

## TUNA RESOURCE MANAGEMENT

### Troubled fishing in Pacific waters

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The Pacific island countries persist with tuna fishing policies that are significantly inferior to what appear to be the economically and environmentally sensible courses to follow. Economists have been offering advice over a fairly long period about better policy options without having any discernable favourable impact. This lack of success might be due, as Gordon Tullock once said, to the fact that economists tend to flit from one area to another in demonstrating problems with government policies. Tullock suggested that economists, whose primary task is to prod governments towards better policies, could have better success if individual economists focused on one issue and continually endeavoured to educate the public and the government about the problems with that particular socially inferior intervention.

It is in that spirit that I discuss again problems that I and others see in the tuna fishing policies of the Pacific island countries. I also examine some of the costs of existing policies and reasons for these governments failing to follow what appear

to be policies that will maximise the benefits from the exploitation of this resource in an environmentally sustainable manner.

#### **Pacific tuna and resource rents**

The importance of tuna to the economies of the Pacific has been discussed, so I will not repeat those observations here. However, it is worthwhile noting that the economic contribution of the resource could be greater if different policies were followed. The migratory nature of the tuna stock and its implications for the availability of fish both inside and beyond the exclusive economic zones of the Pacific island countries should also be familiar. The sustainability of the different species of tuna is a matter in which I have no expertise and therefore do not discuss, although good information about stock size and sustainability of harvest rates is critical to the setting of good policy for the management of the resource. I note, however, that the sustainability of some tuna species is subject to dispute (Hampton et al. 2005;

Myers and Worm 2005). Therefore, I trust that cautions about the sustainability of tuna harvests are better predictions than some of the claims that have been made about the sustainability of logging in the Solomon Islands.<sup>1</sup>

Accurate information about the returns to the Pacific island countries from the exploitation of the tuna stock is difficult to obtain, in large part because the deals made over access by fishers lack transparency. Besides the reluctance to divulge information about the direct monetary payments for access, there are various kinds of package deals involving items such as the building of port and processing infrastructure and employment of local labour. Petersen (2006) records the extent of disagreement over the level of access fees paid by the distant-water fishing nations (DWFNs). Of interest is that, on average, the access fees appear to have declined (from an average of 4 or 5 per cent of gross revenue in the 1980s to around 3 per cent recently) and the level of access fees is much lower than reported for other fishing regions. I look at these two issues below.

The basic principle in the exploitation of natural resources is to maximise the 'economic rent', that is, in the case of fisheries, the difference between the value of the catch and the economic cost of the fishing effort. Various attempts have been made to calculate the optimal resource rent from the Pacific tuna fishery. The problem with these exercises, however, is that the true economic cost of the fishing effort will be revealed only by subjecting fishing firms to competition. This means that rights to fish should be auctioned to force fishers to bid against each other and thereby reveal the true cost of fishing.

The only options for pricing fishing rights that Pacific island countries appear willing to consider are multilateral and bilateral negotiations. Those favouring multilateral agreements appear to believe

that the Pacific island countries have some monopoly power. But as Duncan et al. (1999) argue, competition from other fisheries and from substitute foods makes this unlikely. Bilateral negotiations appear to be favoured by the Pacific island countries, but as various writers note, DWFNs 'game' the individual Pacific countries into what appear to be concessionary deals. As Duncan and Temu (1997) argue, once economically sustainable country quotas are allocated on a multilateral basis, individual countries can auction off their quotas among all the fishers. If the tendering process does not appear to be competitive, then the tender should be readvertised. The number of fishing nations and fishing firms is now sufficiently numerous to ensure a competitive bidding process. The quotas should be multi-year and should be transferable between fishers. By creating an asset in the form of a right to fish, among other things, monitoring costs will be reduced as fishers will attempt to protect their asset by reporting any illegal fishing. Chand et al. (2003) have spelt out the principles of an economically sensible mechanism for allocating fishing access in the Pacific fishery.

