FAO/NORWAY GOVERNMENT COOPERATIVE PROGRAMME – GCP/INT/648/NOR[82]

REGIONAL WORKSHOP ON

FISHERIES MONITORING, CONTROL AND SURVEILLANCE

Kuala Lumpur and Kuala Terengganu, Malaysia, 29 June – 3 July 1998

THE PAYMENT OF FEES FOR ACCESS TO FISHERIES IN EXCLUSIVE ECONOMIC ZONES

Graeme B. Parkes[83]

CONTENTS

1. Introduction
2. The principle of foreign access
2.1 Background
2.1.1 UNCLOS
2.1.2 Provision for Access
2.2 Surplus allowable catch
2.3 The basis of charging fees for foreign access: cost recovery
2.4 Domestic or foreign fishing?
3. The payment of fees
3.1 Types of foreign access agreement
3.1.1 EU access agreements
3.1.2 Non-EU access agreements
3.2 Setting fee levels for foreign access
3.2.1 Cost recovery
3.2.2 The mechanism of fee calculation
3.2.3 Fee levels
3.2.4 Licensing procedure
3.2.5 Transhipment
3.2.6 Regional cooperation in licensing
3.3 Fees for domestic access
4. Conclusion: the link between access fees, surveillance, penalties and illegal fishing
5. References

82. Programme of Assistance to developing countries for the implementation of the *Code of Conduct for Responsible Fisheries* – Sub-programme C: Assistance to developing countries for upgrading their capabilities in monitoring, control and surveillance (MCS)

83. MRAG Americas Inc., 5445 Mariner St., Suite 303, Tampa FA 33609, USA

ACRONYMS USED

ACP	African, Caribbean and Pacific
DWFN	distant-water fishing nation
EEZ	Exclusive Economic Zone
GRT	gross registered tonnage

1. INTRODUCTION

This paper reviews issues to be considered when setting access fees for the licensing of national and foreign vessels authorized to fish in the Exclusive Economic Zone (EEZ) of a coastal State. Agreements under which foreign vessels are granted access to an EEZ frequently, if not always, include the issue of vessel licences, for which fees are payable. Licence fees for foreign vessels are frequently seen as a means of generating revenue for the coastal State, which may be used in part to finance the fishery management programme. In theory, the level at which fees can be set is driven primarily by the economics of the foreign fishing operation. In practice, there are a number of other considerations which influence the terms of access agreements, including the political relationship between the coastal State and the distant-water fishing nation (DWFN) seeking access. Such considerations are an important part of the access negotiation process, but are outside the scope of this review.

Management of domestic fisheries is frequently less restrictive than for foreign vessels, and may or may not involve a licensing system. Domestic licence fees are generally much lower than their foreign counterparts, and are often expected to cover only the cost of administration of the licensing scheme.

With this in mind, this paper focuses primarily on the issues relating to access of foreign vessels to waters of national jurisdiction. Section 2 explains the background to the development of access agreements. Section 3 discusses the main types of agreements that have been concluded and describes the setting of fees within the context of these agreements. Section 4 concludes the review with a consideration of licence fees in the wider context of management of fisheries within an EEZ.

2. THE PRINCIPLE OF FOREIGN ACCESS

2.1 Background

2.1.1 *UNCLOS*

Since the 1970s, the conditions of access to the world's major marine fishing grounds have changed dramatically. Applying the provisions on the United Nations Convention on the Law of the Sea (UNCLOS), signed in 1982 and which entered into force in 1994, coastal States have unilaterally declared jurisdiction over maritime areas extending up to 200 nautical miles from the coastline[84]. This has effectively partitioned sea areas comprising 35% of the world's oceans and over 90% of commercially exploited fish stocks, previously open freely to DWFN vessels, into areas of

84. For ease of drafting, zones of national jurisdiction extending to 200 nautical miles are generally referred to in this paper as Exclusive Economic Zones (EEZs), whether or not such a zone has been formally declared.

restricted access. The conditions of access to these areas, for the purposes of harvesting living marine resources, must now be negotiated with the coastal States exercising jurisdiction.

2.1.2 *Provision for Access*

The requirement for coastal States to make provision for access to their EEZs by foreign fishers is governed by Articles 62, 69, 70 and 71 of UNCLOS. Article 62 (Utilization of the living resources) calls upon each coastal State to determine its own capacity to harvest the living resources in its EEZ. When a coastal State does not have the capacity to harvest the entire allowable catch, it is required to grant other States access to the surplus allowable catch through the conclusion of access agreements. Article 62 cites Articles 69 and 70, which require that certain States (land-locked States – Article 69; and geographically disadvantaged States – Article 70[85]) be considered in a preferential way, to ensure that they have an opportunity to participate, on an equitable basis, in the exploitation of a portion of the surplus of the living resources in the EEZs of coastal States of the same sub-region or region. Article 62 also acknowledges the requirements of developing States in the sub-region or region in harvesting part of the surplus, and the need to minimize "economic dislocation" in States whose nationals have habitually fished in the zone, or which have made substantial efforts in research and identification of stocks.

