

# Conflicts in productive development in hake fisheries (*Merluccius gayi peruanus*) in Peru

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## Abstract

There are two types of fleets catching hake in Peru: the industrial fleet that operates in areas authorized by the Ministry of Production (PRODUCE), and the small-scale fisheries that operate mostly in front of Paita - Piura. The hake resource is in the process of recovery, and many regulations and decrees are applied to its fishery, establishing fishing periods, fishing zones, Total Allowable Catches (TAC) and Individual Fishing Quotas (IFQs). These quotas only apply to the industrial fleet. While small-scale vessels do not have a fishing quota and are not subject to prohibitions related to fishing areas, they must follow the seasonal closure and meet certain requirements, including not selling their catches to processing plants, which means that they can only market their produce as fresh/chilled products to the domestic market at very low prices. These aspects generate conflicts between both actors due to the possibility of illegal fishing by small-scale boats and, on the other hand, the prohibition of productive development of the small-scale fisheries.

## 1. INTRODUCTION

### 1.1 Description of the fishery

Hake (*Merluccius gayi peruanus*) was discovered as an exploitable resource in 1965. Since then, a very dynamic extractive activity based on the Paita port (05° 00'S) was developed for this resource. This resource experienced two situations of overfishing, in 1980 and in 2002, the latter being the most intense one. After evaluating various environmental, biological and anthropogenic factors, the Institute of the Sea of Peru (IMARPE), recommended in November 2002, the closure of the entire hake fishery. RM N° 047-2002-PRODUCE and its complementary in article 5 of RM N° 055- 2002-PRODUCE, defines the zones of allowed hake fisheries, prohibiting capture south of the parallel 06° 00' Latitude South, except for artisanal boats. After the reopening of the hake fishery in 2004, the Ministry of Production began to allocate individual fishing quotas.



Figure 1. Map of the authorized fishing zone for industrial hake fishing, Peru.

Source: PROMPERU, 2018.

Since the ban on hake fishing, landings increased from 30 000 tonnes in 2005, to 78 000 in 2017. The trend has not been a continuous one, but overall production increased, especially during the last three years.

The Peruvian hake fishery is carried out on the continental shelf between the extreme north of the Peruvian maritime domain and the 06°00'S (Punta La Negra); this is the area authorized for industrial extraction. There are two types of fleet in this fishery: the industrial trawler fleet that operates in the area authorized by the Ministry of Production and the artisanal fleet that operates mostly in front of Paita, although artisanal fishing has no restrictions in terms of fishing zones.

### **1.2 Economic contribution and social implications of fishing activity**

Hake from the industrial fisheries goes to frozen processing, as interleaved fillets, block frozen hake headed, and gutted products. These products are exported to Western Europe (mainly to Germany), United States of America, and Eastern Europe. The artisanal hake fisheries produces for the domestic market. Total export value of hake was USD 29.3 million in 2017, which compares to the record of USD 39.4 million reached in 2014.

In the case of the domestic market, there is no precise figure available, however, it can be estimated that 42 563 tonnes of fresh hake were sold in the domestic market in 2016, for an estimated value of USD 26.6 million. In summary, the value of frozen products from hake in 2016 reached USD 29.3 million and fresh products USD 26.6 million, resulting in a total value of USD 55.9 million.

## **2. FISHERIES MANAGEMENT AND RIGHTS-BASED APPROACHES**

### **2.1 Management of the fishery**

The management of fisheries in Peru is carried out by the Ministry of Production (PRODUCE), through its Vice Ministry of Fisheries and Aquaculture, which is advised by the Institute of the Sea of Peru (IMARPE). Type of fisheries and outlets of the products are indicated by the type of fisheries. Industrial fishing is under a quota system, while the small-scale fisheries is outside the quota system.

