



SIAP Training Program Supporting the Monitoring of the Sustainable Development Goals (SDGs) 2030 in the Asia-Pacific region

SDG Indicators under FAO Custodianship

Dorian Kalamvrezos Navarro
Programme Advisor, Office of the Chief Statistician



GOAL 14. CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT



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

- **14.4.1** Proportion of fish stocks within biologically sustainable levels

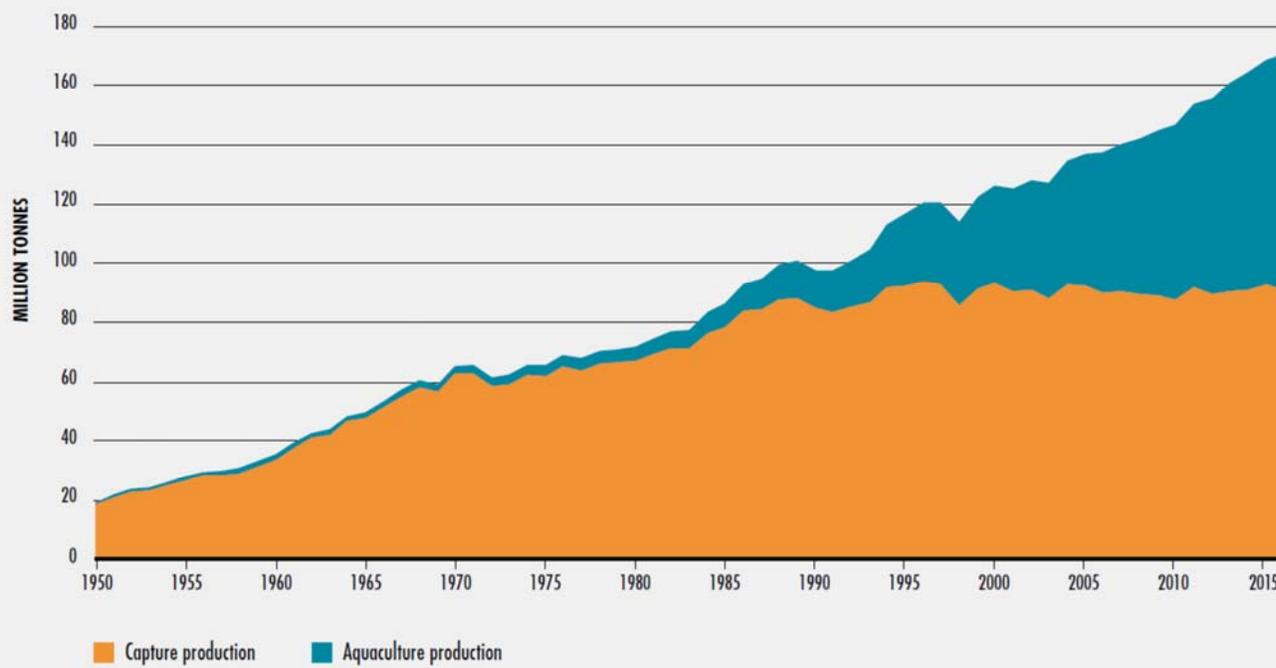
IMPORTANCE OF GLOBAL FISHERIES

- Fisheries and aquaculture are a vital source of nutritious food and protein for billions
- Worldwide some 3.2 billion people receive 20 percent of their daily animal protein intake from fish
- In 2014, 57 million people worked in the primary sector of capture fisheries, the vast majority in small-scale fisheries
- Including ancillary activities (e.g. processing and packaging) and dependants, these sectors support the livelihoods of some 820 million people around the world

IMPORTANCE OF GLOBAL FISHERIES

- In per capita terms, food fish consumption grew from 9.0 kg in 1961 to 20.2 kg in 2015
- In 2014, for the first time ever, the world's population consumed more farmed fish than wild-caught fish.
- The share of world fish production utilized for direct human consumption has increased significantly in recent decades, up from 67 percent in the 1960s to 87 percent
- In 2016, about 35 percent of global fish production entered international trade, with exports valued at USD 143 billion (of which 76 billion were from developing countries).

