

## Fisheries technology development

### ■ Database Specific

#### ■ Abstract

The OECD FISH Unit, in collaboration with the Environment Directorate and the Directorate for Science, Technology and Innovation, has developed patent-based innovation indicators that are suitable for tracking developments in fisheries-related technologies.

The search strategy for fisheries and aquaculture related technologies adopts a mixed solution with a definition of the technical field of interest in fisheries and aquaculture innovation complemented by keywords, e.g. by looking for keywords in the International Patent Classification (IPC) codes and checking manually the relevance of the results in the text of patents (in the title, the abstract, etc). Technology domains are detailed in the ANNEX attached below.

The indicators allow the assessment of countries' and firms' innovative performance as well as the design of governments' fisheries, aquaculture and innovation policies.

For more information on patent data and other work on patent statistics at the OECD, see:

- **Measuring environmental innovation using patent data**
- **The use of patent statistics for international comparisons and analysis of narrow technological fields**
- **Measuring Patent Quality - Indicators of Technological and Economic Value**
- **Fisheries and aquaculture innovation portal**
- **ANNEX**

### ■ Data source(s) used

The patent statistics presented here are constructed using data extracted from the Worldwide Patent Statistical Database (PATSTAT) of the European Patent Office (EPO) using algorithms developed by the OECD. Statistics have been compiled according to the methodology presented on the OECD Patent Statistics Manual.

The data are downloaded on a weekly basis from EPO website (epoline® database), and they are loaded into the OECD database system at least twice a year. Data here have been extracted in April 2015.

- **OECD Patent Statistics Manual**

### ■ Data Characteristics

#### ■ Variables collected

The dataset **Fisheries technology development** provides the number of inventions (simple patent families) developed by country's inventors, independent of the jurisdictions where patent protection is sought (i.e. all known patent families worldwide are considered).

The indicator is disaggregated by:

● **Inventor country** - country of residence of the inventor(s), fractional counted; e.g. for a patent listing inventors from two different countries, each country will obtain a count of 0.5, to avoid double-counting of inventions;

● **Family size** – the number of countries where the patent application has been filed, including the first patent application and all the subsequent patents applications filed in order to extend the geographical coverage of protection. Family size "1 and greater" means that the invention is protected in at least one country and as such this category includes all patents, many of them protecting low-value inventions, for which data are available worldwide. Indeed, it is interesting to notice that the protected size of a patent family has been found to be correlated with the value of the invention. Studies in this field exploit the fact that it is expensive to holders to maintain patent protection in additional countries. Hence it is hypothesised that the value of expanding it the coverage geographically is associated with the economic importance of the invention. Family size "2 and greater" will count inventions that have sought patent protection in at least two countries, and so on.

● **Technology domain** – the three main areas of innovation in fisheries and aquaculture, related to technology development. In detail:

**1. Harvesting technology** such as more effective ways to find or harvest fish and which are typically associated with improvements in catch per unit of effort (e.g. type/size of vessels and their methods of propulsion, search technologies, method of catching or harvesting fish and bringing them on board);

**2. Aquaculture technology** such as methods to more effectively grow fish in captivity (innovation in feeds, improving the health of aquaculture animals, etc.);

**3. New products and markets** such as the development of new fish products and markets (food technologies/processing such as the development of surimi as a crabmeat substitute) and the improvement of market

access (secure or enlarge markets for fish products) that provides important incentives for green growth (e.g. eco-certification with fishers adopting by-catch saving technologies or modifying fishing practices and/or territorial user rights in fisheries).

Note that the total count for aggregate technological domains is provided separately to avoid double-counting of inventions. For example, the count of "selected fisheries-related technologies" is less or equal to the sum of its sub-components (Harvesting technology, Aquaculture technology and New products and markets). This is because patents are commonly classified in more than one technology class. Therefore each patent (invention) is counted only once when aggregating across technological domains.

## ■ Concepts & Classifications

### ■ Key statistical concept

The patent statistics presented here are constructed using data extracted from the Worldwide Patent Statistical Database (PATSTAT) of the European Patent Office (EPO) using algorithms developed by the OECD. Statistics have been compiled according to the methodology presented on the OECD Patent Statistics Manual.

Consistent with other patent statistics provided in OECD.Stat, only published applications for patents of invention are considered (i.e. excluding utility models, petty patents, etc.).

The relevant patent documents are identified using search strategies for fisheries-related technologies based on the methodology developed by the Environment Directorate. They allow identifying technologies relevant to the following three domains: Harvesting or fishing technologies, Aquaculture technologies and New products and markets.

The development and global diffusion of fisheries-related technologies is key for cost-efficient achievement of sustainable policy objectives. Consequently the statistics presented here are based on the concept of a patent family which is defined as all patent applications filed in different countries and protecting the same invention (or priority as defined by the Paris Convention). They are also referred to as simple patent family (For further details, see Martinez 2010, Insight into different types of patent families).

At its most basic, the family comprises a priority patent application, which is the first application filed to protect the invention, generally in the inventor's country, and all subsequent patent applications that relate to it. Subsequent patent applications are filed in other countries one year after the priority patent application in order to extend the geographical coverage of protection.

If in the subsequent patent applications, the priority filing date is kept, we refer to them as equivalent patents; if instead in each subsequent patent application the application date is preferred, then we talk about simple patent families.

A patent can be attributed to the applicant (the patentee at the date of application) or the inventor or the country where it has been filed first (priority application).

Regarding the attribution of dates, a patent has several of them: the priority filing date (i.e. first patent application worldwide, normally done in the inventor's country), the date of application in a given country (i.e. subsequent patent applications, to extend the coverage of protection), the date of publication, or the date of grant. Depending on the selection made, the resulting indicators will give substantially different results. The statistics presented here are based on the priority filing date, which is the first filing date worldwide (under the Paris Convention) and it is considered to be the closest to the actual date of invention.

- **OECD Patent Statistics Manual**
- **Insight into different types of patent families**