



TOURISM DEVELOPMENT PLAN REPUBLIC OF MALDIVES

FINAL REPORT - MAY 1983

VOL.1

KUWAIT FUND FOR ARAB ECONOMIC DEVELOPMENT

**TOURISM DEVELOPMENT PLAN
REPUBLIC OF MALDIVES**

FINAL REPORT - MAY 1983

VOL. 1

SELECTED PROJECTS

worked out by:

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INTRODUCTION

In November 1980 Dangroup was commissioned by the Department of Tourism and Foreign Investments (DTFI) to carry out the consulting work for a feasibility study and project preparation for the tourism sector of the Republic of Maldives.

The first stage of the project consisted of a Master Plan Report termed "Interim Report" which was submitted in June 1981.

In January 1982 DTFI selected six projects for detailed study. These studies were presented together with a revised Master Plan in July 1982 in a "Draft Final Report".

The draft report was discussed with the Government in January 1983. Comments given during these discussions have been incorporated in the present final report. The final report consists of two volumes. Volume I covers the general master plan issues and Volume II deals with the six detailed studies.

In January 1983 the Maldivian Government decided to develop the Alif Atoll as part of a crash tourism development programme. This decision was taken at a stage when it was no longer possible for the Consultants to incorporate details of the development of Alif Atoll in the Master Plan. The Atoll was, however, considered in the initial phases of the master plan work and the Atoll was visited a number of times. On the basis of these preliminary investigations some related planning issues are included in the present report.

SUMMARY

The Maldivé Islands are a young destination in tourism. International tourism only started 10 years ago and the development only speeded up 5 years ago.

The islands are furnished with unique natural resources for tourism development for which the international demand is high. From the market point of view it is considered possible to increase the number of tourist arrivals from the present number (1982) of 60,000 to reach more than 200,000 by the start of the 1990s.

However, manpower and financial resources are scarce. This fact combined with the vulnerability of the local society to changes in the physical and cultural environment makes careful planning of tourism development a necessity.

The Master Plan (Vol. I) is divided into two parts. Part I, "Overall Features of the Plan", covers the planning criteria, the selection process for new development zones and the key issues of the suggested future development. Part I thus covers all main planning outlines and results.

Part II, "Planning Framework", covers the basic background material, surveys and concepts for the planning work as well as the expected major economic, social, cultural and physical implications of the suggested development. Some of these basic planning concepts are further detailed and described in the six selected projects presented in Volume II of the Master Plan.

The Master Plan is flexible with regard to timing of the proposed development; in principle it extends to 1990, but as the plan covers the development of the tourism sector into its final stage (defined as a maximum of 10,000 to 12,000 beds within the archipelago) the planning would probably remain valid until year 2000.

The basic idea of the Master Plan is to develop new and separate tourist centres in parts of the country where economic growth poles are needed. These centres should at the same time be selected according to their tourism potential.

Another planning concept could be to develop atolls located close to Male airport viz. Alif Atoll. By this planning concept the infrastructural investments would be kept down and the creation of new facilities could take place without much delay. The closest atolls, however, have a limited number of suitable islands and the growth pole concept would not be valid here.

After a process of thorough analysis and surveys several tourism development zones have been evaluated. The results of this evaluation are given in Chapter 4 of Part I. In principle the report points to three separate tourism zones each with a bed capacity of 3 to 4,000, giving a total of 10 to 12,000 beds. The way in which the development of tourism at Alif Atoll can be incorporated in the above development concept will depend on the final detailed planning of the development of this atoll.

The planning concept points to a need for integrating the future development within the local socio-economic system and a high degree of local participation is aimed for. The preliminary concepts in this respect are further elaborated upon in Vol. II, project No. 3, An Exhibition Centre, project No. 4, Maldivian Handicraft, and project No. 6, Fruit and Vegetable Gardening for Resort Consumption. The economic linkages from the tourism sector are thus proposed to be harnessed as much as possible for local economic development.

The availability of local manpower and other resources is therefore considered to be a crucial planning parameter. It is considered advisable for resort staff to live close to their families to make normal family life possible.

The suggested tourism development plan is integrated and comprehensive in its approach. Product development, marketing and physical characteristics of the suggested development are designed to maximise local participation and integration with the Maldivian socio-economic and environmental system.

As Maldivian tourism is based on natural resources the protection of the environment is also considered to be a key issue. This planning point is further elaborated on in Vol. II, project No. 5, Protection of Environment and Wildlife Conservation.

The present level of tourism to the Male Tourism Zone is constrained by severe physical restrictions on the development of new resorts. A fast development of new tourism areas is therefore necessary if the past trend in the growth in tourism is to be maintained. The development of Alif Atoll will probably solve the immediate capacity problems, but the physical capacity at Alif is probably not sufficient for a long-term solution.

A rapid development of new tourism areas will only be possible through organizational strengthening of DTFI and will require the availability of further resources for DTFI. Also the creation of financial institutions and a more elaborate legal framework for foreign investments are required.

A key issue for future new tourism areas has been identified as the tourist service centre. This centre is essential as an attraction in itself but is also required for efficient management and control of the development. The centre concept is further elaborated upon in Vol. II, Lay-out and Disposition Plan for a Tourist Service Centre.

As assessed in part II.9 of the Vol. I report the outlined tourism development will have vital implications for the future national income of the Republic of Maldives; it will be a key source of foreign currency and will be of importance in offering new jobs for the future labour force. It is estimated that the total employment generation

effect will be 1 employee per resort bed, when direct and indirect employment is considered, corresponding to 10-12,000 employees with full development. The income calculations undertaken show a local direct income effect in 1980 prices of US\$ 22.2 per bednight, corresponding to US\$ 44.4 mill. on the basis of 200,000 tourists staying 10 nights on average. The Government revenue is calculated to be at least US\$ 5 in 1980 prices per tourist night or US\$ 10 mill. with 2 mill. tourist nights.

PART I

**OVERALL FEATURES
OF THE PLAN**

1. ALTERNATIVE DEVELOPMENT STRATEGIES

The spatial distribution of the tourism development is a decisive factor for the use of the tourism potential as an instrument for socio-economic development of the Maldives. In the following, three general spatial distribution models are described. Within each model several variants can be formed, but the overall choice of model will be between those three main types.

Present Tourism Development

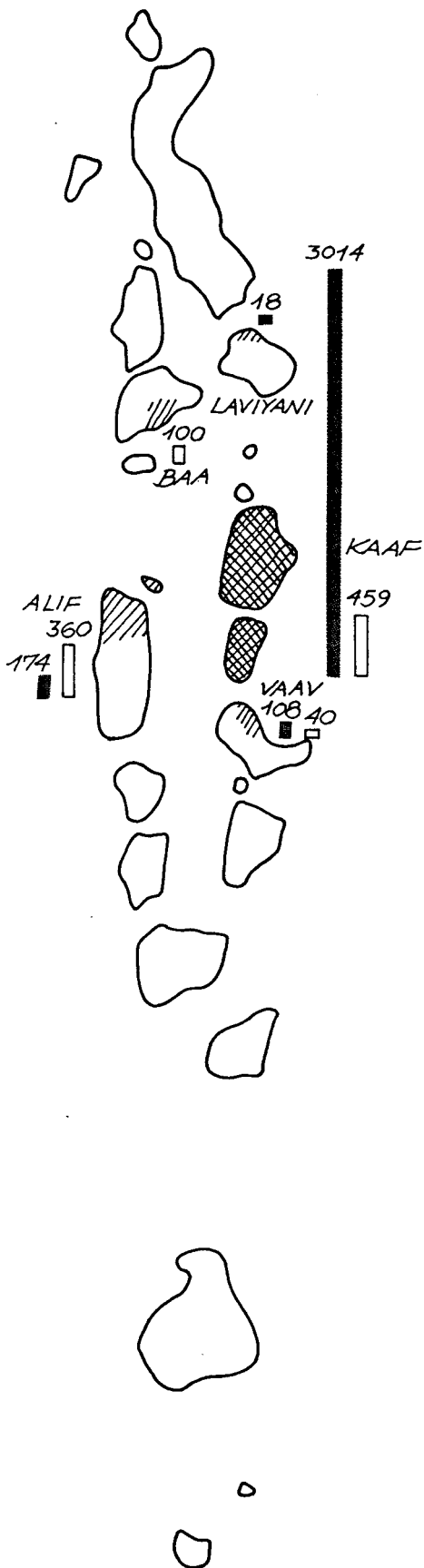
By March 1982 there were 38 resorts with 3,314 beds. To this should be added 113 beds at 4 hotels in Male¹⁾. More than 90% of all present resort beds are located in the Kaaf Atoll (Male North and South) as only 300 beds are located in other atolls (see the map). The development in the Kaaf Atoll has reached a physical limit, where resorts are constructed or are under construction on all suitable, and some less suitable, islands; therefore future new resorts will mainly have to be built in atolls outside Kaaf.

The "Laissez Faire" Model



This model is defined as the case where the Government lets the past development continue with no or limited restrictions as concerns the physical development pattern.

The present situation is characterized by the fact that the Male Atoll has reached an exhaustion point with a maximum number of islands developed into resorts. Even very small islands like Girawaru and Hudhuveli and islands without palm trees like Medhufinolhu and Cocoa Island (Makunufushi) have been developed into resort islands. At the same time the number of beds on some islands has surpassed

1) Excluding beds in small private guesthouses in Male and on other inhabited islands.



 FULLY DEVELOPED
 DEVELOPMENT STARTED

 NUMBER OF BEDS - EXISTING RESORTS
 " " UNDER CONSTRUCTION

MALDIVE ISLANDS : RESORTS (MARCH 1982)

the recommendable limit. The 260 beds at Meerufenfushi, an island with a limited tourism potential, is an example of this. Staff for the resorts are recruited from the outer atolls, and the agricultural supplies within the region cannot meet the demand.

Future tourism development under these circumstances can only take place by:

- increasing the number of beds in existing resorts,
- development of a substantial number of tourist beds on inhabited islands in the Male Atoll, or
- through development of resorts in nearby atolls like Alif, Baa, Raa, Lhaviyani and Vaav.

All three types of development are observed. Many of the existing resorts are undertaking constructions of additional rooms. New resorts have been planned in the nearby atolls, and guest houses are built on the inhabited islands. By the Government acceptance of the zoning of the future tourism development presented in the Interim Report, DTFI stopped the approval of further resorts outside Kaaf. However, a number of new resorts had at the time already been approved, and DTFI is constantly under pressure for allowing new projects.

Some of the existing resorts can with advantage be furnished with a few more rooms, but the physical capacity of most of the islands is limited. Furthermore, according to the tourist questionnaire surveys undertaken previously, the tourists strongly prefer relatively small units in order to get the right island-holiday atmosphere. The possibilities of increasing the bed capacity of existing resorts are therefore limited and the pressure will concentrate on the two other types of development.

A substantial increase in the number of guest houses on inhabited islands will make control of the cultural and social effects of tourism

very difficult, and social friction similar to what is found at other tourist destinations is likely to occur; problems which the Maldives up to now have been able to avoid. Furthermore, guest houses generally attract low-budget travellers which only give limited economic benefits to the country.

Development of resorts in nearby atolls is the logical next step, however, such a development is highly constrained by the long distance to transport tourists as well as supplies. The present pattern, as illustrated on the map, points to a widespread development of fairly small units in several atolls. Such a development in atolls centered around Male will make control of the impact of tourism difficult and will make efficient and economical solutions of the transportation problem difficult. Transportation safety will furthermore create a serious constraint. An efficient solution by private investors will demand heavy investments in infrastructure and will therefore necessitate the building of a large project at one spot in order to cover the investments. However, big separate projects with for instance 1,000 beds do not fit into the tourism pattern of the Maldives and are likely to create a number of bottlenecks. Buildings will have to be at least two to three storeys. The beaches will be overcrowded. Staffing and management will be extremely difficult. The management will have to come from outside, as no Maldivian expertise is found within this field. Transportation of tourists and supplies will cause serious constraints, and because of the concentration heavy pollution will occur. Neither from a physical, nor from an economic or a management point of view is a 1,000 beds resort the same as 10 times 100 beds resorts. Such a resort will therefore have negative effects on the Maldivian image as a tourist destination and will at the same time only be possible through heavy involvement of foreign expertise and investments. As a consequence the benefits to the Maldivian economy will be much less per bed compared with the existing resort types.

The agricultural potential in atolls close to Male is less than the potential in the atolls further north and south. Development of tourism in the central region will therefore result in a further dependence on imported agricultural produce.

A final feature of this development pattern will be a further growth of Male as a centre for economic development and population concentration, with very little growth elsewhere.

A Planned Development with Male as Centre

The present unstructured development of resorts in Ari, Baa, Vaav and Lhaviyani atolls could form the basis for a development strategy consisting of Male as a centre and selected satellite centres in the above-mentioned atolls. The cost of transportation could in this case be minimized by concentrating the development on a limited number of satellite centres. It will, however, probably be difficult to restrict the development to certain areas and it is likely that the development will be spread in most of the atolls in question. The strategy will therefore be difficult to administer, infrastructure costs will be high, the pressure on Male will be intensified, and the resorts in the satellite centres are likely to be of a secondary class compared to the more centrally located facilities in Male Atoll.

A Model of New Separate Tourist Centres

A third alternative would be to select new areas suitable for the development of self-contained tourist centres. Each centre would have a complete internal transportation and communication system, central facilities for storage of supplies, central services, and tourist information. Transportation between the centre and the resorts will also have to be centrally organized.

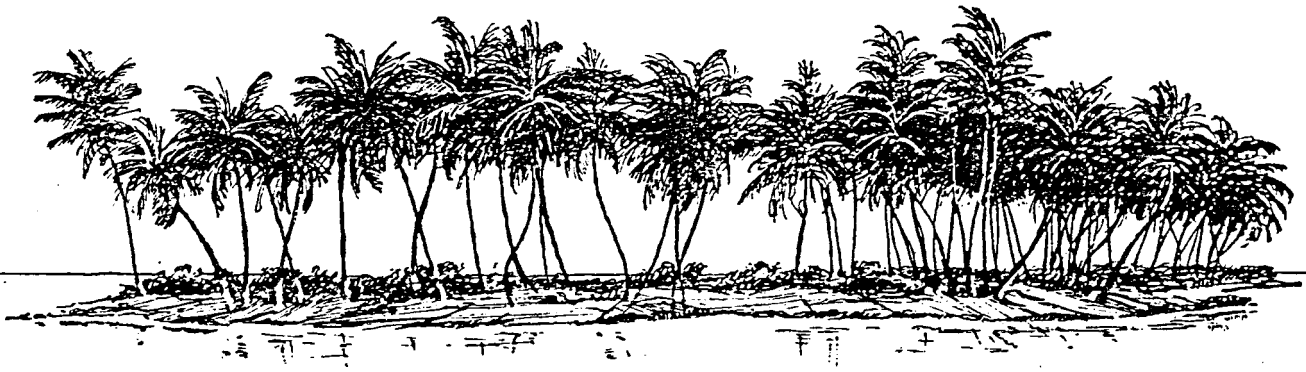
Such a centre would in many ways function like Male Tourist Centre, but would have several advantages due to improved planning and col-

laboration between resorts. The number of beds in a given resort will be restricted, and no single resort will be dominating. As the centre should fit into the local economic and social system, it should be selected in accordance with overall planning guidelines. The development of such new centres will therefore require a comprehensive and integrated plan and will involve close Government participation and control.

The strategy of selected and comprehensively planned tourist centres involves that tourism development outside the selected areas is in principle not allowed and that all future development shall be confined to the tourist zones. As a consequence, the growth of Male Tourist Centre should be limited to the Kaaf Atoll.

The strategy involves major start investments, but in the long run the overall benefit-cost ratio will be much higher than for any of the other alternatives. Therefore, when the above three tourism development models are compared, it is evident that the last model to a much higher degree fulfils the requirements for an optimal tourism development than the "Laissez-Faire" and the Male Centre strategies. However, while the two last mentioned strategies can be seen as a logical continuation of the past trends, the new tourist centre strategy requires a change in the overall structure of the tourism sector. Although such a change will need a great deal of planning effort and although intensive investments will be needed in the starting phase, the centre strategy will in the long run result in the highest socio-economic rate of return. On the other hand, if this strategy is not carried out and the tourism development pressure is intensified, a number of unwanted uncontrollable socio-economic and cultural costs will be the result.





2. PLANNING CRITERIA FOR THE FUTURE TOURISM DEVELOPMENT

The international demand for a tropical island resort holiday is high. Most of the Maldivian islands offer possibilities for a tourism development of the type demanded by the tourists. Therefore, the background situation opens up for a widespread tourism development of the Maldives. Experience from other developing countries shows that a massive and uncontrolled tourism development in small societies can lead to a biased economic system, where a limited number of people will receive a financial benefit while the major part of the population will be financially worse off. Furthermore, a strong tourism development is likely to cause social and cultural friction between population groups and between the tourists and the local population. It is thus realized that the negative sides of tourism development in many cases have been underestimated, and a strong tourism development of small societies will have to be under tight control if the development shall be of general benefit to the country.

In the Maldives tourism development has up to now not been specifically planned, but has taken place according to individual initiative. In order to control the development and to create an optimum use of the natural resources a structural plan with general guidelines for the future tourism development is required. The establishment of such a master plan for tourism should be based on selection of an overall development strategy. This overall strategy has already been pointed at in Chapter 1.

The international demand for travelling is expected to double before year 2000 and the potential demand for a holiday in the Maldives is of such a size that the market will not be a restrictive factor. The general pattern depends, of course, on basic assumptions concerning the stability of the world economy and particularly the development of fuel prices. Therefore the demand for travelling to the Maldives

will only be reduced if unexpected and abnormal changes should take place. Tourism to the Maldives could therefore be planned under the assumption of a long-term stable growth. The stability of the future tourism is to a major degree dependent on the controlling capability of the Maldivian Government.

A development plan for the Maldivian tourism therefore will have to focus on the following major planning criteria:

- development of products of a high tourism demand (product development),
- development of a tourism which is physically acceptable to the Maldives optimizing the natural resources,
- development of tourism which will be Maldivian controlled and which will utilize local resources. It is a specific criterion to optimize the overall economic benefit and to have the benefit distributed to the society in general,
- social and cultural conflicts and negative effects shall be avoided or at least kept at a minimum.

The above planning criteria can thus be divided into three categories: physical, economic and social/cultural.

2.1 Physical Aspects

The physical planning aspects are generally the starting point for a tourism development. Without fulfilling these planning criteria, a development cannot take place. In the case of the Maldives the following basic criteria for development of a new tourism area will have to be applied to.

First of all, an area centre has to be selected. The centre island shall basically meet the following requirements:

- it should be of a sufficient size for the location of an airstrip¹⁾ and all other facilities required for a tourism centre (see Project 1 in Vol. II),
- a number of islands suitable for tourism development shall be located closeby, viz. within one hour's sailing distance,
- natural anchorage facilities shall be found closeby,
- the centre island shall be uninhabited without being an agricultural island of crucial local importance. On the other hand it is an advantage for manpower reasons that one or more inhabited islands are found nearby.

Secondly, a sufficient number of suitable islands located within a reasonable distance from the area centre is needed. "A sufficient number of islands" can be defined within a wide range, but in order to have a well functioning centre with various forms of services and with basic infrastructure a minimum number of resorts will be necessary. On the other hand, the Maldivian socio-economic system can hardly absorb very big centres. A realistic assumption for new tourist centres would therefore be a final size of 3,000 to 3,500 beds corresponding to the level of a fully expanded Male Tourist Centre. With an average size of resorts of about 100 beds the above number of beds means that about 30-35 islands suitable for development have to be found. The maximum distance for the location of resort islands from the centre is defined to be between 20 and 30 nautical miles corresponding to a maximum of 3 to 4 hours' travel by a standard Maldivian diesel boat. The majority of resorts should, however, be located within 20 nautical miles' distance from the centre.

Thirdly, suitable islands should be uninhabited islands with a sandy beach, clear water and live corals²⁾. The island vegetation should include at least some coconut palm trees. Islands with stony beaches

1) The runway should preferably be in the direction north east/south west.

2) In Chapter 3 there is a description of the physical characteristics of the main types of islands.

or where the lagoon bottom is covered with eel grass can be acceptable if these features only cover part of the available beach area.

Several other physical aspects like fresh water on the islands, varied vegetation and good seaward approaches are important but not decisive factors.

Finally it is preferable that the number of islands found within the 3 to 4 hours' travelling distance is much higher than the above-mentioned 30-35 islands. Within the tourism zone there should be space enough for inhabited islands, agricultural islands (supply to inhabited islands and tourist islands), uninhabited islands (visiting points for the local population and tourists) and a number of islands for natural protection. Only by having a sufficient number of islands is it possible to preserve the Maldivian way of life and to preserve the image of natural beauty - the main point in the sale of tourism to the Maldives. It is thus not recommendable that all islands within the tourist zone are either inhabited or used for tourist resorts as presently found in the Male Atoll.

The above leads to the need for a zoning plan within the tourism zone indicating the use of each island within the zone and restricting the use to specific purposes.

2.2 Economic Aspects

One of the Maldivian Government's development priorities is to spread economic and social development from the capital region to the outer atolls. Income disparities shall be reduced, the population pressure on Male be released, and social services be made available to all citizens in the country. The creation of new tourism development centres in depressed areas is an important regional development tool, as such centres will form the basis for increased economic activities and development of social services in the areas selected.

Income from tourist taxes, import duties and tourist island rentals is becoming more and more important as a source of Government revenue. Tourism has been the major economic growth sector since 1975, and has overtaken fisheries as the most important foreign exchange earner. The future tourism industry must be offered such conditions that the industry is viable with adequate profits obtainable by investors in order to create the needed initiatives, but the Maldivian Government will have to obtain a reasonable share of the income derived and at the same time see to it that abnormally high private profits cannot be obtained.

In the selection of atolls for tourism development due consideration shall be given to the input needed for the tourism sector.

The tourism sector should thus be integrated as much as possible into the local economic system, as the availability of potential local/regional resources for supply of agricultural products, fish and handicraft is of major importance. The socio-economic advantage of the tourism development and the overall benefit is dependent upon the local response and utilization of the economic possibilities opened up by the tourism sector.

The resource background also concerns the availability of manpower. A development of a tourist centre will in the final stage require about 4,000 individuals employed directly or indirectly in the tourism sector. It is highly preferable that a major part of this employment gets a local or regional character and that it gets a more balanced distribution on men and women. In the long run it is not an advantage to the employees or to the tourism sector that the manpower is attracted far from the tourist centre. Staff should be able to live a relatively normal family life and preferably they should therefore be attracted from nearby inhabited islands or from close-by atolls.

It is therefore of importance that the areas chosen for tourism development have an excess of manpower and that the main manpower supply is available within a reasonable distance, preferably measurable only in hours travelling by boat.

Also atolls that already have a developed tradition for more complex art-handicrafts (like fine-mats, lacquerwork and utensils from the leaf-stem of the coconut palm) should be chosen to secure the least transport distance between producer and buyer.

Lastly, areas with a large unused agricultural potential in wet and dry lands should be chosen so that development in agriculture to supply the tourist resorts will not lead to competition over limited arable land.

2.3 Social/Cultural Aspects

The best possible way of keeping friction between the tourist sector and the local communities at the lowest level possible is by abiding by the rule that tourism should only be allowed on uninhabited islands, and that tourist visits to inhabited islands should be kept at an absolute minimum. As a consequence a tourism centre island, where frequent tourist visits are expected, should not be located on an inhabited island.

Largely, the effects of tourists over-, or more likely, under-dressing and other behavioural aspects conflicting with Maldivian norms can be lessened by producing better, more exact and comprehensible information for tourists on Maldivian habits, norms for good conduct and general way of life. This can be effected both by publications and brochures for tourists and by special background papers prepared specifically for tour leaders.

The effect of tourism on the traditional handicraft production is another aspect which must be taken into consideration in order to avoid the development of a tourism pseudo-culture. The control of social and cultural effects is facilitated when the development of tourism is confined to special tourist zones keeping the development away from particularly vulnerable areas and keeping the tourist demonstration effect within certain well-defined physical areas. The zoning of the development, the restriction of the effect to certain areas, and cultural protection measures are therefore important planning principles.

2.4 Tourism and the Fisheries Sector

Fishing provides the main livelihood for the vast majority of the island population outside Male. As the Maldivian population by December 1977 was only approximately 143,000¹⁾ the total manpower available in the Maldives is limited. However, as the population is growing with about 3%, approximately 4,200 per year, new employment possibilities will have to be developed. Fisheries and tourism are the two sectors which also in the future will be the major employment sources.

A development of tourism in an atoll will require transportation facilities. In the Male tourism zone it has thus been experienced that fishing boats have been used for transportation of tourists. As described above, the tourism industry will need manpower corresponding to about 4,000 employees directly and indirectly in a tourism centre with 3,000 beds. At the same time it is reported that the fishing industry has problems in getting sufficient boat crews.

The long-term Government policy for the fishery sector is gradually to reduce the dependence upon foreign companies for fish collection

1) As per Population and Housing Census 1977, NPA 1981.

and marketing. The fishing sector is in the middle of a structural transformation from the former production and export of dried, salted and smoked tuna to the present collection of fresh fish for freezing and export by foreign companies. The increased reliance on the export of fresh fish has required investments in a mechanization of the Maldivian fishing fleet. The Government, assisted by international organizations, has thus invested in fishing development projects consisting of mechanizing of dhonis and mobile collector vessels.

The above-mentioned structural change has resulted in a reduction of the demand for landbased female labour and in longer trips away from home for fishermen, while at the same time rising fuel costs and low prices for the fish have resulted in a worsening economic situation for the fishing industry and for the fishermen. Recent trends, with oversupplies of the world market for tuna and extremely low prices, have resulted in a very difficult situation for the fishing industry. Presently the industry is thus in a difficult situation, and as the Maldivians are very flexible, any new employment possibility with a better income will result in a shift of resources.

A further development of tourism is therefore looked at as a possible threat to the fishing industry as the tourism sector is paying higher salaries for less physically demanding work. This threat has particularly been felt in the case where the tourism development would take place in atolls selected for the development of fisheries. The Ministry of Fisheries has therefore opposed the tourism development in such areas. To this the following should be mentioned.

A development of tourism will need some manpower although the sector is not heavily labour intensive. It also needs a considerable number of islands for resorts and production of agricultural inputs. Because the tourism sector does give very attractive employment possibilities the manpower will be attracted, and if the industry is located in an area with a small population the manpower will be attracted from outside this area. Wherever the tourism sector is located, resources will thus move to that area.

As the tourists as well as the employees consume a considerable amount of fish, the tourism development should take place in an area with an oversupply of fish for local consumption. If this is not the case, the tourism industry will buy up the available fish, thereby causing scarcity for the population in the area.

It is preferable that the tourism development takes place in areas where no major fishery projects are planned, but just in order to avoid a potential conflict the above-mentioned planning criteria for the tourism development should not be ignored. If from a tourism industry point of view an area with a fishing project is much preferable, it should be borne in mind that:

- some of the potential conflicts can be avoided by control measurements like special licence for boats sailing with tourists (e.g. painted a special colour),
- fish sold to the tourists is as good as export,
- the manpower need of the tourism sector is limited,
- tourism will give employment possibilities for female labour and other members of the fishermen's families and thereby keep up the family income in case the income from fishing is failing.



3. SELECTION OF POSSIBLE TOURISM DEVELOPMENT ZONES

The Republic of Maldives covers an area of 107,500 square km consisting of the ocean and about 1,200 small coral islands of which 201 are inhabited (classified as 202 administrative units). The country is divided into 19 regional administrative units - atolls.

The atolls form a north-south orientated chain of islands with about 860 km from the far north to the far south point. The atolls are separated by open channels which at times can cause problems for the sea transportation. The biggest channel, the so-called one and a half degree channel, cuts off the four most southernly located administrative atolls from the remaining country. This channel has always been a dividing point between the Maldivian north and south and an obstacle to the communication during the monsoon season.

In Chapter 2 a list of major planning criteria for the development of new tourism areas was set up. These criteria are used in the following evaluation of possible areas for future development.

3.1 Tourism Attractions

Many of the coral islands are found to be suitable for tourism development seen from a physical point of view. The Consultants have therefore in a general survey tried to identify the most suitable areas for comprehensive tourism development under the general assumption that all tourism developments in the future shall be confined to the tourism zones selected.

The basic criteria for developing viable tourist resorts would be the availability of long beaches of coral sand, live coral reefs and channels for both snorkeling and more advanced diving. A good number of lagoon-islands (islands inside lagoon, away from outer reef) are

necessary. Such islands usually have a circular shape with sandy beaches all the way around, good reefs, and therefore fairly calm water, and are eminently suited for resorts. Reef-edge islands often only have limited beach areas, and sometimes silt-bottoms in the lagoon instead of sand. However, channels at reef-edge islands are generally the very best places for diving purposes, although there are often dangerous currents (the strong water movement is the cause of the high coral and fish life). Various types of islands are photographically illustrated on the following pages.

Furthermore, there should be a good number of larger islands with palm and tree vegetation and sufficient amounts of fresh water to provide for shower and washing facilities. The area should contain numerous uninhabited islands that should be kept in their natural/cultivated state to preserve the total area as a nature-lovers' paradise.

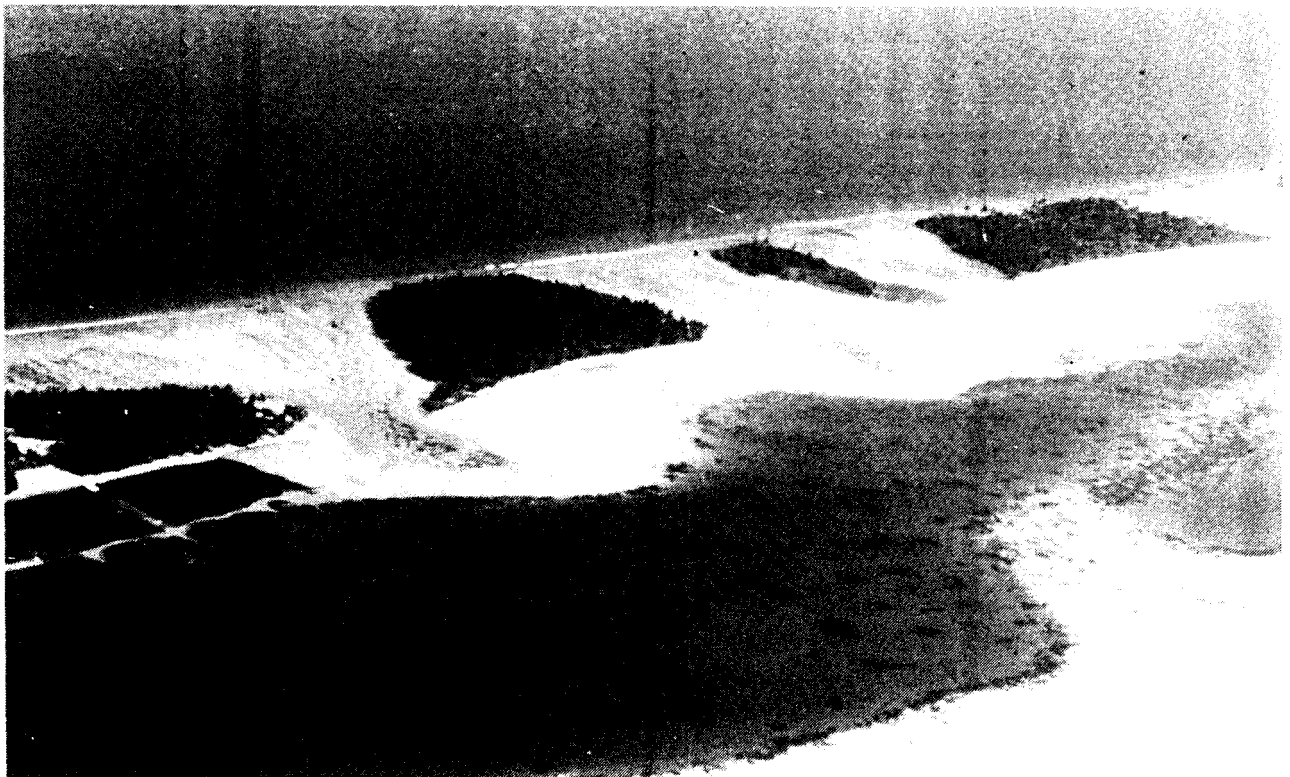
The chosen area should be well protected from the ocean by fringing-reefs, and distances over open ocean channels within the area should not be greater than the distance between the north and south Male atolls. Only out of extreme necessity should areas containing larger channels or atolls with inadequate reef protection be used, because of the problems and costs involved in supplying adequate and safe transportation.

