Introduction to ocean accounting: Managing our impacts

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Speakers

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Agenda

- Introduction of the CTCN
- Introduction and progress of Ocean Accounts
- Pilot projects
- Global ocean data inventory
- Q&A
How to use the webinar platform

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The Climate Technology Centre and Network

Organisation

• Operational arm of the UNFCCC Technology Mechanism
• Consortium of organizations from all regions + Network

Mission and scope

• Mission to stimulate technology cooperation and enhance the development and deployment of technologies in developing countries
• Technologies include any equipment, technique, knowledge and skill needed for reducing greenhouse gas emissions and for adapting to climate change effects

Core services

• Technical assistance to developing countries
• Knowledge platform on climate technologies
• Capacity building and support to collaboration and partnerships
CTCN Technical Assistance

Country-driven
- Any organization from developing countries can express need
- Request endorsed and submitted by the NDE

Fast and easy access to assistance
- User-friendly access: 4-pages submission, in all UN languages
- Appraisal of request within 1-2 weeks and response design within 2-12 weeks

CTCN selects and contracts relevant experts
- Assistance provided through Consortium and Network (value up to 250,000 US$)
- Collaboration with financial organizations to trigger funding

Support to remove barriers to technology transfer (financial, technical, institutional)
- Identification of needs and prioritization of technology, depending on country context
- Technical recommendation for design and implementation of technology
- Feasibility analysis of deploying specific technologies
- Support to scale up use and identify funding for specific technologies
- Support legal and policy frameworks
Networking and Collaboration

Join our network! Easy and free of cost.

**Access commercial opportunities:** respond to competitive bidding for delivery of CTCN technical assistance services

**Create connection:** network with national decision makers and other network members to expand your partnership opportunities and learn about emerging areas of practice

**Increase visibility:** broaden your organization or company’s global reach, including within UNFCCC framework

**Exchange knowledge:** keep updated on the latest information and share via the CTCN’s online technology portal

**Examples of collaboration**
- Co-host climate related events
- Twinning arrangements with research institutions
- Engage in new technology projects
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Part 2: Teerapong Praphotjanaporn: Pilot projects
Part 3: Lyutong CAI: Global ocean data inventory

Global Ocean Accounts Partnership
Learning objectives

1. Understand what ocean accounts are and why they’re necessary
2. Know how ocean accounts have been applied in pilot studies
3. And how inventorying global data can support ocean accounting

LinkedIn & Twitter: #oceanaccounts
LinkedIn group: Partnerships for Ocean Accounting
https://www.oceanaccounts.org/
Why Ocean Accounts?

- Ocean data & governance are fragmented
  - UN Oceans = 24 agencies
  - Global Ocean Observation System (GOOS)
    - 21 observing platform types
    - 36 observing networks
    - 32 data networks…
  - 56 global data portals
- One objective of ocean accounts is to establish a common language among scientists, statisticians and policy experts to strengthen governance
- One way to do this: bring the ocean into official statistics
- Another is to establish links to climate change community of practice (shared data, concepts and classifications)
SNA + SEEA + ? = Ocean Accounts

SNA = System of National Accounts
SEEA = System of Environmental-Economic Accounting
Ocean accounts – Map view

National Spatial Data Infrastructure (NSDI)
SEEA Ecosystem extent
- Land Accounts: Terrestrial and Freshwater ecosystem types
- Catchment areas
- Coastal communities
- Coastal infrastructure
- Pollution sources
Ocean spatial units
- Ocean ecosystem types
- Marine protected areas
- Fishery, tourism, mining areas
- Water quality / temperature
National statistics
- Emissions, effluents, wastes
- Assets: fish stock
- Supply/use: catch, beneficiaries
Governance
- Mandates
Analyses
- Main sources of land-based pollution (by whom)
- Degraded and pristine “Hot spots”
- Cost/benefit of rehabilitation and protection
- Value of natural inputs (to whom)
- Policy options ➔ values at risk
- Capture of “rent” (returns on investment)
Ocean accounts – Main components

Ocean Governance (including management, technology and expenditures)

