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Multinational Corporations in the Pacific Tuna Industry

LICENSING DISTANT-WATER TUNA FLEETS: THE EXPERIENCE OF PAPUA NEW GUINEA

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Papua New Guinea has a Declared Fisheries Zone (DFZ) covering 2.3 million square kilometers of the western Pacific Ocean. The extensive tuna resources found in the DFZ are only lightly exploited by the domestic industry fishing and as a result the government encourages exploitation of the fishery by distant-water fishing nation fleets. Currently, Papua New Guinea has two access agreements with distant-water fishing nations. However, foreign fishing vessels (FFVs) from other flag states are also licensed under the terms and conditions of these agreements in a non-discriminatory manner. The paper explains the determination of access fee payments for distant-water fishing fleets and the terms and conditions of access for FFVs required by Papua New Guinea. Receipts for selected years from distant-water fishing operations in the country's DFZ are presented. The paper addresses aspects of Papua New Guinea's administration and surveillance of its distant-water tuna fishery and compliance issues. Regional considerations as they affect Papua New Guinea's licensing of distant-water fleets is briefly reviewed and some concluding comments made as to how Papua New Guinea has fared in licensing distant-water tuna fleets in its DFZ.
INTRODUCTION

Papua New Guinea declared its 200-mile Declared Fisheries Zone (DFZ) by proclamation in March 1978. Papua New Guinea's DFZ, covering 2.3 million square kilometers (km²) of the western Pacific Ocean, is the third largest Exclusive Economic Zone (EEZ) in the Pacific islands region after French Polynesia (5.0 million km²) and Kiribati (3.6 million km²). Papua New Guinea's DFZ has rich and proven tuna fishing grounds that are exploited by domestic and distant-water fleets. Japanese distant-water tuna fleets have fished in the area covered by Papua New Guinea's DFZ since the end of World War II, and distant-water fleets of other flag states have joined operations more recently. Papua New Guinea's domestic tuna fleet has been in operation since 1970.

On the basis of biological research undertaken by the government of Papua New Guinea in the early 1970s, together with the more recent results of the Skipjack Tagging and Assessment Program conducted by the South Pacific Commission, it is estimated that the potential annual yield of tuna from the country's DFZ significantly exceeds the quantity currently being harvested. The combined quantities of tuna harvested by foreign fishing vessels (FFVs) and the domestic tuna fleet in Papua New Guinea's DFZ have consistently exceeded 100,000 tonnes per annum since 1974. Given the productivity of the DFZ, the capacity of the world tuna market to absorb production and the Papua New Guinea government's willingness to license FFVs to fish for tuna in its waters, it is expected, at least in the medium term, that the total quantity of tuna landed annually in the DFZ will remain at around established levels.

The paper commences with a brief description of the exploitation of Papua New Guinea's tuna resources by domestic and foreign fleets. This is followed by an explanation of Papua New Guinea's rationale for licensing distant-water vessels in its DFZ, as well as an outline of the country's existing, past, and proposed access agreements. The basis for determining access fee payments is explained, and terms and conditions of access are discussed. Revenue received by Papua New Guinea from licensing distant-water fishing tuna fleets is presented for 1980, 1982, and 1984, together with other data showing the relative importance of revenue earned. Administration and surveillance issues are examined, and compliance with distant-water fishing agreements is discussed. Regional considerations as they affect Papua New Guinea's licensing of FFVs are also briefly addressed. Some concluding comments are made summarizing the paper and proposing that, for financial and resource access reasons, distant-water fishing fleets might contemplate basing at ports in the Pacific islands region.
RESOURCE EXPLOITATION

Domestic tuna fishery

Papua New Guinea's domestic harvesting capacity is small. Between 1971 and 1981 an average of 28,000 tonnes of tuna were harvested annually by the country's domestic tuna fleet. However, following the collapse of the domestic tuna fishery at the end of the 1981 fishing season and its subsequent re-establishment in 1984, the harvesting capacity of the domestic fleet was reduced. The domestic tuna fleet in 1985 consisted of 9 pole-and-line vessels of 59 Gross Registered Tonnes (GRT) each and one purse-seine vessel of 350 GRT. The pole-and-line fleet is based at Kavieng adjacent to robust bait fish grounds, while the purse seiner is based at Rabaul. Tuna landed by the domestic fleet is transshipped at Kavieng and Rabaul for export. Over the 1970s, domestic landings went to the United States (American Samoa, Puerto Rico, and Terminal Island) for processing, but more recently exports have gone to canneries in Fiji and Thailand. This change in export orientation partially reflects both the changes in international market demand for tuna and the withdrawal of U.S. interests from the domestic industry in Papua New Guinea. In 1985 the country's domestic fleet harvested about 12,000 tonnes of tuna of which 9,000 were pole-and-line catches. These landings were exported at a value of US$4.7 million.

