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

Target 14.7: By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

Indicator 14.7.1: Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries

Institutional information

Organization:

Food and Agriculture Organization of the United Nations (FAO)

Concepts and definitions

Definitions:

This indicator expresses the value added of sustainable marine capture fisheries as a proportion of Gross Domestic Product (GDP).

Concepts:

The Gross Domestic Product (GDP) is the value of all final goods and services produced in an economy in a given period, which is equivalent to the sum of the value added (VA) from all sectors in an economy.

The value added of marine capture fisheries measures the value of fish harvested from marine stocks, minus the value of goods and services that are used in the production process (such as raw materials and utilities). It includes activities that are normally integrated into the process of production and occur at sea, such as fishing vessels which process or preserve their catch on board. However, it does not include the processing or preserving of fish when it occurs in land based facilities.

A fish stock is a subset of a species (fish, crustacean, mollusc, etc.) or a population inhabiting a geographical area and participating in the same reproductive process.

Maximum sustainable yield (MSY) is the highest theoretical equilibrium yield that can be continuously taken (on average) from a stock under existing (average) environmental conditions without significantly affecting the reproduction process. A stock fished at (MSY) is referred to as biologically sustainable, as it may remain stable or grow while sustaining losses from fishing and natural sources of mortality.

FAO Fishing Areas for Statistical Purposes are arbitrary areas to facilitate comparison of data, improving the possibilities of cooperation in statistical matters.[1]

The basic concepts associated with this indicator are part of the following international instruments and classification schemes:

The 1982 United Nations Convention on the Law of the Sea (UNCLOS)[2]

This instrument is the basis upon which all the subsequent instruments are built. UNCLOS defines the rights and responsibilities of nations concerning their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. It is a binding instrument, although its principles may also be applied by countries who are not a party to it.

The 1995 FAO Code of Conduct for Responsible Fisheries (CCRF)[3]

This instrument provides the necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment by establishing principles and standards applicable to the conservation, management, and development of all fisheries.

The FAO Code of Conduct for Responsible Fisheries relies on the concept of MSY when setting general principles and standards for fisheries management. Article 7.2.1 details how management measures should be "based on the best scientific evidence available" and "designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries."

United Nation's International Standard Classification of All Economic Activities (ISIC) [4].

All components of marine capture fisheries are clearly defined within section A 0311 ISIC revision

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1 FAO fishing areas for statistical purposes:

http://www.fao.org/cwp-on-fishery-statistics/handbook/general-concepts/major-fishing-areas-general/en/ ↑

2 UNCLOS: http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf ↑

3 CCRF: http://www.fao.org/3/v9878e/V9878E.pdf ↑

4 ISIC revision 4: https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf ↑

Rationale:

Although target 14.7 promotes the sustainable use of marine resources "including of fisheries, aquaculture and tourism", this indicator as selected by the IAEG-SDG focuses only on the sustainable use of marine resources by fisheries. The methodology hereby proposed by FAO thus measures sustainable fisheries as a percentage of GDP, in accordance to the agreed indicator formulation.

The share of value added from an industry in GDP is commonly used as an indication of its economic importance. Accordingly, the value added of marine capture fisheries indicates the prominence of marine fish related activities in the country's economy and its importance for livelihoods. Both GDP and the VA are measured in constant prices and domestic currency.

Stocks that are fished at sustainable levels are able to support the communities and industries which rely on them, without compromising reproduction and long-term sustainability. By contrast, a stock that is exploited to a point where it cannot replenish itself will ultimately provide sub-optimal long-term economic returns for stakeholders.

The status of a fish stock is evaluated through a various processes of assessment that commonly combines biological and statistical information to assess changes in its abundance in response to fishing, which also enables forecasting of future trends.