Partially overriding Article 62 is Article 71, which states that the provisions of Articles 69 and 70 do not apply in the case of a coastal State whose economy is overwhelmingly dependent on the exploitation of the living resources of its EEZ. Despite the primary requirement to consider land-locked States and geographically disadvantaged States (except in the case of Article 71), in practice, most agreements provide access to DWFNs. DWFNs are defined here as those officially operating in waters other than the EEZ of their flag state, or waters immediately opposite or adjacent to their EEZ. The majority of the fleets considered under this heading are therefore large-scale industrial vessels based in the countries of the EU, Central and Eastern European States, the USA, Japan, Korea and Southeast Asia.

2.2 Surplus allowable catch

The *surplus allowable catch* referred to in UNCLOS represents the basis on which access by foreign vessels is negotiated. In simple terms, it is the difference between the sustainable yield of a resource inside an EEZ and the coastal State's capacity to harvest that resource. If the coastal State is able to harvest the entire sustainable yield (or _allowable catch_ in management terms), then there is no _surplus_ and no access needs to be granted to foreign vessels. If access were granted, this would result in an overcapacity within the EEZ, to the detriment of the domestic fishery, and ultimately the foreign fishery as well. If, however, the coastal State's fishing capacity is less than that deemed necessary to harvest the allowable catch, then access can and, according to UNCLOS, should be granted. It is then up to the coastal State and the DWFN seeking access to negotiate the terms under which access is granted. The incentive for negotiated agreements, from the perspective of DWFNs, is to safeguard the viability of a sector essential for the supply of products to international markets and to maintain economic activity and employment. Coastal States, on the

85. According to Article 70 of UNCLOS, geographically disadvantaged States means coastal States, including States bordering enclosed or semi-enclosed seas, whose geographical situation makes them dependent upon the exploitation of the living resources of the exclusive economic zones of other States in the sub-region or region for adequate supplies of fish for the nutritional purposes of their populations or parts thereof, and coastal States which can claim no exclusive economic zones of their own.

other hand, undoubtedly see opportunities to derive benefits, principally financial, from granting limited access rights to their EEZs.

It is left up to the coastal State to decide how to determine optimum levels of fishing. UNCLOS is not specific about how it should be done, although Article 61 (Conservation of the living resources) provides guidelines on the sorts of objectives which should form the basis of resource management policy. The following points are taken from Article 61:

- The coastal State "shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone is not endangered by overexploitation."
- Such measures shall also be designed to maintain or restore populations of harvested species at levels which can produce the maximum sustainable yield ...
- ... the coastal State shall take into consideration the effects on species associated with or dependent upon harvested species with a view to maintaining or restoring populations of such associated or dependent species above levels at which their reproduction may become seriously threatened.
- Available scientific information, catch and fishing effort statistics, and other data relevant to the conservation of fish stocks shall be contributed and exchanged on a regular basis.

Considering the often unreliable nature of commercial fisheries statistics and the high cost of surveys, this is not a simple problem to solve. The capacity of coastal States to undertake comprehensive, or even satisfactory resource assessments varies considerably. Coastal States may decide to set target catch limits at more-or-less precautionary levels, depending on their assessment of the risk to the sustainability of the resource and their overall management policy. A precautionary approach may be adopted as part of a policy to allow stocks to recover, develop local small-scale fisheries, or to preserve healthy stocks. In contrast, allowable catches may be set at less precautionary levels to achieve greater short-term benefits (in the form of compensation for access), although this may threaten long-term sustainability. This latter approach places a higher value on benefits derived today, whilst devaluing (or discounting) potential future benefits from a healthy fish stock.

2.3 The basis of charging fees for foreign access: cost recovery

In Section 7.7 on Implementation, the FAO *Code of Conduct for Responsible Fisheries* (1995) specifies certain activities which should be undertaken to ensure good management of vessels granted access to an EEZ. In brief, States should:

- establish an effective legal and administrative framework;
- ensure that provision is made for sanctions applicable in respect of violations which are adequate in severity to be effective; and
- implement effective fisheries monitoring, control, surveillance and law enforcement measures.

The Code also considers the financing of these activities and suggests that, where appropriate, and when possible, fisheries management organizations should aim to recover the costs of fisheries conservation, management and research. Charging fees for access is one means of cost recovery.

The extent to which a coastal State is able to derive revenue from granting access to its EEZ depends to a great extent on the amount and value of the available surplus allowable catch. The level of licence fee acceptable to a DWFN will depend on the demand for access. This, in

turn, depends on the extent and value of alternative harvesting activity available in the region. Clearly there is an upper limit beyond which commercial fishing entities will be unable or unwilling to pay the access fees. In these circumstances they may choose to fish elsewhere, or perhaps fish illegally within the EEZ (see Section 3.4, below). This would result in no licence revenue to the coastal State, as well as a substantial cost for surveillance and enforcement to ensure that unlicensed access is minimized.

