

Fisheries management privatisation : a case study of Sierra Leone

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Abstract

Before 1991, the Department of Fisheries was the sole formal fisheries management authority in Sierra Leone. This authority's management of the fisheries resulted, however, in less than 10% of the estimated annual resource rent accruing to government and in increasing the importance of resource over-exploitation. To improve stock conservation and rent collection the fisheries management functions of the marketing of industrial fishing licences, monitoring, control and surveillance were privatised in 1991 to a Joint Venture Company, owned by the Government (51%) and private investors (49%). This management experiment, however, collapsed in 1993, and political interference has often been cited as a major contributing factor.

This paper is part of an on-going assessment of the economic efficiency of the fisheries management contract of the Joint Venture Company in order to bring out the importance of this determinant in the demise of the Company and lessons for improving management. Conditions under which efficiency might be improved are also discussed. It mainly relies on the use of estimated indices as proxy for the financial viability of the management contract. Preliminary analysis is indicative of the inefficiency of the contract and enforcement system, despite the improvement in entry control and upward trend in the total nominal value of the collected annual access fees. The consequent attempt to adjust the management contract in order to improve its net returns failed, leading to its eventual collapse. The dependence of the fisheries management revenue on multi-factors such as the demand for fishing licences and resource supply suggests the need for the contract to be flexible and profitable.

1 -Introduction

In Sierra Leone, like many developing coastal economies, the maritime fisheries resources are owned and controlled by the state. As a result, the fisheries management authority is vested in the Department of Fisheries. The performance of this management is considered inadequate, thus suggesting the need to search for performance improving management regimes. This is important in order to enable the fisheries sector to realise its full potential in the economic development of the country. Against this background, coupled with the on-going structural adjustments and the scarcity of development finance, the government effectively adjusted in 1991 the fisheries management authority by transferring some of the fisheries management functions from the Department of Fisheries to a Joint Venture Company, which was formed by the government (51% shares) and private investors. This company, however, collapsed in 1993. Political inadequacies have often been advanced for this demise.

The political problems notwithstanding, this paper, part of an on-going review of the fisheries joint ventures in Sierra Leone, focuses on the financial returns to this management option and its impacts on the industrial fleet size and fleet physical productivity. The preliminary analysis of the financial viability of the joint venture management company is inconclusive, given the variability overtime of this indicator.

The relatively short duration of this management option is further explained by the absence of any privatisation administrative agency and the principal-agent problem.

1.1 Specific objectives of the paper

This paper is specifically geared towards the:

Description of the partial privatisation of the fisheries management functions of licensing, monitoring, control and surveillance of industrial fishing fleet,
Assessment of the fisheries management performance and its determinants, and
Highlighting of the lessons for improving fisheries management.

1.2 Analytical framework

This study is, to a large extent, dependent on information in MPSSL and DOF documents, which are already in the public domain. Given the available data, the study resorted to estimating productivity indices as proxy management performance indicators. The indices are defined as follows:

- ✓ Fleet No index = $N_t \cdot 100\% / N_b$
- ✓ Catch (landing) index = $Y_t \cdot 100\% / Y_b$
- ✓ Productivity index = Landing index / fleet No index
- ✓ Gross output index = $(R_t - C_t) \cdot 100 / (R_b - C_b)$
- ✓ Where:
- ✓ N = number of registered vessels
- ✓ Y = Recorded fish catch in MT
- ✓ R = Revenue generated from sale of access rights
- ✓ C = Enforcement cost
- ✓ t & b = any given year and 1990 respectively

As the fleet size in the later 1980s was considered excessive relative to that required for the sustainable exploitation of the resource (e.g., Garcia and Poinsard, 1989), management performance is expected to be inversely related to the fleet index, but positively with the productivity and gross output indices.

