

# Executive Summary

## **The study**

In early 2001, Asian Development Bank (ADB) expressed a growing concern that the importance of fisheries to Pacific Island economies was not fully appreciated by the countries of the region or by the donor community. In discussions with Forum Fisheries Agency (FFA) and the Secretariat of the Pacific Community (SPC), ADB developed a concept for a study to improve the accuracy of the estimates of the contribution of fisheries to national economies. The World Bank agreed later to participate in this joint activity.

## **The objectives of the study**

The immediate objective of the study was to use available data to measure the economic contribution of fisheries to the economies of Pacific Island nations. It was recognized, however, that a thorough quantification of the economic benefits of fisheries would require more than a short intervention. Accordingly, the longer-term objectives of the study were set as follows:

- To improve the accuracy of measuring the contribution of fisheries to national economies;
- To generate interest among government fisheries agencies in measuring the economic contribution of fisheries to national economies; and
- To provide information that could eventually be used to quantify the benefits of the various fisheries management options.

## **The target audience**

The primary target audiences of this study are Pacific Island fisheries agency staff interested in economics and statistics agency staff interested in fisheries. In addition, the study is also intended for economists and national accountants working in the Pacific

Island region, and regional and international organizations with a general interest on fisheries in the Pacific.

### **The scope of the study**

It was decided that the study should initially focus on the fishing contribution to gross domestic product (GDP), including examining the methods used by national authorities to calculate this contribution, commenting on the validity of these methods, and producing an independent estimation of the fishing contribution to GDP. The study also compiled information on the specific economic benefits of fisheries, including contributions to employment, exports, government revenue, and nutrition.

### **National accounts and GDP**

National accounts are an accounting framework used to measure economic activity in a country. Most of the countries in the Pacific publish national accounts. The method used in each country is based on a standardized System of National Accounts (SNA) that was originally introduced by the United Nations in 1953. Typically, governments, international agencies and private corporations use national accounts to monitor developments within an economy. In particular, they are used to:

- Monitor changes in economic activity;
- Make cross-country comparisons;
- Prepare time-series analysis;
- Identify functional relationships;
- Determine aid eligibility/requirements.

National accounts provide several measures of activity, and the two indicators that are most commonly quoted are GDP and gross national income (GNI)—previously known as gross national product (GNP). GDP measures the level of domestic economic activity, or the economic activity that takes place within a country during a specified period of time. GNI is the measure of national economic activity, which includes domestic activity (GDP) plus the net return to the country from overseas investments and remittances.

## Approaches to compiling national accounts

Three different methods are used to compile the national accounts of a country: the production approach, the income approach, and the expenditure approach.

- The **production approach** views the economy from the perspective of production. The approach measures the gross output of each producer then deducts the value of the goods and services purchased from other producers and used in the production process.
- The **income approach** measures the major components of value-added: employee compensation (wages and other remuneration), operating surplus (company profits), and indirect taxes net of subsidies. The sum of these components is the value-added to GDP.
- The **expenditure approach** is based on the final use of the output produced. It sums the expenditures of the main participants in the economy: government final consumption, private final consumption, gross capital formation, and net exports.

## Valuation of subsistence production

An important aspect of the production approach is the calculation of the value of production. This can be particularly difficult when it is necessary to estimate the value of subsistence production. While there are several methods that could be used to value subsistence production in this report, “farm gate” pricing has been used. This method uses the market price of the product less the cost of getting that product to market.

## Categorizing fishing activity for national account compilation

The compilers of national accounts must strike a balance between their desire for accuracy and the limitations on the time and effort they can dedicate to collecting and analyzing data. In the case of fishing, striking this balance means that they are usually limited to using generalized estimates of income or production. The

minimum level of aggregation to be used in the Pacific Islands should divide fishing into three classes of activity: large-scale commercial fishing, small-scale commercial fishing, and subsistence fishing. Each of these three categories can be analyzed using the approach most appropriate for the particular category.

### **Value-added ratio**

The production approach to estimating the contribution of fishing to GDP requires two basic sets of data: (i) value of gross output of fishing, and (ii) intermediate costs. It is usually convenient to express the intermediate costs as a proportion of the gross output. This ratio is called the value-added ratio. In this report the value-added ratios used range from 40% for some offshore fishing to 90% for nonmotorized subsistence fishing.