Undervaluation of resources is potentially a greater hazard. In his study of access agreements for EU vessels to fish in African waters, Porter (1997) considers unrealistically low licence fees to be an implicit subsidy of the commercial fishery. He believes that such subsidies promote overfishing by discouraging the exit of fishing vessels from troubled fishing industries. Undervaluation also reduces the funds available for fisheries management, and particularly for monitoring and surveillance of the foreign fleet. Poor monitoring and surveillance reduces the quality of the data and information from the licensed fleet and increases the likelihood of unlicensed fishing activity. This will severely threaten the sustainability of the fishery for both the foreign and the domestic fleets.

It is essential, therefore, that the value of access is correctly assessed and that the revenues from fees are utilized in the development of an effective fishery management regime.

2.4 Domestic or foreign fishing?

The declaration of jurisdiction over a 200 nautical mile zone gives all coastal States the option to limit harvesting within the zone to domestic vessels only, grant foreign vessels access to harvest the fish, or operate some combination of the two. There are examples where fishing activity is almost exclusively domestic or exclusively foreign (see below), but in practise coastal States have generally opted for a combination of the two. The balance between domestic and foreign fishing will have implications for the composition of the fishing effort applied to particular resources. The question of which component – domestic or foreign – is most appropriate for the sustainable harvesting of a particular resource will vary between fisheries. Ultimately it is a policy decision for the coastal State whether to allow foreign access under licence and what the balance between domestic and foreign fishing effort should be.

The Falkland Islands fishery, for example, is almost exclusively prosecuted by foreign vessels, which are granted access under a licensing scheme. The Falklands is a small island group with a very small population and jurisdiction over valuable squid and finfish resources within its 200 nautical mile Conservation Zone. Traditionally the primary local industry has been sheep farming and there has been little activity associated with harvesting marine resources. Here the emphasis has been on the development of a licensing regime allowing limited access by large industrial foreign fishing vessels, primarily from Europe and the Far East. The main fishery is for illex squid, which are targeted by oriental jiggers, but there are also trawl fisheries for loligo squid and finfish.

In contrast, the Maldives, with a land area one-fortieth of the size of the Falkland Islands and a population about 100 times greater, has kept foreign access to a minimum to avoid potential deleterious effects on traditional domestic fishing activity. Maldives has a long history of fishing and has one of the largest artisanal tuna fisheries in the world. About 60 000 t of skipjack and up to 13 000 t of yellowfin is landed annually by a local fleet of about 800 boats, operating mainly pole and line. The tuna fishery is the primary activity and source of income for the people of the Maldives and about one third of the working population are fishermen (22 268 in 1994). Since 1985 there has been some limited licensing of foreign vessels. These are segregated from the

domestic fleet by limiting their access to the area of the EEZ more than 75 nautical miles offshore. The licensed vessels comprise mainly oriental longliners which target deep-swimming large yellowfin and bigeye. In 1996, 15 Indonesian _semi-industrial_ longline vessels were licensed, again for the area outside 75 nautical miles.

The USA is another example where foreign access has been kept to a minimum. In this case, access agreements have been phased out since the passing of the Magnuson Fisheries Conservation and Management Act in 1976, which established the USA's 200 nautical mile Fisheries Conservation Zone. Previously, agreements were based on a fee per ton caught. There is provision in the Act, which was re-authorized in 1996, for charging fees for foreign access, and fee schedules exist for some fisheries, such as herring and mackerel in the Northwest Atlantic, but in practice no new agreements have been concluded. This appears to be an example where there is deemed to be no surplus allowable catch in the EEZ.

The presence of both domestic and foreign fleets within a fishing zone can lead to conflict, particularly where a strict surveillance and enforcement regime has not been implemented. For example, in Sierra Leone there is considerable fishing activity both in the artisanal and industrial sectors. In 1994, the artisanal fleet comprised about 6 000 wooden craft, ranging from one-man dugouts to 20 m, planked, outboard-powered canoes. This fleet caught about 40 000 to 50 000 t of mainly low-value sardinellas annually. There has been a large industrial fleet operating both inshore and offshore which has interacted significantly with the artisanal fleet. In the period leading up to 1991, this comprised 150 to 250 vessels from 20 m to 90 m in length, operating mid-water and purse seine nets for pelagic species and bottom trawls and longlines for demersals. Iscandari (1995) reported that the annual industrial production in the EEZ of Sierra Leone was 80 000 to 150 000 t of low-value small pelagics, large pelagics (tunas, Spanish mackerel and barracudas), and high-value demersal species (shrimp, snapper, sea bream, grouper, croaker, etc.), 80% of which was exported. Sierra Leone has had substantial difficulty developing an effective enforcement operation to control the industrial fleet, and considerable illegal fishing activity is believed to have occurred. In 1991, industrial effort declined dramatically for a number of reasons[86], but has since increased with the introduction of vessels from China, Korea and several EU countries. More recently, low industrial fishing effort and policing of the Inshore Exclusion Zone has apparently had a beneficial effect on the artisanal fishery (Iscandari, 1995).