There should be good possibilities for sports fishing (lagoon and ocean) and water sports activities like water skiing and wind surfing.

The area should contain a number of inhabited islands, the populations of which are specialized in certain traditional art handicrafts of importance to the tourist industry (i.e. fine-mat weaving, lacquerwork, cotton weaving, gold or silver work, braided utensils from coconut leaf stem etc.).



*ILLUSTRATION 1 :
A PERFECT LAGOON ISLAND KUDA BANDOS , MALE ATOLL .*



*ILLUSTRATION 2 :
A CHAIN OF REEF-EDGE ISLANDS
- THE BEACH AT THE REEF SIDE IS STONY
- THE BEACH AT THE LAGOON SIDE IS SILTY AND THE WATER IS LOW
- NO SPECIFIC CORAL REEF*

Safe anchorages are a necessity throughout the year for the transportation of guests, staff and goods. Such anchorages are found in all atolls of touristic interest except Gnaviyani.

Finally, when possible, the area should contain monuments of interest to tourists. In this respect only large monuments from the Buddhist period will be suggested as the development of mosques and more recent national monuments for tourism purposes would interfere with local culture and religious sentiments.

An overall evaluation of the Maldivian atolls for tourism development is given in Table 1.

Beaches, reefs and diving areas are found in almost all atolls, only missing in the two southernmost, Njaviyani (Fua Mulaku) and Seen (Addu).

Large monuments are scarce in the Maldives and only Male town with its historic buildings and the large stupas on the two islands of Gan have been included. The beautiful mosques in Meedhoo (Raa) and Fenfushi (Alif) have purposely been left out from the list (see above).

Although most islands in the archipelago have local crafts, few are directly suitable for production for the tourist market. Only islands of obvious choice are mentioned: Kihaadho (Baa), utensils of braided coconut leaf stem, Eydhafushi (Baa), cotton weaving and plant dyeing, Thulhaadho (Baa), lacquerwork, Ribudhoo and Hulhudheli (Dhaal), gold and silver work, and foremost Gadhdhoo, Fiyolari, Nadalla and Rathafandhoo (Gaaf Dhaal), fine-mats.



ILLUSTRATION 3 :

THE BEACH OF THE LAGOON SIDE (SEE ILLU. NO. 2).



ILLUSTRATION 4 :

THE BEACH AT THE REEF SIDE (SEE ILLU. NO. 2).

Table 1. Evaluation of the Basic Background for Tourism Development by Atoll

Atoll	Availability of:		
	Beaches, Reefs, Diving	Monuments of Interest to Tourists	Traditional Art Handicrafts for Tourism
Haa Alif (HA)	X	0	0
Haa Dhaal (HD)	X	0	0
Shaviyani (SH)	X	0	0
Noon (NO)	X	0	0
Raa (RA)	X	0	0
Baa (BA)	X	0	Lacquer, cotton weaving, coconut leaf stem
Laviyani (LA)	X	0	0
Kaaf (KA)	X	Male	0
Alif (AL)	X	0	0
Vaav (VA)	X	0	0
Meem (ME)	X	0	0
Faaf (FA)	X	0	0
Dhaal (DH)	X	0	Gold and silver-smiths
Thaa (TH)	X	0	0
Laam (LA)	X	Gan stupa	0
Gaaf Alif (GA)	X	0	0
Gaaf Dhaal (GD)	X	Gan stupa	Fine-mats
Gnaviyani (GN)	0	0	0
Seen (SE)	0	0	0

Note: X = available in sufficient quantity.

0 = not available, or available in small quantities.



ILLUSTRATION 5:
SWAMPY AREAS ARE
SOMETIMES FOUND AT
REEF-EDGE ISLANDS,



ILLUSTRATION 6:
MANY ISLANDS ARE TOO SMALL FOR DEVELOPMENT,

3.2 Population and Number of Islands

The development of tourism in such a way as to keep the cultural and natural environment as intact as possible would primarily be possible in an area having a large number of uninhabited islands of which only a limited number should be used as tourist resorts, leaving the rest in their original state or creating a number of nature reserves. In this way tourism will not cause undue stress on available land and other natural resources. For an estimate of the number of uninhabited and larger uninhabited islands in the various atolls the main source has been the Ministry of Agriculture, however, the count should be seen as a count of islands that could possibly be used for tourist resorts, not as a total count of the islands in the archipelago.

In this connection the ratio of uninhabited to permanently inhabited islands should also be taken into account, and it is suggested that areas having a ratio of less than 3-4 uninhabited islands to one inhabited would be unsuited for tourism development, also both the total number of uninhabited islands and the number of larger uninhabited islands should be as great as possible to minimize the danger of cultural friction and overexploitation of natural resources.

The population/manpower in the tourism area should be sufficient for supplying a major part of the manpower needs of the tourism industry without interfering strongly with other production activities like fishing and agriculture. By being able to attract the major part of the staff locally, the problem of staff living far from home can be avoided. As a rule-of-thumb the following key figures can be calculated. With 4,000 employees in the tourism sector, with a minimum of 60% local employment, the employment effect is 2,400 persons. If a maximum of 25% of the population should be engaged in tourism, the total population should at least be around 10,000 in the selected area. /

Table 2 shows the distribution of the population and the islands by atolls.

Table 2. The Population and Number of Inhabited/Uninhabited Islands by Atoll

Atoll	Popula- ¹⁾ tion 1977	Permanently Inhabited Islands	2) Uninhabited Islands (Total)	Larger ³⁾ Uninhabited Islands	Uninhabited Islands/ Permanently Inhabited Islands
HA	8,603	16	24	13	1.5
HD	9,924	17	20	8	0.9
Sh	6,362	15 ⁴⁾	40	19	2.7
No	6,282	14	62	23	4.4
Ra	7,906	16	74	23	4.6
Ba	5,765	13	68	30	5.2
Lh	5,691	4	57	16	14.3
Ka	33,717	10	97	22	9.7
Al	6,223	18	61	12	3.4
Va	1,078	5	14	3	2.8
Me	3,095	9	24	10	2.7
Fa	2,012	5	21	3	4.2
Dh	3,003	8	49	24	6.1
Th	6,224	13	55	30	4.2
La	6,163	12	71	28	5.9
GA	4,978	10	79	30	7.9
GD	7,720	10	150	70	15.0
Gn	4,204	1	0	0	-
Se	14,096	4 ⁵⁾	37 ⁶⁾	3	9.3
Total	143,046	200	996	317	5.0

Sources and notes:

1) The 1977 Census.

2) Ministry of Agriculture 1980.

3) As uninhabited islands are leased out for a sum depending on the number of bearing coconut palms and fruit trees, the rent paid for an island is a reasonable indicator of size (and usefulness for tourism). Following this, islands the rental fee of which exceeded Mald. Rp. 100 have been listed as "larger uninhabited islands". Also islands in Kaaf Atoll not paying rent but known to be large have been included. Islands in Seen Atoll being connected by land bridge to inhabited islands or very close to these have not been included.

Sources and notes to Table 2 (cont.):

- 4) Farukolhufunadhoo being in a strict sense two islands have been listed as one; this is also the official Maldivian classification. The islands are very close and form one administrative unit.
- 5) In official Maldivian classification the four islands in question are listed as six administrative units: "islands".
- 6) Most of the uninhabited islands in Seen are very small and very close to the inhabited areas.

Only some of the atolls meet the requirement of a ratio of uninhabited islands to inhabited islands of 3 to 4 and only 3 atolls have a population of about 10,000. However, by selecting a tourism area consisting of more than one atoll, the above key figures will be changed.

3.3 Economic Endowment

The important selection factors of the local economic situation are illustrated in Table 3. The table illustrates the size of the arable agricultural land and the catch of tunafish.

As seen in Table 3, available and to some degree surplus land is found in the northern and southern regions but is lacking in the intermediate areas.

Fishing is excellent in most atolls except for Haa Dhal, Guaviyani, Seen and Kaaf¹⁾. It therefore seems difficult to avoid completely a latent conflict between tourism and fisheries.

1) Catches in Kaaf Atoll might be underrecorded.

Table 3. Economic Endowment of the Atolls

Atoll	Population	Inhabited Islands 1)	Arable Land ²⁾		Catch of Tuna Fish 3)	
			Total Acres	Per Capita in 1/100 Acr	Total Tons	Per Capita in Kgs
HA	8,603	16	900	10	2,400	279
HD	9,924	17	851	9	950	96
Sh	6,362	15	603	9	1,000	157
No	6,282	14	286	5	950	151
Ra	7,906	16	579	7	2,750	348
Ba	5,765	13	191	3	2,700	468
Lh	5,691	4	123	2	2,150	378
Ka	33,717	10	47	-	1,000	30
Al	6,223	18	180	3	1,500	241
Va	1,078	5	0	-	400	371
Me	3,095	9	1	-	1,150	372
Fa	2,012	5	30	1	300	149
Dh	3,003	8	53	2	700	233
Th	6,224	13	145	2	1,600	257
La	6,163	12	1,073	17	1,700	276
GA	4,978	10	644	13	1,900	382
GD	7,720	10	720	9	1,750	227
Gn	4,204	1	200	5	200	48
Se	14,096	4	243	2	1,000	71
Total	143,046	200	6,869	5	26,100	182

Notes: 1) Permanently inhabited islands. However, the two close islands of Farukolhu-funadhoo are given as one island, as the islands function and are treated administratively as one island.

2) Arable wet and dry land. Butany 1974.

3) Annual average for the years 1977 and 1978, Ministry of Fisheries.

3.4 Overall Evaluation

On the basis of the three previous evaluation tables a total evaluation of the atolls for touristic purposes is made below:

Table 4. Overall Evaluation of the Atolls for Tourism Development

Atoll	1	2	3	4	5	6	7	8	9	10	Total Points
HA				XX	X	XXX			X	X	8
HD				XX		XXX			X	X	7
Sh	X			XX	X	XXX			X	X	9
No	XX	X	X	X	X	XXX			X	X	11
Ra	XX	X	X	X	XX	XXX			X	X	12
Ba	XX	XX	X		XX	XXX	XXX		X		14
Lh	X		XXX		XX	XXX			X	X	11
Ka	XX	X	XX			XXX		X	X	XX	12
Al	XX				X	XXX			X		7
Va					XX	XXX			X		6
Me					XX	XXX			X		6
Fa			X		X	XXX			X		6
Dh	X	X	X		X	XXX	XXX		X		11
Th	X	XX	X		X	XXX			X		9
La	XX	X	X	XXX	X	XXX		X	X		13
GA	XX	XX	XX	XXX	XX	XXX			X	X	16
GD	XXX	XXX	XXX	XX	X	XXX	XXX	X	X	X	21
Gn				X		X					2
Se			(XX)						X		3

1. No. of uninhabited islands (total)
40 to 60 islands = X, 60 to 80 islands = XX, more than 80 = XXX.
2. Larger uninhabited islands
20 to 30 islands = X, 30 to 50 islands = XX, more than 50 = XXX.
3. uninhabited islands
inhabited islands
4 to 7 = X, 7 to 10 = XX, more than 10 = XXX.
4. Arable land per capita in 1/100 acres
4 to 8 = X, 8 to 12 = XX, more than 12 = XXX.

Notes to Table 4 (cont.):

5. Tuna catch per capita in kgs
100 to 300 = X, more than 300 = XX.
6. Beaches, live corals, diving reefs.
7. Traditional handicraft production.
8. Monuments of interest to tourists.
9. Anchorages.
10. Easy access to nearby agricultural resource areas.

An evaluation of Table 4, bearing in mind that atolls close to Male should be avoided and that it is possible to group atolls in order to obtain a workable tourism zone, brings the attention to the following possible tourism development areas:

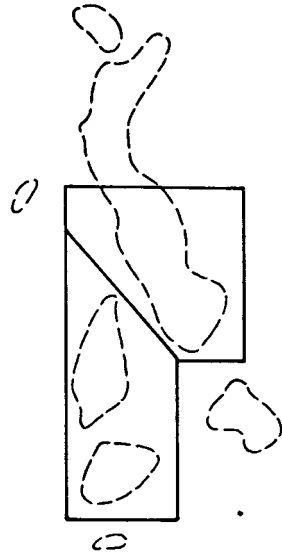
<u>Tourism Zone</u> (see the map on the next page)	<u>Priority</u>
Gaaf Alif/Gaaf Dhaal	first
Raa/Baa	second
Noon/Shaviyani	third
Faaf/Dhaal ¹⁾	fourth

Furthermore Seen could be of interest because of the existence of an airport in this atoll.

The attention was from the start drawn to the Huvadhu Atoll where Gaaf Dhaal gets the highest score (21 points) in the table and the Baa/Raa Atolls receive high scores separately and a very high score when combined. The overall evaluation, therefore, draws the attention to the southern part of the Huvadhu Atoll (Gaaf Dhaal) and the combination of Baa and Raa Atolls. However, because of the wishes of the Ministry of Fisheries the two next atolls in the list have been evaluated.

1) Thaa/Laam would be a further possibility for a tourism zone. Together Thaa/Laam will get higher combined points in Table 4 than both Noon/Shaviyani and Faaf/Dhaal. However, Thaa and Laam are divided by a wide channel which is expected to create a serious hindrance for developing the two atolls into one tourism zone.

Raa and Baa (excluding Goidhoo Atoll)
(26 points)



Noon and Shaviyani
(20 points)

Alif Atoll
(development already started)



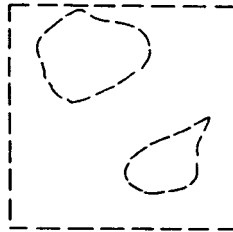
Male Tourism Zone



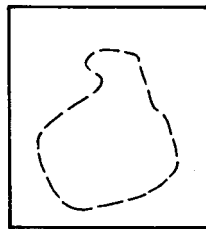
Faaf and Dhaal
(17 points)



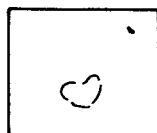
Thaa and Laam



Gaaf Alif and Gaaf Dhaal
(Huvadho = Suvadiva Atoll)
(37 points)

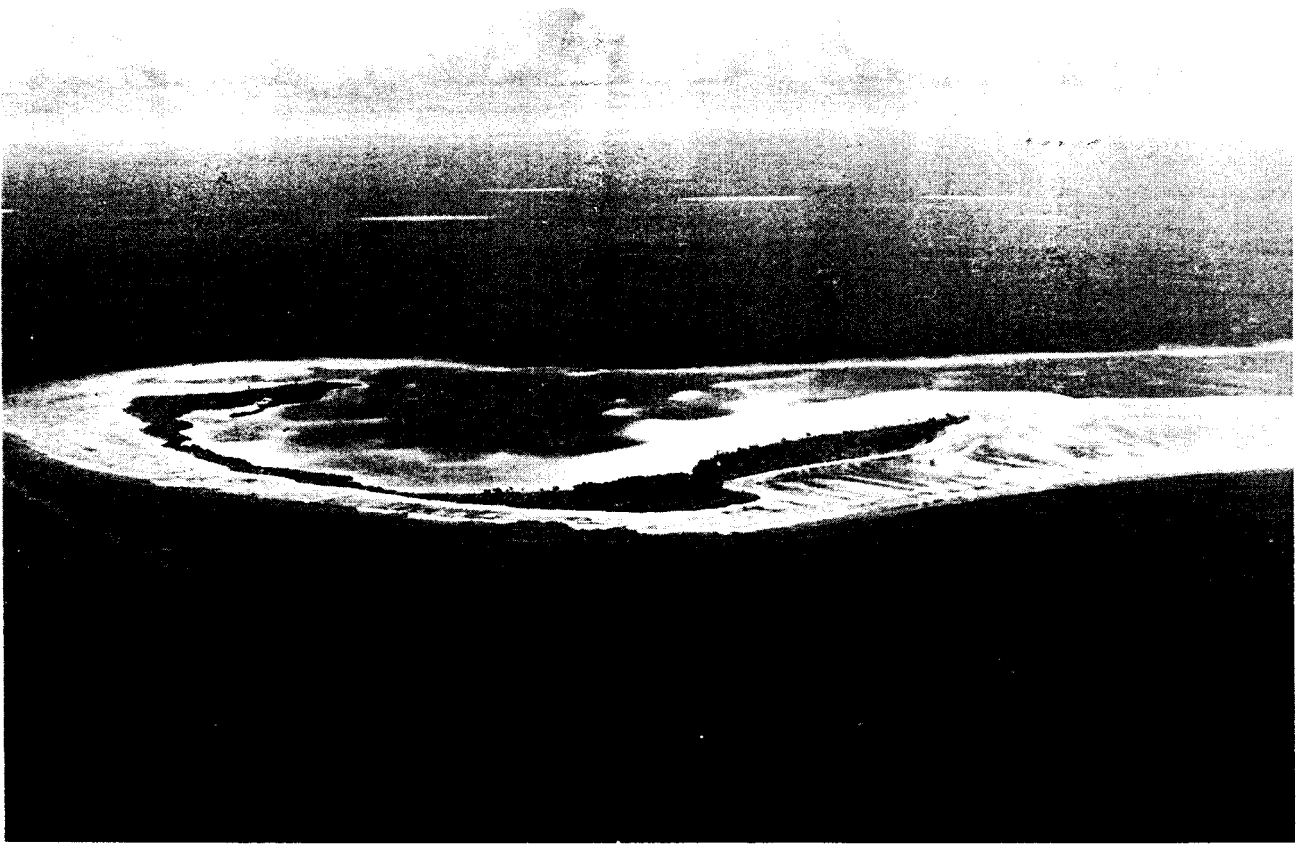


Seen (Addu) and Gnaviyani
(5 points)



POSSIBLE TOURISM ZONES
Points are combined

The above evaluation is based on statistical data as well as physical surveys. The Consultants have visited 145 islands in 15 atolls during field trips, and inspected 2 more atolls and a larger number of islands from sea and air. Furthermore, one of the team members has previously visited more than 100 inhabited and a large number of uninhabited islands spread all over the country during several stays in the country. All in all, the team of Consultants had a thorough basis for the above evaluation.



LAABADHUVAA ISLAND IN HUVADU ATOLL - PROPOSED TOURIST CENTRE



FIYOARI ISLAND IN HUVADU ATOLL , WEST OF LAABADHUVAA

4. EVALUATION OF SPECIFIC AREAS

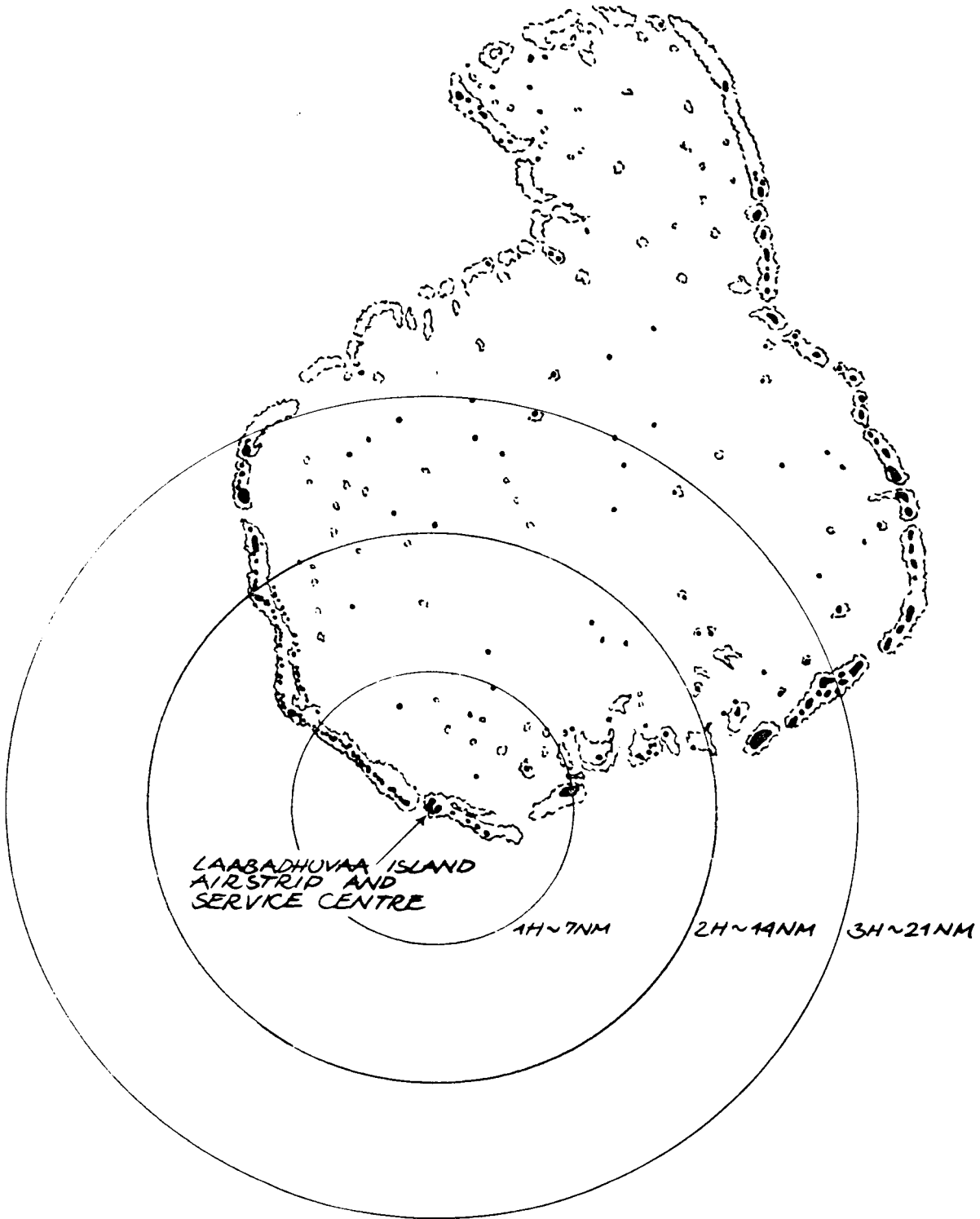
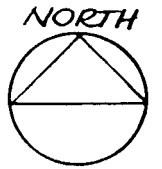
In the following five specific areas are evaluated as possible tourism development zones.

4.1 The Huvadu Tourism Zone

Within the Huvadu Tourism Zone (Gaaf Dhaal Atoll) there are 150 uninhabited islands of which 30 to 40 could be used for tourism development. Details of the zone with Laabadhuvaa as suggested tourism centre are presented on the following map. As seen on the map, a large number of islands are located within easy reach from the centre. The Huvadu Tourism Zone, which was selected as a first priority area, has been inspected by the team of Consultants by sea and by air. A great number of islands were found suitable for tourism development and the Laabadhuvaa Island was found very suitable for development into a centre.

The Gaaf Dhaal/Gaaf Alif Atolls have a population of 12,698 as per the 1977 Census. The population is distributed on 10 inhabited islands in Gaaf Dhaal with 7,720 inhabitants and 10 islands in Gaaf Alif with 4,978 inhabitants as shown on the following map. The map also shows the distribution of the population within the whole of Huvadu Atoll.

The arable land within Huvadu Atoll is estimated at 1,364 acres (720 in Gaaf Dhaal and 644 in Gaaf Alif). Wet-land agricultural farming is prevailing in the Gaaf Dhaal Region and particularly Gan and Kaadedhdhoo Islands (see the map) are important as potential agricultural islands. The atoll is considered to have a high fishing potential and is covered by the development plan made by the Ministry of Fisheries.



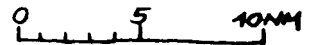
LAABADHUVAA ISLAND
AIRSTRIP AND
SERVICE CENTRE

1H ~ 7NM

2H ~ 14NM

3H ~ 21NM

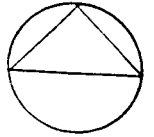
H: HOURS BY ENGINE DHONI - NM : NAUTICAL MILE



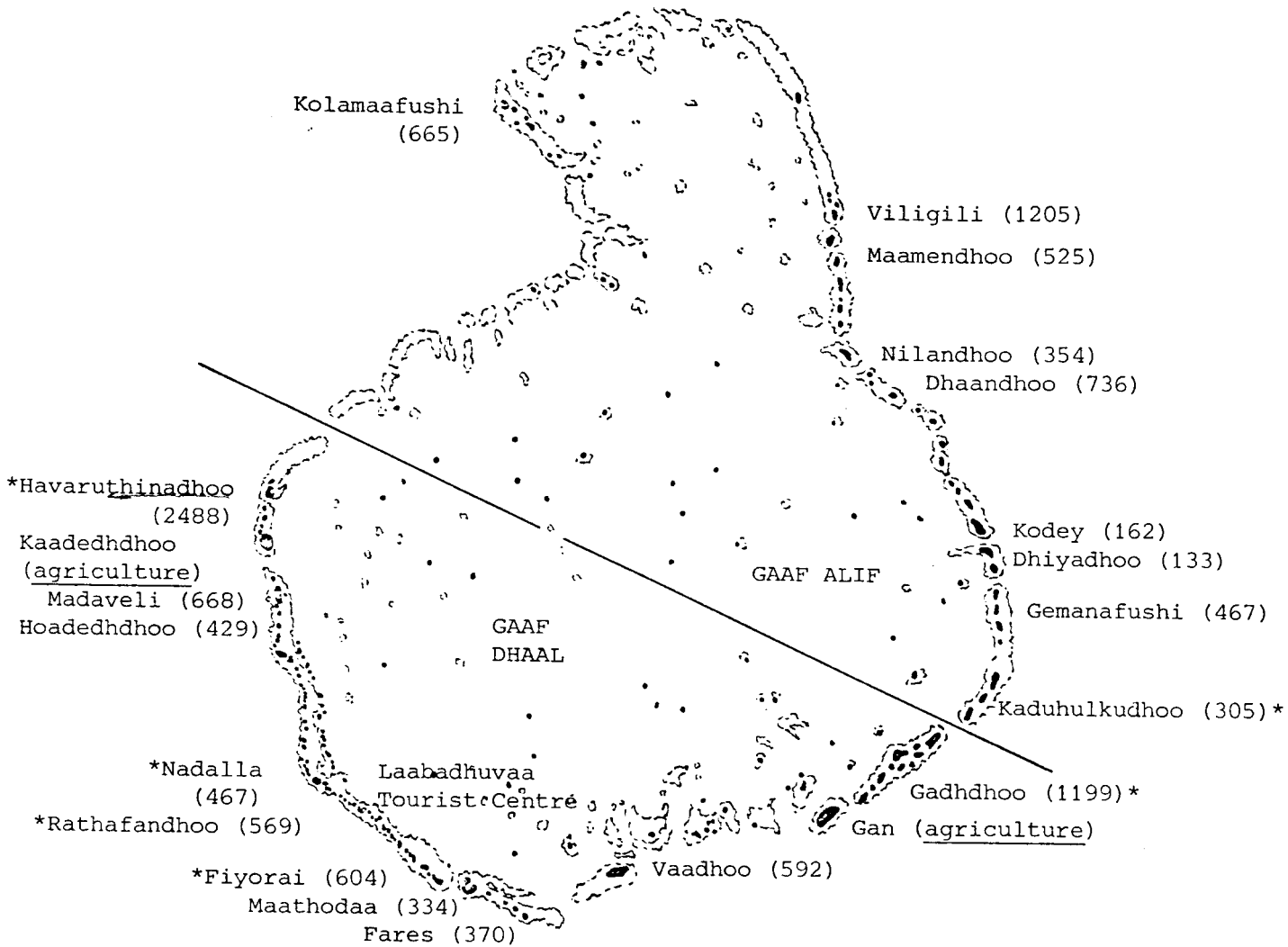
HUVADU TOURISM DEVELOPMENT AREA

SCALE 1/500,000

North

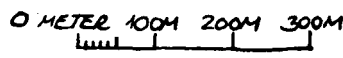
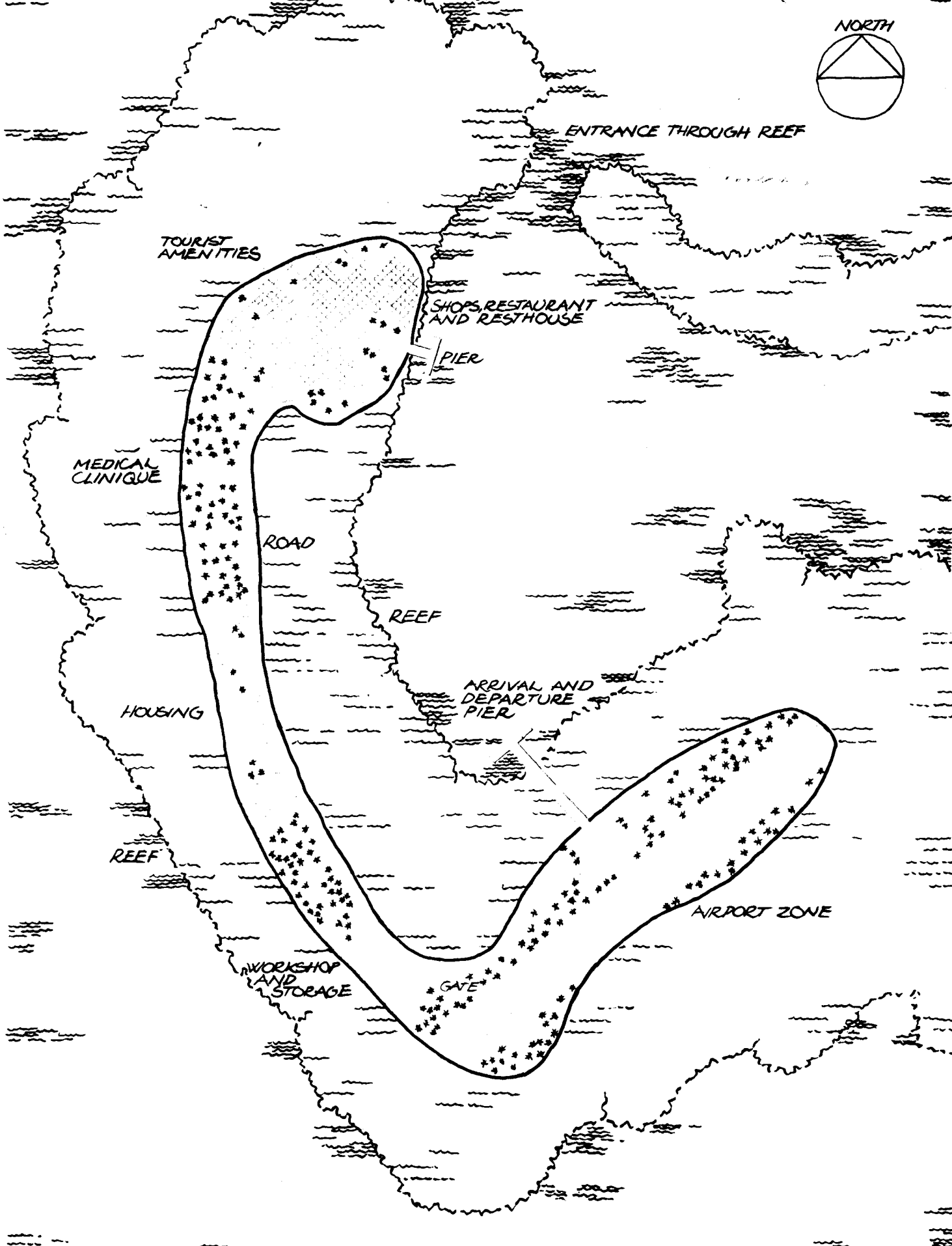
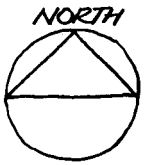


Huvadhu Tourism Zone



Total population: Gaaf Dhaal	7,720
Gaaf Alif	4,978
	<hr/>
	12,698

* = handicraft production (fine-mats)



HUVADU SERVICE CENTRE - LAABADHUVAA ISLAND - LAND USE PLAN - SCALE 1/10,000

The Gaaf Dhaal Atoll is the centre for the production of fine-mats within the Maldives. The fine-mat production is taking place on six islands as shown on the map and the concentration of the high-quality production is found on Gadhdhoo Island, 2½ hours' trip by engine dhoni from Laabadhuvaa Island.