Distant-water operations

Distant-water fishing vessels from Cayman Islands, Honduras, Indonesia, Japan, Korea, Mexico, Panama, Philippines, Taiwan, and the United States operate under license in Papua New Guinea's DFZ. These vessels use purse-seine, longline, and pole-and-line fishing methods. In 1984 about 115 single and group purse seine vessels, 180 longliners, and a small number of pole-and-line vessels were licensed to operate in Papua New Guinea's waters. Approximately 90 percent of the seiners were Japanese and U.S. vessels. All of the longliners and pole-and-line vessels were Japanese. In recent years the size of the longline and pole-and-line fleets has stabilized, largely because of the Japanese government's licensing and overseas operating policies for the country's tuna fleets. However, the size of the purse-seine fleet has fluctuated. Annual fluctuations in the size of this fleet are almost entirely due to the number of U.S. seiners operating in the central and western Pacific Ocean and seeking licenses to fish in Papua New Guinea's DFZ.

ACCESS ARRANGEMENTS

As a matter of policy the Papua New Guinea government encourages the operation of distant-water fleets in its DFZ because:

1. the country's domestic harvesting capacity is insufficient to fully exploit its tuna resources;

2. government revenue is generated through the payment of access fees and other statutory charges as provided for in the Fisheries Act;

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3. the provisions of Article 56 of the Law of the Sea Convention relating to the utilization of surplus fish stocks are acknowledged.

Moreover, the Papua New Guinea government does not discriminate in licensing tuna FFV's on the basis of flag nation or type of tuna vessel. This means that all vessel owners, irrespective of whether an access agreement exists covering their vessels, can seek fishing licenses to operate in Papua New Guinea's DFZ. Access will be refused only if (1) previous licensing conditions have been infringed in Papua New Guinea by the vessel to be licensed, (2) the vessel owner has infringed conditions in the past for another vessel and the infringement has not been rectified, (3) the vessel is not listed on the Forum Fisheries Agency's Regional Register of Foreign Fishing Vessels, or (4) the vessel has been removed from this register.

At present Papua New Guinea's distant-water tuna fishery operates very much as a foreign enclave. Distant-water fleets opt not to transship their catches at domestic ports, nor do they take on provisions within the country. Generally, distant-water fleets operating in the country's DFZ enter domestic ports only in cases of medical or mechanical emergency.

Agreements

The background of Papua New Guinea's tuna access agreement with distant-water fishing nations has been described by Doulman and Wright (1983). Currently, Papua New Guinea has bilateral access agreements with tuna industries in two countries: Japan and Taiwan. The Papua New Guinea/Japan Fisheries Arrangement is an open-ended agreement that has been in force since 1981. It specifically provides for access to Papua New Guinea's DFZ by Japanese single and group purse seiners, longliners, and pole-and-line vessels. The agreement is subject to periodic review and, if necessary, adjustment. Normally, its operation is reviewed annually, though reviews can be held more frequently at the request of any of the agreement's five signatories. Since its conclusion the agreement has functioned well by providing the Japanese tuna fleet with secure access to Papua New Guinea's DFZ and by providing Papua New Guinea with a return for the fish harvested from its DFZ.

Although the agreement exists between Japanese industry and the Papua New Guinea government, the willingness of Japanese industry—with the full support of the Japanese government—to insure that the agreement's terms and conditions are fulfilled by all Japanese fishermen has greatly enhanced its stability and success.

The tuna agreement with Taiwan was concluded in 1985. This agreement provides access for single and group purse-seine tuna vessels only, and parallels the Papua New Guinea/Japan Fishing Arrangement in all other respects.

Papua New Guinea does not currently have an agreement in force providing access for the U.S. tuna fleet. However, since 1984 Papua New Guinea has actively supported and participated in negotiations for a multilateral tuna treaty between the United States and several Pacific Islands.
island nations. This treaty will guarantee access to the tuna fishing grounds in the central and western Pacific Ocean. In 1982 Papua New Guinea concluded a nine-month agreement with the American Tunaboat Association (ATA), but this agreement was not renewed.