### **Official data on the contribution of fishing to GDP**

According to current official data in Pacific Island countries, the percentage contribution of fishing to GDP in 1999 (or latest prior year available) ranges from 0.6% in Papua New Guinea (PNG) to 12.0% in Kiribati.

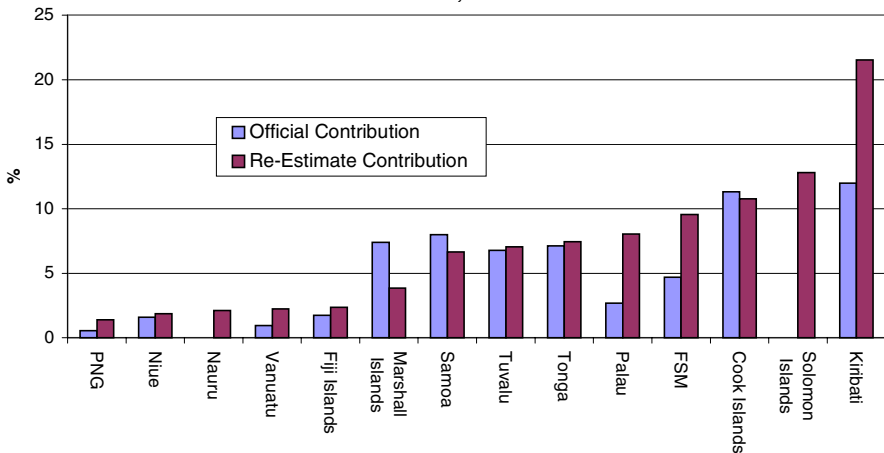
### **Re-estimation of the contribution of fishing to GDP**

Given the complexity of the issues to be addressed and the large difference in the accuracy of the official fishing estimates made in the Pacific Island countries, it was important for the study to re-estimate the fishing contribution to GDP using a consistent method across all countries. It was believed that, at the very least, these estimates would provide useful comparators for the compilers of national accounts. In addition, it was anticipated that the review of the different methods and approaches used in each country would provide useful insights into the effectiveness of alternative approaches to national accounting.

## Comparison of official and re-estimates

The comparison between the official and the new estimates of fishing contribution to GDP is presented on Figure 1 below. The largest difference was found in Kiribati, Palau and Federated States of Micronesia (FSM), where the new estimates nearly doubled or tripled the official figures. By contrast, this study lowered the estimate of fishing contribution to GDP in Marshall Islands, Samoa and, to a lesser extent, Cook Islands. On average, the new estimates indicated a higher contribution of fishing to GDPs than reported by national statistics (7.0% vs. 5.4% across all countries).

**Figure 1: Comparison of Official and New Estimates of Fishing Contribution to the GDP of Pacific Island Countries, 1999**



## Major reasons for difference in estimates of fishing contribution

In some countries, notably FSM and PNG, the difference in estimates is primarily due to subsistence fishing not being included in the official figures. In other countries, in particular Palau, the differences are primarily due to the methods used. For most countries, it is

a combination of differences in the estimate of production and the method used to calculate the GDP contribution. In Samoa, for example, subsistence production was valued at the full market value, rather than at “farm gate” prices. Cook Islands, Niue, Tonga, and Tuvalu all compile soundly based national accounts that include reasonable estimates of fishing contribution. Nauru and the Solomon Islands have weaknesses in compiling national accounts.