Draft Programme for the Development of Laabadhuvaa Tourist Service Centre

The Service Centre is proposed to be located on the Laabadhuvaa Island which has an adequate size for the construction of an airstrip and which is uninhabited. The island's crescent shape is suitable for the placing of buildings for a wide range of purposes. The Centre shall primarily offer facilities for the reception and further transportation of tourists arriving by air. In addition, storage and distribution of supplies will take place from here. The island will serve as a shopping centre and also offer some public entertainments.

The Service Centre will be dimensioned to serve tourist resorts containing 1,000 tourist beds in the first stage of development. It will gradually be extended to service up to 3,000-3,500 beds in the final stage.

The Service Centre shall in all its stages be built in accordance with a development plan. (For further details of the Centre Island, please see Vol. II - Project No. 1).

Particular Tourism Products

As a great number of uninhabited islands are found lying as a string of pearls well protected from the sea, sailing in small boats will be safe. Within the area north-west of Laabadhuvaa a small-scale sailing centre could be developed. Some of the islands are actually so close to each other that the tourists could pass from one to another by a rowboat or canoe. This aspect could be used as a variation from the isolated Robinson Crusoe type of island.

The number of lagoon islands suitably located within the development zone is limited. On the other hand the outer-reef located islands are of a high touristic value. The problems of islands of this type as described in Chapter 3 are less outspoken in the Huvadu area.

In the eastern part of the tourism zone between Gadhdhoo and Kaduhulhudhoo there are particular groupings of islands with small hidden and protected lagoons in between. The overall lay-out of the area is very picturesque and the particularity of this island constellation could be used for a new product development.

As the inhabited islands are well spread all over the tourism zone, the idea of a locally managed safari cruise by engine dhonis would be feasible. Selected inhabited islands along a route should develop a number of primitive tourist accommodation facilities on nearby uninhabited islands. During such a cruise of 3 to 4 days' duration the tourists catch their own fish and get served local products together with some basic imported food items. Each of the accommodation islands should be taken care of by the nearby inhabited island but the overall product management and sale should be controlled through the tourism centre.

4.2 The Baa/Raa Tourism Zone

The Baa/Raa Tourism Zone with Digili Island as suggested centre is presented on the next map. Within the zone there are 142 uninhabited islands of which less than one fourth would be used for tourism development. The two atolls have a total population of 13,671 as per the 1977 Census. The population is distributed on 29 inhabited islands as illustrated on the map on page 42. The map also shows the location of handicraft producing islands.

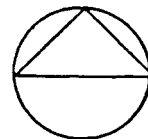
Raa/Baa have a very high per capita catch of tuna and the area is one of the important fishing zones.



WOOD-TURNING FOR LACQUER WORK, BAA ATOLL

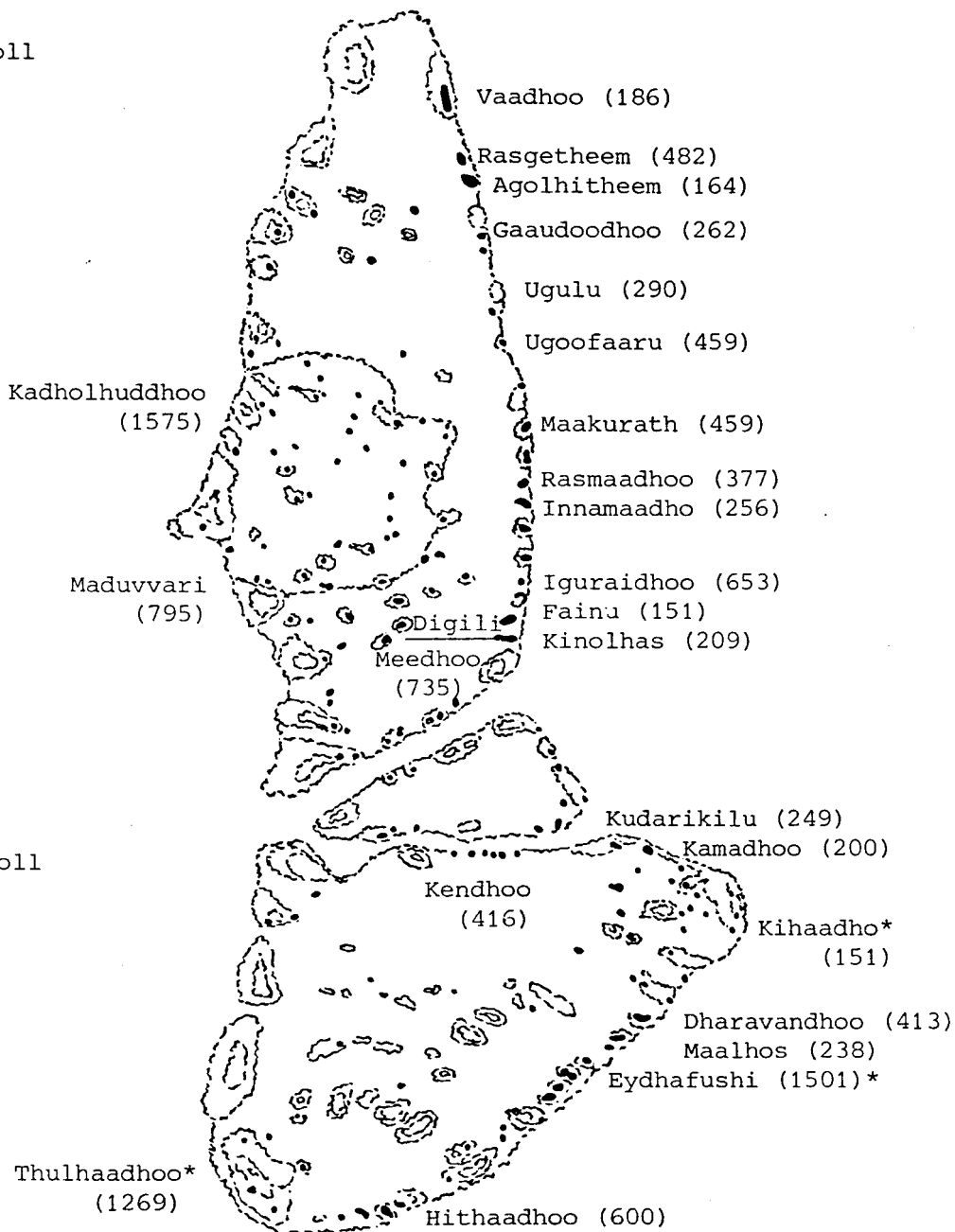


TYPICAL ISLAND IN THE BAA-RAA ATOLL



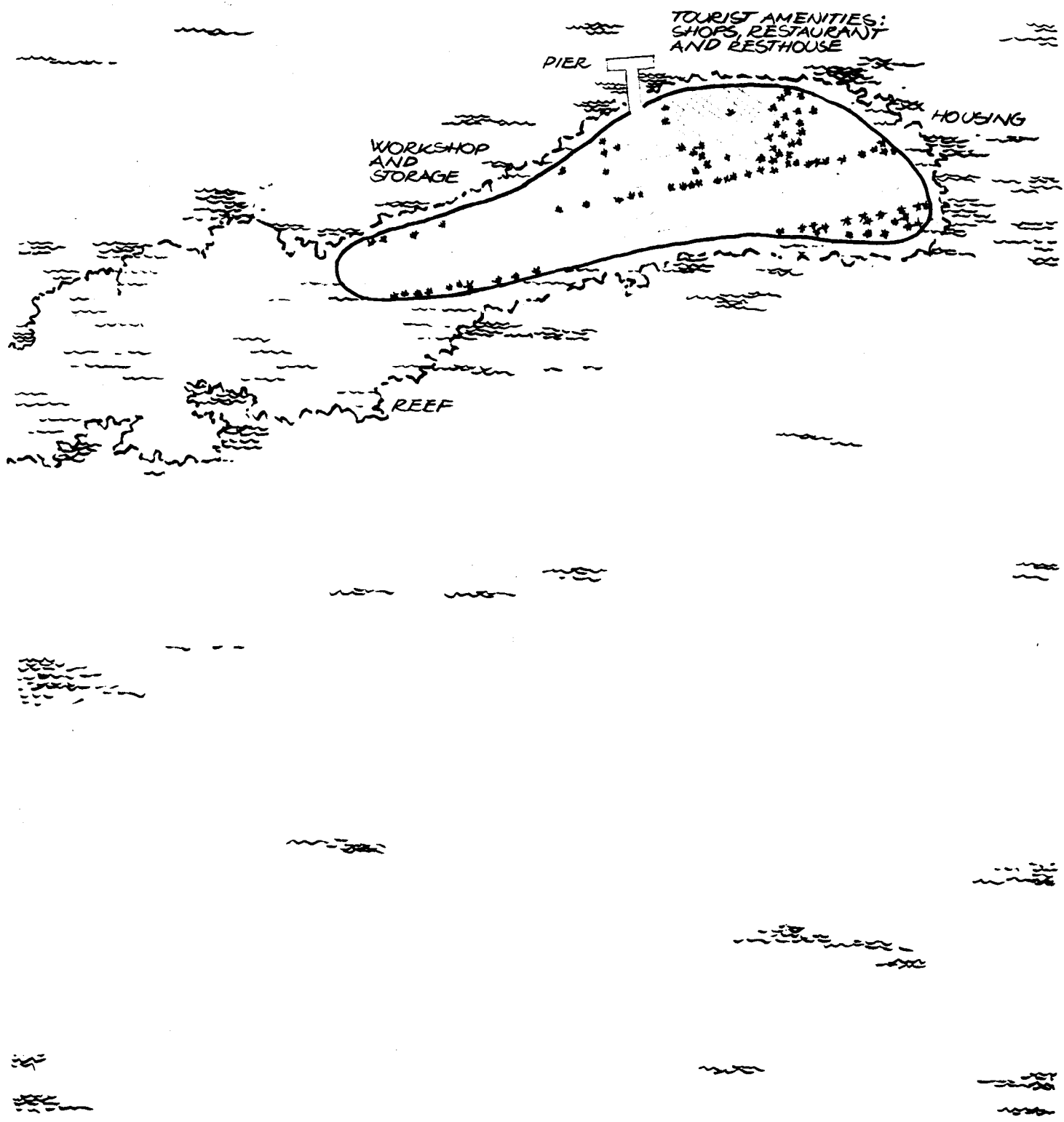
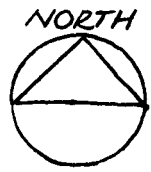
Raa/Baa Tourism Zone

RAA Atoll



Total population:	RAA Atoll:	7,906
	BAA Atoll:	5,765
		<hr/>
		13,671

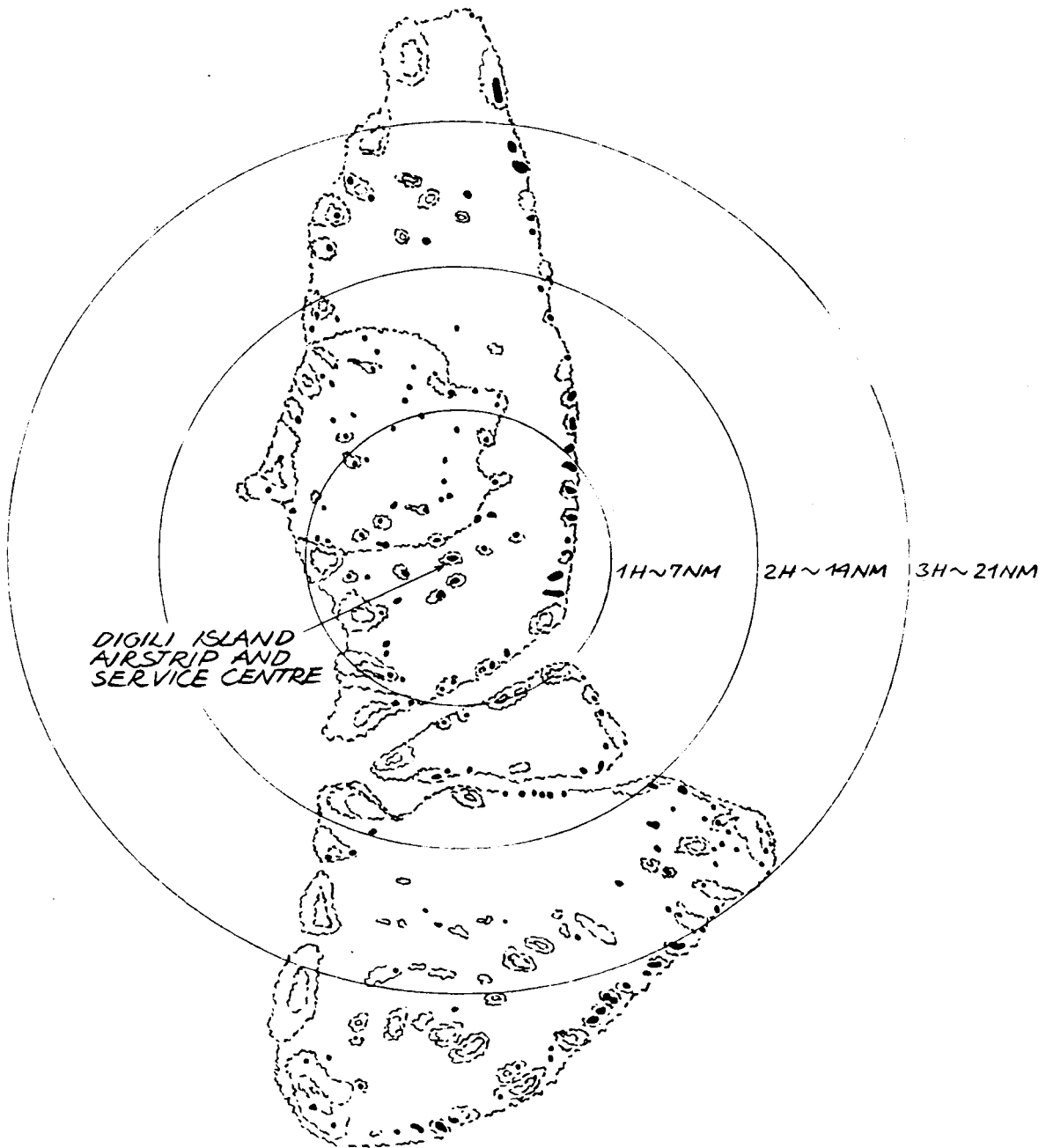
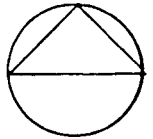
* = handicraft production



0 METER 100M 200M 300M

BAA-RAA SERVICE CENTRE - DIGIKI ISLAND - LAND USE PLAN - SCALE 1/10,000

NORTH



H: HOURS BY ENGINE DHONI - NM : NAUTICAL MILE



BAA/RAA TOURISM DEVELOPMENT AREA

SCALE 1/500,000

The arable land is estimated to be 770 acres. Dry-land agricultural farming is found on most inhabited islands and also on a number of uninhabited islands. A considerable potential for agricultural production is found in the eastern part of the Raa Atoll.

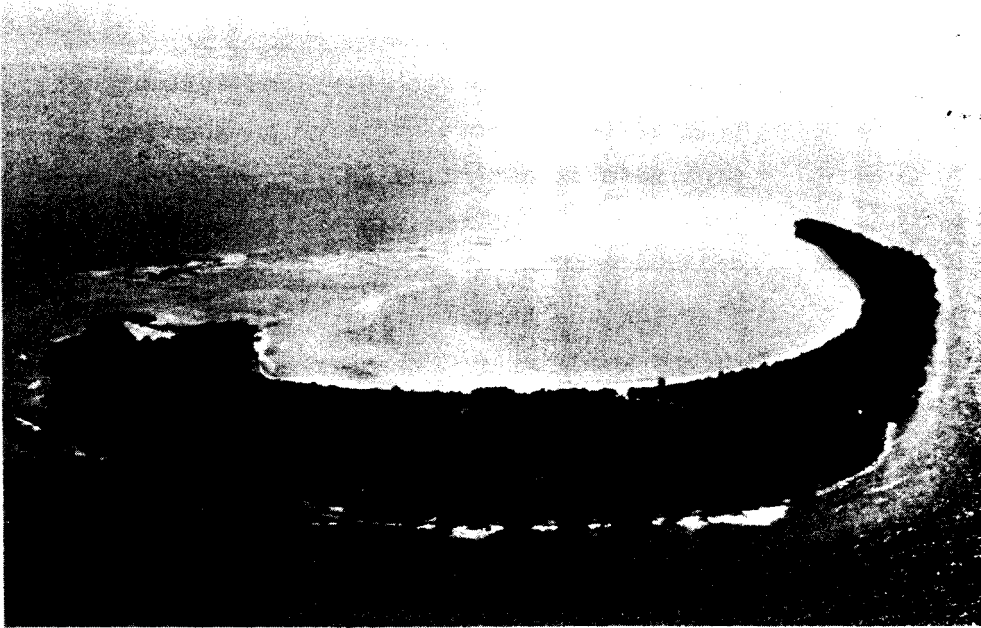
The Baa Atoll is the centre for the handicraft production in the tourism zone. Lacquerwork and woodturning have for ages been the occupation of male specialists on the island of Thulhaadhoo. Dyeing, starching and weaving of imported cotton thread is traditionally made on the island of Eydhafushi. At the moment only two old men still know the craft, and production is moderate. Braiding of utensils from coconut leaf stem is mainly done on the island of Kihaadhoo in Baa Atoll but also to a lesser degree on other islands in the Baa and Raa Atolls. The main products at the moment are trays for cleaning rice and millet, fly-covers and containers. Further details on the handicraft production are presented in Vol. II of this report.

The Raa/Baa Tourism Zone was selected as second priority area for development. Within the zone there is a large number of separately situated lagoon islands which makes the overall feature of the zone highly attractive. For instance the area between Kendhoo and Kihaadhoo in Baa Atoll is very attractive and suitable for development.

Within the zone Digili Island was found to be centrally situated and suitable as centre for the tourism development. The general outline for the centre and the development of the tourism zone follow the same guidelines as laid down for the Laabadhuva Centre and as presented in Vol. II.

Particular Tourism Products

In contrast to the Huvadhu Tourism Zone, the Baa/Raa potential islands for tourism development are for a major part situated inside the atoll rings, and the islands are generally located isolated from each other. The physical characteristics of these lagoon islands make the possibilities for island cruising trips numerous and form a perfect base for the Robinson Crusoe holiday.



TYPICAL ISLANDS IN NOON ATOLL .

4.3 The Noon/Shaviyani Tourism Zone

Within the Noon/Shaviyani Tourism Zone there are 102 uninhabited islands, which means that only about 1/3 should be used for tourism development. The two atolls have a total population of 12,644 as per the 1977 Census. The population is distributed on 29 inhabited islands as illustrated on the map on page 48. The next map indicates the location of major production areas for agriculture and handicraft which could be used as resources for the tourism zone.

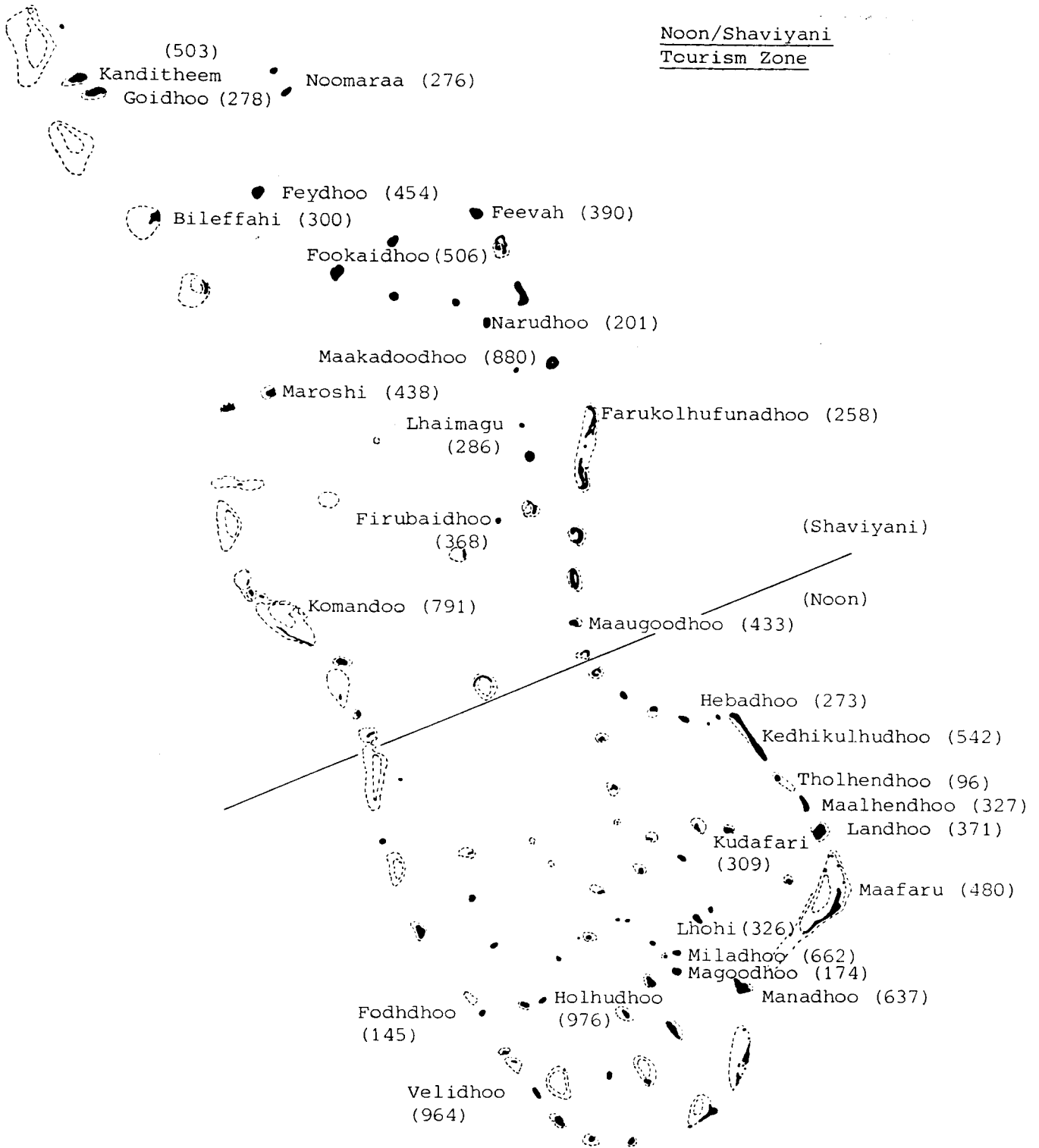
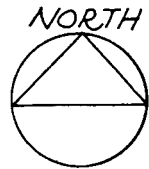
The arable land is estimated to be 889 acres of which 603 acres are at Shaviyani. Agricultural production is moderate, but other resource areas could be Eastern Raa and Haa Alif. Fishing in the two atolls is below the average for the Maldives and the area is not considered of high potential fishing value.

The two atolls do not have a developed handicraft industry and most handicraft products have at the start of the tourism development to be brought in from other atolls. In this connection Baa is only located at a few hours' sailing distance.

Noon/Shaviyani have only been considered as a possibility for tourism development late in the planning work. Therefore, the area has not been carefully investigated by the Consultants. However, preliminary findings are based on a brief aerial survey combined with a visit in the atolls some years ago by one of the team members.

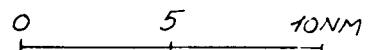
The preliminary findings point at Karimma Vattaru in the southern part of the Noon Atoll as a possible centre island (see the map on page 50).

Although some of the outer reef islands might be less suitable for tourism development as for instance indicated on the picture on page 25, the total number of islands should be more than sufficient, the major problem being the final selection of a centre island.



