SUSTAINABLE DEVELOPMENT GOALS

Conservation and Sustainability of Biological Resources on the Planet Earth: Present and Future

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Outline

- The 2030 Sustainable Development Agenda
- National Efforts in SDGs Mainstreaming
- Means of Implementation
- Next Steps

Environmental Protection

1962 "Silent Spring" Rachel Carson

1966 "The Limits to Growth" Roman Club

1972 "Polluter-Pays Principle" OECD

1982 "United Nations Convention on the Law of the Sea: UNCLOS" adoption

1991 Rio declaration: "Precautionary Principle"

1992 "Convention on Biological Diversity"

1993 United Nations conference held in Rio de Janeiro from 3 to 14 June 1992

1994 International Seabed Authority

2000 Mining Code (by the ISA)

2001 Environmental Guidelines (the ISA)

What is biodiversity?

- Genetic diversity
- Species diversity
- Ecosystem diversity

Genetic diversity

- Genetic diversity is the variation in the genetic composition of individuals in a population, community or species
- Evolves as a result of many different processes: e.g. chromosomal/sequence mutation, and physical or behavioural isolation of populations
- Allows individuals to adapt to different conditions. Thus, high genetic diversity increases ability of populations and species to survive major changes in their environment (e.g. climate change)

Species diversity

- Species diversity is the variety of species (group of interbreeding organisms) in a particular habitat or ecosystem
- About 1.75 million species described. Total number estimated at approx 12.5 million, but could be anything from 5-100 million. There may be 10 million undescribed species in the deep sea alone!
- The diversity of the smaller organisms (e.g. phytoplankton, the plants of sea) is less well known than the larger organisms (e.g. mammals such as dolphins and whales)

Ecosystem diversity

- Ecosystem diversity describes the variation in all living and non-living things in a particular geographic or ecological region. Ecosystems comprise unique combinations of animals, plants, micro-organisms and physical characteristics that define a location.

- Novel marine ecosystems continue to be discovered. In the ocean, hydrothermal vents, extremely distinct habitats with many endemic species, were discovered less than 25 years ago!

