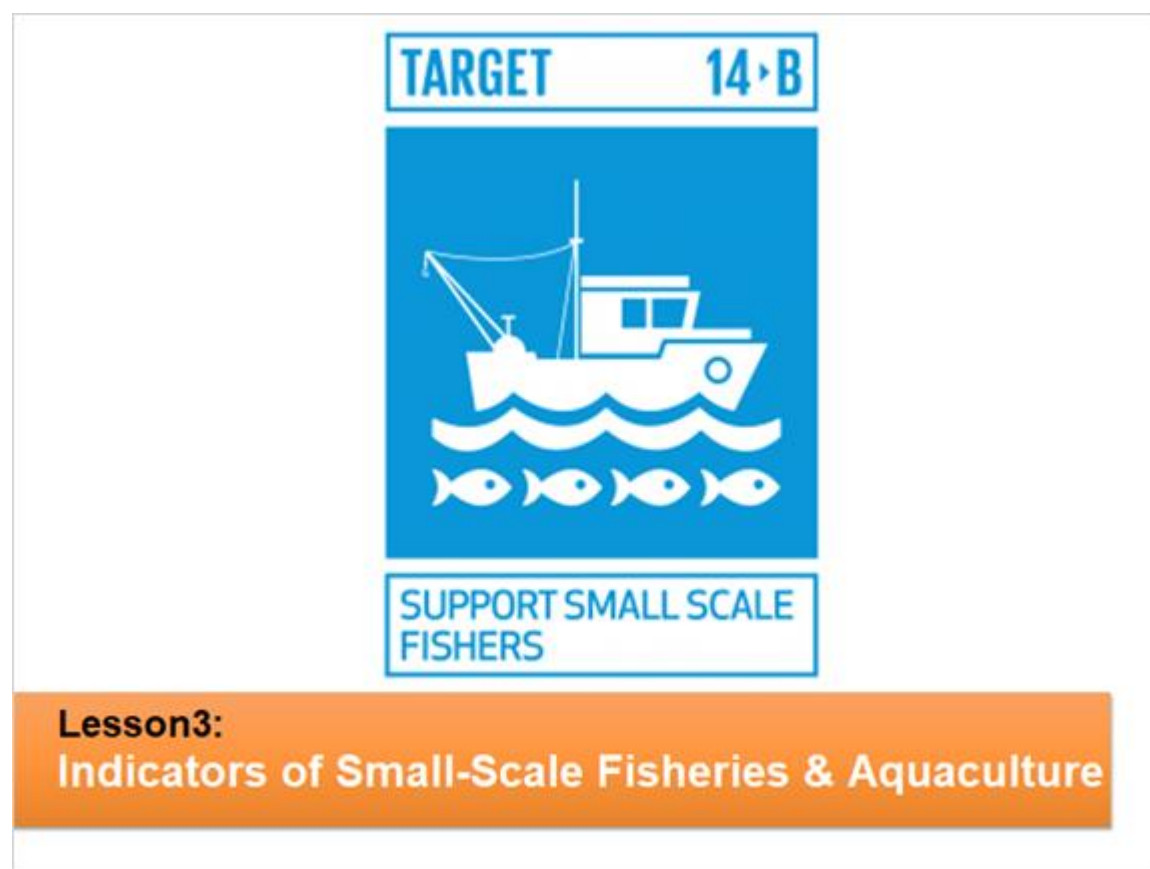


Fisheries and Aquaculture Statistics - Lesson3

Lesson3

3.1 Lesson3: Indicators of Small-Scale Fisheries & Aquaculture



Notes:

Indicators are needed to understand if the exclusive fishing rights comply with the duty of care imposed on them, and to check whether a straddling stock or highly migratory resource is exploited in compliance with the Law of the Sea and other relevant international instruments (such as the FAO Code of Conduct on Responsible Fishing). Indicators could also be used by NGOs and the public at large to assess the performance of a national policy or management system. In international trade and recent developments, indicators can also be used as a basis for an eco-certification and labelling

system for fisheries and fishery products as proposed by the World Wide Fund for Nature(WWF) (also known as World Wildlife Fund (WWF)) and an important worldwide fish trader (Unilever) in the framework of a Marine Stewardship Council.

3.2 Lesson3 Outline

The topics we would be learning are:

- 1 Fishery Indicators**
- 2 SGD Targets & Indicators for Fisheries**
- 3 Data Required for Indicators**



Notes:

This lesson improves our understanding of indicators related to small-scale fisheries and aquaculture. The production data of the fishery sector is capable of supporting economic growth, food security and conservation of aquatic resources.

3.3 Why do we need indicators in fisheries?

Why do we need indicators in fisheries?

- Indicators measure access rights aspects of the Sustainable Development Goal's (SDG's) target.
- Indicators reveal and monitor conditions and trends in the fishery sector.

Notes:

Indicators enhance monitoring of the sustainability of the fishery sector, fishery development policy and management performance in relation to the various components of the fishery system.

3.4 What work do indicators carry out in fisheries?

What work do indicators carry out in fisheries?