Total population: Shaviyani 6,362
 Noon: 6,282

 12,644

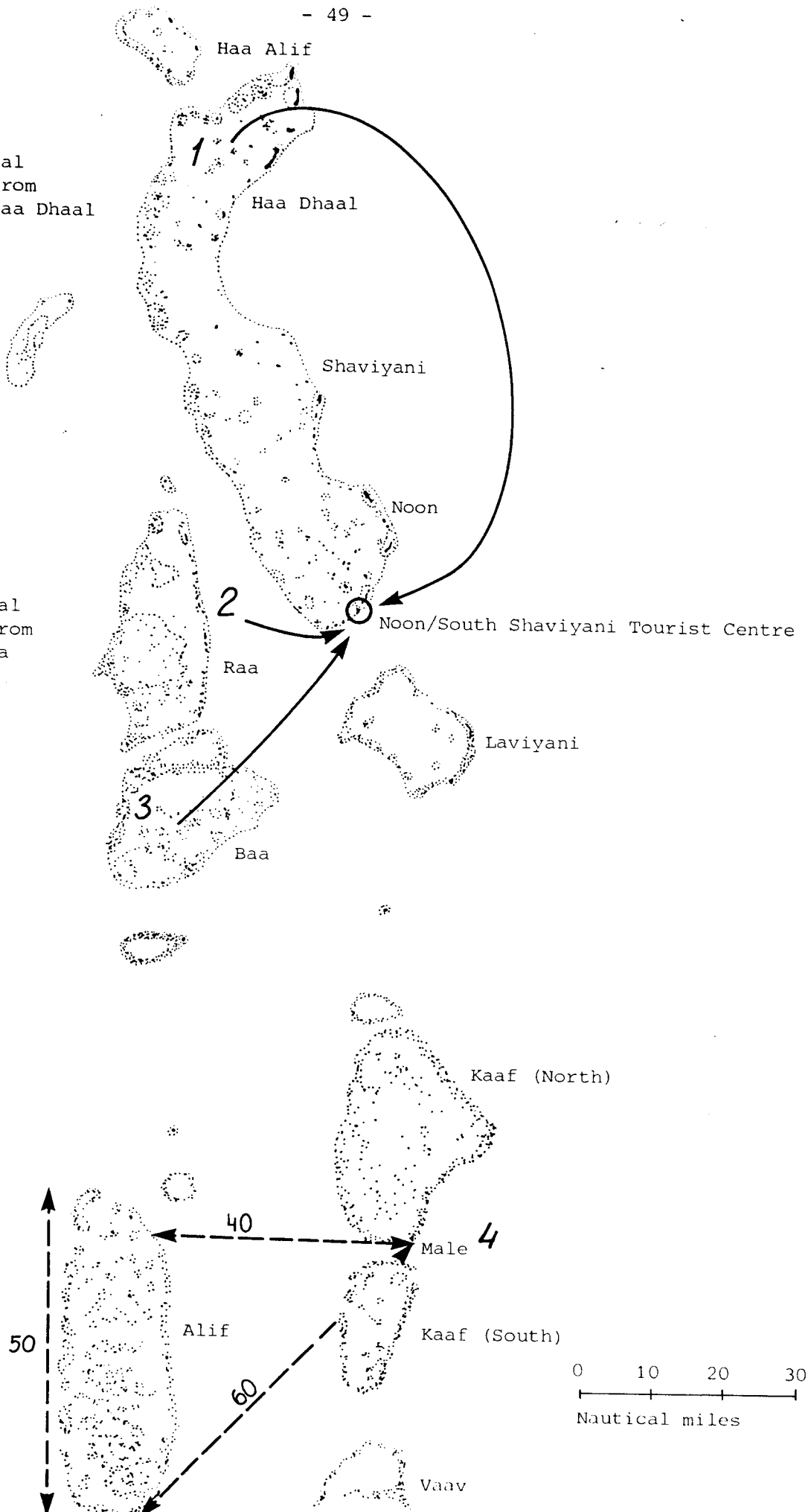


1) Agricultural products from Haa Alif/Haa Dhaal

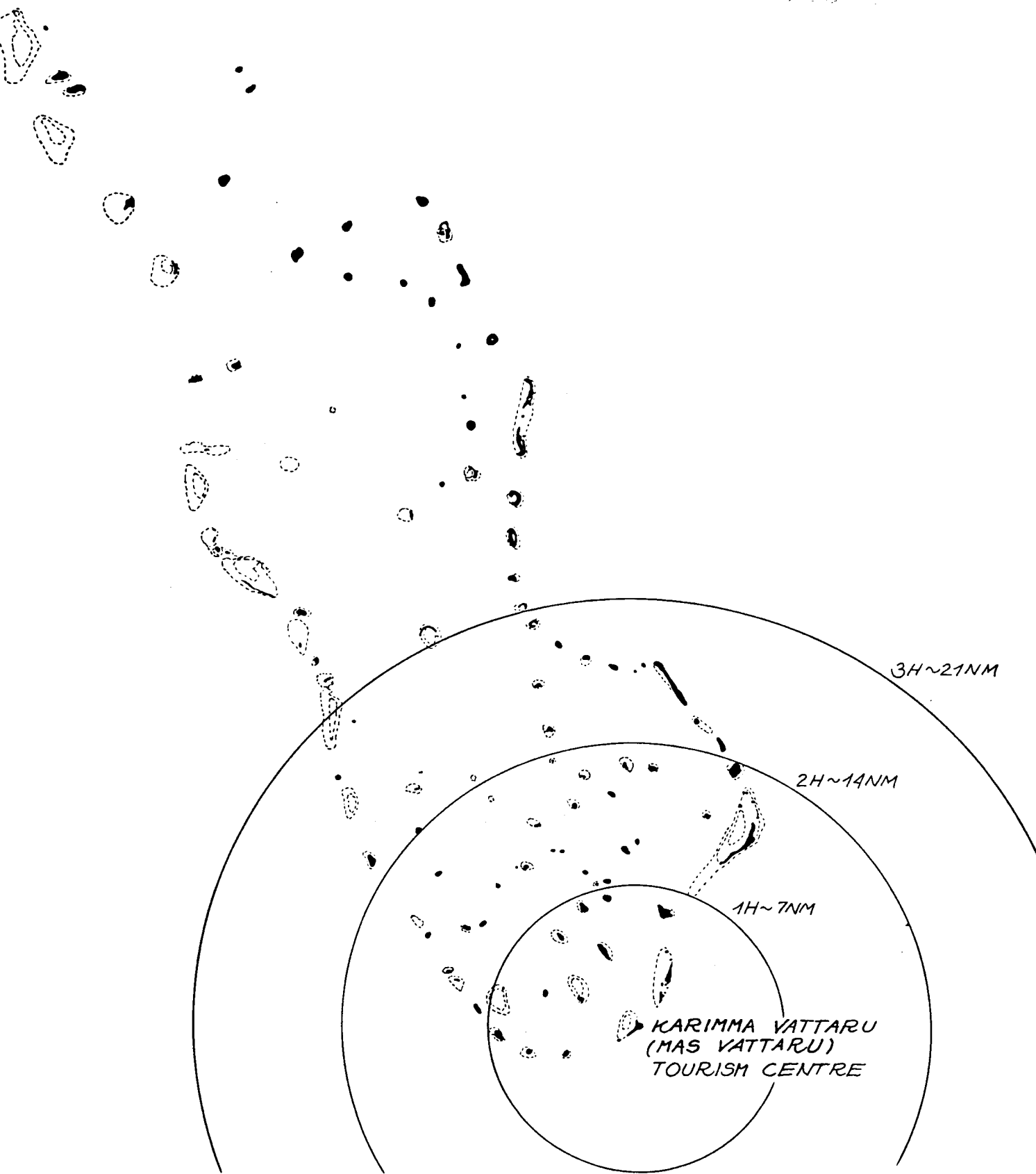
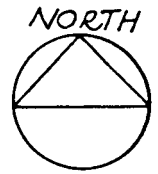
2) Agricultural products from Eastern Raa

3) Handicraft from Baa

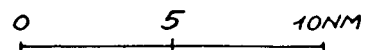
4) Imported products from Male



0 10 20 30
Nautical miles



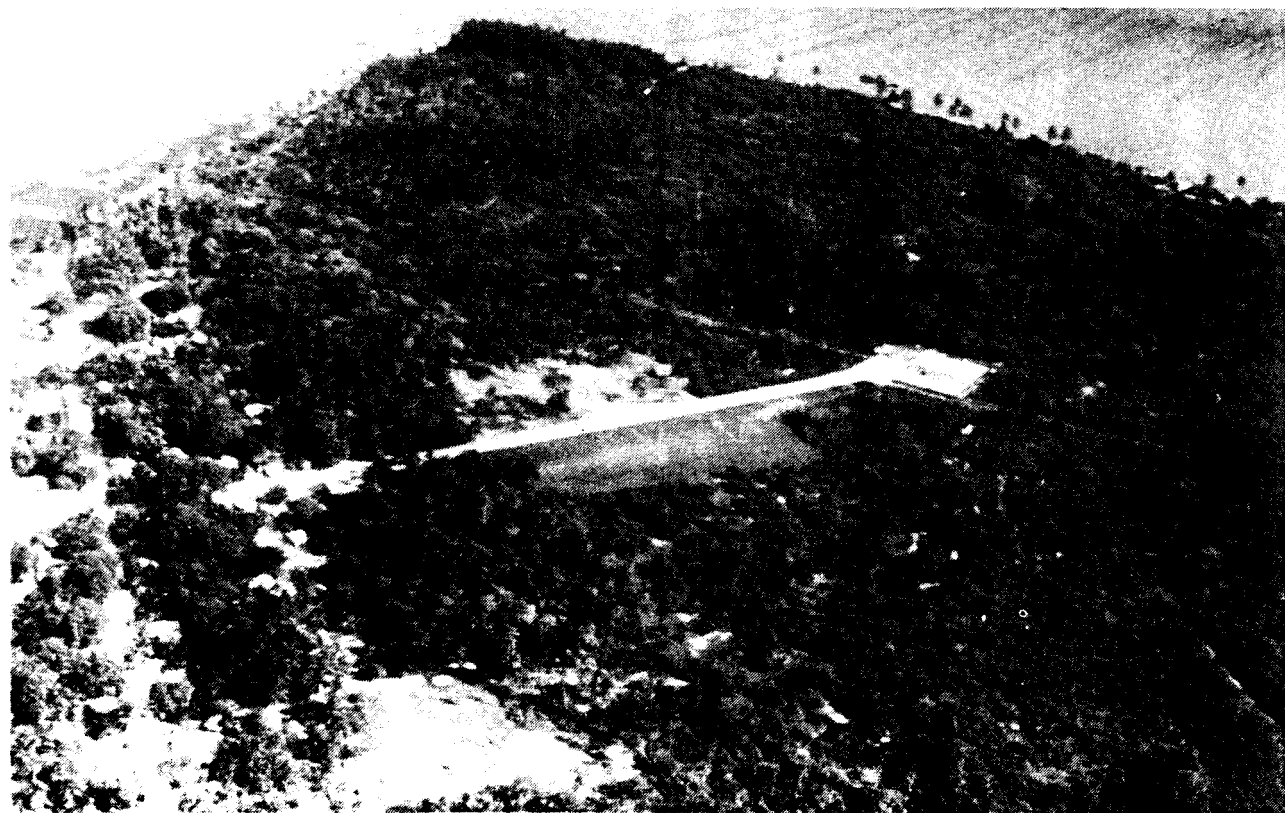
H: HOURS BY ENGINE DHONI - NM : NAUTICAL MILE



NOON / SOUTH SHAVIYANI DEVELOPMENT AREA



DHAAL ATOLL - A CHAIN OF OUTER REEF ISLANDS



*KUDA HUVADHOO, DHAAL ATOLL
ONLY ISLAND HAVING SUFFICIENT SPACE FOR AN AIRSTRIP.*

4.4 The Faaf/Dhaal Tourism Zone

The Consultants have been asked by the Maldivian Government to make a particular survey of the Faaf and Dhaal Atolls for tourism development. The preliminary findings from a field visit in the period 10th to 18th March were presented in a report dated 20th March, 1982.

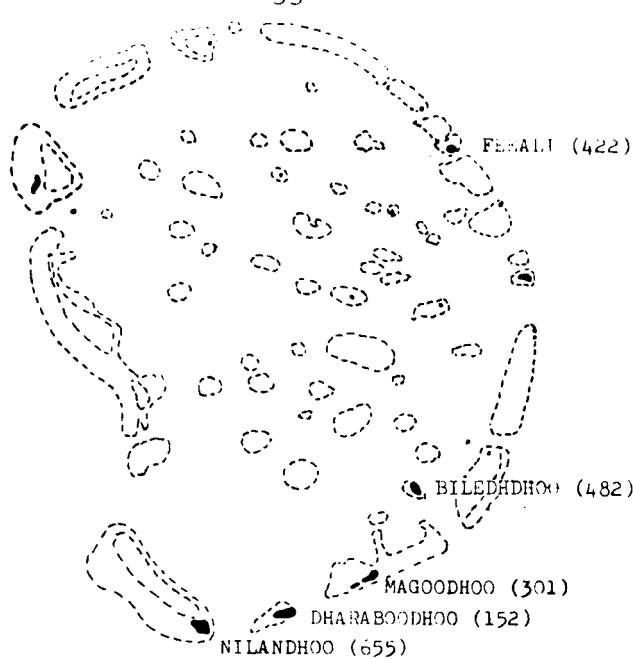
Within the Faaf/Dhaal Tourism Zone there are 70 uninhabited islands. However, a complete island survey revealed that only 4 islands in the Faaf Atoll and 16 to 18 in the Dhaal Atoll were suitable for development. The total development capacity was thus found to be 2,300 beds, distributed with 500 in Faaf and 1,800 in Dhaal.

The number of suitable islands was limited because of the size of the islands and because of non-suitability of a large number of outer reef islands (see illustrations on page 23). Beaches were found either stony or silty with very shallow water at the lagoon side. The water was so shallow that by low tide tourists should walk a long distance just to be able to get enough water depth for a swim.

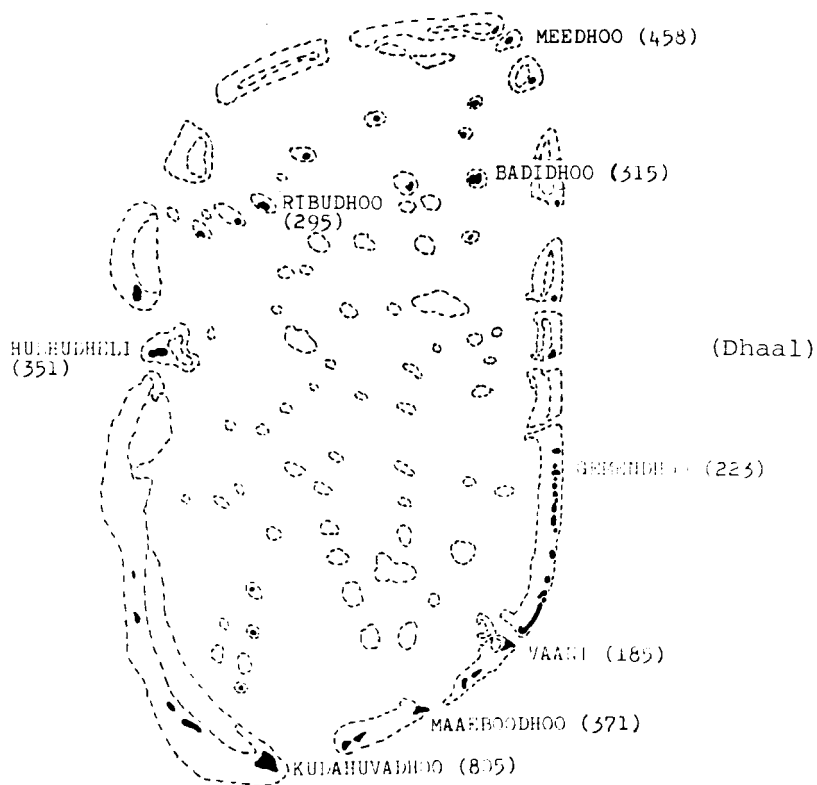
Faaf Atoll is furthermore very open with few protecting reefs. The channel between the two atolls is considered to be very rough in bad weather and the distance from the potential tourist islands of Faaf to Kuda Huvadhoo (the only island found suitable for an airstrip) is 35 miles. The use of islands of Faaf for tourism is therefore problematic, thus bringing the number of suitable islands down to 16-18.

The two atolls have a total population of 5,015, which is much less than optimal as background for the tourism development. The population is distributed on 13 inhabited islands as illustrated on the map on page 54. The arable land is limited with an estimated 83 acres in total. The total catch of fish in the two atolls is very small, Gnaviyani Atoll being the only atoll where catches are even less.

Faaf/Dhaal
Tourism Zone

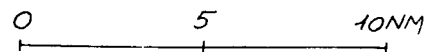


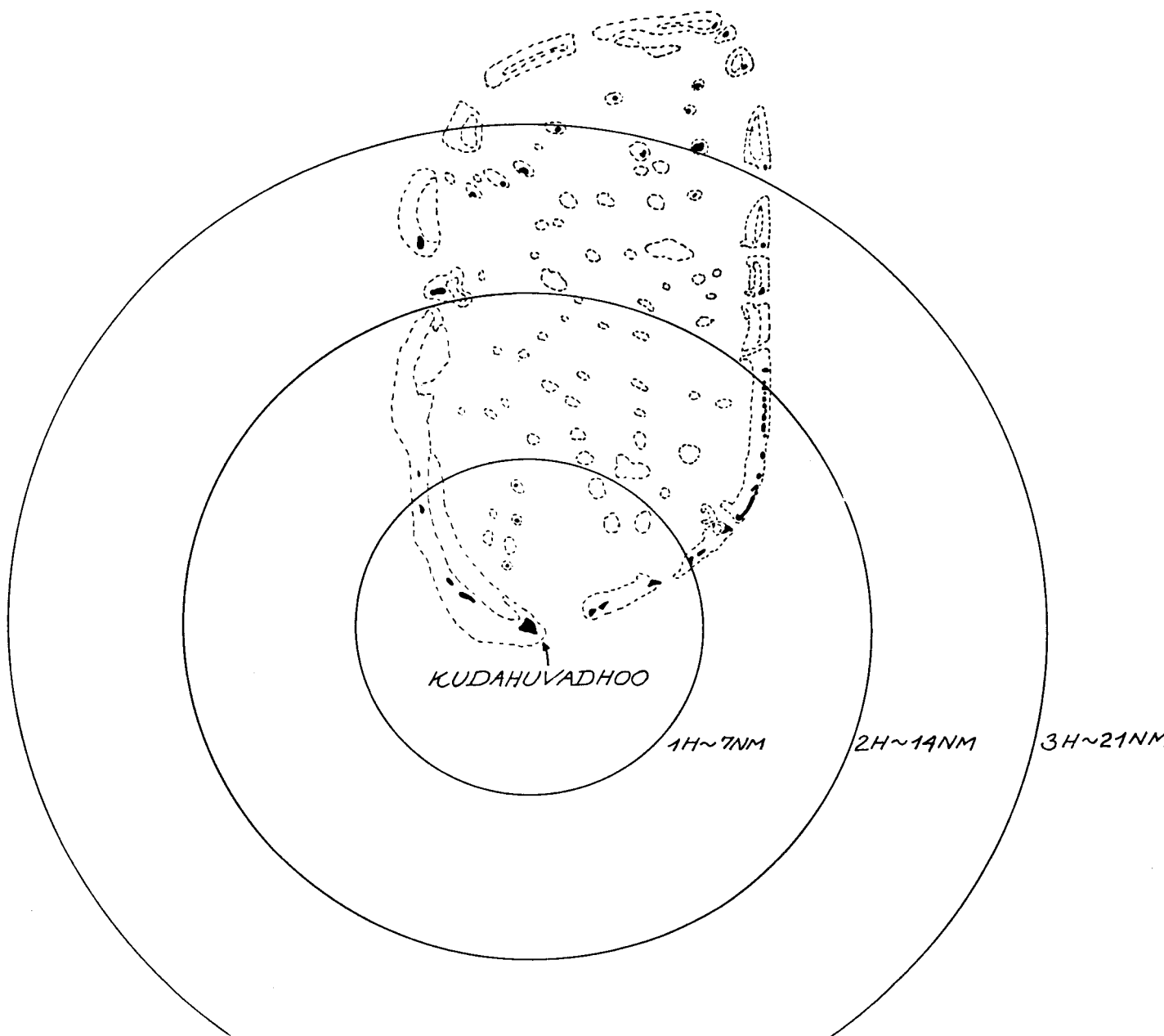
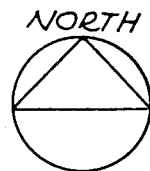
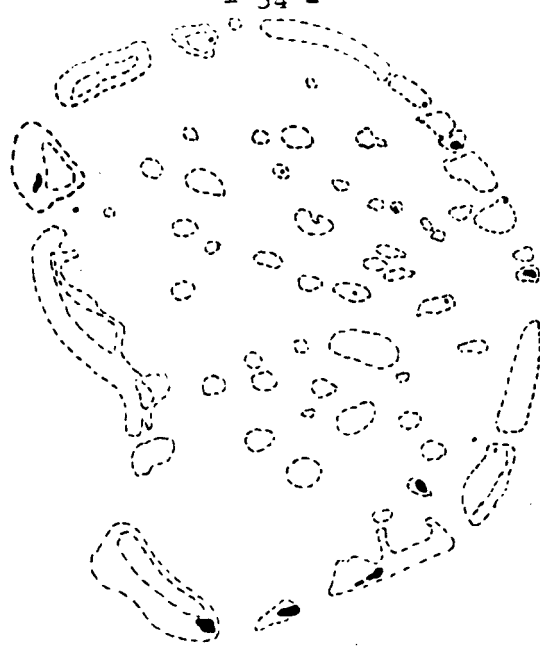
(Faaf)



(Dhaal)

Total population: Faaf Atoll	2,012
Dhaal Atoll	3,003
	<hr/>
	5,015



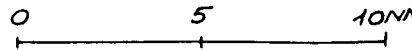


KUDAHUVADHOO

1H~7NM

2H~14NM

3H~21NM



H: HOURS BY ENGINE DHONI - NM : NAUTICAL MILE

FAAF/DHAAL TOURISM ZONE

The Dhaal Atoll is the centre for silver work within the Maldives. The silver handicraft production is taking place on the islands of Ribudhoo and Hulhudheli. However, at the time of visiting the islands the craftsmen were producing black coral handicraft items as it was said that no raw silver was available for the silver handicraft production.

The Faaf/Dhaal Atolls are estimated to have only a limited tourism development potential; the major problems and bottlenecks being:

- The number of islands suitable for development.
- Problems of finding a suitable centre island (Kuda Huvadho has a population of 1,000).
- The available manpower is much less than required.
- Fruits, vegetables and fish cannot be supplied in sufficient quantities from local sources.

4.5 The Alif Atoll

In January 1983 the Maldivian Government decided to develop Alif Atoll in the next phase of the tourism development. This decision was made at a step where it was not possible to incorporate its full implications in the master plan. However, a few comments are given on the following pages.

Alif Atoll has been visited by the Consultants at several occasions although a full and detailed survey has not been undertaken. The atoll is an obvious possibility for tourism development because of its close location to Male; the distance is only 30-40 miles from the airport. However, the atoll was not evaluated in detail because of lack of fulfilment of the general planning criteria.

Within the atoll there are 18 inhabited and 61 uninhabited islands. Of the uninhabited islands only 12 are of a larger size. The atoll

has a population of 6,223 as per the 1977 Census. The distribution of the population in the atoll is indicated on the map on the next page.

The fishing in the atoll is above average for the Maldives, but the arable land is only estimated at 180 acres. No particular handicraft industry is developed in the atoll. No obvious island suitable as centre island can at present be pointed at.

While the closest islands are only 30-40 miles away from Hulule airport and therefore easily can be covered by a fast boat from Male, the farthest located islands are up to 60 miles away. The atoll has a long shape covering nearly 50 miles (see the map on page 49).

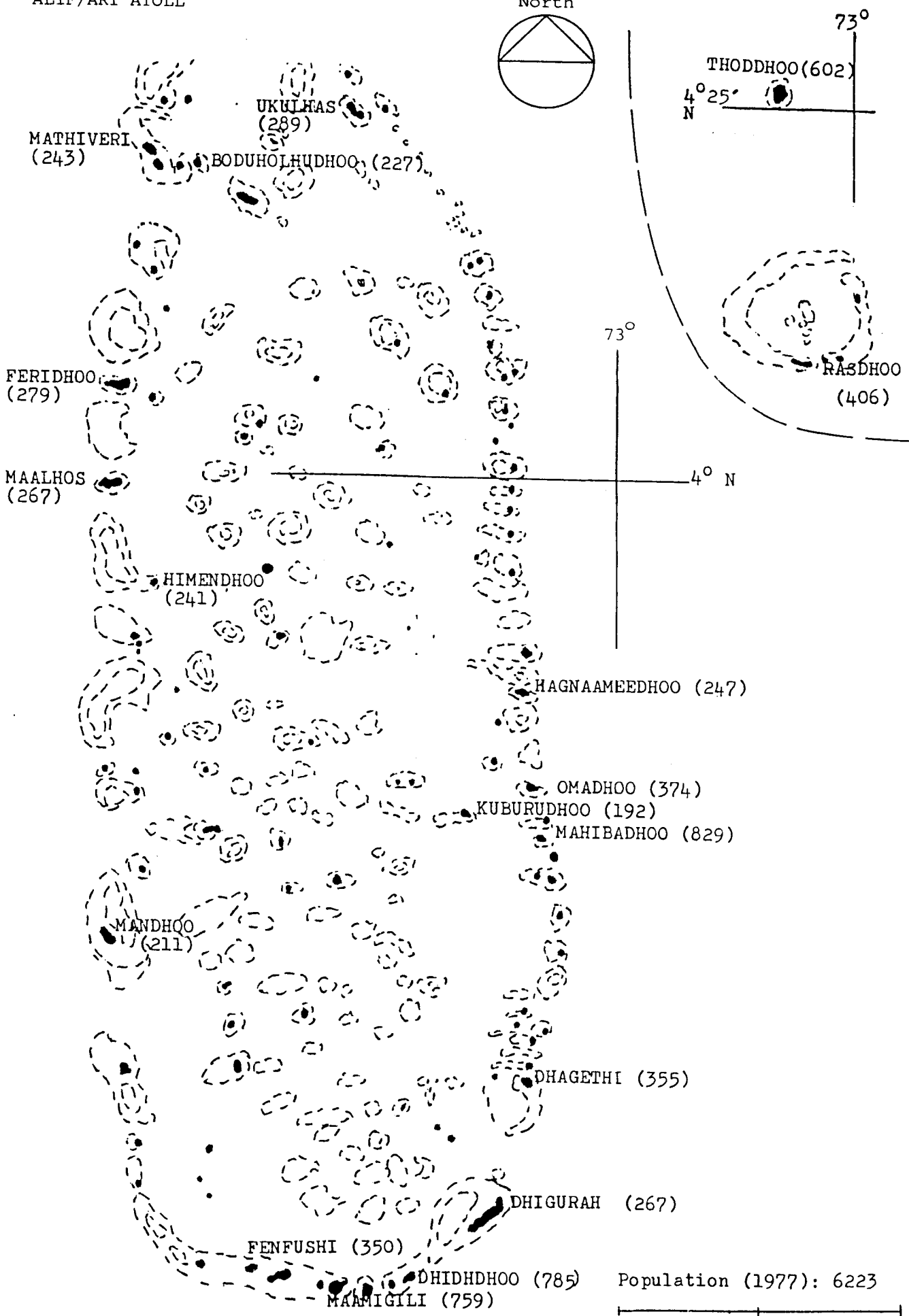
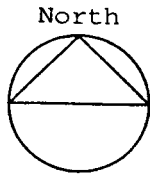
Because of a limited number of larger uninhabited islands and the fairly long distance from north to south within the atoll, careful planning efforts have to be made as to develop a well functioning new tourism development area. It is doubtful whether it is physically possible to develop 3-4,000 beds in the Alif Atoll. Depending on the number of beds which can be developed Alif Atoll can either be looked at as a new and complete tourism zone or as an appendix to the Male Zone developed as a crash programme in order to utilize the existing infrastructure facilities in the Male Zone. The final status of the Alif Atoll for tourism purposes will have to be defined in a detailed development plan.

4.6 Evaluation of the Addu Atoll

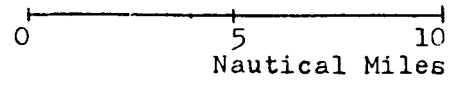
General Features of the Atoll

Addu Atoll is the second most densely populated atoll in the archipelago and one of the smallest administrative units as well. It consists of 7 major islands of which the 4 are heavily populated and a larger number of very small islands with mainly low vegetation.

ALIF/ARI ATOLL



Population (1977): 6223



During the time of the air-base both agriculture and fishing were neglected to a degree, as the best qualified manpower was drawn to the base instead of to traditional skills. Agricultural production on the very fertile soils has picked up since, but the land available would never, unless with a very high input of agricultural expertise, fertilizers etc., be able to be a reasonable supplier to possible tourist resorts.

Therefore, most of the agricultural input needed for a major tourism development will have to come from abroad or from the nearby Fua Mulaku island and Huvadu Atoll, both areas having a considerable potential for agricultural production.

As a large number of Adduans were employed by the British during the time of the base, Addu has a pool of technically skilled manpower including cooks and service staff. The closing of the airbase in 1976 took away the economic basis for the Atoll and the unemployment rate has since then been high. The economic activities in Male have therefore attracted a major part of the skilled manpower, and according to information received from the Atoll Chief about 3,000 of the work force are at present working in Male Atoll, mostly within the tourism sector.

A preliminary inspection of the airport and port facilities on Gan island has revealed that the technical facilities including the runway probably can be put into operation with limited investments and that the previous airbase would be in a position to form a technical/administrative centre for a tourism development.

Evaluation of the Natural Resources for Tourism Development

A thorough inspection of the islands within the atoll was undertaken by sea, land and air. The findings of the survey can be summarized in the following conclusions:



ADDU ATOLL - GAN AIR BASE AND TYPICAL BEACH

- Beaches on all islands, inhabited as well as uninhabited, were found unsuitable for the use of tourists. The beaches were stony (see the picture), only small stretches with sand were found, and often the bottom was covered with eel grass. The standard of the beaches was thus not at all comparable to what is found at the present resorts in Male Atoll or in the rest of the archipelago.

- The sea was generally very shallow, the visibility of the water was low, and in parts it was filled with a high content of organic material giving the sea a dirty and unpleasant appearance. A muddy bottom with eel grass was the normal picture close to the islands.

- The availability of live corals inside the reef was very limited.

All in all, seen from a tourism development point of view the natural resources are not comparable neither to what is developed by now, nor to the resources found so plentiful in other parts of the Maldives. The most pleasant place observed during the investigation was Villingili island which is covered with a large amount of high vegetation including fields with corn, palm trees and other agricultural plants. Villingili is thus an important agricultural island, but again beaches and reefs were of no value for tourism development.

As already mentioned, the natural resources are the most important qualifications for a tourism development. If the qualifications are not met, the normal type of beach and sea orientated tourism development cannot be made. Other types of development based on activities like sports including golf (already found in Gan) and on sight-seeing on inhabited islands are theoretically possible. However, if a development based on man-made attractions should be promoted, very high investments in development of attractions will be needed. Even in this case the demand will be very limited and the traditional image of the Maldives might even be hurt by the introduction of a tourism centre based on such premises.

A general conclusion is therefore that a substantial tourism development in Addu Atoll as such is not possible or feasible.

Since the delivery of the Interim Report a few accommodation facilities have been developed at the Gan island. These facilities will serve the visitors to the newly started clothing industry at Gan together with occasional tourists arriving by the newly erected internal flight connection between Male and Gan.

5. A TOURISM DEVELOPMENT PLAN

At the present stage of the planning work the Maldivian Government has not been able to finally select the area for the next phase development.¹⁾ Therefore, the actual development plan can only give general guidelines for the development without relating these to one specific area.

The following pages outline the general features of the suggested development including the expected economic implications of the growth in tourism.

5.1 Overall Physical Features

It is suggested that the long-term tourism development is based on provision of three separate and equal tourism zones.

1. The Male tourism zone consisting of Kaaf Atoll with Male as tourist centre.
2. A centre in the northern part of the Maldives.
3. A centre in the southern part of the Maldives.

In each tourism zone the tourism development should in principle be confined to an area within approximately 20 nautical miles or 3 hours' trip by engine dhoni. However, for administrative reasons the tourism development zones will have to be defined according to the Maldivian administrative system (by atolls).

Tourism development outside the three zones should not be allowed or be very restricted. Each tourism zone should at the final stage con-

1) The implications of the selection of Alif Atoll for tourism development have not been incorporated in the following.

sist of a bed capacity of about 3,000 to 4,000 beds.¹⁾ The three zones together will in this case have a capacity of 10,000 to 12,000 beds.

This total of approximately 12,000 beds is evaluated by the Consultants to be the upper limit within which the Maldivian tourism development should take place considering the socio-economic and physical constraints of the archipelago.

The overall background concepts for the zoning policy and the development of tourist centres are presented in Part II of Vol. I and in Vol. II. Here it should just be emphasized that the development should be based on the principle of a specific Maldivian tourism and not a development comparable to or too heavily influenced by developments in other parts of the world. Therefore, local integration and participation at the atoll level should play a very important role in the overall planning policy. Protection and conservation of the natural resources are other important features of the plan.

Each tourism zone should in principle be formed as a separate growth centre and each centre should therefore be able to function independently of the present Male Tourist Centre. Through this policy the highest local socio-economic benefits can be obtained.

As mentioned above, general principles for the transportation system, training of staff, centre management, design of resorts, etc. are presented in Part II of the report.

5.2 Timing and Phasing of the Development

A scenario covering the future development of tourism to the Maldives is presented in Chapter 3 in Part II, Vol. I. This scenario should be viewed as a general planning target with incorporated flexibility. The following timing and phasing is based on this flexible scenario:

1) At present (March 1983) the total number of beds in the Male Zone is close to 4,000.

1983-84

This is the period of consolidation and heavy planning efforts. The following steps would be involved:

- Consolidating the present tourism by improving the services and amenities. Creation of a hotel school, improvement of staff training and hotel management. Continuation of the imposed tight control with the development in the Male Tourism Zone and particularly control with the development in Ari, Baa and Vaav Atolls. The best possible discouragement of developments in these atolls is public information about the development of a new tourism centre and immediate steps to create the first centre.
- Increased utilization of the existing tourism resources during the off-season. Sales promotion and attractive prices for accommodation. (See also page 77, the Indian market).
- Further studies and planning work for the next tourism zone (selected as first priority). Planning work concerning: a thorough island survey to select those islands most suitable for development, introduction of the plan to the local population and encouragement to local participation in the planning work, final design of the tourist centre, and appointment of the centre management, a programme for handicraft and agricultural production, negotiations with companies interested in the air transportation.
- The creation of the institutional and financial framework for the development.
- Encouragement of local and foreign investors to investments in resort projects in the zone.
- By the end of the period construction of the tourist centre should be started (infrastructure: airstrip, communication facilities, and jetties).

Year 1985

During this year or at the beginning of 1986 the second tourism zone will start operations. The first part of the centre would be finished and a number of resorts would be opened. The final schedule for the following phases of the development should be made. The following phases will be tentative according to the success of the start phase.

