Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Target 14.4: By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics
Indicator 14.4.1: Proportion of fish stocks within biologically sustainable levels

Institutional information

Organization(s):

Food and Agriculture Organization of the United Nations (FAO)

Concepts and definitions

Definition:

The indicator Proportion of fish stocks within biologically sustainable levels measures the sustainability of the world's marine capture fisheries by their abundance. A fish stock of which abundance is at or greater than the level, that can produce the maximum sustainable yield (MSY) is classified as biologically sustainable. In contrast, when abundance falls below the MSY level, the stock is considered biologically unsustainable.

Rationale:

The indicator measure the sustainability of fish resources based on two major considerations: yield and reproduction. When a stock is fished biologically sustainable, it produces good yield without impairing the stock's reproductivity, reaching a good balance between human use and ecological conservation.

The proportion is just calculated based on stock numbers, without weighting either by its production volume or stock abundance, that is every fish stock is considered of the same importance.

Concepts:

Fish stock assessment science defines the long term sustainability of fish resources as their abundance is fished at the level that produces the maximum sustainable level. The basic benchmarks for the sustainability of fisheries are set by the UN Convention on the Law of the Sea (UNCLOS, Article 61(3)).

Comments and limitations:

The indicator measures the sustainability of fishery resources very well, and is an end-result measure of Target 14.2. However, its derivation is not only data hungry, but also technically demanding as it needs stock assessment. This is also the reason why there is nodata at country level.

Methodology

Computation Method:

Fishery sustainability is defined based on stock abundance. To know stock abundance, one needs to carry out stock assessment that uses fish catch statistics, fishing effort data and biological information and fit the data to a population dynamics model. After completing stock assessment for all stocks concerned, fish stocks that have abundance at or above the level associated with the maximum sustainable yield are counted as biologically sustainable, and otherwise are considered as overfished.

Disaggregation:

Disaggregation by country is not possible for the moment.

Treatment of missing values:

- At country level

  No interpolation is carried out for missing data.

- At regional and global levels

  A fixed number of fish stocks is monitored and assessed in terms of their stock.

Sources of discrepancies:

NA, as there is no national data.

Methods and guidance available to countries for the compilation of the data at the national level:

The concept of “within biologically sustainable levels” means that abundance of the fish stock is at or higher than the level that can produce the maximum sustainable yield.

We estimated 584 fish stocks around world since 1974, representing 70% of global landings. Each stock was estimated using the method described in FAO Technical Paper 569 (http://www.fao.org/docrep/015/i2389e/i2389e.pdf). If the stock has abundance below the level that can produce maximum sustainable yield, it was counted as overfished. The indicator measures the % of the assessed stocks are within biologically sustainable levels.

However, no such assessments have been done at country level and no methods and guidance of assessment at country level have been established because stock assessment requires numerical modelling skills and is highly data demanding so that the majority of developing countries do not have the capacity of carrying out its own stock assessment.

Quality assurance:

NA

Data Sources

Stock assessment needs several different kinds of data that come from different sources. For example, catch data are often reported to FAO by member countries, but fishing effort data and other biological data may come from other sources. A great effort must be made to collect data that are needed for stock assessment. Also, it is worth noting that this indicator cannot be directly calculated from the data, but only through stock assessment which is a mathematical modelling process.

Data Availability

Description:

The indicator has global data from 1974 to 2013. There is not systematic country data available. Regional breakdown by continent is impossible as fish live in the sea. However, it is possible to bread it down to oceans or by FAO statistical regions.

Time series:

From 1974 to 2013

Calendar

Data collection:

2013, 2015 and so on (every another year)

Data release:

2013, 2015 and so on (every another year).

Data providers

FAO

Data compilers

FAO

References

URL:

http://www.fao.org

References:

http://www.fao.org/docrep/015/i2389e/i2389e00.htm