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TRADE IN FISHERIES AND AQUACULTURE SERVICES - DATA COLLECTION AND ASSESSMENT



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**TRADE IN FISHERIES AND AQUACULTURE SERVICES
DATA COLLECTION AND ASSESSMENT**

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EXECUTIVE SUMMARY

As one of the oldest economic activities, fisheries and aquaculture plays a key role in fostering economic growth and employment in numerous countries, especially developing and least-developed countries. Although plenty of data on the volume of marine and freshwater fish products are readily available from several international, regional and national sources, the same cannot be said about trade in fisheries and aquaculture services.

This report aims at helping FAO identify the existing data sources and gaps to conduct a meaningful assessment on international trade in fisheries and aquaculture services, and streamline the classification of fisheries and aquaculture services by assessing international classification systems used for trade in services. It does so as part of a larger package that can be used to develop a Best Practice Review on trade in fisheries and aquaculture services.

The fisheries and aquaculture value chain can be generally described as comprising 3 main phases of production (pre-harvesting, production - harvesting or farming, and post-harvesting) and involves a wide variety of services.

The diverse localization of fish production sites and the emergence of global value chains imply that services relating to fisheries and aquaculture production may be supplied both locally and by foreign suppliers, depending on technical capacity and competitive advantage considerations on the part of the service beneficiary.

Fisheries access arrangements could be considered as a form of an international supply of services, although issues arise with respect to its classification under the General Agreement on Trade in Services (GATS), and the remuneration of foreign suppliers by the coastal states.

The most important services classifications systems currently in use can be divided into two categories: (i) *Product-based*, which includes the UN Central Product Classification (CPC), the WTO Services Sectoral Classification (W/120), the IMF Balance of Payments and International Investment Position Manual (BPM6), and the Extended Balance of Payments Services Classification (EBOPS2010); (ii) *Activity-based*, which includes International Standard Industrial Classification of All Economic Activities (ISIC).

These classification systems present two essential drawbacks: (i) a lack of consensus on how to treat services supplied throughout the fisheries and aquaculture value chains; and (ii) a lack of transparency on terminology and related scope of coverage of category items. On a positive note, all existing services classification frameworks may accommodate FAO's need for a more disaggregated approach to classifying fisheries and aquaculture services that goes beyond the more general (and opaque) categories of 'services incidental to' fishing/aquaculture, 'support services to' fishing/aquaculture and the like.

The most reliable sources of data on international trade in services are provided by a number of international and regional organizations, namely the WTO, the UN, the World Bank, OECD, and EUROSTAT. Among the countries that make extensive use of foreign fishing access arrangements and provide rather reliable and accurate government statistics are the China, EU, Japan, New Zealand, and the US.

A closer look at these databases shows that they all fall short of properly capturing the extent of trade in fisheries and aquaculture services, partly due to the very aggregated nature of the data presented, which makes it impossible to discern data ascribable to fisheries and aquaculture from those attributable to services supplied in relation to other activities, and to the inadequacy and opacity of the classification systems they rely on to categorize the data collected. Overall, only the OECD, EU and New Zealand are able to capture a very limited picture of the actual volume of fisheries and aquaculture services,

which can be partly explained by the fact that they all rely on the 2010 Extended Balance of Payments Services Classification (EBOPS 2010) to compile data.

It is suggested that FAO, in its quest to address statistical gaps and streamline the classification of fisheries and aquaculture services, considers the following:

- Discussing with statisticians from the main international organizations (e.g. IMF, UN, OECD) about the meaning of terms such as ‘incidental’, ‘related to’, ‘support to’ and the like, with a view to clarify to what extent certain services categories can include the list of fisheries and aquaculture services identified in Tables 1 and 2 of this report;
- Discussing with statisticians from the OECD, Eurostat, and the New Zealand statistical agency to better understand how they actually capture data on ‘services incidental to agriculture, forestry and fishing’ and, in particular, on ‘services incidental to fishing’;
- Using the CPC system and its classification criteria as a potential benchmark for classifying fisheries and aquaculture services at a level of disaggregation that can better serve the need to properly identify and assess different fisheries and aquaculture services along their respective supply chains for analytical and policy purposes; and
- Examining in detail how remuneration of foreign service suppliers occurs under fishing access arrangements with a view to better understand what data should be collected to capture how trade in fisheries and aquaculture services occurs under these type of agreements.

1. INTRODUCTION

As one of the oldest economic activities, fisheries and aquaculture plays a key role in fostering economic growth and employment in numerous countries, especially developing and least-developed countries (LDCs). Although plenty of data on the volume of marine and freshwater fish products are readily available from several international, regional and national sources, little information can be found on the impact and volume of trade in fisheries and aquaculture services.

In 2018 the Expert Consultation on Trade in Fisheries Services, mandated by the FAO Sub-Committee on Fish Trade (COFI:FT) to undertake a detailed review of the trade in fisheries and related services, found that various classification systems being used for statistics on international trade in services do not cover the fisheries and aquaculture services comprehensively and in a manner that allows meaningful collection and reporting of relevant data.

Reasons for the importance of assessing fisheries and aquaculture services and, especially, their international trade via properly collected data abound. First of all, they are a key component of the fisheries and aquaculture supply chain, contributing to countries' gross domestic product (GDP), and adding value to the goods produced. Also trade in fisheries and aquaculture services enable supplying countries to transfer knowledge, technology and to provide highly skilled labour to service-scarce countries, contributing to increase productivity abroad, thus allowing economic gains for both the recipient and the supplier countries, including the possibility of the latter obtaining more diversified imported fish products at a lower cost. A data-based assessment of the value and impact of trade in fisheries and aquaculture services would help understand better the fisheries services and resulting implications and opportunities for producing and trading them at various point along the pre-harvest, harvest, and post-harvest value chains. It would also help guide policy decisions, allowing countries, whether as beneficiaries or suppliers of fisheries and aquaculture services, to design and regulate their activities with a view to maximizing the resulting welfare gains.¹ This would also help ensure that the interests of local stakeholders are safeguarded, in particular vulnerable groups like small-scale operators, as well as addressing gender policies².

According to the FAO COFI:FT,

“For recipient countries, the fulfilment of a specific need regarding trade in fisheries services can create a new frontier for increasing their fish production in a more competitive and sustainable way, enhancing their participation in international trade, and empowering the participants throughout the supply chain. These benefits are particularly tangible if services are provided in highly specific spillover sectors, such as training, research and development, operations, infrastructure, vessels and personnel. [...] the development of a framework would allow a more precise identification of traded services within the sector (such as the activities performed, the amount being traded, its origin and destination, among other information). Also, a framework would permit studies on how trade in fisheries services behaves worldwide: its flows; its potential to affect the sector, employment and the economy; any particular growth in demand for a particular service; market opportunities, among other issues”³.

Considering all the above, and based on the work carried out so far under the mandate of FAO COFI:IT, this report aims at helping FAO identify the existing data sources and gaps to conduct a meaningful assessment on international trade in fisheries and aquaculture services, and streamline the classification of fisheries and aquaculture services by assessing international classification systems used for trade in services. It does so as part of a larger package that can be used to develop a Best Practice Review on trade in fisheries and aquaculture services.

¹ Will, Emma (2018), Trade in Fisheries Services, FAO; FAO (2016), Trade in Fisheries Services, Sub-Committee on Fish Trade, 15th Session, Agadir 22-26 February.

² FAO (2018a), Expert Consultation on Trade in Fisheries Services, Rome.

³ FAO (2016), op. cit, pp. 3-4

In order to achieve its intended purposes, this report first offers a brief overview and description of the fisheries and aquaculture value chain, detailing the different phases of the production process and the potential services involved, in order to understand the nature and role of fisheries and aquaculture services and identify the main (priority) fisheries and aquaculture services, with a view to determine where efforts to classify and fill statistical data gaps should focus. It then proceeds with an analysis of how the existing services classification systems upon which most statistical databases rely on address trade in fisheries and aquaculture services, with a view to find potential common criteria that could be used to build a comprehensive classification system for these specific services and better understand why potential gaps in data collection, reporting and assessment exist for international trade in fisheries and aquaculture services.

The report continues with an exploration of existing sources of data on fisheries and aquaculture services at international, regional and national level and any regional schemes or initiatives on fisheries and aquaculture services data collection and reporting that could be used as best-practice for the global approach. A concluding section providing policy recommendations on how to set a framework for data collection and reporting on fisheries and aquaculture and how to streamline the classification of fisheries and aquaculture services follows.

2. FISHERIES AND AQUACULTURE SERVICES: DESCRIBING THE SUPPLY CHAIN

In order to understand the nature and role of fisheries and aquaculture services, it is first necessary to clarify the nature and structure of the fisheries and aquaculture supply chains, detailing the different phases of the production process and the potential services involved.

Fisheries products can result from either catches or aquaculture. Catches refer to fisheries products taken for all purposes (commercial, industrial, recreational and subsistence) by all types and classes of fishing units (including fishermen, vessels, gear, etc.)⁴. Aquaculture, also known as aquafarming or fish farming, refers to the farming of freshwater or saltwater organisms (i.e. fish, molluscs, crustaceans and plants) for human use or consumption, under controlled conditions. It implies some form of intervention in the natural rearing process to enhance production, including regular stocking, feeding and protection from predators, as well as individual or corporate ownership of, or contractual rights to, the stock being cultivated⁵.

For the purposes of this report, the term fisheries will be used to identify production via the catching or harvesting of fisheries products as opposed to aquaculture, whose use will be confined to production of fisheries products via the farming of aquatic organisms.

2.1. The supply chain

Bearing in mind that it does not exist in isolation to other supply chains and sectors, the fisheries and aquaculture value chain can be generally described as comprising 3 main phases of production: (i) pre-harvesting; (ii) production (harvesting or farming); and (iii) post-harvesting.

Pre-harvesting refers to all the activities that are implemented before the harvesting and farming of fish and other aquatic organisms. A crucial activity in this phase is resource management, which aims at ensuring production or capture through the gathering of information and monitoring of fish stocks.

The production phase can take place in the form of wild capture of fish and/or shellfish; aquaculture; or aquaponics, the combination of fish farming with the production of vegetables whereby waste from the fish farm supplies the nutrients for plants grown hydroponically, which in turn purify the water⁶.

The post-harvesting phase comprises four stages:

- *Collection from the production point*, which begins when the products are landed and generally weighed and sorted before being collected from a first producer point, be it an auction or directly from a boat or aquaculture farm through contract or direct sales;
- *Preparation of value-added products*, which involves the processing of the fisheries products. It mainly includes gutting, stripping, freezing, filleting, portioning, boiling, cooling, storing, smoking, canning, as well as the preparation of ready-made meals. The processing of discards and fish waste to producing fish meal from discards or leather from fish skin also takes place during this phase;
- *Distribution*, which involves the packaging, transport and distribution of the products to their final destinations;
- *Sales to the target market*, which allows the products to reach the final consumer directly or through retail outlets and restaurants, or large-scale buyers, who will in turn sell them on⁷.

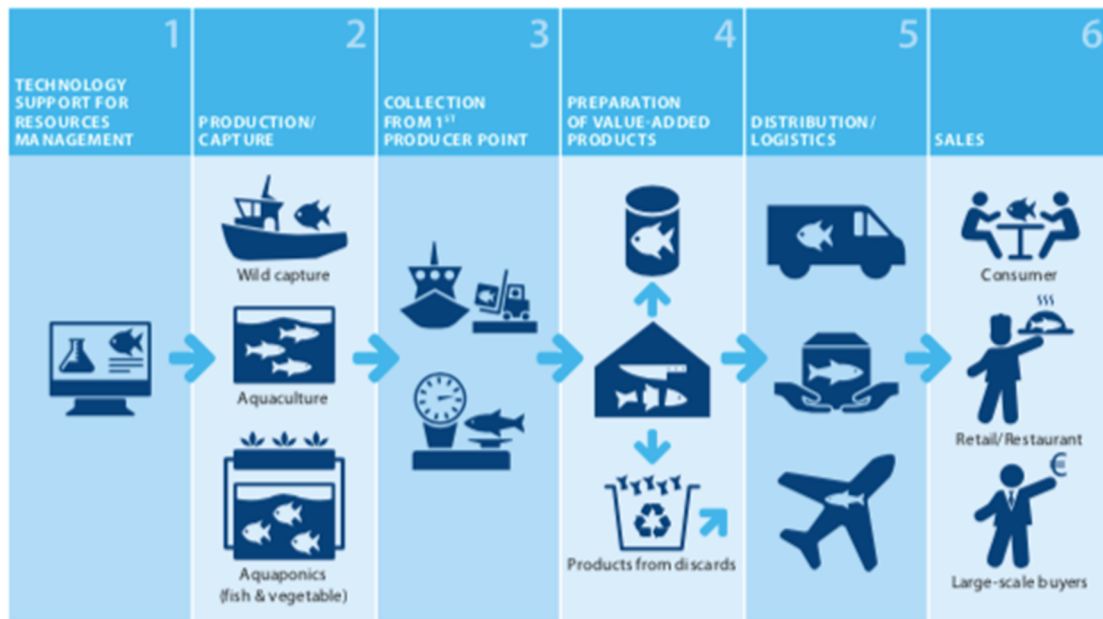
⁴ The flag of the fishing vessel is used as the primary indication of the nationality of the catch. EUROSTAT, Glossary: Aquaculture, (last accessed on June 2019) <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Aquaculture>

⁵ Ibid.

⁶ Veronesi Burch, Monica and Stephanie Maes (2017), Boosting Business along the Fisheries Value Chain, Farnet, Guide 12, Brussels: European Commission, Directorate-General for Maritime Affairs and Fisheries, Director-General), p. 6.

⁷ Ibid, p. 7.

Figure 1. The fisheries and aquaculture supply chain



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Source: Monica Veronesi Burch and Stephanie Maes (2017)

Albeit in reality fisheries supply chains have become increasingly complex and globalized, with each aquatic species possibly having its own specific value chain, due to the evolution in consumer demand and technology, Figure 1 above offers a good general illustration of the path fisheries and aquaculture may take to market and helps identify the different stages of the supply chain⁸.

As described in tables 1 and 2 below, the fisheries and aquaculture supply chain involves a wide variety of services. Some are specific to each individual stage of the production process. For example, wholesale and retail services, port-related services as well as marketing services typically occur in the post-harvesting phase, whereas vessel rental services are supplied primarily in the pre-harvesting stage⁹.

⁸ Ibid, pp. 7, 40.

⁹ Swedish Agency Marina and Water Management (2018), FAO Expert Consultation on Trade in Fisheries Services; FAO (2018a), op. cit., p. 6.