In the absence of an access agreement, U.S. tuna seiners, along with tuna vessels of other flag states, are licensed to operate in Papua New Guinea's DFZ under the terms and conditions of the Papua New Guinea/Japan Fisheries Arrangement. For licensing purposes U.S. vessels are treated as though they were of Japanese flag, and their owners are obligated to fulfill the same terms and conditions of access as Japanese vessel owners. Under this non-discriminatory and open-door licensing policy, Papua New Guinea does not deny fishing access to any tuna vessel owner who is prepared to (1) pay the prescribed fee, and (2) observe the terms and conditions of access specified in the Papua New Guinea/Japan Fisheries Arrangement. These terms and conditions have become standard access requirements in Papua New Guinea and in a number of other countries throughout the Pacific islands region.

The Korean tuna fleet is also licensed under the Papua New Guinea/Japan Fisheries Arrangement. Since 1980 negotiations have been underway with the government of the Republic of Korea to conclude a tuna access agreement. However, it has not been possible to reach agreement because of Korea's objection to the wording and content of certain clauses in the draft agreement relating to the powers of the Papua New Guinea government in cases where Korean vessels and crews are found by a court of law to be guilty of infringing their terms and conditions of license.

The Papua New Guinea/Japan Fisheries Arrangement has become Papua New Guinea's benchmark bilateral agreement. It is flexible and it has stood the test of time. For these reasons all of Papua New Guinea's future bilateral fisheries agreements with distant-water fishing nations are likely to be closely modeled on it. Several other countries in the Pacific islands region have observed the advantages of this agreement and have also adopted its licensing approach.

ACCESS FEES

In return for access to Papua New Guinea's DFZ and the right to harvest tuna within the zone, the government levies a fee on each operating vessel. By definition access fees are a tax that is essentially designed (1) to extract a resource-rent from the fishery, (2) to foster operational efficiency in the use of the resource, and (3) to provide an instrument for government to regulate, develop and manage the fishery (Doulman 1981:235). As with most indirect taxes, the financial burden of access fees can be avoided by fishermen (1) opting not to fish in areas where fees are payable, or (2) operating illegally in areas where the payment of fees is mandatory. However, the ultimate financial burden for fishermen who operate illegally and are apprehended greatly exceeds the initial burden.

Access fees can be structured in a number of different ways. However, as a general principle and out of fairness to both the licensing authority (resource owner) and fishermen, fees should be related to the use
made of the resource (i.e., production) by individual fishermen per period of time.

As specified in Papua New Guinea's Fisheries Act, access fees paid by distant-water fishing vessel owners consist of three components: a Fisherman's Licensing Fee, a Boat Licensing Fee, and an Operation Fee. The first two components of the access fee are nominal and are included in the Fisheries Act primarily to satisfy domestic considerations. The Operation Fee is the component of the access fee used by Papua New Guinea to extract a financial return from the exploitation of the country's fisheries. Unlike some Pacific island countries, Papua New Guinea does not accept aid in the form of goods and services as partial payment for access to its tuna fishery. Rather, Papua New Guinea firmly maintains, along with a number of other Pacific island countries, that access to its EEZ by distant-water tuna fleets must be based on strictly commercial terms. As a matter of principle, any developmental assistance provided by distant-water fishing nations to Papua New Guinea must be provided independently of fisheries access.

General approach

In Papua New Guinea the Operation Fee is currently determined with reference to (1) the operations of the Japanese distant-water fleet in the country's DFZ, and (2) Japanese tuna prices. Initially, when the Papua New Guinea/Japan Fisheries Arrangement was concluded, the various parameters in the formulae used to compute the Operation Fee were estimated. However, as more information has become available through independent investigations and through consultation with the Japanese fishing industry and the Japanese government, it has been possible to replace estimated parameters in the formulae with parameters based on reported and recorded information.

As an established practice in Papua New Guinea the Operation Fee for particular classes of tuna vessels is related to (1) type (purse seiner, longliner, or pole-and-liner), (2) size (by tonnage), (3) estimated daily catch rates, (4) the period of time spent operating in Papua New Guinea's DFZ, (5) duration of fishing trip, (6) species composition, and (7) the market price of certain species of tuna at designated Japanese ports. These parameters are used to calculate the value of catches made by different classes of tuna vessels in Papua New Guinea's DFZ. The Operation Fee is based on percentage of this value per period of time.