### **Common difficulties associated with calculating the contribution of fishing to GDP**

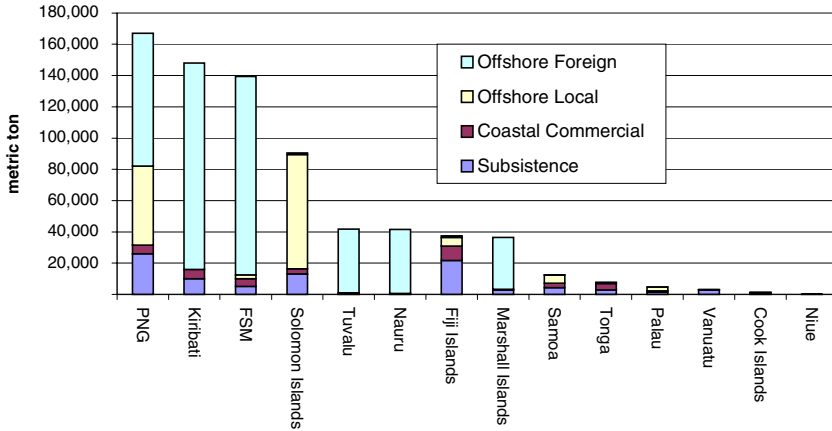
The common difficulties found in estimating the contribution of fishing to GDP in many Pacific Island countries include:

- *Fisheries technical input.* There is a lack of coordination between fisheries agencies and statistical agencies in the calculation of fishing input.
- *Treatment of subsistence fisheries.* There is often a lack of data on subsistence fisheries and difficulties in isolating fishing from other subsistence activities.
- *Fish processing.* Because in the SNA scheme the processing of fish is outside the “fishing” sector, it is often not possible to isolate the contribution of this important fishing-related activity from other forms of food processing.
- *Export data.* Official export figures in the Pacific Island countries characteristically undervalue exported commodities, especially fisheries products.
- *Economics of small-scale fisheries.* Data on small-scale fisheries are often scarce, as is technical assistance for its analysis.
- *Lack of “champions”.* There is often a scarcity of individuals in Pacific Island countries who are vocal at stressing the importance of the fisheries sector, contributing to its undervaluation in national statistics.

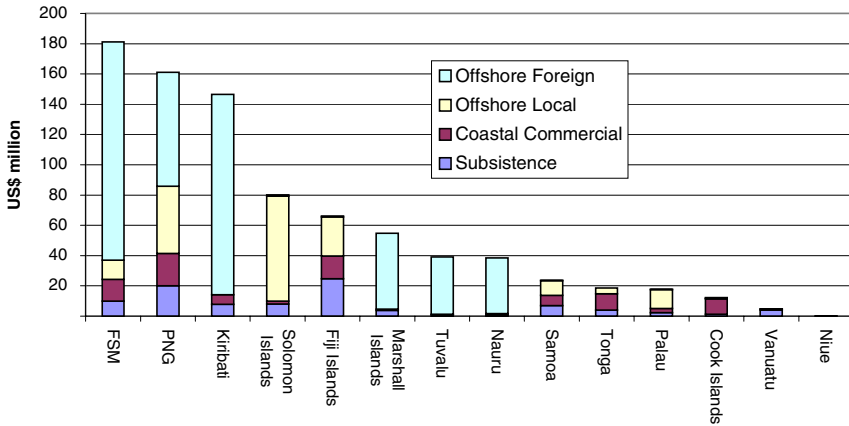
### **Fishery production in specific Pacific Island countries**

Figure 2 and Figure 3 show the estimated fisheries production and annual value in Pacific Island countries.

**Figure 2: Estimated Annual Fisheries Production of Pacific Island Countries by Volume, late 1990s**



**Figure 3: Estimated Annual Fisheries Production of Pacific Island Countries by Value, late 1990s**



**Fishery production patterns**

Key patterns in the fisheries production data include :

- The weighted average price per kg in the region is US\$1.04 for subsistence fisheries, US\$2.41 for coastal commercial fisheries, US\$1.28 for locally-based offshore fisheries, and US\$1.04 for foreign-based offshore fisheries.

- The ranking of countries by total fisheries production is strongly influenced by the level of tuna catches.
- There is a general pattern of total national catches decreasing going from west to east across the region, and from equatorial to higher latitudes.
- The higher value of longline tuna relative to purse seine tuna is apparent from the ranking of the FSM where a relatively large proportion of the catch is taken by longline vessels. The FSM ranks third by volume and first by value.
- The Fiji Islands appears to have the largest non-tuna production, in terms of both volume and value.
- The production from Nauru and Tuvalu is almost entirely related to tuna fishing.