3. THE PAYMENT OF FEES

3.1 Types of foreign access agreement

A wide variety of access agreements exists. They range from the multi-year agreements negotiated between the European Commission and coastal States around the world for access by distant-water vessels of the countries of the European Union, to small-scale reciprocal agreements between neighbouring coastal States. Not all of these agreements involve the payment of fees, and, for many, the payment of fees is only one component of the compensation for access. This section considers the ways in which fees are applied as a component of access agreements. In doing this, given the large scope of the EU Agreements, it seems appropriate to consider them as a separate category.

86. Principally Sierra Leone's non-signing of a fisheries agreement with the EU and non-approval of the Bilateral Fishing Agreement with the then USSR in 1990.

3.1.1 *EU access agreements*

The European Commission currently classifies EU fishing agreements into three categories:

- agreements involving financial compensation;
- reciprocal agreements; and
- the agreement with Argentina.

The first two categories are what is known as the _First-Generation Agreements._ The agreement with Argentina is known as a _Second-Generation Agreement._

Although far from uniform in structure, First-Generation Agreements involving financial compensation comprise those concluded with Morocco, with 14 African, Caribbean and Pacific (ACP) countries, and with Greenland. The agreements with Morocco and the 14 ACP countries are expressed in terms of gross registered tonnage (GRT) for trawlers and in numbers of vessels for tuna fishing. There is no pre-set limit on the level of catches in these agreements. In the case of Greenland, licences are granted for fishing possibilities expressed in catch weights per species. Fisheries are closed when the authorized quantities are reached.

The financial compensation paid under the Morocco and ACP agreements is subdivided into the following categories:

- contribution directly to the third country's budget; or
- contribution to the fisheries sector, e.g., for:
  - long-term development activities;
  - scientific research;
  - training;
  - maritime surveillance; and/or
  - support for artisanal fisheries

The relative contributions vary between agreements. The compensation paid to Greenland is in the form of a lump sum and is not allocated in any way. These agreements are a major component of the EU's Common Fisheries Policy (the internationally agreed policy framework under which the fisheries of the European Union are managed), with nearly a quarter of the fish being imported into Europe currently derived through the agreements. Compensation associated with the agreements is considerable. Between 1987 and 1993, the Community spent ECU 1 100 million on EU-ACP fishery agreements. The budget has risen steadily, from ECU 6 million in 1981, to ECU 35 million in 1985, then to ECU 130 million in 1989. The cost of the Agreements is now in the region of ECU 280 million annually, or 35% of the total budget of the Common Fisheries Policy (Johnstone, 1996).

The basic principle of the reciprocal Agreements is the balanced exchange of access to stocks. The balance is established by the use of a common unit of measure, the cod equivalent, which is applied to every species covered by the exchange on the basis of a pre-determined set of coefficients. There are currently six EU reciprocal agreements. These are with the Faeroe Islands, Iceland, Norway, Estonia, Latvia and Lithuania. In general, the exchange of stocks is assumed to be in balance and these agreements do not include financial compensation. However, provision is made in the agreements with the Baltic States for the Community to pay a financial contribution if the fleets of these countries do not exploit the stocks available to them in community waters.

The Second-Generation Agreement with Argentina comprises a framework of joint enterprises and temporary joint ventures under which vessels are allocated fishing possibilities in terms of annual catch limits for both surplus and non-surplus species. Under joint enterprises, the Community vessels lose the flags of their Member States of origin and are subject to Argentine law. Under temporary joint ventures the vessels retain their flags and are subject to the law of their Member States, except for those fishing activities covered by Argentine law. The community makes no financial contribution in direct exchange for fishing possibilities, but in order to promote the establishment of joint enterprises and joint ventures, financial aid is foreseen. The Community also makes a contribution to scientific and technical research in the fisheries sector.

3.1.2 *Non-EU access agreements*

In addition to the EU agreements, a large number of access arrangements have been agreed bilaterally between coastal States and DWFNs, both at government and at commercial company level. Detailed information on these agreements is less readily available than for the EU agreements, particularly where private commercial companies negotiate access with developing economies. This is partly due to commercial confidentiality, but it also reflects a lack of readily accessible information in the public domain, although a substantial number have been concluded. Based on the information that is available, these agreements mainly consist of financial compensation for access to a developing country's EEZ, or the exchange of reciprocal access rights between coastal States within a region. However, within this simple framework there is a plethora of detailed provisions designed to meet the needs of the coastal State and the DWFN, which render each agreement unique. For example, in the agreement between Russia and Morocco for access to Moroccan pelagic fish resources, an annual compensation fee in the form of 17.5% of the total production must be landed to shore-based processors. In a similar agreement between Poland and Mauritania, Mauritania does not set fishing quotas or charge for licence fees; instead it takes a total of 10 to 35% of the catch. A total of 20% of the catch revenue must also be made available to a Mauritanian partner.