2.1 Fisheries management problem

Sierra Leone is found between latitudes ($6^{\circ}55'-10^{\circ}N$) and longitudes ($10^{\circ}14'-13^{\circ}17'W$) (IUCN, 1993) in West Africa (see Fig. 1.1). The country's coastline (350 Km) and shelf area (30,000 Km²) constitute an important maritime fishing zone in the West African region (Ssentongo and Ansa-Emmim, 1986).

As it is typical of most tropical marine waters, the Sierra Leone fisheries consist of multi-pelagic, demersal, shrimp and shellfish species. Total estimated biomass potentials range from 500,000 to 100,000 metric tonnes (Department of Fisheries, 1991). The annual sustainable catch is, however, in the region of 130,000 metric tonnes (Bonzon and Horemans 1998). These fisheries resources are being exploited by both artisanal and industrial fishing fleets with a diversity of fishing technologies and methods (see Coutin 1998; Kamara 1991; Ssentongo and Ansa-Emmim, 1986). Their catch composition has already revealed more than 200 species (Vakily, 1992). The multi-fleet and -species nature of the Sierra Leone fisheries are a source resource use conflicts. To minimise these conflicts and their resource use implications, fisheries management is deemed necessary.

The fisheries sector is assigned a multi-objective role in the economic development of the country (Government of Sierra Leone, 1976). This economic importance of fisheries is mainly captured in the gross domestic product (GDP), employment, food security and in both internal and external trade (see Turay, 1996). Whereas the role

of the artisanal fisheries is more pronounced in local employment and supply of incomes, and in supplying local fish demand and internal fish trade, that of the industrial sub-sector mainly concerns the external trade, hence the generation of government revenue and foreign exchange. To at least maintain this level of economic importance of the fisheries, there is need for management. The section to follow, therefore, examines the fisheries management issues.

Figure 1.1: Map of Africa, showing Sierra Leone

2.2 Fisheries management issues

The state is the *de jure* owner of the Sierra Leone maritime fisheries, and the authority to manage them is bestowed upon the Department of Fisheries^{1[1]} by the government (Government of Sierra Leone, 1988). The Department of Fisheries is the basis of the state management authority^{2[2]}. This authority embodies a number of rights such as exploitation, regulation and exclusion (e.g. supply of monitoring, controlling and surveillance services), alienation (mainly in the form of the sale of fishing rights), but excludes the punishment of violators of the fisheries regulations. This latter rights, important in influencing fisheries management performance, mainly falls within the domain of the Judicial system. State fisheries management is primarily geared towards resource conservation and minimisation of artisanal-industrial resource use conflicts in order to ensure the attainment of the fisheries multi-objectives in economic development. In pursuing these objectives, state management is dependent on controls on fishing gears and mesh sizes, creation of the inshore exclusive zone (IEZ), input taxation, and licensing (of industrial fishing firms). While all these management instruments concern the industrial fishing firms, but effective licensing is yet to be extended to the artisanal fisheries (Turay, 1996). From an economic perspective, these fisheries management instruments are sources of resource mis-use (e.g. Waters, 1991).

Relative to its stated objectives, this state management regime has, however, proved to be ineffective, as is evident in the biological over-fishing in certain fisheries (Ssentongo and Ansa-Emmim, 1986; Garcia and Poinard, 1989), the relatively high number of sightings of poaching in the Sierra Leone EEZ (MPSSL, 1991), increasing importance of the artisanal-industrial fishing conflicts (Turay, 1996). This poor management performance is attributable to the inadequate adoption of fisheries regulations and to the multi-objective nature of the role of fisheries in economic development. Some of the fisheries objectives are incompatible, thus the need to accommodate certain levels of trade-offs (e.g. Charles, 1992). For example, to maximise state revenue generation from the fisheries in the short-run, industrial fisheries expansion was pursued even to the detriment of resource conservation. This expansion was mainly promoted by the 1976 bilateral fishing agreement with the former Soviet Union, which lasted up to 1990. The total number of licensed industrial

^{1[1]} This Department used to be under the Ministry of Agriculture, Natural Resources and Forestry, but it now part of the Ministry of Fisheries and Marine Resources.