Group seiners and some classes of longliners can purchase a license for a period of two or four months, but all other tuna vessels are licensed for two months. The operational characteristics of different sizes and types of tuna vessels indicate that, if vessels operate for the entire duration of their two or four months license periods in Papua New Guinea's DFZ, they can take a full load of fish. Under normal circumstances the license period is not long enough to permit vessels to make a second trip into the zone and to take another full load. Nonetheless, recent Japanese industry reports (May 1986) indicate that all purse seiners operating in Papua New Guinea's DFZ are making exceptionally good catches. Some Japanese seiners have been taking a full load of tuna—approximately 620 tonnes of fish—in five to seven fishing days, and total landings of the

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Japanese purse-seine fleet are currently running at about 11,000 tonnes per month.

**Fish prices**

Tuna prices used to calculate the value of catches for each fishing method take into account (1) the species composition of landings, and (2) the Japanese port shares of landings. Weighted tuna prices based on these factors are derived monthly by Papua New Guinea's Department of Primary Industry using relevant port prices obtained from Japanese authorities. For example, most Japanese purse seiners discharge their entire catches at Yaizu, Japan's main purse-seine port, and for this reason Yaizu skipjack (75 percent catch composition) and yellowfin (25 percent) prices are used to compute the value of catches landed. Similarly, tuna prices for yellowfin (75 percent catch composition), bigeye (15 percent), albacore (2 percent), blue marlin (4 percent), shark (1 percent), and other species (3 percent) at the ports of Kochi (31 percent of landings), Shimizu (31 percent), Nago (22 percent), and other ports (16 percent) are used to compute the value of catches for longliners, because most of the longline vessels operating in Papua New Guinea's DFZ offload at these ports.

To remove wide price fluctuations, and hence corresponding fluctuations in the value of catches, the tuna prices used in the formulae to determine catch values are three-month moving average prices. For example, the prices used to determine the value of catches for different classes and types of tuna vessels in May 1986 would be an average price based on derived weighted (by species and port) prices in the preceding three months (i.e., prices derived for February, March, and April).

**Fee determination**

Once the value is of catch determined based on an average of weighted prices, transportation costs are deducted (on a per tonne basis) from the catch value. This is done to reduce the catch valuation from a Japan port valuation to a Papua New Guinea fishing ground value—perhaps what might be loosely termed, a Papua New Guinea fob valuation. For single purse seine vessels, the transportation adjustment factor is US$200 per tonne while the longline adjustment factor is US$460 per tonne. The difference in the adjustment factors for purse-seine and longline vessels reflects the cost differential in transporting and handling purse-seine and longline caught fish.

After determining the Papua New Guinea fishing ground value of catches for each size and type of vessel, the government appropriates 5 percent of the catch value as the Operation Fee. Operational Fees are recalculated on the 15th day of each month, reflecting tuna price changes over the preceding three months.

The rationale for setting the Operation Fee at 5 percent of the catch value relates to statutory export taxes on tuna harvested by the country's domestic fleet. Tuna that is landed by the domestic fleet and then exported unprocessed attracts an export tax of 5 percent ad valorem. The export tax is designed to extract a financial return for the resource owner—the people of Papua New Guinea. To maintain uniformity between the
domestic and distant-water components of the tuna fishery, the Operation Fee for FFVs is therefore based on 5 percent of the fishing ground value of catch.

The system used in Papua New Guinea for determining access fee payments is inherently fair for both fishermen and government in that (1) fees are linked to prevailing tuna prices, (2) fees are related to the estimated quantity and species of tuna harvested, and (3) trip licenses of two or four months' duration provide foreign fishermen with flexibility in determining where to operate.

**TERMS AND CONDITIONS OF ACCESS**

In addition to paying prescribed access fees, the owners and operators of FFVs licensed to operate in Papua New Guinea's DFZ are obligated to fulfill certain terms and conditions. These are designed to (1) promote the orderly exploitation of the fishery, (2) minimize administrative costs associated with licensing FFVs, and (3) provide a basis for scientific monitoring and management of the fishery. The terms and conditions of access as contained in the Papua New Guinea/Japan Fisheries Arrangement are essentially the same as those contained in the Nauru Agreement (see Regional Considerations).

**Prohibited areas**

FFVs licensed to operate in Papua New Guinea's DFZ are excluded from fishing in the country's territorial seas (i.e., within 12 miles of the coastline) and in certain other defined areas. Operation by FFVs in these areas is restricted to protect the operations of the domestic pole-and-line fleet. Closed and prohibited fishing areas are commonly used throughout the world for biological, management, political, and industry protection reasons.