Some coastal States have opted to conduct commercial negotiations for access directly with fishing companies or company associations from DWFNs, rather than deal on a bilateral basis or with a bloc of nations such as the EU. This strategy provides the coastal State with considerable flexibility in determining the terms of access and puts it in a stronger negotiating position when trying to secure the maximum benefit from granting access to its resources. An effective negotiating strategy, however, requires considerable analysis of the economics of the fishing operation and an appreciation of international market forces in the fishing industry. Another approach is for several coastal States in a region to cooperate in the development of common terms and conditions of access to resources present in, or migrating through, several EEZs to which a DWFN may seek access. For example, the Nauru Agreement set forth terms and conditions of access to several of the fisheries zones of the South Pacific (including Micronesia, Kiribati, Marshall Islands, Nauru and Palau). Potential advantages of regional cooperation between coastal States are considered in Section 3.2.6, below.

3.2 Setting fee levels for foreign access

3.2.1 *Cost recovery*

The basis for setting the level of licence fees for access by foreign vessels varies from State to State. As suggested by the FAO *Code of Conduct*, "where appropriate, and when possible" a basic

minimum target should be to seek to cover the incremental cost to the coastal State fishery management authority of effectively monitoring and controlling the fishing activity resulting from the agreement. This includes the scientific research work necessary to generate sound management advice. Anything less than this will result in inadequate management and increase the scope for fishing practices which threaten the sustainability of the resource. This is likely to be detrimental to both the foreign fishing operation (and hence future licence fee revenues to the coastal State) and may also adversely affect the coastal State's domestic fisheries. For example, in 1998 the cost of licences issued to longliners for fishing in the Maritime Zone around South Georgia in the South Atlantic included a levy to recover the cost of a scientific observer placed on each vessel.

In fact, there may be scope for generating considerably more revenue from licensing than is needed to cover the cost of fishery management. For example, in the Falkland Islands, the licence revenue amounts to about £ 15 to 20 million annually. A portion of this, of the order of £ 4.5 million, is invested annually in a comprehensive fishery management regime, including a patrol vessel and a substantial scientific programme.

3.2.2 *The mechanism of fee calculation*

Catch based

Distant-water fleets usually aim to pay a fee on the basis of the weight of fish actually caught during the licensed period. The EU agreements, for example, can include an agreed lump sum payable for a fixed level of catch. In agreements covering tuna fishing in the EEZs of island states in the western Indian Ocean, catches of tuna over and above the fixed level are charged at a supplementary rate per tonne caught. The EU agreement with the Seychelles, which ran from 1993 to 1996, for example, included a total EC contribution of ECU 9.9 million (ECU 6.9 million flat fee, ECU 2.7 million for scientific programme and ECU 0.3 million for training and scholarships), which was equivalent to an annual catch of 46 000 t. Companies then paid annually for each tuna purse seine vessel an advance lump sum of ECU 5 000, equivalent to a catch of 250 t, plus ECU 20/t over and above this level. Tuna longliners paid ECU 500 up front for a catch of 25 t, and ECU 20/t above this level (Mangatalle, 1996). As mentioned earlier, many EU agreements also specify the total aggregate GRT of the vessels permitted access to the Zone's fisheries. This implies an assumed relationship between GRT and catch, which is considered further in the following section.

A fee per tonne amounts to a tax on the catch taken and protects the DWFN and/or fishing companies from paying relatively high licence fees when the fishing is poor. This is particularly relevant in the case of highly migratory fisheries such as tuna, when the inter-annual variability of catches is likely to be high. However, such an arrangement can be unfavourable to the coastal State for several reasons:

- it imposes a substantial monitoring burden on the coastal State's fishing authority;
- it creates a great incentive on the part of the fishers to under-report the catch;
- in the case of highly variable catches (e.g., some migratory tuna), it provides an irregular revenue stream from licences to the coastal State; and
- a fixed level of catch often results in variable levels of fishing effort, resulting in problems for assessment and management of the fishery.

Effort based

Rather than linking the licence fee retrospectively to the actual catch taken, it may be more beneficial for the coastal State to charge a fee for a period of access to the EEZ, i.e., based on a level of effort. Under this scenario, the fee is not linked explicitly to the amount of catch actually taken. Once a vessel is licensed, there is no restriction on the amount of fish they are permitted to catch. This removes the incentive for vessels to mis-report their catch. The coastal State, however, must be in a position to make a reasonable estimate of the expected catch rates of the vessels to be licensed, in order to set the licence fee at a reasonable level, and limit total effort so that the expected total catch is in line with conservation guidelines. Expected catch rates can be estimated using data from previous fishing seasons, or – for new fisheries – may be derived from data on fisheries in adjacent areas or similar fisheries in non-adjacent areas.

