

No 44 | 2023

# POLICY BRIEF

## The aquaculture sector findings and policy implications of the Benefish Study 4

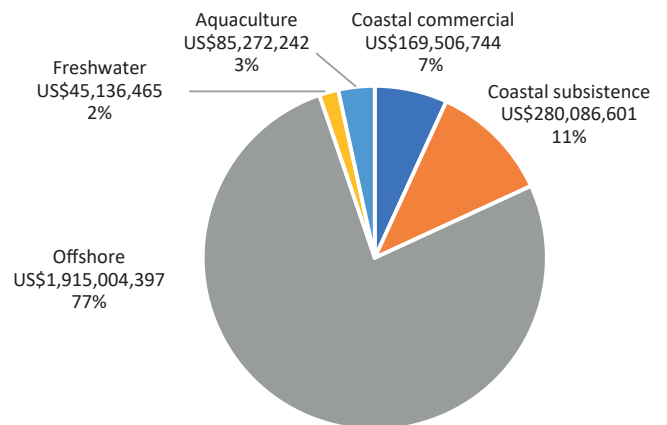
### Purpose

This policy brief highlights the results and policy implications related to aquaculture in the Benefish Study 4. The study examined fisheries production (coastal, offshore, aquaculture, and freshwater) on national and regional levels and quantified the benefits flowing from those fishery categories (i.e., contributions to GDP, exports, government revenue, employment, and nutrition).<sup>1</sup>

### Aquaculture production in the region in 2021

Using the best available information, the Benefish Study made estimates of fishery and aquaculture production in both volume and value for each country and territory for the year 2021. There is a lack of knowledge of the overall aquaculture production in almost every PICT. The value of aquaculture production in the Benefish Study are in many cases educated guesses. The pie chart to the right shows the total value of aquaculture and that of the other fishery sub-sectors.

It is not possible to do a similar pie chart comparing the volume of aquaculture summed across the region to the other sub-sectors because the volume of the aquaculture in the region is measured using two different units – kilogrammes (e.g., seaweed) and pieces (e.g., giant clam). The total volume of aquaculture production in 2021 was estimated at 7,573 t and 8,825,931 pieces.

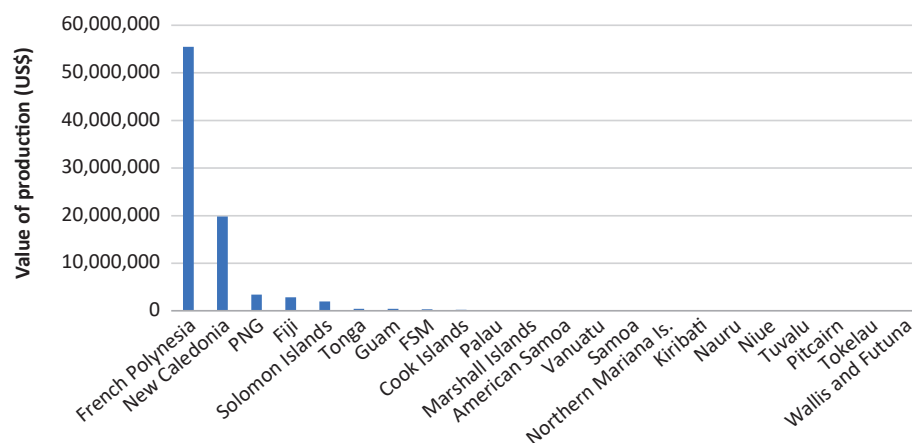


<sup>1</sup> The full Benefish Study 4 report is available at: <https://purl.org/spc/digilib/doc/ppizh>