- a) establish cost-effective data collection systems for fisheries;
- b) monitor conditions and trends in the fishery sector;
- c) make inform decision making;
- d) create early warning systems.



Notes:

Indicators for management and decision-making must be identified with setting objectives through a participatory process and knowledge of the policy/management cycle using the indicators. Indicators could also be used to compare the trajectory of a fishery with a planned (target) trajectory.

3.5 The need for indicators in fisheries create the needs to:

The need for indicators in fisheries create the needs to:

a) develop more accurate information systems
updated in quasi real time



Notes:

There is a need for a simple and robust system to track instability through limited number of indicators with integrative properties.

3.6 The need for indicators in fisheries further creates the needs to (Cont.):

The need for indicators in fisheries further creates the needs to (Cont.):

- b) develop indicators of practical value for management, and sufficiently integrated and comparable across fisheries;
- c) Aggregate environmental, biological, economic and social indicators.

Notes:

The development of indicators, therefore, poses a significant challenge to countries, and in particular, to their research institutions.

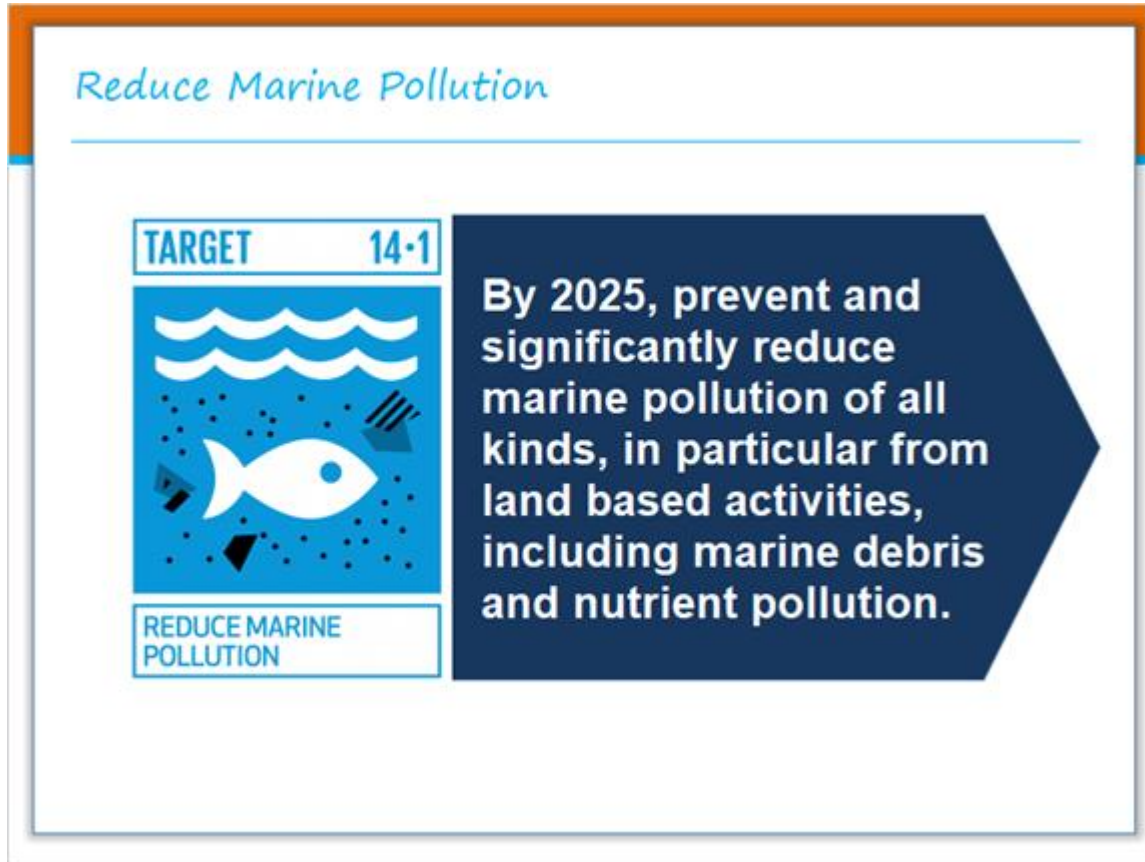
3.7 SDG Goal 14



Notes:

Let us learn more about the indicators for fisheries through SDG 14. The targets and indicators of Goal 14 are mentioned in the upcoming slides.