It has been argued that effort control is generally inferior to management strategies that directly allocate an allowable catch to different components of the industry (for example, individual transferable quotas (ITQs)). Compared to quota allocation mechanisms, effort controls are an indirect approach to defining the right to harvest fish. In order to achieve a target catch level under effort controls, the management authority must fix every element of the operation necessary to harvest the fish. However, in situations where the fishing operation is reasonably uniform across the harvesting units (vessels), this task becomes less of a problem. Administration of this type of licensing system requires detailed analysis of fishing patterns, market information and catch and effort data, in order to provide advice on appropriate types of licences, levels of licence fees and allocations of fishing effort (number and duration of licences) compatible with conservation. Nevertheless, removal of the incentive to mis-report catches is a powerful motivation. Effort-based regulation has been successfully implemented for a number of years in the fisheries for squid in the Falkland Islands and for migratory tuna in the British Indian Ocean Territory.

There are other advantages of effort regulation to the coastal State. For example, there is no guarantee of catch associated with the purchase of a licence. In years when the catches are unexpectedly low, there is no drop in revenue to the coastal State. This is reasonable, since the expenditure on the fishery management system is likely to be much the same as in years when the fishing is good.

3.2.3 *Fee levels*

Percentage of the value of the catch

The most common approach to setting fee levels is to consider the fee as a percentage of the value of the catch. In the case of direct quota allocations, this is a percentage of the estimated value of the actual catch. For effort-based mechanisms, this is a percentage of the estimated value of the expected catch. The percentage level achieved varies considerably around the world. The Marshall Islands, for example, claim to collect about 5% of the value of the catch in licence fees (Kabua, 1997). Under the 1990-93 EU-Seychelles Agreement, the EU's reported fish catch was estimated at $US 75 million, while the Seychelles earned $US 13.4 million ($US 11.1 million compensation), representing a rate of nearly 18%. The rate achievable depends on a number of interacting factors. In general, it is considered that between 10% and 15% should be achievable, and in some cases where demand for access to the fishery is particularly high, an expectation nearer to 20% is not unrealistic.

This approach implicitly assumes that the target species is only available on the defined fishing grounds within the EEZ, and that there is no viable alternative in the region outside the EEZ. Many species, however, occur in a number of neighbouring EEZs and/or adjacent high-seas areas. In these cases the level of fee (and hence the percentage of the value of the catch) that can

be charged is influenced by the potential profitability of fishing opportunities outside the EEZ. The value of a licence is more accurately defined, therefore, by the advantage gained by a vessel with a licence, which can fish legally inside the EEZ, over a vessel without a licence, which cannot. In simple terms, if the catch rates inside are similar to, or lower than, the catch rates outside, then there is probably little or no advantage to be gained by buying a licence to fish inside the EEZ. In these circumstances, licence fee/catch value ratios would have to be low (probably in the region of 5% or less). If, however, the catch rates inside are significantly higher than outside, then there is a profit advantage and licence fee/catch value ratios would be influenced by economic operational considerations within the EEZ. Fees in this situation can be quantified in terms of the differential between the catch rates, which effectively sets an upper limit on the value of the licence. In cases where there are relatively few or no fishing opportunities in the region outside the EEZ, the marginal value calculations do not apply, and the simple percentage of the value of the catch described above is a reasonable rule of thumb.

In practice there may be additional advantages to having a licence for access to an EEZ other than the simple opportunity to catch fish. For example, if the coastal State provides port facilities for transshipment and onward transport of catch to world markets, or provides a substantial market in its own right, then vessels may be inclined to purchase licences, even when catch rates inside the EEZ are not significantly different to those achievable outside. The licence affords the vessel the opportunity to fish en route to and from the port, which may represent a substantial steaming time through the EEZ of the coastal State. Other possible advantages include a lower overall level of effort in the controlled fishery, compared to the adjacent unregulated high seas area, reducing the problems of technical interactions between vessels.

Fee formulae

As indicated above, the setting of licence fees requires the calculation of an expected catch value for a licensed vessel, compared to the catch value that vessel could expect to achieve without a licence. In the most simple case, the fee can be set at the same flat rate for every vessel. This approach might be reasonable if there is very little variation in the characteristics of the vessels in the fleet, or if there is no reason to believe that differences between vessels result in higher or lower catching power. In practise, however, this is rarely the case. Catch rates often vary between vessels in some systematic way, linked to vessel characteristics such as vessel size, engine power and processing capacity. Under these circumstances, the licence fee can be expressed as a formula which contains a proxy for fishing power. One such proxy frequently used is the International Gross Registered Tonnage (IGRT). This vessel characteristic has an international standard for which a certificate is issued by a recognized authority. This information can be requested as part of the licence application process and used to calculate the appropriate vessel fee. An example of a simple fee formula utilizing IGRT is:

$$(a * IGRT) + b$$

where a and b are constants, fixed so that ratios *licence fee*:*expected catch value* are approximately equal (i.e., have no trend) for all IGRTs.