FAO has been periodically analysing and compiling the status of marine fish stocks combining the results of formal stock assessments available, including the assessments carried out at the regional level and a finer scale by national institutions and scientific working groups. For stocks that do not have a formal stock assessment, effort is made to collect relevant data and information from the literature, or from local experts, that could be used to infer stock status (for instance trends in catch rates, size frequency distribution of the catch, occasional fishing mortality estimates through surveys, etc.). The information from various sources is analysed and synthesized to classify the exploitation status of fish stocks. FAO monitoring of stocks will be enhanced with the implementation of SDG indicator 14.4.1, which tracks progress towards more fish stocks within biologically sustainable levels at national, regional (across FAO Major Fishing Areas) and global levels.

Based on FAO's monitoring of stocks at regional and global level, the percentage of fish resources that are within biologically sustainable levels has exhibited a downward trend from 90 percent in 1974 to 67 percent in 2015, while 33 percent are considered to be overexploited. Overexploitation not only has negative ecological consequences, but also reduces long-term fishery yields, which have adverse social and economic effects, particularly for dependent communities in developing countries and Small Island Developing States (SIDS).

Comments and limitations:

The indicator measures the value added of sustainable marine capture fisheries as a proportion of GDP. However, the vast majority of countries report only aggregated data for value added for the fisheries and aquaculture sector. To overcome this problem it is necessary to separate the value added for marine capture fisheries from the aggregated data. Preferably this would be done using the value of marine capture fisheries as a proxy. However, in the absence of value data, the quantity of marine capture fisheries as a proportion of total production is used as a proxy for the proportion of value added.

For marine capture fisheries, despite the expanded coverage of FAO's assessments in recent years, data deficiencies may lead to uncertainty as to the level of exploitation of a stock. While data limitations exist, the methodology employed by FAO seeks to eliminate discrepancies and provide a representative assessment of marine fish stocks. The time series for which stock assessment is available starts with the first public release of FAO stock assessment, in 2011 for each FAO Major Fishing area. FAO continues to release this information biennially.[8]

National fish stock assessments are only available for a few countries, and therefore are not globally or regionally representative. Therefore, the sustainability multiplier used in the compilation of this indicator is based on the average fish stock sustainability calculated by FAO for each Major Fishing Area. For each country, the sustainability multiplier will be the average sustainability weighted by the proportion of the quantity of marine capture for each respective fishing area in which the country performs fishing activities.

Currently, FAO aims to begin compiling country-level estimates for SDG indicator 14.4.1 (proportion of fish stocks within biologically sustainable levels) in 2020. Once these estimates become available, the computation method for the current indicator will use country-level estimates rather than estimates based on FAO Major Fishing Areas to determine the sustainability multiplier and hence estimate the value added of sustainable marine capture fisheries as a proportion of GDP.

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8 The most recent version of Review of the State of World Marine Fishery Resources which contains stock status is available at http://www.fao.org/docrep/015/i2389e/i2389e.pdf ↑

Methodology

At a country level, the contribution of sustainable marine capture fisheries to the GDP is calculated as follows:

a) The percentage contribution of fisheries and aquaculture to GDP is estimated by simply dividing the value added of fisheries and aquaculture by national GDP.

GDP from Fisheries and Aquaculture (%) = Value Added Fisheries and Aquaculture/GDP

$GDP_{FIA} = VA_{FIA}/GDP$

b) In order to disaggregate for the value added of marine capture fisheries and the value added of aquaculture, the quantity of fish produced from marine capture fisheries will be divided by total quantity of national production of fish, and then multiplied by the percentage of GDP from fisheries and aquaculture. As such, the quantity of production of marine capture fisheries is used as a proxy for the value of marine capture fisheries.

Value added of Marine Capture Fisheries proxy (%) =

GDP from Fisheries and Aquaculture x (Quantity of Marine Capture Fisheries/Total Quantity of Fish)

$VA_F = GDP_{FIA}\, x\, (Q_M/Q_T)$

c) The sustainability multiplier will be calculated based on the average sustainability published periodically for each FAO major marine fishing area.

For each country, the sustainability multiplier will be the average sustainability weighted by the proportion of the quantity of marine capture for each respective fishing area in which the country performs fishing activities. When a country fishes in only one FAO fishing area, its sustainability multiplier will be equal to the average sustainability of stocks in that area.