^{1[2]} Informal management regime is also characteristic of the artisanal fisheries (Turay, 1996), thus leading to the overlap of management regimes.

fishing vessels in the Sierra Leone EEZ increased from 173 in 1980 to 327 in 1987. These numbers of fishing units were considered far in excess of that required avoiding biological over-fishing (Ssentongo and Ansa-Emmim, 1986).

The lack of the participation of the fishing industry may also have reduced the adoption rate of the management regulations (e.g. Jentoff, 1989). An additional factor to this, concerns the inadequate supply of monitoring, control and surveillance (MCS) services, which have been attributed to the managerial capability and financial resource constraints (Golley-Morgan, 1991). Before 1984, the Departments of Fisheries, and of Defence (the Naval wing of the Sierra Leone Military Forces) collaborated in the supply of MCS services, and thereafter and up to 1990, the latter Department was the sole provider of these services. What is more, fisheries management performance is also dependent on that of the Justice Department (system) which is expected to ensure that the state is adequately compensated for violating its fisheries regulations. This departmental linkage is however, mainly weakened by the resource constraints and the lack of flexibility on the part of the latter Department in dealing with fisheries non-compliance.

This ineffectiveness of fisheries management is indicative of state management failure, and is suggestive of the possibility of improving the performance of the fisheries sector, thereby not only saving scarce resources but also improving its contributions to economic development. Given the scarcity of state management resources, the government modified in 1991 the structure of the fisheries management authority as a strategy to reduce state management inefficiencies, which is explained in the next section.

2.1 Fisheries management privatisation in the Sierra Leone context

By privatisation is meant, in general, the transfer of state property rights over assets and/or services to the private sector (e.g. Adamolekun, 1989). It usually falls within the general context of structural adjustment policies, to which a number of developing countries including Sierra Leone, are being subjected. It is usually justified on economic grounds. Given that state management is concerned with a number of objectives (e.g. employment) other than economic efficiency, privatisation is seen as a strategy of improving this latter objective by minimising the mis-use of scarce public productive resources and at the same time increase the efficiency of use of private resources. This improvement in resource allocation is attributed to the profit maximising behaviour of the private sector. However, the comparative studies of factor productivity of private and public enterprises in Tunisia, Mauritania, and Kenya reported in Adamolekun (ibid) are inconclusive on the relative efficiency gains from privatisation. What may also be of importance is the resulting marketing structure, which could explain privatisation performance to a greater extent than ownership.

From section 2.2, the need to adjust the functions of the DOF for management improvement was obvious to the government. The partial privatisation of fisheries management within the Sierra Leone was, therefore, mainly seen the government as a strategy of mobilising foreign development finance and managerial expertise in order to improve fisheries management outcome. The importance of this strategy needs not to be overemphasised, given the relatively high cost of establishing and operating an effective fisheries management system^{3[3]} and the fact that the country

^{3[3]} For example, Mauritania (although with a larger EEZ) needed US\$7.5 million to set-up and US\$1.8 million as set-up capital and annual operating costing for her MCS system alone (Kaczinski, 1989). spent

was also undergoing structural adjustment. Towards this end, options considered by the government included the formation of joint fisheries agreements with the European Community (EC) or the private sector. The government, however, opted for the involvement of private sector in managing the marine fisheries, especially the industrial fleets. As a result, the fisheries Act was amended by government in 1990, to allow the transfer of the licensing of the industrial fleet (sale of access rights and control of access revenues), and the supply of monitoring, control, and surveillance (MCS) services from the Department of Fisheries (DOF) to a joint venture company. This company, known as the Maritime Protection Service (Sierra Leone) Limited (MPSSL), was a joint venture between the Government of Sierra Leone and Maritime Protection Services (MPS) of the United Kingdom, with the former accounting for 51% of the company shares. The rest of the shares went to the MPS, provided the set-up capital, thereby acquiring, in practice, a rather disproportionate share of the decision-making authority of MPSSL. As private investor, the MPS motive is profit maximisation, which was not compatible with some of the government fisheries management objectives.