It was also suggested in Duncan and Temu (1997; see also Duncan 2004) that the tendering process could be used to provide a stable flow of resource rents to the Pacific island countries, in recognition of the volatile nature of fish catches and fish prices. Fishers are much better positioned to assess these risks and to hedge against them than are the small Pacific countries. Parris and Grafton (2005:164) suggest that the less than 50 per cent of 'economic rent'<sup>2</sup> that the Pacific island countries are receiving can be justified by the high risk of tuna fishing. Again, I have to say that under existing arrangements, Pacific island countries have no idea of the true economic rent and no idea of the fishers' capacity and willingness to hedge the risks on their behalf.

## Poor policies and their costs

As Duncan and Temu (1997) noted, there are two major problems with the tuna fisheries policies adopted by the Pacific island countries. First, the policies do not follow the economic principle of comparative advantage and attempt to promote economic activities that do not make the best use of these countries' factor endowments. Second, the policies adopted ignore what is known as the Tinbergen Principle, that is, the very useful principle of economic policymaking that argues that there should be only one policy instrument for each policy objective (Tinbergen 1952). In many cases, countries are trying to achieve more than one economic objective with one policy instrument. I shall illustrate how these principles are violated as I discuss the various policies being followed.

The objective of allowing the exploitation of the tuna fishing resource should be to maximise the Pacific island countries' share of the resource rent over time. This would be best done by setting up a system of tradable permits and allocating these competitively among fishers through auction or by tender. Under this system, fishing rights would be allocated to the most efficient fishers and would maximise the share of resource rents to the Pacific island countries, as the most efficient fishers would be able to bid the highest access price for the permit.

There should be no discrimination in favour of national fleets for several reasons. First, it is most unlikely that tuna fishing with capital-intensive vessels (such as purse seiners) and equipment is in conformity with their comparative advantage, as the Pacific island countries generally are not capital rich and therefore do not have a comparative advantage in capital-intensive activities. Second, vessels and equipment used by

national fishers are generally not the most up-to-date and therefore not likely to be the most efficient, so the access fee loss from discriminating in their favour will be magnified by the higher cost of fishing. Third, tuna fishing on a large scale, such as through the use of purse seiners, is also high risk, as noted above, and subsidising small developing countries to enter such a risky and competitive business is not likely to be in their best interest. The problems are magnified if the government is taking part in the enterprise, whether as a joint-venture partner or as a sole proprietor, as the country usually ends up wearing the loss in the event of the collapse of the venture.

The bundling of cheap access to fishers with promises of investment in the country has been a favourite policy of the Pacific island countries, however, it violates the Tinbergen principle of one policy, one instrument. Pacific island countries are rightly concerned about increasing investment and jobs in order to promote economic growth. By bundling investment and employment promotion together with providing access to tuna fisheries, however, none of the objectives are likely to be achieved efficiently.<sup>3</sup> Moreover, the country will not know what it has forgone in trying to achieve these goals. Each of the objectives should be pursued independently using first-best policies. The resource rents should be maximised using a single policy, as should investment and employment promotion.

Another form of 'bundling' of policies in Pacific fishing is the provision of cheap access in return for aid. Petersen (2006) has provided a good account of such poor policies with respect to Japanese aid. An important adverse side-effect of these poor policies and their associated opaqueness, which allows huge room for discretionary behaviour on the part of politicians and civil servants, is the high level of corruption. In

fact, because first-best policies would reduce the scope for discretionary behaviour and corruption, this is one of the most likely reasons why their adoption is resisted. For this reason, it is very important that the costs of poor policies are continually brought to public attention.

Forcing DWFNs to service their ships at Pacific island country ports, where the costs of fuel, parts and labour are likely to be higher than in their home ports or in the ports of larger countries, is in effect purchasing local investment and employment at the cost of reduced resource rents, as forcing fishers to use these services raises their costs and reduces the resource rent they will be willing to pay. Moreover, provision of such port services might not be in conformity with the Pacific island countries' comparative advantage. Similarly, fish processing may also not be serving the country's comparative advantage. Just because a country is rich in a natural resource, such as fish, it does not follow that it has a comparative advantage in processing the resource. Moreover, processing the fish is only part of the requirements for successfully engaging in fish processing. As has been shown from the experience of Soltai Fishing and Processing (formerly Solomon Taiyo Ltd) in Solomon Islands, when the government took over the fishing company previously operated in partnership with a Japanese company, access to the network and marketing expertise of the Japanese partner was lost (Barclay 2005).