WORLD CAPTURE FISHERIES AND AQUACULTURE PRODUCTION



Global fish production¹ peaked at about 171 million tonnes in 2016, with aquaculture representing 47 percent of the total and 53 percent if non-food uses (including reduction to fishmeal and fish oil) are excluded.



GLOBAL FISHERY STATISTICS

| (million tonnes) | 2011 | 2016 |
|--------------------------|-------------|-------------|
| Inland capture | 10.7 | 11.6 |
| Marine capture | 81.5 | 79.3 |
| Total capture | 92.2 | 92.6 |
| Inland aquaculture | 38.6 | 51.4 |
| Marine aquaculture | 23.2 | 28.7 |
| Total aquaculture | 61.8 | 80.0 |

CHALLENGES OF THE FISHERY SECTOR

- The bulk of capture fisheries production comes from coastal waters, where both the productivity and quality of fish stocks are severely affected by pollution.
- Fleet overcapacities result in large economic losses - estimated at USD 50 billion/year - through inefficient utilization of resources that otherwise could support economic development and growth.
- Overfishing: Almost a third of marine fish stocks were fished at biologically unsustainable levels in 2013 (FAO SOFIA) and the decreasing trend is worrying
- Illegal, unreported and unregulated (IUU) fishing weighs in at around 11 million to 26 million tonnes each year [on 5 June 2018, first International Day against IUU fishing was celebrated]

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- **14.4.1** Proportion of fish stocks within biologically sustainable levels (Tier I)

METHODOLOGY

- The indicator builds on the already established MDG indicator 7.4
- Measures the percentage of the assessed stocks within biologically sustainable levels
- ‘*Within biologically sustainable levels*’ means the abundance of the fish stock that is at or higher than the level that can produce the maximum sustainable yield (MSY)
- The basic benchmarks for the sustainability of fisheries are set by the UN Convention on the Law of the Sea (UNCLOS, Article 61(3))
- FAO has monitored the state of the world’s fishery stocks since 1974, classifying about 584 species every two or three years (these species assessed account for 70-80% of global catch) – FAO SOFIA (The State of World Fisheries and Aquaculture)

METHODOLOGY

What is a stock?

- A **stock** refers to a unit of fish that is harvested and/or managed. This unit is typically defined by geographic location, and may or may not correspond to an individual population.
- A **fish population** is a group of single interbreeding individuals of the same species located in a given area.
- Often a population is composed of one or more stocks defined by management constraints (e.g., jurisdictional boundaries) and/or biology.