### **Fisheries-related employment**

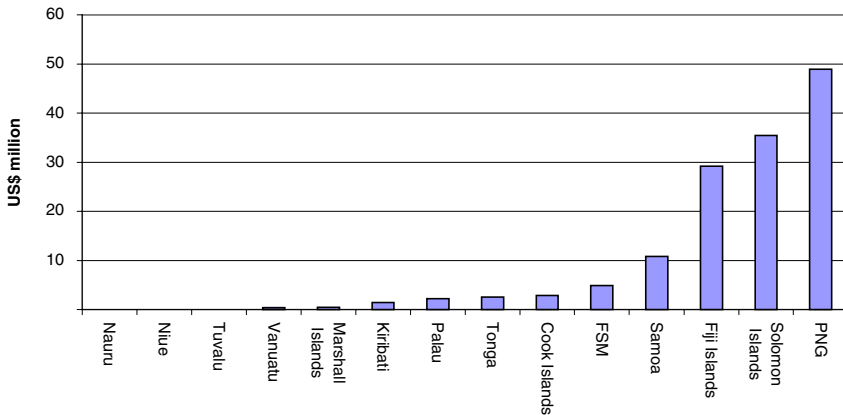
There are also certain observations that can be made about employment in the fisheries sector:

- The importance of fisheries in the subsistence economy seems to be strongly related to the type of island. In decreasing importance, atolls, islands, and large high islands are associated with very different levels of significance. This pattern is somewhat altered by PNG with its important freshwater subsistence fisheries.
- The importance of formal employment in fisheries seems to be related more to business conditions than to island type. Most formal employment in fisheries appears to be tuna-related.
- The importance of women employment in fisheries is generally understated due to (i) the practice of classifying activity according to a person's "main unpaid activity," which masks the importance of secondary activities—e.g. for many women, childcare is often the "main unpaid activity" so any fishing activity, even if it is a substantial amount of activity, is not duly reported; and (ii) placing commercial fish processing (where many women are employed) in the manufacturing sector. Where commercial fish processing occurs (canning, loining) and when this is attributed to the fisheries sector, the increase in fisheries employment is remarkable.

## Fisheries exports

The most notable feature of fishery trade data in the Pacific Islands is the underestimation of the value of fisheries exports. This underestimation appears large and is probably worse than in other trade sectors. In most cases, when the official export values are compared to other sources of similar information, the differences are remarkable. Figure 4 provides estimates of fisheries exports for end-1990.

**Figure 4: Estimated Values of Fisheries Exports of Pacific Island Countries, late 1990s**



## Features of the fisheries import and export data

Some of the key features of fisheries trade in the region include:

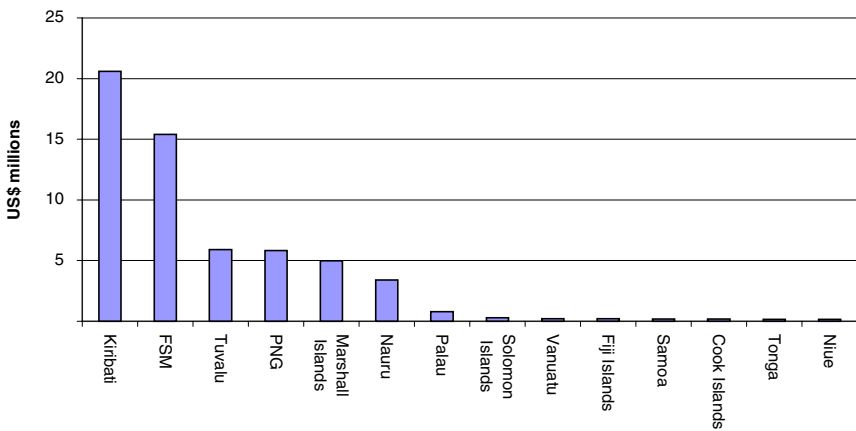
- In general terms, the region exports tuna and other high-value species such as trochus and beche-de-mer, while importing canned and inexpensive frozen fish.
- Tuna products dominate the fisheries exports of the region. For the five main exporting countries, tuna (fresh, frozen, and processed) overshadows all other fisheries exports.
- Canned mackerel dominates the fisheries imports.

- The relatively new aquarium fish industry is responsible for a significant portion of fisheries exports. Aquarium fish exports from Kiribati and the Marshall Islands now account for 78% and 95% of all fishery exports from those countries, respectively.
- There is considerable inter-annual variation in fisheries exports.
- The amount of fishery products exported as passenger baggage is quite large, especially in FSM, Marshall Islands, Palau, and Samoa.