**License application**

All FFVs applying for a license to fish in Papua New Guinea's DFZ must be in good standing on the Regional Register of Foreign Fishing Vessels. In addition, application for a fishing license must be made and the prescribed access fee paid before a vessel enters the DFZ. If a license application is rejected by Papua New Guinea, the fee is refunded to the vessel's owner. However, no refund is made if a vessel owner opts not to fish in the DFZ after an application has been made and the appropriate fee paid. Licenses are not generally transferable between owners or vessels.

Under the provisions of Papua New Guinea's Fisheries Act, the Minister for Primary Industry has the sole authority to grant, suspend, and cancel fishing licenses. The Minister normally exercises this authority upon recommendations made by the Director of Fisheries.

**Reporting**

All licensed FFVs entering or exiting Papua New Guinea's DFZ must notify the Fisheries Division by telex 24 hours in advance. The vessel's
operator must also report its exact position and the quantity of fish on board when entering and exiting the DFZ. FFVs are permitted to enter and exit the DFZ as many times as they wish during a single license period so long as the required notifications are made. These reporting requirements are necessary to facilitate efficient fisheries surveillance and to provide a cross reference check on catch records.

Catch records

FFV operators must maintain a current catch record on the vessel. The record must be signed by the vessel operator and forwarded to Papua New Guinea’s Director of Fisheries within 45 days of the completion of each fishing trip. The catch record used in Papua New Guinea is the standard catch reporting schedule developed by the South Pacific Commission’s tuna program. Its completion is required by all countries in the Pacific islands region for all tuna fleets operating in their respective EEZs.

Vessel identification

All FFVs licensed in Papua New Guinea’s DFZ must display their international signal letters or radio call signs on top of the vessel, and which must be clearly discernible from the air. Vessel names also must be printed in English on the bow and stern of the vessel. In addition, Papua New Guinea vessel registration numbers must be displayed on both sides of the wheelhouse.

Observers

The issuance of fishing licenses by Papua New Guinea obligates vessel owners to take on government-nominated observers. Observers must be allowed access to all facilities and equipment on the vessel so long as they do not affect or impair operational safety or place undue financial burden on the vessel owner.

Agents

All FFV owners seeking to license vessels for operation in Papua New Guinea’s DFZ must appoint an agent in the country to handle licensing arrangements. In practice the agent expedites the issuance of licenses and reduces administrative costs for Papua New Guinea.

REVENUE

Table 1 shows revenue received by Papua New Guinea from licensing FFVs in 1980, 1982, and 1984. Over this five year period, revenue derived from the distant-water tuna fishery increased from US$1.2 million to US$4.2 million—a rise of 250 percent. Revenue received by Papua New Guinea in 1984 was the largest amount that any country had received in a single year from licensing distant-water tuna fleets. The increase in revenue between 1980 and 1984 was due to (1) an increasing number of purse-seine vessels taking out licenses, and (2) periodic upward adjustments in the parameters—mainly fish prices and species compositions—used to calculate access fees. These factors enabled Papua New Guinea to increase its total
Table 1: Revenue derived from Papua New Guinea's distant-water fishing agreements in 1980, 1982, and 1984.

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<tr>
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</tr>
</tbody>
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Notes:
- b. Fisheries Division, Department of Primary Industry, Papua New Guinea.
- c. Percentages might not add to 100 due to rounding.

Table 2: Comparison of distant-water license revenue, Fisheries Division budget and total government revenue in 1980, 1982, and 1984.

<table>
<thead>
<tr>
<th>Distant-water License revenue (X)</th>
<th>Fisheries Division Budget (Y)</th>
<th>Total Government Revenue (Z)</th>
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<tr>
<td>$m</td>
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<tr>
<td>1980 1.2</td>
<td>5.4</td>
<td>899.2</td>
</tr>
<tr>
<td>1982 3.7</td>
<td>4.3</td>
<td>767.3</td>
</tr>
<tr>
<td>1984 4.2</td>
<td>3.5</td>
<td>741.8</td>
</tr>
</tbody>
</table>

Notes:
- a. Table 1.
- b. Papua New Guinea Department of Primary Industry, Fisheries Division.
revenue from the fishery despite the depressed state of the international tuna market.