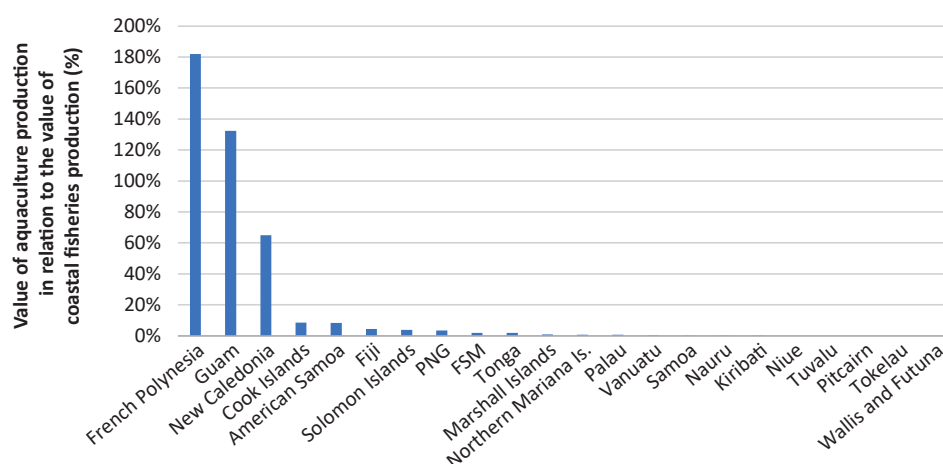


The estimate of the value of aquaculture in the region from the recent Benefish study is reasonably close to an estimate made by the Food and Agriculture Organization (FAO) of the United Nations. FAO used a desktop review of peer-reviewed and grey literature and interviews with staff of organisations that focus on aquaculture development in the Pacific region. The report of the study<sup>2</sup> stated that total aquaculture production across the PICTs in 2020 had an estimated value of US\$92.5 million.

The value of production (US\$) estimated by the present study by country/territory is shown in the graph below.



The graph below places the value of aquaculture production in the context of coastal fishery production (commercial and subsistence) in each PICTs, showing the relative significance of aquaculture. In only four territories and one country was the value of aquaculture production in 2021 greater than 5% of the coastal fishery production. Unlike coastal fisheries, where there are limits to production, there is some long term (decadal) scope for growth in aquaculture in the region, with most of the potential likely to be in aquaculture products for domestic consumption.



The leading aquaculture activities in 2021 (i.e., those that had a production with a farm gate value above US\$1 million) are given in the table below.

Activity	Value of production (US\$ millions)
Pearls in French Polynesia	50.2
Shrimp in New Caledonia	18.5
Shrimp in French Polynesia	3.2
Tilapia in PNG	2.4
Seaweed in Solomon Islands	1.9
Pearls in Fiji	1.4
Tilapia in Fiji	1.0

<sup>2</sup> Mori L., G. Goto, S. van Dijken and D. Klinger. 2022. Realizing Aquaculture's Blue Economy Potential in the Pacific Island Region – Enabling conditions, barriers, and next steps. Food and Agriculture Organization of the United Nations, Apia.

Previous Benefish studies estimated the value of aquaculture production in the region in 2007 and 2014. The production values for those years can be converted to 2021 dollars and compared:

- 2007 value of aquaculture production converted to 2021 dollars = US\$192,955,114
- 2014 value of aquaculture production converted to 2021 dollars = US\$129,926,187
- 2021 value of aquaculture production = US\$85,272,242

The Benefish Study commented on the general types of benefits from aquaculture on the Pacific Islands region:

Contribution to GDP	Contribution to exports	Contribution to access fees	Contribution to employment	Contribution to food supply
About 6.1% across the region; almost all this contribution is from two French territories	About 80% of the aquaculture production in terms of value is exported	Zero	Significant in French Polynesia and New Caledonia; of minor importance in most PICTs	Significant in PNG and New Caledonia

## Key messages

It is well known that there has been considerable effort devoted to the development of aquaculture in the Pacific Island region. According to the Benefish Studies (covering the years 2007, 2014, and 2021), that effort has not resulted in a significant increase in the value and volume of aquaculture production in most PICTs.

The aquaculture production graph above shows that two French territories were responsible for 88.3% of the value of all the aquaculture in the region. Both territories enjoy a large degree of support from France targeting aquaculture. Aquaculture production is significant (i.e., annual production worth more than US\$100,000) in only nine of the 22 PICTs. The real value of aquaculture in the region in 2021 was less than half of that in 2007. This decline could possibly be explained by (i) the fact that many operations folded during recent natural disasters (e.g., cyclones/typhoons), (ii) the fall in pearl production in the Cook Islands and French Polynesia, and (iii) the COVID-19 pandemic in 2020/2021.