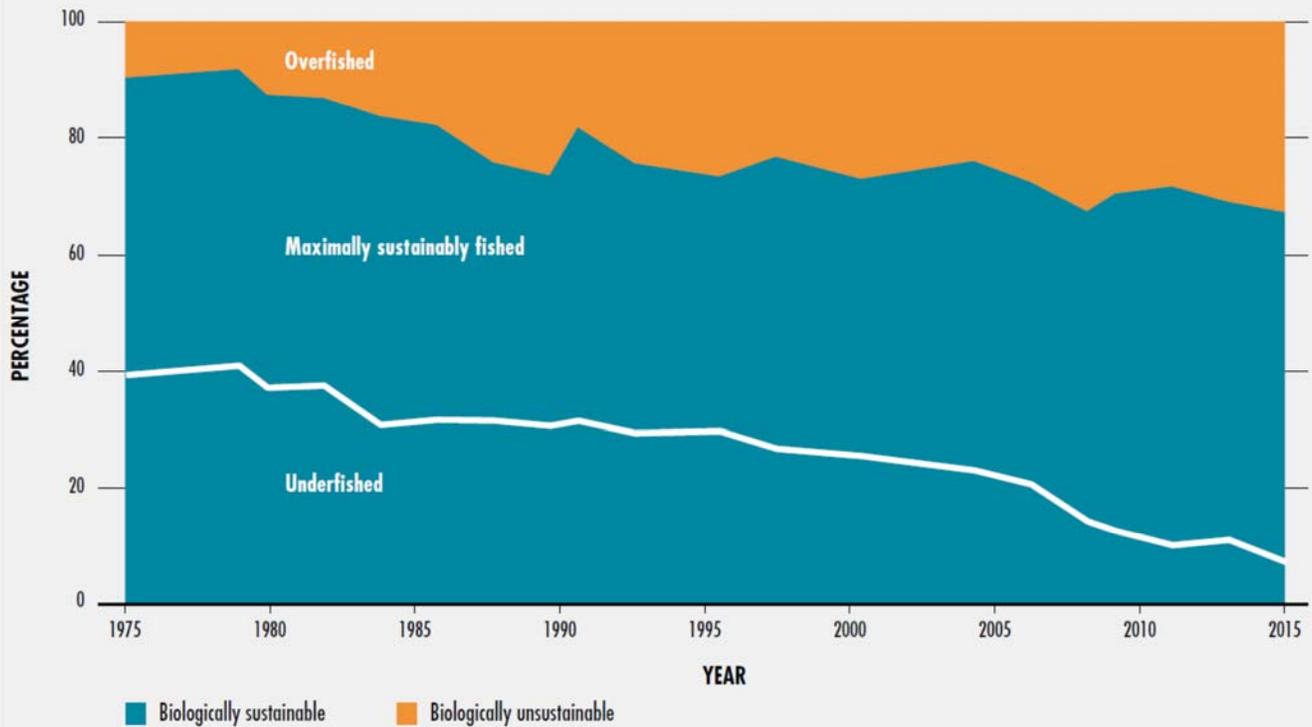
METHODOLOGY

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

METHODOLOGY

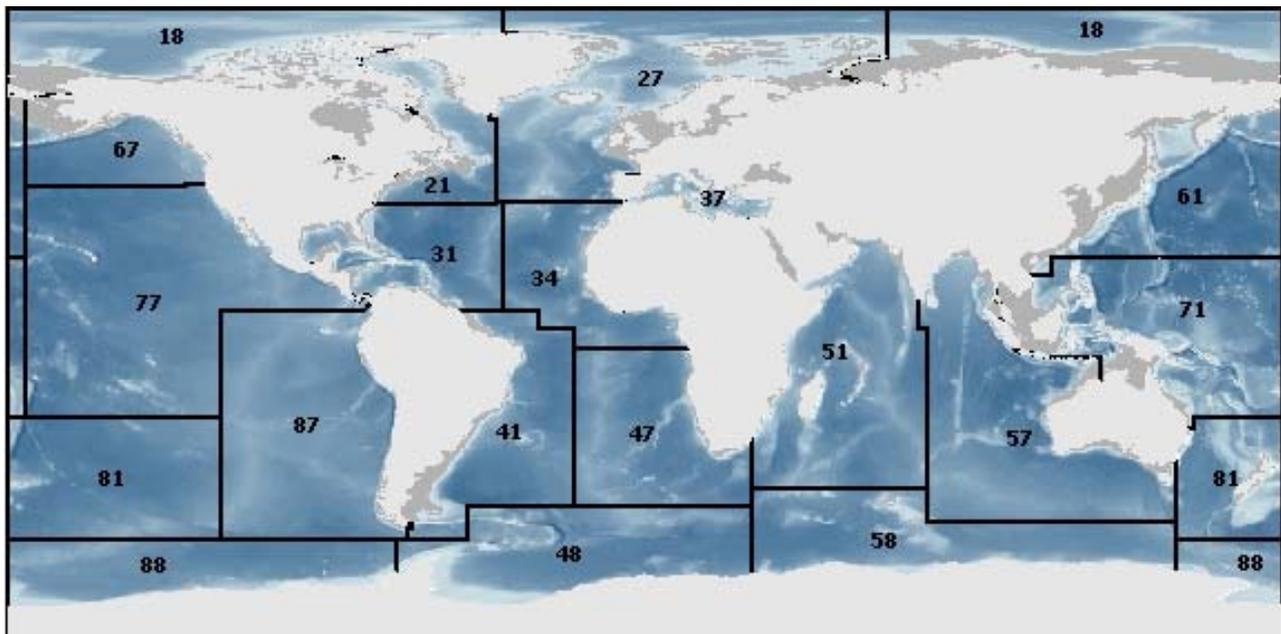
- Fishery sustainability is defined based on **stock abundance**.
- To know stock abundance, one needs to carry out **stock assessment** that uses fish **catch statistics, fishing effort data, biological information** and **surrogate biomass measures** and fit the data to a **population dynamics model**.
- 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.