Table 1 also serves to illustrate how the distant-water tuna fishery in Papua New Guinea's DFZ has become a truly international fishery. In 1980, only Japanese tuna fleets operated legally in the DFZ, but by 1984 the number of fleets from different flag states had expanded significantly. The internationalization of the fishery has been entirely due to the expansion of the purse seine fishery in the western Pacific Ocean. Most notable has been the entrance of the U.S. tuna fleet into the fishery. In 1980, no U.S. vessels were licensed by Papua New Guinea to operate in its DFZ, but by 1984 this fleet contributed US$1.1 million—or 26 percent—of total license revenue. Similarly, license revenue paid by Korean and Taiwanese purse-seine fleets between 1982 and 1984 showed marked increases.

Table 2 provides a comparison of (1) revenue received by Papua New Guinea from licensing distant-water tuna fleets, and (2) the budget of the Department of Primary Industry's Fisheries Division, and (3) total government revenue. In 1980 licensing revenue equaled 22 percent of the Fisheries Division's budget. However, with reductions in the size of the Division's budget and increases in license revenue, revenue exceeded the Division's budget by 20 percent in 1984. Thus, revenue generated by Papua New Guinea's distant-water tuna fishery is making a contribution to the government's efforts to regulate, develop, and manage the country's fisheries.

As a proportion of total government receipts, revenue derived from Papua New Guinea's distant-water tuna fishery is marginal. In 1980 license revenue as a proportion of government revenue was 0.1 percent, rising to 0.6 percent in 1984 (Table 2). In this respect Papua New Guinea is quite different from some other Pacific island countries where license revenue is an important source of government revenue. In 1986, for example, it is estimated that total tuna license receipts from distant-water fishing in Kiribati's EEZ will account for 25 percent of the government's budget (Doulman 1986).

**ADMINISTRATION AND SURVEILLANCE**

Licensing of FFVs in Papua New Guinea's DFZ involves government administration and surveillance costs. Administration involves processing license applications and verifying that fees are paid, liaising with fleet agents in Papua New Guinea, and follow-up at the completion of fishing trips to insure that completed catch records are submitted to the Department of Primary Industry in the proper format within the required time period. A licensing and surveillance unit within the Fisheries Division undertakes the administrative functions associated with licensing FFVs, while catch records are checked by the Division's research branch. Data contained in catch reports are computerized by the Fisheries Division so that summaries by vessel, month, species, fishing method, etc., can be readily retrieved. Copies of catch reports, including reports for the domestic fishery, are also forwarded to the South Pacific Commission's tuna project in Noumea for computer processing and regional analysis.

Fisheries surveillance in Papua New Guinea is carried out by vessels operated by the Fisheries Division together with Defence Force vessels and
aircraft. A national surveillance center in Port Moresby, utilizing
Defence Force facilities and personnel, coordinates surveillance. The
center, established in 1984, liaises with the police forces and
surveillance authorities in neighboring Pacific island countries as well as
with a range of regional and international organizations. The center
monitors activities and movements of all foreign vessels operating in Papua
New Guinea waters as a means of preventing illegal actions such as
unlicensed fishing and drug trafficking.

FFVs that are found to be infringing the terms and conditions of their
licenses or to be fishing illegally are apprehended and escorted to a
domestic port to face legal proceedings. If it is not possible to
apprehend a vessel, Papua New Guinea could request that it be removed from
the register of Foreign Fishing Vessels. Countries in the Pacific islands
region have agreed that if a vessel is removed from the register for
illegal fishing or for infringement of its terms and conditions of license
in the EEZ of any FFA member country, no FFA member shall license that
vessel until its standing is restored on the register. The institution of
the regional register has reduced the need for conventional fisheries
surveillance using vessels and aircraft, and this in turn has reduced
surveillance costs in some instances.

In 1982 the cost of administering distant-water fishing agreements and
providing surveillance by Papua New Guinea's Fisheries Division—but not
including expenses incurred by the Defence Force—was US$0.6 million. This
represented 16 percent of license revenue received in 1982 (Papua New
Guinea 1982) or 14 percent of the Fisheries Division's budget (Table 2).
However, if the surveillance costs incurred by the Defence Force were
combined with those incurred by the Fisheries Division the total
surveillance costs would be significantly higher.

COMPLIANCE

FFVs licensed to operate in Papua New Guinea's DFZ must comply fully
with the terms and conditions under which they are licensed or face
penalties provided by the country's Fisheries Act, and possibly the
sanctions of the Regional Register. Although Papua New Guinea does
undertake surveillance, the smooth functioning of its distant-water fishing
agreements relies to a significant degree on the willingness of fishermen
to voluntarily comply with the terms and conditions of their licenses.