One of the most remarkable points about aquaculture in the region is the lack of knowledge of the overall aquaculture production in almost every PICT. There have been many independent regional reviews of aquaculture from the classic 1984 Uwate study<sup>3</sup> to the 2022 SPC-sponsored review.<sup>4</sup> Virtually all of them recommend the need to improve aquaculture statistics. In the course of this Benefish study, despite internet searches, discussions with national and regional aquaculture authorities, consultations with private sector aquaculturalists, and interaction with an author of a recent regional review of PICT aquaculture, not a single document was identified that gave national aquaculture production. Considering the large amount of development funds and public money spent on the promotion and development of aquaculture in the region, it is remarkable that there is so little monitoring of the progress of aquaculture development in terms of the total volume and value of production. Without such information it is not possible to judge progress resulting from past and current aquaculture investments or to have evidence-based policy discussions of aquaculture to determine whether further investment is justified. The other aspect of this issue is that, while sharing the challenges of collecting small-scale fisheries data, it should be possible to improve the tracking of aquaculture production: much harvesting is not continuous, the ponds do not move around, several types of remote sensing are applicable, and ongoing subsidies for many aquaculture operations provide an entry point for monitoring.

<sup>3</sup> Uwate K.R. 1984. A review of aquaculture activities in the Pacific Islands. Pacific Island Development Program, East-West Center, Honolulu, Hawaii.

<sup>4</sup> IAS. 2022. Assessment of the aquaculture needs, priorities and future direction in the Pacific Islands region. Draft final report, 8 May 2022. Information paper 12. 14th Heads of Fisheries Meeting, 14–17 June 2022. Noumea, New Caledonia: Pacific Community. <https://purl.org/spc/digilib/doc/pxwff>





Another feature of aquaculture in the region gained through the Benefish Study is the lack of emphasis on economic viability in the general promotion of aquaculture and in the planning of individual aquaculture investments, both by publicly and privately funded projects. This observation has direct relevance to the often-cited poor record of aquaculture development in the region. This is similar to a finding of an SPC review of aquaculture in the region in 2011:

Lessons have not been learned. In particular, some research and development organisations and government fisheries departments have repeatedly promoted development trials without undertaking the most basic analysis of production and marketing costs. Risks have not been assessed, and there has been a failure to compare objectively mariculture with existing and other potential income generating activities... Any aquaculture development initiative which does not undertake a thorough analysis of price, of volumes of product traded or consumed, of alternative sources, of preferences and substitutes, of logistics, supply chains and power relations – prior to any encouragement of production – is at best incompetent and at worst irresponsible.<sup>5</sup>



Fiji. Avinash Singh ©SPC

Many of the apparently successful aquaculture activities in the region involve taking advantage of relatively affluent tourists or elite local residents (when present). This applies to shrimp culture (in New Caledonia and Fiji) and pearl culture (in Fiji, Tonga and the Cook Islands). As an example of this, the relatively low-value mabe pearls grown in Tonga are mostly sold directly to tourists and had an average farm gate value in 2021 of US\$13 per pearl. The average price in 2021 for the relatively high-quality round pearls from French Polynesia was US\$4.60 per pearl.

## Recommended policy actions

From the perspective of the results of the Benefish studies, the need for aquaculture policy action in two aquaculture policy issues over-shadows all else: aquaculture production statistics and attention to economics:

- **Aquaculture production statistics:** Few PICTs collect good aquaculture statistics. Because of the amount of resources invested in past aquaculture development, the mixed success of aquaculture development efforts, and that virtually all regional reviews of aquaculture have commented on the poor state of aquaculture statistics, governments need to make policy decisions to compile and report on the volume and value annual aquaculture production, and aquaculture enterprises need to compile and assess the data needed by any business in order to plan and operate their aquaculture investments in a business-like fashion.
- **Aquaculture economics:** To address the poor record of aquaculture development in the region, PICT governments and private sector/community aquaculture enterprises should have a firm policy that, prior to launching any aquaculture development initiatives with public funds or subsidising any aquaculture activities or making any private sector/community business investments in aquaculture, there should be a thorough objective and impartial economic analysis.

<sup>5</sup> Hambrey Consulting and Nautilus Consultants. 2011. Opportunities for the development of the Pacific islands' mariculture sector. Secretariat of the Pacific Community, Noumea. <https://purl.org/spc/digilib/doc/xuzmi>