GLOBAL TRENDS IN THE STATE OF THE WORLD'S MARINE FISH STOCKS, 1974–2015

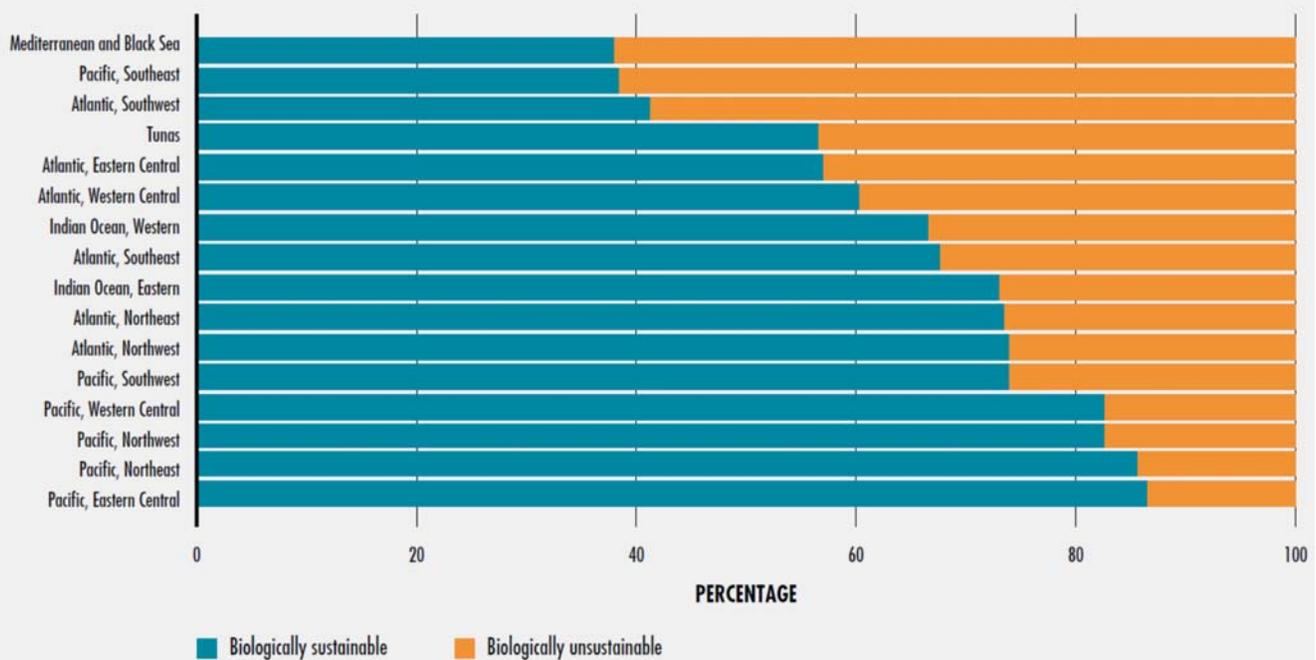


The fraction of fish stocks that are within biologically sustainable levels has exhibited a decreasing trend from 90.0 percent in 1974 to 66.9 percent in 2015

DISAGGREGATED DATA AVAILABLE FOR FAO MAJOR FISHING AREAS



PERCENTAGES OF STOCKS FISHED AT BIOLOGICALLY SUSTAINABLE AND UNSUSTAINABLE LEVELS BY FAO STATISTICAL AREA, 2015



NOTE: Tuna stocks are singled out as they are largely migratory and straddling across statistical areas.