Sustainability multiplier = Sum of (Sustainability for Each region x ((Quantity fished from Each marine region/Total Quantity fished from All marine regions))

$$Sm = \sum_{i=1}^{n} S_i \times \frac{Q_i}{Q_N}$$

d) The value added of marine capture fisheries (b) will be adjusted by the sustainability multiplier (c) to get the sustainable marine capture fisheries as a percentage of GDP

Sustainable marine capture Fisheries as a % of GDP = Sustainability multiplier x Value Added marine Fisheries

$SuGDP_F = Sm\ x\ VA_F$

In summary, the computation method for GDP from sustainable marine capture fisheries may also be expressed as:

$$SuGDP_F = \sum_{i=1}^{n} S_i \frac{Q_i}{Q_N} \times \left(\frac{Q_M}{Q_T} \times \frac{VA_{FIA}}{GDP} \right)$$

Currently there are no disaggregation dimensions for this indicator.

Treatment of missing values:

- ***At country level:***

This indicator examines economic contribution from marine capture fisheries. If a country has no marine capture fisheries then the indicator is not calculated for that country.

No imputation is performed to derive estimates for countries or years when the value added of fisheries and aquaculture is not available.

FAO employs a wide spectrum of data and analysis to assess 500 fish stocks, which accounts for 70–80 percent of global landings. A detailed description of the approach used by FAO is available at the Review of the State of World Marine Fishery Resources.[9]

- ***At regional and global level:***

Not applicable. Regional aggregates will only be calculated based on contribution of sustainable fisheries to the GDP of those countries that have reported value added for fishing and aquaculture in a given year.

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9 The most recent version of Review of the State of World Marine Fishery Resources is available at http://www.fao.org/docrep/015/i2389e/i2389e.pdf ↑

Regional and global aggregates:

Regional and global aggregates will be generated by taking the average value of the indicator for countries in each SDG region.

When interpreting regional aggregates, it is important to consider that a country's geographic region is not necessarily indicative of how or where it fishes. Countries may fish in completely different fishing areas from others in their region, and therefore land-based regional aggregates can be inappropriate when dealing with marine resources.

Quality assurance:

In order to provide continuity of collection of data for value added for fisheries and aquaculture, and GDP across different versions of the Systems of National Accounts (SNA) and ISIC revisions, FAO Fisheries and Aquaculture Department ensures its consistency by the use of backwards and forwards linkages when collecting and validating the information.

While SDG indicator 14.7.1 is completely constructed on data already provided by countries to FAO, to the United Nations Statistics Division (UNSD) and to the Organization for Economic Cooperation

and Development (OECD), countries are invited to collaborate with FAO to increase the precision of their results, by providing otherwise unavailable inputs for the calculation of the indicator.

Data sources

Description:

The data series on the value added of fisheries and aquaculture and GDP are derived from UNSD National Accounts Official Country Data. In case of missing values, supplementary data is retrieved from OECD Annual National Accounts Database.

Economic data are specifically taken from:

- UNSD National Accounts Official Country Data[5]
- Table 2.1. Value added by industries at current prices (ISIC Rev. 3)
- Table 2.4. Value added by industries at current prices (ISIC Rev. 4)
- OECD Annual National Accounts[6]
    - Table 6. Value added and its components by activity, ISIC rev3
    - Table 6A. Value added and its components by activity, ISIC rev4

The base data from which stock status is modelled and a detailed description of the approach used by FAO is available in:

- FAO Review of the State of World Marine Fishery Resources[7]
- Tables D 1-D 19. State of exploitation and annual nominal catches.

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5 http://data.un.org/Explorer.aspx ↑

6 http://stats.oecd.org/ ↑

7 http://www.fao.org/docrep/015/i2389e/i2389e.pdf ↑

Data availability

Description:

The indicator may be calculated based on currently available data for 128 countries which have marine capture fisheries and have reported the value added of fisheries and aquaculture at least once since 2011. This includes 35 SIDS, 68 developing countries and 23 least developed countries.