Flows to the Environment

Water emissions
Solid wastes

Ocean Assets:
Ecosystem and individual assets
Extent
Condition

Ocean Services:
Biotic and abiotic
Supply
Use

Ocean Economy including Satellite Accounts

SEEA – Central Framework

SEEA - Ecosystems

SNA
How we got here (1)

Feb. 2018: Concept note for Bangkok workshop

Key issues for testing and resolution via pilots:

1. Spatial units & ecosystem types
2. Ecosystem services
3. Climate change and disaster risk
4. Social concerns
5. Economic concerns
6. Global data
7. Measuring SDG14
8. Governance
9. Modelling
10. Outstanding issues
How we got here (2)

- March 2018: United Nations Statistical Commission accepted ESCAP and UNEP’s offer to contribute guidance on ocean ecosystems to the SEEA Ecosystems revision for 2021
- ESCAP engaged via Technical Committees and Editorial Board
- Revision of (among others):
  - Ecosystem classification
  - Ecosystem services classification
  - Approach to valuation (market and non-market)
  - NOT working on pressures, economy or governance
August 2018: Bangkok workshop

• Experts expanded & presented issue briefs
• Offers of national pilots
• Discussions on global partnerships

• Not many “answers” → many more “questions”

• [Link](https://www.unescap.org/events/asia-and-pacific-regional-expert-workshop-ocean-accounts)
August 2018: Bangkok workshop
Agreed Technical Guidance would:
• Explain “how” to statisticians
• Explain “why” to non-statisticians (scientists & policy experts)
• Link to existing standards (SNA, SEEA-CF, SEEA-EEA)
• Provide a foundation for testing and experimentation
• Contribute to SEEA Ecosystems revision where appropriate (classifications, concepts)
How we got here (5)

Since August 2018:

- Substantial inputs from experts
- Links to High-Level Panel for a Sustainable Ocean Economy (Blue Paper #8 on National accounting for the ocean and ocean economy)
- Establishment of GOAP (ESCAP, UNSW, UNEP-WCMC…)
- Pilots in Canada, China, Malaysia, New South Wales, Samoa, Thailand, Viet Nam
- Dec. 16: V0.8 Technical Guidance on Ocean Accounting for Sustainable Development

http://communities.unescap.org/node/1144/view
How we got here (6)

Training materials (90 minutes each)

1. Introduction
2. Tools and Methods
3. Linking SEEA-CF
4. Ecosystem Extent and condition
5. Ecosystem Services

Each with “fun”

Also

- Global Ocean Accounts Data Inventory (Lyutong Cai, ESCAP)
- Pacific Ocean Accounts Portal (Gemma Van Halderen, ESCAP)
- Feasibility Study: Mapping Global Ocean Ecosystems (Feixue Li, Nanjing University)

http://communities.unescap.org/node/1156/view
November 2019: Sydney “Global Dialogue”

• Review of technical guidance
• Presentation of pilots and other related research
• Policy changes needed to implement ocean accounts
• Initiatives to continue pilots, collaborate on resolving technical issues and joint research
• Next workshop in Ottawa, October 2020.

Regional Ocean Accounts Platform

http://communities.unescap.org/node/1144/view

- Technical guidance (V0.8)
- National pilots (scoping, presentation, final report)
- Training materials
- Global Ocean Data Inventory
- Feasibility studies:
  - Mapping ocean ecosystems;
  - Pacific Portal
- November 2019 “Global Dialogue”
- Statistical papers:
  - SDG14 data,
  - Assessment of SDG14.2.1 (Marine Spatial Planning) by country
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Global Ocean Accounts Partnership
Objectives of the pilot studies