Table 1. Fisheries supply chain

Production Phase	Description	Specific services	Horizontal services
Pre-harvesting	A preparatory phase, it includes all key services provided before the actual harvesting activity can take place. It includes services supplied by the governmental authority (*). ¹⁰	<ul style="list-style-type: none"> • Vessel rental (charter) with or without crew • Operational services (insurance, finance, electronic location) • Public administrative services (such as licensing services, access agreements, permits)* • Transfer of licenses* • Monitoring, control and surveillance* • Stock management • Infrastructure services • Environmental impact assessment and management 	<ul style="list-style-type: none"> • Consulting ^[11] • Management ^[11] • Quality control • R&D services ^[11] • Capacity building and training
Production	This phase includes the fish-harvesting process itself and related support services.	<ul style="list-style-type: none"> • Fishing ^[11] • Monitoring, control and surveillance * • Transport, transshipping and ^[11]distribution ^[11] • Refueling services 	
Post-harvesting	A key phase, it includes all services taking place after harvesting that provide added value to the fisheries products.	<ul style="list-style-type: none"> • Processing: cutting, cleaning and packing • Port and landing services ^[11] • Waste disposal ^[11] • Freezing and warehouse services ^[11] • Maintenance (including boat and gear ^[11]repair) ^[11] • Transport and distribution ^[11] • Wholesale and retail services • Marketing¹¹ 	

Source: FAO Expert Consultation (2018)

Table 2. Aquaculture supply chain

Production Phase	Description	Specific services	Horizontal services
Pre-harvesting	A preparatory phase, it includes all key services provided before the actual harvesting activity can take place. It includes services supplied by the governmental authority (*).	<ul style="list-style-type: none"> • Public administrative services (such as licensing services and permits)* • Hatching, growing and reproduction ^[11] • Production surveillance ^[11] • Disease prevention and control • Risk assessments ^[11] • Veterinary services ^[11] • Operational services (insurance, ^[11]finance) ^[11] • Construction and rental of ^[11]infrastructure and capital goods ^[11] • Environmental impact assessment ^[11]and management ^[11] 	<ul style="list-style-type: none"> • Consulting ^[11] • Management ^[11] • Quality control • R&D services ^[11] • Capacity building and training
Production	This phase includes the farming process itself and related support services.	<ul style="list-style-type: none"> • Production surveillance* • Harvesting • Energy services 	
Post-harvesting	A key phase, it includes all services taking place after harvesting that provide added value to the aquaculture products.	<ul style="list-style-type: none"> • Water treatment and waste disposal ^[11] • Processing: cutting, cleaning and ^[11]packing ^[11] • Freezing and warehouse services ^[11] • Maintenance of facilities and ^[11]equipment ^[11] • Transport and distribution ^[11] • Wholesale and retail services ^[11] • Marketing ^[12] ^[11] 	

Source: FAO (2018), Expert Consultation

Some services, however, apply horizontally to all phases of the production process. These include research and development services, management and consulting services, as well as training services. Several services, which are typically associated with the post-harvesting phase, are involved both in the fisheries and in the aquaculture supply chain.

¹⁰ Pursuant to Article I:3(c) of the General Agreement on Trade in Services (GATS), services supplied in the exercise of governmental authority which are supplied neither on a commercial basis, nor in competition with one or more service suppliers fall outside the scope of application of the agreement.

¹¹ Marketing services include certification and labeling. See Will, Emma (2018), op. cit., p. 5.

¹² Ibid.

Generally, services supplied in the post-harvesting phase provide greater added value to fisheries and aquaculture products than those supplied in other phases of the production chain. Prioritizing these services for data collection with a view to understand whether they are supplied primarily by foreign suppliers as opposed to domestic suppliers, could be helpful for policymakers, especially in coastal states, that are interested in evaluating the cost opportunity of specializing in downstream value-added services versus upstream services.

2.2. Trade in fisheries and aquaculture services: a domestic perspective

The diverse localization of fish production sites and the emergence of global value chains imply that services relating to fisheries and aquaculture production may be supplied both locally and by foreign suppliers, depending on technical capacity and competitive advantage considerations on the part of the service beneficiary¹³.

Domestic or internal trade identifies any commercial activity, usually - but not exclusively - wholesale and retail trade - that takes place within a country's jurisdiction. When a domestic supplier provides a service to a domestic consumer the service is supplied within the national borders. Case in point is a domestic distributor that sells fish harvested by foreign suppliers to domestic consumers through its retail outlets.

Distinguishing between services traded across borders between residents and non-residents and those traded among residents of a country within its geographical boundaries has key implications for the collection of data that can adequately capture the volume and impact of trade in fisheries and aquaculture services, especially in relation to the widespread use of foreign access arrangements. Indeed, while international trade in services statistics are captured in the current account of the balance of payments (BOP), which covers an economy's transactions with the rest of the world, services trade domestically are not accounted for in BOPs.

2.3. Trade in fisheries and aquaculture services: a GATS perspective

Taking into account that services related to the fisheries and aquaculture supply chain may be supplied by both domestic and foreign suppliers and that fisheries access arrangements¹⁴ are considered as form of international supply of service, two issues emerge in relation to the data-based assessment of the impact and volume of trade in fisheries and aquaculture services: (i) the treatment of fisheries and aquaculture services within the framework of the General Agreement on Trade in Services (GATS), which applies to measures affecting trade in services; and (ii) the treatment of fisheries access arrangements under the GATS.

2.3.1. Fisheries and aquaculture services under the GATS

Article I:3 of the GATS, clarifies that, for the purposes of the Agreement, "services" includes any service in any sector, except services supplied "in the exercise of governmental authority" - i.e. any service which is supplied neither on a commercial basis, nor in competition with one or more service suppliers. Potentially, therefore, fisheries and aquaculture services could be covered by the term "services" under the GATS.

However, while the term fisheries and aquaculture services has been used in the deliberations of the FAO Sub-Committee on Fish Trade, this terminology has not been embraced within the GATS

¹³ FAO (2016), op. cit., p. 3.

¹⁴ Fisheries access arrangements are also referred to as foreign access arrangements. Through this report both terminologies will be used to identify this type of agreement.

framework and no definition of “fisheries and/or aquaculture services”, or “trade in fisheries and/or aquaculture services” has been universally agreed upon¹⁵.

The GATS Services Sectoral Classification List does not mention either “fisheries” or “aquaculture” services but rather refers to “services incidental to fishing”. The Agreement does not consider fishing (or aquaculture) itself as a service, in the same vein as it does not consider agriculture as a separate service provided by a foreign supplier. Rather, it focuses on services that are “incidental” to fishing, i.e. services that are related and/or support the fishing activity, which under the FAO framework could primarily refer – in aggregate form - to all those services provided in the pre- and post-harvesting stages of the supply chain.

If taken individually, the services identified in Table 1 and 2 above as being part of the fisheries and aquaculture value chain could be classified separately under the GATS Services Sectoral Classification List under a wide variety of sectors that are not specific to fisheries and aquaculture activities (see Section 3 below).

2.3.2. Fisheries access arrangements under the GATS

Under the GATS trade in services occurs when the service is supplied in any of these four modes:

- Mode 1: cross-border supply (i.e. from the territory of the foreign supplier into the territory of the consumer);
- Mode 2: consumption abroad (i.e. the service is supplied to the consumer into the territory of the foreign supplier);
- Mode 3: commercial presence (i.e. the foreign supplier establishes a commercial presence in the territory of the consumer to supply the service);
- Mode 4: movement of natural persons (i.e. the foreign supplier is a natural person that moves temporarily into the territory of the consumer to supply the service).

Determining the treatment of foreign access arrangements as a form of trade in services under the GATS requires a clarification of the concept of foreign access arrangement and the identification of the factors that would determine whether harvesting constitutes a service under an access arrangement.

Fisheries access arrangements identify all types of agreements between coastal states with jurisdiction over access to fish resources (‘resource owners’) and foreign companies with fleets providing fishing services that permit vessels from one state to fish within another state’s coastal waters. Covering a variety of value-added services for the coastal state, including maintenance and repair services, and processing services, fisheries access arrangements may be concluded between governments; between a domestic private company and a foreign government; or between domestic and foreign private companies¹⁶.

Foreign access arrangements agreed upon between developed countries tend not to involve monetary payments but rather a reciprocal exchange of fishing opportunities, whereas those between developing and developed countries consist of the granting of access in return for monetary and/or in-kind payments. Under fishing access arrangements individual vessels pay a licence fees to the country concerned for access to its coastal waters¹⁷.

¹⁵ Swedish Agency Marina and Water Management (2018), op. cit..

¹⁶ Mbithi Mwikya, Stephen (2006), Fisheries access agreements: Trade and development issues, ICTSD Natural Resources, International Trade and Sustainable Development Series Issue Paper No. 2, International Centre for Trade and Sustainable Development, Geneva, Switzerland, p. 17; Virdin, John et al. (2019), West Africa’s coastal bottom trawl fishery: Initial examination of a trade in fishing services, Marine Policy 100 (2019) 288-297, p. 288.

¹⁷ Will, Emma (2018), op. cit., p. 7; Virdin, John et al. (2019), op. cit., p. 288; Swedish Agency Marina and Water Management (2018), op. cit..

If a foreign harvester (the supplier) is granted access rights by a coastal State that owns the fisheries resources and the arrangement includes an obligation to land the catch for the benefit of the coastal State (beneficiary), it would appear that the foreign vessel harvesting the fish conducts the harvesting operation on behalf and for the benefit of the coastal State, thus supplying some form of harvesting service to the coastal state¹⁸.

However, a few issues emerge in relation to the treatment of foreign access arrangements as a form of trade in services. As mentioned before, the harvesting or fishing activity itself may not be considered a “service” under the GATS but rather a separate activity akin to forestry and agriculture, which fall outside the scope of application of the GATS. Thus, only the activities complementary or ancillary to harvesting (e.g. processing, distribution and transport services) that are also provided through foreign access arrangements could be considered as trade in services under the GATS regulatory framework. This is particularly relevant for the purposes of data collection since some key statistical frameworks currently in use both at international and domestic level tend to reflect the GATS approach by grouping fishing itself together with agriculture and forestry.

Moreover, the fisheries activities provided under foreign access arrangements are not easily classifiable under any of the four modes of supply used to define trade in services under the GATS. More specifically, under mode 1 (cross-border supply) the service is supplied from the territory of the supplier into the territory of the consumer. But in the case at issue, under fisheries access arrangements, the supplier moves into the territory of the consumer to supply its services since the vessel cannot be considered foreign territory¹⁹. Mode 2 (consumption abroad) is also not applicable for foreign access arrangements because the service is supplied in the territory of the consumer, rather than in the territory of the supplier. Nor can foreign access arrangements be considered as a mode 3 supply of services as they do not involve the establishment of a commercial presence abroad.

If the crew of the vessel harvesting fish under a foreign access agreement were to be considered as the actual supplier of the services, then foreign access arrangements could be classified as a form of trade in services under mode 4 (movement of natural persons). However, classifying foreign access arrangements under mode 4 has significant implications on the ability to collect meaningful data on trade in fisheries services, because statistical frameworks both at national and international level are still struggling to properly record the volume of services supplied through mode 4, making it the most difficult mode of supply to measure. Also, proper data collection would require establishing the nationality of the supplier, which depends on whether the crew of the vessel is considered akin to intra-corporate transferees or independent service suppliers. In the former case, the service will be considered as supplied by the country in which the company harvesting the service is registered, whereas in the latter the nationality of the crew itself would matter for statistical purposes. Notably, developing countries’ nationals are frequent suppliers of fisheries services as individual contractors’ crew²⁰.

Another issue related to the treatment of foreign access arrangements as a form of trade in services concerns the remuneration of the foreign supplier. While in its definition of ‘service’ the GATS is silent on the concept of remuneration, for the purposes of data collection it is important to understand how the foreign supplier is paid by the coastal state in a form that can be monetized and captured in statistical frameworks. This is particularly evident in cases where the foreign access arrangements include in-kind payments. And the inclusion of specify other conditions requiring the foreign harvest to purchase certain

¹⁸ If the (foreign) harvester is not required to land the catch for the benefit of the coastal State, it means it operates on its own behalf and would own the harvested fish and consequently, would not be providing a service to the coastal state granting the access rights. However, if the coastal State has designated a point of landing elsewhere, but still for its benefit, it is a service. By the same token, fish landed for transshipment or direct transport out of the coastal State, does not involve a service. FAO (2018a), op. cit.

¹⁹ GATS Article XXVIII (f) (i), which refers to "a service which is supplied [...] by a vessel registered under the laws of that other Member or by a person of that other Member which supplies the service through the operation of a vessel and/or its use in whole or in part", applies only to maritime transport services, which do not include the harvesting/fishing activities covered by the foreign access arrangements.

²⁰ FAO (2018a), op. cit.

services - not central to the harvesting activity - from the coastal state adds an extra layer of complexity to this matter²¹.

2.4. Trade in fisheries and aquaculture services: the World Bank approach

Recent studies carried out with the support of the World Bank (WB) have also focused on trade in fishing services, offering both an overview of the legal and economic underpinnings of foreign access arrangements and a potential approach to interpreting remuneration of fisheries services supplied to coastal states in the context of foreign access arrangements.

The 2014 WB study, which is based on the premise that if foreign fishers have a comparative advantage in the harvesting of the fishery resource, processing of the catch and/or marketing and distribution of the finished fish products it is in the interest and to the benefit of coastal states to import their services, identifies trade in fishing services as the importation of harvesting services by the coastal state, acknowledging that “access regimes based around use and property rights of different kinds are taking hold” and that there is an increasing “interest in generating further benefits from fish resources through international trade in fishing services of all kinds, in particular harvesting and processing services”²².

Arguing that foreign access arrangements are a particular form of a broader set of provisions for international trade in fishing services, the 2014 report contends that compensation for the harvesting, processing and/or marketing services of foreign suppliers by the coastal state is implicit rather than explicit. More precisely, it argues that their remuneration should be thought of in opportunity cost terms, namely the economic return that each foreign supplier could be expected to obtain in its next best form of employment, net of the access fee paid by the foreign supplier to the coastal state²³.

In the WB-funded study published in 2019, which focused on one particular type of foreign fishing arrangement (i.e. West Africa’s coastal bottom trawl fishery), the authors make explicit use of the opportunity cost approach, providing an analytical framework for measuring the net revenue generated in this fishery and assessing what part is retained by foreign providers of a fishing service²⁴. More precisely, they suggest estimating resource rents (RR) differentiated for the countries of origin of fishing vessels or the destination markets of the catch, as well as an autarky rent (*RRCS*) that would reflect the cost of fishing using the national fleet and the capacity of post-harvest handling and marketing of products. Such information would allow for a comparison between RR generated by the trade and the counterfactual of RR without a trade²⁵.

Clearly, for the WB approach to work, the following statistical data are necessary: (i) catch data by foreign country; (ii) payments by foreign entities to capital and labour provided by the coastal States; and (iii) the different costs of services provided by individual countries²⁶. While data on catches are generally available for a wide variety of countries, data on the costs of services provided by individual countries are more difficult to acquire, partly due to complications arising from how to adequately classify services related to fisheries and to properly identify the nationality of service suppliers (see discussion on mode 4 in section 2.2.2).

²¹ Ibid.

²² World Bank (2014), Trade in Fishing Services – Emerging Perspectives on Foreign Fishing Arrangements, World Bank Report N. 92622 – GLB, Washington D. C.: International Bank for Reconstruction and Development, pp. xiii-xiv.

²³ Ibid, pp. 31, 48-49.

²⁴ FAO (2018a), op. cit..

²⁵ Virdin, John et al. (2019), West Africa’s coastal bottom trawl fishery: Initial examination of a trade in fishing services, Marine Policy 100, p. 294.

²⁶ FAO (2018a), op. cit..

3. Classifying fisheries and aquaculture services

In order to understand why potential gaps in data collection, reporting and assessment exist for trade in fisheries and aquaculture services, it is first necessary to explore and analyse the existing services classification systems upon which most statistical databases rely on.

Classifications systems can be divided into two categories: (i) *Product-based*, which includes the UN Central Product Classification (CPC), the WTO Services Sectoral Classification (W/120), the IMF Balance of Payments and International Investment Position Manual (BPM6), and the Extended Balance of Payments Services Classification (EBOPS2010); (ii) *Activity-based*, which includes International Standard Industrial Classification of All Economic Activities (ISIC).

