LESSONS LEARNED

PICES 14th Annual Meeting
Vladivostock, Russia

1 October 2005

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Sea Around Us Project, UBC
Millennium Ecosystem Assessment

An international scientific assessment of the consequences of ecosystem changes for human well-being:

- Findings were released in early 2005
- Modeled on the Intergovernmental Panel on Climate Change (IPCC)
- Providing information requested by:
  - Convention on Biological Diversity (CBD), Desertification (CCD), Ramsar, Migratory Species (CMS)
  - other partners including the private sector and civil society
- With the goals of:
  - Meeting decision-makers’ needs for information
  - building capacity
The MA focuses on:

- The consequences of changes in ecosystems for human well being
  - Ecosystem services
- The consequences of changes in ecosystems for other life on earth
- MA is a critical assessment of the state of scientific knowledge – not a research project
- MA reports are policy relevant, but not policy prescriptive
## Ecosystem Services

The benefits people obtain from ecosystems

<table>
<thead>
<tr>
<th>Provisioning</th>
<th>Regulating</th>
<th>Cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goods produced or provided by ecosystems</td>
<td>Benefits obtained from regulation of ecosystem processes</td>
<td>Non-material benefits from ecosystems</td>
</tr>
<tr>
<td>• food</td>
<td>• climate regulation</td>
<td>• spiritual</td>
</tr>
<tr>
<td>• fresh water</td>
<td>• disease regulation</td>
<td>• recreational</td>
</tr>
<tr>
<td>• fuel wood</td>
<td>• flood regulation</td>
<td>• aesthetic</td>
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<tr>
<td>• genetic resources</td>
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<td>• inspirational</td>
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<tr>
<td>Services necessary for production of other ecosystem services</td>
</tr>
<tr>
<td>• Soil formation</td>
</tr>
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<td>• Nutrient cycling</td>
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<td>• Primary production</td>
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MA Components

- Conceptual Framework
- Condition & Trends
- Scenarios
- Responses
- Subglobal Assessments
MA is a Multi-scale Assessment
e.g., Southern Africa Millennium Assessment

Source: Reyers, B., SAFMA Lessons Learned (Panama, June 2002)
THE MA NOW INCLUDES 16 APPROVED ASSESSMENTS
Plus A Further 17 Associated Assessments

1. ASB: Alternatives to Slash and Burn – multiple local sites in tropical South America, Africa, and Southeast Asia.
Timeline

Launch and design

1st design meeting

2nd design meeting

Core assessment work

1st working group meetings

2nd working group meetings

3rd working group meetings

Combined working group meeting

Review process

Begin review

Board Review approval meetings

Release; Outreach and Capacity Building

2001

UN Launch

2002

2003

Release of Conceptual Framework report

2004

2005
MA Outputs

- Technical Assessment Reports (300-800 pages ea.) and Summaries for Decision-makers (SDMs)
  - Sub-global Assessment
  - Condition/Trends Assessment
  - Scenario Assessment
  - Response Options Assessment
  - Summary Volume (SDMs of 4 reports) Biodiversity, Health, Food, Coastal & Marine, Water, Desertification

- Core datasets available
- On-line data catalog and exploration tool
- Active outreach to conventions and private sector
MA DATA

CURRENT SYSTEM
- Overall - MA does not generate data but uses existing data.
- CORE DATA set, primarily terrestrial based available for downloading from the MA website.
- ON_LINE GIS that can be used to map the core data as well as downloading the ecosystem polygons.
- META DATABASE of global datasets that link to the source web page, some regional datasets included.

POST MA
- April 2004 - first meeting to discuss archiving datasets, models and the data used in the models (where possible).
- 2 - 3 sites have indicated willingness to archive and work has begun.
Lesson Learned

- Including future scenarios and responses added value to the data that was used
- Sub-global assessments at different scales were useful, especially when they were embedded in other regional initiatives
- Difficulty to keep it policy relevant and exclude policy prescriptive
- Need to better capture datasets that were used an assessment.
- Scale down the next assessment
Marine and Coastal

CONDITION & TRENDS VOLUME

- Two primary chapters - Marine Fisheries & Coastal
- The boundary between marine and coastal is currently 50 m depth contour
- Coastal has inland boundary of 100 m elevation (to cover land based influences)
- Marine fisheries and aquaculture also included in the Food Chapter and the Cultivated Systems Chapter
- Other aspects such as climate change, nutrient cycling etc. are covered in other chapters
Lessons Learned

Defining key variables/drivers that policy makers can relate to need to be defined ASAP.

Engage as broad a base of researchers and connect with international initiatives early in the assessment.

Need to look at how to best measure or define uncertainty relating to trend data.

Difficult to link ecosystem services to human-well being outside of food provisioning.