In principle, the 51% of government ownership of MPSSL makes this company a government parastatal, thereby putting it under the influence of the then Ministry of State enterprises. The influence of the DOF in the operation of the MPSSL was therefore reduced. The MPSSL effectively started operation in 1991, but it commenced experiencing difficulties as early as 1992 before collapsing in 1993. The performance of the MPSSL is examined, therefore, in the next section.

2 Fisheries Management Performance

This section presents the preliminary results and the discussion of the paper. The impacts of the MPSSL, especially on the number of registered industrial fleets and their reported catches, and on its financial attractiveness are examined. This is followed by the discussion on some of the determinants of management performance.

2.1 Some fisheries management impacts

Apart from the effects (e.g. employment) of the injection of part of the set-up capital on the economy, according to Kamara (1991) and MPSSL (1991), the MPSSL experiment improved the effectiveness of the industrial fleet licensing programme and the supply of the fisheries enforcement services. This was reflected in number of desirable outcomes which concern the number of licensed industrial fleet, artisanal-industrial fishing conflicts, illegal fishing in the Sierra Leone EEZ, and the management revenues collected from the sale of fishing access rights and royalties. These achievements were obtained, however, at higher fisheries management costs and resource exploitation cost to the industrial fisheries firms.

The signing of the joint venture fisheries management agreement made possible the relatively easy access to foreign capital, and as a consequence, foreign managerial resources. The establishment of MPSSL created direct local employment as well as multiplied effects. Employment creation, although marginal, was important, given the presence of the structural adjustment programme whose goals included the reduction of government employment.

According to the MPSSL report (1991), the management of the industrial fisheries licensing programme, coupled with the drastic reduction of illegal fishing resulted in the reduction of the number of fishing fleets to that compatible to the biologically

sustainable exploitation of the resources. From Table 3.1, the fleet index was only in excess of that in the base period (1985-1990) during 1975-1980, the period corresponding to the start of the Sierra Leone-USSR fishing agreements. Moreover, the catch index in the various periods, however, remained far below that of the base year. However, the MPSSL period showed the second highest fleets catch and physical productivity index (see Table 3.1). The highest productivity index (168) was registered in the period preceding the base year. Taking the productivity to be a proxy indicator of the level of resource conservation, then Table 3.1 is not supportive of the MPSSL period as the relatively most desirable. No doubt there was fleet reduction during the MPSSL period compared to that preceding the 1980.

During the period 1988-1993, the highest annual nominal revenues (US\$ 2.2 million, which was four times that in 1988) from licence fees and royalties were recorded in 1991 from which it declined by 63% in 1993 (Fadlu-Deen, 1994). The performance of MPSSL in generating management revenues was, therefore, relatively outstanding during its first year of operation. In real terms, this management performance can be considered as marginal, as for instance the 1991 management revenue increased over that of 1990 by less than 1%. Therefore, the upward trend in annual fisheries management revenue can mainly be attributed to that of the yearly payments per fishing firm. As the payments of fees and royalties by foreign fishing firms was in foreign currency, the increase in fisheries management revenue may have contributed to the improvement of the supply of foreign exchange, thereby facilitating international transactions.

The improvement in fisheries management revenue was accompanied by additional management costs. As shown in Table 3.2, in 1991-1992 the estimated annual operating management costs were far less than the management revenues, hence the positive gross output indices. The annual management gross output index was, however, negative in 1993, thus indicating operating losses. With the lowest and highest gross output indices, 1993 and 1991 can be regarded as the least and most successful years for the MPSSL respectively.