**Access fees**

All Pacific Island countries received fees for foreign fishing activity in their waters. In some countries, the access fees form a very large portion of government revenue. In the FSM, for example, the 1999 access fees represented an estimated 39% of nontax revenue and 22% of total domestic revenue. In Kiribati, 34% of government income in 1999 was derived from fishing license fees. Figure 5 summarizes the value of access fees received by the different Pacific Island countries in 1999.

**Figure 5: Estimated Access Fees from Foreign Fishing Vessels, 1999**



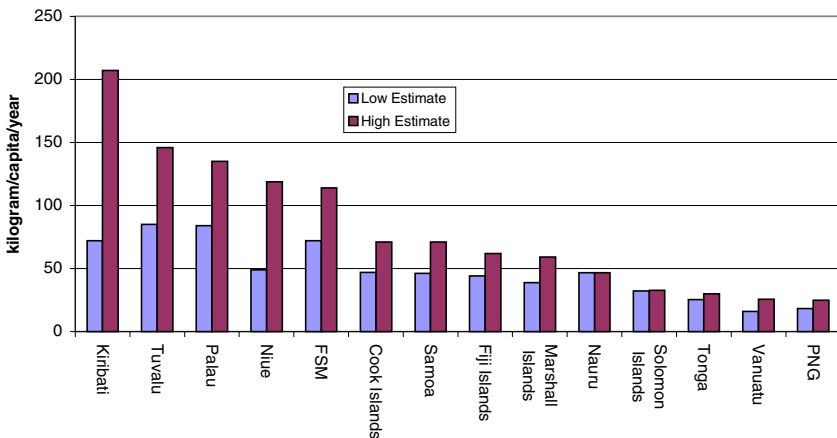
## Fish consumption

Key features of fishery product consumption in the region include:

- In general, countries made up of predominantly small islands have high fish consumption rates, while large island countries have low consumption rates. The exceptions to this are Tonga where the data suggest surprisingly low fish consumption rates, and Palau where fish consumption is remarkably high.
- Most of the Pacific Island countries exceed by a large margin the world average per capita fishery product consumption rate of 13.0 kg.
- Most estimates for Kiribati indicate that it has the highest rate of fish consumption in the world.

The estimates of per capita consumption are summarized in Figure 6.

**Figure 6: Ranges in Annual Per Capita Fisheries Consumption of Pacific Island Countries in the 1990s**



## Major conclusions and recommendations

A major conclusion of the present study is that fisheries contribution to GDP is underestimated in most Pacific Island countries.

In countries where estimates of fishing contribution to GDP are markedly different from estimates made in this study, the process used in preparing the national accounts tends to rely on dated surveys, weak indicators, and/or poorly understood methods. It is recommended that, in these countries, the compilers of national accounts carefully examine and evaluate the data, the assumptions, and the methods used.

The accuracy of the estimate of fishing contribution to GDP could be improved with a closer liaison between the fisheries and the statistics agencies. The fisheries agencies are in a position to provide information on new developments, technical insight, and recent data, all of which could improve GDP estimates. This cooperation, however, rarely occurs in Pacific Island countries. Because the fisheries agencies have a vested interest in assuring that the importance of their sector is not underestimated, they should take the lead in improving the liaison between their agency and the compilers of national accounts.

One of the factors that often result in an underestimation of fisheries contribution to national economies is the limited information available on the production of small-scale fisheries. Throughout most of the region, the statistics on small-scale fisheries are incomplete, inaccurate and, in some cases, absent. Given this reality, it is recommended that maximum use be made of survey opportunities *outside* the fisheries sector. At little cost, production information on small-scale fisheries could be collected through such tools as the national census, nutrition surveys, agriculture censuses, household income and expenditure surveys (HIES), and poverty studies.

In many countries, the underestimation of the value of fisheries exports in official customs statistics is a major source of error in the calculation of fisheries contribution to national economies. It appears that the export information could be worse in fisheries than in most other sectors. In countries where this problem is especially acute, it is recommended that export valuation be based on a broader spectrum of information than what is provided by customs.