Ecosystem Functioning

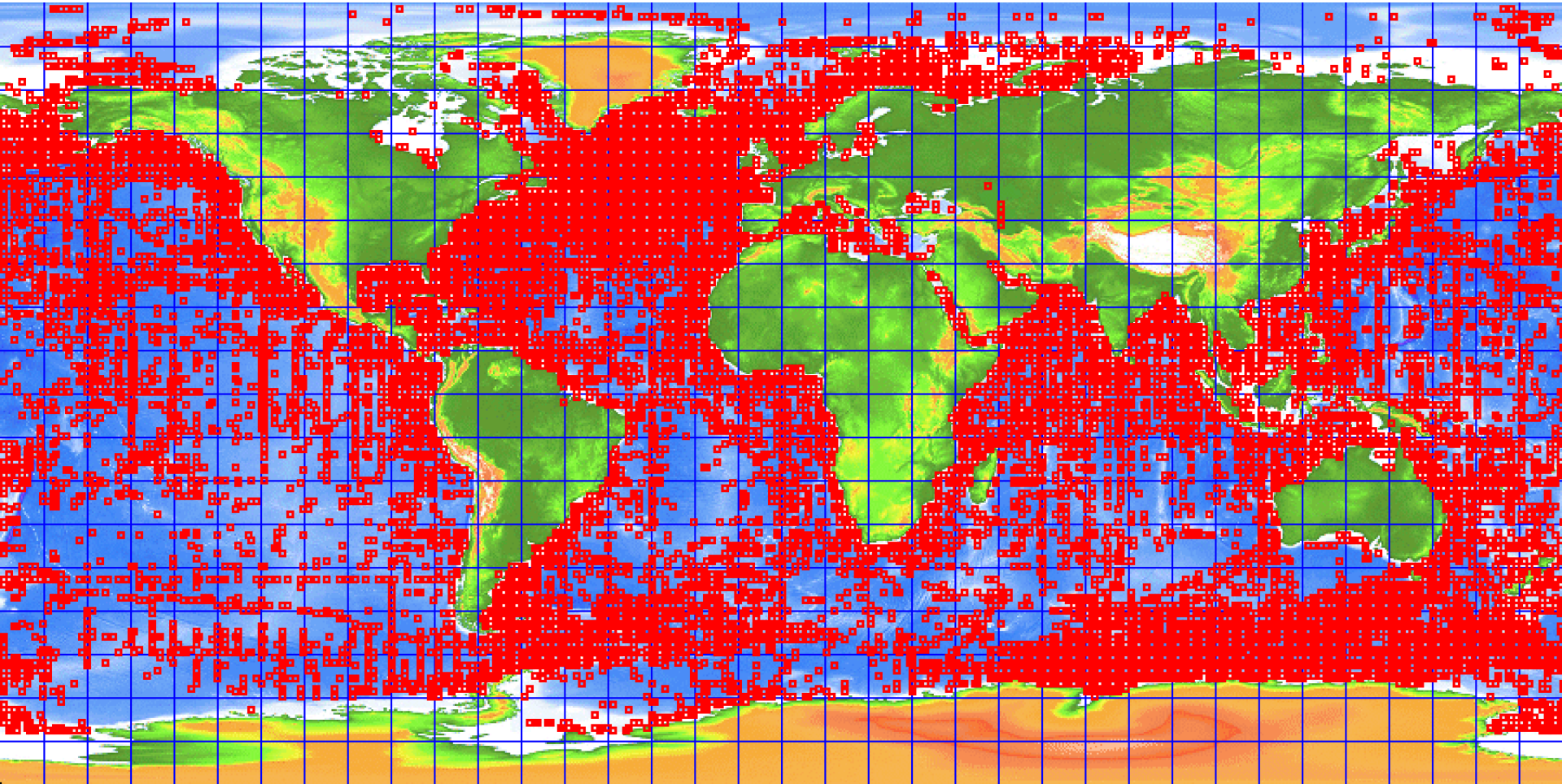
- Ecosystem functioning is a term that comprises both the ecological and evolutionary processes (e.g.) and the individual components (e.g. herbivores, predators) within a system