Need to promote economic valuation studies that focus on non-market values.
Marine and Coastal

SCENARIO

4 Scenarios eventually used

Scenarios used to explore what futures are plausible and not what will happen in the future

- Used a combination of quantitative modeling and narrative storylines
- Models and storylines harmonized as much as possible
- Agreed data sets used as inputs to the models as well as storylines - population growth, water demand, land use change, freshwater inputs
Marine and Coastal

Approach to Quantifying the MA Scenarios

**Storylines**
- Global Orchestration, Techno-garden, etc.

**Model Inputs**
- Demographic
- Economic
- Bio-physical
- Technological

**AIM**
- Global change

**IMAGE 2**
- Global change

**IMPACT**
- World food production

**WaterGAP**
- World water resources

**Model Outputs**

**Provisioning Services**
- Food (meat, fish, grain production)
- Fiber (timber)
- Freshwater (renewable water resources & withdrawals)
- Fuel wood (biofuels)

**Regulating**
- Climate regulation (C flux)
- Air quality (NOx, S emissions)

**Supporting**
- primary production

**Links to human wellbeing**
Marine and Coastal

Storylines

• major coastal habitats, especially as they relate to the Ramsar Convention based on four drivers

•Drivers - climate changed, invasive species, landuse change, freshwater inputs

•Fisheries - inshore and offshore (EEZ), high seas and aquaculture
What are the consequences for ecosystem services and human well-being of alternative worlds in which different approaches to sustainability are emphasized?

<table>
<thead>
<tr>
<th>Scenario Name</th>
<th>Dominant Approach for Sustainability</th>
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<tbody>
<tr>
<td>Order from Strength</td>
<td>Reserves, parks, national-level policies</td>
</tr>
<tr>
<td>Global Orchestration</td>
<td>Economic growth, public goods</td>
</tr>
<tr>
<td>Adapting Mosaic</td>
<td>Local-regional governance, common-property institutions</td>
</tr>
<tr>
<td>TechnoGarden</td>
<td>Green technology</td>
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Marine and Coastal

Modelling
• No global marine model

• Ecopath with Ecosim used for 3 representative areas

• Gulf of Thailand, Central North Pacific & North Benguella

• Changes in catches, catch value and diversity of the landings (Kempton’s Q)
Marine and Coastal Central North Pacific - Diversity

Techno-garden
Global orchestration
Adaptive mosaics
Order from strength

(c)
Lessons Learned

- Need lots of time to harmonize storylines and models, as well as within models.
- Need to include people who are doing the trends in the development of storylines and verification of model outputs.
- Scenarios that represent some of the extremes of the drivers are easier for people to differentiate conceptually.
- Combining storylines and modelling sends a powerful message to policy makers.
Marine and Coastal

Responses Working Group

Part I: Conceptual Framework for Evaluating Responses
- Typology of responses (legal, institutional, economic, technical, ecological)
- Methodologies to assess responses
- Uncertainties in the effectiveness of responses

Part II: Assessment of Past and Current Responses
- Biodiversity
- Food, fiber, fresh water, fuel
- Nutrients, waste, climate
- Cultural services
- Integrated responses

Part III: Synthesis: Ingredients for successful responses
- Poverty reduction
- Health
- Choosing responses
- Millennium Development Goals
Marine and Coastal Responses

No specific marine-coastal-fisheries chapter

Limited review of fisheries management responses in the food chapter

Integrated Responses Chapter - ICZM and MPAs but limited
Lessons Learned

- More interactions with the other groups
- Longer lag time
- Responses for marine and coastal issues were often buried with other issues
- Difficult to be relevant and not prescriptive
Sub-Global Assessments: Approved Assessments

Africa (southern regions), Canada, Caribbean region, Chile, China (western regions), India, Kenya, Norway, Peru, Papua New Guinea, Philippines, Portugal, Sweden, Trinidad, Vietnam

Sub-Global Assessments: Associated Assessments

Arafura and Timor Seas, Argentina, Asia (central regions), Australia, Brazil, Colombia, Costa Rica, Egypt, Fiji, India, Indonesia, Morocco, Saudi Arabia, United States
Coastal British Columbia, Canada
The Coast Information Team (CIT)

<table>
<thead>
<tr>
<th>Location</th>
<th>North and central coastal British Columbia, comprising 11 million ha of the traditional territories of 26 First Nations (aboriginal peoples)</th>
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</table>
| Institutions | • Independent scientists and local experts, overseen by a management committee and supported by a secretariat  
• Representatives from mandating stakeholder groups include the provincial government, First Nations, environmental groups, forest product companies and the community-at-large |
| Contact | Robert Prescott-Allen, Padata, Inc. (padata@pinc.com) |

**Brief Project Summary**

**Focal issues**
• Recession and high unemployment, due to challenges facing the regional economy dominated by fishing, logging and other resource-based industries  
• Unresolved land management and land use issues, pending outcome of settlements with some First Nations

**Activities**
• Providing information for decision-making using an ecosystem-based approach  
• Project components include an ecosystem-based management framework, regional and sub-regional analyses, a hydoriparian decision tool, and assistance with the development of land use plans

The CIT project has obtained funding of C$3 million from the provincial government, environmental NGOs, and forest products companies
Lessons Learned

- Need to be a part of the development of global storylines
- Subglobal assessments help to provide the detail that global assessment glossed over.
- Multi-scale provided detail at various levels giving relevance to different policy makers.
Thank you!

For more information:

www.millenniumassessment.org

Also for fisheries information

www.searoundus.org