3.8 Reduce Marine Pollution



Notes:

There are 4 main types of marine litter: -

- 1) Plastic debris washed/deposited on beaches or shorelines (beach litter)
- 2) Plastic debris in the water column
- 3) Plastic debris on the seafloor/seabed
- 4) Plastic ingested by biota (e.g. sea birds)

3.9 Indicator 14.1.1

Indicator 14.1.1

Index of Coastal Eutrophication (ICEP) and Floating Plastics Debris Density



Notes:

The indicators for coastal eutrophication are:

1. Indicators of the causes of eutrophication (nutrient input and concentrations)
2. Indicators for the direct effects of eutrophication (e.g. Chlorophyll-a concentrations, biomass growth, water clarity/turbidity)
3. Indicators for the indirect effects of eutrophication (e.g. dissolved oxygen levels)
4. Modelled indicators for predicting coastal eutrophication (Index of Coastal Eutrophication Potential based on nutrient load ratios and expected influence on eutrophication due to land based activities)

3.10 Protect and Restore Ecosystems



Notes:

This target aims to conserve oceans, seas and marine resources for sustainable development and use. The importance of ecosystems and ecosystem approaches, as well as the need for enhancing their resilience, as the basis for sustainable management of the marine environment and resources has long been recognized. Sustainable management of coastal ecosystems requires sustained inclusion and participation of coastal communities.

3.11 Indicator 14.2.1.

Indicator 14.2.1.

Proportion of national exclusive economic zones using ecosystem-based management.

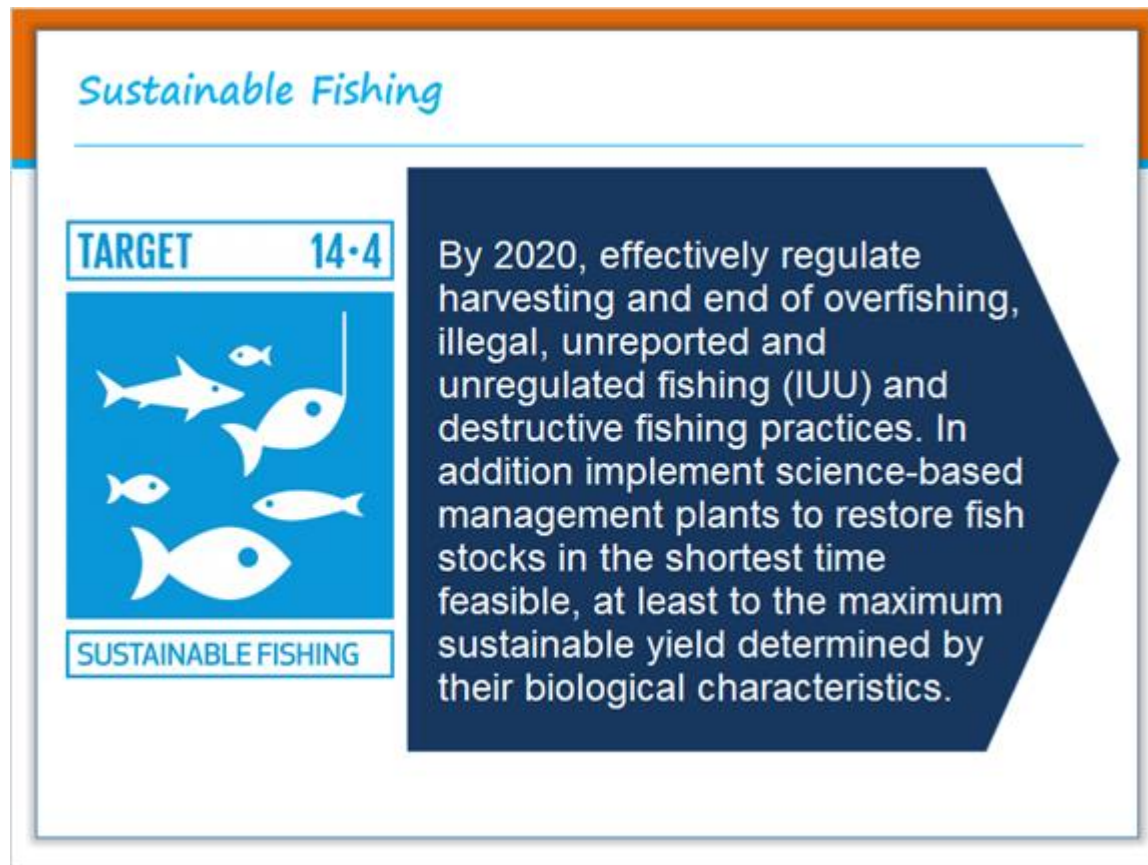


Notes: SDG 14.2 seeks to increase the proportion of national Exclusive Economic Zones managed by an ecosystem-based approach.

This indicator is classified as Tier 3 and therefore, internationally established methodology and standards are not available yet. The methodology and standards are being (or will be) developed or tested.

A review of existing indicators and methodologies currently used by Regional Seas Programmes and other key intergovernmental, international or regional bodies highlight a number of existing indicators for integrated management and planning strategies for socio-ecological systems. Some indicators included are based on the implementation status of marine-area based, integrated planning and management approaches, such as Marine/Maritime Spatial Planning (MSP) or Integrated Coastal Zone Management (ICZM). This indicates there are existing, current mechanisms reported to the Regional Seas Conventions that can be used for this indicator.

3.12 Sustainable Fishing



Notes:

Fish stock assessment science defines the long-term sustainability of fish resources and at the fishing level that produces the maximum sustainable level. The basic benchmark for the sustainability of fisheries is set by the UN Convention on the Law of the Sea (UNCLOS, Article 61(3))

3.13 Indicator 14.4.1

Indicator 14.4.1

Proportion of fish stocks within biological sustainable levels.