3.2.4 *Licensing procedure*

The way in which licence fees are set also requires consideration of the mechanism to be used for issuing licences and the format of the licence itself. In its simplest form a licence may be issued for operating in a particular fishery, targeting a named species, with specific fishing gear, for a specified period of time. To regulate by-catch limit, the licence may also have non-target quotas

associated with it. Effort-based licences can take several forms. Licences can be sold to individual vessels for specific blocks of time, such as one month, as and when they are required. This approach has worked well for managing oriental tuna longliners in the western Indian Ocean which generally work individually and follow migratory tuna across wide areas. These vessels tend to only require periodic access to a specific zone. For vessels which operate in an organized fleet, it is usually more attractive for both the coastal State and fishing company to negotiate a fee for a group of vessels for a fixed period. Such _block deals_ can be offered by the coastal State before the start of the fishing season at a discount price compared to individual vessel licences, which makes it attractive to the fishing company. The justification for the discount is the substantially lighter administrative burden this creates for the licensing authority.

Access negotiations with European tuna fishing companies for access in the western Indian Ocean have shown that, whilst the coastal State may wish to set licence fees on the basis of fishing effort, irrespective of the catch taken, the companies would much rather pay a fee based on their actual catch. The relative merits of these approaches for the coastal State were discussed earlier. However, during negotiations, there is always merit in showing flexibility in an attempt to meet the needs and desires of both sides. On the one hand, the coastal State does not want to create an incentive to mis-report catches, whilst, on the other hand, the fishing company does not want to pay for long periods of access to the EEZ when the fishing is poor. A hybrid arrangement, devised to meet the aims of the licensing authority and the fishing industry, has been operating successfully for several seasons in the western Indian Ocean tuna purse seine fishery. Companies pay a reduced fixed fee in advance for access for a fleet of vessels for the season. Then, during the season they pay an additional sum for each day the vessels actually operate inside the fishing zone. This links the fee more closely to the actual level of activity by the vessels inside the zone. Thus, in a poor season they pay less and in a good season they pay more, but the coastal State is guaranteed a basic level of revenue on the basis of the advance payment. The administrative burden of this arrangement on the coastal State is somewhat higher because it is necessary to collect accurately a large number of entry, exit and daily activity reports for invoicing purposes. However, this burden could be alleviated substantially by the establishment of a satellite vessel monitoring system, which would provide near-real-time data on each vessel's position and eliminate the need for specific entry and exit reports by individual vessels.

3.2.5 *Transshipment*

Another potential source of licence revenue is from the transshipment of catch within the territorial sea or EEZ of the coastal State. This may be specified as a requirement of licensing to fish in the EEZ and may include not only transshipment, but also landing and processing to encourage the development of local industry. Economic incentives can be used to encourage transshipment activity. The re-emergence of Victoria in Seychelles as the western Indian Ocean's most important tuna transshipment port, for example, was boosted by the introduction of several new initiatives, including privatization of stevedoring (transshipments was previously restricted to government working hours) and a review of the port charges. Encouragement of local transshipment and landing of the catch has the advantage of providing additional means to verify the catch taken under licence, particularly important when licence fees are dependent on weight caught.

3.2.6 *Regional cooperation in licensing*

Coastal States are sometimes disadvantaged when it comes to negotiating the terms of access with DWFNs, particularly when the economic strength of the latter is substantially greater than that of the former. A single DWFN may seek access to fish a resource existing in the EEZs of several neighbouring coastal States. If coastal States act in competition with one another, this will tend to drive down the fee that can be charged for access. The acknowledged worldwide existence of overcapacity, particularly in DWFNs (this is one of the driving forces behind the EU agreements), suggests that the business of negotiating access to EEZs should be a sellers market. It therefore makes sense for coastal States to cooperate on a regional basis to establish common terms and conditions of access. In fact, there is a general trend towards greater regional coordination and cooperation on fisheries, driven by concerns over straddling and highly migratory fish stocks. Such cooperation is in accordance with UNCLOS, the UN Agreement on Straddling Stocks and Highly Migratory Fish Stocks, and the FAO *Code of Conduct*. It is advantageous for coastal State negotiations and for the sustainable management of trans-boundary, straddling and migratory fish stocks.

3.3 Fees for domestic access

There are numerous ways in which domestic fisheries are managed, ranging from open access with an overall quota, limited entry and season closures, to effort controls and quota allocations. Some strategies may include the issue of licences to individual fishers, boats or for different types of fishing gear. Licences may be specific to areas, seasons and/or species. Frequently, the purpose of domestic licensing is not to limit the number of vessels able to fish, nor to generate revenue, but simply to enumerate the number of fishers and/or vessels operating in a fishery. As such, the fees for domestic licences are often not set at a level commensurate with the commercial benefit associated with the activity, but are simply levied to pay the costs of administering the licensing scheme itself. As a result domestic licence fees are generally much less than those for foreign fishing.

