

Approach Towards Development of the Condition Accounts for the Ocean

Dr. K. Ramu

Scientist - E

National Centre for Coastal Research (NCCR),

Ministry of Earth Sciences, Chennai - 600100

Importance of Oceans

O₂

Generates >50% of the oxygen we breathe



97% of the Earth's water



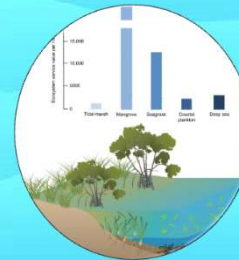
Regulates climate



Coastal Resilience - marine habitat (e.g., mangroves protect the coast from erosion, flooding...)



Economy- food, energy resources, transportation, tourism etc.



Mangroves, seagrass, salt marshes: removes 10 time more CO₂ from atmosphere

System of Environmental Economic Accounting – SEEA

Ecosystem Accounting

Ecosystem
Extent

Ecosystem
Condition

Ecosystem
Services
(Physical)

Ecosystem
Services
(Monetary)

Monetary
Ecosystem
Asset

Ecosystem Condition Accounts

Condition accounts are used to synthesize information about changes over time in the state of ecosystem assets



The development of ecosystem condition accounts has the potential to make key policy commitments

Ecosystem Condition Variables for Marine Shelf/Coastal Ecosystem

Abiotic Characteristics

A1 Physical State

Marine shelf
Water clarity;

(Micro)plastic
concentration

A2 Chemical State

Chlorophyll
concentration;
% anoxic area;
Oxygen
concentration;

pH
or
dissolved CO₂

Biotic Characteristics

B1 Compositional State

Coral species
richness;

Fish species
richness

B2 Structural State

Reef
"bleachedness";

Kelp/seagrass
height or cover;

Live coral cover

B3 Functional State

Trophic
composition
(food web
functionality);

Ratio fishing
mortality and
fishing at MSY

Programs Contributing for Ocean Condition Account

Seawater Quality Monitoring

Marine Litter and Micro Plastics

Abiotic Characteristics

A1
Physical State

Marine shelf
Water clarity;

(Micro)plastic
concentration

A2
Chemical State

Chlorophyll
concentration;

% anoxic area;

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pH (or dissolved
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Coastal Resources Assessment
and Management

Biotic Characteristics

B1
Compositional
state

Coral species
richness;

Fish species
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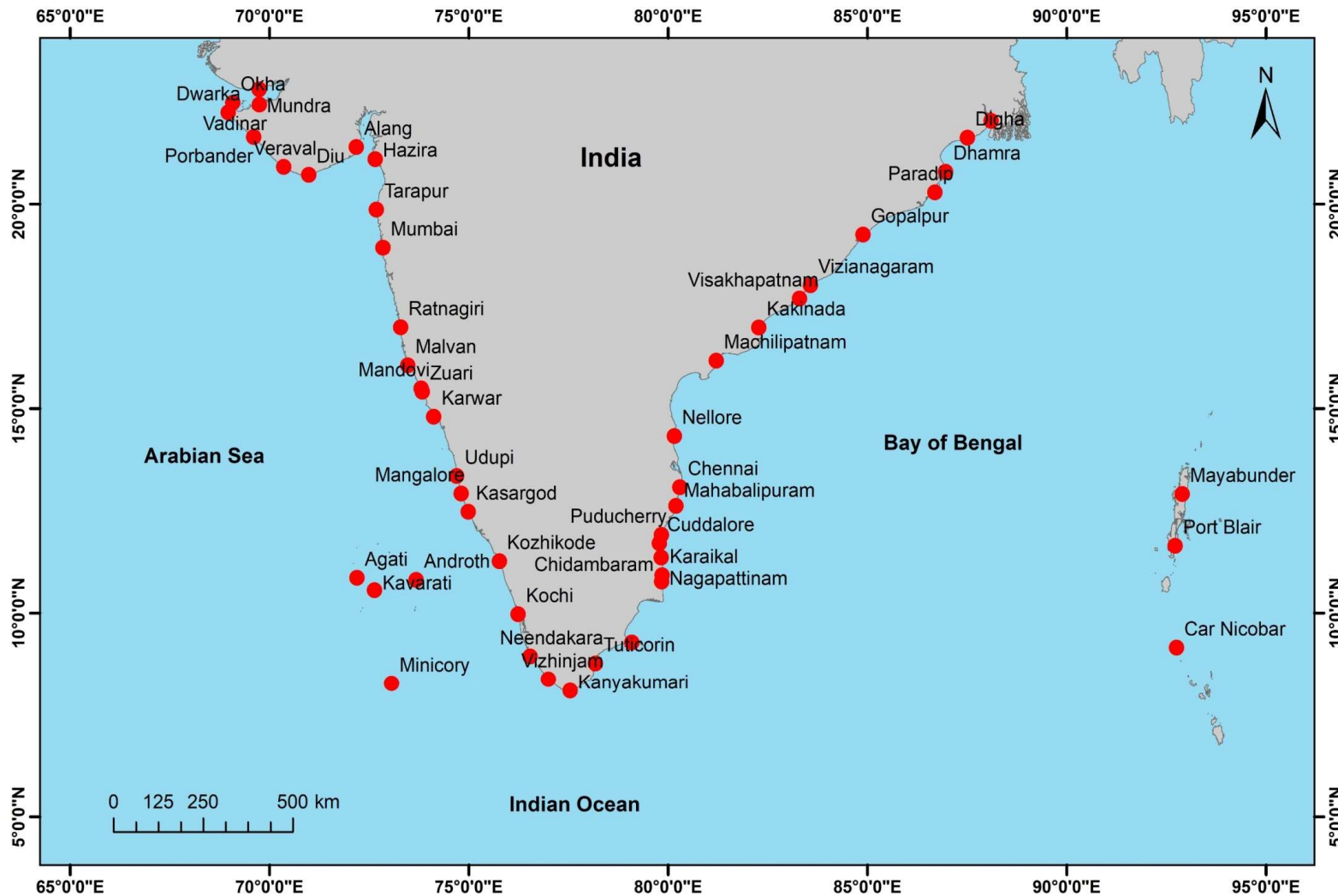
B2
Structural
state