- Many scientists believe that ecosystems with a high variety in processes and components are more resilient to change than ecosystems with fewer functional roles

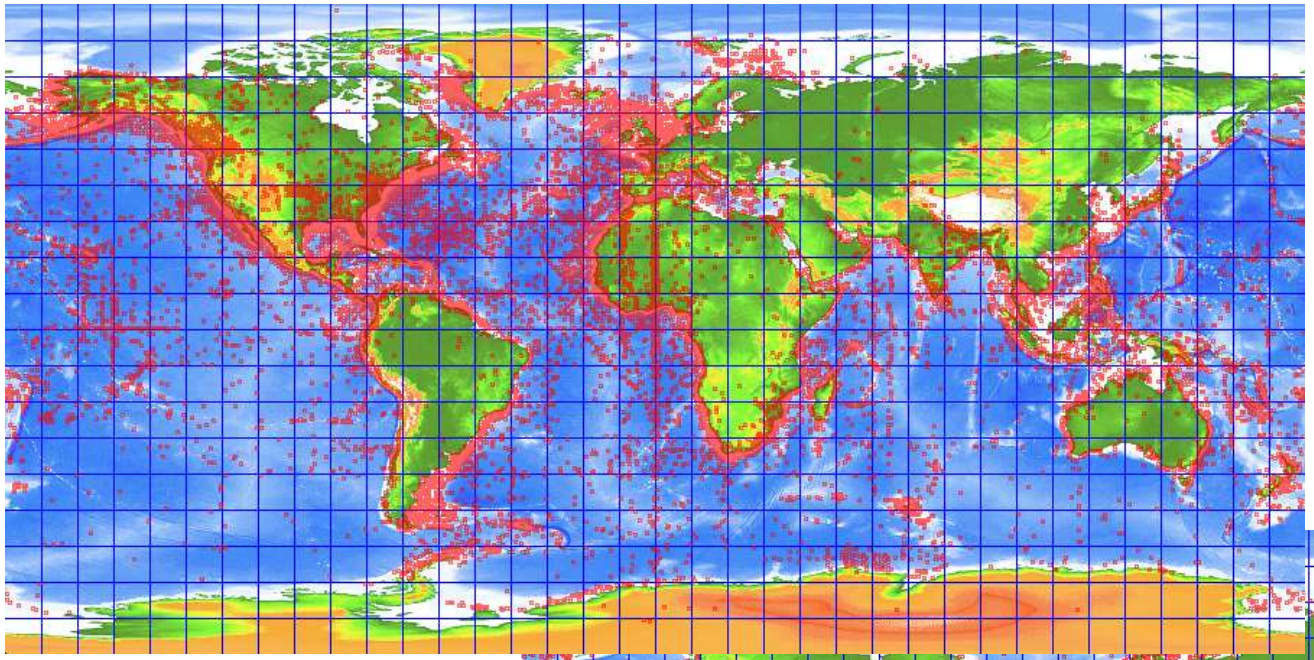
Status of marine biodiversity information from world oceans