• Test and apply the methodologies suggested in the draft technical guidance to inform national/provincial ocean priorities.
• Provide practical evidence and inputs to the revision/improvement process of the draft technical guidance
<table>
<thead>
<tr>
<th>Activity</th>
<th>Objectives</th>
<th>Timeline</th>
</tr>
</thead>
</table>
| Scoping assessment             | • Review existing ocean-related policy priorities, concerns, stakeholders, institutional mechanisms; existing data; constraints and opportunities  
                                 | • Suggest options for the pilot                                                                                                                  | Jan-May 2019   |
| 1<sup>st</sup> national workshop  | • Ocean accounts/SEEA training  
                                 | • Review/discuss scoping report  
                                 | • Agree on pilot topic and geographical area  
                                 | • Develop work plan                                                                                                                                | Jan-May 2019   |
| Pilot implementation           | • Conduct the pilot project  - Technical support from local consultants and ESCAP                                                                                                                           | May-Oct 2019   |
| 2<sup>nd</sup> national workshop | • Review/discuss pilot results                                                                                                                                                                           | Sep-Oct 2019   |
| Regional workshop              | • Present pilot results  
                                 | • Share lessons learned  
                                 | • Discuss next steps                                                                                                                               | Nov 2019       |
Diagnostic tool

- Focuses on strategic planning for implementing environment statistics
- Guides structured conversations among stakeholders
- Identifies policy priorities, foundational information, stakeholders and institutional mechanisms
  - Necessary to develop a national work plan for improving environment statistics
Thailand

- Lead agency: National Statistical Office
- First workshop: 15 Jan 2019
- Pilot topic: Sustainable tourism - linkages between tourism, the environment and the ocean
  - Stage I: TSA-SEEA (water, energy and solid waste accounts)
  - Stage II: Mapping land cover, tourism and ecosystem information to identify tourism potentials and sites for conservation
  - Stage III: Building scenarios to inform decisions on tourism sustainability
- Geographical scope: five Andaman provinces (Phang Nga, Phuket, Krabi, Trang, and Satun)
- Second workshop: 15 Oct 2019
Malaysia

• Lead agency: Department of Statistics
• First workshop: 4-5 Apr 2019
• Pilot topic: Living resources in Straits of Malacca
  • Stage I: Test accounts and change matrix of selected ecosystem extent and ocean conditions
  • Stage II: Test selected ocean services
    – water quality → mangroves → fish catch
• Geographical scope: Straits of Malacca
• Second workshop: 17-18 Oct 2019
Viet Nam

- Lead agency: Institute of Strategy and Policy on Natural Resources and Environment (ISPONRE)
- First workshop: 23-24 Apr 2019
- Pilot topic: Land-based pollution, tourism and ecosystem impacts
  - Stage I: Estimating and allocating land-based pollution (wastewater, solid waste, BOD etc. → shipping, offshore mining etc.) to drainage basins
  - Stage II: Mapping ecosystems (extent, conditions, services) and designated uses
  - Stage III: Estimating impacts of tourism on ecosystems
  - Stage IV: producing preliminary MSP
- Geographical scope: Quang Ninh province
- Second workshop: 10-11 Oct 2019
Samoa

- Lead agency: Ministry of Natural Resources and Environment
- First workshop: 7-8 May 2019
- Pilot topic: Sustainable tourism - accounting for the environment and selected ocean factors
  - Stage I: Developing a test Tourism Satellite Account (TSA)
    - Initial step for understanding sustainable tourism and ocean economy
  - Stage II: TSA-SEEA (water, energy and possibly solid waste, land)
- Geographical scope: national
- Second workshop: 7-8 Oct 2019
China

- Lead agency: Fourth Institute of Oceanography
- First workshop: 15-16 May 2019
- Pilot topic: Ecosystem mapping in Beihai Bay
  - Stage I: Creating change matrix of key ecosystem types (e.g., mangroves)
  - Stage II: Analyzing important ecosystem assets (e.g., Carbon stock)
- Geographical scope: Beihai Bay, Guangxi province
- Second workshop: 24-26 Sep 2019
Canada

- Lead agencies: Fisheries and Oceans, Statistics Canada
- First workshop (23 Sept 2019)
- Pilot topics:
  - Ecosystems extent and condition
    - Developing spatial framework (hexagons)
    - Inventorying and integrating spatial data
  - Expanding existing marine economy accounts
    - Estimates for marine tourism & recreation; private ports
  - Non-market valuation (ecosystem services)
    - Adopting common approaches, aligning with SEEA-EEA revision
- Geographical scope: National
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Global Ocean Data Inventory

1. Objectives
2. Methodology
3. Classification
4. Results
5. Next steps
1. Objectives

- NOAA
- NASA
- FAO
- EU-COPERNICUS

Most recent daily OI SST map.
1. Objectives

• Ocean data are collected by different agencies, organizations, research institutes etc. for different themes, including sea surface temperature, sea surface salinity, ocean carbon and acidification, currents, waves, coral reefs, seagrasses, shipping, marine tourism etc.