Notes:

Indicator 14.4.1 will measure progress towards SDG Target 14.4. This indicator measures the sustainability of the world's marine capture fisheries by abundance. A fish stock of at or greater than Maximum Sustainable Yield (MSY) is classified as biologically sustainable. In contrast, when abundance levels fall below the MSY level, the stock is considered biologically unsustainable.

3.14 End Subsidies Contributing to Overfishing

End Subsidies Contributing to Overfishing

TARGET

14.6



END SUBSIDIES CONTRIBUTING TO OVERFISHING

By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing (IUU fishing) and refrain from introducing new such subsidies, recognising that appropriate and effective special and different treatment for developing and least developed countries should be an integral part of the World Trade Organization (WTO) fisheries subsidies organisation.

Notes:

IUU fishing undermines national and regional efforts to conserve and manage fish stocks and, as a consequence, inhibits progress towards achieving the goals of long-term sustainability and responsibility set forth in the 1995 FAO Code of Responsible Fisheries. Fishers acting responsibly are placed at a great disadvantage and face related discrimination. To curb IUU fishing, a number of different international instruments have been developed over the years (e.g. the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU), etc.) focusing on implementation of different state responsibilities.

3.15 Indicator 14.6.1

Indicator 14.6.1

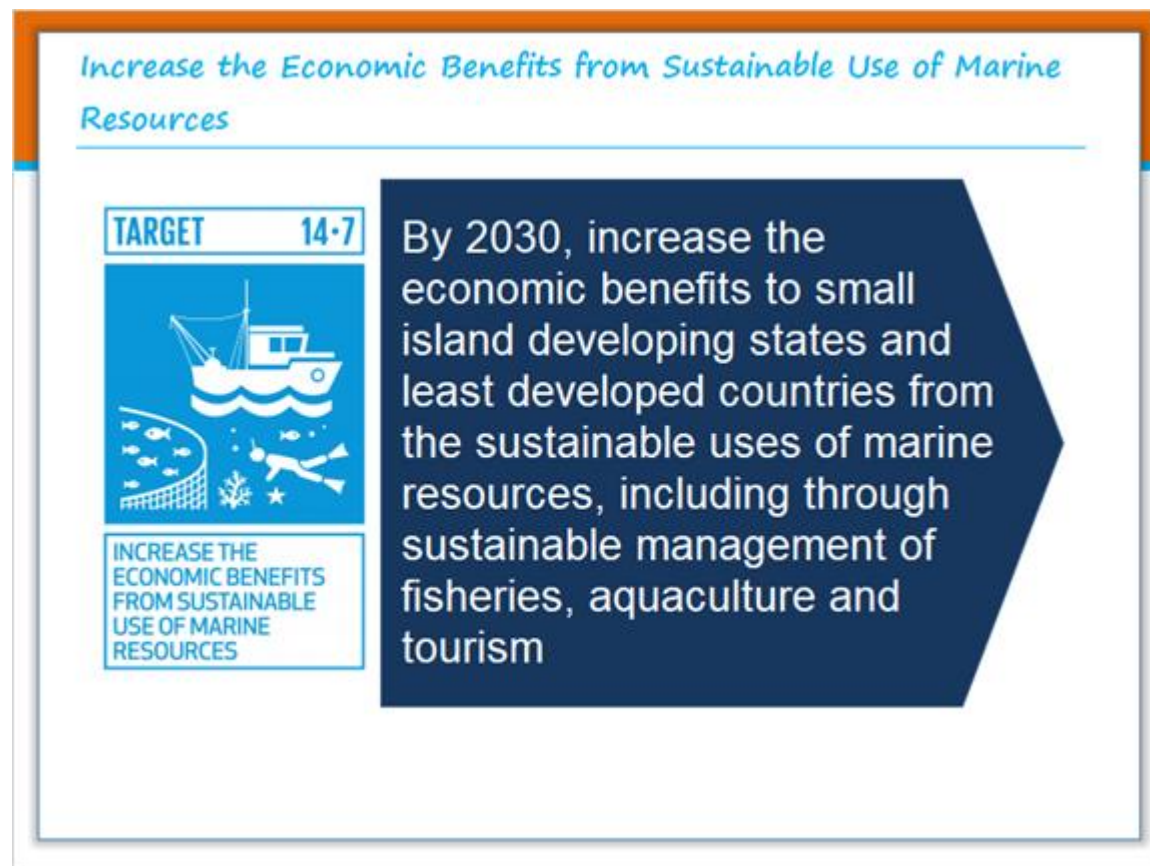
Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing (IUU).



Notes:

This indicator will measure progress towards SDG Target 14.6. The indicator focuses on the effort to combat illegal, unreported and unregulated fishing (IUU) through the implementation of key international instruments.