DATA SOURCES

- Assessments on stock status is provided by the cooperation with regional fishery bodies (RFBs) and FAO member countries
- Catch data are often reported to FAO by member countries, but fishing effort data and other biological data usually come from regional fishery management organizations.
- Global capture production can be accessed here:
<http://www.fao.org/fishery/statistics/global-capture-production/en>



FAO FIRMS – THE FISHERIES AND RESOURCES MONITORING SYSTEM

- Access to a wide range of high-quality information on the global monitoring and management of fishery marine resources
- <http://firms.fao.org/firms/summaries/en>
- An information sharing partnership to facilitate the monitoring of stocks status among:
 - 14 International organizations
 - 19 Regional Fishery Bodies (RFBs)
- Monitoring is based on inventories of stocks and fisheries
- Each stock inventoried include information on the identification of single marine resources/stocks plus the indicators of Stock State and total catch (or landings)



FAO FIRMS – THE FISHERIES AND RESOURCES MONITORING SYSTEM

- FIRMS database currently covers:
 - ✓ shared stocks under RFBs mandates
 - ✓ national stocks / assessment units
 - ✓ status of national fisheries

A map viewer tool is also available:

<http://firms.fao.org/firms/stocks-fisheries-map-viewer>

REPORTING ON NATIONAL STOCKS

- Currently, SDG indicator 14.4.1 is only available at global level. However, FAO is developing new methods to allow for country reporting of fish stock sustainability status. This will entail:
 - ✓ A selection of species and identification of national stock units - national inventories of relevant fish stocks
 - ✓ Individual assessment of fish stocks **and their sources of assessment (national, RFBs, peer-reviewed,..)**
 - ✓ The proportion of sustainable fish stocks is compiled in time/space **at regional and global levels in** consistent ways

REPORTING ON NATIONAL STOCKS

- Low capacities in developing countries for assessing individual stocks
 - ✓ traditional assessment methods are based on mathematical models
 - ✓ challenge in determining which methods to apply / identifying who will do the assessment
- Catch / effort data not of sufficient quality
 - ✓ catch often not available by species ; fishing effort data often not available by fleet segment
 - ✓ geographic distribution often not precise enough
 - ✓ if available, time series are often short or difficult to reconstitute consistently in long term

REPORTING ON NATIONAL STOCKS

- Determining individual stock status will require:
 - ✓ countries assess themselves the status of selected stocks in waters under their jurisdiction
 - ✓ countries are fully engaged and delegate the assessment of other selected stocks e.g. as part of RFB process
 - ✓ countries will be consulted and should be in a position to understand why stocks are presented in a given status

14.4.1: HOW FAO CAN SUPPORT

- Identification of a suitable set of stock assessment methods in Data Poor situations
 - Workshop organized in Rome in November 2017, with the participation of **one Asia-Pacific countries:**

| | |
|--------------|-------|
| MUKTHA MENON | INDIA |
|--------------|-------|

- Workshop to be organized in Rome in February 2019 on a unified methodology for the stock assessment

14.4.1: OUTLINE OF NEXT STEPS

- Ongoing development of an e-training curriculum to be published by April 2019 (Course includes guidelines on the monitoring / reporting framework)
- Pilot phase to test the questionnaire (May-June 2019) (potential countries in Asia-Pacific)
- Dispatch the questionnaire by July 2019 and appointment of focal points / institutions (technical and research) involved in the process
- First submission of data by countries by September 2019

GOAL 14. CONSERVE AND SUSTAINABLY USE THE OCEANS, SEAS AND MARINE RESOURCES FOR SUSTAINABLE DEVELOPMENT



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

- **SDG indicator 14.7.1** Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries

OVERVIEW OF METHODOLOGICAL CHALLENGES

- Extensive technical consultations and revisions took place to establish methodology
- In consultation with Small Island Developing States, FAO started a reflection on a surrogate indicator that would:
 - ✓ better reflect the target
 - ✓ be feasible in terms of data collection

OVERVIEW OF METHODOLOGICAL CHALLENGES

- **Last version** of methodology relies on datasets collected through the System of National Accounts (SNA).
- This refers to **fisheries and aquaculture valued added to GDP** by the contribution of country (but without reference to sustainability).
- This data is available to FAO for 120 countries
- Even though the SNA sets out fairly straightforward procedures, in practice its application can vary. Use of this indicator would require data consistency, both over time and across countries.