In 2001 and 2003, Peru through the Supreme Decree No. 029-2001-PE and Supreme Decree N ° 016-2003-PRODUCE, approved the Fisheries Management Regulation (ROP from the Spanish Reglamento de Ordenamiento Pesquero) for the hake resource. The objectives of the ROP are: to achieve the recovery of the hake resource in the medium term, for the subsequent sustained use of this resource and its by-catch, to harmonize the participation of different actors involved in the catch and processing of the hake resource, to optimize the operational efficiency of the trawler fleet that allows them to access new fishing areas of the hake resource, reducing fishing pressure in traditional areas; as well as protecting the growth process of the specimens and their biological development.

The ROP and the following regulations establish fishing periods, fishing zones, Total Allowable Catches (TAC) and Individual Fishing Quotas (IFQ), the latter two to be fixed each year. After the reopening of the fishery in 2004, the Ministry of Production began to allocate individual fishing quotas. In accordance with the Regulation of Fishing Regulation, the quotas would be non-transferable from the reopening of the fishery. Then, through the D.S. N ° 016-2006-PRODUCE given in September 2006, the quotas became transferable, and, once again, non-transferable since August 2008 (DS N ° 016-2008-PRODUCE repeals DS No. 018-2006 -PRODUCES). Individual fishing quotas are valid for one year and their remainders do not accumulate from one year to the next.

The IFQs are applied to the industrial fisheries, while the small-scale fisheries are excluded from this system. The small-scale sector, however, must comply with the respective reproductive closures and minimum sizes. Furthermore, they must have valid fishing permits and may only carry out longline fisheries. They are not allowed to sell their catch to the processing plants. Thus their produce can be sold only in fresh form to the domestic market.

The ROP specifies that the extraction of hake in Peruvian jurisdictional waters shall only be carried out with national flag trawlers. New authorizations for fleet increase or fishing permits for larger trawlers or factory vessels are not granted. The ROP also indicates that vessel capacity of the Peruvian hake fisheries should not exceed 600 m<sup>3</sup> of holding capacity or 70 meters in length. These industrial vessels have to operate at least ten nautical miles from the coast and in depths greater than 100 meters. The small and medium-size fisheries carry out their activities in the first five (5) nautical miles from the coastline.

## **2.2 Brief history of rights-based approaches previously used in this fishery**

The bottom trawl fishery is one of the most complex fisheries in Peru, whose target resource is hake. This species was over-exploited in the late 1970s, but recovered in the second half of the 1980s, probably due to two main factors:

1. The decrease in the fishing effort during and after the El Niño event 1982-83, as the coastal fleet was more dedicated to the fishing of shrimp and factory boats to the extraction of horse mackerel and mackerel; and
2. The increase in the biomass of the sardine, preferred prey of hake over 50 cm, from the mid-1980s. A second drastic reduction in hake stock levels due to overexploitation and others occurred in the early 2000s. Based on the recommendation of IMARPE, an 18-month closure was established (September 2002 to April 2004), and since the establishment of Provisional Fishing Regimes, restrictive measures of fishing effort were applied, closed by reproduction and by the presence of juveniles. However, the expected results were not obtained in relation to the recovery of hake stock, mainly in relation to the population structure.

In 2003 and 2004, IMARPE convened two panels of experts to evaluate the status of hake stock under a conventional approach. The recommendations of both panels became the main axes of the recovery process of this species.

## **2.3 Rights-based approach: allocation and characteristics**

Each year, IMARPE recommends a TAC, and the PRODUCE determines the participation coefficient of each shipowner or company in accordance with their Fishing Declarations and the net storage capacity. Fleet increases are not authorized for Peruvian hake fishing nor are new fishing permits granted. In addition, in accordance with the IMARPE monitoring of the location of spawning areas and juvenile specimens, different non-fishing areas and closed seasons are established each year. The quotas are non-transferable. Small-scale vessels are excluded from the IFQs system.

## **3. CONTRIBUTIONS OF RIGHTS-BASED APPROACHES TO FISHERIES MANAGEMENT TO ACHIEVE SUSTAINABILITY**

### **3.1 Sustainable use of the resource**

Hake lives in coastal waters, between 50 and 600 m deep. In Peru, it is distributed from the border with Ecuador 3° 23'S to 10° 03'S in Huarmey. It is the most abundant species of the demersal system of Peru and is closely associated with the Southern Extension of the Cromwell Current.