3.16 Increase the Economic Benefits from Sustainable Use of Marine Resources



Notes:

Trade in fish can contribute between 0.5 and 3 per cent of gross domestic product (GDP) of different country groupings. Least developed countries (LDCs) and small island developing states (SIDS) are the two groups where GDP contribution by fisheries is highest. In some LDCs and SIDS, fisheries can contribute as much as 10 per cent or more of GDP and fish consumption accounts for up to 90 percent of animal protein in their populations' diet (United Nations Environment Program (UNEP), United Nations Department for Economic and Social Affairs (DESA) and FAO 2012). Additionally, trade in fish is a fundamental source of foreign currency and a key factor in the trade balance for many LDCs and SIDS. United Nations Conference on Trade and Development (UNCTAD) 2012 data report, SIDS's exports of fish product exports reached 1.75 billion USD, about 7 per cent of their total exports.

1.17 Indicator 14.7.1

Indicator 14.7.1

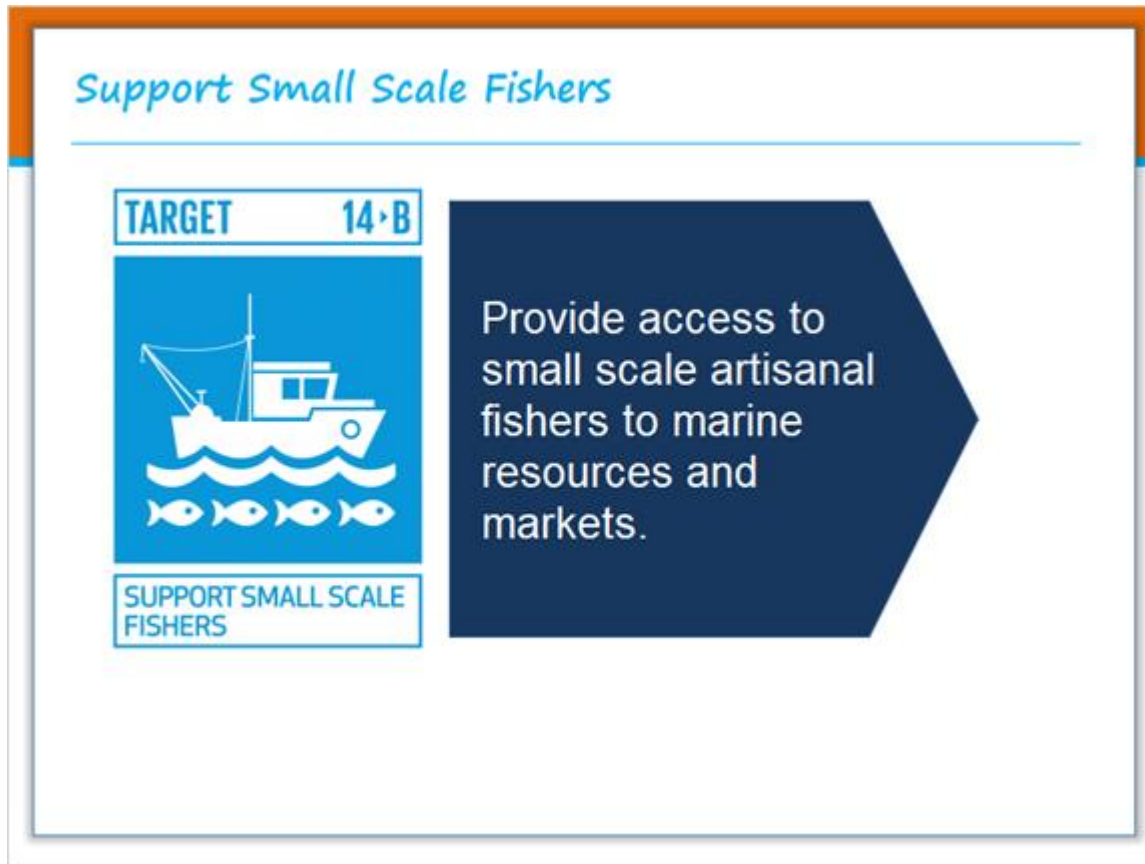
Sustainable fisheries on a proportion of GDP in small island developing states, least developed countries and all countries.



Notes:

Indicator 14.7.1 will measure progress towards SDG Target 14.7 . This indicator is intended to measure the value of sustainable fisheries. It is expressed as a percentage of the country's Gross Domestic Product (GDP). Data will be produced for all countries and aggregated for Small Island Developing States (SIDS) and Least Developed Countries (LDCs).

3.18 Support Small Scale Fishers



Notes:

Target 14.b focusses on small-scale fisheries' access to resources and markets. In order to guarantee secure access, an enabling environment is necessary, which recognizes and protects small-scale fisheries' rights. Such an enabling environment has three key features:

- 1) Appropriate legal, regulatory and policy framework
- 2) Specific initiatives to support small-scale fisheries
- 3) Institutional mechanisms allowing participation of small-scale fishery organizations in relevant processes.

3.19 Indicator 14.b.1

Indicator 14.b.1

Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognises and protects access rights for small scale fishers.