The Papua New Guinea/Japan Fisheries Arrangement has operated
successfully since its inception, largely because Japanese fishermen, their
industrial associations, and the Japanese government have insured that the
terms and conditions of their agreements have been closely followed.
Between 1981 and 1985 fewer than five serious incidents were reported where
Japanese vessels either fished illegally in Papua New Guinea's DFZ or
infringed the terms and conditions of their licenses, more than 6,200
individual fishing trips. This excellent track record has fostered trust
and understanding between Papua New Guinea and the Japanese tuna industry.
In turn, this cooperation has manifested itself in a stable and lasting
agreement.
The compliance record of tuna vessels of other flag states operating in Papua New Guinea's DFZ has been patchy in comparison. In addition to illegal fishing in the country's DFZ, some vessels have frequently ignored terms and conditions of license. In particular, licensed vessel operators frequently fail to report as required, and to furnish catch records. Failure to fulfill terms and conditions of license is short-sighted, as it is likely to prejudice the future licensing of individual vessels and possibly entire fleets.

Lack of voluntary compliance necessarily increases Papua New Guinea's administration and surveillance costs. As costs increase, upward pressure can be expected to be exerted on access fee levels. Should administration and surveillance costs reach a point where Papua New Guinea is not receiving an adequate net financial return from licensing distant-water tuna fleets, it might be reasonably anticipated that legal access to the country's DFZ could be selectively or completely terminated for the distant-water tuna fleet.

**REGIONAL CONSIDERATIONS**

In addition to domestic considerations and requirements with respect to licensing FFVs, Papua New Guinea is obligated to abide by certain formally agreed arrangements—without derogation of its sovereign rights—with other Pacific island countries. In particular, Papua New Guinea, along with six other countries with contiguous EEZs that constitute the Nauru Group, have agreed to progressively harmonize terms and conditions of access for FFVs to their respective EEZs. The countries making up the Nauru Group are Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea and Solomon Islands (Figure 1). The combined EEZs of this group contain the most productive and least seasonal purse-seine tuna fishing grounds in the Pacific islands region.

Nauru Group countries have agreed to harmonize the following terms and conditions of access: subscription to the Regional Register of Foreign Fishing Vessels; licensing procedures and the functions of authorized observers; catch reporting and maintenance of log books; timely reporting of catch, entry to and exit from EEZs, and the identification of licensed vessels (Nauru Agreement 1984). Other aspects of fisheries access—such as methods used for determining fees—are also likely to be harmonized in the future. The demonstrated advantages of harmonization have encouraged other Pacific island countries that are not party to the Nauru Group to also focus on harmonization as a licensing policy objective.

Harmonization of terms and conditions of access for bilateral distant-water fishing agreements has considerable advantages for fishermen. Where terms and conditions of access are the same or similar over a number of countries, it becomes easier for distant-water fleets to observe and comply with access requirements.

The Forum Fisheries Agency's Regional Register of Foreign Fishing vessels, which already plays a major role both in promoting FFV compliance with terms and conditions of distant-water fishing agreements and in
Figure 1: EEZs of the Nauru Group countries
deterring illegal fishing in the Pacific islands region, will remain an important enforcement tool.

CONCLUSION

Papua New Guinea, out of self-interest and in recognition of its international obligations, adopts an open-door and non-discriminatory policy in licensing distant-water tuna fleets. In return, Papua New Guinea expects to receive a fair financial return for granting access to its highly productive tuna grounds. Moreover, Papua New Guinea insists that all distant-water fishing fleets pay the same access fees and agree to be bound by the same terms and conditions of license. It is unrealistic to expect Papua New Guinea to give some distant-water tuna fleets preferential financial treatment. Such preferential treatment would lead to instability in access to the country's DFZ, which would be mutually disadvantageous in the longer run for both Papua New Guinea and distant-water tuna fishermen.

Financial returns derived by Papua New Guinea from the distant-water tuna fleets operating in its DFZ have improved since 1980 as additional licenses have been purchased, as parameters used in the formulae to calculate access fee payments have been adjusted to more accurately reflect the operational characteristics of different sizes and types of vessels, and as market information has been refined. Scope for further adjustments exists, and it is expected that these adjustments will be progressively made.