3.1. Product-based classifications

3.1.1. UN Central Product Classification (CPC)

The UN Central Product Classification (CPC), a comprehensive classification of all goods and services, constitutes the first attempt to cover the whole spectrum of outputs of the various service industries in a classification system²⁷. It was first adopted in 1989 in its provisional version (CPC Prov.), which became the basis for the compilation of the WTO Services Sectoral Classification. A number of revisions followed, with the last (version 2.1) being adopted in 2015.

A general-purpose classification, the CPC was designed to: (i) provide a framework for the international comparison of statistics dealing with products; (ii) serve as a guide for developing or revising existing classification schemes for products in order to make them compatible with international standards; (iii) enhance harmonization among various fields of economic and related statistics and to strengthen the role of national accounts as an instrument for the coordination of economic statistics; (iv) provide the basis for recompiling basic statistics from their original classifications into a standard classification for analytical use²⁸.

Under the CPC, products are to be intended as goods and services are the result of production; they are exchanged and used for various purposes, such as for inputs in the production of other goods and services, or as final consumption or for investment. Thus, this classification system covers all products that can be the object of domestic or international transactions or that can be entered into stocks, as well as products that are an output of economic activity²⁹.

In its most recent version (CPC 2.1) products are classified under a five-level hierarchical system comprising sections, divisions, groups, classes and subclasses. CPC 2.1. covers 10 sections, with sections 0-4 relating primarily to goods and sections 5-9 relating to services:

0. Agriculture, forestry and fishery products;
1. Ores and minerals; electricity, gas and water;
2. Food products, beverages and tobacco; textiles, apparel and leather products;
3. Other transportable goods, except metal products, machinery and equipment;
4. Metal products, machinery and equipment;
5. Construction and construction services;
6. Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services;
7. Financial and related services; real estate services; and rental and leasing services;
8. Business and production services;

²⁷ UN (2015), Central Product Classification (CPC), Version 2.1, Statistical Papers, Series M N. 77, Ver. 2.1, ST/ESA/STAT/SER.M/77/Ver.2.1, p. 7.

²⁸ In providing guidelines for future product-type classifications for specific areas of the economy, the CPC ensures that such specific classifications are compatible with its general framework, thus enabling data comparability. UN (2015), op. cit., p. 7.

²⁹ UN (2015), op. cit., p. 9.

9. Community, social and personal services.

The categories under which the CPC classifies products are both exhaustive and mutually exclusive, with the classification of products being based on the physical properties and the intrinsic nature of the products as well as on the principle of industrial origin, although some products can still be the output of several ISIC industries³⁰.

For the classification of services under the CPC, the following criteria should be followed whenever services are, *prima facie*, classifiable under two or more categories, on the understanding that only categories at the same level (sections, divisions, groups, classes or subclasses) are comparable:

- Preference should be given to the category that provides the most specific description over categories providing a more general description;
- If applicable, composite services consisting of a combination of different services that cannot be classified by reference to (a) shall be classified as if they consisted of the service which gives them their essential character;
- When services cannot be classified by reference to (a) or (b), they shall be classified under the category that occurs last in numerical order among those that equally merit consideration.
- Whenever services cannot be classified in accordance with (a), (b) and (c), they should be classified under the category appropriate to the services to which they are most akin;
- If applicable, products making up a bundle of goods and services shall be classified according to their main component (i.e. value added)³¹.

The terms ‘fisheries and aquaculture services’, ‘fisheries services’ and ‘aquaculture services’ appear nowhere in the CPC 2.1 classification – and neither in its provisional version. Instead, the classification includes two subclasses - ‘support services to fishing’ (CPC 85153) and ‘support services to aquaculture’ (CPC 86154), which include support services related to fishery, and fish hatcheries and fish farms, respectively. Since the CPC manual adds no further information on the meaning of either ‘incidental’ or ‘related to’, it cannot be excluded that the coverage of subclasses CPC 86153 and CPC 85154 could extend to the wide variety of pre- and post-harvesting services involved in the fisheries and aquaculture supply chains.

On the other hand, subclasses ‘fishing services on resources owned by others (CPC 86151)’ and ‘aquaculture services on inputs owned by others (CPC 86152)’, which refer to the operation of a fishing and aquaculture unit, respectively, on a fee or contract basis, could be used to classify services provided in the harvesting phase under foreign access arrangements.

In the absence of clarifications on the exact coverage of subclasses CPC 85151, CPC 85153, CPC 85153, CPC 85154, it may be worth considering that, as illustrated in Tables 4 and 5 below, the CPC classification system could accommodate a more disaggregated classification of fisheries and aquaculture services into other subclasses, based on the five criteria mentioned above, albeit none of these categories would be specifically and exclusively dedicated to the fisheries and aquaculture production.

³⁰ Ibid, pp. 4-5.

³¹ Ibid, pp. 14-15.

Table 4. Potential disaggregated classification of fisheries services under CPC

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Vessel rental (charter) with or without crew	Financial and related services; real estate services; and rental and leasing services	Leasing or rental services without operator (73)	Leasing or rental services concerning machinery and equipment without operator	Leasing or rental services concerning vessels without operator (73115)
	Operational services (insurance, finance, electronic location)	Financial and related services; real estate services; and rental and leasing services	Financial and related services (71)	Financial services, except investment banking, insurance services and pension services (711)	
				Insurance and pension services (excluding reinsurance services), except compulsory social security services (713)	
	Public administrative services (such as licensing services, access agreements, permits)	Community, social and personal services	Public administration and other services provided to the community as a whole; compulsory social security services (91)	Administrative services of the government (911)	Public administrative services related to agriculture, forestry, fishing and hunting (9113)
	Transfer of licenses	Business and production services	Legal and accounting services (82)	Legal services (821)	
Harvesting	Fishing ³²	Business and production services	Support and operation services to agriculture, hunting, forestry, fishing, mining and utilities (86)	Support and operation services to fishing (8615)	Fishing services on resources owned by others (86151)
					Support services to fishing (86153)
	Transport, transshipping and distribution	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Freight transport services (65)	Water transport services of freight (652)	

³² Fishing itself is not considered a service. Indicated herein are the subclasses that include services supplied in relation to fishing.

Production Phase	Activity	Section	Division	Description	Details
Post-harvesting	Processing: cutting, cleaning and packing	Business and production services	Support services (85)	Packaging services (854)	
			Manufacturing services on physical inputs owned by others (88)	Food, beverage and tobacco manufacturing services (881)	
	Port and landing services <small>[11] [SEP]</small>	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Supporting transport services (67)	Supporting services for water transport (675)	Fish processing services (8812)
	Waste disposal <small>[11] [SEP]</small>	Community, social and personal services	Sewage and waste collection, treatment and disposal and other environmental protection services (94)	Waste treatment and disposal services (943)	
	Freezing and warehouse services <small>[11] [SEP]</small>	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Supporting transport services (67)	Supporting transport services	Refrigerated storage services (67210)
					Other storage and warehousing services (67290)
	Maintenance (including boat and gear <small>[11] [SEP]</small> repair) <small>[11] [SEP]</small>	Business and production services	Maintenance, repair and installation (except construction) services (87)	Maintenance and repair services of fabricated metal products, machinery and equipment (871)	
	Transport and distribution <small>[11] [SEP]</small>	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Freight transport services (65)	Water transport services of freight (652)	
			Supporting transport services (67)	Supporting services for water transport (675)	
	Wholesale and retail services	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Wholesale trade services (61)	Fruits, vegetables and tobacco	Fish and other seafood
			Retail trade services (62)	Fruits, vegetables and tobacco	Fish and other seafood
	Marketing	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Marketing management consulting services (83114)

Production Phase	Activity	Section	Division	Description	Details
Horizontal services	Consulting ^[11] _{SEP}	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Operations management consulting services (83115)
	Management ^[11] _{SEP}	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Operations management consulting services (83115)
					Supply chain and other management consulting services (83116)
					Business process management services (83117)
	R&D services ^[11] _{SEP}	Business and production services	Research and development services (81)	Research and experimental development services in natural sciences and engineering (811)	Basic/Applied/Experimental research services in engineering and technology (81119)
					Basic/Applied/Experimental research services in agricultural services (81140)
					Basic/Applied/Experimental research services in other natural sciences (81119)

Source: Author's elaboration

Table 5. Potential disaggregated classification of aquaculture services under CPC

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Public administrative services (such as licensing services and permits) ^[11] _[SEP]	Community, social and personal services	Public administration and other services provided to the community as a whole; compulsory social security services (91)	Administrative services of the government (911)	Public administrative services related to agriculture, forestry, fishing and hunting (9113)
	Hatching, growing and reproduction ^[11] _[SEP]	Business and production services	Support and operation services to agriculture, hunting, forestry, fishing, mining and utilities (86)	Support and operation services to fishing (8615)	Support services to aquaculture (86154)
	Veterinary services ^[11] _[SEP]	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Veterinary services (*835)	
	Operational services (insurance, finance, electronic location)	Financial and related services; real estate services; and rental and leasing services	Financial and related services (71)	Financial services, except investment banking, insurance services and pension services (711)	
				Insurance and pension services (excluding reinsurance services), except compulsory social security services (713)	
	Construction and rental of ^[11] _[SEP] infrastructure and capital goods ^[11] _[SEP]	Constructions and construction services	Construction services (54)	General construction services of civil engineering works (542)	General construction services of irrigation and flood control waterworks (54234)
				Installation services (546)	Water plumbing and drain laying services (5462)
	Financial and related services; real estate services; and rental and leasing services	Leasing or rental services without operator (73)	Leasing or rental services concerning machinery and equipment without operator	Leasing or rental services concerning other machinery and equipment without operator n.e.c. (73129)	
Harvesting	Harvesting	Business and production services	Support and operation services to agriculture, hunting, forestry, fishing, mining and utilities (86)	Support and operation services to fishing (8615)	Aquaculture services on inputs owned by others (86152)
					Support services to aquaculture (86154)

Production Phase	Activity	Section	Division	Description	Details
Post-harvesting	Water treatment and waste disposal ^[1] _[SEP]	Community, social and personal services	Sewage and waste collection, treatment and disposal and other environmental protection services (94)	Sewerage, sewage treatment and septic tank cleaning services (941)	
			Sewage and waste collection, treatment and disposal and other environmental protection services (94)	Waste treatment and disposal services (943)	
	Processing: cutting, cleaning and packing	Business and production services	Support services (85)	Packaging services (854)	
			Manufacturing services on physical inputs owned by others (88)	Food, beverage and tobacco manufacturing services (881)	
	Transport and distribution ^[1] _[SEP]	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Freight transport services (65)	Water transport services of freight (652)	
	Freezing and warehouse services ^[1] _[SEP]	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Supporting transport services (67)	Storage and warehousing services (672)	Refrigerated storage services (67210)
					Other storage and warehousing services (67290)
	Transport and distribution ^[1] _[SEP]	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Supporting transport services (67)	Supporting services for water transport (675)	
	Wholesale and retail services	Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services	Wholesale trade services (61)	Fruits, vegetables and tobacco	Fish and other seafood
			Retail trade services (62)	Fruits, vegetables and tobacco	Fish and other seafood
Marketing	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Marketing management consulting services (83114)	

Production Phase	Activity	Section	Division	Description	Details
Horizontal services	Consulting ^[11] _[SEP]	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Operations management consulting services (83115)
	Management ^[11] _[SEP]	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Management consulting and management services; information technology services (831)	Operations management consulting services (83115)
					Supply chain and other management consulting services (83116)
					Business process management services (83117)
	Quality control ^[11] _[SEP]	Business and production services	Professional, technical and business services (except research, development, legal and accounting services) (83)	Scientific and other technical services (834)	Technical testing and analysis services (8344)
	R&D services ^[11] _[SEP]	Business and production services	Research and development services (81)	Research and experimental development services in natural sciences and engineering (811)	Basic/Applied/Experimental research services in engineering and technology (81119)
					Basic/Applied/Experimental research services in agricultural services (81140)
					Basic/Applied/Experimental research services in other natural sciences (81119)

Source: Author's elaboration

3.1.2. WTO Services Sectoral Classification List (W/120)

The Services Sectoral Classification List (W/120) compiled by the WTO in July 1991 is a comprehensive list of all the services sectors and sub-sectors covered by the General Agreement on Trade in Services (GATS) that was negotiated during the Uruguay Round. Structured into 12 sectors and 160 sub-sectors, it draws heavily from the provisional version of the Central Product Classification System elaborated by the United Nations (CPCProv), which retains a higher level of detail with respect to the WTO Services Sectoral Classification List.

In order to ensure the stability and comparability of commitments over time, even though related international statistical classifications have been revised, changes in the subsequent versions of the CPC have not translated into revisions of current commitments under the GATS, which continue to be based on the Provisional CPC³³.

Regarding fisheries services, the W/120 refers to ‘services incidental to fishing’ under the ‘other business services’ sub-sector, which corresponds to CPCProv. code 882. However, since no explanation is provided either in W/120 or CPCProv. as to what activities fall under the scope of this item and on the meaning of the term ‘incidental’, the coverage of ‘services incidental to fishing’ may be limited to the services related to fishing that are involved in the harvesting-phase rather than across the whole the fisheries value chain, although the act of fishing itself is likely to be excluded from it, as previously discussed.

A closer look at the WTO Services Sectoral Classification List shows that several services related to fisheries could be found under other headings in different economic activities, albeit without the possibility of distinguishing them from other activities within each of these categories³⁴.

³³ Ibid, p. 21.

³⁴ Swedish Agency Marina and Water Management (2018), op. cit.

Table 6. Potential disaggregated classification of fisheries services under WTO (W/120)

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Vessel rental (charter) with or without crew	Business Services	1.E (a)	Rental/Leasing Services Without Operators	Relating to ships (83103)
			1.E (c)	Rental/Leasing Services Without Operators	Relating to other transport equipment (83101 + 83102)
			1.E (d)	Rental/Leasing Services Without Operators	Relating to other machinery and equipment (83106-83109)
		Transport Services	11.A (c)	Maritime Transport Services	Rental of vessels with crew (7213)
			11.B (c)	Internal Waterways Transport	Rental of vessels with crew (7223)
	Operational services (insurance, finance, electronic location)	Financial Services	7.A (b)	All insurance and insurance-related services	Non-life insurance services (8129)
			7.B	Banking and other financial services	
	Infrastructure services	Business Services	1.A (e)	Professional Services	Engineering Services (8672)
		Construction and Related Engineering Services	3.E	Other	Other (511+515+518)
	Environmental impact assessment and management	Environmental Services	6.D	Other	
Harvesting	Fishing ³⁵ _{SEP SEP}	Business Services	1.F (g)	Other Business Services	Services incidental to fishing (882)
	Transport, transshipping and _{SEP} distribution _{SEP}	Distribution Services	4	Distribution Services	
		Transport services	11.H	Services Auxiliary to All Modes of Transport	
			11.I	Other Transport Services	

³⁵ Fishing itself is not considered a service. Indicated herein are services incidental to fishing.