Notes:

This indicator measures the “access rights” aspect of the SDG Target 14.b. This indicator provides access rights for small-scale fishers. It is a composite indicator calculated on the basis of the efforts being made by countries to implement selected key provisions of the voluntary guidelines for securing sustainable small scale fisheries in the context of food security and reduction of poverty.

3.20 Indicator (Level wise)

Indicator (Level wise)

We need to sustain the following categories to support sustainable fisheries:

Nature



Life Support



Community



Notes:

There are several factors under each of the categories, and they are mentioned in the next slide.

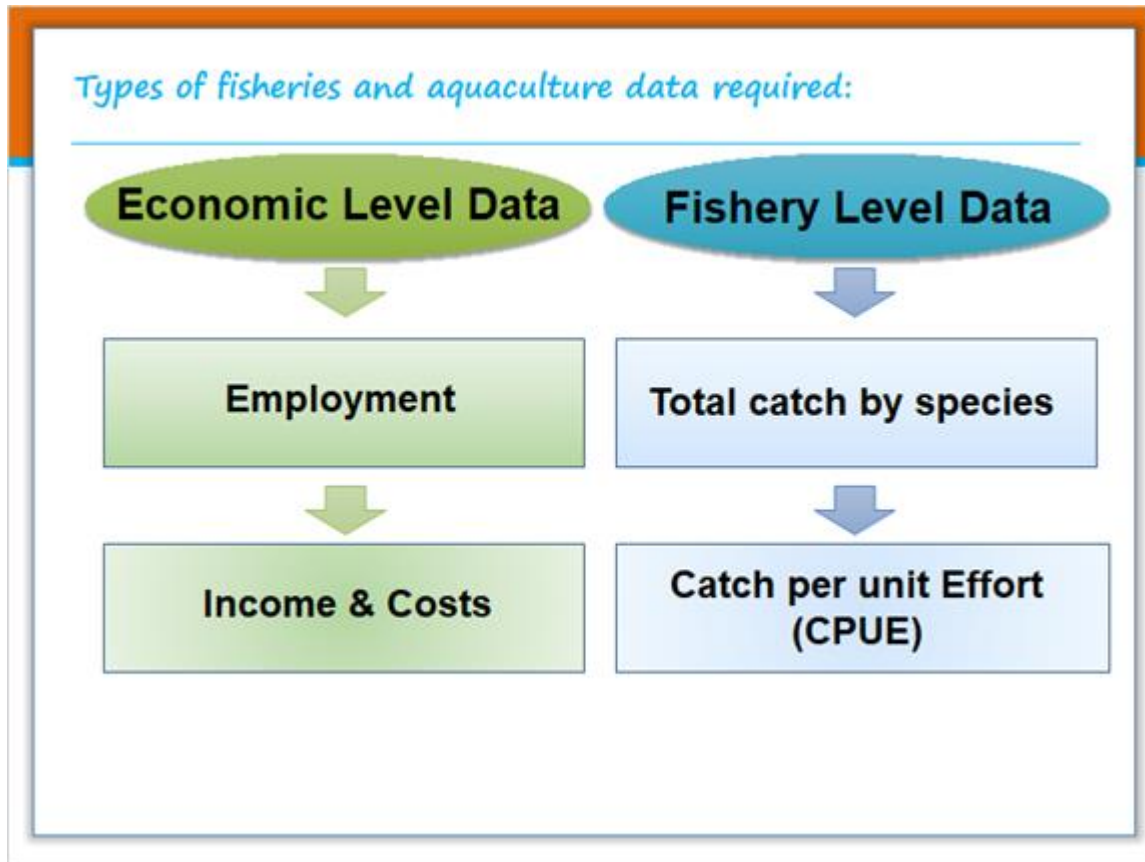
3.21 List of Sustainable Items

List of Sustainable Items		
Nature	Life Support	Community
<ul style="list-style-type: none"> • Earth • Biodiversity • Ecosystem 	<ul style="list-style-type: none"> • Ecosystem • Resources • Environment 	<ul style="list-style-type: none"> • Culture • Groups • Places
		

Notes:

The contribution of small scale fisheries and aquaculture for sustainable development include securing food, using water efficiently, diversifying livelihoods, generating local employment and income, fostering social harmony and empowering women. Small-scale fishers contribute to local food security, the alleviation of poverty and provision of livelihoods in the field of fisheries and aquaculture.