The IMARPE carries out several research campaigns each year: two cruise campaigns that are carried out with their own economic resources and at least two complementary campaigns carried out with the collaboration of the commercial fleet. These complementary campaigns are aimed at monitoring the

fishery and verifying the conclusions reached using data from observations at landing points. Based on the findings of these campaigns, IMARPE fixes a TAC, which is generally not fished.

After the two periods of extreme overfishing, which led to the introduction of IFQs for the industrial fisheries, the hake resource seems to be sustainable now.

### **3.2 Economic viability of the fishery**

In recent years, the gap between the TAC and landings has decreased from 22 percent to 19 percent. This difference may be due to various factors, such as the reduction of effort due to compliance with the closure of fishing zones when juveniles are present in large quantities, and because the population is still weak in numbers.

### **3.3 Social equality**

The fishing rights are given to fishing companies, and the quotas are assigned to their vessels and oriented to the extraction of the resource in the areas authorized by the Ministry of Production. It should be noted that the artisanal fleet does not have assigned quotas for extraction but must comply with regulations related to reproductive closures and minimum catch sizes. This measure, which was chosen for social reasons, is subject to discussion.

## **4. MAIN CHALLENGES AND WAY FORWARD**

### **4.1 Main challenges for the fishery**

While the introduction of IFQs and the ROP has generally resulted in a recovery of the hake resource, it has engendered conflicts between the small-scale and the industrial sector as well.

The small-scale sector argues that they are excluded from any value addition to their product, as they are not allowed to sell to the processing plants, which are producing for the export market. In fact, the ex-vessel price of their hake catch is very low, at USD 0.60 per kg, a value which is adequate for a small pelagic but not for a groundfish species. The small-scale sector should be integrated into the normal value chain, allowing them to sell to processing plants, thus enabling them to generate value-addition.

On the hand, the industrial fisheries argue that since artisanal fishing is not subject to quotas, there have been situations in which illegal landings or black hake fishing occur in the various small-scale landing sites in the area, mainly during the night. These landings come from apparently artisanal vessels that operate with very small mesh towed nets, and whose annual landing figures are estimated at around 10 000 tonnes. This group of boats also does not respect the closed season. The circuit of commercialization of these illegal products seems to be the domestic market, mainly Lima, and the products generally do not comply with all marketing, health and tax regulations.

Another challenge is the incorporation of the ecosystem approach into the hake ROP, given that fisheries management should not be merely based only on the dynamics of the fish populations. It should also take on board the economic and social aspects, as well as the impact of the environment on fishing activity and environmental monitoring, which also determines the abundance of resources.

### **4.2 Improving the sustainability of the fishery in the future**

The ROP has been an important instrument for proper management of the hake fisheries. The ROP should be revised to ensure that also the small-scale fisheries have catch quotas, in order to improve the management of fisheries, to avoid or reduce illegal fishing, and allow small-scale fishers into the full value chain. It is believed that these actions will contribute to the reduction of existing conflicts and incorporate

artisanal fishermen in the value chains, where they can contribute with their scaling, productive development, welfare and also with the reduction of fishing pressure.

## **5. LESSONS LEARNED**

Clear allocation of fishing rights and TACs improve the resource situation. However, the mixed system where industrial fisheries have IFQs and small-scale fisheries are excluded create tensions. Leaving small-scale fishers outside the quotas system, but also outside the value chain does not work, as it provides limited income to the small-scale fishers, and leads to illegal fishing, landing and marketing, which creates a risk for the health of the population. The industrial fishery also argues that the small-scale fisheries should follow the strict quota rules. An obvious solution is to give catch quotas to fishing communities, which they can allocate to the participants in the small-scale fishery. In turn, this would allow the produce of the small-scale fisheries to enter processing plants, thus assuring higher income and possibly less pressure on the resource.

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