</td>
<td>⇒</td>
<td>Distributional impacts: some lose, some gain, unless licensing allows larger fishing zones.</td>
</tr>
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<td>Cumberland Sound turbot fishery prosecuted from ice surface, and so is vulnerable to changes in ice thickness and distribution.</td>
<td>⇒</td>
<td>Investment in new fishing methods may be needed or markets may be lost; some fishers may need to shift to other fisheries.</td>
</tr>
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<td>Storm surges and coastal erosion will affect wetlands (and thus fish habitat).</td>
<td>⇒</td>
<td>Loss of habitat on coast could have relatively negative impact on coastal small-boat fishers.</td>
</tr>
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#5. Networking: The OMRN

OCEAN MANAGEMENT RESEARCH NETWORK

• An inclusive Canadian network involving researchers and research users across the country dealing with human uses of the ocean & management of such uses
• Coastal planning and management is a key component
• For more information or to join the OMRN:

www.omrn.ca
Some References