Administration and surveillance costs associated with licensing distant-water fishing fleets are burdensome. All countries that license foreign fleets and attempt to provide adequate surveillance of FFVs are acutely aware of this. For this reason, Papua New Guinea and other Pacific island countries have adopted innovative measures as a means of trying to provide cost-efficient fisheries surveillance and enforcement. However, voluntary compliance by distant-water fishing fleets with the terms and conditions of their fishing licenses reduces government surveillance, enforcement and administration costs, and generally contributes toward strengthening ties between resource owners and foreign fishermen. Non-compliance and illegal fishing jeopardize continued access to Papua New Guinea's DFZ for particular vessels and sometimes for entire fleets. Moreover, distant-water fishing nation governments and their tuna industries must be prepared to accept responsibility for their fishermen while they are operating in the EEZs of foreign countries. In extreme cases, these governments and industries must be prepared to sanction vessel owners who act against the interests of long-term and stable fisheries agreements.

The time is right for distant-water fishing fleets to review the nature of their operations and to decide if they could be improved. Primary producers the world over are inherently conservative and resist change. Fishermen are no exception. However, with the progressive restructuring of the world tuna industry, it might be advisable—both for financial and continued resource access reasons—for distant-water fishermen to carefully evaluate whether they should remain distant-water operators or become part of the domestic industry in Pacific island countries.
NOTES

1. The Offshore Seas Proclamation was approved by Papua New Guinea's parliament and signed by the Governor-General in 1978.

2. The range in annual production between 1971 and 1981, which depended on the number of vessels deployed and catch rates, was from 13,000 tonnes (1972) to 48,000 tonnes (1978).

3. For a discussion of the collapse of the domestic tuna fishery in 1981, see Doulman and Wright (1983), and for its re-establishment, see Doulman (1984a).

4. Papua New Guinea defines a U.S. vessel as one that is owned, operated, or controlled by U.S. interests. U.S.-owned, operated, or controlled vessels using flags of convenience are considered to be U.S. vessels for the purposes of this paper.

5. The complete title of the arrangement is Arrangement Between the Government of Papua New Guinea and the Federation of Japan Tuna Fisheries Cooperative Associations, the National Federation of Fisheries Cooperative Associations of Japan, the Japan Far Seas Purse Seine Fishing Association, and the Federation of North Pacific Distant Purse Seine Fisheries Cooperative Associations of Japan Concerning Fishing Within the Fishing Zone Under the Jurisdiction of Papua New Guinea.

6. The Papua New Guinea/Taiwan Fisheries Arrangement was negotiated with FCF Fisheries Pty. Ltd, a Taiwanese corporation, of Kaoshiung. Because Papua New Guinea has diplomatic ties with the People's Republic of China, its fisheries dealings with Taiwan must necessarily be of a commercial nature and with a corporation.

7. In all cases, access fees represent a production cost for fishermen, but the payment of fees gives fishermen the option of legally deploying their capital on highly productive fishing grounds.

8. The Fisherman's License Fee is set at approximately US$1 per fisherman per year or part thereof, and the Boat Licensing Fee is approximately US$30 per meter of the length of vessel per annum, on a time prorated basis.

9. Tuna fishing vessels registered or based in Papua New Guinea do not pay an Operation Fee because they are taxed on their production at the time of export. However, if tuna is consumed domestically or exported processed, no export tax is due.

10. Papua New Guinea's Fisheries Act requires that if a duly constituted court of law finds a vessel operator guilty of illegal fishing in the country's DFZ (1) a fine imposed by the court on the operator shall be paid, (2) the operator and vessel crew shall possibly serve jail terms, and (3) the vessel, gear, and catch shall be forfeited to the State. Penalties (1) and (2) are subject to the discretion of the court, but penalty (3) is mandatory and automatic.
11. These constitute the minimum terms and conditions that Nauru Group countries must incorporate in their distant-water tuna access agreements.
REFERENCES


Doulman, David J. 1984a. PNG tuna industry re-established through agreement with Japan. Australian Fisheries. 43 (November). pp.36-9.


Doulman, David J. Forthcoming. Some aspects and issues concerning the Kiribati/Soviet Union fishing agreement. 31p.

Nauru Agreement. 1982. An arrangement implementing the Nauru Agreement setting forth minimum terms and conditions of access to the fisheries zones of the parties. Honiara. 15p.


Papua New Guinea Department of Primary Industry Fisheries Division. 1982. Annual costs involved in licensing foreign fishing fleets. 5p. (mimeo).

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