Production Phase	Activity	Section	Division	Description	Details
Post-harvesting	Processing: cutting, cleaning and packing	Business Services	1.F (q)	Other Business Services	Packaging services (876)
	Port and landing services ^[1.1] _[SEP]	Transport Services	11.A (e)	Maritime Transport Services	Pushing and towing services (7214)
	Waste disposal ^[1.1] _[SEP]	Environmental Services	6.B	Refuse Disposal Services	Refuse Disposal Services (9402)
	Freezing and warehouse services ^[1.1] _[SEP]	Transport Services	11.H (b)	Services Auxiliary to All Modes of Transport	Storage and warehouse services (742)
	Maintenance (including boat and gear ^[1.1] _[SEP] repair) ^[1.1] _[SEP]	Transport Services	11.A (d)	Maritime Transport Services	Maintenance and repair of vessels (8868)
			11.B (d)	Internal Waterways Transport	Maintenance and repair of vessels (8868)
	Transport and distribution ^[1.1] _[SEP]	Transport Services	4	Distribution Services	
			11.A (b)	Maritime Transport Services	Freight transportation (7212)
			11.A (f)	Maritime Transport Services	Supporting services for maritime transport (745)
			11.B (f)	Internal Waterways Transport	Supporting services for internal waterways transport (745)
			11.H	Services Auxiliary to All Modes of Transport	
	Wholesale and retail services	Distribution Services	4.B	Wholesale Trade Services	Wholesale trade services (622)
			4.C	Retailing Services	Retailing services (631+632+6111+6113+6121)
	Marketing	Business Services	1.F (a)	Other Business Services	Advertising services (871)
1.F (b)			Other Business Services	Market research and public opinion polling services (864)	
Horizontal services	Consulting ^[1.1] _[SEP]	Business Services	1.F (c)	Other Business Services	Management consulting services (865)
			1.F (m)	Other Business Services	Related scientific and technical consulting services (8675)
	Management ^[1.1] _[SEP]	Business Services	1.F (c)	Other Business Services	Management consulting services (865)
	R&D services ^[1.1] _[SEP]	Business Services	1.C (a)	Research and Development Services	R&D services on natural sciences (851)

Source: Author's elaboration

Table 7. Potential disaggregated classification of aquaculture services under WTO (W/120)

Production Phase	Activity	Section	Division	Description	Details	
Pre-harvesting	Hatching, growing and reproduction ^[11] _[SEP]	Business Services	1.F (g)	Other Business Services	Services incidental to fishing (882)	
	Veterinary services ^[11] _[SEP]					
	Operational services (insurance, ^[11] _[SEP] finance) ^[11] _[SEP]	Financial Services	7.A (b)	All insurance and insurance-related services	Non-life insurance services (8129)	
			7.B	Banking and other financial services		
	Construction and rental of infrastructure and capital goods ^[11] _[SEP]	Business Services	1.A (e)	Professional Services	Engineering Services (8672)	
Construction and Related Engineering Services			3.E	Other	Other (511+515+518)	
Environmental impact assessment ^[11] _[SEP] and management ^[11] _[SEP]	Environmental Services	6.D	Other			
Harvesting	Harvesting	Business Services	1.F (g)	Other Business Services	Services incidental to fishing (882)	
Post-harvesting	Water treatment and waste disposal ^[11] _[SEP]	Environmental Services	6.B	Refuse Disposal Services	Refuse Disposal Services (9402)	
	Processing: cutting, cleaning and ^[11] _[SEP] packing ^[11] _[SEP]	Business Services	1.F (q)	Other Business Services	Packaging services (876)	
	Freezing and warehouse services ^[11] _[SEP]	Transport Services	11.H (b)	Services Auxiliary to All Modes of Transport	Storage and warehouse services (742)	
	Transport and distribution ^[11] _[SEP]	Transport Services	Distribution Services	4	Distribution Services	
			11.A (b)	Maritime Transport Services	Freight transportation (7212)	
			11.A (f)	Maritime Transport Services	Supporting services for maritime transport (745)	
			11.B (f)	Internal Waterways Transport	Supporting services for internal waterways transport (745)	
			11.H	Services Auxiliary to All Modes of Transport		
	11.I	Other Transport Services				
	Wholesale and retail services	Distribution Services	4.B	Wholesale Trade Services	Wholesale trade services (622)	
4.C			Retailing Services	Retailing services (631+632+6111+6113+6121)		
Marketing	Business Services	1.F (a)	Other Business Services	Advertising services (871)		
		1.F (b)		Market research and public opinion polling services (864)		
Horizontal services	Consulting ^[11] _[SEP]	Business Services	1.F (c)	Other Business Services	Management consulting services (865)	
			1.F (m)		Related scientific and technical consulting services (8675)	
	Management ^[11] _[SEP]	Business Services	1.F (c)	Other Business Services	Management consulting services (865)	
R&D services ^[11] _[SEP]	Business Services	1.C (a)	Research and Development Services	R&D services on natural sciences (851)		

Source: Author's elaboration

3.1.3. IMF Balance of Payments and International Investment Position Manual (BPM6)

The Balance of Payments and International Investment Position Manual (BPM) was first published in 1948 to provide a basis for regular, internationally standardized reporting to the International Monetary Fund (IMF). The BPM underwent successive rounds of revisions, which culminated in 2009 with the release of the sixth edition of the Manual (BPM6)³⁶.

The BPM6 provides the standard framework for the compilation of statistics on transactions³⁷ (balance of payments – BOP) and positions (international investment position - IIP) between an economy (individual country, currency union (e.g. Euro Area) or economic union (e.g. European Union) and the rest of the world³⁸.

Balance of payments are statistical statements that summarize transactions between residents and nonresidents during a period and consist of the goods and services account, the primary income account, the secondary income account, the capital account, and the financial account³⁹.

Serving as the standard framework for BOP statistics, BPM6 aims at:

- providing and explain concepts, definitions, classifications, and conventions for balance of payments and international investment position statistics;
- enhancing international comparability of data through the promotion of guidelines adopted internationally;
- showing the links of balance of payments and international investment position statistics to other macroeconomic statistics and promote consistency between different data sets; and
- providing a brief introduction to uses of data on balance of payments, other changes in financial assets and liabilities, and international investment position, as the international accounts of an economy⁴⁰.

While the overall framework of the fifth edition remained unchanged, BPM6 introduced significant innovations, with a view to reflect the changes that have occurred in the global economy since 1993, such as the significant growth in cross-border activity due to removal of trade barriers and capital controls⁴¹.

The goods and services account was extensively affected by the introduction of the BPM6 with major amendments concerning the treatment of goods under merchanting and goods for processing. In particular, BPM6 eliminated the ‘goods for processing’ imputation in favour of

³⁶ IMF (2009), Balance of Payments and International Investment Position Manual, Washington D.C: International Monetary Fund, p. 3.

³⁷ A transaction is an interaction between two institutional units that occurs by mutual agreement or through the operation of the law and involves an exchange of value or a transfer. Transactions are classified according to the nature of the economic value provided (goods or services, primary income, secondary income, capital transfers, nonproduced non-financial assets, financial assets, or liabilities. IMF (2009), op. cit., pp. 29-30.

³⁸ EUROSTAT, Changes in the methodology and classifications of the balance of payments and the international investment position statistics, (last accessed on June 2019) <https://ec.europa.eu/eurostat/documents/39118/40189/Changes-introduced-BPM6-methodology.pdf/c3621a69-6b2f-4b33-9834-619fb1ae5d9c>.

³⁹ Under BPM6 transactions can be distinguished between (i) exchanges, which involve the provision of something of economic value in return for a corresponding item of economic value; and (ii) transfers, which involve the provision/receipt of an economic value by one party without receiving /providing a corresponding item of economic value (e.g. taxes, and grants). They can be monetary or non-monetary (i.e. resources are provided in a form other than funds, such as goods, services, and interest forgone). As all flows are to be expressed in monetary terms, the monetary values of nonmonetary transactions need to be indirectly measured or otherwise estimated. IMF (2009), op. cit., pp. 3, 9, 31.

⁴⁰ Ibid, pp. 1, 3.

⁴¹ The fifth edition of the Balance of Payments and International Investment Position Manual was published in 1993. EUROSTAT, op. cit.; and IMF (2009), op. cit., p. xii.

including only the earnings received for the processing services under ‘manufacturing services on physical inputs’, with trade in goods being recorded only when the goods change economic ownership, not when they are physically shipped to an economy for processing without a change in economic ownership. Thus, BPM6 results in a reduction in gross exports and imports of goods, and an increase in exports or imports of services, with the increase in services equal the value of the processing services performed. Hence, for economies where inward or outward processing is relevant, this revision could lead to significant changes in their trade balances and possibly also in the current account⁴².

An overview of the classification of services is shown in Table 8 below. The classification is mainly product-based, but is transactor-based for travel, construction, and government goods and services n.i.e, and is according to the type of service, rather than the unit that provides it⁴³.

⁴² EUROSTAT, op. cit.; and IMF (2009), op. cit., p. xii.

⁴³ IMF (2009), op. cit., p. 161.

Table 8. BPM6 Services classification under Current Account

Categories	Sub-category	Description
Manufacturing services on physical inputs owned by others	<ul style="list-style-type: none"> • Goods for processing in reporting economy — Goods returned (credits), Goods received (debits) • Goods for processing abroad — Goods sent (credits), Goods returned (debits) 	<ul style="list-style-type: none"> • Covers processing, assembly, labeling, packing, and so forth undertaken by enterprises that do not own the goods concerned • Undertaken by an entity that does not own the goods and that is paid a fee by the owner (the ownership of the goods does not change) • Cover the transaction between the owner and processor, and only the fee charged by the processor is included under this item • Refers to all work done on goods by a resident of one economy for the owner of goods who is resident in another economy; the treatment of these services is not conditional on whether the goods were previously or subsequently in the physical possession of the owner or not.
Maintenance and repair services n.i.e.		<ul style="list-style-type: none"> • Cover maintenance and repair work by residents on goods that are owned by nonresidents (and vice versa) • Covers repairs and maintenance on ships, aircraft, and other transport equipment
Transport	<ul style="list-style-type: none"> • Sea (passenger, freight, other) • Air (passenger, freight, other) • Other modes of transport (passenger, freight, other) • Post and courier services 	<ul style="list-style-type: none"> • Transport can be classified according to: (a) mode of transport; and (b) what is carried (passengers or freight) • Other modes of transport include rail, road, internal waterway, pipeline, and space transport as well as electricity transmission • Other transport services include services that are auxiliary to transport and not directly provided for the movement of goods and persons (cargo handling charges billed separately from freight, storage and warehousing, packing and repackaging, towing not included in freight services, pilotage and navigational aid for carriers, air traffic control, cleaning performed in ports and airports on transport equipment, salvage operations, and agents' fees associated with passenger and freight transport) • Covers cleaning of transport equipment • Includes rental of ships and aircraft with crew • Includes postal and courier services
Travel	<ul style="list-style-type: none"> • Business (Acquisition of goods and services by border, seasonal, and other short-term workers; Other) • Personal (Health-related; Education-related; Other) 	<ul style="list-style-type: none"> • Includes local transport services, accommodation services and food-serving services • Transactor-based rather than product-based
Construction	<ul style="list-style-type: none"> • Construction abroad • Construction in the reporting economy 	<ul style="list-style-type: none"> • Covers the creation, renovation, repair, or extension of fixed assets in the form of buildings, land improvements of an engineering nature, and other such engineering constructions, installation and assembly work, site preparation, general construction as well as specialized services, and management of construction projects • Includes acquisition of goods and services by the enterprises undertaking that construction work from the economy of location of the construction work • Covers construction maintenance and repairs (including repairs of railway facilities, harbors, and airfield facilities) • Transactor-based rather than product-based
Insurance and person services	<ul style="list-style-type: none"> • Direct insurance • Reinsurance • Auxiliary insurance services • Pension and standardized guarantee services 	<ul style="list-style-type: none"> • Include services of providing life insurance and annuities, non life insurance, and freight insurance

Categories	Sub-category	Description
Financial services	<ul style="list-style-type: none"> Explicitly charged and other financial services Financial intermediation services indirectly measured (FISIM) 	<ul style="list-style-type: none"> Includes deposit taking and lending, letters of credit, credit card services, commissions and charges related to financial leasing, factoring, underwriting, and clearing of payments, financial advisory services, custody of financial assets or bullion, financial asset management, monitoring services, liquidity provision services, risk assumption services other than insurance, merger and acquisition services, credit rating services, stock exchange services, and trust services
Charges for the use of intellectual property		
Telecommunication, computer and information services	<ul style="list-style-type: none"> Telecommunication services Computer services Information services 	<ul style="list-style-type: none"> Computer services include maintenance and repairs of computers
Other business services	<ul style="list-style-type: none"> Research and development services Professional and management consulting services Technical, trade-related and other business services 	<ul style="list-style-type: none"> Research and development services consist of services that are associated with basic, applied, and experimental development of new products and processes (including commercial research related to electronics, pharmaceuticals, and biotechnology) Professional and management consulting services include: (a) legal services, accounting, management consulting, managerial services, and public relations services; and (b) advertising, market research, and public opinion polling services Technical, trade-related, and other business services include: (a) architectural, engineering, and other technical services; (b) waste treatment and depollution, agricultural, and mining services (include waste collection and disposal, remediation, sanitation, and other environmental protection services; environmental services that are not classified under any more specific category, and veterinary services); (c) operating leasing services (including operating leasing services cover leasing (rental) and charters, without crew, of ships, aircraft, and transport equipment), (d) trade-related services; and (e) other business services (including distribution services related to water, steam, gas, and other petroleum products and air-conditioning supply, where these are identified separately from transmission services; placement of personnel, security, and investigative services; translation and interpretation; photographic services; publishing; building cleaning; and real estate services
Personal, cultural and recreational services	<ul style="list-style-type: none"> Audio-visual and related services Other personal, cultural and recreational services 	
Government goods and services n.i.e.		<ul style="list-style-type: none"> Includes rental of buildings by international organizations, embassies, and so forth Transactor-based rather than product-based Amounts payable by households for licenses to own or use vehicles, boats, or aircraft and also licenses for recreational hunting, shooting, or fishing are treated as taxes, whereas amounts payable by households for all other kinds of licenses, permits, certificates, passports, and so forth, are treated as purchases of services

Source: IMF (2009)

In examining how trade in fisheries and aquaculture services could be classified under BPM6, a few clarifications on its methodology are necessary. First of all, as the scope of economic statistics BPM6 uses an economic territory, which comprises territorial waters, including areas over which jurisdiction is exercised over fishing rights and rights to fuels or minerals and, in a maritime territory, islands that belong to the territory. This means that each member of a group of affiliated enterprises is part of the economy in which it is resident, rather than being attributed to the economy of its head office⁴⁴.

Secondly, crews of ships that operate outside a territory or across several territories are treated as being resident in their home base territory. The home base is determined from where they spend most time other than undertaking their duties. The same criteria are applied to institutional units that operate ships on the high seas and various territorial waters and to enterprises that own ships. Bearing in mind that the enterprise that operates the ships is not necessarily the same as the enterprise that owns the ships, flags of convenience used by enterprises do not determine the residence of the operator. Nor do they determine the residence of enterprises that charter ships, which is determined instead by the location of its own base of operations⁴⁵.

Finally, in the balance of payments goods and services account, the valuation of goods includes transport within the exporting economy as well as wholesale and retail services indistinguishably in the price of the goods. Similarly, the value of some service items (e.g. travel, construction and government goods and services n.i.e) includes the values of some goods.⁴⁶

Differently from the CPC and WTO Services Sectoral classifications, under BMP6 there is no explicit reference to ‘support services’ to fishing and/or aquaculture or to ‘services incidental to fishing’. Fishing-related services could be covered under the heading ‘manufacturing services on physical inputs covered by others’, since it refers to all work done on goods by a resident of one economy for the owner of goods who is resident in another economy and covers processing, assembly, labeling, packing, and so forth undertaken by enterprises that do not own the goods concerned.