Seabed – benthos
Open water – pelagos, plankton

November 2018

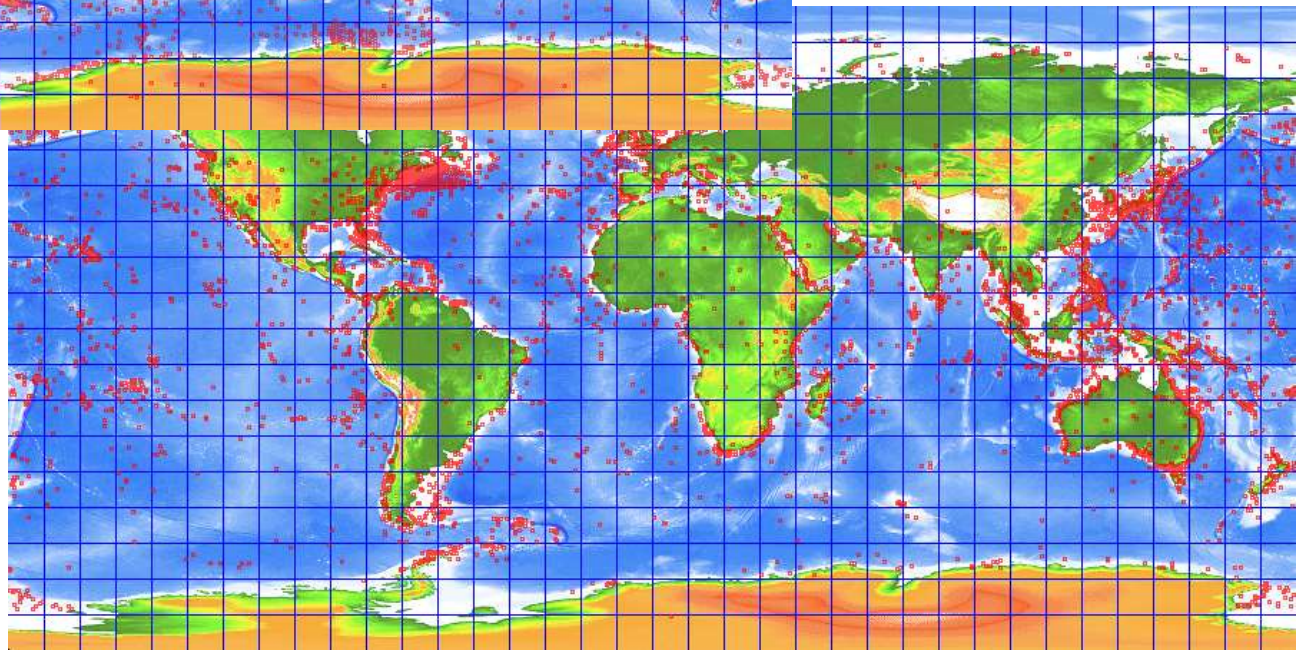


Most data belongs to fish & crustaceans



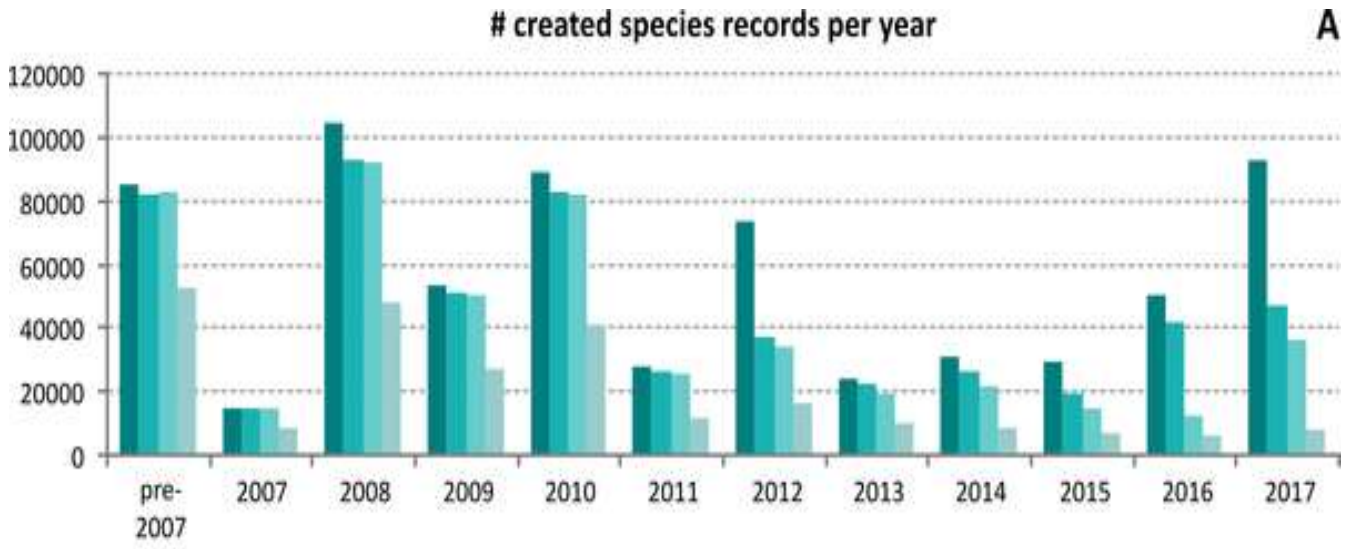
Fish

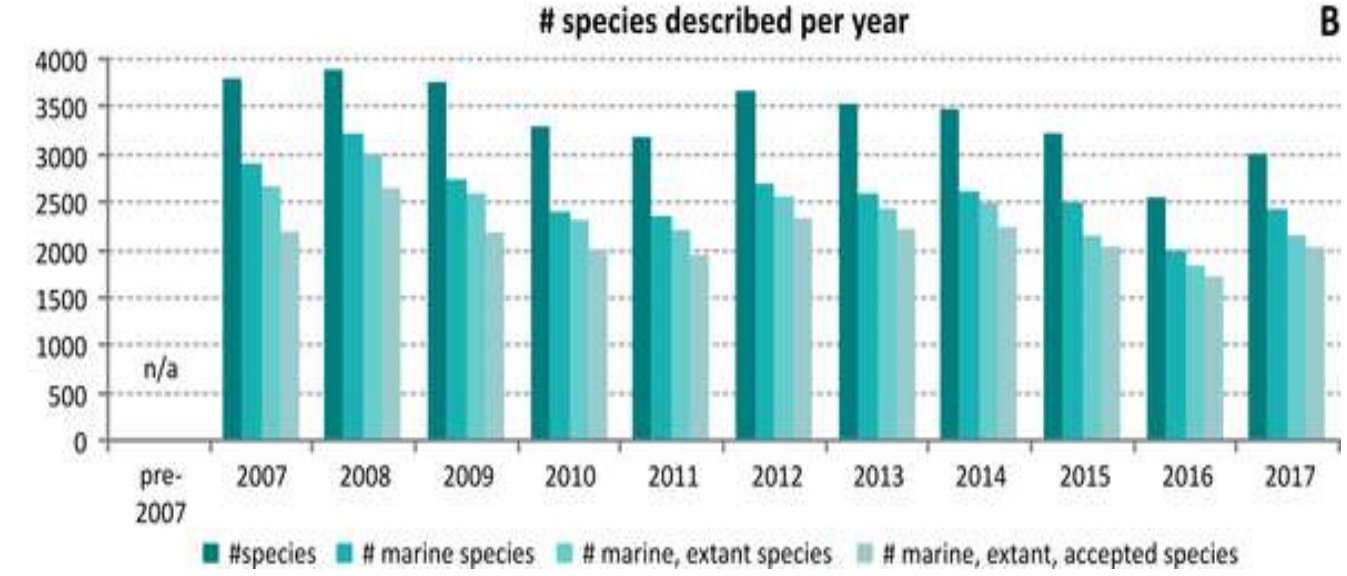
30,000 species described



Invertebrates

200,000 species described





The World Register of Marine Species (WoRMS) is a biodiversity information system designed as a global open-access inventory of the names of marine taxa. It contains **613 499** taxon names of which **243 081** are accepted marine species

The Duty to Protect

The development of science and the evolution of technology have enhanced knowledge of the ocean, its biodiversity, biotechnological and energetic potential as well as of the mineral resources of the marine soil and subsoil.

To protect and preserve the marine environment is not only a goal but a General Obligation under Part XII of UNCLOS (Art. 192)

"States have the right to exploit their natural resources pursuant their environmental policies and in accordance with their duty to protect and preserve the marine environment"

Some meaningful numbers

- Ours is an ocean planet: **70%** of it is covered by the sea
- Projected coastal population by 2025 : **6 billion**
- Number of people who rely on fisheries for direct employment, of which 87% are in Asia and the Pacific: **38 million**
- Marine pollution originating from land based sources: **80%**

Caring for what sustains

- **61%** of the world's total economic output comes from areas within 100 kilometers from the coast