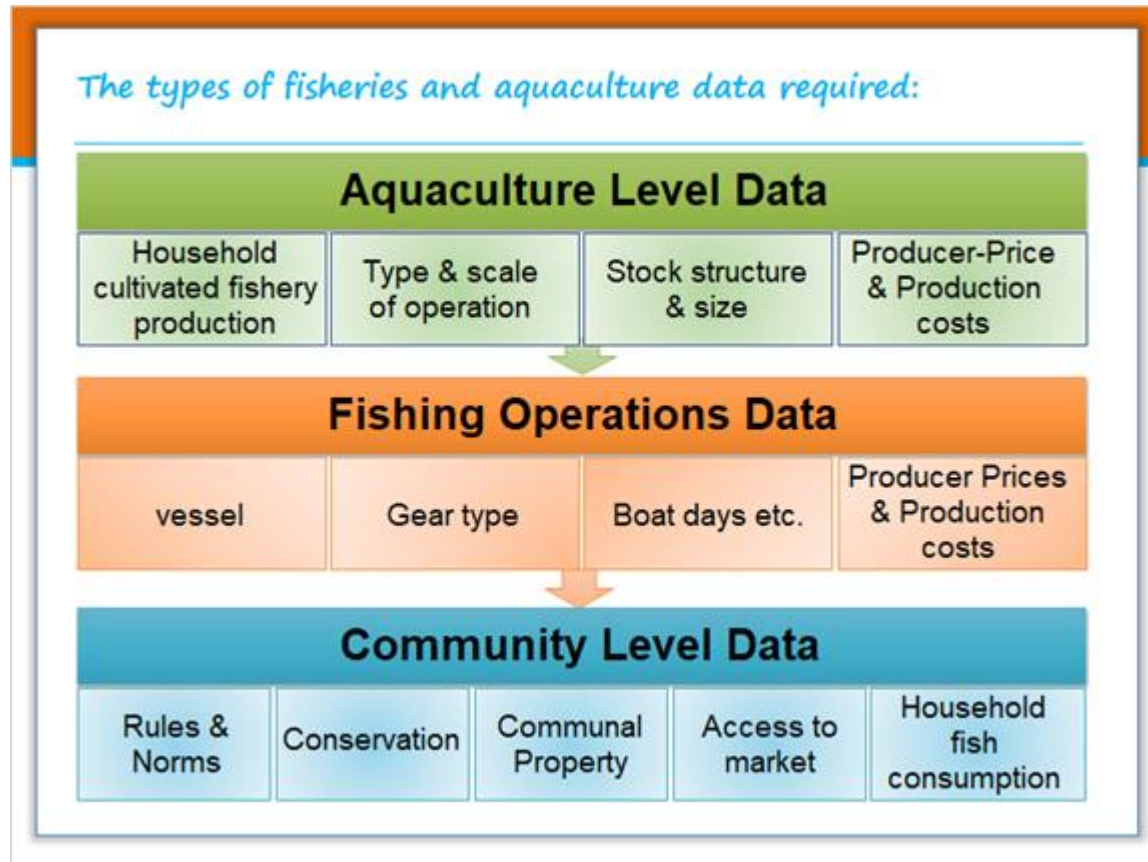
3.22 Types of fisheries and aquaculture data required:



Notes:

There is a need for developing statistical data at the national level for both inland and marine sectors. This slide tells us the type of data is required for economic level data and fishery level data.

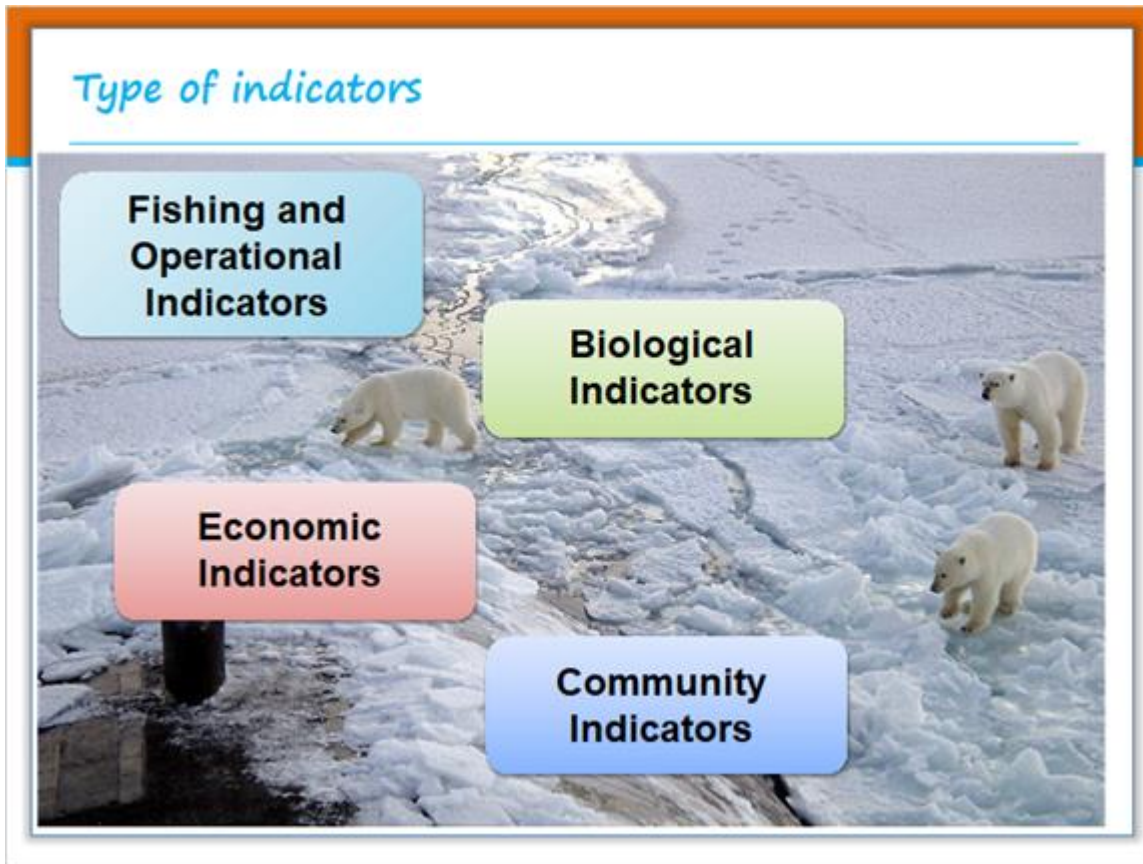
3.23 The types of fisheries and aquaculture data required:



Notes:

Data on aspects of fish biological diversity and stocks, and on socio-economic characteristics of household and fishing communities are required to be recorded. Accurate and timely information is required for policy matters regarding to fisheries and aquatic resources. This slide gives information for the type of data required for aquaculture level data, fishing operations data and community level data.

3.24 Type of indicators



Notes:

Indicators are required to determine how the objective of the sustainable development of fishery sector is achieved. There are a few items under these indicators we can consider mentioned in the following slide.

3.25 The list of various items under each indicator that we need to find



Notes:

Managing fisheries for sustainable development is a multidimensional and multi-level activity. It requires information and indicators well beyond fish stock and fishing activities.

3.26 Indicators provide information in the following ways

Indicators provide information in the following ways

They give information about an activity at a given scale (e.g. fish stock) or specific geographical region.

The information given for a unit of activity at one scale allows the activity to be considered in relation to another scale of activity. For example the fishing activity of a local fishing community may be appraised from overall pressure on certain fish stock in a broader context.

Notes:

Indicators also provide an operational tool in fishery management and server as a bridge between objective and management action.

A wider range of indicators are required to assess progress towards sustainable development, including indicators reflecting ecological, social, economic and institutional objectives.

3.27 Dimensions and their Criteria

Dimensions and their Criteria:			
Economy	Society	Ecology	Governance
<ul style="list-style-type: none"> • Harvest • Fisheries contribution to GDP • Investment in fishing fleets • Employment • Income 	<ul style="list-style-type: none"> • Employment/ Participation • Literacy • Consumption • Income • Fishing tradition 	<ul style="list-style-type: none"> • Catch structure • Exploitation Rates • Bio diversity • Direct effects of gears 	<ul style="list-style-type: none"> • Compliance regime • Property rights • Capacity to manage

Notes:

The criteria mentioned here are listed against economic, social and governance dimensions for the Sustainable Development Reference System (SDRS). One of the goals of SDRS is to bring together overlapping perspectives of all sustainable development dimensions.

3.28 The indicators of major importance

The indicators of major importance:

Sr. No.	Indicator	Description (if any)
Fishing & operational Indicators		
I)	CPUE	Catch per unit effort
II)	Gear/gear change	Types/changes of fishing gear used by fishers
III)	Size of vessel	
IV)	Mechanisation	
V)	Fishing Day/ trip	

Notes:

This table provides a brief overview of major indicators. Depending on the purpose and focus of the region/nation.

In many cases, indicators will be proxies for the underlying criteria of real interest, e.g. Catch Per Unit Effort (CPUE) is a measure of relative catch level and abundance as a measure of economic performance.

3.29 The indicators of major importance (continue)

The indicators of major importance (continued):

Sr. No.	Indicator	Description (if any)
Biological Indicators		
I)	Stock assessment	Stock assessment available for targeted stock
II)	Catch emission	Catch per unit emission of carbon dioxide
III)	Conservation participation	Issues of conservation measures

Notes:

This table shows the biological indicators.

3.30 The indicators of major importance (continue)

The indicators of major importance (continued):

Sr. No.	Indicator	Description (if any)
Economic Indicators		
I)	Employment (full time/ part time)	
II)	Labour use/Exploitation	Average hours worked as compared with legal maximum
III)	Exports	Catch exported
IV)	Prices	Producer prices of fishery product, aquaculture product, consumer prices of fish products
V)	Expenditure	Final expenditure including government expenditure, private investment
VI)	Cost of Labour	

Notes:

This table shows the economic indicators.

3.31 The indicators of major importance (continue)

The indicators of major importance (continued):

Sr. No.	Indicator	Description (if any)
Social/Community Indicators		
I)	Demographics of population	Sex, Age, Education etc.
II)	Community services	
III)	Fish consumption & Nutrition	
IV)	Distribution of nutritional benefits	
V)	Proportion of household fish consumption	

Notes:

This table shows the social/community indicators.

3.32 References

References

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Notes:

3.33 End of Lesson

End of Lesson



Congratulations!

You have successfully completed the interactive lecture of the **Lesson 3:**

TARGET 14-B



SUPPORT SMALL SCALE FISHERIES

Indicators of Small-Scale Fisheries & Aquaculture

Notes:
