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MARINE DEVELOPMENT AND SOCIO-ECONOMIC CONFLICTS (Internal and External) OF THE MALDIVES

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MARINE DEVELOPMENT AND SOCIO-ECONOMIC CONFLICTS (Internal and External) OF THE MALDIVES.

1. Introduction and General Issues.

The Republic of Maldives is an archipelago consisting of 26 coral atolls, situated in the Indian Ocean, south-west of India. Its closest neighbour is India, which lies 595 km from the northern most atoll and the next closest is Sri Lanka, which is 670 km from the capital Male (see Figure 1).

INSERT FIGURE 1

The twenty-six coral atolls contain about 1,190 very small islands of which only 203 are inhabited. The longest island Gan, in Addu atoll, is about 7.2 km long. Male, the capital, occupies an island about 1.6 km long on the eastern side of Male atoll. The total land area is only 298 square km, even though the area covered by the Republic is 90,000 square km. Because of this limited land mass and because of its lack of mineral and oil reserves and because of the fact that the agricultural potential is limited due to the alkaline nature of the soil, its poor water retention capacity and its lack of nitrogen, (Butany, 1976), the Maldives has a narrow resource base (Sathiendrakumar and Tisdell, 1985). Its main natural resources consist of fisheries and a marine environment conducive to international tourism. In general, the opportunities for alternative employment in coral based island economies are quite limited (Tisdell and Fairbairn, 1983). Thus the main prospect for economic development

of Maldives lies in the possibility of exploiting the economic potential of its marine resources.

The Republic of Maldives is considered by UNDP to be among the 20 least developed countries in the world and has been earmarked for a special, though very limited, programe of assistance (Adney and Carr, 1975). "The five characteristics identified among the countries seeking special assistance all apply to the Maldives. They are (1) subsistance agriculture, (2) a pervasive weakness of administration, (3) an acute shortage of trained man-power at all levels, (4) inadequate transport and communication, and (5) a very narow industrial base", (Adney and Car, 1975: 154).

The atolls, and some individual islands are almost self-contained economic units, depending on the sea around them relying on fishing. The women in these atolls are generally employed only in domestic or selected duties within their own family such as tending some of the crops and producing general handicraft items such as coir rope and cadjan for domestic use. Unlike women elsewhere in the islands of Indian Ocean, women of Maldives do not market the fish caught by their menfolk.

Male, the capital acts as the centre for Maldivian political and economic life. The dualism characteristic of urban and rural economic and social life in many LDCs is also present in the Maldives as there is a disparity of economic and social progress between Male (the centre) and the atolls. A disproportionate share of government expenditure directly benefits Male and ensures its residents a

standard of living that is substantially higher than those in the atolls (World Bank, 1980: 5 - 6). "Rural-urban misallocation, with its damaging impact on efficiency and equity, is the main weakness of recent development process", (Lipton, 1977: 75).

The 1985 Census of population revealed that the Republic of Maldives has a population of 181453 (Ministry of Planning and Development, 1985a). The overall growth in population per annum is 3.5%. But the growth rate of population is uneven between the atolls.

For administrative purpose, the government of the Republic of Maldives has divided the Republic into a set of 19 regions (see Figure 1), formed by merging smaller atolls or by splitting larger ones. The capital Male, an island in itself, is treated as a seperate administrative area, giving a total of 20 administrative areas. Seperate islands are set aside for specific purposes, for example, the international airport has an island to itself and so has each tourist resort development. Transport between islands is mainly by boat.

Historically, Maldivian society has always been closely knit and disciplined. The unity of Islamic religion and a single language has been important reason for this. The inhabitants of each island form a closely-knit group, where every one knows each other. Strong loyalities tie the individual to the extended family. The level of education in the Maldives and more so in the outer atolls is quite low. Large number of people in the villages have education levels equal to or less than Grade 3.

The family has been in the past and is today ~~the basic~~ the basic

unit of the Maldivian society, providing security in old age and refuge during hard times. Thus the social security system is based on bonds of family and kinship. In the fishing villages of the Maldives the extended family remains located in its village but for employment and income some members may move outside the village for extended periods of time. Such type of migration is called temporary migration (Roseman, 1971). Decisions about the migration by a family member are family rather than individual decision. Furthermore, migration of whole family is difficult in the Maldives, since the land belongs to the state and are given entitlement to lease land to build their house on the island of their origin.

In the Maldivian fishing village younger people with better education and belonging to middle class in terms of wealth are more likely to migrate and when they reach a certain age (by 45) they return back to the village.

Fisheries, tourism and trade, and transport (shipping) constitute the principle economic base of the Maldives. Poor soils and the lack of land area limit the scope for agriculture. The bulk of the manufacturing output consists of cottage industries, boat building and repair, and a few small food and beverage enterprises, primarily producing for the home market. The only exceptions are the export-oriented small tuna cannery, a mica-fabricating plant in Male and two small garment factories on Gan island in the south. The garment industry (apparel and clothing accessories) accounted for about Rf. 44 million in 1983 (Sathiendrakumar and Tisdell, 1985). But the value added in the apparel industry in Maldives was estimated to

be about Rf. 5 million (Ministry of Planning and Development, 1985b: 89) and this sector employs over 1400 people.

Island developing countries are usually vulnerable to external shocks because their exports typically consist of a restricted range of products, principally primary products subject to significant price fluctuations in international markets, (Fairbairn, 1985). Export earnings of the Republic of the Maldives come almost entirely from two sources: (1) fish and fishery product exports, which contributed US$ 10.4 million to foreign exchange earnings in 1984 (59.25% of foreign exports); and (2) apparel and clothing accessories, which contributed US$ 7.07 million to foreign exchange earnings in the same year (40.1% of foreign exchange from exports). As for invisible trade, tourism is its major foreign exchange earner. In 1984 the gross foreign exchange gained from net travel was estimated to be US$ 21.3 million, which was twice that from fish exports.

Fishing is the major occupation in the Republic of Maldives (36.3% of labor force in 1985) followed by manufacturing (24.5%), (Table 1). Other industries such as construction, commerce, transport, communication, electricity and other services and tourism account for the remainder. Although there is little open unemployment in the atolls, there is nevertheless disguised unemployment. This is a major problem because fishing absorbs the largest proportion of people employed in the atolls, and fishing is a seasonal activity due to the prevailing climate. With regard to distribution of those employed, skilled work levels account for only 5.4% of those employed in 1985. But the remarkable feature is that the semi-skilled level of

employment has shown a marked improvement rising from 30% in 1980 to 35% in 1985. The constraint on the growth of skilled level of jobs is due to poor educational facilities available in Male and more so in the outer atolls.

INSERT TABLE 1

The Maldives shares many of the natural disadvantages of most island developing countries, ie it has a very small population, limited land size, a low level of economic opportunity and geographic isolation. On the one hand small island countries generally have a small revenue base, a limited range of manpower and skill, as well as the disadvantage of small scale, all of which constituete an economic constraint on development, (Sathiendrakumar and Tisdell, 1985). On the other hand the Maldives may have some advantages compared to other IDCs: unlike most IDCs, the Maldives was never a colony and is not dependent politically or economically on one nation or trading block. The presence of an effective national shipping line, the Maldives shipping Ltd., (MSL), means that the country is not dependent on foreign lines for its trade. The World Bank has suggested that this has provided some advantages for the Maldives (World Bank, 1980: 67).

2. Technological Change and Domestic Fishing Industry Conflicts.

The fishery resources of the Maldives can be categorised into three groups. First, the pelagic surface swimming tuna caught in the near shore (about 25 km from the atoll reef) which caters for the export and domestic markets; secondly, a variety of reef fish which

mainly caters for the domestic tourist industry;[1] and thirdly, the large deep-swimming tuna taken beyond the 25 km range but within the eclusive economic zone (EEZ) of the Maldives, by foreign poaching vessels, (Sathiendrakumar and Tisdell, 1986). This section will deal with the domestic fishing industry. Since about 80% of the fish caught by the Maldivians is tuna and over 90% of tuna is caught outside the atoll reef by live bait pole-and-line fishing, (Sathiendrakumar and Tisdell, 1986; Anderson and Hafiz, 1985; and Christy et.al, 1981) this section will deal only with pole-and-line tuna fishing.

In the Maldives, the government has encouraged motorization of fishing fleet as a means of bringing about economic growth (Christy, et.al, 1981; Anderson and Hafiz, 1985, Ministry of Planning and Development, 1985b; and Sathiendrakumar and Tisdell, 1986). The major change in technology affecting the harvesting of tuna in the Maldives commenced in 1974/1975 when the traditional locally built wooden sail-powered pole-and-line boats (mainly coconut) of about 8-12m LOA with a carrying capacity of 4 - 6 tons, locally known as 'masdhoni', were fitted with a 25hp in-board motors with little change in boat design and construction. The engines were distributed by the government of Maldives on an interest-free loan basis, based on the size of population on each atoll and on the need for all atolls to have an equitable share of the engine 'dhonis'. Mechanized boats have now virtually displaced sailing 'masdhonis' in the harvesting of tuna in the Maldives (see Sathiendrakumar and Tisdell, 1986). The reason

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1 Since Maldivians prefer tuna to other species, the domestic market is limited to the tourist industry.

for this change in technology (subsidized by the government) was due to the conventional wisdom prevailing at that time. It was believed that the cause of poverty among small-scale fishermen was the limited productivity of sailing boats. It was thought that this could be overcome by the presence of mechanized technology (Smith, 1979).

The operation of sailing tuna boats in the Maldives was seasonal because the fishermen had to wait for the various stocks of tuna to come within their very limited range of operation. Motorization confers increased mobility: a motorized vessel is much less at the mercy of the wind and current compared to a sailing boat and normally has greater speed, (Eddie, 1983). But incresed mobility as a result of motorization has not lead to an increase in the zone of operation of tuna boats (25km from atoll reef), (Sathiendrakumar and Tisdell, 1986). Rather it has resulted in schools of tuna being more quickly located in the usual area of operation and has increased the likelihood of location of schools in this area. Neverthless the added mobility conferred by mechanical propulsion has resulted in greater effective fishing effort than that required for optimum economic yield (OEY), (see Sathiendrakumar and Tisdell, forthcoming). The present tuna pricing policy by the State Trading Organization (STO), although adopted with the objective of using the resource-rent extracted from the fishery to subsidize imported staple commodities to consumers, has prevented the fisheries reaching the social open-access equilibrium yield level of effort in which all resource-rent would be dissipated by excess entry (see Sathiendrakumar and Tisedll, forthcoming). Greater mobility conferred by mechanical propulsion has ensured that

the catch is landed in a fresher condition than in the days of sailing 'masdhonis'.

In spite of the greater mobility of the motorized pole-and-line boats and its greater technical efficiency, the overall catch of tuna in the Maldives did not increase after motorization. Average tuna catch was 29982 tons for the period 1970-74 as against 29754 tons for 1980-84, (Table 2). Any increase in gross income is due to changes in price level, which could have been brought about as a result of changes in export composition from 'maldive fish' to frozen tuna and the pricing policy adopted by the STO (see Sathiendrakumar and Tisdell, forthcoming).

INSERT TABLE 2

Even though, the overall catch of tuna in the Maldives did not increase as a result of motorization of pole-and-line boats, the average catch per boat per trip in the Republic of Maldives increased by 68% (from 160kg per trip prior to motorization to 269kg per trip after motorization (Table 2). Motorization was accompanied by a fall in the number of boats fishing for tuna, (Table 3).

INSERT TABLE 3

2.1 Impact of motorization on the income of fishermen.

The income of the fishing crew in the Republic of Maldives is based on a sharing system. Income from work is a predetermined fraction of the value of total output (catch). Prior to motorization, a third of the total catch was allocated to the boat owner and the

remaining two-thirds was shared among the crew. The crew's share is divided into eleven (11) portions. The skipper, the chummer and a crew member who is also the caretaker of the boat on shore each receive one and one third portion (1 1/3) of the share and the remaining crew (7) receive a share (1/11 of crew, total share) each. After motorization, the sharing system changed. The cost of fuel is now deducted from the total catch and then the remaining catch is distributed such that the boat owner gets fifty percent (50%) of it and the other fifty percent (50%) is shared among the crew. The crew's share is now divided into 12 portions and the skipper, the chummer, the engine operator and a crew member (who is also the caretaker of the boat on shore) each receive one and a half portion (1 1/12) of the share and the remaining crew (6) receive a share each (1/12 of crew's total share).

About 10 men worked on an average in a sailing pole-and-line boat. Motorization did not lead to a change in the number of crew members working on each tuna boat. Table 4 gives the real income of the crew and boat owner of sailing pole-and-line boat at current prices in the absence of motorization in the Northern atolls, Central atolls, Southern atolls and in the Republic. Because of improvement in quality of catch, as a result of motorization, it could be argued that current prices may not reflect the true real income but would overstate, the real income prior to motorization. In the absence of data pertaining to the relationship between price and quality, we are forced to ignore the quality differences and use the current price. Table 5 gives the real income of the crew and the boat owner of mechanized pole-and-line boat at current prices in the Northern

atolls, Central atolls, Southern atolls and in the Republic of Maldives. According to these Tables (Table 4 and Table 5) the crew's share has declined[2] since motorization in all the regions except in the Southern atolls. The reason for this increase in the Southern atolls is the very considerable rise in catch per boat after motorization in thses atools (see Sathiendrakumar and Tisdell, 1986).

INSERT TABLE 4

INSERT TABLE 5

2.2 Impact of motorization on the boat owners rent.

Even though, a comparison of Table 5 with Table 4 show that the share accruing to boat owners after motorization has increased[3] in all three regions, we cannot conclude that the rent accruing to boat owners has increased. This is because motorized vessels require a higher investment per crew member and involve costs such as the cost of the engine, which traditional boats did not. Thus a higher proportion of gross earnings will have to be allocated to the motorized boats in comparison to the sailing boats to cover such costs.

In order to determine whether the rent that accrues to the boat owner has increased after motorization or not, we have to deduct the capital cost and other operating cost, except the cost of fuel which

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2 This decline would have been less in terms of real income had we used the prevailing price of tuna prior to motorization. But in terms of quantity of catch the percentage decline is the same as given in Table 5.

3 This increase would have been still greater had we used the prevailing price of tuna prior to motorization for Table 4.

has already been deducted prior to the allocation of shares. Since the crew supply the poles, lines and hooks (equipment) used in the catching of tuna, the cost of equipment is not included in the estimation of rent accruing to boat owners. Table 6 gives the rent that would accrue to the sailing pole-and-line boat, in the absence of motorization, and when current prices are used, if a 10% accounting rate of interest for capital is used. Table 7 gives the rent that would have accrued to a mechanized pole-and-line boat with a 10% accounting rte of interest for capital and at current prices.

INSERT TABLE 6

INSERT TABLE 7

The capital cost of a boat is assumed to be the same in all three regions, which is quite likely. As far as operating cost is concerned, since fuel cost is deducted prior to the allocation of shares, only the repair and maintenance cost is used. The difference in repair and maintenance cost between sailing pole-and-line boat and mechanized pole-and-line boat is self-explanatory. For each type of boat (mechanized and sailing) it is assumed that the repair and maintenance cost is the same in all three regions.

But repair and maintenance cost could vary by area depending on several factors such as the availabilty of repair facilities, the skill of the crew, the number of fishing trips completed by each boat per year, oceanographic condition in each region and the age of the boat. Since we do not have seperate estimates of costs for each region, let alone for each atoll, the cost estimates obtained from Noonu atoll in the North is used to approximate these costs. This

assumption was checked with the Ministry of Fisheries in Male which confirmed that it was a reasonable approximation for all three regions. Comparison of the data in Table 7 and Table 6 reveals that except in the Central atolls, the rent accruing to boat owners has increased as a result of motorization.

Comparison of Table 5 with Table 4 shows that the revenue available for sharing in the Northern atolls, Southern atolls and in the Republic as a whole has increased[4] as a result of motorization, but the earnings of the crew has declined in the Northern atolls, Central atolls and in the Republic, but the earnings of the skippers has declined only in the Northern atolls and the Central atolls. A decrease in the number of boats (see Table 2), as a consequence of motorization, resulted in a decrease in demand for fishing labour by the boat owners. This enabled the boat owners to pay a lower wage (reduced quantity of catch) to the crew, especially in a situation of limited alternative employment opportunities in the village. This is so in spite of increased productivity of labour. Thus the benefit from increased productivity has acrued to the boat owners. Hence, fisheries development efforts in the Republic of Maldives, which had focussed exclusively on production-oriented technology such as motorization, raise issues about distributional justice, (Cf. Bailey, et. al, 1986).

2.3 The earnings of displaced fishermen.

Not only did the real income of fishermen remaining in tuna

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4 This increase would have been still greater had we used the price prevailing prior to motorization for Table 4.

fishery not increase as a result of motorization (in fact income decreased), but motorization displaced about 50% of the pole-and-line fishermen engaged in tuna fisheries (Sathiendrakumar and Tisdell, 1986). The majority of those who were displaced were able to find jobs in other traditional sectors and obtained these by accepting lower income for a given effort. Therefore, in this case there is some support for Turnham's view that, "considerable number of potential entrants to the modern sector have, of necessity, been absorbed into stagnant or slow growing sectors", (Turnham, 1971: 10). This could have resulted in the marginal productivity of labour in the traditional sectors (outside fishing) falling to zero or even below, resulting in 'disguised unemployment'. The reason why the fishermen who were displaced did not move to Male atoll was that their probability of successfully securing employment in Male atoll was very low, due to their low educational level (Sathiendrakumar and Tisdell, 1987), even though the wage rate in Male is much higher than in their village.

As a result of motorization, the income distribution in the fisheries sector in the Republic of Maldives moved in favour of the boat owners. Thus motorization has resulted in increasing inequality of income and a decline in real income of the rural poor (fishermen). There was decline in real income of the fishermen in all three regions, except in the Southern atolls, (Table 5). The reason for this increase in the Southern atoll is due to a substantial increase in the overall catch of tuna in the region. One reason for this increase might be that motorization enabled improved navigation in this area

which experiences rough-seas (due to the 'One and a Half Degree' Channel). In fact, the average number of fishing trips per tuna boat increased in the Southern atolls from 67 prior to motorization to 129 after motorization (Table 2).

3. Fishing Conflicts with Foreign Countries.

The concern of the coastal nations about the rapid depletion of fish stocks off their coasts by foreign distant-water fleets lead to the Third United Nation Conference on the Law of the Sea in 1973 (Sutinen and Anderson, 1985). But, since progress at the conference was slow, like several coastal nations which took unilateral action in declaring an extended jurisdiction to 200 nautical miles from the shore (Sutinen and Anderson, 1985), the Republic of Maldives also claimed a 200-nautical mile oceanic zone of national jurisdiction and control by law No. 30/76 of of 27th November 1976 (Sathiendrakumar, 1983). According to this law the Republic of Maldives has the sovereign rights and exclusive jurisdiction over its Economic Zone for the purpose of exploitation, conservation and management of the natural resources therein, both living and non-living, or for any other economic purpose. Any person or persons contravening the sovereign rights of the Republic of Maldives over its Economic Zone shall be liable to prosecution and conviction in accordance with laws and regulations of the Republic of Maldives.

The only resource that is known to have any commercial value now in this zone, and which is not exploited by the Maldives, is the

deep-swimming tuna resource, (Sathiendrakumar and Tisdell, 1986). The commercial concentration of this resource is said to occur in the Republic of Maldives EEZ during two to six months of the year (World Bank, 1980). The Maldives has three options available to it in dealing with this tuna resource. (1) Exclusion of foreign fleets without any direct participation in the exploitation of deep-swimming tuna, (2) exclusion of foreign fleets with direct participation, and (3) allowing foreign participation but charging a fee for the use of this resource.

3.1 Exclusion of foreign fleets without direct participation.

To some, exclusion of foreign fleets is the correct policy option, since foreign harvesting amounts to an export of real wealth. But, in the absence of Maldives having adequate resources to exploit such resources by itself, such exclusion also carries with it an implicit opportunity cost, that is the forgone economic benefits such as the loss of potential income from foreign companies, in the form of fishing licence fees.

To keep foreign fleets out of its EEZ, the Maldives would need aerial and surface surveillance. "The main purpose of surveillance and enforcement is to provide a creadible deterrent to the violation of regulation or laws", (Lipiz and Sutinen, 1985: 313). However, to maintain a level of credibility for its regulations, the Maldives must have the capability of detecting violators and must actually apprehend violators on at least on a random spot-check basis. Yet it is doubtful whether the country can achieve this for, "the Republic of Maldives is

helpless due to the inadequacy of surveillance patrol boats and weapons to apprehend the intruders", (Sathiendrakumar, 1983: 56). Furthermore, according to Sutinen and Anderson, (1985), increases in the stock size requires greater enforcement cost to control illegal catch of a given level. In these circumstances, it is possible, for poaching to take place. In fact in the past, Taiwanese and South Korean trawlers have been detected poaching in the Maldivian waters. It has been reported that poaching is a major problem for the country and that the development of sufficient means for policing the nation's marine economic zone is the chief priority of the Ministry of Public Safety of the Republic of Maldives, (Sathiendrakumar, 1983).

Even though, from a static economic point of view, it is likely to be economical to allow poaching as the marginal cost (MC) of controlling poaching may exceed the marginal benefit (MB) at all levels of surveillace for the Maldives, from the dynamic economic point of view it could be economical to control poaching. This is because, even though, the resource is migratory, unlimited poaching could still have a negative impact on the future tuna population via recruitment failure in the EEZ and therefore affect the total future catch, (Industries Assistance Commission, 1984). This is so if the Republic wants to utilize the resource in the future either by direct or indirect participation.

3.2 Exclusion of foreign fleets with direct participation.

In order to participate directly on any significant scale in the exploitation and marketing of deep-swimming tuna, the Maldives would

require a great deal of capital,[5] technical know-how and marketing skill, all of which are generally in short supply, (Nichols, 1985 and Sathiendraskumar and Tisdell, 1986). Thus in the Republic of Maldives, as in many other island developing countries (IDCs), direct participation may entail costs which exceed benefits.

The commercial availability of the deep-swimming tuna in the Maldivian territorial waters occurs for a period of only two to six months per year, (World Bank, 1980). Thus not only would a Maldivian venture to exploit deep-swimming tuna be costly to the country, which has limited capital resources but would also result in idle capital resource for a period of six to ten months per year. Any resources used would have alternative uses and considerable opportunity costs.

3.3 Allowing foreign participation.

Exclusion carries with it an implicit opportunity cost, that is, forgone economic benefit such as the loss of potential income (rent) from foreign fishermen if allowed to fish in the EEZ. Other economic benefits that could accrue to the Maldives from foreign fishing in its EEZ include the income obtained from use of its port facilities and also information on fish stock. The latter is of particular importance in assessing the size of the stock and the economics of utilizing it.

There are two options available to the Maldives to allow foreign participation. One is for the Maldives to enter into joint-venture

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5 see Kearney, 1980 for a cost estimate in the purchase and operation of a 300-tonne long-line vessel and in purchasing and operating an average tuna purse-seine of 1100-tonne capacity.

agreement with a foreign company to harvest and market tuna on an agreed share basis. The only joint venture agreement the Maldives had in the past was with Japanese Corporations (Hoko Maldives and Nipon Corporations). Here the foreign partners were not involved in catching the tuna but participated in collecting, processing and marketing the tuna caught by the locals. This joint venture, however, did not bring many benefits to the Maldives and was eventually wound up, leaving the government somewhat reluctant to enter into other joint ventures.

The other option, is for the Maldives to allocate fishing rights to foreign companies and charging a fee for the use of the resource. There are various ways of charging fees. One possibility is for the Maldives to set prices for fishing rights of tuna (economic rent on the fishing) and then sell quotas to all those interested. But the Maldives does not have the capacity to assess this true price (resource rent) and therefore if the set price is too high it can lead to underutilized fish stock and if too low can lead to exploitation of the resource beyond the maximum sustainable yield level (MEY). The other possiblity is to auction fishing rights. Since there may be a few buyers for the exploitation rights of the deep-swimming tuna belonging to the Maldives, that is oligopsony prevails, Meade (1967) argues that sealed bidding is the more appropriate method of auctioning this right.

4. Marine Based Tourism and Domestic Tensions.

Maldivian tourism entered the international scene only in the

early 70s. By the late 1970s, international tourism had become an important source of income for the Maldives. The share of tourism in GDP in 1983 (at 1982 constant prices) was 14%, making tourism the third-largest sector as far as contribution to GDP is concerned. This share has been increasing.[6] An important contribution from tourism in the Maldives is in terms of foreign exchange earnings. The balance of payments account of the Maldives indicates that the foreign exchange from travel has been increasing continuously from US$ 7.8 million in 1979 to 18.1 million in 1983, (Ministry of Planning and Development, 1984). However, when one considers the net effect of tourism on foreign exchange[7] it is uncertain whether tourism would continue to rank as the number one foreign exchange earner for the Republic. However, a recent UN study (United Nations, 1982) indicates that net foreign exchange earning from inward tourism are usually positive, even when multinational corporations are involved.

Furthermore, as tours are organised as package tours, and as a Maldivian holiday is in isolation on a chosen resort island, the direct demand of tourist for services outside resorts is minimal and therefore the average expenditure on goods and services outside the resort is very small. A few non-resort linked enterprises have developed in the form of freelance boat taxis for tourists wishing to

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6 For example, the share of tourism to GDP at 1982 constant prices has increased from 10.5% in 1980, through 12.5% in 1981, 13.9% in 1982, to 14% in 1983.

7 That is when one takes into consideration the import content of tourism, such as food, beverage, etc., brought into cater for tourists, and when one considers the fact that the majority of tourist employees at a higher level are expatriates and that they will be remitting some of their pay abroad.

make an excursion independently from those organised by the resort. Top management jobs are held by foreigners. The local employment in the tourist industry was quite low. In 1985, it was reported that 2857 people (Department of Tourism, Male) or only 3.5% of work-force was employed in the tourist sector. (see Sathiendrakumar and Tisdell, 1985). Thus the trickle down effect on indigenous employment and development may be limited.

Europe is the major supplier of tourists to the Maldives, accounting to about 75% of arrivals, (see Sathiendrakumar and Tisdell, 1985). European tourists would normally be expected to leave Europe on a holiday outside the continent only during the winter season, in order to get away from the cold winter season in Europe. Seasonal fluctuations in tourist demand create considerable instability in employment. However, fluctuations in tourist demand can have positive side benefits in that it may raise the total revenue received from tourism (Tisdell, 1984b) compared to an evened out level of demand.

Tourist development in the Maldives is based on the principle of isolation of tourist from the bulk of the indigenous population and this seems to have worked. In contrast it has proven difficult or impossible for the Indonesian government to sustain an isolated tourist development policy on Bali, (Daroesman, 1977; Tisdell, 1984a). The geographical features of the Maldives (large number of small uninhabited islands) facilitates the pursuance of this type of tourist development. In the absence of this isolation, a cultural shock could have been expected from introducing tourists with different ideas, habits and needs from those in this Muslim country with old

traditions. Cultural shock can lead to the disintegration of social fabric in the country, leading to a political and economic disaster, (Sathiendrakumar and Tisdell, 1985).