Year 1986 to 1988

In this period the second tourism zone will be finalized with 3,000-3,500 beds. The development speed will depend upon the market reaction, and the timing will be flexible. At the end of the period the third tourism centre should be planned in detail, and construction of the tourist centre should be started.

About Year 1988/89¹⁾

The third tourism zone will be opened with a first phase consisting of the tourist centre and a number of resorts. Planning of the proceeding phases will be finalized.

About Year 1989 to 1990 (tentatively up to year 2000)

The third tourism zone will be finalized with about 3,000 beds. Tourism to the Maldives will have reached a saturation point; from now on it should be consolidated and not expanded much further. A total of 10,000 beds will then be available within the three tourism zones. Much more than approximately 10,000 beds within the archipelago is not found advisable. At this final stage the Maldives would be visited by about 200,000 tourists per year.

As underlined above, the timing and phasing should be characterized by a stepwise, flexible and controlled development through which the Government should try to adjust supply and demand to each other.

1) Timing is very tentative and the development of the third tourism zone might be postponed until the period 1990 to year 2000.

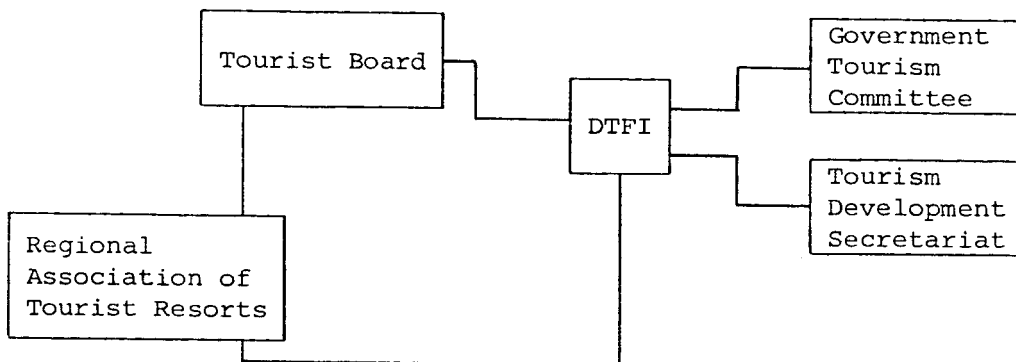
The starting phase of the above planning programme is very tight and is based on a fast decision process. In the period 1983 to 1984 efforts are needed in order to avoid chaotic conditions within the Male Tourism Zone. A considerable delay in the execution of the plan will probably soon lead to unavoidable conflicts within the Male Tourism Zone and it is strongly feared that such conflicts will have negative long-term effects on the potentiality for future tourism development.

5.3 Organization of the Implementation

On the National Level

As pointed out above, the outlined plans will make heavy demands on a tight controlling and planning system. As already now DTFI is overworked with day-to-day problems, the accomplishment of heavy new tasks will only be possible through strengthening of the organizational system.

A system enabling DTFI to accomplish the future tasks is suggested below.



DTFI will be the central body in the organizational system, but assisted by the establishment of a Tourist Board of which the Government (DTFI and other relevant Government bodies) together with the private sector should be members. The Tourist Board should deal with

all joint private and Government tasks, such as joint promotion, control of the behaviour of the individual resorts, staff training, and day-to-day problems. In order to strengthen the joint efforts, it is suggested that the resorts are forced members of regional associations of resorts. One association for each tourism zone. The Government (DTFI) should try to control the behaviour of the private resorts through the association in order to diminish a direct control system which would be expensive as well as staff requiring.

The development of new tourism zones will need joint efforts between various Government bodies. It is therefore suggested that a Government Tourism Committee is established. It is understood that such a Committee has recently been created. Through this Committee the planning and implementation of new tourism zones should be controlled and coordinated. Within DTFI a position as "planning officer" should be filled out with a well-trained person. The planning officer should be the coordinating link between the Government Tourism Committee and a suggested "Tourism Development Secretariat". This Secretariat should work as a part of DTFI but should mainly be responsible for the development of new tourism zones. In order to furnish the planning and implementation skill needed, it is suggested that expert assistance to the Secretariat is obtained. The Secretariat would be responsible for undertaking all further analyses and studies, and for the day-to-day implementation of the plans.

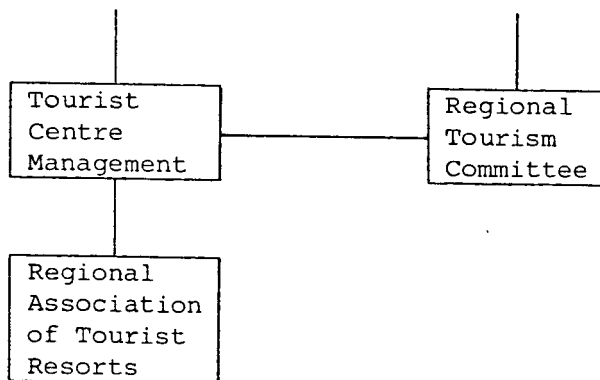
The expert assistance should consist of the following: one architect (physical planner), one general engineer, one expert on culture and handicraft (responsible for the creation of the cultural centre). All the above experts should stay in the Maldives in a 2 year period with the possibility of an extension of one further year. Besides these experts provision for participation of short-term experts should be made such as a general tourism planner, special engineers, and an agricultural advisor.

Although the above diagram and the description of organizations seem complicated, in actual practice the system should be based on a few key persons and efficient and skilled working groups and not on large and heavy organizational bodies.

On the Regional/Local Level

A strong organization on the regional level is essential as to accomplish the regional development targets. The organizational set-up on the regional level is suggested as follows:

Tourism Development Secretariat (DTFI) in Male



The system consists of three elements:

1. The Management of the Tourist Centre.

The management of the tourist centre would be in a central position for fulfilling the planning targets for the tourism zone in question. One of the tasks of the Tourism Development Secretariat would be to appoint a sufficient management group. In the start phase foreign expertise in management would probably be required. The long-term management of the tourist centre should be defined at a later stage.

2. Regional Association of Tourist Resorts.

Each resort would have to be a member of the regional association, and the association would have to work closely together with the centre management.

3. Regional Tourism Committee.

The Regional Tourism Committee should be established at an early planning stage. Members of the Committee should be island chiefs and atoll chief(s). Expertise within regional handicraft and agricultural production should be available within the Committee and the Committee, together with the centre management and the Tourism Development Secretariat, should work out studies and plans for handicraft and agricultural production, undertake information on the local level and initiate local entrepreneurs (either individuals or groups of persons) into participation in the tourism development. The creation of local/regional benefits thus heavily depends on the initiatives of the Committee.

The accomplishment of the tasks of the above organization depends very much on the resources of manpower and money made available. Foreign expertise and capital resources will thus be needed for fulfilling the programmes and projects on the regional level.

5.4 Steps to be Undertaken by the Government

The Maldivian Government will be the main initiating body to organize and control the tourism development including the furnishment of the overall framework for the development and also the general facilities. The following initiatives will have to be taken:

- Formation of the organizational set up for the future development.
- Final selection of tourism development zones.
- Final details of the implementation including selection of islands and detailed sketches and lay-outs for final building programmes.
- Construction of infrastructure and general facilities.
- Procurement of funds for the above developments as well as capital made available for the private sector (development banking).

5.5 Economic and Financial Implications

Key Figures

The development of 10,000 beds in three tourism zones will have a total employment effect of 10,000 distributed with 3,000 to 4,000 within each tourism zone.

With an average of 3,300 beds per tourism zone, each zone will produce 1.2 million bednights. It is anticipated that each tourist will stay for 10 days as an average and that an average annual bed occupancy rate of 60% will be obtained. This means that 720,000 bednights will be sold and that about 70,000 tourists will visit each zone. In 1980 the total expenditure per tourist night was estimated at US\$ 39.2, corresponding to a total economic effect by each zone of US\$ 28.2 million. As the local component is estimated at 56.6%, the total Maldivian income effect by tourism zone will be about 16 million US\$ calculated in 1980 prices. Tourism will thus be a main income generating sector in the regions in question. Calculating with a Government tax and duties of US\$ 4.5 per tourist-night (excluding airport tax), the total Government income effect would be US\$ 3.2 million. Added to this should be revenue from lease of tourist islands to investors.

Government Investments

The Government investments involved will be of the following kind:

- 1) Creation of a tourism development secretariat which has to involve outside expertise and which also has to be furnished with facilities like one or two boats.
- 2) Investments in the general infrastructure of the tourist centre island. The overall investments are estimated at US\$ 8.5 million as per Table 5.

Table 5. Tourism Centre - Development Cost in 1982 Prices

Unit	m ²	Cost/m ² US\$	Total Cost US\$ 1000	Import Component US\$ 1000
Airport buildings	2,000	230	460	130
Workshop buildings	940	230	216	62
Cold store	500	1,100	550	550
Dry store	1,000	230	230	66
Medical clinic	200	500	100	65
Offices: PTT, Bank, Centre management, DTFI	100	230	23	10
Exhibition centre	500	230	115	10
Shops, cafés and toilets	300	230	69	5
Resthouse with 40 beds	700	230	161	46
Jetties		-	95	-
Housing	3,500	200	700	100
Infrastructure	-	-	1,900	1,150
Fuel storage			100	80
Airstrip			4,719	2,274
Airport and workshop equipment			2,000	500
Miscellaneous			1,500	1,500
			281	126
Total			8,500	4,400
Possible extra costs:				
Communication (satellite station)			2,500	2,500
Hotel school			69	20

The total investments of US\$ 8.5 million can either be fully undertaken by the Government or could be divided between the Government (general infrastructure), the Regional Association of Tourist Resorts (RART), and the private sector.

Another possibility would be to create a tourism centre company which should take care of the tourist orientated investments. Shareholders in the company could be RATR, tourist resorts, the Government, private companies or private persons. However, out of the total investments of US\$ 8.5 million, about 6.5 million can be considered as general infrastructure and therefore to be undertaken by the Government.

The development of infrastructure will not only be of importance to the tourism development but would also suit regional purposes and can therefore not fully be charged to the tourism sector. The remaining investments in the tourist centres will mainly be for the purpose of the tourism sector.

Out of the US\$ 8.5 million 52% or 4.3 million will be the import component. Particularly investments in cold storage facilities, the medical clinic, infrastructure and airport and workshop equipment are heavily import generating.

The phasing of the investment and the return are shown in Vol. II, Project 1.

The Private Sector Investments

The private sector will have to develop about 3,300 beds in each tourism zone. Calculating with a cost of US\$ 5,000 on an average per bed, the overall investments in resorts would amount to approximately 16.5 million US\$. Money for investments of these dimensions will not be available within the Maldivian private sector, and particularly not locally in the tourism zone itself. Public assistance through an investment programme will therefore be needed.

The resorts have to be members of the Regional Association of Tourist Resorts. RATR shall participate in the running of the tourism centre and could possibly also participate in the centre investments through a fixed fee to be paid by the resorts, either to RATR or to the tourist centre. This fee could be related to the number of beds in the resorts.

Running of the Tourist Centre

It is anticipated that the cost of running the centre to a major extent will be covered by the income generating activities. The centre will obtain income from

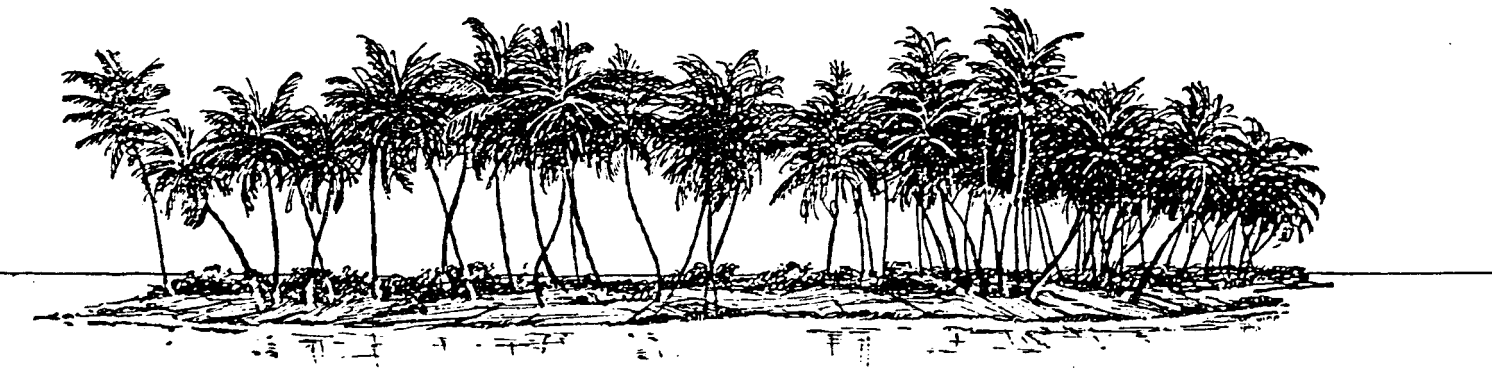
- landing fees for aircraft
- storage of products
- rooms at the resthouse
- shop fees and sales in shops run by the tourist centre
- transportation charges
- fees for other services rendered to the resorts.

In case the centre investments are divided between the Government and a centre company, the revenue and expenditures will have to be divided accordingly.

While it is not anticipated that the running of the tourism centre will cause major financial problems, the transfer of tourists to the tourism zone could be a financial obstacle. The new tourism centre will to some extent be competing with the resorts in the Male Tourism Zone. Because of improved planning and product development the new centre will have a number of advantages compared to the Male resorts; it is thus anticipated that the tourists/tour operators will be ready to pay a certain extra amount for travelling to the new centre. It is, however, calculated that the cost price for a round trip ticket Male-new centre-Male will amount to 50 to 60 US\$ (see section 7.6 in part II). This is considered to be more than what the tourists/operators are ready to pay, and it is therefore necessary that the price is reduced. A ticket price of 30-40 US\$ seems realistic, particularly bearing in mind that the trip in itself is attractive, seeing the Maldives from the air. A subsidy of about 20 US\$ per tourist is therefore a consequence if the new centre shall be able to compete with the Male resorts.

The above-mentioned cost reduction of the air ticket could be accomplished through various means:

- 1) By obtaining the required aircraft at special terms.
- 2) By allowing direct flight connection to Colombo from the centre. This route could be commercially viable and thereby reduce the need for the above ticket reduction.
- 3) By using a part of the tourist bed night tax at the new centre as a subsidy for the transportation.
- 4) By increasing the general bed night tax stepwise for all resorts in the Maldives. For instance to US\$ 4 in 1983 and US\$ 5 in 1985. Such an increase will only keep the tax in line with the overall price escalations. The further tax increase of US\$ 2 per bed night for all resorts could be used as the necessary financial source for the ticket reduction.
- 5) By introducing a particular tax on charter flights. This tax could be used as a financial source for the reduction of the internal air ticket.



PART II

**PLANNING
FRAMEWORK**

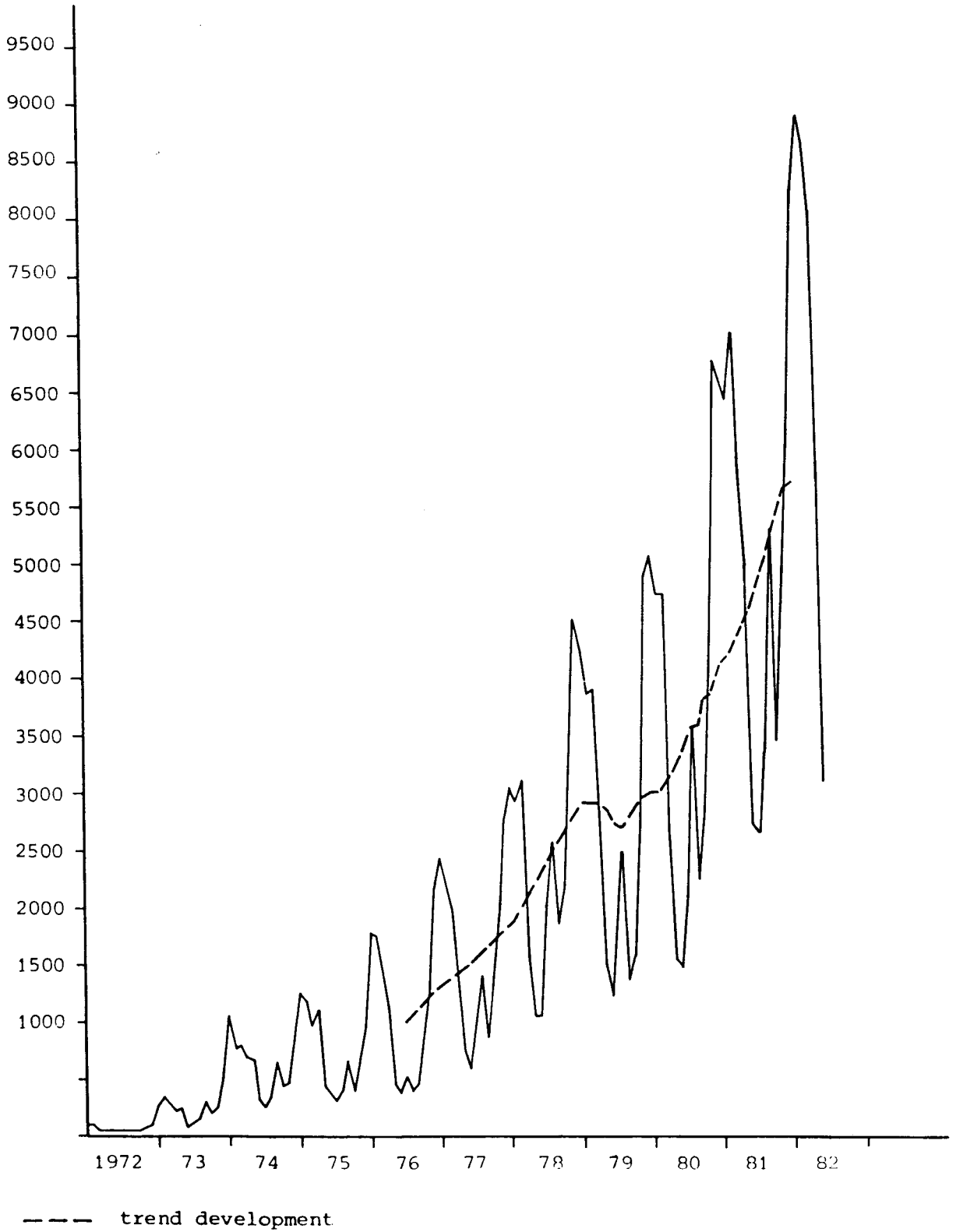
II.1 THE PAST TOURISM DEVELOPMENT

1.1 Historical Trend

In 1972 the first tourist village (Kurumba Village) was opened on Vihamanaafushi Island. This 122 bed resort was the beginning of a tourism development which by March 1982 resulted in 38 resorts with 3,290 beds. Tourism has been growing in jumps related to the opening of new resorts and the introduction of the Maldives in still more tour operators' programmes. The beauty of the Maldivian tropical coral islands is identical with the European ideal picture of a perfect island holiday. Therefore, as soon as the market got to know about the islands, it became increasingly difficult to fulfil the need for rooms (in the season from November to April - in the off-season period there is more than sufficient capacity). Tourism has thus been pulled by the demand for a holiday on an attractive tropical island surrounded by coral reefs. As a result, it has not been necessary to make any major marketing efforts or to use much effort in building attractive resorts or offering special food, entertainment or service - the natural resources have been strong enough to attract tourists in spite of the lack of a sophisticated tourism superstructure.

As shown in the figure on the next page, the visitor arrivals (recorded as passenger arrivals at Hulule Airport) went up from less than 1,000 in 1972 to 74,400 in 1982. Within the whole period the growth rate has been high and since 1976, when tourism was well established, the annual growth rates have remained as high as between 30 and 40% on an average per year. In 1980 the growth rate was 30% and in 1981, when the new Hulule airport was opened, the arrivals grew by 44%. In 1982 the growth was, however, reduced to 23%. The figure also illustrates the long-term development since 1976 (named the trend in the figure) and the seasonal variations can be observed as the fluctuations around the trend development. The trend shows a remarkably steady growth throughout the period.

Figure II.1 Monthly Arrivals, 1972-1982 at Hulule Airport



Although Male itself has only limited attractions for pleasure tourists, the increased economic activities and the need for rooms to cover short-stay and transfer visitors have resulted in the development of 4 hotels in Male with a total capacity of 113 beds. In 1982 nearly 15,000 visitors arrived from India and 2,000 visitors from Sri Lanka. These visitors are mainly attracted to Male to do shopping and they stay either with relatives and friends working in Male or in one of the 93 registered guest houses in the town. The introduction of a special payment agreement between India and the Maldives could increase this tourism considerably. If Indian tourists in the off-season (the Indian summer holiday) could pay with Indian Rupees at the hotels or resorts, and if these in return could pay import from India with the received Rupees, the overall tourism from India would change.

From the start the Maldivian tourism has been tied to the tourism of Sri Lanka. Tour operators have found it convenient to combine a package arrangement to Sri Lanka with a beach holiday on the Maldivian Islands. This combination has strengthened the total attraction of the programmes as it has been possible to offer the mountains and cultural attractions of Sri Lanka together with the beaches and coral reefs of the Maldives. Another important feature of the starting period has been the Maldivian coral reefs for diving enthusiasts. The interest shown by divers has resulted in a worldwide reputation of the country as an attractive tourist destination, and the descriptions of the "diving paradise" islands in magazines and newspapers have resulted in an awareness among tour operators and potential tourists. The main background for the tourism development can therefore in general terms be described as the special natural resources for beach orientated tourists and for divers combined with the close-by potential market of tourists to Sri Lanka.

Today the picture has somewhat changed. Diving is still a very important attraction, but the share of enthusiastic divers has been decreasing and the share of beach/relaxation orientated tourists has simultaneously been increasing (the latter group is also very interested in the underwater life, but the coral reefs are not the de-

cisive factor for their choice of the trip to the Maldives). The market base has thus changed from the more limited and specialized divers' market to the much bigger mass market for beach holidays. With the growing importance of the mass market the tour operators have found that the market base was sufficient for introducing the Maldivian Islands as a separate destination. By the end of 1981, when the new Hulule airport was opened, tour operators from Germany and Italy started to fly in tourists by wide-body aircraft.

1.2 Profile of the Tourists

Visitors' Travel Purpose

In general the visitors can be divided into business and pleasure travellers.

Up to 1980, when Maldivian import duties were introduced, the country has been a duty-free area, and products like synthetic textiles, watches, radios etc. have been available at relatively low prices from Singapore. Visitors from India and Sri Lanka have been attracted for short-stay visits in order to buy these items and also because of traditional trade relations between the Maldives and India and Sri Lanka. Just about all visitors from India and Sri Lanka can be categorized as travellers for the purpose of business and shopping, and they are seldom found as guests at the tourist resorts.

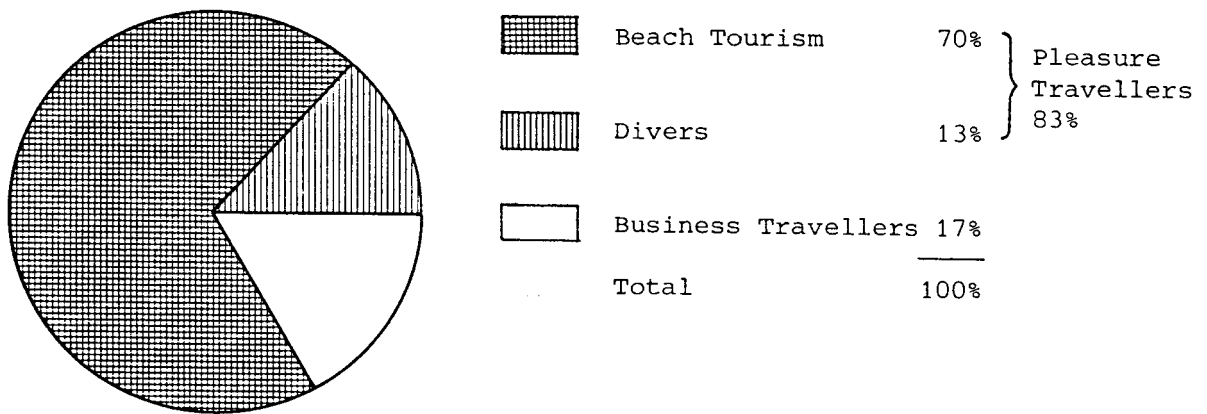
Although the Maldivian prices have increased by import duties, the price level is still competitive, which can also be illustrated by the recent growth in arrivals from the two neighbouring countries.

The second category are visitors travelling to the Maldives for holiday and relaxation purposes. According to the main trip purpose the holiday pleasure travellers can further be divided into "the divers" attracted by the unpolluted reefs with perfect diving condi-

tions, and the "beach tourists" attracted by the sun, sand and sea. The main travel motives are thus for both categories related to the natural resources of the Maldives.

No exact data exist covering the distribution of the pleasure tourists by type. However, based on the questionnaire survey, a crude estimate has been possible. On this basis the 1980 travel pattern can be illustrated as shown in Fig. II.2.

Figure II.2 Visitor Arrivals in 1980 divided on Visitor Categories



Nationalities of Visitors

The Maldives are visited by a large number of different nationalities. The distribution on main nationalities in 1979 and 1981 is shown in Table I.1.

The Germans are the most important nationality group with 25% of all arrivals in 1981. If the German-speaking Austrians and Swiss are added, the German-speaking tourists make up 35% of all arrivals.

The Italians are the second most important nationality with a 17% share in 1981. The annual growth from 1979 to 1981 of 58% points to a higher future share.

Table II.1 Visitor Arrivals to the Maldives by Nationality in 1979 and 1981

	1979		1981		Annual Growth Rate 1979-81,%	Annual Growth Rate 1981-82,%
	in 1000 No.	%	in 1000 No.	%		
Germany	7.8	24	15.4	25	41	25
Italy	4.0	12	10.0	17	58	29
France	3.2	10	6.1	10	38	12
Scandinavia ¹⁾	3.7	11	2.7	5	-15	-28
Other West European countries	3.8	12	9.7	16	60	2)
Total Western Europe	22.5	69	43.9	73	40	2)
Sri Lanka and India	8.1	25	12.1	20	22	42
Other parts of the world	1.9	6	4.4	7	52	2)
Total	32.5	100	60.4	100	36	29

Notes: 1) Denmark, Sweden, Norway and Finland.

2) Data not available.

Source: DTFI.

The French market also seems to develop fast, while the Scandinavian countries are becoming of less importance. All in all, the recent developments show an increased nationality concentration on the German-speaking, the Italian and the French markets having 62% of all visitor arrivals. The British market has been very limited but has shown strong growth tendencies from 448 arrivals in 1979 to 2,323 in 1981 and 3,117 in 1982.

The arrivals from Sri Lanka and India do not show the same sort of regular growth and the number of arrivals has been going up and down in the period.

From other parts of the world the Americans and Japanese make up about 2% each. The remaining 3% are divided on several countries with Australia¹⁾ and South Africa as the most important.

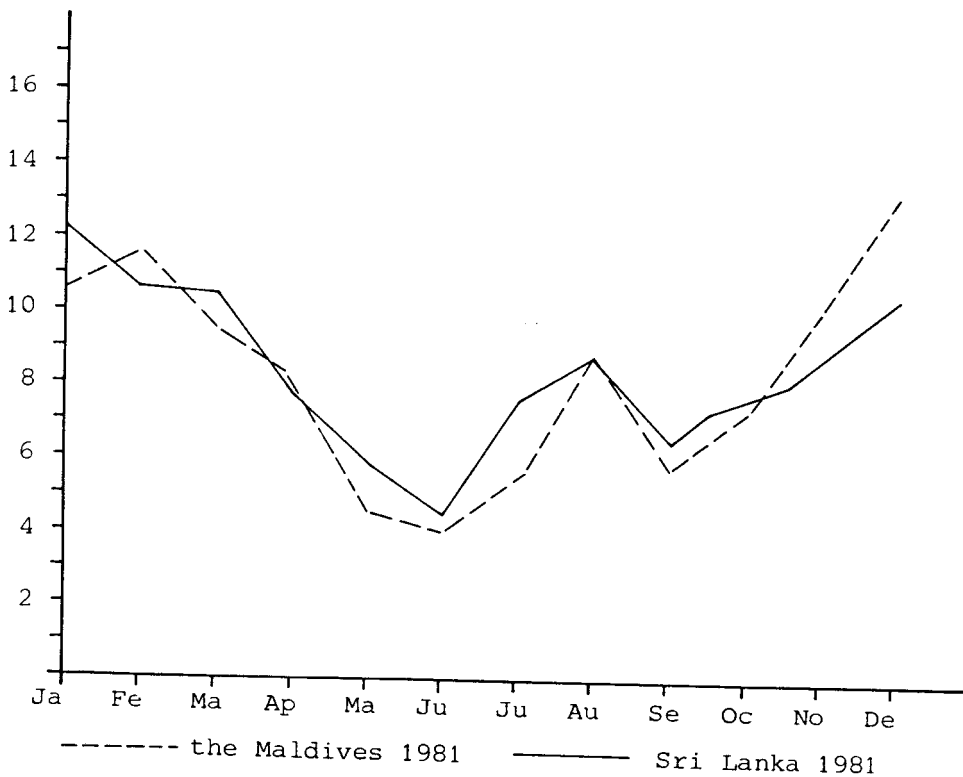
1) In 1982 the Australian arrivals increased to 638 from 413 in 1981.

Seasonality

One of the major problems for the Maldivian tourism industry is illustrated in Figure II.3 showing the seasonality pattern of the visitors arriving to the Maldives.

Figure II.3 The Seasonality Pattern of Tourism to the Maldives and Sri Lanka

% of total annual arrivals



In comparison, the seasonality pattern of the tourism to Sri Lanka is also given. The Maldivian season is concentrated on the period December to March with November and April as shoulder months. The low season is from May to July, the monsoon period, followed by September and October. August is a second season as illustrated in the figure. While the main season is closely related to the cold and dark winter climate in Europe inducing the Europeans to travel to coun-

tries with a more pleasant and sunny weather, the second season is related to the main summer holiday period in Europe. It is especially Italian and French tourists who are attracted in this period, while it is tourists from the climatically worse parts of Europe who are attracted in the main season. In August guests from Italy and France make up 65% of all arrivals from Western Europe.

Therefore, these nationalities have a major importance for the leveling out of the seasonality problem. Sri Lanka has a less pronounced season, a fact which is further elaborated upon in the following chapter.

Average Length of Stay

Until November 1980 no precise statistical data concerning the average length of stay have been available. However, the new tourism tax system started from November 1980 is based on accurate reports on the number of bednights in the resorts. Based on the bed taxes collected the following picture of the average length of stay occurs:

Table II.2 Average Length of Stay in Resorts

	No. of Arrivals to the Maldives ¹⁾	No. of Guestnights	Average Length of Stay
November 1980-March 1981	25,510	234,426	9.2
April 1981-October 1981	18,920	166,257	8.8
November 1981-March 1982	35,346	369,245	10.5
Total Nov. 1980-March 1982	79,776	769,428	9.7

Note: 1) Total No. of arrivals less arrivals from India and Sri Lanka.

Source: DTFI.

An average length of stay of 9.7 days seems to give a reasonably exact picture of the general situation although maybe a little on the

low side. The order of magnitude is confirmed by the data from the questionnaire surveys showing average length of stays of 9.6 and 9.9 days respectively.

The questionnaire surveys also give general information on the profile of the tourists. The specific findings are presented in Chapter II.2.

1.3 Tourism within the South Asia Region

According to information from the WTO, Commission for South Asia, 1.6 million tourists arrived to the Region in 1979. These arrivals were distributed as follows:

Table II.3 Tourist Arrivals in the South Asia Region in 1979

Country	No. in Thousands	Change from 1978 %
Afghanistan	40	-57
Bangladesh	57	14
Burma	22	2
India	765	2
Maldives ¹⁾	33	14 ²⁾
Nepal	162	4
Pakistan	319	10
Sri Lanka	250	30
The Region	1,648	5

Notes: 1) Figures for the Maldives are corrected.

2) Arrivals in 1979 were affected by disruptions in the air-line services between the Maldives and Sri Lanka.

Source: WTO, Commission for South Asia.

India, Pakistan and Sri Lanka are the major tourism destinations within the region. From 1978 to 1979 the average growth in arrivals was 5%, however, considerable variations in the development pattern can be observed with Sri Lanka having the strongest growth.



*DIVERS' VILLAGE :
VAADHU - SOUTH MALE*

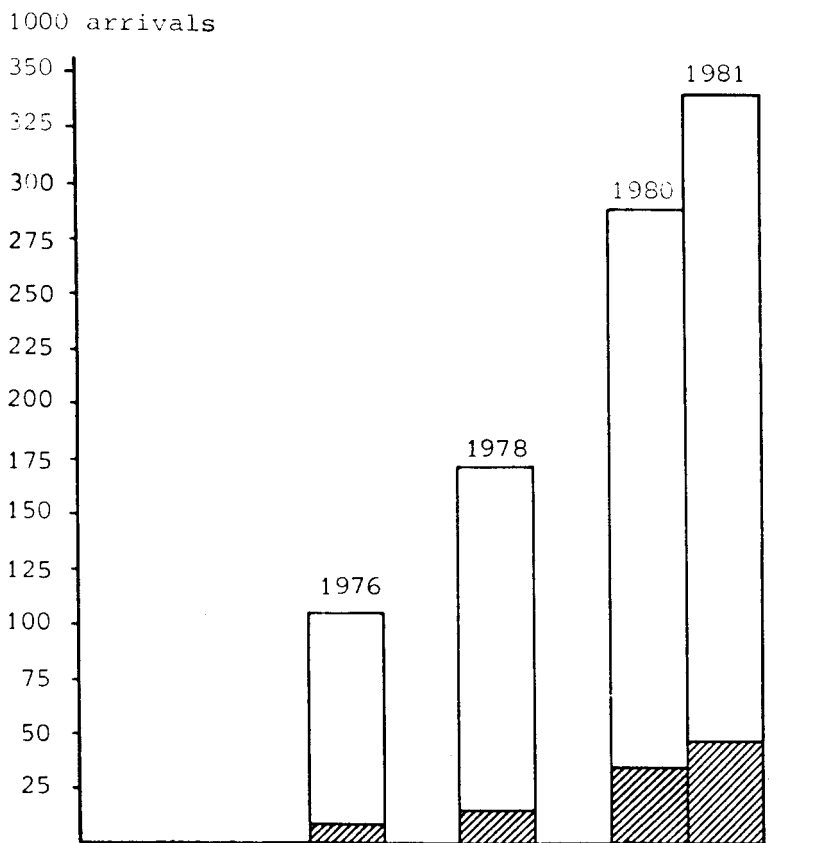


*GASHURI FINOLHU
NORTH MALE*

Because of the present strong link between tourism to the Maldives and Sri Lanka, the growth in tourism in the latter country is of special importance for the market base for the Maldivian Islands.

From 1979 to 1980 the arrivals to Sri Lanka further increased by 28% and the recorded number of visitor arrivals was 321,800. In 1981 the arrivals were further increased by 15% to 370,700. In Figure II.4 the arrival of pleasure tourists to Sri Lanka¹⁾ is compared with the arrivals to the Maldives for the period 1976 to 1981.

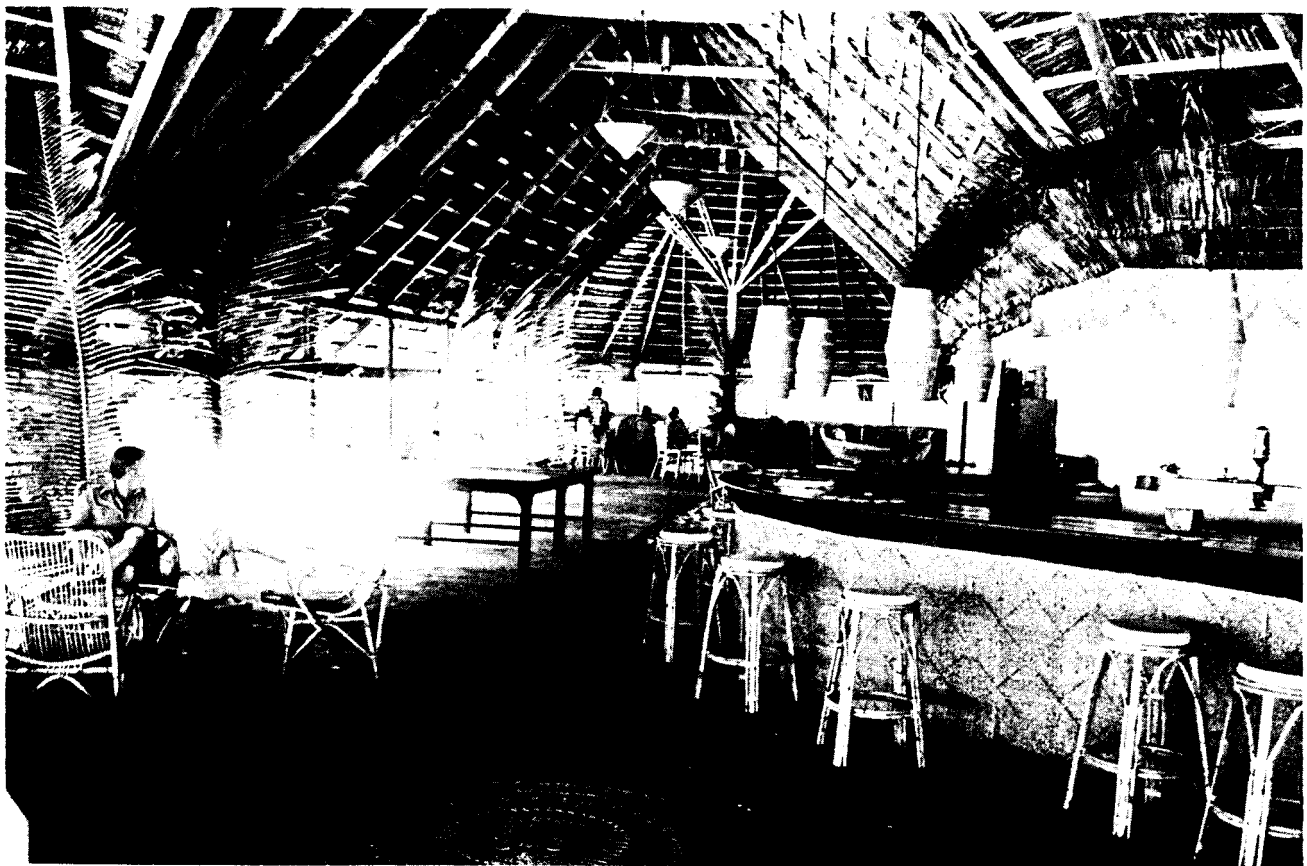
Figure II.4 Pleasure Tourist Arrivals to Sri Lanka and the Maldives 1976-1981



The arrivals to the Maldives in percentage of the arrivals to Sri Lanka:

1976: 8% 1978: 9% 1980: 12% 1981: 14%

1) About 90% of all visitors to Sri Lanka belong to the category of pleasure travellers.



THULHAAGIRI - NORTH MALE

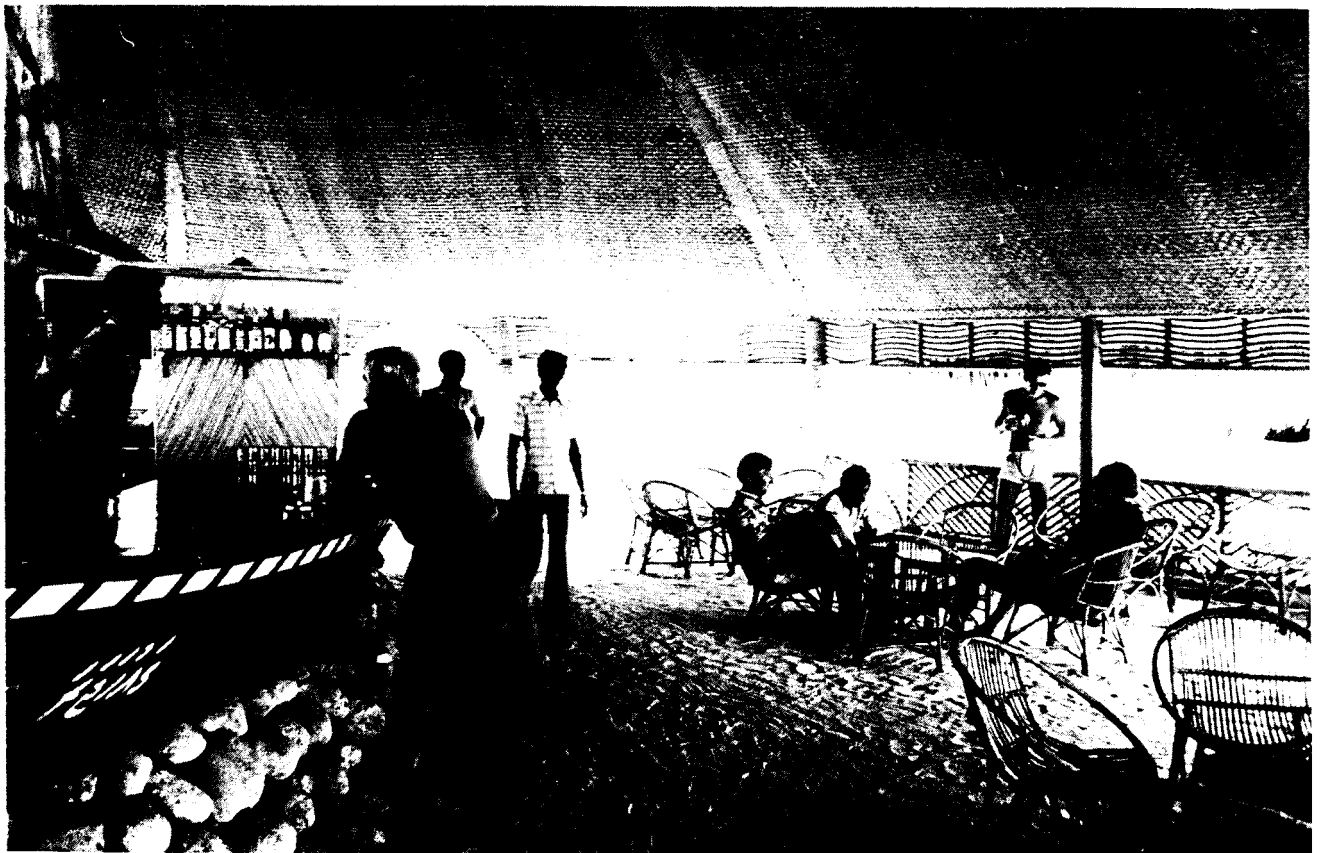
Since 1976 the Maldives have had a higher average growth rate than Sri Lanka, but by 1981 the Maldives still only receive a fraction (14%) of the pleasure tourists attracted to Sri Lanka. Sri Lanka anticipates a slowdown of the growth rate in 1982, for instance indicated by a growth of less than $\frac{1}{2}$ % of pleasure arrivals in December 1981. The big gap between Tourist arrivals to the two countries will thus probably be reduced in 1982.

An analysis of the arrivals by nationalities to the two countries shows the following pattern for 1980:

Table II.4 Tourist Arrivals by selected Nationalities to Sri Lanka and the Maldives in 1980

	Arrivals in 1000		Maldives in % of Sri Lanka
	Sri Lanka	Maldives	
Germany	75.4	11.1	15
Italy	16.9	7.4	44
France	34.2	4.8	14
Scandinavia	19.5	2.7	14
UK	31.0	1.2	4
Austria	8.2	1.4	17
Netherlands	7.8	0.2	2
Switzerland	15.5	2.3	15
Total Western Europe	215.7	32.2	15
Other selected countries:			
North America	15.4	0.6	4
Japan	11.5	0.6	5
South Africa	1.4	0.2	14
Australia	7.4	0.3	4

Sources: DTFI and Ceylon Tourist Board Annual Statistical Report, 1980.



LHOHIFUSHI - NORTH MALE

The table shows wide variations in the market characteristics. The Maldives have a comparably strong position on the Italian market but a weak position in UK and the Netherlands.

Tourism to the Maldives is furthermore subject to a higher degree of seasonal fluctuations (see Fig. II.3). A main reason for this is the Maldivian weather situation from May to July where Sri Lanka is able to offer beaches on the East Coast with more stable weather conditions. Another reason might be differences in travel purpose and some differences in the profile of clients, as Sri Lanka has a higher portion of low-cost travellers travelling when prices are down. Also the age distribution shows some characteristic differences, as a higher portion of the guests to Sri Lanka is found within the group above 50 years of age (19.1% in Sri Lanka compared with 15.7% in the Maldives, both countries in 1980).

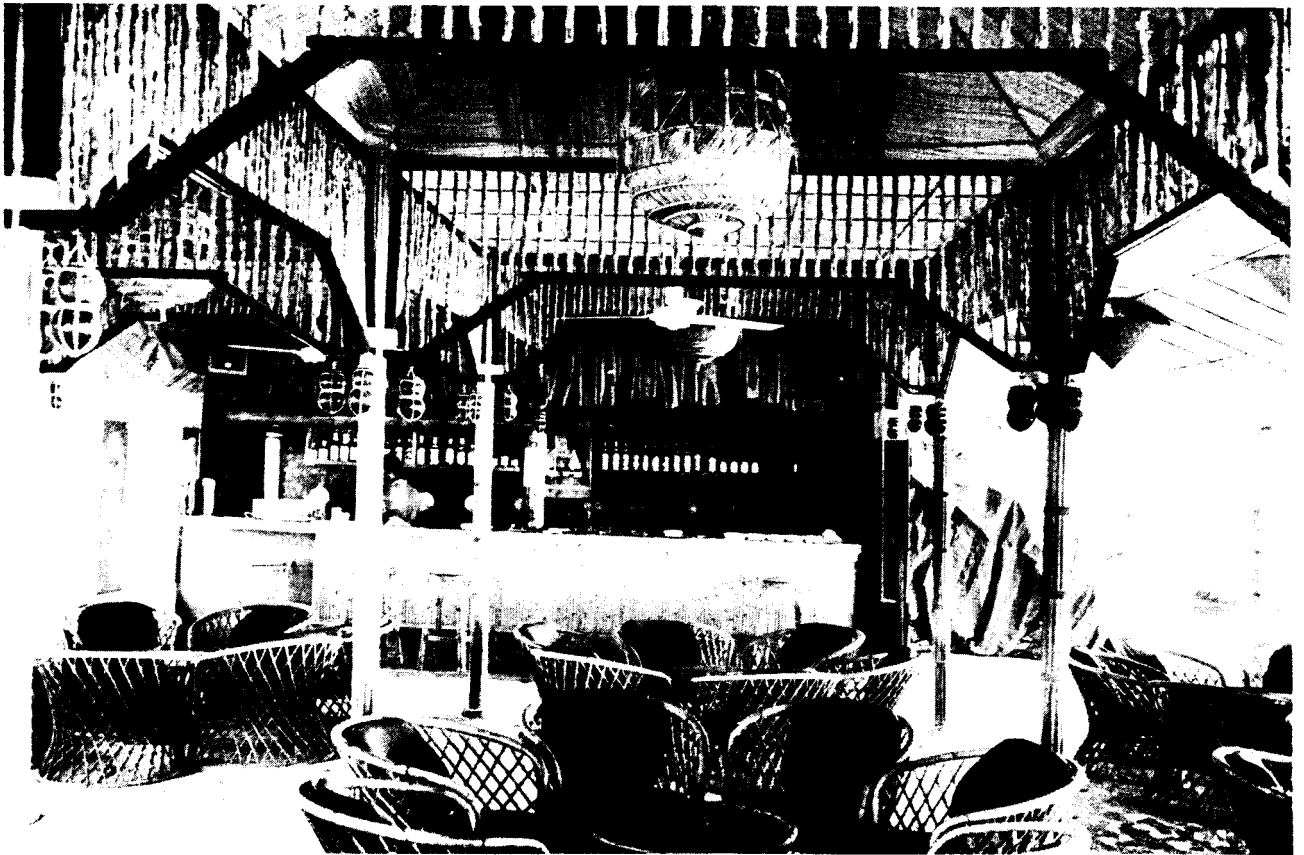
1.4 Major Tourism Development Constraints

At the international level the limitations in availability of airline seats to and from Sri Lanka have been a serious constraint and have made it difficult for individual travellers to come to the Maldives. This transport bottleneck has been released by the Hulule Airport extension in 1981.

Another bottleneck has been the availability of rooms in the high season. As pointed out in Section 1.1, the demand in the season has generally exceeded the supply of rooms. The adjustment between demand and supply has been made stepwise, but generally during the peak of the season at Christmas time overbookings have taken place and tourists have had to sleep in staff quarters or on the beach. This bottleneck will be much more serious in the near future because of limitations in available islands for tourism development in the Male Atoll. Within the Maldives there are a large number of islands suitable for development, but the constraints of internal transport only

make islands within 20 to 30 miles' distance from Hulule Airport realistic for development. By the end of 1982 all islands within this distance will have been developed, and further increases in the bed capacity will have to take place through minor increases in the bed capacity of existing resorts or outside the distance barrier.

The internal transport constraint will therefore in the near future be a crucial constraint for further tourism developments within the existing central tourism zone.



BANDOS - NORTH MALE



FURANA - NORTH MALE



II.2 QUESTIONNAIRE SURVEY OF THE PRESENT TOURISM

2.1 Introduction

The basis for analysing the present tourism is quantitative data covering the opinions and expectations of the tourists. Much effort has therefore been made as to get a clear picture of the tourists' expectations before arriving to the Maldives and their opinions about the stay when leaving the country. Normally, it is extremely difficult to obtain information from tourists before arrival at their destination, but because most of the tourists in 1981 were passing Colombo Airport on their way to the Maldives, it has been possible to organize a survey before the arrival in the Maldives.

Although tourists in general are uniform in their expectations and opinions, it was expected that some variations would materialize according to nationality, organization of the tour, and the place of stay in the Maldives. In order to cover any variations it was decided that tourists (arriving and departing) within a 3 to 4 week period should be covered by the surveys. As more variations were expected in the departure survey, this was planned to cover a larger number of respondents than the arrival survey.

The surveys were expected to identify the need for improvement programmes and to give essential information for the future marketing strategy.

A comparison of the findings of the two surveys was expected to point at critical areas where the image of the Maldives would differ from the realities.

2.2 Implementation of the Surveys

During November and December 1980 a pilot study presenting the forms to the tourists was undertaken. On the basis of the findings some changes of the questionnaire forms were made. The actual surveys were then performed from the end of January until the end of February 1981. (Copies of the questionnaire forms are shown in Appendix 1).

In order to enable full analyses of all types of relations between parameters, data processing of the survey results has been made.

The Arrival Survey

With assistance from the Ceylon Tourist Board questionnaire forms were given to tourists leaving Colombo Airport bound for the Maldives. Within the one hour and fifteen minutes' travel time the tourists had time for filling out the forms. On arrival at Hulule representatives from DTFI picked up the forms. The specific survey started on the 9th and ended on the 20th of February 1981. Within the period 1,086 forms were collected corresponding to about 50% of all tourist arrivals within the period. Twelve forms were fragmentarily filled out, therefore, only 1,074 forms have been data processed.

The Departure Survey

Forms were given to the tourists in the departure lounge in Hulule Airport to be filled out when waiting for the airplane. The survey started on the 28th of January and ended on the 27th of February. Within the period 2,412 forms were given to the tourists and 1,889 forms were collected at the departure corresponding to a response of 78%, a highly satisfactory figure. As 49 of the forms were very fragmentarily filled out, only 1,840 forms have been data processed.

2.3 Main Survey Findings

The outprints from the data analyses have been further processed and are presented in the following. Besides the data presented a full set of outprints is collected in a separate volume.

Tourist Profile

As expected, Germans were the main tourist nationality followed by Italians and French.

Table II.5 The Distribution on Nationalities

	No. of Respondents		% Distribution	
	D	A	D	A
Germany	610	345	33	32
Italy	478	222	26	21
France	209	152	11	14
Switzerland, Austria and Holland 1)	199	186	11	18
Scandinavia 2)	186	90	10	8
Other West European Countries 3)	83	45	5	4
Other Parts of the World	75	34	4	3
Total No. of Respondents	1,840	1,074	100	100

D = Departure. A = Arrival.

Notes: 1) Mainly German-speaking.

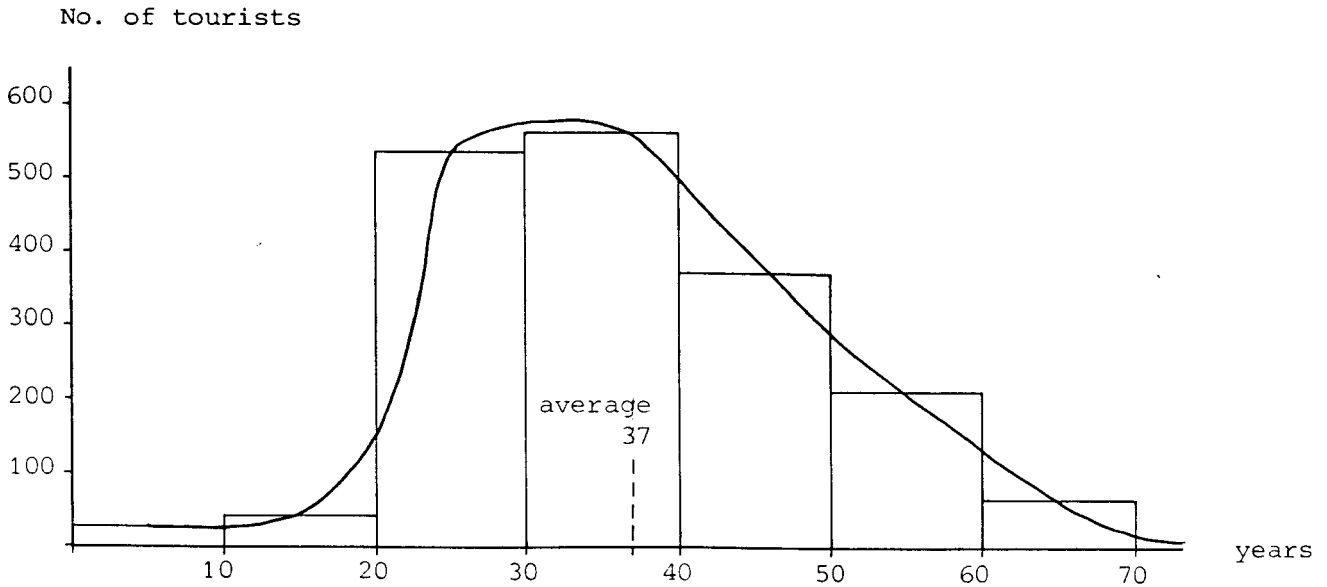
2) Sweden, Norway, Denmark and Finland.

3) Mainly Belgium and Britain.

Source: The tourist departure and arrival surveys.

The tourists were found to have an average age of 37 years. Most of the tourists (60%) as shown on the diagram below were between 20 and 40 years old, and very few children were recorded. The same distribution and the same average age were also found in the arrival survey.

Figure II.5 Age Distribution of Departing Tourists



Source: The tourist departure survey.

The above picture is very uniform by nationalities. However, for the Scandinavians a minor difference was found as 10% of these were between 10 and 20 years and 38% between 20 and 30 years. This is probably due to the sale of CLUB 33 products on the Scandinavian market. This product is for younger people.

84% of the respondents were visiting the Maldives for the first time. The highest number of repeat visits was found for Germans, as about 20% have visited the Maldives before, while the lowest number was found for Italians and French as only about 10% had been in the Maldives before.

Profile of the Travel Arrangement

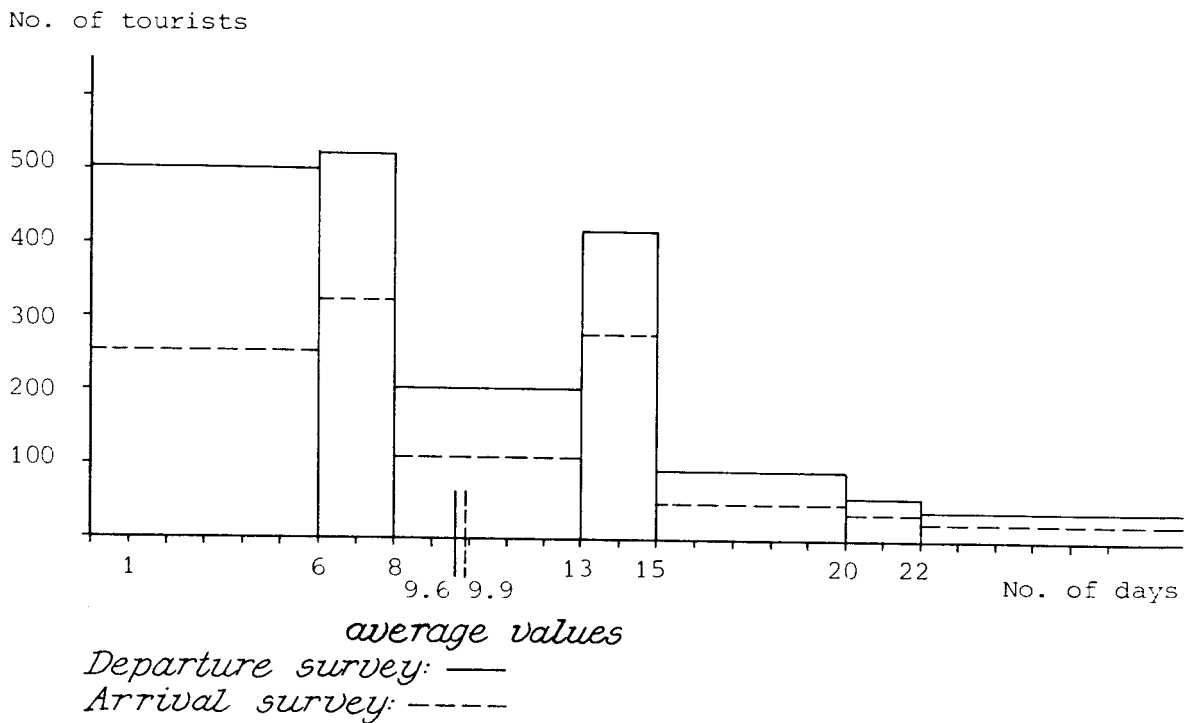
Most of the tourists are travelling in couples, relatively few are travelling alone and very few in groups of more than four persons. The surveys give the following distribution:

	<u>Survey:</u>	
	<u>Departure</u>	<u>Arrival</u>
Travelling alone	12.6%	10.2%
Two persons	62.4%	63.2%
Three or four persons	16.5%	18.1%
More than four persons ¹⁾	8.5%	8.5%
Total	100%	100%

Note: 1) Figures probably too high as some of the respondents seem to have included non-related travel companions.

On an average the tourists were found to stay between 9.6 and 9.9 days in the Maldives. However, the average covers a wide distribution, as shown in Fig. II.6.

Figure II.6 Length of Stay Distribution



Germans were found to stay longer with a length of stay of 11 days, while tourists from outside Europe had the lowest length of stay with 6.9 days. The recorded differences are due to the type of travel as tourists travelling on their own generally stay a shorter period in the Maldives. The Scandinavians and the Italians are generally coming on a one-week tour, therefore, their average length of stay is lower (about 8.5 days on an average) compared to the Germans, many of whom are on a two-week tour to the Maldives.

A large number of tour operators/travel agents have been identified in the surveys. The number recorded is as high as 100. Of these, however, only few have any importance. The major part of the travel agents/tour operators only send a handful of guests to the Maldives per week or they only send tourists occasionally. The major tour operators found in the questionnaire surveys are as follows:

Germany:	TUI
	Tjæreborg
	Neckermann
	Sub-Aqua
Italy:	Kuoni
	Vacanze
	Turisandra
	Club Mediterranee
France:	Jet Tours
	Kuoni
	Club Mediterranee
Austria/Holland/ Switzerland:	Kuoni
	Montana
	Sub-Aqua
	Meridian

Scandinavia: Vingresor
 Scan Tours
 Tjæreborg
 Club 33

In the arrival survey the tourists were asked the following question: "How did you learn about the Maldives". The question, which is of great importance for the marketing strategy, gave the following distribution:

Through:

Friends	38.7%
Travel Brochures	27.2%
Newspapers	13.3%
Travel Agents	10.8%
Diving Clubs	10.0%

The mouth-to-mouth information channel is the most important, followed by travel brochures. The above average pattern shows considerable variations by nationalities. For instance, in Italy "friends" is an even more important source with 46.8% of the tourists. Also travel agents play some role with 15.8% while travel brochures only informed 10.4% of the Italian tourists. Quite opposite on the Scandinavian market travel brochures were the main source of information for 45.6% of the tourists. In Germany newspapers have a central position with 22.3% of the tourists, and diving clubs reached 12.8%. The latter source is of special importance in Switzerland, Austria and Holland with 16.7% of the tourists. In France travel agents are an important source of information for 15.8%. All in all, it must be concluded that each market has its own sales channels and therefore each country must be treated separately in the marketing strategy. However, it can also be concluded that the mouth-to-mouth source of information is of crucial importance. This means that tourists with negative attitudes towards their stay in the Maldives can spoil the future possibilities of increasing the number of guests. Therefore, to have happy guests is not alone a problem for each resort as such,

but is a general problem for the whole tourist industry. Resorts with bad management can therefore be very harmful for the tourism development to come.