Forcing local processing facilities to use domestic fishers, exempting domestic fishers or locally based DWFN fishers from access fees, and levying export taxes on unprocessed fish to subsidise local processing are also inferior policies on several counts. Where is the analysis that points to forgone resource rents being used to promote domestic fishing fleets or domestic processors as being the best use of these rents? Why should domestic

canneries be placed at a disadvantage in an internationally competitive industry by being forced to take fish from a domestic industry that needs subsidies to survive? Moreover, why should overfishing of the tuna stock be encouraged by subsidising fishing and canning through EU preferential entry and rules of origin?<sup>4</sup>

The 1993 ban on the trans-shipment of tuna at sea and the requirement for DWFN fishers to transfer their catch in Pacific island country ports was imposed in the highly questionable belief that this would generate additional benefits to the Pacific island countries. Requiring fishing vessels to steam to Pacific island country ports to unload their catch adds to their costs in terms of fuel, lost time in fishing and lost time in unloading in inefficient ports. These costs are ultimately not borne by the fishers but reduce the access fees that they are willing to pay. Other mandatory requirements on DWFN fishers, such as visits to Pacific island country ports for inspections and to purchase a minimum value of supplies while in port, have the same consequences. The points system developed by the Forum Fisheries Agency for evaluating vessels applying for regional fishing access, with its emphasis on local equity, numbers of nationals employed, value of local purchases and value of onshore investment, promotes all the worst features of fishing policies in the Pacific.

The cost to the Pacific island countries of the policies they have adopted is very difficult to evaluate. It could be estimated only if a market-based access allocation scheme were followed that established the true economic rent. If the market-based resource rent were known, there would be some chance of estimating the return on the access fees given up in exchange for the promotion of local investment and employment. The cost of these policies, however, does appear to be showing up in the decline in the estimates of the access fees.

As noted earlier, the ban on trans-shipment and other mandatory requirements placed on DWFN fishers, such as compulsory port inspections, add to the costs of fishing and reduce the resource rent. Exemptions from access fees for domestic fishers and part or whole exemption for locally based DWFN fishers also reduce the access fees.

The *Pacific 2020* report (AusAID 2006:50) notes that the current value of catches by tuna vessels based in the Pacific island countries is estimated at about US\$300 million a year. It is not clear whether this is the value of the unprocessed fish or the value after processing. If, however, this figure refers to the value of the landed fish, then at an access fee of 4 per cent of the value of the catch, the access fee forgone would be US\$12 million. This figure can be compared with the estimated total value of access fees received by Pacific island countries in recent years of US\$60–70 million out of a total catch revenue of about US\$2 billion.

The most desirable tuna fisheries policies appear to encompass the following

- a multilateral approach is adopted for the establishment of the economically sustainable harvest limits and the quotas for each Pacific island country, as well as for surveillance and monitoring;
- individual Pacific island country auctions or tenders are used for the allocation of their quotas to ensure the maximisation of their resource rents;
- access fees are put to their best use, as determined through benefit–cost analysis, rather than indirectly subsidising inefficient fishing-related activities; and,
- the efficiency of the fishing effort is maximised by not discriminating in favour of domestic fishers or locally based DWFN fishers, and the resource rents and the capacity to pay access fees are thereby maximised.

## The behaviour of the DWFNs and the WCPFC negotiations

The argument most commonly advanced against the idea of individual Pacific island countries tendering or auctioning the rights to fish in their waters is that the DWFNs will refuse to deal with the country. This completely misunderstands the idea of competitive processes. In a bilateral negotiation, the individual DWFN fisher can decide that it will withdraw from the negotiation and deal with another country. In the competitive situation that we have in the Pacific, however, where there are a large number of potential fishers, an auctioning system requires them to compete against each other for access. If the Pacific island country does not believe that the auction or tendering process is sufficiently competitive, it can withdraw from the process and readvertise.