Where licences are issued to companies under a domestic licensing scheme, there are usually strict regulations and eligibility criteria governing the status of the company. For example, it is common that for a vessel to be considered _domestic,_ it must first be registered in the coastal State and show proof of beneficial ownership (>50%) by a resident or residents of the coastal State. Such provisions vary between coastal States according to domestic law, but the prospect of lower licence fees and access to fisheries closed to foreign fishers is a powerful incentive to commercial fishing companies to set up operations in the coastal State. This is often achieved through the creation of joint ventures or other commercial arrangements to meet the eligibility criteria of the coastal State. An example where the fee differential for domestic companies has been put into practice is the _Namibianization_ of the fisheries in the EEZ of Namibia. This process has been actively encouraged since Namibian independence in 1991. There is an _open-door_ policy to applications for licences, but the fees charged to locally-owned fishing operations are less than those for locally-based but foreign-owned operations. The fees charged to foreign operations with no local base are higher still.

In some cases, coastal States have opted to pass on not just administrative costs, but the costs of the entire fishery management system to the fishers, domestic and foreign: the concept of _user pays._ In New Zealand, for example, where most foreign vessels operating in the EEZ are now chartered to quota-holding New Zealand companies, almost all industry-attributable costs for

the management of fisheries, including research, are extracted from the quota holders by way of a levy (Robertson, pers comm).

4. CONCLUSION: THE LINK BETWEEN ACCESS FEES, SURVEILLANCE, PENALTIES AND ILLEGAL FISHING

This paper has reviewed the issues to be considered when setting access fees for the licensing of national and foreign vessels authorized to fish in the EEZ of a coastal State. It has considered the basis for charging fees, the setting of licence fees as a component of access agreements, and the ways in which fees are calculated. This concluding section considers licence fees in the wider context of the management of fishing in an EEZ, and particularly the link between access fees, surveillance, penalties and illegal fishing.

As discussed in this paper, providing they perceive a benefit in doing so, domestic and foreign fishing companies and organizations will want to exploit the fish stock in a coastal State's EEZ. In order to fish legitimately they will seek to abide by the conditions of access set by the coastal State, which may include the payment of a licence fee. A number of factors will influence whether or not fishers will decide to buy licences. The key factors under the control of the coastal State are the level of licence fees, the level of surveillance activity (which can be quantified as the probability of detecting vessels) and the penalties for fishing without a licence.

The coastal State wishes to maximize the net revenue it can accrue from granting access to fishing vessels. However, as discussed previously, if the licence fee is set too high, the fishers will no longer consider it worthwhile to pay for access. They may opt to fish elsewhere, or fish illegally inside the EEZ. Even if licence fees are set at levels which make access economically attractive, some fishers may still opt not to pay the fee. Additionally, when the number of licence applicants is greater than the number of licences available, experience has shown that some of the vessels unable to obtain licences will try to fish illegally inside the EEZ. To counteract this, the coastal State must enforce the fisheries law by detecting and penalizing illegal fishing. However, surveillance and enforcement activity itself bears a substantial cost, which may or may not be offset by the revenue from licence fees. The coastal State must recognize the trade-off between the level of investment in monitoring, control and surveillance (MCS) and the income from licensing.

A study by MRAG, funded by the UK Department for International Development's (DFID) Fisheries Management Science Programme (FMSP), and reported in Parkes (1997), examined in detail the trade-offs between these variables. This demonstrated that it is possible to estimate the optimum combination of fee level, surveillance expenditure and magnitude of legal penalties to minimize the risk of illegal fishing and maximize the benefits accruing to the coastal State. The results of a series of case studies indicated the importance of maintaining an effective deterrent to illegal fishing within the budget of the coastal State. This is achieved through efficient surveillance and the capability of imposing large penalties (in terms of fines and vessel/catch forfeiture) for illegal fishing.

5. REFERENCES

FAO. 1995. *Code of Conduct for Responsible Fisheries*, Rome FAO. pp.

Iscandari, N.B. 1995. An overview of fisheries monitoring, control and surveillance in Sierra Leone. pp 39-44, *in:* Report of the Global Fisheries Enforcement Workshop, 25-27 October 1994. US Department of State, Washington D.C.

Johnstone, N. 1996. The economics of fisheries access agreements: perspectives on the EU-Senegal case. IIED [International Institute for Environment and Development] Environmental Economics Programme Discussion Paper 96-02.

Kabua, I. 1997. Welcoming address. *in:* Report of the Second Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western Pacific. FFA.

Mangatalle, 1996. Coastal State requirements for foreign fishing. *FAO Legislative Study* No. 57. 273 pp.

Parkes, G. 1997. Control of foreign fisheries. A summary report. pp 203-232, *in:* Report of a Regional Workshop on Fisheries Monitoring Control and Surveillance. Albion, Mauritius, 16-20 December 1996. GCP/INT/606/NOR Field report 97/37. FAO, Rome.

Porter, G. 1997. Euro-African fishing agreements: Subsidizing overfishing in African waters. WWF's Endangered Seas Campaign. World Wildlife Fund U.S., Washington D.C.