As shown in Tables 9 and 10, other services involved in the fisheries and aquaculture production chain could also be classified under different headings, although none of them would allow for a disaggregated identification of the services that, within each separate heading, would specifically relate to fishing and aquaculture.

⁴⁴ IMF (2009), op. cit., pp. 50-51.

⁴⁵ Ibid, pp. 71-74.

⁴⁶ Ibid, pp. 149-150.

Table 9. Potential disaggregated classification of fisheries services under BPM6

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Vessel rental (charter) with or without crew		Other business services		Operating leasing
	Operational services (insurance, finance, electronic location)		Financial services		Financial services
			Insurance and pension services		Insurance and pension services
	Public administrative services (such as licensing services, access agreements, permits)		Government goods and services n.i.e.		Government goods and services n.i.e.
Infrastructure services		Construction services		Construction services	
Harvesting	Fishing ⁴⁷ <small>[SEP]</small>				
	Transport, transshipping and <small>[SEP]</small> distribution <small>[SEP]</small>		Transport		Transport
Post-harvesting	Processing: cutting, cleaning and packing		Manufacturing services on physical inputs owned by others		Manufacturing services on physical inputs owned by others
	Port and landing services <small>[SEP]</small>		Transport		Other transport services
	Waste disposal <small>[SEP]</small>		Other business services		Waste treatment and depollution, agricultural and mining services
	Maintenance (including boat and gear <small>[SEP]</small> repair) <small>[SEP]</small>				Maintenance and repair services n.i.e.
	Transport and distribution <small>[SEP]</small>		Transport		Transport
	Marketing		Other business services		Professional and management consulting services
Horizontal services	Consulting <small>[SEP]</small>		Other business services		Professional and management consulting services
	Management <small>[SEP]</small>		Other business services		Professional and management consulting services
	R&D services <small>[SEP]</small>		Other business services		Research and development services

Source: Author's elaboration

⁴⁷ Fishing itself is not considered a service.

Table 10. Potential disaggregated classification of aquaculture services under BPM6

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Public administrative services (such as licensing services and permits) ^[1] _[SEP]				Government goods and services n.i.e.
	Hatching, growing and reproduction ^[1] _[SEP]		Manufacturing services on physical inputs owned by others		Manufacturing services on physical inputs owned by others
	Veterinary services ^[1] _[SEP]		Other business services		Waste treatment and depollution, agricultural and mining services
	Operational services (insurance, ^[1] _[SEP] finance) ^[1] _[SEP]		Financial services		Financial services
			Insurance and pension services		Insurance and pension services
Construction and rental of ^[1] _[SEP] infrastructure and capital goods ^[1] _[SEP]		Construction		Construction	
Harvesting	Harvesting				
Post-harvesting	Water treatment and waste disposal ^[1] _[SEP]		Other business services		Waste treatment and depollution, agricultural and mining services
	Processing: cutting, cleaning and packing		Manufacturing services on physical inputs owned by others		Manufacturing services on physical inputs owned by others
	Maintenance of facilities and equipment ^[1] _[SEP]		Construction services		Construction services
	Transport and distribution ^[1] _[SEP]		Transport		Transport
	Marketing		Other business services		Professional and management consulting services
Horizontal services	Consulting ^[1] _[SEP]		Other business services		Professional and management consulting services
	Management ^[1] _[SEP]		Other business services		Professional and management consulting services
	R&D services ^[1] _[SEP]		Other business services		Research and development services

Source: Author's elaboration

3.1.4. Extended Balance of Payments Services Classification (EBOPS 2010)

Like the CPC and the WTO Services Sectoral Classification, the Extended Balance of Payment Services Classification (EBOPS) is a product-based classification that was first devised for the 2002 Manual on Statistics of International Trade in Services (MSITS). Based on the experience gained during the implementation of the Joint OECD-Eurostat Trade in Services Classification at the end of the 1990s, the first version of EBOPS was a disaggregation of the Joint Classification and consistent with the BMP5 services classification⁴⁸.

Revised in 2010, EBOPS provides for the production of statistical information at a level of detail that meets needs for information in the framework of GATS and builds upon the BPM6 classification of services. In EBOPS 2010 the 12 main service categories that BPM6 identified and broke down into a list of standard and supplementary components are further disaggregated into more detailed sub-items, as summarized in table 10 below⁴⁹.

In order to facilitate the use of statistics based on EBOPS 2010 for GATS purposes, MSITS 2010 provides tables of correspondence between EBOPS 2010 and CPC Ver. 2 as well as between EBOPS 2010 and the WTO Services Sectoral Classification⁵⁰.

Similarly to the CPC and WTO Services Sectoral classification, and contrary to the BPM6 classification upon which it is build, EBOPS 2010 includes an explicit reference to fishing under the heading ‘services incidental to agriculture, forestry and fishing’ in the sub-category ‘other business services’. However, despite presenting a greater level of detail than the BPM6 classification, EBOPS2010 does not permit to distinguish services incidental to fishing from those incidental to agriculture and/or forestry.

While the 2010 version of the Manual on Statistics of International Trade in Services clarifies that veterinary services fall under ‘services incidental to agriculture, forestry and fishing’ in EBOPS 2010, no further explanation is provided regarding the meaning of ‘incidental’, thus hindering efforts to understand which services in the fisheries and aquaculture value chain would be covered under the heading ‘services incidental to agriculture, forestry and fishing’⁵¹.

Assuming that ‘services incidental to agriculture, forestry and fishing’ cover only veterinary services (relevant to aquaculture) and are relevant solely to the fishing activity in the harvesting phase, Tables 11 and 12 offer a potential disaggregated classification of all the services involved in the fisheries and aquaculture production chain under the EBOPS 2010 framework.

⁴⁸ UN (2015), op. cit., pp. 21-22.

⁴⁹ Kovacs, Karoly (2016), EBOPS 2010 Overview of the Services Categories, UN Statistics Division, Regional Seminar on International Trade Statistics, Ashgabat, Turkmenistan, 26-29 September; WTO (2010), op. cit., pp. 10-11.

⁵⁰ WTO (2010), op. cit., pp. 10-11.

⁵¹ UN (2010), Manual on Statistics of International Trade in Services 2010, St/ESA/M.86/Rev.1, New York: United Nations, p. 74.

Table 11. EBOPS 2010 services classification

Categories	Sub-category	Description
Manufacturing services on physical inputs owned by others	<ul style="list-style-type: none"> • Goods for processing in reporting economy — Goods returned (credits), Goods received (debits) • Goods for processing abroad — Goods sent (credits), Goods returned (debits) 	<ul style="list-style-type: none"> • Includes activities such as processing, assembly, labelling and packing that are undertaken by enterprises that do not own the goods.
Maintenance and repair services n.i.e.		<ul style="list-style-type: none"> • Includes maintenance and repair work by residents on goods that are owned by non-residents and vice versa and maintenance and repairs on ships and other transport equipment
Transport	<ul style="list-style-type: none"> • Sea (passenger, freight, other) • Air (passenger, freight, other) • Space • Rail (passenger, freight, other) • Road (passenger, freight, other) • Internal waterway (passenger, freight, other) • Pipeline transport • Electricity transmission • Other supporting and auxiliary transportation services • Post and courier services 	<ul style="list-style-type: none"> • Covers the process of carriage of people and objects from one location to another as well as related supporting and auxiliary services and rentals (charters) of carriers with crew as well as all transport services performed by residents of one economy for those of another and that involve the carriage of passengers, the movement of goods (freight), rentals (charters) of carriers with crew, related supporting and auxiliary services.
Travel	<ul style="list-style-type: none"> • Business (Acquisition of goods and services by border, seasonal, and other short-term workers; Other (Business travel)) • Personal (Health-related; Education-related; Other (Personal travel)) 	<ul style="list-style-type: none"> • Covers goods and services for own use or to be given away, acquired from an economy, by non-residents during visits to that economy. It covers stays of any length, provided that there is no change in residence, • Transactor-based rather than product-based.
Construction	<ul style="list-style-type: none"> • Construction abroad • Construction in the reporting economy 	<ul style="list-style-type: none"> • Covers the creation, management, renovation, repair or extension of fixed assets in the form of buildings, land improvements of an engineering nature and other constructions such as roads, bridges and dams. It also includes related installation and assembly work, site preparation and general construction as well as specialized services such as painting, plumbing and demolition). • Transactor-based rather than product-based.
Insurance and person services	<p>Direct insurance</p> <ul style="list-style-type: none"> • Life insurance • Freight insurance • Other direct insurance • Reinsurance • Auxiliary insurance services • Pension and standardized guarantee services 	
Financial services	<ul style="list-style-type: none"> • Explicitly charged and other financial services • Financial intermediation services indirectly measured (FISIM) 	<ul style="list-style-type: none"> • Included are services provided in connection with transactions in financial instruments, as well as other services related to financial activity, encompassing, inter alia, deposit taking and lending, letters of credit, credit card services, commissions and charges related to financial leasing, factoring, underwriting and clearing of payments

Categories	Sub-category	Description
Charges for the use of intellectual property	<ul style="list-style-type: none"> • Franchises and trademarks licensing fees • Licenses for the use of outcomes of research and development • Licenses to reproduce and/or distribute computer software • Licenses to reproduce and/or distribute audio-visual and related products 	
Telecommunication, computer and information services	<ul style="list-style-type: none"> • Telecommunication services • Computer services • Information services 	
Other business services	<ul style="list-style-type: none"> • Research and development services • Professional and management consulting services • Technical, trade-related and other business services • Waste treatment and de-pollution, agricultural and mining service • Operating leasing services • Trade-related services^[11] • Other business services n.i.e. 	<ul style="list-style-type: none"> • Professional and management consulting services include legal, accounting, management consulting and public relations services^[11] as well as advertising, market research and public opinion polling. • Waste treatment and de-pollution, agricultural and mining services include services incidental to agriculture, forestry and fishing. • Trade-related services include distribution services on a fee or contract basis. Wholesale trade and retailing services (except on a fee or contract) cannot be measured separately, and thus are in the value of the goods traded
Personal, cultural and recreational services	<ul style="list-style-type: none"> • Audio-visual and related services • other personal, cultural and recreational services 	<ul style="list-style-type: none"> • Includes education services.
Government goods and services n.i.e.	<ul style="list-style-type: none"> • Embassies and consulates • Military units and agencies • Other government goods and services n.i.e. 	<ul style="list-style-type: none"> • Includes services supplied by and to governments and not included in other categories of services. • Transactor-based rather than product-based.

Source: Kovacs (2016), WTO (2010), and WTO (2014)

Table 12. Potential disaggregated classification of fisheries services under EBOPS 2010

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Vessel rental (charter) with or without crew	Other business services		Operating leasing services (10.3.3)	
	Operational services (insurance, finance, electronic location)	Insurance and pension services	6	Freight insurance (6.1.2)	
		Financial services	7		
	Infrastructure services	Construction	5	Construction abroad (5.1)	
	Infrastructure services	Construction	5	Construction in the reporting economy (5.2)	
	Veterinary services ^[11] _[SEP]	Other business services		Waste treatment and de-pollution, agricultural and mining services (10.3.2)	Services incidental to agriculture, forestry and fishing (10.3.2.2)
Harvesting	Fishing ^[52] _[SEP] ^[11] _[SEP]	Other business services	10	Waste treatment and de-pollution, agricultural and mining services (10.3.2)	Services incidental to agriculture, forestry and fishing (10.3.2.2)
	Transport, transshipping and ^[11] _[SEP] distribution	Transport	3	Mode of Transport - Sea Transport (3.1)	Freight (Sea) 3.1.2
				Other modes of transport (3.8)	Freight (Inland waterway) 3.8.2
				What is carried (for all modes of transport)	Freight (All modes of transport) 3a.2
Post-harvesting	Processing: cutting, cleaning and packing	Manufacturing services on inputs owned by others	1	Goods for processing in reporting economy — Goods returned (credits), Goods received (debits) (1.1)	
				Goods for processing abroad — Goods sent (credits), Goods returned (debits) (1.2)	
	Waste disposal ^[11] _[SEP]	Other business services	10	Waste treatment and de-pollution, agricultural and mining services (10.3.2)	Waste treatment and de-pollution (10.3.2.1)
	Maintenance (including boat and gear ^[11] _[SEP] repair) ^[11] _[SEP]	Maintenance and repair services n.i.e.	2		
	Transport and distribution ^[11] _[SEP]	Transport	3	Mode of Transport -Sea Transport (3.1)	Freight (Sea) 3.1.2
				Other modes of transport (3.8)	Freight (Inland waterway) 3.8.2
			What is carried (for all modes of transport)	Freight (All modes of transport) 3a.2	
Marketing	Other business services	10	Professional and management consulting services (10.2)	Advertising, market research, and public opinion polling services (10.2.2)	
Horizontal services	Consulting ^[11] _[SEP]	Other business services	10	Professional and management consulting services (10.2)	Business and management consulting and public relations services (10.2.1.3)
	Management ^[11] _[SEP]	Other business services	10	Professional and management consulting services (10.2)	Business and management consulting and public relations services (10.2.1.3)
	R&D services ^[11] _[SEP]	Other business services	10	Research and development services (10.1)	

Source: Author's elaboration

⁵² Fishing itself is not considered a service. Indicated herein are the subclasses that include services supplied in relation to fishing.

Table 13. Potential disaggregated classification of aquaculture services under EBOPS 2010

Production Phase	Activity	Section	Division	Description	Details
Pre-harvesting	Hatching, growing and reproduction ^[11] _[SEP]	Other business services	10	Waste treatment and de-pollution, agricultural and mining services	Services incidental to agriculture, forestry and fishing (10.3.2.2)
	Operational services (insurance, ^[11] _[SEP] finance) ^[11] _[SEP]	Insurance and pension services	6	Freight insurance (6.1.2)	
		Financial services	7		
	Construction and rental of ^[11] _[SEP] infrastructure and capital goods ^[11] _[SEP]	Construction	5	Construction abroad (5.1)	
5			Construction in the reporting economy (5.2)		
Harvesting	Harvesting	Other business services	10	Waste treatment and de-pollution, agricultural and mining services (10.3.2)	Services incidental to agriculture, forestry and fishing (10.3.2.2)
Post-harvesting	Water treatment and waste disposal ^[11] _[SEP]	Other business services	10	Waste treatment and de-pollution, agricultural and mining services (10.3.2)	Waste treatment and de-pollution (10.3.2.1)
	Processing: cutting, cleaning and ^[11] _[SEP] packing ^[11] _[SEP]	Manufacturing services on physical inputs owned by others	1	Goods for processing in reporting economy — Goods returned (credits), Goods received (debits) (1.1)	
				Goods for processing abroad — Goods sent (credits), Goods returned (debits) (1.2)	
	Transport and distribution ^[11] _[SEP]	Transport	3	Mode of Transport -Sea Transport (3.1)	Freight (Sea) 3.1.2
				Other modes of transport (3.8)	Freight (Inland waterway) 3.8.2
What is carried (for all modes of transport)				Freight (All modes of transport) 3a.2	
Marketing	Other business services	10	Professional and management consulting services (10.2)	Advertising, market research, and public opinion polling services (10.2.2)	
Horizontal services	Consulting ^[11] _[SEP]	Other business services	10	Professional and management consulting services (10.2)	Business and management consulting and public relations services (10.2.1.3)
	Management ^[11] _[SEP]	Other business services	10	Professional and management consulting services (10.2)	Business and management consulting and public relations services (10.2.1.3)
	R&D services ^[11] _[SEP]	Other business services	10	Research and development services (10.1)	

Source: Author's elaboration

3.2. Activity-based classifications

3.2.1. International Standard Industrial Classification of All Economic Activities (ISIC)

In contrast with the CPC and the WTO Services Sectoral Classification systems, which cover goods and services, the International Standard Industrial Classification of All Economic Activities (ISIC) consists of a coherent and consistent classification structure of productive activities, i.e. economic activities within the production boundary of the System of National Accounts (SNA)⁵³. Since the adoption of its original version in 1948, ISIC has undergone a number of revisions, the latter of which (revision 4) was released in 2008.