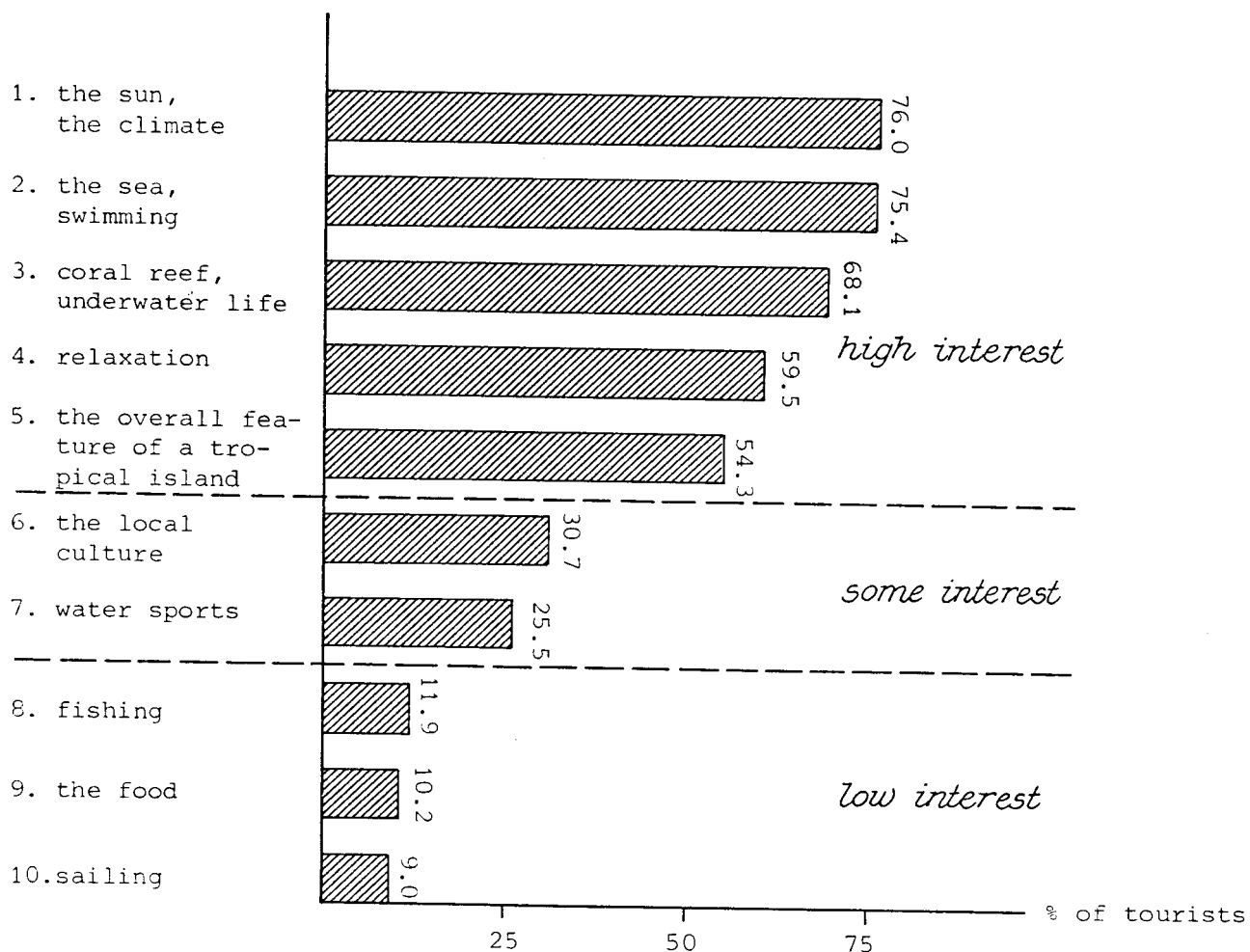
Profile of the Expectations

The central questions in the arrival survey were related to the expectation pattern, and the tourists were asked what they expected to enjoy most during their holiday in the Maldives. Ten fixed choices were suggested in the questionnaire (see Fig. II.7). Five of the choices were found to be of high interest, two were found to be of some interest, while the remaining three choices were found to have relatively little interest.

Some differences in the average picture were found when analysing the answers by nationalities. The most important of these differences are:

- the Germans did not expect much from the food (only 7.2% of the German tourists had selected this item compared to the average of 10.2% of all tourists) while the Italians, tourists from "Other West European Countries" and from "Other Parts of the World" had food expectations higher on the list of choices.
- the sun and beach loving Scandinavians had the sea and swimming as high as 88.9% and the sun/climate as high as 87.8%. The Germans, on the other hand, did not seem to point as strongly to the climate as "only" 66.5% of the German tourists had selected this choice.
- concerning relaxation, the Germans, the German speaking and the Scandinavians were as high as about 65%, while the Italians were as low as 46%.
- the overall feature of a tropical island was of high interest for the Italians (67%) while the Scandinavians were on the low side (29%).

Figure II.7 Distribution of Expectations of the Stay



Source: the tourist arrival survey.

- fishing is of generally low interest but with a particularly low expectation profile among German tourists (only 4% point at this activity), and with a higher interest among Italians with 25% expecting to enjoy fishing.

The information concerning the expectations of the stay was further elaborated upon in the next two questions where the arriving tourists specifically were asked what they expected from the hotel and the food. In each case three different choices were possible.

Regarding the hotel expectations the following picture occurred:

Primitive but comfortable hotels:	72.2%
Primitive without much comfort:	16.9%
International standard:	10.9%

Regarding the food expectations the following picture occurred:

Simple food with limited variations:	31.3%
International standard	7.9%
Simple but exotic food:	60.8%

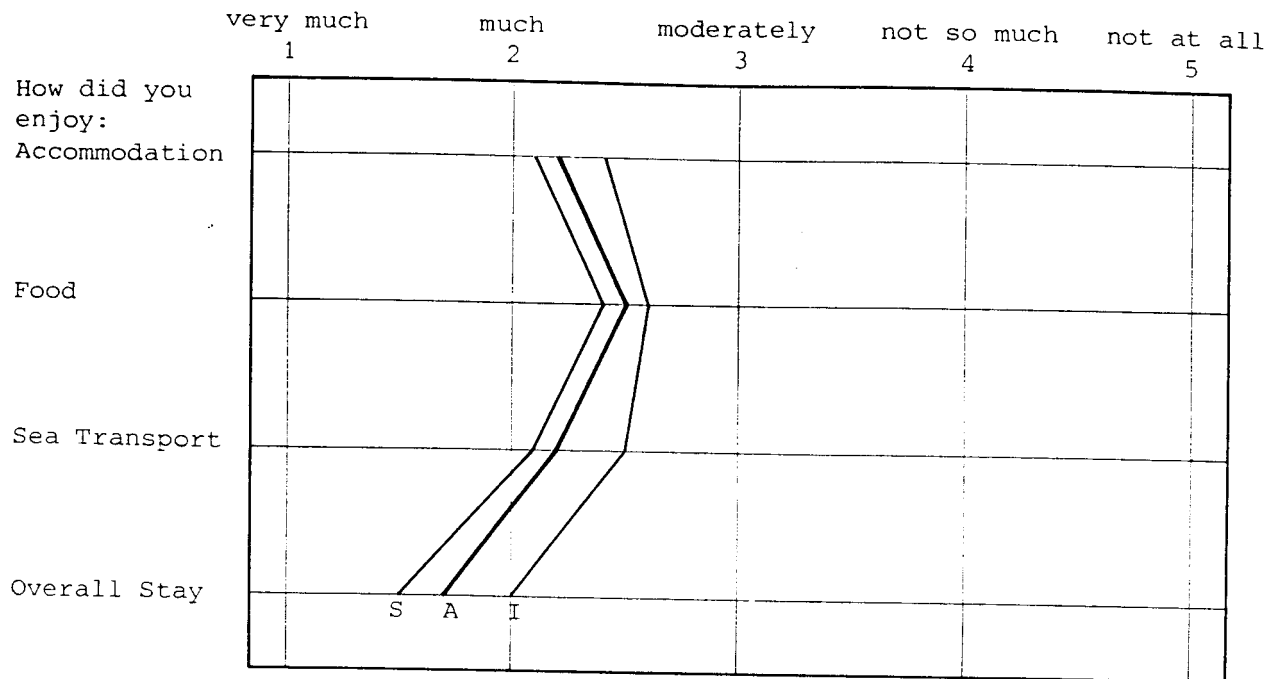
In general, the tourists do not expect international standards in the Maldives, but the main expectations are related to the feature of primitive and simple facilities and service at the same time offering basic comfort and exotic preparation of the food. The pattern is generally the same for all nationalities with some minor differences. For instance, 20% of the Scandinavians expected international food and 80% of the French expected that the food would be something special (simple but exotic).

Profile of the Stay

The analogous central questions in the departure survey were related to the tourists' opinion about the stay. The tourists were thus asked how they liked the food, the accommodation, the sea transportation and the overall stay. The findings of these important questions are illustrated in Figure II.8.

The figure, which is based on calculation of weighted average values, shows that the tourists in general liked their stay in the Maldives (rated between much and very much). However, the food, the accommodation and the sea transportation are evaluated more negatively (between moderately and much).

Figure II.8 Evaluation of the Tourism Product



A: Average of all nationalities.

I: Italians.

S: Scandinavians.

Source: The tourist departure survey.

The figure shows the average of all nationalities and the two extremes - Italians (the most negative) and Scandinavians (the most positive). The Germans are very close to the average situation. A separate analysis of individual tourists versus group tourists shows that the former type of tourists have a more negative attitude. The reason seems to be considerable or even insuperable difficulties for the individual tourist in making practical travel arrangements such as confirmed airline tickets, resort bookings, sea transportation etc. In some cases the individual tourist does not feel welcome.

As the negative answers are of high importance for the formation of the Maldivian tourist image, these are analysed separately. The findings are as follows:

<u>General Satisfaction</u>	<u>Not so much</u>	<u>Not at all</u>
All tourists	2.3%	1.2%
Private tourists	10.7%	3.6%

All Tourists

Food	12.0%	5.1%
Sea transportation	6.4%	3.3%
Accommodation	5.5%	2.4%

As illustrated above, the opinion about the food is quite negative. More than 14% of the private tourists are negative about their stay.

The above questions were supplemented with two "open" questions in which the tourists were able to express specific "likes" and "dislikes". Only some of the tourists filled out the two questions as they require an active evaluation of the stay. The "like" question was answered by 1,363 tourists while the "dislike" question only was filled out by 701 respondents. The various types of suggestions have been grouped in 7 categories, as shown in the Table below.

Table II.6 Specific "Likes" and "Dislikes"

LIKES	% of 1,840 Respondents	% of 1,840 Respondents	DISLIKES
The beach, sun and sea	38	10	The customs and Maldivian officials
The nature and the island feature	25	10	The sanitation in resorts. Pollution.
Underwater life and corals	22	9	The price level
The Maldivian population	17	6	The service level in resorts - bad staff
The climate	10	5	The overall sea transportation and the missing possibilities of transportation
The peace	10	4	Missing shopping possibilities
Other types	13	4	Other types

Source: The tourist departure survey.

The tourists give a generally positive picture of their holiday. They like the natural environment, the sea, beaches, the underwater life, the climate and the peace. Because of the intensive and direct interest in the environment the tourists are very concerned about all features which they think are threatening nature.

The pollution of the sea with garbage, piles of waste found in the resorts often close to tourist cottages, the picking of corals, the use of spearguns are all features which do not fit into the tourists' image of the Maldives. Also, a few tourists have seen the killing of sea turtles which has been an extremely negative event. The tourists are even concerned with the sale of female lobsters with eggs and very small lobsters in resort restaurants. Therefore, tourists are also indignant at other tourists if they are found to spoil nature or the peace.

The above findings underline that nature conservation is very essential in the tourism planning, and in this respect the psychological effect is just as important as the avoidance of real nature damages.

Many of the tourists like the interrelation with the Maldivian population in the form of staff in the resorts or on excursions to the inhabited islands. The Maldivian hospitality is thus mentioned by some of the tourists. However, a few tourists seem to have had bad experiences, for instance cases of staff asking for tips, resulting in a negative attitude.

On the dislike side the airport was at the time of the questionnaire survey the major problem¹⁾. The waiting and queuing in the crowded airport and the treatment by the customs officials in the airport seem to be the strongest overall negative point about the stay in the Maldives. In the resorts the sanitation does not seem to be up to standard. Cleaning of rooms, cleaning of the beaches and the islands and the habit of throwing garbage in the sea and keeping garbage piles on the islands are negative experiences for the tourists.

1) Since the opening of the new airport in November 1981 the picture has completely changed, and the new airport facilities are well functioning.

The price level in bars is another problem, especially felt by Germans. It is also felt that the service level is below what is expected. However, most of the above types of problems seem to be specific for a few resorts. Therefore, these resorts are undermining the general Maldivian tourist image.

The present sea transportation system where the tourists are fully dependent upon the availability of boats at the resorts where they stay and where they have to accept prices asked for by the resort results in frustrations. The tourists thus dislike the overall sea transportation system and the missing possibilities for shopping in Male. Finally, under "other types" some of the tourists have stated that they dislike the missing medical facilities in the resorts, the foreign exchange system with bad rates for non-American foreign currency and the use of one dollar as the smallest unit for change.

As a supplement to the possibilities of expressing likes and dislikes the tourists were further asked whether they were missing something, whether they wanted to change something or whether they had any special problems. The suggestions put forward add to the picture of what should be changed. 670 different suggestions were put forward. These were grouped in 9 categories as shown in Table II.7.

More variation of the food is a general complaint among the tourists, and 191 had specifically mentioned this in the survey. They want more fruits, not fish two times a day, and a generally better preparation of the food. There seems to be major variations between the resorts as some obviously are serving standard meals with very little variation. More Maldivian food is also a point put forward by some of the tourists.

As already stated the tourists are very concerned about the environment of the Maldives. Some even suggest limitations in the number of tourists in each resort.

Table II.7 List of Specific Missing/Wanting/Problem Items stated by the Tourists

	No. of Respondents	% of all Respondents
1. More variation in the food	191	10.4
2. More protection of the nature. Limits on the no. of tourists in resorts/the Maldives	137	7.4
3. Improvements in the airport	101	5.5
4. Improvements of the resorts	65	3.5
5. Improved organization	61	3.3
6. Improved transportation system incl. more possibilities of island hopping and trips to Male for shopping	40	2.2
7. More activities incl. night life	27	1.5
8. Possibilities for purchase of alcohol	27	1.5
9. Need for medical services	21	1.1

Source: The tourist departure survey.

The overall organization of the stay, the arrival at the airport, the transfer, overbooking in resorts, confirmation of airline tickets and the need for more information seem to cause some of the tourists' major problems. This specifically regards the individual tourists.

Various complaints are found concerning specific resorts. Tourists have found beds too short or too hard, no ventilation, missing furniture, no shade on the beach from the sun, no hot water, the water in the showers is polluted and smells, etc.

As mentioned above under the "dislike" question, the tourists have a need for an improved transportation system enabling them to get more easily around and to do shopping in Male. Also the security onboard boats is a point mentioned.

A few tourists have stated that they need more day-and-night activities, possibilities for purchase of alcohol (prices in bars are found to be too high) and a need for a medical service system.

Only few variations are found in the points put forward by different nationalities. The Germans are those most concerned with the natural environment, while the Italians are the least concerned. The problems in the airport are specially felt by French, Belgian and British tourists, and the need for medical services is specially felt by Italians. The food is of specific concern to the German-speaking tourists and they are also asking for improvements within the resorts.

Comparison of the Expectations and the Actual Stay

The expectations of the tourists seem to have been fulfilled in general terms. The Maldives have been able to offer what the tourists expected. However, there are still a number of problems. The food, the resorts, the organization of the stay and the transportation system are all points where tourists have been disappointed. The natural beauty has been as expected, but the man-made tourist facilities and services have lacked back. The tourists do not expect very much, but they have expectations concerning something simple but exotic and still fulfilling basic needs. It therefore seems quite easy to improve the situation by relatively simple means. On the other hand, it must not be overlooked that problems exist. On an average, the tourists are quite satisfied, but negative opinions can do considerable damage in the future. Particularly as mouth-to-mouth information is very important. Tourists being on a holiday generally do not want to be negative. Particularly, they do not want to show a negative attitude towards their host country. Therefore, they have to be really angry or concerned in order to write negative opinions or to describe problems. The surveys might therefore underestimate the negative attitudes.

For instance, when only 10.4% of the tourists suggest more variation in the food, this means that a considerably high portion of the tour-

ists do not feel content with the food served in general in the resorts, and when 10% of the tourists state that they dislike the customs and Maldivian officials in the airport, this means that the situation in the airport is bad.

Because of the importance of the mouth-to-mouth source of information about the Maldives, efforts should be made to counter the problems. First of all; improvements should be made concerning the food (17.1% of the tourists did not like the food), the transportation (9.7%) and also the accommodation (7.9%). The surveys point at some resorts with more than average problems and also point at specific dissatisfaction for private tourists.

That the problem is considerable in some specific resorts can for instance be seen from the fact that in one of the major resorts 37% of the tourists stated the food to be in the categories "not so much" and "not at all". In another major resort this percentage was only 4. Also concerning the accommodation the replies vary from 20% in the two "worse" categories down to about zero in some cases.

Travel Relation Sri Lanka-the Maldives

For the future planning strategy it has been important to find out the relation between the two product parts (Sri Lanka and the Maldives) in the overall holiday trip pattern. The tourists were therefore asked: "Why did you choose to travel to the Maldives" with the answer to be selected from three fixed choices. The answers to each of the three possibilities were as follows:

Because:

1. it is an interesting supplement to a stay in Sri Lanka:	25.6%
2. of the diving possibilities:	21.8%
3. of the possibilities for a relaxed holiday on an exotic island:	52.6%
Total	<hr/> 100%

As could be expected from the question covering "source of information" the Germans and German-speaking tourists show a high interest

in the diving possibilities, while the Scandinavians, French and "Other West European Countries" only put little emphasis on diving. The main reason for all nationalities is, however, to have a relaxed holiday on an exotic island.

Out of the 1,074 tourists 73% apparently have taken combined trips to Sri Lanka and the Maldives. These tourists were asked what had been the main decisive factor in selecting the combined package. The combination of the two countries in one holiday was by far the main motive as shown below:

The stay in Sri Lanka:	5.2%
The stay in the Maldives:	23.7%
The combination of the two countries:	71.1%

The combination of the two countries therefore seems to be an attractive sales point, especially for tourists visiting the area for the first time.

Propensity to Return

The tourists, when leaving the Maldives, were asked whether they would like to come back. The first possibility suggested was a direct holiday in the Maldives. To this question 1,687 tourists responded giving the following distribution:

yes:	67%
no:	10%
maybe:	23%

The second choice, to which 1,385 tourists responded, covered a return trip combined with a holiday in Sri Lanka. To this choice the replies were distributed as follows:

yes:	45%
no:	32%
maybe:	23%

From the above can be concluded that many tourists, after having visited the Maldives, would like to come back again directly. On the other hand, the combination of the Maldives with Sri Lanka is still an attractive possibility for returning tourists. The future Maldivian markets might thus consist of tourists coming direct as well as tourists combining their stay with a holiday in Sri Lanka.

Souvenirs

In order to get a picture of what the tourists are spending on souvenirs the departing tourists were asked whether they had found the availability of souvenirs sufficient. About 2/3 said yes to this question, while 1/3 were of the opinion that the souvenir selection was not sufficient. It therefore seems that the return from the souvenir trade could be improved.

The tourists were furthermore asked about the amount spent. Considerable variations were found in this answer as shown in Fig. II.9.

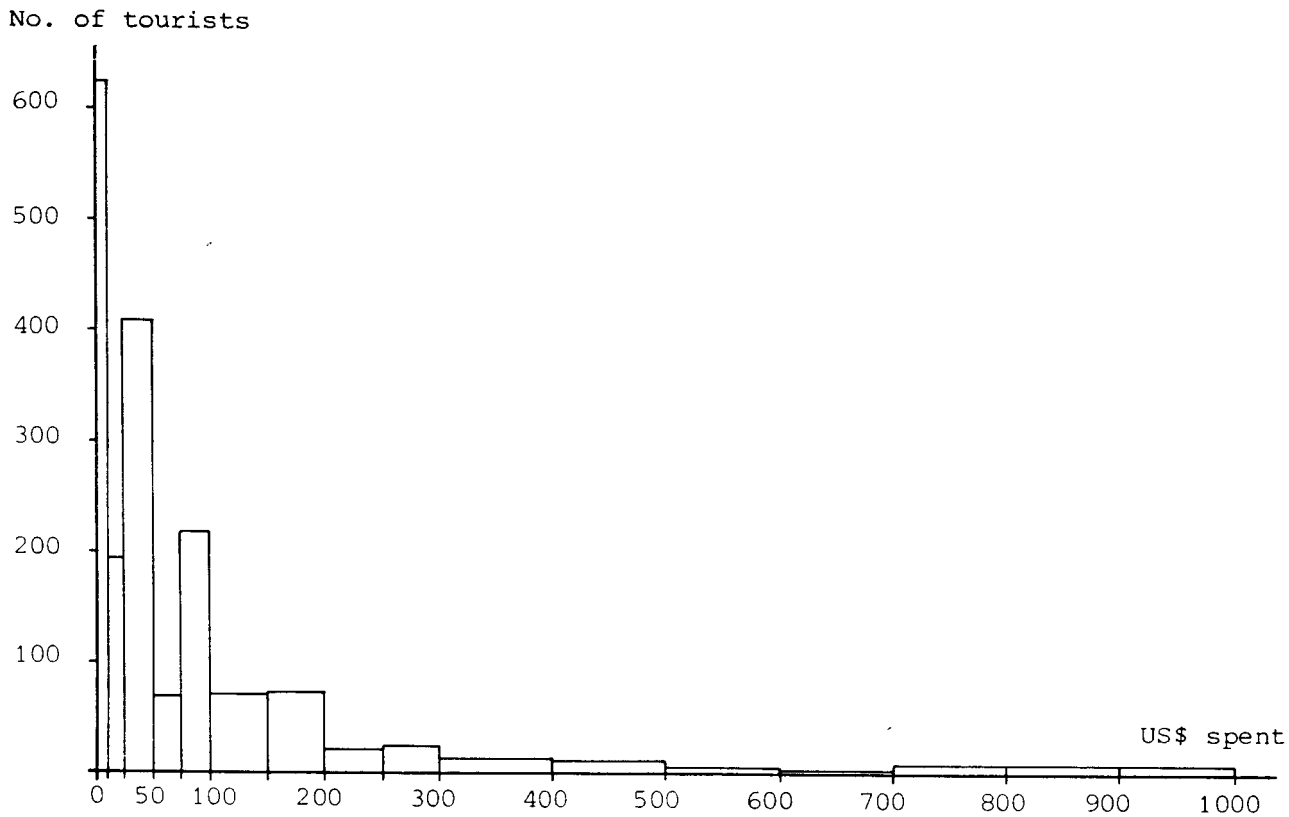
2.4 The Validity of the Surveys

The surveys were formed as total counts of all tourists arriving and leaving within a 3 to 4 week period. A minor bias occurs in this connection because tourists arriving to the Maldives via India are not included in the arrival survey. However, this is not considered to have any major importance for the general validity of this survey.

Within the period of the surveys a high percentage of all travellers were included and the refusal percentage has been very low. The major problem met by the staff distributing the forms has been the sometimes chaotic circumstances in the airports.

The surveys are therefore considered to give a valid picture of the situation in the 1980/81 season of tourism to the Maldives.

Figure II.9 The Distribution of Souvenir Expenditures



Overall average per tourist 53 \$ or \$ 5.5 per day

Italian tourists: average of 73 \$ or \$ 8.5 per day

German tourists: average of 43 \$ or \$ 3.9 per day

Source: The tourist departure survey.

A comparison of the nationalities of the tourists within the surveys and the tourist arrival statistics for the period January to March 1981 also shows a high degree of identity as shown below:

	<u>Tourists by Nationalities</u>	
	<u>The Tourist Surveys</u>	<u>The Official Statistics for January-March 1981</u>
German	33%	29%
Italian	24%	24%
French	13%	13%
Scandinavian	9%	9%
Others	21%	25%
Total	100%	100%

When the survey results are used for general conclusions it must, however, be recognized that the surveys were made within the main tourist season. A similar survey in the low season might give small differences in the results. It is, however, estimated that such differences probably only would be minor and that the survey results are valid as average estimates of the present tourism to the Maldives.



II.3 THE FUTURE TOURISM DEVELOPMENT

3.1 Overall Market Volume

Tourism to the Maldives has shown a remarkable growth rate since the start in 1972 and also the neighbouring country, Sri Lanka, with which the Maldivian tourism has been linked, has shown high growth rates. Europe is the biggest potential market for tourism to the South Asia Region, thus 70% of the pleasure tourists to Sri Lanka and 92% of the pleasure tourists to the Maldives are from Europe. However, also USA and Japan have developed into important generating countries for tourism to the Region as illustrated in Table II.8.

Table II.8 Destinations of International Tourists (Figures in 1,000) from Selected Countries in 1976

Generating Countries	Total Generated	Attracting Regions					
		Africa	America	East Asia and the Pacific	Europe	Middle East	South Asia
Germany	41,039	307	647	224	39,637	131	93
USA	28,116	201	16,153	1,146	10,266	185	164
France	18,119	811	255	133	16,713	112	95
Italy	5,035	125	253	80	4,455	55	67
United Kingdom	13,033	261	1,017	409	10,928	215	203
Japan	3,988	3	906	1,507	1,491	65	16

Source: WTO - Economic Review of World Tourism, 1980 edition, page 10.

Within Europe, UK, France and Germany are the main generating countries as illustrated by Table II.9.

Since the 1976 surveys, the long-distance travelling intensity has increased in Europe, particularly in Germany. Although international tourism has been stagnating recently, the long-distance travel market has not been influenced as much as the short-distance market. The

Table II.9 Holiday Makers in Eight European Countries in 1976

Country	Population in Mio.	Travelling Intensity %	No. of Travellers in Mio.	Travelling Abroad Intensity %	Travellers Abroad in Mio.	Long- Distance Travelling Intensity %	No. of Long- Distance Travellers in Mio.
Sweden	6.4	66	4.2	19	1.2	2.5	0.160
United Kingdom	42.1	69	29.1	18	7.6	3.2	1.350
West Germany	45.2	50	22.7	30	13.6	1.5	0.660
Netherlands	10.4	63	6.6	37	3.8	1.4	0.150
Belgium	8.7	48	4.2	13	1.1	1.7	0.150
Switzerland	4.5	55	2.5	40	1.8	3.3	0.150
France	41.0	63	25.8	14	5.9	2.6	1.080
Italy	41.5	42	17.4	3	1.2	0.5	0.190
Total	199.8		112.5	18	36.2		3.890
Average		56				2.0	

Travel intensity: Part of the adult population taking a holiday of at least 4 days' duration.

Source: Studienkreis für Tourismus e.V. and Steigenberger Consulting GmbH, Frankfurt.
Tourism Masterplan for the Arabic Republic of Egypt; unpublished survey undertaken by Steigenberger Consulting, Frankfurt, in connection with Studienkreis für Tourismus e.V., Starnberg, for the Ministry of Economic Cooperation, Bonn.

Maldives as a holiday destination is, in relation to the most important generating markets, in an introduction and growth phase. How strong the future growth will be can only be indicated within the limits posed by the present knowledge. The growth depends on specific circumstances related to the demand, particularly the economic development in the industrialized countries, but also on the tourist policy followed by the Maldives determining quantity- and qualitywise the supply of tourist facilities and services. Also the cost developments within air transportation, the tour operators' sales policies, and the competition between destinations are all important factors.

Despite the present economic problems in the industrialized countries, a low to medium-size general increase in the demand for long-distance travelling is expected also in the future. This is particularly true of the Asian Region, which for key countries has shown relatively strong increases, although the world-wide tourism has shown negative tendencies. A questionnaire survey made by the German Ministry of Economic Cooperation among the tour operators in West Germany in 1980 gave a picture of the future as shown in Table II.10.

The German tour operators specializing in long-distance travels have thus estimated that long-distance travelling will increase but the growth rate will only be small to medium. This opinion is shared by tour operators in other European countries and also expressed by other tourism experts. At meetings between the Consultants and various tour operators also the same impression was conveyed.

The reason why the long-distance tourism has not been strongly affected by the recent economic problems is probably because the type of tourists travelling long distances come from higher social strata (with higher income and education), strata which react more slowly and to a less extent on the general decline in the economy.

If, in spite of all prognoses, the economic problems are further increased, also the long-distance tourism will suffer. Because of a fast growth in the number of destinations offered and the number of

Table II.10 Development in German Third World Tourism 1981-1985 as seen by Tour Operators

	Questioned Tour Operators	Ave- rage	Strong Increase			Stable	Strong Decrease			No Answer
			+3	+2	+1		0	-1	-2	
The Philippines	36	1.4	3	11	13	4	0	0	0	5
P.R. China	36	2.3	17	6	7	1	0	0	0	5
Thailand	36	-0.2	0	0	9	11	8	3	0	5
Malaysia	36	1.0	0	7	17	5	1	0	0	6
Indonesia	36	1.3	3	9	13	5	1	0	0	5
Sri Lanka	36	1.5	8	8	10	3	2	0	0	5
India	36	1.1	0	10	15	4	1	0	1	5
Nepal	36	1.1	3	6	15	5	2	0	0	5
Turkey	36	-0.2	1	1	9	9	5	3	2	5
Egypt	36	1.6	6	14	7	4	1	0	0	4
Tunisia	36	1.2	6	5	12	9	1	0	0	3
Morocco	36	0.9	1	9	9	13	1	0	0	3
Kenya	36	1.1	4	6	14	4	1	0	1	6
Tanzania	36	0.5	1	6	8	10	3	1	1	6
The Gambia	36	0.3	1	2	10	12	2	0	2	7
Senegal	36	0.7	0	6	13	8	0	1	1	7
South Africa	36	1.0	4	7	9	6	3	1	0	6
The Caribbean	36	1.7	12	7	7	3	1	1	0	5
Mexico	36	1.6	5	13	11	0	2	0	0	5
Peru	36	1.2	2	9	11	7	0	0	0	7
Brazil	36	1.0	2	7	10	11	0	0	0	6

Source: The Federal Ministry for Economic Cooperation, autumn-winter 1980, tour operator questionnaire survey.

hotels at already established destinations, the problems might be multiplied for an individual destination. Strong increases in fuel prices will also shift the competition to the advantage of the countries located in the periphery of the industrialized countries.

The optimism concerning long-distance travelling is even higher for the Maldives than for most other tourist-attracting areas. The tourism to the Maldives is relatively new, the country has a unique product which is in high demand on the industrialized markets, viz. clear and clean water, beaches, corals, beautiful islands and only few tourists. The attractiveness of the Maldives was underlined by the tour operators interviewed.