• The existing inventories are collected for specific purposes. **There were no existing data inventories that included all the databases and fully matched the needs of ocean accounting**, so the Global Ocean Data Inventory was developed.

• The information from **as many global ocean databases as possible** has been re-organized in this inventory.
2. Methodology

• Scale: Global ocean database
• Well-known research agencies:
  – National Oceanic and Atmospheric Administration (NOAA) (https://www.noaa.gov/)
  – National Aeronautics and Space Administration (NASA) (https://www.nasa.gov/)
  – EU Copernicus-marine environment monitoring service (http://marine.copernicus.eu/)
  – Australian Institute of Marine Science (https://www.aims.gov.au/)
  – French Institute for the Exploitation of the Sea (Ifremer) (https://wwz.ifremer.fr/)
  – China Meteorological Administration (CMA) (http://www.cma.gov.cn/en2014/)
  – …
• Online keywords research
• Recommendation from experts
### 3. Classification

#### Component Description

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Spatial units</td>
<td>Existing database/standards about the classification</td>
</tr>
<tr>
<td>2 Ocean Extent</td>
<td>Coastal Community, coral, mangrove, seagrass, topography, geoid, bathymetry, EEZ, sponge, geography, islands, saltmarshes</td>
</tr>
<tr>
<td>3 Use (designated)</td>
<td>Protected areas, Fishing, Tourism, Shipping etc.</td>
</tr>
<tr>
<td>4 Ocean Condition</td>
<td>Physical: temperature/ Sea surface temperature, ocean circulation, sea level, waves, tides, winds, sea ice/ glacier, salinity, heat content, mean sea surface, mean dynamic topography, turbidity (reflectance), mixed layer thickness, water pressure, water density; Chemical: phosphate, nitrate, silicate, alkalinity, pH, CO2, tritium, Oxygen/hypoxia; Biological: plankton, Chlorophyll; ocean color, oil-spill trajectory, algal bloom, plastics, water quality</td>
</tr>
<tr>
<td>5 Ocean Asset</td>
<td>Fish stock, minerals, aquatic plants, oil/ petroleum/ gas, seafloor sediments and rocks, marine species Algae, seaweeds, plankton, whales, dolphins, sea turtles</td>
</tr>
<tr>
<td>6 Ocean Service Supply</td>
<td>Fish catch, Tourism, Mining</td>
</tr>
<tr>
<td>7 Ocean Service Use</td>
<td>Trade, transport(use), port, habitat, values at risk (coral bleaching, coral diseases), blue carbon, marine safety/security, shipping</td>
</tr>
<tr>
<td>8 Non-specific classification</td>
<td>Databases without a clear classification</td>
</tr>
</tbody>
</table>
### 4. Results

#### Classification

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single component</td>
<td>106</td>
</tr>
<tr>
<td>Multiple components</td>
<td>27</td>
</tr>
<tr>
<td>Non-specific classification</td>
<td>5</td>
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<tr>
<td><strong>In total</strong></td>
<td><strong>138</strong></td>
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<td>Ocean Extent</td>
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<td>86</td>
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</table>
4. Results ---- Table version

http://communities.unescap.org/node/1144/view
4. Results ---- Text version

Ocean Accounts

Global Ocean Data Inventory

Version 1.0  13 Dec 2019

http://communities.unescap.org/node/1144/view
5. Next steps

- A website (as part of the ESCAP Regional Ocean Accounts Platform) + Guidance

I want to have an ocean extent account of mangroves, but I don’t have local data for the distribution of mangroves and shoreline, which global datasets should I refer to?

Mangrove datasets in WCMC Ocean+ Library are good options.

A Global Self-consistent, Hierarchical, High-resolution Geography Database (GSHHG) will help you define the shoreline.

- Advice from experts in case some important databases are missing
- Global → Regional → National
Thank you!

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