During the revision process of ISIC Rev.4 special attention was paid to improving the links between existing activity classifications, especially at the regional level, in order to facilitate future international data comparison, as well as to harmonize ISIC with other classifications that have conceptual linkages to some part or all of the economic structure⁵⁴.

ISIC serves a dual purpose. First, it provides the internationally accepted standard for categorizing producing units within an economy, which allows for data comparison at the national and international levels. This does not imply that countries must adopt ISIC as a whole, without modification, but rather that ISIC should be used as a guide in adapting national classifications to the international standard, thus enabling countries to choose between using ISIC directly for their national purposes or developing their own national classification in conformity with the ISIC framework⁵⁵.

Secondly, as the internationally accepted reference classification for economic activities and its strong link to other existing activity classifications, ISIC acts as an effective tool for the harmonization of economic statistics⁵⁶.

Distinctively different in nature and purpose from the classifications of goods and services, ownership, institutional units or other types of classifications, ISIC has a strong natural relationship with the Central Product Classification. Both are general-purpose classifications adopted by the United Nations, with CPC covering products and ISIC representing the activity side of these two interrelated United Nations classifications. Also, each subclass of the CPC consists of goods or services that are generally produced in a specific class or classes of the ISIC. Moreover, in the CPC version 2.1 classification list each sub-class has a reference to the ISIC (Rev.4) industry or industries in which most of the goods or services in question are generally produced⁵⁷.

Still, the CPC should not be regarded as a mere extension of the ISIC, as it is not limited to listing goods and services produced according to ISIC industries. Also, there is no intention of establishing a one to one correspondence between the CPC and ISIC due to the different nature of the underlying concepts of these two classifications. The CPC classification is based on the physical characteristics and intrinsic nature of goods or on the nature of the services rendered, whereas ISIC does not draw distinctions according to kind of ownership of a producing unit, type

⁵³ The SNA states that “economic production is an activity, carried out under the responsibility, control and management of an institutional unit, that uses inputs of labour, capital, and goods and services to produce outputs of goods and services”. UN (2008), International Standard Industrial Classification of All Economic Activities – Revision 4, Statistical Paper, Series M N 4/Rev.4, ST/ESA/SER.M/Rev.4, p. 3.

⁵⁴ UN (2008), op. cit., pp. 4-5.

⁵⁵ Ibid, p. 33.

⁵⁶ Ibid, pp. 5-6.

⁵⁷ Ibid, p. 18.

of legal organization or mode of operation because such criteria do not relate to the characteristics of the activity itself⁵⁸.

Under ISIC economic activities are subdivided in a hierarchical, four-level structure of mutually exclusive categories (i.e. section, division, group, and class). Table 14 below summarizes the broad structure of the ISIC classification system.

Table 14. ISIC Rev. 4 structure

Section	Divisions	Description
A	01–03	Agriculture, forestry and fishing
B	05–09	Mining and quarrying
C	10–33	Manufacturing
D	35	Electricity, gas, steam and air conditioning supply
E	36–39	Water supply; sewerage, waste management and remediation activities
F	41–43	Construction
G	45–47	Wholesale and retail trade; repair of motor vehicles and motorcycles
H	49–53	Transportation and storage
I	55–56	Accommodation and food service activities
J	58–63	Information and communication
K	64–66	Financial and insurance activities
L	68	Real estate activities
M	69–75	Professional, scientific and technical activities
N	77–82	Administrative and support service activities
O	84	Public administration and defence; compulsory social security
P	85	Education
Q	86–88	Human health and social work activities
R	90–93	Arts, entertainment and recreation
S	94–96	Other service activities
T	97–98	Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U	99	Activities of extraterritorial organizations and bodies

Source: UN (2008), ST/ESA/SER.M/Rev.

ISIC is built on a production-oriented or supply-based conceptual framework that groups producing units into detailed industries based on similarities in the economic activity, taking into account:

- the inputs of goods, services and factors of production;
- the process and technology of production;
- the characteristics of outputs; and
- the use to which the outputs are put.

⁵⁸ UN (2015), op. cit., p. 18; UN (2008), op. cit., pp. 9-10, 36

New needs that had emerged during the fourth revision of ISICS have prompted the creation of more categories at the highest level (section) especially for service activities⁵⁹.

As an activity-based classification ISIC explicitly covers fishing and aquaculture, with a level of detail that also permits the distinction between marine and freshwater activities (see Table 15). However, as previously noted, these activities do not fall under the definition of ‘services’ under the GATS framework and, therefore, do not provide for an adequate categorization of the services that are trade internationally along the fisheries and aquaculture value chains.

Tables 16 and 17 offer an overview of other categories in the ISIC Rev. 4 classification that could be used to classify fisheries and aquaculture services, albeit only one would be specifically and exclusively dedicated to the fisheries and aquaculture production (i.e. ‘processing and preserving of fish, crustaceans and molluscs’).

⁵⁹ UN (2008), op. cit., pp. 3-4, and 12.

Table 15. Fishing and aquaculture under ISIC Rev. 4

Division	Group	Class	Description	Includes	Excludes
03			Fishing and aquaculture	<ul style="list-style-type: none"> • Capture fishery and aquaculture, covering the use of fishery resources from marine, brackish or freshwater environments, with the goal of capturing or gathering fish, crustaceans, molluscs and other marine organisms and products • Activities that are normally integrated in the process of production for own account 	<ul style="list-style-type: none"> • Building and repairing of ships and boats (3011, 3315) • Sport or recreational fishing activities (9319) • Processing of fish, crustaceans or molluscs (1020)
	031		Fishing	<ul style="list-style-type: none"> • Capture fishery, i.e. the hunting, collecting and gathering activities directed at removing or collecting live wild aquatic organisms from the oceanic, coastal or inland waters for human consumption and other purposes • Fishing restocked water bodies 	
		0311	Marine fishing	<ul style="list-style-type: none"> • Fishing on a commercial basis in ocean and coastal waters^[1]_{SEP} • Taking of marine crustaceans and molluscs • Whale catching^[1]_{SEP} • Taking of marine aquatic animals (e.g. turtles, sea squirts) • Activities of vessels engaged both in fishing and in processing and preserving of fish • Gathering of other marine organisms and materials (e.g. sponges, algae) 	<ul style="list-style-type: none"> • Capturing of marine mammals, except whales, e.g. walruses, seals (0170) • Processing of fish, crustaceans and molluscs on factory ships or in factories ashore (1020) • Renting of pleasure boats with crew for sea and coastal water transport, e.g. for fishing cruises (5011) • Fishing inspection, protection and patrol services (8423)^[1]_{SEP} • Fishing practiced for sport or recreation and related services (9319) • Operation of sport fishing preserves (9319)
		0312	Freshwater fishing	<ul style="list-style-type: none"> • Fishing on a commercial basis in inland waters • Taking of freshwater crustaceans and molluscs • Taking of freshwater aquatic animals • Gathering of freshwater materials 	<ul style="list-style-type: none"> • Processing of fish, crustaceans and molluscs (1020) • Fishing inspection, protection and patrol services (8423) • Fishing practiced for sport or recreation and related services (9319) • Operation of sport fishing preserves (9319)
	032		Aquaculture	<ul style="list-style-type: none"> • Aquaculture or aquafarming (the production process involving the culturing or farming (including harvesting) of aquatic organisms using techniques designed to increase the production of the organisms in question beyond the natural capacity of the environment. 	
		0321	Marine aquaculture	<ul style="list-style-type: none"> • Fish farming in sea water including farming of marine ornamental fish • Production of bivalve spat (oyster mussel etc.), lobsterlings, shrimp post-larvae, fish fry and fingerlings^[1]_{SEP} • Growing of laver and other edible seaweeds • Culture of crustaceans, bivalves, other molluscs and other aquatic animals in sea water^[1]_{SEP} • Aquaculture activities in brackish waters • Aquaculture activities in salt water filled tanks or reservoirs • Operation of fish hatcheries (marine) • Operation of marine worm farms 	<ul style="list-style-type: none"> • Frog farming (0322)^[1]_{SEP} • Operation of sport fishing preserves (9319)
		0322	Freshwater aquaculture	<ul style="list-style-type: none"> • Fish farming in freshwater including farming of freshwater ornamental fish • Culture of freshwater crustaceans, bivalves, other molluscs and other aquatic animals • Operation of fish hatcheries (freshwater) • Farming of frogs^[1]_{SEP} 	<ul style="list-style-type: none"> • Aquaculture activities in salt water filled tanks and reservoirs (0321) • Operation of sport fishing preserves (9319)

Source: UN (2008), ST/ESA/SER.M/Rev.

Table 16. Potential disaggregated classification of fisheries services under ISIC Rev. 4

Production Phase	Activity	Section	Division	Description	Details	
Pre-harvesting	Operational services (insurance, finance, electronic location)	K. Financial and insurance activities	64	Financial service activities, except insurance and pension funding	Other financial service activities, except insurance and pension funding activities (649)	
			65	Insurance, reinsurance and pension funding, except compulsory social security	Non-life security (6512)	
			66	Activities auxiliary to financial service and insurance activities	Activities auxiliary to financial service activities, except insurance and pension funding (661)	
			66	Activities auxiliary to financial service and insurance activities	Activities auxiliary to insurance and pension funding (662)	
Harvesting	Fishing ^{11} _{SEP}	A. Agriculture, forestry and fishing	3	Fishing and aquaculture	Marine fishing (0311) Freshwater fishing (0312)	
	Transport, transshipping and ^{11} _{SEP} distribution ^{11} _{SEP}	H. Transportation and storage	50	Water transport	Sea and coastal freight water transport (5012) Inland freight water transport (5022)	
			52	Warehousing and support activities for transportation	Services activities incidental to water transportation (5222)	
					Cargo handling (5224)	
			Post-harvesting	Processing: cutting, cleaning and packing	C. Manufacturing	10
	N. Administrative and support service activities	82			Office administrative, office support and other business support activities	Packaging activities (8292)
Waste disposal ^{11} _{SEP}	E. Water supply, sewage, waste management and remediation activities	38		Waste collection, treatment and disposal activities; materials recovery	Waste treatment and disposal (382)	
Freezing and warehouse services ^{11} _{SEP}	H. Transportation and storage	52		Warehousing and support activities for transportation	Warehousing and storage (5210)	
Maintenance (including boat and gear repair) ^{11} _{SEP}	C. Manufacturing	33		Repair and installation of machinery and equipment	Repair of transport equipment, except motor vehicles (3315)	
Transport and distribution ^{11} _{SEP}	H. Transportation and storage	50		Water transport	Sea and coastal freight water transport (5012) Inland freight water transport (5022)	
		52		Warehousing and support activities for transportation	Cargo handling (5224)	
Wholesale and retail services	G. Wholesale and retail trade; repair of motor vehicles and motorcycles	46	Wholesale trade, except of motor vehicles and motorcycles	Wholesale of agricultural raw materials and live animals (4620)		

Production Phase	Activity	Section	Division	Description	Details
Post-harvesting	Wholesale and retail services	G. Wholesale and retail trade; repair of motor vehicles and motorcycles	47	Retail trade, except of motor vehicles and motorcycles	Retail sale in non-specialized stores with food, beverages or tobacco predominating (4711)
				Retail trade, except of motor vehicles and motorcycles	Retail sale of food in specialized stores (4721)
				Retail trade, except of motor vehicles and motorcycles	Retail sale via stalls and markets of food, beverages and tobacco products (4781)
	Marketing	M. Professional, scientific and technical activities	73	Advertising and market research	Advertising (7310)
				Advertising and market research	Market research and public opinion polling (7320)
Horizontal services	Consulting ^[1] _{SEP}	M. Professional, scientific and technical activities	70	Activities of head offices; management consultancy activities	Management consultancy activities (7020)
	Management	M. Professional, scientific and technical activities	70	Activities of head offices; management consultancy activities	Management consultancy activities (7020)
		N. Administrative and support service activities	82	Office administrative, office support and other business support activities	Business support service activities n.e.c. (829)
	R&D services ^[1] _{SEP}	M. Professional, scientific and technical activities	72	Scientific research and development	Research and experimental development on natural sciences and engineering (7210)

Source: Author's elaboration

Table 17. Potential disaggregated classification of fisheries services under ISIC Rev. 4

Production Phase	Activity	Section	Division	Description	Details	
Pre-harvesting	Veterinary services ^{1} _{SEP}	M. Professional, scientific and technical activities	75	Veterinary activities	Veterinary activities (7500)	
	Operational services (insurance, ^{1} _{SEP} finance)	K. Financial and insurance activities	64	Financial service activities, except insurance and pension funding	Other financial service activities, except insurance and pension funding activities (649)	
			65	Insurance, reinsurance and pension funding, except compulsory social security	Non-life security (6512)	
			66	Activities auxiliary to financial service and insurance activities	Activities auxiliary to financial service activities, except insurance and pension funding (661)	
	Activities auxiliary to insurance and pension funding (662)					
	Construction and rental of ^{1} _{SEP} infrastructure and capital goods ^{1} _{SEP}	F. Construction	43	Specialized construction activities	Other construction installation (4329)	
Other specialized construction activities (4390)						
Harvesting	Harvesting	A. Agriculture, forestry and fishing	3	Fishing and aquaculture	Marine aquaculture (0321)	
					Freshwater aquaculture (0312)	
Post-harvesting	Water treatment and waste disposal	E. Water supply, sewage, waste management and remediation activities	36	Water collection, treatment and supply	Water collection, treatment and supply (3600)	
			38	Waste collection, treatment and disposal activities; materials recovery	Waste treatment and disposal (382)	
	^{1} _{SEP} Processing: cutting, cleaning and ^{1} _{SEP} packing ^{1} _{SEP}	C. Manufacturing	10	Manufacture of food products	Processing and preserving of fish, crustaceans and molluscs (1020)	
		N. Administrative and support service activities	82	Office administrative, office support and other business support activities	Packaging activities (8292)	
	^{1} _{SEP} Freezing and warehouse services ^{1} _{SEP}	H. Transportation and storage	52	Warehousing and support activities for transportation	Warehousing and storage (5210)	
	^{1} _{SEP} Maintenance of facilities and equipment ^{1} _{SEP}	C. Manufacturing	33	Repair and installation of machinery and equipment	Repair of other equipment (3319)	
	^{1} _{SEP} Transport and distribution ^{1} _{SEP}	H. Transportation and storage	50	Water transport	Sea and coastal freight water transport (5012)	
					Inland freight water transport (5022)	
	Wholesale and retail services	G. Wholesale and retail trade; repair of motor vehicles and motorcycles	46	Wholesale trade, except of motor vehicles and motorcycles	Wholesale of agricultural raw materials and live animals (4620)	
					47	Retail trade, except of motor vehicles and motorcycles
Retail sale of food in specialized stores (4721)						
				Retail sale via stalls and markets of food, beverages and tobacco products (4781)		

Production Phase	Activity	Section	Division	Description	Details
Post-harvesting	Marketing	M. Professional, scientific and technical activities	73	Advertising and market research	Advertising (7310)
					Market research and public opinion polling (7320)
Horizontal services	Consulting ^[17] _{SEP}	M. Professional, scientific and technical activities	70	Activities of head offices; management consultancy activities	Management consultancy activities (7020)
	Management	M. Professional, scientific and technical activities	70	Activities of head offices; management consultancy activities	Management consultancy activities (7020)
		N. Administrative and support service activities	82	Office administrative, office support and other business support activities	Business support service activities n.e.c. (829)
	R&D services ^[17] _{SEP}	M. Professional, scientific and technical activities	72	Scientific research and development	Research and experimental development on natural sciences and engineering (7210)

Source: Author's elaboration

4. Statistical data on trade in fisheries and aquaculture services

4.1. International statistical databases

An essential tool for policymakers, statistics allow to evaluate market opportunities, assess the effects of trade liberalization commitments, and undertake informed policy decisions. Following the entry into force of GATS, efforts have been made to develop detailed, relevant and internationally comparable statistical information on the international supply of services⁶⁰. Nonetheless, three challenges with measuring services trade flows remain: (i) the intangible nature of services; (ii) the dispersion of data sources; and (iii) the limited capacity of national statistics agencies.