Table 2.1 Annual fleet number, catch and productivity indices

<u>Period</u>	<u>Fleet index</u>	<u>Catch index</u>	<u>Prod. index</u>
1950-1960	8		
1960-1970	26		
1970-1975	27	5	18
1975-1980	141	36	25
1980-1985	41	69	168
1985-1990	100	100	100
1990-1993	71	56	79

Adapted from records of the Department of Fisheries

Table 2.2 Annual Gross output index

Year	Index
1988	+39
1989	+44
1990	+100
1991	+109
1992	+93
1993	-50

Adapted from Fadlu-Deen (1994) and MPSSL (1991)

The effective exclusion of the industrial fishing fleets in the artisanal exclusive zone increased, in theory, the resource accessible to the artisanal fishing units. This potential benefit for the artisanal fishing units was not translated into reality, as indicated by the downward trend in estimated total annual artisanal catch from 1990 to 1994 (Department of Fisheries, 1996). According to the artisanal fisheries catch record in the Department of Fisheries, 50,000 MT were landed by the artisanal fisheries in 1990, a catch level which was about 4%, 5%, 6% and 6% higher than those of 1991, 1992, 1993 and 1994 respectively. This catch trend was partially attributable to the declining tendency of the active number of artisanal fishing units (Turay, 1995). Therefore, the artisanal fisheries benefits from the presence of the MPSSL may mainly be seen in terms of cost and fishing timesaving from the minimisation of the artisanal-industrial fisheries conflicts.

As regard to the industrial fishing firms whose management was the primary concern of the MPSSL, they may have mainly benefited from the reduction of crowding externality, due to the decline in the number of fishing vessels in the Sierra Leone EEZ (resulting in an increase in the present catch rate). Regarding the minimisation of stock externality (leading to the increase in future catch rates due to reduction in recruitment and growth over-fishing), the duration of the MPSSL was too short for the fishing firms to be able to reap any substantial gains from the intervention of the MPSSL. It was obvious that the presence of MPSSL substantially increased the cost of resource exploitation for the industrial fishing firms in the forms of relatively high access fees and management compliance costs (e.g. transshipment), thereby reducing fishing profitability. Therefore, the MPSSL activities definitely reduced the financial attractiveness of industrial fishing, consequently facilitate the early exit of loss-making firms. As already mentioned above, the annual payments of the industrial fishing firm for the rights to fish in the Sierra Leone was relatively high during the period of the MPSSL. The industrial fishing industry was exposed to multiple regulations such as inspection, mesh size, fishing area location and transshipments. According to Fadlu-Deen (1994), the total annual cost to the industry of transshipments alone could far exceed the entire yearly cost of the operations of the MPSSL. Despite the importance of transshipment for MCS land activities, hence data collection, there was a need to search for alternative ways of reducing of complying with this regulation, thereby minimising attempts by some fishing units to circumvent it.

From the above, the MPSSL experiment was relatively short-lived (less than three years) to have any pronounced impacts on some of the general fisheries management like resource conservation, employment and generation of revenue. The change in the structure of fisheries management authority was institutional, and such changes usually require a relatively long period of time for the manifestation of their impacts on the resource.

The MPSSL experiment, indeed, reduced the fishing capacity in the Sierra Leone EEZ, and at the same time increased the management revenue, costs, and resource exploitation costs. Despite the relatively minor contribution of industrial fishing employment in the Sierra Leone economy, the reduction in industrial fishing capacity was expected to have negatively impacted on fishing employment. MPSSL was foreseen as a long-term investment. The relatively short life span of this company, coupled with the variable and low annual gross profits suggest that government might not have benefited from any direct transfer of access fees and royalties during the period of implementation of this project. One wonders, therefore, if government was not worse off (in terms of revenue collection) in the presence of MPSSL. Given the expected fisheries management improvements from the MPSSL experiment, the section to follow will examine some of the determinants of the management performance.

2.4. Determinants of management performance

Having revealed the variability of the financial viability (in terms of the yearly gross output index), the discussion in this section is limited to the inadequacies of the privatisation administrative capacity of government and the principal-agent problem.