4.1 Increasing Tourist Load.

It is widely believed that there is an adverse relationship between the extent of tourism in an area and the environmental quality, (Pigram, 1980; Tangi, 1977; Budowski, 1976). However, this relationship may only be present once the level of tourism exceeds some threshold quantity. Beyond this threshold the amount of tourism does have environmental consequences, (Sathiendrakumar and Tisdell, 1985).

Even though tourist load is a very difficult factor to estimate, let us consider some crude indicators of tourist load for the Maldives. These are not definitive measures but provide a framework in which to raise issues. These are: (1) Ratio of tourists to population, (11) Ratio of tourist to square km, (111) Ratio of bednights to population.

Over the years, the ratio of tourists to population has been increasing at a decreasing rate, except in 1983 where there was a slight decline as shown in Table 8 and Figure 2. Table 8 indicates that this ratio is high (48% in 1984). There is approximately one tourist per year for every two Maldivians.

INSERT TABLE 8

INSERT FIGURE 2

In the absence of total land area of inhabited islands, the total land area of 298 km is used in the estimation of tourists per square km and is shown in Table 8 and Figure 2. The Figure shows that this ratio has been increasing at a constant rate from 1980 to 1982, but thereafter showed a slight decline in 1983 with a small improvement in 1984.

The ratio of tourist bednights to total population gives a better indication of tourist load factor, than does the ratio of tourist arrivals to population. Table 8 and Figure 2 shows that even though the other two indicators declined in 1983, the ratio of bednights increaed even in 1983 but at a reduced rate of growth rate compared to previous years. In 1984, foreign tourism rose to almost 4.5 bednights per resident in the Maldives.

4.2 Environmental and Geographical Constraints for Tourism Development in the Maldives.

Pollution Problem: At present sea pollution has not been recognised by the government as a serious problem in the Maldives, but tourists do pollute the resort islands, though not on a large scale, by dumping empty drink cans into the surrounding sea. But the dumping of waste material by the tourist can assume greater proportions and become a serious threat to the marine environment of Maldives (Sathiendrakumar, 1983). Many tourists are attracted to the country mainly due to the scenic beauty of the resorts, the sunny climate, and marine activities (Sathiendrakumar and Tisdell, 1985). In the interest

of tourist development in Maldives, a certain amount of state intervention is necessary to control pollution.

Geographical Constraint: Maldives has a very limited land area. Even though about 900 islands are still uninhabited, they have a very limited area and not all are suitable for habitation or tourist development. Of the 53 resorts developed by 1984, only 10 resorts are outside Male atoll. Thus tourism at present is concentrated in the Male atoll which has probably reached a point of saturation with the maximum number of uninhabited islands developed into tourist resorts. The reason for the lack of tourism development in outer atolls is due to the distance from capital Male, and the airport, which acts as a constraint for resort opperators as well as the tourists in terms of time and cost of transport. But overcrowding in the resort islands could deter tourist arrivals in the future. This is more pronounced when tourism is seasonal as in the case of the Maldives. Furthermore, over crowding is especially important if the country depends on return of tourists for much of its continuing tourist trade. The restricted land area may prove a serious limit to any great expansion in the volume of the Maldivian tourist trade in the future.

5. Shipping Interests and Tensions.

Shipping is crucial to the Maldivian economy. Its merchandise exports were eqivalent to 40.5% of GDP in 1984, and merchandise imports including basic food and fuel, were equivalent to 80% of GDP in 1984. The country's remoteness and imbalance in freight tonnage of

exports and imports would place it at an extreme disadvantage if it had to depend on regular foreign shipping line operations. A national shipping line, Maldivian Shipping Limited (MSL), was established in 1967. The MSL handles about 95% of the Maldives imports, which however, accounts for only 5% to 10% of MSL's, total cargo (Ministry of Planning and Development, 1985b). The rest (90% to 95%) is accounted by the third country trade. This sector was adversely affected by the onset of world recession in 1981 which lead to a stagnation in world cargo trade and excess capacity in world shipping.

Even in the face of an overall depression, and with freight rates declining, the MSL sought and carried cargo on trade routes which were less affected by a slowdown of trade; for example, the Gulf area in the Middle East and South Asia (Ministry of Planning and Development, 1985b). But the trade in the Gulf area was reduced due to the outbreak of war in that region. For example the freight loaded and discharged by MSL ships at Iraqi ports dropped from about 72,000 freight tons (FT) in 1979 to 50,000 FT in 1980 (Government of Maldives, 1985b). Since shipping became more hazardous in the area, (one MSL ship was lost in the Gulf area in 1980 war between Iran and Iraq), operations have had to be halted completely resulting in the forgoing of considerable potential earnings.

In South Asia, lifting of third country trade from Colombo in Sri Lanka had become an important MSL operation representing 10% of total freight carried and 15% of total cargo earnings in 1980. But this operation has been severely curtailed by the institution of the UNCTAD (United Nations Conference on Trade and Development) '40:40:20

resolution'[8]. MSL's third country lifting from Colombo declined from approximately 91,700 FT in 1980 to 7,500 FT in 1983. The value of earnings during this period declined from US$ 7 million to US$ 0.5 million (Ministry of Planning and Development, 1985b).

6. Conclusion.

The Republic of Maldives shares many of the natural disadvantages of most island developing countries. That is it has a very small population, limited land size, a low level of economic opportunity and geographic isolation. Such island countries generally have a small revenue base, a limited range of manpower and skill as well as the disadvantage of small scale, all of which constitute an economic constraint on development. Despite this drawback, the country has managed to sustain itself and grow by exploiting sectors like fisheries, shipping and tourism.

As a result of Government policy encouraging motorization of tuna boats, tuna fishermen have been displaced and real incom of fishermen has fallen. The change in the sharing system that accompanied motorization caused income distribution in the fisheries sector in the Republic of Maldives to move in favour of the boat owners. Even though tourist development took place during this time the majority of the displaced fishermen, due to their low levels of education and due to the low wealth ranking of fishing households,

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8 This allocates 40% of the sea freight to ships owned by the exporting country; 40% to the ships owned by the importing country; and 20% to ships owned by a third country.

were not in a position to migrate to Male atoll in search of alternative employment in the tourist sector.

The development of the tourist sector in the Maldives has only had a small impact on local poverty and disguised unemployment especially in the fisheries sector. Nevertheless, it cannot be concluded that the Maldives has made an economic loss as a result of international tourism. A small positive contribution seems to have been made to employment and economic welfare in the Maldives by the tourist sector.

