



Coastal
Eutrophication
(SDG 14.1.1)



Marine
management
(SDG 14.2.1)



Marine
litter (SDG
14.1.1)



Protected
areas (SDG
14.5.1)

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Steps

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Eutrophication

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Target 14.1: By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution

Indicator 14.1.1: Index of coastal eutrophication and floating plastic debris density

Approach

Approach

Two types of indicators

1) Indicators for the cause of eutrophication (nutrient input and concentrations): Nutrient enrichment is included in five Regional Seas Programmes and by the European Union (EU)

2) Indicators for the direct effects of eutrophication (e.g. Chlorophyll-a concentrations, biomass growth, water clarity/turbidity): Chlorophyll-a is most frequent across the 18 Regional Seas Programmes.

Regional Seas Programmes use two methodological approaches for monitoring Chlorophyll-a:

- In situ measurements, and
- Remote sensing using satellite images.

Regional
seas

Indicators

Satellites

**The following have a method
for
measuring eutrophication:**

CPPS: Permanent Commission for the South Pacific (Southeast Pacific); EU MSFD: European Union Marine Strategy Framework Directive; GEF-TWAP: Global Environment Facility Transboundary Waters Assessment Programme; HELCOM: Helsinki Commission (Baltic Sea); Nairobi Convention (Western Indian Ocean); NOAA: National Oceanic and Atmospheric Administration; NOWPAP: Northwest Pacific Action Plan (Northwest Pacific); OSPAR: ROMPE: Regional organization for the Protection of the Marine Environment (ROMPE sea area); UNEP-MAP: UN Environment Mediterranean Action Plan (Mediterranean Sea)).

Monitoring parameters	Core parameter	Supplementary parameter	Parameter available from remote sensing
Chlorophyll-a (remote sensing)	X		X
Chlorophyll-a (<i>in situ</i>)		X	
Nitrogen/DIN (dissolved inorganic nitrogen)		X	
Total nitrogen		X	
Phosphorus/DIP (dissolved inorganic phosphorus)		X	
Total phosphorus		X	
Dissolved oxygen		X	
Biological/chemical oxygen demand (BOD/COD)		X	
Total organic carbon (TOC)		X	X (indirectly)
Turbidity		X	X
Water clarity/transparency		X	X
Cyanobacterial bloom		X	X
Species shift in floristic composition		X	X (being developed)
Abundance of opportunistic macroalgae		X	X (being developed)
Abundance of perennial seaweeds and seagrasses adversely impacted by decrease in water transparency		X	X (experimental)

Remote sensing

We are working with NASA, ESA and others to generate Chlorophyll A and DSS for all countries as a proxy indicator which could be used by countries.



Today:

> 200 public datasets
> 11 million images

> 6000 new images every day
> 8 petabytes of data

Graphic reproduced from Google



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Current Regional Seas Practices

- 1) **Plastic debris washed/deposited on beaches or shorelines** (beach litter): Beach litter is monitored by most Regional Seas.
- 2) **Plastic debris in the water column**: HELCOM (Helsinki Commission, Baltic Sea), UN Environment Mediterranean Action Plan (UNEP-MAP; Mediterranean Sea) and the South Asian Seas Action Plan have indicators and methodologies.
- 3) **Plastic debris on the seafloor/seabed**: Three European Regional Seas Programmes and the UN Environment/IOC-UNESCO and the European Commission Joint Research Centre include.
- 4) **Plastic ingested by biota** (e.g. sea birds): OSPAR (Northeast Atlantic), UNEP-MAP (Mediterranean Sea) and the EU include

Indicators

Monitoring parameters (and methods)	Core parameter	Supplementary parameter
Beach litter (beach surveys)	X	
Beach litter microplastics (beach samples)		X
Floating plastics (visual observation, manta trawls)		X
Floating microplastics (manta trawls, e.g. Continuous Plankton Recorder)		X
Water column plastics (demersal trawls)		x
Water column microplastics (demersal plankton trawls)		X
Seafloor litter (benthic trawls (e.g. fish survey trawls), divers, video/camera tows, submersibles, remotely operated vehicles)		X
Seafloor litter microplastics (sediment samples)		X
Plastic ingestion by biota (e.g. birds, turtles, fish)		X
Plastic litter in nests		X
Entanglement (e.g. marine mammals, birds)		X



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Protected areas (SDG 14.5.1)

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Management

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Target 14.2: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans

Indicator 14.2.1: Proportion of national exclusive economic zones managed using ecosystem-based approaches



Concepts

Concepts

Integrated Coastal Zone Management is a policy indicator more than a statistical indicators, but it links to indicators related measuring marine ecosystems types and quality.

- ESCAP is currently working on an Oceans Accounting approach which aims to capture marine ecosystems (UN Environment is collaborating with ESCAP)



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Protected areas (SDG 14.5.1)



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Protected areas

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Target 14.5: By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information

Indicator 14.5.1: Coverage of protected areas in relation to marine areas

**Well developed
method already**



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Way Forward

- We conducted pilot testing in Fiji and Colombia in 2017, but there is a need for more country experiences.
- The specific parameters of the SDGs are not easy to identify in the FDES - particularly beach litter and floating plastic debris by size (micro and macro).
- Perhaps need to create a guidance on using the FDES for Oceans.
- For the SDG, UN Environment is proposing regional monitoring by the regional seas which will feed into global monitoring. The role of regional mechanisms for monitoring oceans could be also elaborated in the FDES.
- UN Environment plans to publish a manual on oceans statistics which covers the indicators 14.1.1, 14.2.1 and 14.5.1 and the linkages with the regional seas this year.



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