With respect to the behaviour of DWFN fishers and the sustainability of the fish stock, Grafton et al. (2005) have made the important point that individual, secure harvesting rights can promote collective action on the part of the owners of such rights to ensure that management practices are consistent with maintaining the long-term value of their asset. As well as the incentive that they will have for surveillance of illegal fishing, which I mentioned previously, they will engage in other collective action on research into sustainable harvests and equipment improvements that reduce by-catch. The authors mention as an example the recent formation of the Tuna Industry Fishing Association.

This point leads me to ask why the DWFNs are so opposed to ideas such as tradable harvest quotas, and why the positions of the Pacific island countries and the DWFNs, particularly the north Asian fishers, were so far apart in the negotiations over fishing on the high seas outside the 200

nautical mile exclusive economic zone that led to the establishment of the Western and Central Pacific Fisheries Commission (WCPFC)? Are the Japanese, for example, not interested in secure fishing rights and sustainable management of the tuna stock? If they are not, this would appear to be contrary to their behaviour with respect to their involvement in the use of other resources. My hypothesis is that as long as the Pacific island countries are not prepared to provide secure fishing rights, the optimal behaviour for the DWFNs is 'free riding'.

This argument raises another question: why did the Pacific island countries not put forward any positions in the WCPFC negotiations along the lines of allocating fishing rights through a market-based system such as transferable quotas? More to the point, why is this form of allocation of fishing rights within the exclusive economic zone never discussed by the Pacific island countries? I raised previously the possibility that the Pacific island countries' resistance to this concept is because it would remove an area of discretionary behaviour so integral to the patron–client politics of the Pacific island countries. Moreover, widespread knowledge within the Pacific that this is how politics is undertaken undermines the ability of Pacific governments to undertake collective action; that is, they do not trust each other. In contract theory terms, this can be seen as a lack of credibility of commitment to cooperation.

While such behaviour can be expected from Pacific governments—as it is ingrained in their politics—what is so frustrating is the lack of effort on the part of the Forum Fisheries Agency to attempt to educate the public in these countries about the costs of the *n*th-best policies being followed. Australia has put a lot of money into supporting the Forum Fisheries Agency over the years and it strikes me that the policies being followed could

hardly be any worse—and could possibly be even better without the FFA. According to its web site, the FFA was set up to 'provide expert fisheries management and development advice and services to member countries'. There appears to be no evidence of the FFA serving any of its goals.

Parris and Grafton (2005) rightly dismiss as being largely ineffectual the agreements leading to the conclusion of the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific and the establishment of the WCPFC. For this reason, it is important that the Pacific island countries focus on maximising the benefits that they receive from the exploitation of the tuna stocks in their exclusive economic zone. If they do move towards first-best fishing policies and especially towards providing secure rights for DWFN fishers, this might have flow-on effects in the form of agreement on better management of tuna stocks in the high seas outside their exclusive economic zone.

## Conclusions

The persistence of the Pacific island countries in following poor policies in the exploitation of their tuna resources is very disappointing. The poor policies, which defy the law of comparative advantage and the Tinbergen principle, are wasteful uses of the resource rents and are ineffective in achieving any of the countries' stated objectives. Persistence with these policies appears to be an outcome of the patron–client politics that pervade Pacific politics. Moreover, the positions taken by the Pacific island countries appear to generate unhelpful reactions by the DWFNs, resulting in corruption and free riding.

It is especially disappointing that the Forum Fisheries Agency has been so ineffectual in changing the policies followed

by the Pacific island countries. Australia's investment in the Forum Fisheries Agency has yielded a very poor return with respect to policy improvements.

What could change this predatory behaviour of Pacific island governments, which has such high costs in terms of forgone improvements in the welfare of Pacific peoples? It is only through the education of the public about the benefits of following transparent, market-based policies that such behaviour can be changed. Ultimately, if the public does not demand good governance, nothing will change.

