

## Eutrophication group discussion from Day 1 (September 12<sup>th</sup>) of Marine Indicators Expert Workshop

### Summary

- OK to use a mix of globally available and locally measured indicators.
- Locally measured indicators could be either provided directly to UNEP by countries or through regional seas, when such programs are available.
- Thought it was useful to divide indicators into "core indicators" and "desirable or aspirational" indicators
- Core parameters: chlorophyll a, nutrients (total nitrogen, total phosphorous, silica, and dissolved inorganic N, P, and Si), ICEP, dissolved oxygen, pH, salinity, secchi depth, turbidity, HAB occurrence, SST, confidence index for products, river flow nutrient concentrations and discharge
- Aspirational: HAB extent in time and space, microalgal growth, submerged aquatic coverage, alkalinity, biodiversity, dissolved organic carbon, toxic metals, persistent organic pollutants, regional contaminants of concern
- Reporting at most annually (for satellite-derived products), less frequently for measurements.
- Appropriate for UNEP and IOC to provide recommendations on methodology and parameters/indicators
- Also thought it would be important for UNEP/IOC to consider cost of core indicators

### More detailed discussion notes

#### Question 1 – what parameters

Indicators

-chlorophyll-a

-discharge flux from rivers into coastal areas various N/P and silica in the rivers/discharge sources

-monthly concentration values in coastal areas for N/P/silica and chlorophyll for validation

- Sensitive areas, what is an acceptable baseline? What should be the maximum threshold?
- How many points along a coastline should be measured per country?
  - HELCOM requires 15 stations to be measured in a country from June to September (shifts as you go further north)
- Chlorophyll-a anomaly ratio?
- Maximum value along a coastline, anomaly relative to a long-term average
- 10-year average?
- Incremental approach for what is possible now, what is useful for
- Coastal categories – based on the watershed source of nutrients and water flowing into the coastal zone and the characteristics of the ecosystems receiving those segments (ex. Do not mix coastal lagoons and fjords). Currently about 160 areas.
- Could organize the coastline globally and use them as way to organize land/sea

- Sediments topology in India, US, UK (primary cells, secondary cells), typology for coastal waters, could be used to make a grid to determine where to make measurements.
- For in situ measurements – ideally monthly. How many measurements?
- Sampling will depend on what is representative taking into account natural variability and seasonality, what is characteristic of each season

#### **Question 2 – include global parameters?**

- Common procedure for boundary of what is “coastal eutrophication”
- Satellite data: baseline should start from 1998 when NASA began collecting data on a regular basis, need to combine data sets to make something
- what should the baseline be for a chlorophyll anomaly?

#### **Question 3 – how should data be collected at the global level?**

- Helcom: they having mandatory reporting that are then quality checked before being incorporated into the indicators, if there was something similar to this we should be able to have data collected by countries and reported to the UN? Data collection is done by the contracting parties
- Is it feasible to do this globally? There are large resources needed to do this.
- Elisabetta – envisioned Regional Seas collecting data, data given to UN Environment then passed to the UN in New York for processing
- UN Environment has “UNEP live”, IRIS tool which is in the pilot testing phase, easy way to input data, can be done automatically for different reporting obligations to help reduce reporting burden for countries; UN Environment has interface for extracting data
- Ideally, tool down the line, GEO database with coastal units (coscats), then map in chlorophyll anomaly, etc.
- In HELCOM, after they have agreed on data and guidelines, the database has specific requirements for the formats, need to have an agreed format
- IRIS tool depends on focal point on the country to make sure the data is valid
- Another SDG indicator (12), regional parties have focal points, challenge to mandate the regional seas secretariats to do this, needs to be approved by the contracting parties
- Needs to be an upfront effort to make sure data is reported in a comparable way, SDG annual report is the end reporting goal

#### **Question 4 – how widespread should this be?**

- Have two sets – a “must have dataset” and the other one is optional...what is the thing every country can do?
- Chlorophyll, dissolved oxygen, turbidity/water clarity, pH
- For reporting – as long as the methodology is agreed upon such as just measuring in situ data in “hot spots”
- Core set of indicators, add in non-core parameters and indicators that countries can report on in the future, for non-core indicators

- HELCOM: they do this by having some monitoring proxies and assign a confidence on that based on the number of components that enter the assessment and availability of the coverage, could show the confidence based on how many parameters are included in the index
- Cost should be considered for core indicators
- Also link with goal 6
- Water temperature
- Biodiversity not specifically included in indicators, just MPA distribution, IUCN asked for biodiversity to be overlaid on areas with high biodiversity

#### **Question 5 – how often?**

- Is annual basis enough? How often could we get those from countries?
- With HELCOM they get the data to the database every year, an assessment is done every year
- SDG database not analyzed by UN Environment
- How often UN Environment is expected to analyze it, there is a cycle, every three years a goal comes up, need to say “something” every three years
- Is expectation to see changes? In HELCOM they have seen extensive recovery times, new report almost identical
- Do not want to see an increase in eutrophication in terms of reporting, reporting would look for
- Countries can only pass data through the custodian, must go through UN Environment to go in the global report, countries can submit a voluntary report
- Paper sent to regional seas or countries member states that data share should be going through UN Environment
- Time scale – could have some delay, will be a mismatch of years for data reporting
- Data can be taken directly from space agencies, countries can be overlaid on global products, or they can be submitted as separate sub-indicators

#### **Question 6 – how prescriptive should IOC and UN Environment in terms of what should be measured ?**

- Can provide recommendations on methodology and parameters
- Methodologies for the 22 indicators in the regional seas programs are being developed by Takahiro Nakamura
- Could have multiple methods for collecting data for various parameters, Helcom could put that forward to the contracting parties
- Resources will also have to be mobilized to do this, some regional seas projects have active GEF projects
  - CLME+ initiative (nutrient loading effort)
  - South China sea has initiative
  - Western Indian Ocean
  - Mediterranean sea
- How to determine the “coastal zone”, watersheds of interest, etc.
- Source to sea approach, framework should link with the waters that are delivering pollutants
- Drainage basins and coastal receiving basin
- Costcats could be used as a breakdown

- HELCOM has different levels, regions broken down into water body types
- How to deal with sensitivities of coastal countries?