The Manual on Statistics of International Trade in Services (MSITS), adopted by the United Nations Statistical Commission in 2002 and revised in 2010, provides internationally agreed guidelines and recommendations on how to use and develop the two main sources to measure the international supply of services: (i) balance of payments; and (ii) foreign affiliate statistics⁶¹.

Balance of payments (BOP) statistics summarize transactions of an economy with the rest of the world into the components of the current account and the capital and financial account. In conformity with the 6th edition of the IMF Balance of Payments and International Investment Position Manual (BPM6), they display data on trade in services between residents and non-residents (within the current account) into 12 items: manufacturing services on physical inputs owned by others; maintenance and repair services; transport; travel; construction; insurance and pension services; financial services; charges for the use of intellectual property; telecommunications, computer, and information services; other business services; personal, cultural and recreational services; and government goods and services. BOP statistics are used primarily to measure mode 1, 2 and 4, although the latter is the mode of service supply most difficult to capture⁶².

Since BOP statistics do not allow a comprehensive measurement of services delivered through Mode 3, MSTIS 2010 recommends the use of the Foreign Affiliates Statistics (FATS) framework, which provides for the compilation of a number of indicators aimed at describing the operations of foreign affiliates, including on services⁶³.

The most reliable sources of data on international trade in services are provided by a number of international and regional organizations, namely the WTO, the UN, the IMF, the World Bank, OECD, and EUROSTAT. However, a closer look at these databases shows that they all fall short of properly capturing the extent of trade in fisheries and aquaculture services, partly due to very aggregated nature of the data presented and to the inadequacy of the classification systems they rely on to categorize the data collected.

4.1.1. WTO Statistics Database

The WTO dataset presents exports and imports of commercial services of all economies in conformity with EBOPS 2010 and following the item definition of the IMF BPM6. Reported data are sourced primarily from Eurostat, the OECD, the IMF, and national statistical sources, and complemented - where necessary - by estimates produced by the WTO, UNCTAD, and ITC⁶⁴.

⁶⁰ WTO (2010), *Measuring Trade in Services*, Geneva: World Trade Organization, pp. 10-11.

⁶¹ *Ibid.*, pp. 10-11.

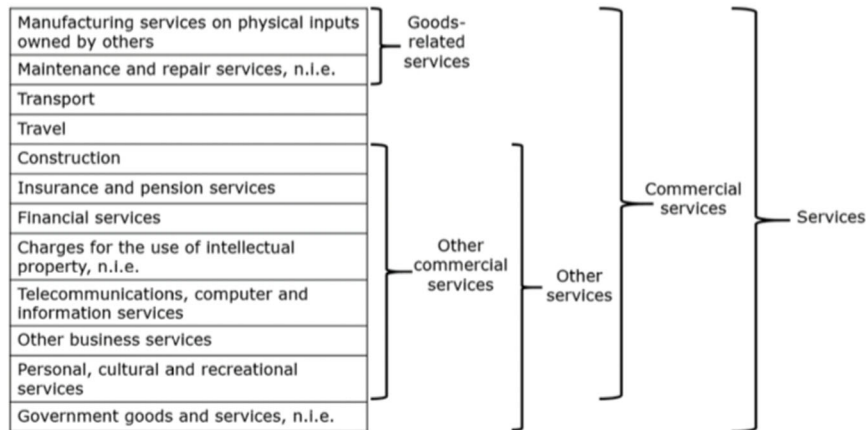
⁶² *Ibid.*, pp. 10-11.

⁶³ *Ibid.*, pp. 10-11.

⁶⁴ WTO, Technical Note, https://data.wto.org/assets/UserGuide/TechnicalNotes_en.pdf

Commercial services in the WTO database fall under 4 major categories: (i) goods-related services, (ii) transport, (iii) travel; and other commercial services.⁶⁵

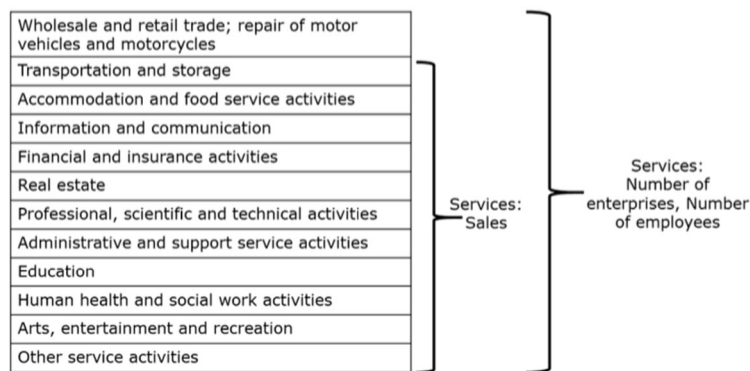
Figure 2. WTO BOP Services breakdown



Source: WTO

As data on commercial services do not cover the supply of services through a commercial presence, the WTO database also contains statistical data on inward and outward FATS, whose activity classification is based on the 4th revision of the Standard Industrial Classification of All Economic Activities (ISIC).⁶⁶

Figure 3. WTO FATS Services breakdown



Source: WTO

While the WTO database does not offer data at a level of detail that could well capture trade in fisheries and aquaculture services as intended by FAO, some of its sub-categories provide data on services relevant to the fisheries and aquaculture value chain. For example, transport covers sea transport services that are performed by residents of one economy for those of another and that involve the movement of goods (freight), and rentals (charters) of carriers with crew, and good-related services include manufacturing services on physical inputs owned by others that cover processing, assembly, labeling, packing, and so forth undertaken by enterprises that do not own the goods concerned.

⁶⁵ WTO (2017), Trade Profiles 2017, Geneva: WTO, p. 4.

⁶⁶ Inward FATS capture the activities of domestic enterprises controlled by foreign investors, whereas the activities of controlled affiliates of domestic enterprises established abroad are covered in outward FATS.

4.1.2. World Bank

The World Bank captures data on trade in services under three different databases (i.e. World Development Indicators, Trade in Services Database and Export of Value Added Database), but in none of them are data on fisheries and aquaculture services as intended under the FAO framework properly captured.

The World Development Indicators offer aggregated data on trade in services for 5 services categories, i.e. transport services, insurance and financial services, travel services, ICT services, and commercial services. Specific disaggregated data on the volume of fisheries and aquaculture services cannot be drawn from this database.

The Trade in Services Database (TSD) consolidates multiple sources of bilateral trade data on services (UN, Eurostat, OECD) and global trade data (IMF) for 199 countries in the period 1985 – 2011, covering 11 services categories in conformity with BPM6 and transportation, travel, communication services, construction services, insurance services, financial services, computer and information services, royalties and licence fees, other business services, personal, cultural and recreational services, and government services n.i.e.⁶⁷.

The TSD database falls short of properly capturing data on fisheries and aquaculture services because it only provides information on annual bilateral services trade flows in Mode 1 (cross-border trade) and Mode 2 (consumption abroad), but not Mode 4, the mode of supply through which fisheries and aquaculture services provided under fisheries access arrangements are likely to be supplied. Moreover, the level of data aggregation in this database is such that no fisheries- and aquaculture-specific disaggregated data can be derived from it.

The Export of Value Added Database (EVAD) measures value added exports of services and the linkages with other export sectors for 118 economies, including developing countries in the period 1992-2011. It covers 9 commercial services (communications, construction, distribution and trade, finance, insurance, other business and ICT, other consumer services, other services, and transport). It is a particularly useful database for measuring services exports, since it measures trade in services by making explicit the direct value-added contribution of a sector to domestic production as well as exports, as well as the linkages that the sector provides to all other sectors of the economy in terms of value added⁶⁸.

Like its fellow World Bank services database, the EVAD database also fails to properly capture data on the backward and forward linkages of fisheries and aquaculture services exports.

4.1.3. UNCTAD Data on Trade in Services

Similarly to the WTO's and World Bank's approach, UNCTAD collects and classifies data on trade in services in accordance with concepts of the IMF BPM6 and of the national accounts. It also defines trade in services according to the 4 modes of supply established by the GATS.

UNCTAD's statistics on services trade covers 4 main categories (transport, travel, goods-related services, and other services) and 11 sub-categories. Data are available on a quarterly and yearly basis for around 200 economies⁶⁹.

⁶⁷ World Bank, Trade in Services Database, (last accessed on June 2019) <https://datacatalog.worldbank.org/dataset/trade-services-database>

⁶⁸ World Bank, Export of Value Added Database, (last accessed on June 2019) <https://datacatalog.worldbank.org/dataset/export-value-added-database>

⁶⁹ In collaboration with the WTO and ITC, UNCTAD prepares the Trade-in-Services Quarterly Bulletin, a unique most up-to-date collection of short-term statistics on the international flows of services covering around 150 economies. UNCTAD, UNCTADStat, (last accessed on June 2019) <https://unctad.org/en/Pages/Publications/Statistics-on-Trade-in-Services.aspx>

As UNCTAD closely follows the WTO's and World Bank's approach to statistical data, its statistics on trade in service suffer the same issues with regards to its inability to provide adequate data on the volume of fisheries and aquaculture services as interpreted under the FAO framework.

4.1.4. OECD international trade in services statistics

OECD international trade in services statistics are collected in close coordination with the WTO and Eurostat to ensure maximum coordination and cooperation at the international level. They cover both balance of payments trade in services data and data on the activities of foreign affiliates (Activity of Multinational Enterprises - AMNE)⁷⁰.

To the extent that countries report them, data in the OECD International Trade in Services database, are also broken down by type of service according to the EBOPS 2010 classification. From a fisheries and aquaculture services perspective, this approach to collecting and disseminating statistical data is particularly relevant because the OECD database provides data on 'services incidental to agriculture, forestry and fishing' under 'other business services', as opposed to the WTO, World Bank and UNCTAD databases that do not grant such option⁷¹.

Likewise, the database provides information on a wide variety of services categorized in conformity with the EBOP2010 classification system that, as illustrated in Section 3.1.4, could be considered as potentially covering part of the fisheries and aquaculture supply chain. However, at such disaggregated level, it would not be possible to distinguish them from services supplied in relation to activities other than fisheries and aquaculture.

4.2. National statistics databases

Among the countries that make extensive use of foreign fishing access arrangements and provide rather reliable and accurate government statistics are China, the EU, Japan, New Zealand, and the US. China, the world's largest producer of seafood, has a prosperous distant-water fishing industry, which is considered of strategic importance for employment and business opportunities, food security, technological development and safeguarding China's rights and interests globally. The EU has signed bilateral fisheries agreements with partners in the northern hemisphere (i.e. Norway, Iceland and Faroe Islands) as well as with countries in the southern hemisphere (i.e. sustainable fisheries partnerships). Japan, whose fisheries agreements do not directly involve the government, has established arrangements mainly in the Pacific Region. For New Zealand trade in fishing services primarily takes the form of chartering arrangements. The US government is interested primarily in concluding fisheries agreements with partners where the potential to include specific target species such as tuna is high⁷².

While data on the international trade of fish and aquaculture products can be found in the national statistics databases of all the above-mentioned countries, the same does not hold true for data on international trade in fisheries and aquaculture services.

Notwithstanding the fact that all five countries provide data on services categories relevant to the fisheries and aquaculture value chain (e.g. transport services, research and development services), these statistics are presented at such an aggregate level that data ascribable to fisheries and aquaculture are almost impossible to discern from those attributable to services supplied in relation to other activities. Overall, only the EU and New Zealand are able to capture a very limited picture of the actual volume of fisheries and aquaculture services.

⁷⁰ OECD, International Trade in Services Statistics, (last accessed on June 2019) <https://www.oecd.org/sdd/its/international-trade-in-services-statistics.htm>

⁷¹ Ibid.

⁷² Will, Emma (2018), op. cit. pp. 9-10; World Bank (2014), Trade in Fishing Services – Emerging Perspectives on Foreign Fishing Arrangements, World Bank Report N. 92622 – GLB, Washington D. C.: International Bank for Reconstruction and Development, pp. 32, 42.

4.2.1.China

Every year the Chinese National Bureau of Statistics, in charge of the country's statistics and economic accounting, publishes the China Statistical Yearbook, which presents a wide variety of data, including on imports and exports in services⁷³.

Although BPM6 is used as reference for compiling data on trade in services, which come from the Chinese Ministry of Commerce, these data do not include any information on 'manufacturing services on physical inputs owned by others', which, as stated before, could cover fishing-related services insofar as the term refers to all work done on goods by a resident of one economy for the owner of goods who is resident in another economy and covers activities such as assembly, labeling, and packing undertaken by enterprises that do not own the goods concerned.

Data are instead provided on processing services, albeit in such an aggregate form that it is not possible to establish to what extent their value can be attributed to the processing of fisheries and aquaculture products.

4.2.2.European Union

Eurostat is the official statistical office of the European Union (EU), which is tasked with providing, among others, with statistics on International Trade in Services (ITS) that cover transactions paid for the services that have taken place between the residents and non-residents. Although they are compiled following the principles described in the BPM6 and the 2008 System of National Accounts, in order to allow compilers to use many of the same data sources for compiling both balance of payments and international trade in services statistics, they are collected using the EBOPS 2010 classification, which boasts a higher degree of detail in categorising services than the BPM6 product classification of the balance of payments⁷⁴.

Due to the methodological changes introduced by the BPM6, which included revised criteria for treating outsourced processing (i.e. goods for processing), statistics on the EU international trade in services are only available from 2010 onwards⁷⁵.

ITS statistics cover all modes of supply except commercial presence, for which foreign affiliates' statistics are used instead. Eurostat has explored, through a pilot project, the feasibility of estimating international trade in services by mode of supply, based on a methodology detailed in the UN's MSITS 2010. Thereafter, statistics for international trade in services and those for foreign affiliates may be combined with the model to estimate shares of trade in services for modes 1, 2 and 4⁷⁶.