- Marine tourism, marine fisheries, and acquaculture are estimated to provide global economic benefits worth **$161 billion, $80 billion and $57 billion, respectively**

Challenges

- **Overfishing** is the #1 challenge to the health of the marine ecosystem; species, as well as entire ecosystems are being lost.

- As a result, the overall ecological unity of our oceans are under stress and at risk of collapse.

- We are in risk of losing a valuable food source many depend upon for social, economical or dietary reasons.

Challenges … (conti..)

Loss of habitat : Marine ecosystems are experiencing high rates of habitat loss and degradation, and these processes are considered as a critical threat to marine biodiversity, second only to overfishing.

Approximately **20% of the world's coral reefs were lost** and an additional **20% degraded** in the last several decades of the twentieth century, as well as approximately **35% of mangrove area**

Invasive species: invasions harm not only the environment but also have industrial, social, recreational, and economic impacts

Unsustainable Fisheries

- **Overcapacity**: oversized fishing fleet take more than our oceans can sustainably support.
- **Unsustainable fishing methods** impact on the basic functioning of our marine ecosystems.
- **Unselective fishing practices and gear** cause destruction on non target species.
- **Bycatch / discards and bottom trawling** are examples of those practices.

Subsidies

Subsidies allow fleets to fish longer, harder and farther away than would be otherwise possible.

Eliminating harmful subsidies is the single greatest action that can be taken to protect the world's oceans.