2.4.1 Lack of privatisation administrative capacity

Although privatisation of state enterprises was within the context of the on-going structural adjustment programme in Sierra Leone, before the establishment of MPSSL there was no government agency with well-defined legal and regulatory framework for the planning and implementation of privatisation. As government was inexperienced in matters of privatisation, there was a need for such an agent (or structure) to provide sound advice especially in the choice of management activities to sale and of management option, and in determining the terms of exchange. Furthermore, the MPSSL was a monopoly, therefore, needed to be regulated in order to minimise the tendency of the under-supply of services and the improvement of management performance.

In the absence of such an agency, the government failed to envisage the resentment towards MPSSL and the impacts of the deficiencies in the pricing system of fishing access rights and in the legal system. To promote the expansion of the national fishing firms, they were subsidised in the form of discounts in the price of fishing licences. As a result, there was an important licence price differential between foreign and national fleets which led to the positive growth of joint venture fishing enterprises. The relative shares of both national and foreign fleets in the industry consequently declined, leading to loss of revenue from the sale of fishing access rights. Moreover, the unit licence prices was administratively set rather than by competitive bidding, thereby further reducing the total revenues from this activity. A common unit licence price for all fishing firms and competitive price bidding would be compatible with revenue maximisation.

The inadequacies of the legal system with regards the implementation of MPSSL mainly concern the prolonged delays in carrying out prosecutions, high rate of prosecution failures and the relatively low levels of fines. For example, only 9 of the 32 vessels apprehended during the period 1991-1993 were prosecuted. As a result, the legal system was not capable of providing the appropriate signals for deterrence of deviant behaviour, thereby contributing to the low level of compliance with the fisheries regulations, and positively impacting on enforcement costs. Thus, there is need to make the legal system adaptive to changes in fisheries management structures.

he MPSSL experiment was unpopular not only to the Department of Fisheries and to the industrial fishing industrial, but also to local press and opposition politicians. The MPSSL experiment was a new innovation in the Sierra Leone context and in West Africa in general, therefore its implementation should have been preceded by an adequate education of all the various interest groups in the fisheries. There was hardly time for this. This education would have prepared the fisheries stakeholders for the changes in the management regime, thereby increasing the level of co-operation needed for the success of this experiment. The failure to take full cognisance of the consequences of the implied loss of authority of the DOF and the increased cost of fishing for the industry resulted in the relatively high level of resentment among stakeholders towards this experiment. The DOF seemed to be in favour of foregoing the protection services, but not the control of the licence scheme, as revealed in the statement:

"this decision, welcome as it was for surveillance, has been unpopular within both the public and private sectors regarding the management aspects of the issuance of licence and collection of receivables. It is generally felt that MPSSL's responsibilities should have been limited to Surveillance, for which a service fee should have been negotiated and the revenue retained by Government..." (Golley-Morgan, 1991 p4).

Furthermore, the timing of the implementation of the MPSSL experiment was rather unfortunate. Before MPSSL, there was already a draft Sierra Leone-European Economic Community (EEC) fishing agreement to be finalised and signed. The EEC agreed to provide, among other services and payments, maritime protection services of the Sierra Leone EFJ (the same function to be assigned to the MPSSL) in return for fishing rights. To the disappointment of both the EEC and the Sierra Leonean negotiating team, the MPSSL was conceived and immediately implemented just at the point when the Sierra Leonean-EEC fishing agreement was expected to have been concluded^{4[4]}. The sudden appearance of MPSSL created a lot of suspicion in the local press who considered this company as an instrument for siphoning the resource rent for the personal benefit of some government officials, thus casting doubt on the social rationality of this experiment.