The impact of future likely crowding of tourist resorts on tourist demand in the Maldives needs serious consideration in formulating tourist development strategies (Fisher and Krutilla, 1972; McConnell and Sutinen, 1984). The possibility for expanding international tourism in the Maldives are limited by the restricted availability of suitable sites for tourist development. Once tourist 'full capacity' on the Maldives is reached (which may be soon) a policy designed to limit the quantity of tourism rather than expand its volume need to be considered. Expansion in Maldivian income from tourism will need to rely on greater payments by each tourist rather than on the further expansion of the volume of low-cost package tourist arrivals to the Maldives.

The presence of an effective national shipping line, MSL means that the country is not dependent on foreign line for its trade; the World Bank (1980) has suggested that this has provided some advantage for the Maldives. However, adverse external factors since 1980 have

seriously hit the MSL, which has reduced its fleet by one half (Ministry of Planning and Development, 1985b).

The Maldives is not exploiting the deep-sea tuna in its EEZ and some poaching of its resource by foreign vessels is occuring. The goal of coastal states such as the Maldives, with an extended jurisdiction of 200 nautical mile should be to maximize fishery resource rents over time (Christy, 1979). Since the Maldives finds it uneconomic to exploit this resource on its own due to constraints on capital, technical-knowhow and marketing, it is suggested that Maldives should either enter into a joint-venture scheme or auction fishing rights to foreign participants. At the present time, deep-sea tuna is the major unutilized fishery resource of the Maldives. Finally, marine policy in the Republic should be integrated with the national development plan.

Figure 1. Map of the Maldives

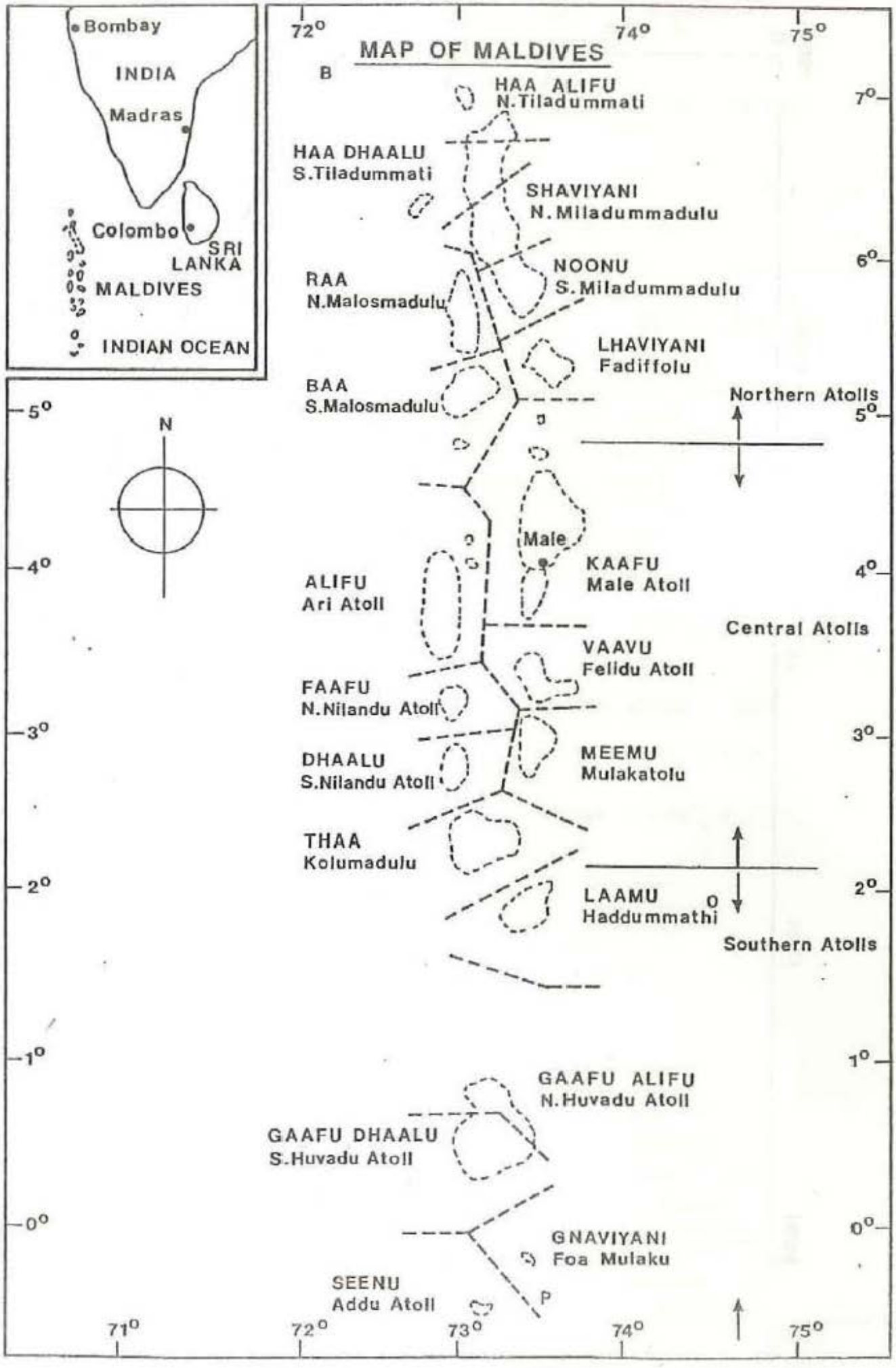

Figure 2. Measures of annual tourist load for the Maldives, 1980-1984 - tourists as a percentage of population, tourists per sq.km. and tourist bednights in relation to population.

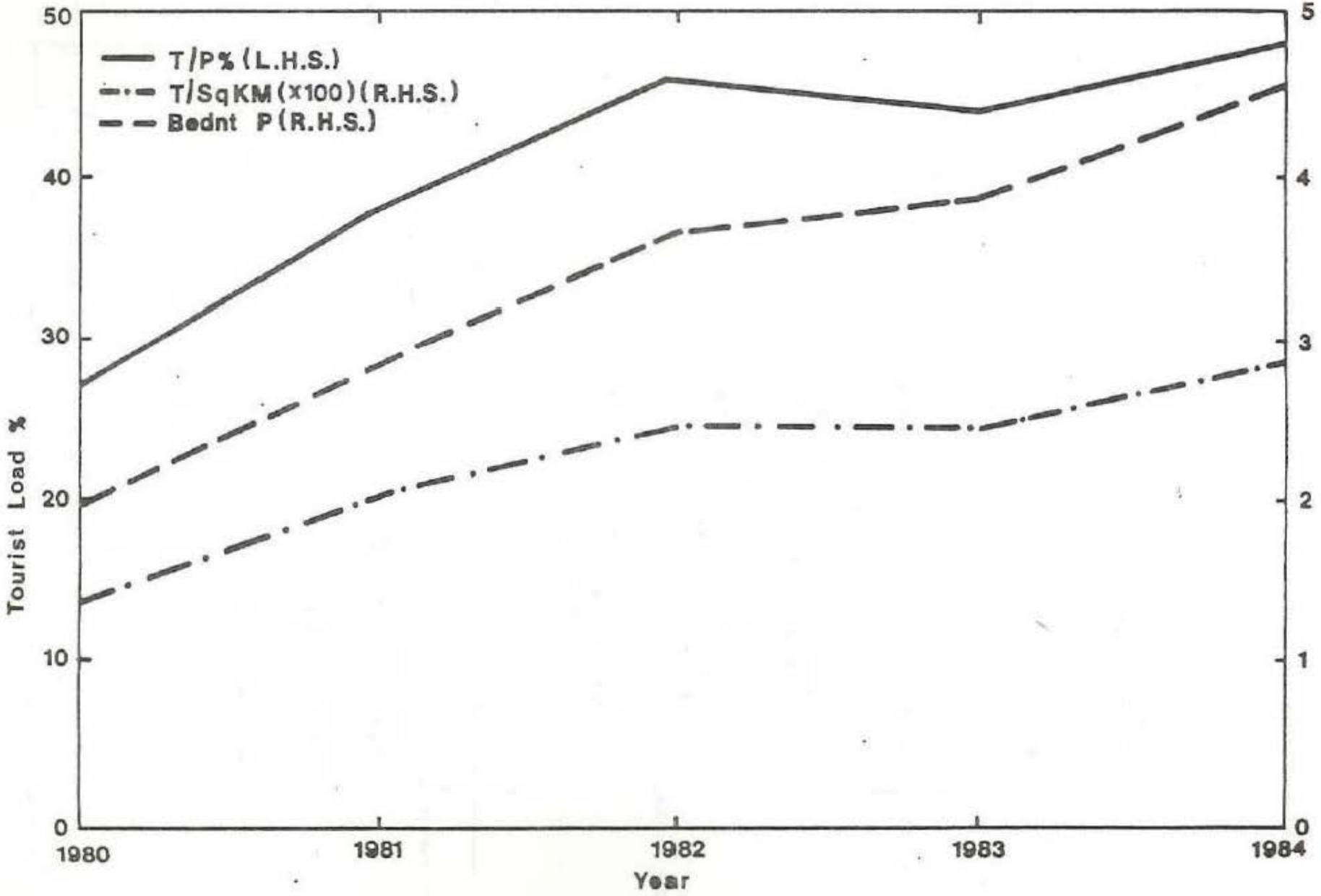

TABLE 1: SECTORAL EMPLOYMENT DATA FOR THE MALDIVES, (1977).

Sectors	Total employed No.	%	Employed Males No.	%	Employed females No.	%
Fisheries	27173	45.09	20509	54.85	6664	29.14
Manufacturing	13851	22.99	2927	7.83	10924	47.77
Agriculture	6347	10.53	2970	7.94	3377	14.77
Services	4823	8.00	3375	9.03	1448	6.33
Transport, storage and communication	3301	5.48	3208	8.58	93	0.41
Commerce	1890	3.14	1668	4.46	22	0.97
Construction	1885	3.13	1834	4.90	51	0.22
Tourism	411	0.68	385	1.03	26	0.11
Electricity and water	209	0.35	206	0.55	3	0.01
Unknown	369	0.61	309	0.83	60	0.26
Total*	60259	100.00	37391	100.00	22868	100.00

Note: % may not add up to 100 due to rounding.

Source: Based on Table 11-6 of Statistical Year Book of Maldives, 1984, p. 12.

TABLE 2: CATCH AND EFFORT DATA OF TUNA FISHING BY SAILING AND MECHANIZED POLE-AND-LINE BOATS FOR TWO PERIODS (1970 TO 1974 AND 1980 TO 1984) FOR THE REPUBLIC OF MALDIVES

	BEFORE MECHANIZATION (1970 to 1974)				AFTER MECHANIZATION (1980 to 1984)			
SAILING P&L BOATS	NORTH	CENT.	SOUTH	TOT.	NORTH	CENT.	SOUTH	TOT.
Av. No. of boats	887	556	617	2060	305	330	310	945
Av. No of fishing trips	88197	58172	41198	187567	3198	5984	1482	10664
Av. No of trips/boat	99	104	67	91	10	18	5	11
Av. catch of skipjack(mt)	10837	7051	4797	22685	122	164	192	478
Skipjack per trip (kg.)	123	121	116	121	38	27	129	45
Av. catch of yellowfin tuna (mt)	1643	926	215	2784	46	170	3	219
Yellow fin tuna /trip (kg.)	19	16	5	15	14	28	2	20
Av.catch of other tuna (mt)	3250	1104	159	4513	113	122	0	235
Other tuna/trip (kg.)	36	18	4	24	35	20	0	22
Total tuna/trip (kg.)	178	155	125	160	87	75	131	87
MECHANIZED P&L BOATS								
Av. No. of boats	0	0	0	0	412	452	229	1093
Av. No of trips	0	0	0	0	35749	41593	29578	106920
Av. No. of trips per boat	0	0	0	0	87	92	129	98
Av. catch of skipjack (mt)	0	0	0	0	7364	6256	7935	21555
Skipjack/trip (kg.)	0	0	0	0	206	150	268	201
Av. catch of yellowfin tuna(mt)	0	0	0	0	2416	1858	513	4787
Yellowfin tuna per trip (kg.)	0	0	0	0	67	44	17	45
Av. catch of other tuna (mt)	0	0	0	0	1266	1161	58	2485
Other tuna/trip (kg.)	0	0	0	0	35	28	2	23
Total tuna/trip (kg.)	0	0	0	0	308	222	287	269

Source: Based on Ministry of Fisheries, Fishery Statistics, (1970 to 1984) Maldives.

TABLE 3: TOTAL NUMBER OF POLE-AND-LINE BOATS AVAILABLE BEFORE AND AFTER MECHANIZATION, AND THE NUMBER USED IN FISHING AFTER MECHANIZATION, IN THE MALDIVES.

	NORTH	CENTER	SOUTH	TOTAL
Av. No. of P&L boats used before mechanization (1970 to 1974)	887	556	617	2060
Av. No. of P&L boats available after mechanization (1980 to 1984)	717	782	539	2038
Av. No. of P&L [1] boats used for fishing after mechanization (1980 to 1984)	444	509	251	1210
Percentage reduction in pole-and-line boats used for fishing after mechanization (1980 to 1984)	50%	8%	59%	41%

Note 1: This is obtained by adding the number of sailing pole-and-line boats used effectively fishing to the number of mechanized pole-and-line boats. The number of sailing pole-and-line boats effectively used for fishing is obtained by deviding the average number of fishing trips by sailing pole-and-line boats after mechanization (from Table 2) by the average number number of fishing trips per boat before mechanization (from Table 2).

Source: Based on Table 2.