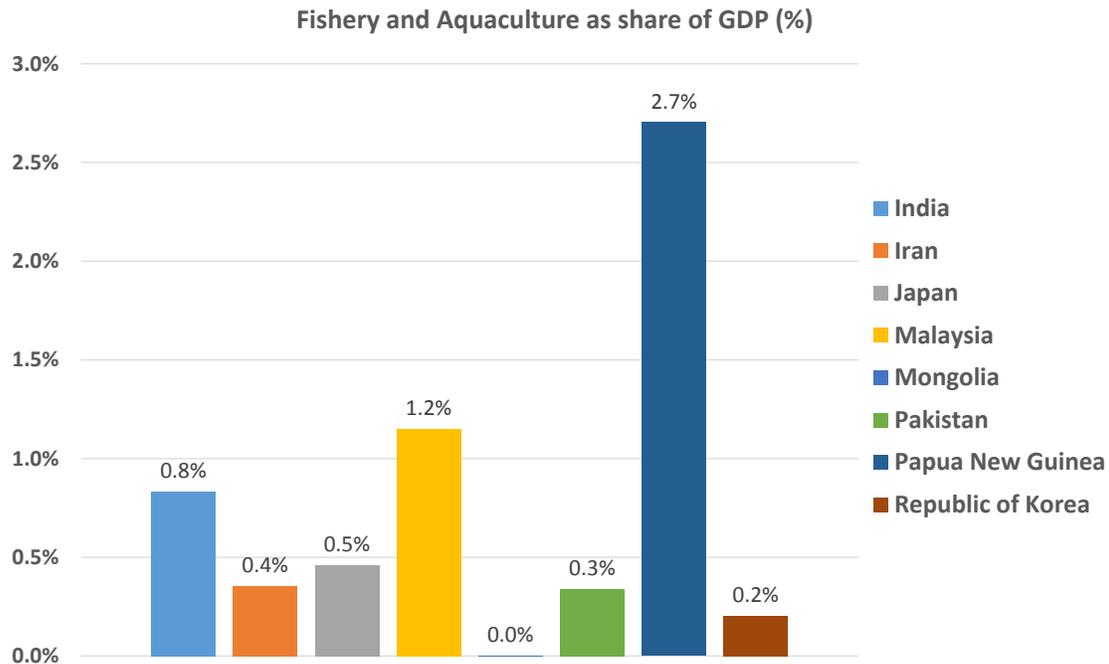
OVERVIEW OF METHODOLOGICAL CHALLENGES

- SNA datasets do not take into account sustainability criteria when estimating the contribution of fisheries and aquaculture to GDP, for this **a sustainability multiplier** will be applied for capture fisheries production (non-aquaculture production).
- Sustainability multiplier **will be** extracted from outputs of SDG 14.4.1, as the average of the status of fish stocks for FAO fishing areas

CONTRIBUTION BY FISHERY AND AQUACULTURE TO GDP IN ASIA PACIFIC COUNTRIES

| Country | Time Period | Fishery and Aquaculture share of GDP(%) |
|-------------------|-------------|---|
| India | 1993-2014 | 0.8% |
| Iran | 1992-2013 | 0.4% |
| Japan | 1980-1989 | 0.5% |
| Malaysia | 2010-2014 | 1.2% |
| Mongolia | 2000-2014 | 0.0% |
| Pakistan | 2006-2015 | 0.3% |
| Papua New Guinea | 1997-2006 | 2.7% |
| Republic of Korea | 1970-2008 | 0.2% |

CONTRIBUTION BY FISHERY AND AQUACULTURE TO GDP IN ASIA PACIFIC COUNTRIES



ADDITIONAL INDICATORS

- Two potential additional indicators have been proposed for target 14.7 within the context of the 2020 comprehensive review:
 - ✓ The economic impact of sustainable fisheries, aquaculture, tourism and other coastal and marine resources uses
 - ✓ The productivity of aquaculture
- FAO has already sent feedback to the IAEG-SDG
 - ✓ Unclear how to assess “economic impact”, if not again as *value added* in the same approach as 14.7.1.
 - ✓ 90% of aquaculture is concentrated in Asia and measuring of aquaculture productivity is extremely complicated because it is not clear which input could be used (area, feed, wild stock).



THANK YOU

DorianKalamvrezos.Navarro@fao.org

For more detailed information please see:

- <http://www.fao.org/sustainable-development-goals/indicators/1441/en/>
- <http://www.fao.org/sustainable-development-goals/indicators/1471/en/>