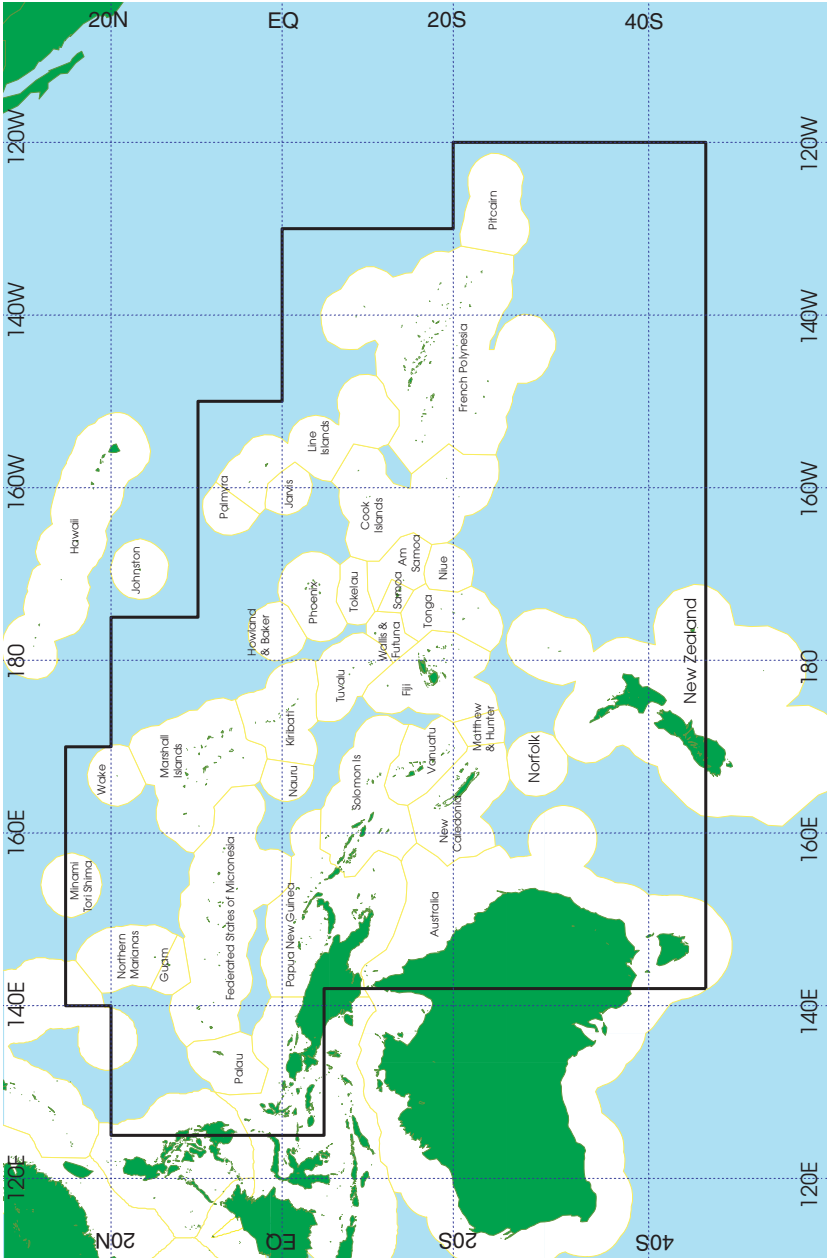
Additional information on the economics of small-scale fisheries would contribute to improving measurement of the fisheries

contribution to GDP. Studies to gather the required data need not be complex but should cover the major small-scale commercial and subsistence fisheries.

Where the compilers of national accounts have access to comprehensive and detailed information on the income/expenditure of the participants in one or more sectors of the fishing industry, the income approach is the most appropriate method of calculating the fishing contribution to GDP. In the Pacific, it is, however, rare for this data to be available. In these circumstances, the production approach is likely to produce the most accurate results.

Regional organizations could play an important role in improving the measurement of fisheries in the economies of their member countries.

Figure 7: The Pacific Islands Region



Source: Secretariat of the Pacific Community (SPC). The dark line delimits the SPC fisheries statistical area.