Reef
"bleachedness";

Kelp/seagrass
height or cover;

Live coral cover

Seawater Quality Monitoring (SWQM)



Sampling Strategy
 Annually Twice
 Min. 2 Transects at each location
 Min. 4 stations at each transect
 Shore: < 1 km
 Near Shore: 2 km & 3 km
 Offshore: 5 km

Parameters Monitored

Water:
 Temperature, Salinity, pH, DO, BOD, TSM, TA, DIC, Nutrients, Trace Metals, PHC, Chlorophyll pigments,

Plankton:
 Phytoplankton, Zooplankton

Microbial:
 Total Viable Count, EC, FC, SF

Sediment:
 Organic carbon, Texture, Trace Metals, PHC
 Benthos
 Microbial:
 Total Viable Count, EC, FC, SF

Seawater Quality Monitoring (SWQM)

MoSPI

- ❖ Natural Capital Accounting and Valuation of Ecosystem Services - NCAVES

NITI Aayog

- ❖ Annual SDG progress reports

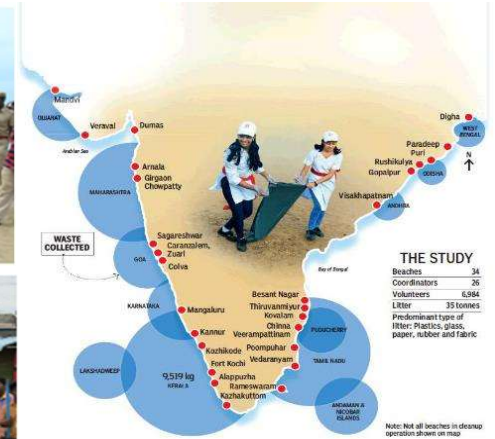
Marine Litter (ML) and Microplastics (MP) Program

Monitoring & Research

- ❖ Assessment and quantification of marine litter and microplastics (MPs) in the water, sediment and biota.
- ❖ Fate and behaviour of plastics from source to sink
- ❖ Ecological impact of MPs



Citizen Science

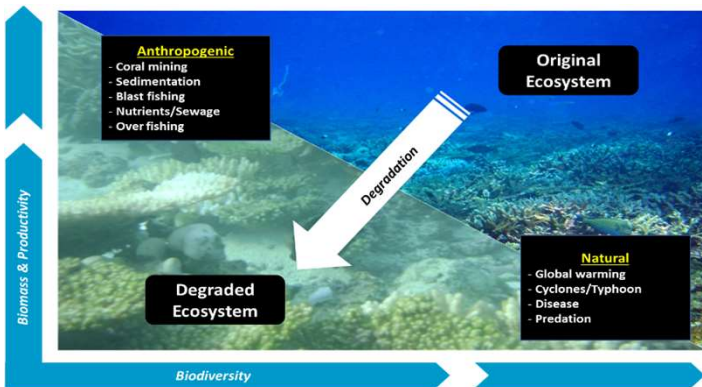


- ❖ Create awareness towards management and mitigation measures
- ❖ Beach cleaning during International coastal clean up day along the Indian coast

Coastal Resources Assessment & Management

Monitoring, Mapping & Restoration of Coral Reefs

Threats to coral reefs

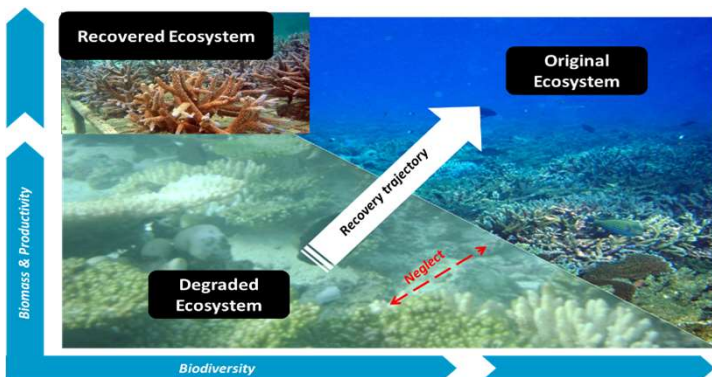


Coral Reef Ecosystems in India

Gulf of Mannar
Lakshadweep Islands
Andaman & Nicobar
Gulf of Kutch



Restoration of Coral reefs



Challenges & way forward for Ocean accounting





Thank you!