## Notes

- <sup>1</sup> For example, Montgomery (1995) stated that, at the current rate of logging, the forests of Solomon Islands could be depleted in 12–14 years, and, at faster rates of logging—which has happened—depletion could occur within 8–10 years. Other writers made similar predictions. Predictions that current rates of logging will lead to depletion of Solomon Islands' forests within 10 years are still popular.
- <sup>2</sup> I use quotation marks around the term because the bilateral and multilateral deals that have been made do not reflect the true economic rent.
- <sup>3</sup> If the quality of the local 'investments' by the DWFN fishers is anything like the quality of similar investments made by foreign logging companies in Papua New Guinea in exchange for cheap access to forests, it is unlikely that they will be long-lived or viable. Under these circumstances, the foreign investor has no vested interest in ensuring that the project will be viable.
- <sup>4</sup> The rules-of-origin requirements for supplying canned tuna to the EU market are that the fish must be caught by vessels on which the owner, the captain and the majority of the crew are EU or ACP nationals. These arrangements effectively protect the domestic fleet from competition and limit the efficiency of the canning operations.

## References

- Australian Agency for International Development (AusAID), 2006. *Pacific 2020: challenges and opportunities for growth*, Australian Agency for International Development, Canberra.
- Barclay, K., 2005. 'Tuna dreams revisited: economic contributions from a tuna enterprise in Solomon Islands', *Pacific Economic Bulletin*, 20(3):78–94.
- Bertignac, M., Campbell, H.F., Hampton, J. and Hand, A., 2000. 'Maximising resource rent from the Western and Central Pacific tuna fisheries', *Marine Resource Economics*, 15(3):151–77.
- Chand, S., Grafton, R.Q. and Petersen, E.H., 2003. 'Multilateral governance of fisheries: management and cooperation in the Western and Central Pacific tuna fisheries', *Marine Resource Economics*, 18(4):329–44.
- Duncan, R., 2004. 'Managing volatile fishing licence revenues in the Pacific', *Pacific Economic Bulletin*, 19(3):137–8.
- Duncan, R. and Temu, I., 1997. 'Trade, investment and sustainable development of natural resources in the Pacific: the case of fish and timber', *Volume 1: Issues, Enhancing cooperation in trade and investment between Pacific island countries and economies of East and South-East Asia*, Economic and Social Commission for Asia and the Pacific, United Nations, New York.
- Duncan, R., Cuthbertson, S. and Bosworth, M., 1999. *Pursuing economic reform in the Pacific*, Pacific Studies Series No. 18, Asian Development Bank, Manila.
- Grafton, Q. R. Arnason, R. Bjørndal, T. Campbell, D. Campbell, H.F. Clark, C.W. Connor, R. Dupont, D.P. Hannesson, R. Hilborn, R. Kirkley, J.E. Kompas, T. Lane, D.E. Munroe, G.R. Pascoe, S.

- Squires, D. Steinshamn, S.I. Turriss, B.R. and Weninger, Q., 2005. *Incentive-based approaches to sustainable fisheries*, Economics and Environment Network Working Paper, EEN0508, The Australian National University, Canberra.
- Hampton, J., Sibert, J.R., Kleiber, P., Maunder, M.N. and Harley, S.J., 2005. 'Decline of Pacific tuna populations exaggerated?', *Nature*, 434(7037):E1.
- Montgomery, P., 1995. 'Forestry in Solomon Islands', *Pacific Economic Bulletin*, 10(2):74–6.
- Myers, R.A. and Worm, B., 2005. "'Fisheries" decline of Pacific tuna populations exaggerated? Myers and Worm reply', *Nature*, 434(7037):E2.
- Parris, H. and Grafton, R.Q., 2005. 'Fishing for a future', in S. Chand (ed.), *Pacific Islands Regional Integration and Governance*, Asia Pacific Press, The Australian National University, Canberra:148–64.
- Petersen, E.H., 2006. *Institutional Economics and Fisheries Management: the case of Pacific tuna*, Edward Elgar, United Kingdom and United States.
- Tinbergen, J., 1952. *On the Theory of Economic Policy*, North Holland, Amsterdam.

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