Breakdown of country data availability by region, starting in 2011:

	2011	2013	2015	Overall coverage

Global	126	122	111	128
Developing	68	67	60	68
Least Developed Countries	20	18	18	23
SIDS	35	33	30	35
Africa	26	25	23	29
Northern Africa	2	1	1	2
Sub-Saharan Africa	24	24	22	27
Eastern Africa	6	7	7	7
Middle Africa	6	6	5	6
Southern Africa	2	2	2	2
Western Africa	10	9	8	12
Americas	36	36	31	36
Latin America and the Caribbean	32	32	28	32
Caribbean	16	16	13	16
Latin America	16	16	15	16

Northern America	4	4	3	4
Asia	22	22	22	22
Central Asia	0	0	0	0
Eastern Asia	1	1	1	1
Southern Asia	6	6	6	6
South-Eastern Asia	8	8	8	8
Western Asia	7	7	7	7
Europe	29	28	26	30
Eastern Europe	5	4	4	5
Northern Europe	11	11	10	11
Southern Europe	9	9	8	9
Western Europe	4	4	4	4
Oceania	12	10	9	12
Australia and New Zealand	1	1	1	1

Melanesia	4	2	2	4
Micronesia	3	3	3	3
Polynesia	4	4	3	4

Time series:

Regional state of the world's marine fish stock: 2011, 2013 and 2015

Value added from UNSD: from 1990 to 2017

Calendar

Data collection:

Data for GDP and value added is retrieved by FAO from UNSD (or the OECD in case of missing values) once a year every February.

FAO compiles and releases stock status information biennially in the SOFIA publication. When data reported by countries for SDG indicator 14.4.1 ("proportion of fish stocks within biologically sustainable levels") becomes available it will be used to replace the current sustainability multiplier for SDG indicator 14.7.1.

Data release:

New data for this indicator is expected to be released biennially in March.

Data providers

National governmental agencies reporting to:

- Food and Agriculture Organization of the United Nations (FAO).
- United Nations Statistics Division (UNSD).
- The Organization for Economic Cooperation and Development (OECD).

Data compilers

Food and Agriculture Organization of the United Nations.

References

Sustainable Development Goal 14.7.1: http://www.fao.org/sustainable-development-goals/indicators/1471/en

FAO. 2018. Fishery and Aquaculture Statistics. Global capture production 1950-2016 (FishstatJ). In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2018. www.fao.org/fishery/statistics/software/fishstatj/en

FAO. 2018. FAO yearbook. Fishery and Aquaculture Statistics 2016. Rome: http://www.fao.org/fishery/static/Yearbook/YB2016_USBcard/index.htm

FAO. 2018. The State of World Fisheries and Aquaculture 2018 - Meeting the sustainable development goals. Rome: http://www.fao.org/3/i9540en/I9540EN.pdf

FAO. 2011. Review of the State of World Marine Fishery Resources. Rome: http://www.fao.org/docrep/015/i2389e/i2389e.pdf

FAO. 1995. Code of Conduct for Responsible Fisheries. Rome: http://www.fao.org/3/a-v9878e.pdf

ICTSD. 2018. Overfishing, Overfished Stocks, and the Current WTO Negotiations on Fisheries Subsidies: https://www.ictsd.org/themes/environment/research/overfishing-overfished-stocks-and-the-current-wto-negotiations-on

OECD Annual National Accounts: http://stats.oecd.org/

The United Nations International Standard Industrial Classification of All Economic Activities, revision 4: https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf

The United Nations International Standard Industrial Classification of All Economic Activities, revision 4: https://unstats.un.org/unsd/statcom/doc02/isic.pdf

System of National Accounts 2008 - 2008 SNA: https://unstats.un.org/unsd/nationalaccount/sna2008.asp

System of National Accounts 1993 - 1993 SNA: https://unstats.un.org/unsd/nationalaccount/sna1993.asp

System of National Accounts 1968 - 1968 SNA: https://unstats.un.org/unsd/nationalaccount/docs/1968SNA.pdf

Related indicators

Linkages with other goals and targets: SDG 1, SDG 2, SDG 8 (in particular 8.1 and 8.4), SDG 12, SDG 13, SDG 14 (in particular 14.4.1)