IUU Fishing

- **Illegal fishing** : conducted by national or foreign vessels in waters (1)**under the jurisdiction of a State, without the permission of that State, or in contravention of its laws and regulations; (2)** conducted by vessels flying the flag of States **that are parties to a relevant regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization and by which the States are bound, or relevant provisions of the applicable international law**; or (3) **in violation of national laws or international obligations, including those undertaken by cooperating States to a relevant regional fisheries management organization**.
- **Unreported fishing** refers to fishing activities: which have not been reported, or have been misreported, to the relevant national authority, in contravention of national laws and regulations; or undertaken in the area of competence of a relevant regional fisheries management organization which have not been reported or have been misreported, in contravention of the reporting procedures of that organization.
- **Unregulated fishing** refers to fishing activities: in the area of application of a relevant regional fisheries management organization that are conducted by vessels without nationality, or by those flying the flag of a State not party to that organization, or by a fishing entity, in a manner that is not consistent with or contravenes the conservation and management measures of that organization; or in areas or for fish stocks in relation to which there are no applicable conservation or management measures and where such fishing activities are conducted in a manner inconsistent with State responsibilities for the conservation of living marine resources under international law.

Pollution

Nearly 80% of marine pollution originates on land; pollution accompanies most kinds of human activities, including offshore oil and gas production and marine oil transportation.

Traditional shipping and oil transportation routes are more exposed to the impacts of oil-polluted discharges from tankers and other vessels than other areas.

Ocean Acidification and Climate Change

- Caused by the ocean uptake of anthropogenic CO2 from the atmosphere
- Stringent CO2 mitigation measures would limit ocean acidification and global warming.
- The increase in acidity in the surface waters of the ocean is a consequence of the CO2 emissions may severely threaten the existence of various marine species.
- Most of the world's coastal cities were established during the last few millennia, a period when global sea level has been near constant. Since the mid-19th century, sea level has been rising, primarily as a result of human-induced climate change.

What can be done to protect the ocean?

- Implementation is the key word
- Eliminating harmful subsidies is the single greatest action that can be taken to protect the world's oceans.
- Complete negotiations underway since 2001 at the WTO, which comprises dedicated negotiation on fisheries subsidies as part of the Doha round.

I. THE 2030 AGENDA

15 Years **17 Goals** **169 Targets** **230 Indicators**

Sustainable Development Goals, Targets and Indicators

GOALS	TARGETS	INDICATORS
Goal 1: End poverty in all its forms everywhere	7	12
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	8	14
Goal 3: Ensure healthy lives and promote well-being for all at all ages	13	26
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	10	11
Goal 5: Achieve gender equality and empower all women and girls	9	14
Goal 6: Ensure availability and sustainable management of water and sanitation for all	8	11
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	5	6
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	12	17
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	8	12

Sustainable Development Goals, Targets and Global Indicators

GOALS	TARGETS	INDICATORS
Goal 10: Reduce inequality within and among countries	10	11
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	10	15
Goal 12: Ensure sustainable consumption and production patterns	11	13
Goal 13: Take urgent action to combat climate change and its impacts	5	7
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	10	10
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	12	14
Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	12	23
Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	19	25

Principles 5 and 6 of the Rio Declaration on Environment and Development focus on poverty eradication and reinforce the need to ensure that overfishing and habitat destruction do not deprive developing countries and the poor of the marine resources they are dependent upon

Principle 15 : "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

A matter of principles…

Principle 17: "Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority."

GA in Resolutions 61/105: "*Calls upon States to take action immediately, individually and through* regional fisheries management organizations and arrangements, and consistent with the precautionary approach and ecosystem approaches, to sustainably manage fish stocks and protect vulnerable marine ecosystems, including seamounts, hydrothermal vents and cold water corals, from destructive fishing practices, recognizing the immense importance and value of deep sea ecosystems and the biodiversity they contain;"

- Implement the FAO International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IUU) by 2004
- Implement the FAO International Plan of Action for the Management of fishing Capacity ;
- Eliminate subsidies
- Maintain and restore depleted fish stocks to levels that can produce their maximum sustainable yield on a urgent basis and where possible *no later than 2015*

Encourage the application of ecosystem approaches

Promote integrated coastal and ocean management

Advance the implementation of the Global Program of Action for the Protection of the Marine environment from Land Based Activities

And last but certainly not least…

Define the regime for biodiversity abnj

The protection of biodiversity in areas beyond national jurisdiction needs legal certainty hence the need to define the legal regime applicable to those resources.

UNCLOS provides the legal framework for the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction.

The role of the International Seabed Authority, established by UNCLOS, relating to marine biological diversity, including environmental protection and marine scientific research, is reflected in the Codes which have been developed to regulate mining in the AREA

Although the Convention on Biological Diversity has a complementary role, its jurisdictional scope applies only in the case of processes and activities undertaken by its Parties, regardless of where their effects occur

The symbiotic relationship that genetic resources have with non-living marine resources and other living resources in the surrounding water column should be noted

A regulatory mechanism, including the adoption of improved norms and/or an implementing agreement to the Convention, may become necessary to clarify matters such as the relationship between marine scientific research and bioprospecting.

The definition of a regime applicable, under UNCLOS, to biodiversity in abnj would enable the application of area based tools for the conservation and management of such resources.

A regulatory mechanism could also address the question of access to those resources and legal options for benefit-sharing, including non-monetary benefits, international cooperation in marine scientific research through the exchange, sharing and dissemination of information on research programs, their objectives and results, and cooperation in the transfer of marine technology.

India's action plan for implementaiton of SDG 14 (As reported by India in the High-Level political forum on sustainable Development, New York/July 2017)

1. Agenda on "Blue Revolution"
2. Tracking the levels of marine pollution along the country coastlines (COMAPS).
3. Oil spill management systems.
4. Integrated National Fisheries Action Plan 2016.
5. National Biodiversity Strategy & Action Plan
6. Sagarmala for port connectivity

Mangroves and Coral Reefs

India has 25 Marine Protected Areas in the peninsular region and 106 in islands collectively covering approximately 10,000 square km of the country's geographical areas.

Ensuring sustainability of Fisheries

More than 14.50 million people deped on fisheries for their livelihod.

In order to livelihood creation, potential fishing zone advisory programme, modernization and upgradation of fishing centre and banning of mechanised fishing in certain areas.

Blue revolution - align with integrated development and Management of Fisheries.

Integrated National Fisheries Action Plan 2016.

Maintenance of the ecological integrity of the marine environment.

Protection of coastal ecosystems

India ratified numerous international conventions related to the use of oceans and their resources, including the United Nations Convention on the Law of the Sea.

An online mechanism o prediction the movement of oil spills and oil spill advisory system launched in 2015.

Revised National Oil spill disaster contingency Plan 2015.

Marine Pollution - Coastal Ocean Monitoring and prediction System. for coastal processes ad monitor water quality.

Holistic development of islands and coastal areas. In 2016, the prime minister of India launched a flagship programme, Sagarmala, for promoting port connectivity, development and industrialization in a phased manner during 2015 - 2025.

Promoting coastal tourism is promoted to enabling access to better livelihood opportunities.

A final thought

- "The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat"

  Jacques Yves Cousteau

Thank you for listening

The United Nations has proclaimed a Decade of Ocean Science for Sustainable Development (2021-2030) to support efforts to **reverse the cycle of decline in ocean health** and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the Ocean.

The marine realm is the largest component of the Earth's system that stabilizes climate and support life on Earth and human well-being. However, the First World Ocean Assessment released in 2016 found that much of the ocean is now seriously degraded, with changes and losses in the structure, function and benefits from marine systems.

In addition, the impact of multiple stressors on the ocean is projected to increase as the human population grows towards the expected 9 billion by 2050.

Adaptation strategies and science-informed policy responses to global change are urgently needed.

Scientific understanding of the ocean's responses to pressures and management action is fundamental for sustainable development. Ocean observations and research are also essential to predict the consequences of change, design mitigation and guide adaptation.

As mandated by the UN General Assembly, the Intergovernmental Oceanographic Commission (IOC) of UNESCO will coordinate the Decade's preparatory process, inviting the global ocean community to plan for the next ten years in ocean science and technology to deliver, together, the ocean we need for the future we want!