The resulting negative implementation environment contributed to a large extent to the reversion of the sale of fishing licences and collection of licence fees to the DOF, thereby restricting the MPSSL to the supply of protection services. With no control and ready access to the inflow of funds, the MPSSL project ran into continuous cash flow difficulties (as evident in the negative gross output index in

^{4[4]} Furthermore, MPSSL was preceded by a company (the West African Fisheries Company: WAFC), hastily formed by a group of private investors to take over the management of the industrial fisheries from the DOF. This company was vehemently opposed by opposition politicians and the local press, and was consequently dissolved. In effect, the MPSSL was perceived to be in the guise of WAFC by the public.

1993)^{5[5]}, consequently and negatively impacting on the supply of protection services.

The need to perform the fisheries management functions, assigned to the MPSSL, was acknowledged by an overwhelming number of its critics. The criticisms were focused on who should be the provider of the needed management services, Government (DOF), MPSSL, or both. The critics tended to favour the DOF, especially in the marketing of fishing licences, as they considered the delegation of this role to an agent (private/foreign) to be tantamount to the surrender of state sovereignty, hence incompatible with national laws. In effect, the MPSSL debate was biased towards national political sentiments. They, however, failed to examine the problem from an economic perspective, hence the failure to determine whether MPSSL was the best option to generate the highest net economic benefit for the nation.

2.4.2 Agency (principal-agent) problem

Furthermore, the Principal-Agent problem (e.g., Edwards, 1994) could also have contributed to the demise of MPSSL. The MPSSL was a parastatal with stakeholders including the Government (representing the public), DOF, Department of State Enterprises, shareholders, and management team (being one of the shareholders). As a company, MPSSL was accountable to its shareholders (through the board of directors), but it was managing in effect a public good. Small wonders whether it should not have been a public Agent.

The implied multiple and diffused nature of the principals as well as of the principal-agent may have negatively affected the performance of MPSSL, mainly due to the problems of incompatibility of management objectives and of accountability. For example, the government was concerned with multiple fisheries management objectives (see section 2.1), and in promoting the expansion of national fishing capacity through price subsidies, it negatively affected the revenue maximising objective of MPSSL. The structure of the principals could increase the cost of co-ordination, hence that of the agent (management team). Consequently, the likelihood of the agent misallocating the MPSSL resources would be high. The principal-agent problem might have been minimised where the terms of reference and stakeholders of MPSSL clearly defined.

3 Lessons

This preliminary analysis of the involvement of the private sector in fisheries management in Sierra Leone is inconclusive due to the relatively short duration of MPSSL, and to the difficulties in accessing the data on its financial operations. However, the performance results of the first year of operation of MPSSL reveal some indicative positive management impacts on the fishing fleet size, catch rate (possibly for resource conservation) and on the financial returns to management. Thus, suggesting the possibility of improving fisheries benefits from extra investment in fisheries management. Despite the relatively limited duration of the

^{5[5]} The allocation of the fishing licenses, control and protection services to two different service providers (Department and MPSSL) partly contributed to the financial problems of MPSSL. This allocation of management services could work, if the collected license revenue could easily be made available to pay for the protection services. But, given the lengthy bureaucratic procedure and the numerous expenditure areas of Government, accessing the license fee from the Government consolidated fund could prove at worst impossible and at best time consuming and frustrating.

MPSSL experiment, there are lessons to be learned, of which include planning framework, fisheries role in development and implementation environment.

The planning framework is needed to provide a basis for the choice of management options, to clearly and unambiguously define the structure, terms of reference (including time frame) and the objectives of the management agency in order to facilitate the attainment of the desired management outcome. Given the incompatibility of some of the usual fisheries role in economic development, the government should be prepared to accommodate trade-offs. The MPSSL experiment involved an institutional change whose net potential economic benefits would require a longer time frame to be realised. Consequently, a relatively long-term contract would provide incentives to both the management agent and the private investors, thereby enhancing management improvement.

The implementation environment covers the education of the public and the relevant fisheries stakeholders, and the needed adjustments of other Departments (e.g., the legal system) which influence fisheries management structure. This is important in minimising the cost of enforcement, hence in increasing the returns to fisheries management.

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