Eurostat used a wide range of data sources to compile services statistics:

- the international transactions reporting system (ITRS);
- surveys of businesses, including international trade in services statistics (ITSS) surveys;
- administrative data sources;
- information obtained from partner countries'
- other sources, such as household surveys.⁷⁷

⁷³ National Bureau of Statistics of China (2018), China Statistical Yearbook, (last accessed on June 2019) www.stats.gov.cn/tjsj/ndsj/2018/indexeh.htm

⁷⁴ EUROSTAT, International Trade in Services Statistics - Background, (last accessed on June 2019) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_Trade_in_Services_statistics_-_background

⁷⁵ Under the new guidelines inward and outward flows of processed goods that do not change ownership should no longer be recorded gross within the current account for goods, but instead should be measured in terms of the value of their processing fee within services. This methodological change led to an increase in the value on international trade in services. Ibid.

⁷⁶ EUROSTAT, International Trade in Services – an Overview, (last accessed on June 2019) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_trade_in_services_-_an_overview#Statistics_on_international_trade_in_services.

⁷⁷ The method for collecting statistical data on international trade in services within the EU is to survey a representative sample of the population that are engaged in international trade in services and then weighted up to the total trade. EUROSTAT, International Trade

As EUROSTAT uses the OECD approach in collecting data on trade in services in conformity with EBOPS2010, its database on international trade in services contains data on the volume of fisheries and aquaculture services insofar as they are captured as ‘services incidental to agriculture, forestry and fishing’ under ‘other business services’, although at such disaggregated level it would not be possible to distinguish them from services supplied in relation to activities other than fisheries and aquaculture.

4.2.3. New Zealand

Stats NZ Tatauranga Aotearoa is New Zealand's official data agency, tasked with collecting and publishing statistics on the country's population, business, labour market, society, economy and environment⁷⁸. Among them are data on international trade in services, which are compiled according to BPM6 with a highly disaggregated level of service type more akin to the EBOPS 2010 services classification⁷⁹.

Similarly to the EU case, limited data on trade in fisheries and aquaculture services imported and exported by New Zealand are available under ‘services incidental to agriculture, forestry and fishing’ under ‘other business services’ in the table on International Trade in Services by Service Type, albeit the level of aggregation makes it impossible to distinguish them from services supplied in relation to agriculture and forestry.

4.2.4. Japan

In Japan the statistical system is decentralized, with the Statistics Bureau conducting fundamental censuses and statistical surveys, and other relevant ministries produce statistics for their own policy purposes. The Ministry of Finance (MOF), in particular, is in charge of compiling the balance of payments statistics, which include data on international transactions of services⁸⁰.

Like China, Japan's MOF follows the BPM6 approach for compiling data, without the level of detail of EBOPS 2010. Unlike China, MOF included ‘manufacturing services on physical inputs owned by others’ in its system, which could potentially cover trade in fisheries and aquaculture services. However, the highly aggregated nature of these data makes it virtually impossible to distinguish these services from those supplied in relation to activities other than fisheries and aquaculture.

The statistics on fisheries provided by Japan's Ministry of Agriculture, Forestry and Fisheries cover only fish and aquaculture products (e.g. value of catches and harvests, production volume by processing type), vessels (e.g. number of owned fishing vessels), management entities (e.g. number of management entities, number of processing plants), and workers. They offer no data on fisheries and aquaculture services⁸¹.

4.2.5. United States

The United States Census Bureau provides data about the nation's people and economy, including

in Services Statistics-Background, (last accessed on June 2019) [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International Trade in Services statistics - background](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_Trade_in_Services_statistics_-_background).

⁷⁸ StatsNZ, Statistics, (last accessed on June 2019) www.stats.govt.nz.

⁷⁹ StatsNZ, Balance of Payments and International Investment Position Statistics, (last accessed on June 2019) http://datainfolplus.stats.govt.nz/Item/nz.govt.stats/13e41c3d-4ff4-403b-a503-ecd498f8bc1c?_ga=2.268083274.594367117.1561027275-2003180368.1561027275#nz.govt.stats/13e41c3d-4ff4-403b-a503-ecd498f8bc1c/162.

⁸⁰ Statistics Japan, Statistics, (last accessed on June 2019) www.stat.go.jp/english/data/index.html; Japan Ministry of Finance, Balance of Payments (historical Data), (last accessed on June 2019) https://www.mof.go.jp/english/international_policy/reference/balance_of_payments/ebpnet.htm.

⁸¹ E-Stat/Statistics of Japan, Census of Fisheries, (last accessed on June 2019) www.e-stat.go.jp/en/stat-search/files?page=1&layout=datalist&toukei=00500210&tstat=000001033844&cycle=0&tclass1=000001066355&tclass2=000001079776.

data on international trade in goods and services, which are compiled by the Bureau of Economic Analysis (BEA) based on BPM6, with a notable departure: contrary to Japan's approach, BEA has yet to implement the new treatment of 'manufacturing services on physical inputs owned by others'. This is due primarily to the fact that detailed information on the processing fees received and paid by US firms for manufacturing services and on the underlying goods transactions either are not available in the US statistical system or are not identifiable in any of the source data⁸².

As the US statistical system follows the BPM6 methodology without the level of detail of EBOPS 2010, there are no data available also on 'services incidental to agriculture, forestry and fishing'. Thus, from a fisheries and aquaculture services perspective, the US national statistics database on international trade in services does not offer adequate data to measure the volume and impact of international transactions of fisheries and aquaculture services⁸³.

⁸² U.S. Department of Commerce - Bureau of Economic Analysis (2014), U.S International Economic Accounts: Concepts and Methods, Washington D. C.: Bureau of Economic Analysis, p. 10-5.

⁸³ U.S. Department of Commerce - Bureau of Economic Analysis, International Trade in Goods and Services, (last accessed on June 2019) www.bea.gov/data/intl-trade-investment/international-trade-goods-and-services.

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

The analysis of the most reliable international services classification systems and representative sample of international, regional and national statistical databases allows to draw a few compelling considerations about how to streamline the classification of fisheries and aquaculture services and how to evaluate the volume and impact of trade in fisheries and aquaculture services.

5.1. Considerations on classification

For the purpose of providing a useful framework for FAO to classify fisheries and aquaculture services, existing classification systems present two essential drawbacks: (i) lack of consensus on how to treat services supplied throughout the fisheries and aquaculture value chains; and (ii) lack of transparency on terminology and related scope of coverage of category items.

As regards the first point, a perusal of current services classification systems shows that there is no universally agreed approach to classifying services related to fisheries and aquaculture activities, with some systems offering potential aggregated category items that allow for a distinction between services related to fishing and those related to aquaculture (i.e. CPC) and others refraining from even mentioning fisheries or aquaculture services as worthy of a distinctive classification.

Convergence, however, emerges on how to consider fishing itself - intended as the catching of fishing products during the harvesting phase of the supply chain. Both product-based and activity-based classification systems regard (and classify) it as an activity akin to forestry or agriculture rather than a service. Consequently, from the perspective of standard services classification systems, foreigners fishing fish products owned by a coastal state during the harvesting phase of the production chain would not be considered as providing a service across borders. Therefore, statistical frameworks whose data collection methodologies rely on these services classification system would not be able to adequately capture the value and volume of this activity, which will simply be expressed in terms of number of catches and landings of fish products.

Moreover, none of the services classification systems (and statistics databases) actually uses the term 'fisheries'. Instead, the term 'fishing' is preferred to identify activities that, under the FAO framework, would be considered fisheries and aquaculture. Furthermore, only the CPC and ISIC classification systems refer to the term 'aquaculture', albeit the latter does not do so in explicit reference to services. ,

With regards to the lack of transparency in the terminology adopted by existing classification frameworks, while convergence exists among the vast majority of product-based and activity-based classification systems on the importance on distinguishing the activity of fishing from services 'incidental' to it (with exception the IMF classification system - BPM6 - being the notable exception), no formal explanation is provided as to what the term 'incidental' actually mean and therefore to what extent the 'services incidental to fishing' category covers services supplied along the fisheries and aquaculture supply chain. Similarly no detailed information is provided on the actual coverage of the CPC services category 'support and operation services to fishing', nor does the CPC classification system clarifies to what extent 'services in relation to fishing' in cover the wide range of services supplied along the fisheries and aquaculture value chain. Clearly, this lack of transparency significantly affects the ability of statistical methods that rely on these classification systems to capture the actual volume and impact of trade in fisheries and aquaculture services.

Table 18. Services Classification Systems at a glance

Classification system	Type	Organization	Version	Level of detail	Potential for disaggregated classification	Explicit reference to fishing and aquaculture services	
						YES	Support services to fishing Support services to aquaculture
CPC	Product-based	UN	2.1	High	YES	YES	Support services to fishing Support services to aquaculture
W/120	Product-based	WTO	CPCProv	Medium	YES	YES	Services incidental to fishing
BMP6	Product-based	IMF	6	Low	YES	NO	
EBOPS 2010	Product-based	UN	2010	Medium	YES	YES	Services incidental to agriculture, forestry and fishing
ISIC	Activity-based	UN	4	High	YES	NO	

Source: Author's elaboration

On a positive note, all existing services classification frameworks may accommodate FAO's need for a more disaggregated approach to classifying fisheries and aquaculture services that goes beyond the more general (and opaque) categories of 'services incidental to' fishing/aquaculture, 'support services to' fishing/aquaculture and the like. Indeed, in all classification systems under consideration the different services identified as being an integral part of the fisheries and aquaculture supply chains⁸⁴ can be classified under a wide variety of sub-categories⁸⁵.

However, in doing so two issues must be factored in. On the one hand, the mutual exclusivity of category items in all services classification systems, which implies that since each identified service can be classified under only one of the sub-categories, at the exclusion of others, adopting adequate classification criteria (such as those implemented under the CPC framework) are fundamental to ensure that the different fisheries and aquaculture services are properly allocated within the most relevant and appropriate categories. On the other, since these sub-categories are not specific to fisheries and aquaculture, a disaggregated approach to classification may negatively affect the ability of statistical framework that rely on these classification systems to capture the actual volume and significance of trade in fisheries and aquaculture services.

5.1. Considerations on data collection and publication

As regards the collection of data on the volume and impact of international trade in fisheries and aquaculture services, three issues emerge from the analysis of existing databases at national, regional and international level.

First of all, as shown in Table 18 below, data on international trade in services are most commonly collected and published on a balance of payment basis and following the guidelines set out by the sixth edition of the IMF Balance of Payments and International Investment Position Manual (BPM6), which contains no explicit reference to 'support services' to fishing and/or aquaculture or to 'services incidental to fishing' in its classification framework. Consequently, the statistical databases under consideration - with the exception of those by the OECD, EU and New Zealand, which adopt the BPM6 approach in connection with the more detailed EBOPS 2010 framework - are unable to present data on services trade that can be directly and unequivocally attributable to fisheries and aquaculture activities.

Table 19. Services Statistical Databases at a glance

⁸⁴ See Tables 1 and 2.

⁸⁵ See Tables 3-6, 8-9, 11-12 and 15-16.

Statistical Database	Type	Organization	Country coverage	Level of detail	Classification system of reference	Publication cycle	Explicit reference to fishing and aquaculture services	
							YES	NO
Trade in Services Database	International	WTO	>200	Low	BPM6/EBOP S 2010	Annual Quaterly Monthly	NO	
Trade in services Database	International	World Bank	199	Low	BPM6	Biannual	NO	
Trade in Services Database	International	UNCTAD	150	Low	BPM6	Quarterly	NO	
International Trade in Services	International	OECD	40	Medium	BPM6/EBOP S 2010	Annual	YES	Services incidental to agriculture, forestry and fishing
China Statistical Yearbook	National	China	1	Low	BPM6	Annual	NO	
International Trade in Services	Regional	EUROSTAT	32	Medium	BPM6/EBOP S 2010	Annual	YES	Services incidental to agriculture, forestry and fishing
International Trade in Services by Type	National	New Zealand	1	Medium	BPM6/EBOP S 2010	Annual Quarterly	YES	Services incidental to agriculture, forestry and fishing
Balance of Payments (services)	National	Japan	1	Low	BPM6	Annual Quaterly Monthly	NO	
International Trade in Goods and Services	National	United States	1	Low	BPM6	Annual Monthly	NO	

Source: Author's elaboration

Secondly, even when data are available, as in the case of data on ‘services incidental to agriculture, forestry, and fishing’ provided by the OECD, the EU and New Zealand, they present a very limited picture of the volume and impact of trade in fisheries and aquaculture services. This is partially due to the highly aggregate nature of the data, and difficulties in collecting data at national level.

Thirdly, the vast majority of existing BOP-based international trade in services databases are unable to properly capture data on services supplied via mode 4. This has important implications for the assessment of the volume of services provided via foreign access arrangements because, as previously explained, the latter are most likely to be considered a form of trade in services falling under the GATS framework insofar as they are services supplied through the movement of natural persons (mode 4).

Gaps in data on international trade in fisheries and aquaculture services may also be explained by the lack of methodological transparency on the scope of application of the terms ‘incidental’ and ‘support and operation services to’, which poses substantial problems for the collection and compiling of data. For example, if one assumes that they were to cover the vast majority of services identified along the fisheries production chain, the very aggregate nature of the categories ‘support and operation services to fishing’, ‘services incidental to fishing’ or, in the case of EBOPS 2010, ‘services incidental to agriculture, forestry and fishing’ would prevent the identification of the different fisheries and aquaculture services that play a more dominant role along the various (pre-harvesting, harvesting, and post-harvesting) phases of the supply chain.

On the other hand, if one assumes that the application of the term ‘incidental’ and ‘incidental’ and ‘support and operation services to’ do not extend to all services supplied along the fisheries and aquaculture value chain, all existing classification systems would allow - albeit with different degrees of detail and efficacy - for a disaggregated classification of these services under a wide variety of other sub-categories. However, since none of these sub-categories would be specifically and exclusively dedicated to the fisheries and aquaculture production, it would be impossible to distinguish data attributable to fisheries and aquaculture services from those ascribable to other activities.

5.2. Policy recommendations

Taking into account that:

- The term fisheries and aquaculture services used within the FAO framework has not been embraced in international trade, either under the GATS or under the main existing services classification systems;
- The CPC and ISIC classification systems offer the highest degree of detail;
- There is a general lack of transparency on the actual scope of certain services categories related to fishing;
- Current statistical data on trade in fisheries and aquaculture services are meagre and inadequate to provide a proper picture of the actual volume and impact of trade in fisheries and aquaculture services; and
- Compiling data according to EBOPS 2010 rather than BPM6 alone offers more benefits in terms of the statistical assessment of international trade in fisheries and aquaculture services;

It is suggested that FAO, in its quest to address statistical gaps and streamline the classification of fisheries and aquaculture services, considers the following:

- Discussing with statisticians from the main international organizations (e.g. IMF, UN, OECD) about the meaning of terms such as ‘incidental’, ‘related to’, ‘support to’ and the like, with a view to clarify to what extent certain services categories can include the list of fisheries and aquaculture services identified in Tables 1 and 2 of this report;
- Discussing with statisticians from the OECD, Eurostat, and the New Zealand statistical agency to better understand how the actually capture data on ‘services incidental to agriculture, forestry and fishing’ and, in particular, on ‘services incidental to fishing’;
- Using the CPC system and its classification criteria as a potential benchmark for classifying fisheries and aquaculture services at a level of disaggregation that can better serve the need to properly identify and assess different fisheries and aquaculture services along their respective supply chains for analytical and policy purposes; and
- Examining in detail how remuneration of foreign service suppliers occurs under fishing access arrangements with a view to better understand what data should be collected to capture how trade in fisheries and aquaculture services occurs under these type of agreements.

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