TABLE 4: REVENUE AVAILABLE FOR SHARING BETWEEN BOAT OWNER AND CREW FOR AN AVERAGE SAILING POLE-AND-LINE BOAT (Based on data between 1970 - 1974) IN THE NORTHERN ATOLLS, CENTRAL ATOLLS, SOUTHERN ATOLLS, AND IN THE REPUBLIC OF MALDIVES.

	Northern Atolls	Central Atolls	Southern Atolls	Total
1) Average catch of skipjack tuna per boat per annum (mt).	12.217	12.681	7.774	11.012
2) Average catch of yellowfin tuna per boat per annum (mt).	1.852	1.665	0.348	1.351
3) Average catch of other tuna per boat per annum (mt).	3.666	1.985	0.258	2.191
4) Revenue available for sharing (Rf.). [(1+2)1500+(3)1100][1]	25134.00	23703.00	12467.00	20955.00
5) Boat owner's share. (1/3 of 4) (Rf.)	8378.00	7901.00	4156.00	6985.00
6) Crew's share. (2/3 of 4) (Rf.)	16756.00	15802.00	8311.00	13970.00
7) Average earning of a skipper or chummer or crew member cum caretaker per annum (Rf.).	2030.50	1910.60	1004.90	1692.90
8) Average earning of other crew member per annum (Rf.)	1523.30	1436.50	755.50	1270.00

Source: Based on Ministry of Fisheries, Fishery Statistics (1970 to 1974), Maldives.

Notes: 1. See Sathiendrakumar and Tisdell (forthcoming) for estimates of average price for skipjack tuna, yellowfin tuna and other tuna. Note that the current prices and not the prices prevailing before motorization is used.

TABLE 5: REVENUE AVAILABLE FOR SHARING BETWEEN BOAT OWNER AND CREW FOR AN AVERAGE MECHANIZED POLE-AND-LINE BOAT (Based on data between 1980 - 1984) IN THE NORTHERN ATOLLS, CENTRAL ATOLLS, SOUTHERN ATOLLS AND IN THE REPUBLIC OF MALDIVES.

	Northern Atolls	Central Atolls	Southern Atolls	Total
1) Average catch of skipjack tuna per boat per annum (mt).	17.874	13.841	34.650	19.721
2) Average catch of yellowfin tuna per boat per annum (mt).	5.864	4.111	2.240	4.380
3) Average catch of other tuna per boat per annum (mt).	3.073	2.569	0.253	2.273
4) Gross Revenue (Rf.) [(1+2)1500+(3)1100][1]	38987.00	29754.00	55613.00	38652.00
5) Cost of fuel.[2]	9048.00	9568.00	13416.00	10192.00
6) Revenue available for sharing. (4)-(5)	29939.00	20186.00	42197.00	28460.00
7) Boat owner's share. (1/2 of 6) (Rf.)	14969.50	10093.00	21098.50	14230.00
8) Crew's share. (1/2 of 6) (Rf.)	14969.50	10093.00	21098.50	14230.00
9) Average earning of a skipper or chummer or engine operator or crew member cum caretaker per annum (Rf.).	1871.20	1261.60	2637.30	1778.75
10) Average earning of other crew member per annum (Rf.)	1247.50	841.10	1758.20	1185.80
11) % change in income of skipper or chummer or crew member cum caretaker after motorization.	(7.85%)	(33.97%)	162.45%	5.08%
12) % change in real income of other crew members	(18.11%)	(41.45%)	119.49%	(6.63%)

Source: Based on Ministry of Fisheries, Fishery Statistics (1980 to 1984).

Notes: 1, See Sathiendrakumar and Tisdell (forthcoming) for estimation of average price for skipjack tuna, yellowfin tuna and other tuna. Note that the current prices are used for the purpose of comparison.

2, Fuel cost = Av. fuel cost per trip * Av. Number of trips per boat per annum.

Av. fuel cost per trip = 8 gal @ Rf. 13 = Rf. 104.

TABLE 6: RENT ACCRUING TO AN AVERAGE SAILING POLE-AND-LINE BOAT OWNER IN THE NORTHERN ATOLLS, CENTRAL ATOLLS, SOUTHERN ATOLLS AND IN THE REPUBLIC OF MALDIVES, WHEN 10% ACCOUNTING RATE OF INTEREST FOR CAPITAL IS USED.

	Northern Atolls	Central Atolls	Southern Atolls	Total
1) Gross Revenue in Rf. (Share accruing to boat owner)	8378.00	7901.00	4156.00	6985.00
2) Cost in Rf.				
(a) Capital Cost (at 10% ARI)[1] Boat	5619.00	5619.00	5619.00	5619.00
(b) Operating Cost Repairs and maintenance	2000.00	2000.00	2000.00	2000.00
(c) Total Cost	7619.00	7619.00	7619.00	7619.00
3) Rent in Rf. (1 - 2c)	759.00	282.00	(3463.00)	(634.00)

Source: Based on Table 4 and on cost data collected from the survey.

Notes: 1, Cost of boat is about Rf. 50940 and the life span is assumed to be 25 years.

TABLE 7: RENT ACCRUING TO AN AVERAGE MECHANIZED POLE-AND-LINE BOAT OWNER IN THE NORTHERN ATOLLS, CENTRAL ATOLLS, SOUTHERN ATOLLS AND IN THE REPUBLIC OF MALDIVES, WHEN 10% ACCOUNTING RATE OF INTEREST FOR CAPITAL IS USED.

	Northern Atolls	Central Atolls	Southern Atolls	Total
1) Gross Revenue in Rf. (Share accruing to boat owner)	14969.00	10093.00	21098.00	14230.00
2) Cost in Rf.				
(a) Capital Cost (at 10% ARI)[1]				
Boat	5619.00	5619.00	5619.00	5619.00
Engine	4720.00	4720.00	4720.00	4720.00
(b) Operating Cost Repairs and maintenance	2730.00	2730.00	2730.00	2730.00
(c) Total Cost	13069.00	13069.00	13069.00	13069.00
3) Rent in Rf. (1 - 2c)	1900.00	(2976.00)	8029.00	1161.00

Source: Based on Table 5 and on cost data collected from the survey.

Notes: 1, Capital cost of hull is about Rf. 50940 and life span is assumed to be 25 years. Capital cost of engine is about Rf. 20750 and the life span is assumed to be 10 years.

TABLE 8: DATA ON TOURIST LOAD FROM 1979 TO 1984.

Year	Population	Tourist arrivals	Bednights	Ratio: tourists to pop.	Tourists per sq.km	Ratio: bednights to pop.
1979	148800	33124	---	0.22	---	---
1980	153000	42007	298740	0.27	141	1.9525
1981	157800	60358	445493	0.38	202	2.8231
1982	162800	74411	593258	0.46	250	3.6441
1983	167900	74163	647348	0.44	249	3.8555
1984	173200	83814	791846	0.48	282	4.5719

Source: Based on Table 11-23 and Table VIII-4 of the Statistical Year Book of Maldives, 1984, pp. 31, 93 and 98. 1983 and 1984 figures obtained from the Department of Tourism, Male.

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