In order to quantify this evaluation the Consultants have participated in a personal interview survey of 6,000 households in Germany. The survey attempted to establish an evaluation of beach orientated tourism to developing countries. The results are presented in Appendix II which shows an annual potential for German tourists to the Maldives of between 40,000 and 70,000 tourists within the period 1981 to 1983. To these figures for the German market should be added the potential markets from other European countries. In total, the annual potential will thus be much higher considering that the big potentials of the markets in UK and France have only partly been tapped. The European market in itself has thus a very high potential today, a potential which is increasing because of a growing interest in underwater life and unpolluted nature areas. Added to the European market should further be the Japanese, American and Australian markets which only partly have been tapped. These markets are mostly generating tourists travelling to visit a number of countries in order to see international "sights". For these types of tourists the Maldives have only little to offer, however, also within this market a growing interest for the coral reefs and unpolluted nature areas is found.

Scenario of the Future Tourism

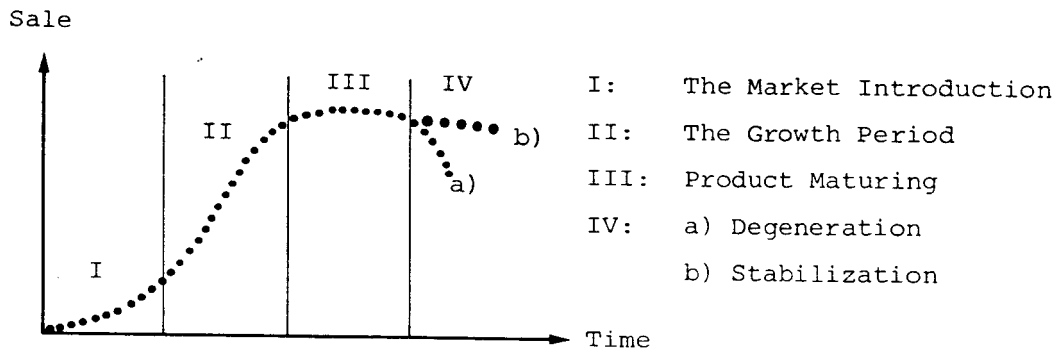
All in all, the Maldives seem to be able to attract 200,000 tourists per year by the end of the 1980's/start 1990's. The tourists will be coming either direct (about 50%) or in connection with a stay in Sri Lanka (about 50%). About 10-15% will be mostly interested in diving while the main part of the tourists will be coming to relax on the beach, in the sun and in the water. However, the interest for sports including fishing and sailing will increase. The length of stay will probably be close to 10 days on an average and the seasonality pattern will only slightly be changed. Some changes in the distribution by nationalities might take place, resulting in a distribution of the following type.

<u>Generating Country</u>	<u>Percentage Distribution of Tourists</u>	<u>No. of Tourists based on 200,000 Arrivals</u> (no. in 1,000)
Germany	30-35	60-70
Italy	15	30
France	15-20	30-40
UK	5-10	10-20
Scandinavia	5-10	10
Other European Countries	10	20
Japan	4	8
America/Australia	4	8
Other Countries	2	4

3.2 Scenario for the Future Tourism Development

The above conclusion concerning the market base is, however, only valid if the capacity of the Maldivian tourism industry can simultaneously be increased according to the demand, and only if the product standard is kept close to what the tourists expect.

The tourism products offered by a tourist destination are subject to general market principles just like most other consumer products. This overall observation is for instance also valid for the product lifecycle. The general lifecycle is characterized by the following phases:



How the fourth phase will turn out depends on several factors like the time horizon, the product type, product policy, and the planning efforts. Unfortunately, the degeneration tendency has been observed in cases of tourism development in developing countries; particularly in cases where tourism has run out of control and the tourists have not found what they expected.

A Short-Term Scenario

The present positive situation for the Maldivian tourism will not continue unchanged without an active Government planning interference.

As it is now, the Maldives are looked at as a new destination, the tourists have a relatively high tolerance level when faced with inadequate services and facilities. When the tourism development gets into the next phase with a higher number of visitors, the ready acceptance of low-quality services and facilities will change and the expectations will grow. If this growth in expectation occurs at the same time as the Maldivian tourism industry faces problems because

of too little capacity compared with the number of tourists, the abovementioned positive situation will change. In the opinion of the Consultants the tourism development has reached a very important stage from which either a long period of constant growth can be maintained or a strong growth in the next couple of years and then a decline. The biggest problems facing the Maldivian tourism on a short term are the following:

- to develop a sufficient number of beds within acceptable distance from Hulule,
- to control the environmental damages,
- to improve the level of service, particularly the food,
- to avoid price escalations.

The background for the problems faced can be described in the following way:

1. Because of lack of islands suitable for tourism development close to Hulule Airport, new resorts will be located further and further away. As the tourists do not want to sail a very long distance, the highest demand will be for the resorts located closest to the airport. These will therefore have the possibility for increasing the prices and lower the service and still have the resort fully booked in the season. Overbookings will also take place and the overall service level might decrease. The tourists will be pressed out to the more distant resorts.
2. Mass tourism on a large scale has been started by the introduction of wide-body charter flights from Germany and Italy. The tour operators organizing these programmes require bookings of a major number of beds in the inner tourism zone. A concentration of the bookings has therefore taken place limiting the possibilities for other operators and for individual tourists.
3. The lack of trained staff, particularly trained cooks, will be a still more important factor with more resorts being opened and an expected higher expectation from the tourists.

The first months of 1982 point at a continuously high growth rate in 1982 of about 30%. As the introduction of direct charter flights seems to have been successful, the growth rates for 1983 and 1984 will probably not be much less. On this basis the development will take the following form:

<u>Year</u>	<u>No. of Pleasure Tourists</u>	<u>No. of Beds:</u>		<u>Surplus/ Deficit</u>
		<u>Required</u> ¹⁾	<u>Available</u> ²⁾	
1982	63,000	2,875	3,200	+325
1983	82,000	3,550	3,500	-50
1984	105,000	4,800	3,500	-1,300

- 1) Based on a 10 days' average length of stay and an annual bed occupancy rate of 60%.
- 2) In the Central Tourism Zone including Kuramathi but excluding beds in Baa, Ari and Vaav Atolls. Maximum in the zone estimated at about 3,500 beds.

By 1983 the capacity limit will be exceeded and in 1984 the demand will strongly exceed the supply. The situation will be even more problematic if the average length of stay is increased. With a large number of tourists flying direct to the Maldives, the length of stay will probably be extended.

The above scenario for the situation in 1983/84 requires strong measures to be introduced by the Maldivian Government. Such measures could include:

1. Control and improvement of the development at Male Tourism Centre. Various steps to improve the present services and facilities should be taken. It is of particular importance that resorts are not exploiting the possibilities for overbooking, strong price increases and low service.
2. Further developments at Vaav, Ari and Baa shall be avoided. In case such development already has been allowed, DTFI will have

to undertake a strict control with these resorts as concerns transportation of tourists. With the increased demand far-away resorts will be able to sell their capacity in the high season but they might not be able to offer sufficient and safe transportation facilities. These facilities must be required and inspected by DTFI.

3. The immediate tourism growth should be kept at a lower level and DTFI should not encourage further growth in the high season but should try to get more tourists in the off-peak periods.

4. The second tourism centre should be developed soonest possible.

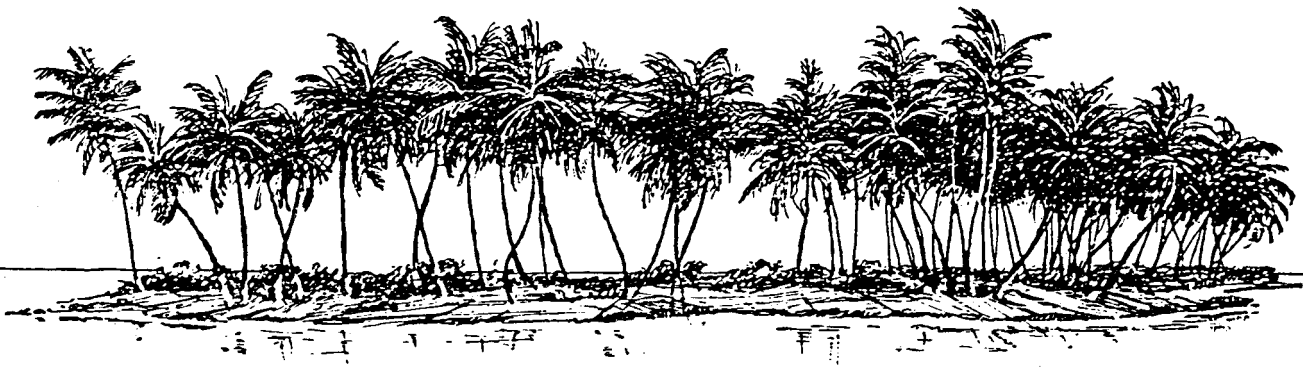
Scenario Covering the Period 1983 to 1990

Under the assumption that the abovementioned Government steps are taken and that an annual growth rate of about 15% in tourist arrivals is taken as a target for the period 1984 to 1990¹⁾, the development in the period could take the following form:

Year	No. of Pleasure Tourists	Beds Required	Male	Beds available:		Surplus/ Deficit
				Second Tourism Zone	Third Tourism Zone	
1983	82,000	3,550	3,500			-50
1984	94,000	4,300	3,500	1,000	0	+200
1985	108,000	4,900	3,500	1,500	0	+100
1986	124,000	5,600	3,500	2,500	0	+400
1987	144,000	6,600	3,500	3,000	0	-100
1988	165,000	7,500	3,500	3,500	1,000	+500
1989	190,000	8,700	3,500	3,500	2,000	+300
1990	215,000	9,800	3,500	3,500	3,000	+200

1) The scenario is very tentative and the development could be further extended up to year 2000.

The long-term planning problem is therefore to adjust demand and supply. By 1990 tourism will then be spread to three equal-sized tourist areas and about 215,000 tourists could arrive to the Maldives. If the growth is slower, the development of the tourist centres can be prolonged and the start of the third centre can take place at a later date. If the tourism development goes much faster than the above scenario, the Maldives will be faced with many problems. The above should therefore rather be seen as a realistic target for the possible tourism development than a growth only based on the possible market demand.



II.4 EXISTING AND PLANNED TOURISM FACILITIES

4.1 Historical Development

Since 1972 the number of tourist beds has been continuously increasing. The expansion has taken place both in the form of an increased number of resorts and in the form of more beds in already existing resorts. Under these circumstances it is difficult to get an exact picture of the availability of beds, as the figure is changing from day to day. During visits to a number of resorts the Consultants were thus often presented with planned or started building programmes. However, the records of DTFI show the following recent developments:

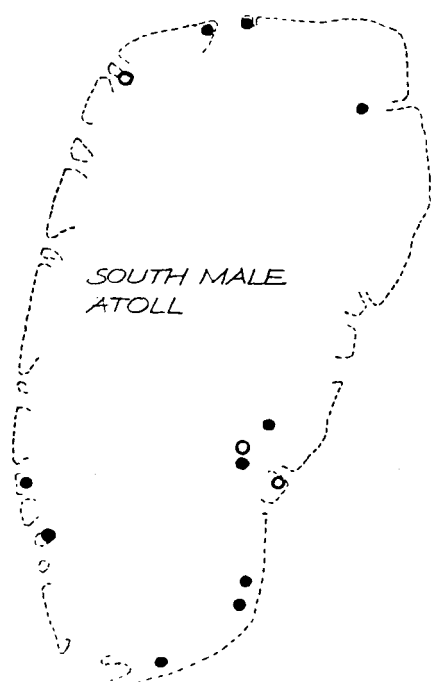
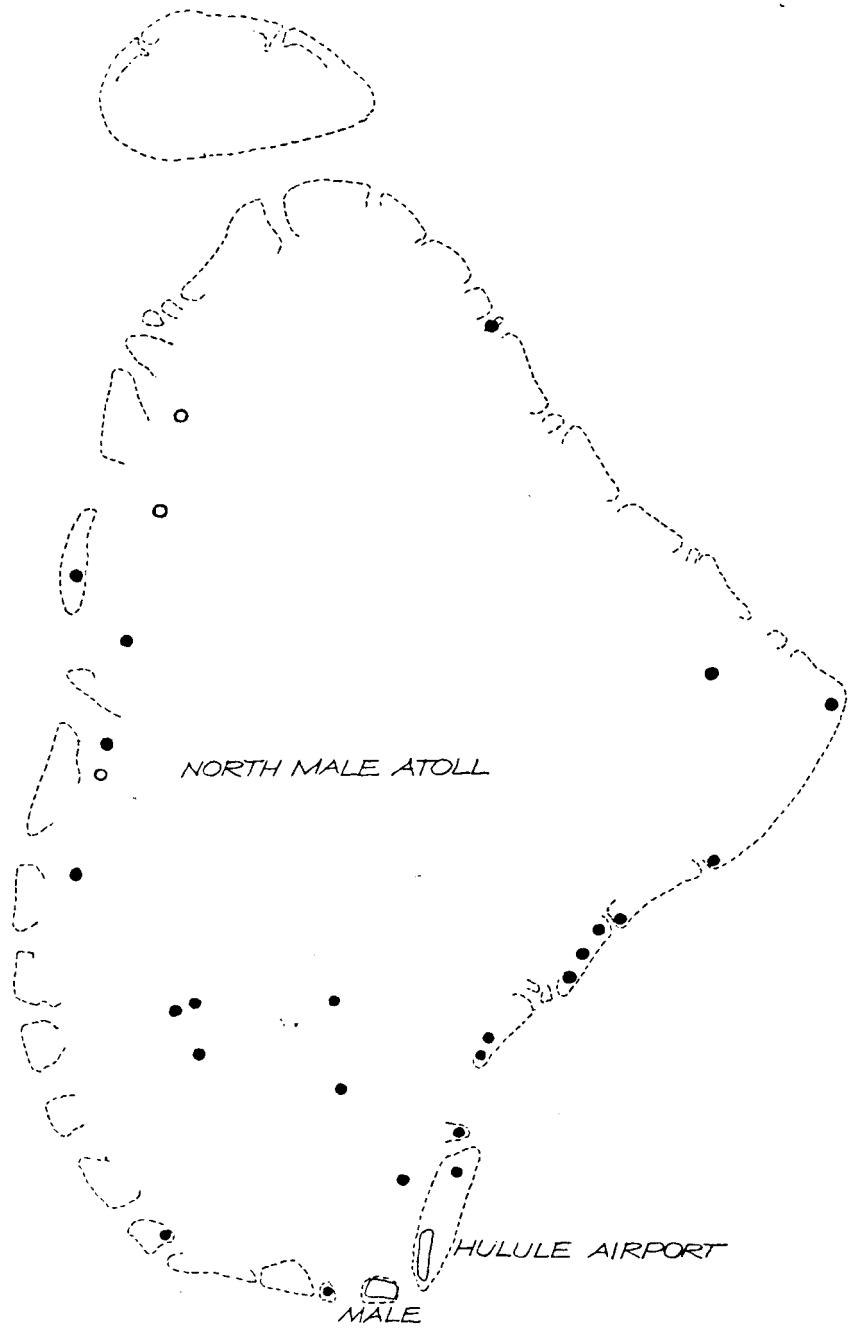
	<u>No. of Resorts</u>	<u>No. of Beds</u>
End of 1978	13	1,114
End of 1979	17	1,336
End of 1980	31	2,442
End of March 1982	38	3,314
End of March 1983	48	4,300

Calculated on the basis of the above figures an average resort had 90 beds by the end of March 1983.

The map on the following page gives the following details:

- location of the 35 resorts existing in the Kaaf Atoll by March 1982 (see also the list of resorts at the end of this chapter),
- location of 6 resorts under construction in the Kaaf Atoll.

28 of these resorts have been visited by the Consultants.



● EXISTING RESORTS
○ RESORTS UNDER CONSTRUCTION

TOURIST RESORTS
IN KAAF ATOLL (MALE)
MARCH 1982

4.2 Room Rates

Resort rates are varying in accordance with the standard of the resort, what is covered by the rate, the time of the year (off-season rates are considerably lower than season rates) and according to the type of client (group or individual).

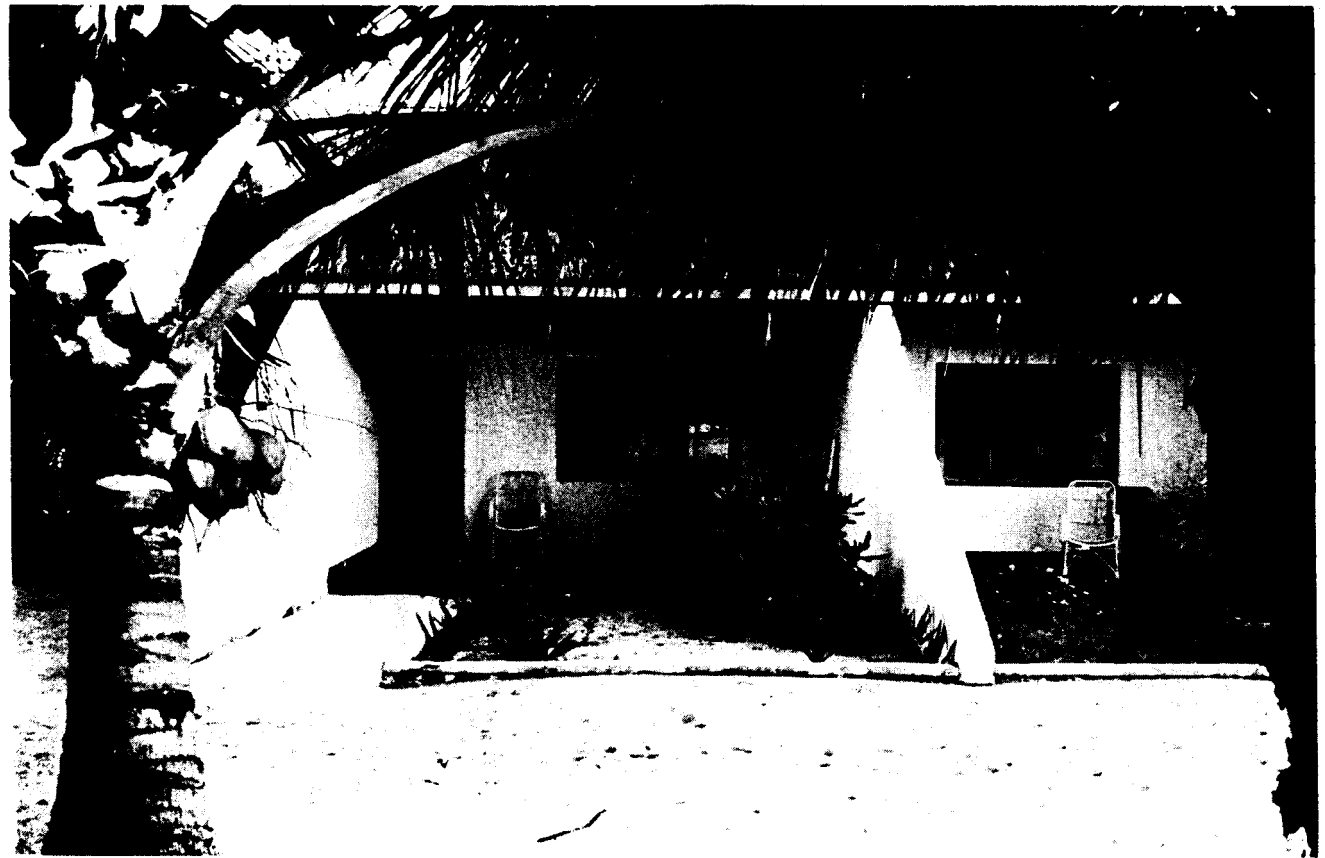
For the season 1981/1982 listed room rates start at about 45 US\$ for a double room (2 persons) including full board. Most rates are concentrated around 45 to 60 US\$ with a few resorts taking considerably higher rates. Tour operators are generally given a discount of 10 to 20% of the above prices.

4.3 Occupancy Rates

In 1981 the tourists spent 445,500 bednights in the Maldives. In the same year about 2,700 beds were available as an average. On this basis the average capacity utilization in 1981 can be calculated as about 45%. However, as some resorts are closed in the off-season, the capacity utilization is higher in the resorts which stay open all the year round. In the season most resorts are fully booked and in the very peak periods such as Christmas time some resorts are heavily overbooked leading to a high degree of frustration among tourists who have been transferred to resorts at which they have not booked and which are often located at considerably longer distances from Hulule, or among tourists who have had to sleep in staff quarters or even on the beach.

4.4 Physical Characteristics

The tourist facilities in the Maldives as a whole have acquired an identity and a character which is in reasonably good accordance with a relaxed holiday life on the beach and in the sea.



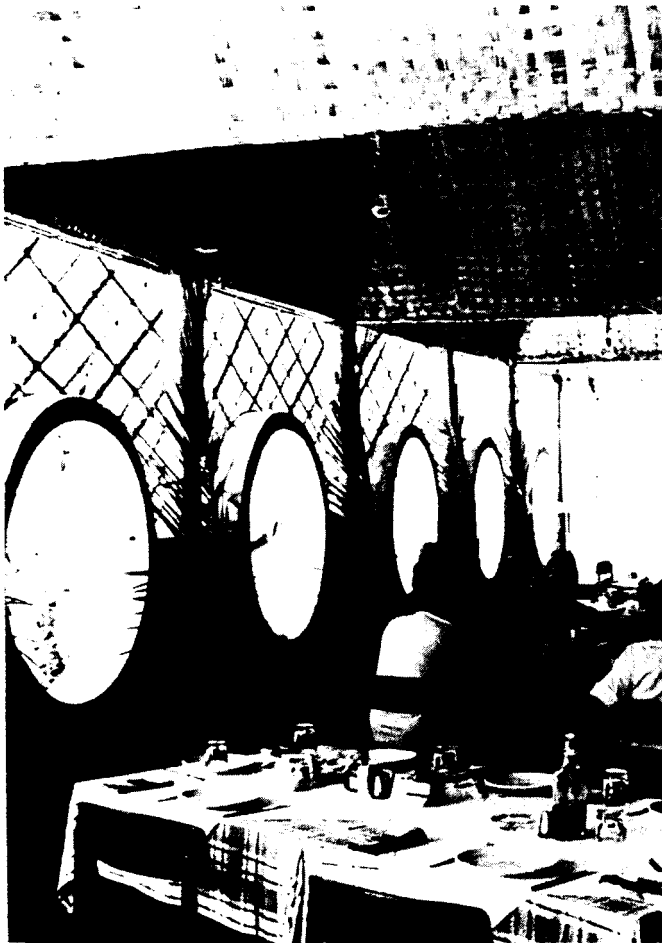
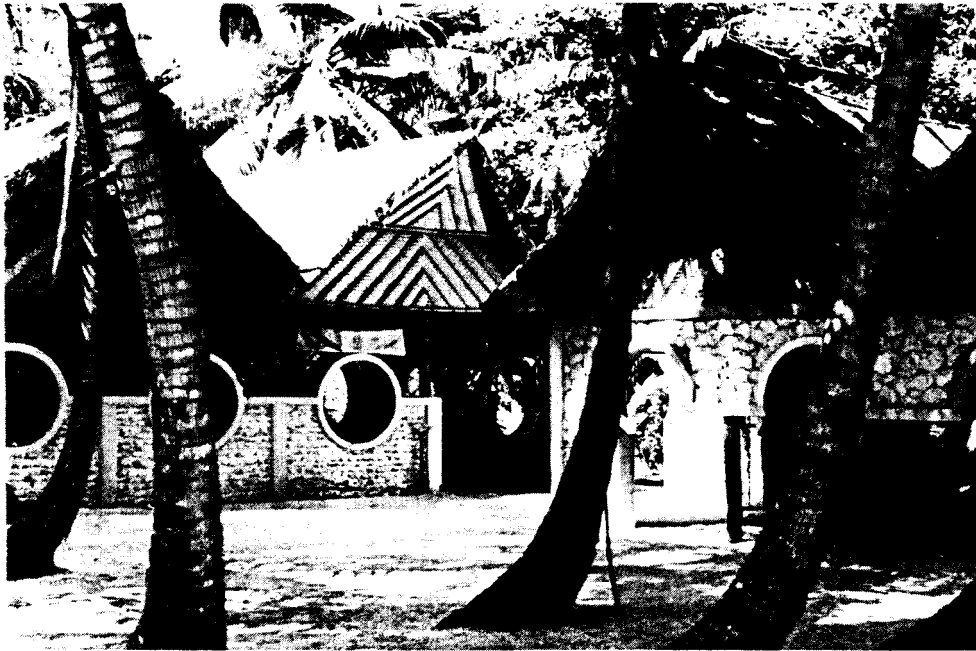
VELASSARU - SOUTH MALE

All existing resorts are conceived as holiday villages with single-storey buildings, generally well hidden by palm trees and vegetation. The villages are, however, not equal with regard to the level of comfort and they are in many cases influenced by a building style probably related to the "Military design" from Gan airbase, a style which is not the best possible for a holiday village.

In broad lines 3 categories of tourist villages could be distinguished.

- "Divers' Villages" which have few public amenities, sparingly equipped guest rooms and common toilet and washroom blocks. They attract a young and sporty clientele, mostly divers who try to avoid the atmosphere of mass tourism. The units of this type of tourist village have a relatively small size - up to about 30 beds.
- "Medium Class Villages" which by far is the main category of accommodation in the Maldives. The best villages in this group comply quite well with the expectations of the clientele searching a relaxed and informal holiday atmosphere. The rooms are reasonably well equipped and each room has a private bathroom with WC, hand wash basin and a shower. In front of the rooms there is a terrace with a view to the beach mostly framed by palm trees.
- 1st Class Villages. There is no sharp distinction between villages in the better end of the medium class and this category. The villages are very similar in lay-out and general appearance, the difference being that the 1st class villages have a higher standard in interior finishes, bathroom equipment, furniture and services. Entertainment, sporting facilities and food are offered in a greater variety.

The tourists are generally happy with the physical appearance of the resorts, but in some cases furniture and equipment are too simple, for instance in the cases of too short or too hard beds.



*BODU HITHI
NORTH MALE*



*EMBLIDHU
SOUTH MALE*

In the period 1981/82 improvements of facilities have taken place in a number of resorts. Today air-conditioned rooms are thus available at a number of resorts.

List of Existing Tourist Resorts by March 1982

<u>Name of Resort</u>	<u>Location</u>	<u>No. of Beds</u>	<u>Year of Opening</u>
Kurumba Village	NM	130	1972
Bandos	NM	210	1972
Baros	NM	100	1973
Villingili	NM	220	1973
Furana Fushi	NM	124	1973
Farukolhu Fushi	NM	112	1973
Velessaru	SM	90	1974
Alimatha	V	108	1975
Little Hura	NM	68	1977
Kuramathi	A	174	1977
Vabbinfaru	NM	50	1977
Rannalhi	SM	90	1978
Kuredhdhoo	L	18	1978
Meerufenfushi	NM	260	1978
Vaadhu	SM	32	1978
Kanifinolhu	NM	84	1978
Ihuru	NM	74	1979
Embudhu	SM	72	1979
Helengeli	NM	48	1979
Nachchafushi	NM	80	1979
Olhuveli	SM	100	1979
Bodu Hithi	NM	110	1979
Medhu Finolhu	NM	100	1979
Lankanfinolhu	NM	60	1979
Lhohifushi	NM	120	1979
Gashurifinolhu	NM	36	1980
Giraavaru	NM	40	1980
Thulhaagiri	NM	58	1980
Hudhu Veli	NM	80	1980
Bodu Finolhu	SM	44	1980
Rihi Veli	SM	40	1980
Cocoa Island	SM	12	1981
Dhigufinolhu	SM	60	1981
Fihaalhohi	SM	90	1981
Leisure Island	NM	20	1981
Hembadhoo	NM	44	1982
Villi Varu	SM	120	1982
Asdhoo	NM	36	1982

Total of 38 resorts with 3,314 beds

NM = North Male, SM = South Male, V = Vaav, A = Ari, L = Lhaviyani

II.5 CONCEPTS FOR THE FUTURE DEVELOPMENT

5.1 The Marketing Concept

The marketing concept forms an overall framework for producing and selling the Maldivian tourism products. The marketing concept can be divided into the following components:

1. The Product Concept. The product: "A holiday in the Maldives" can take various forms and have various contents (diving, cruising, relaxation, fishing, water sports etc.). The products to be developed should be identified and described by major components.
2. The Distribution Concept. According to the type of product and the market characteristics, principles for selection of distribution channels should be laid down.
3. The Communication Concept. Principles for how information about the products and the Maldives should be communicated to consumers, tour operators, and the international tourism trade in general.

The first component is of particular importance as a decisive factor for the future tourism development, while the two other components are more related to later stages of the tourism development strategy.

The Product Concept

When outlining the master plan, the product concept plays an important role when identifying potential areas for development. Also, in the physical briefs for the resorts and the overall lay-out for the tourist areas, the product concept is necessary background information.

The Maldivian tourism product can be divided into two main categories:

- A diving holiday.
- A relaxed holiday orientated towards the beaches, the water and the sun.

The diving product is only attracting about 10% to 15% of the present number of tourists. Numberwise, it is thus not of great importance. However, diving gives a very positive image for the Maldives as a destination for nature lovers and also an important press coverage in worldwide magazines. Furthermore, within the industrialized countries the interest for diving and snorkling is under a constant development, among other things influenced by underwater films on television. Potential divers might therefore take the first step through a holiday in the Maldives where lessons can be taken on the resort islands. The diving motive, therefore, has a crucial importance for the Maldivian tourism, although the number of real "divers" is limited.

The advantages of the Maldivian diving product are:

- numerous very good diving possibilities spread all over the archipelago,
- the variation in fish species is perhaps the highest in the world. A slogan like the one presented in the headline of a recent article¹⁾ about the Maldives: "Even the sharks are friendly" is priceless.
- because of many possibilities and relatively few tourists, the divers can experience the underwater life under superb conditions.

The weak sides of the diving product are few. Whether other alternative areas like the Red Sea and the reefs of Australia have more colourful and interesting reefs and corals is a matter of discus-

1) Time, May 18, 1981.



THE DREAM OF PARADISE : PALM TREES, CORAL SAND AND BLUE SKY

sion and personal taste, but it seems to be a fact that the quality of the Maldivian diving product is considered to be one of the very highest in international comparison. Because of the widespread possibilities for diving in the Maldives, the security in case of accidents is a problem which is difficult to handle. For reasons of security, decompression chambers should be available in the tourist centres and emergency plans should be available in case serious accidents occur.

Because of the importance of the diving due consideration to the divers' needs should be incorporated in the tourism planning. The wishes for fairly remote diving camps in good diving areas and the avoidance of pollution of the sea are points which have to be met.

The main Maldivian tourism product is orientated towards a relaxed holiday on the beach and in the water.

Product advantages:

- A reliable, warm and sunny climate and constantly warm water.
- Generally unpolluted and clear water and beaches.
- First class sandy beaches and sea bottom.
- Safe swimming.
- Peaceful surroundings. No mass tourism. None of the normal tourist rumble. No children begging, just a relaxed atmosphere.
- The exotic small islands covered with coconut trees - the Robinson Crusoe dimension.
- Outstanding possibilities for underwater sports also for less experienced tourists in the form of snorkling.

- Possibilities for other types of sports related to the water such as fishing, sailing, wind surfing etc.
- The image of an exclusive holiday, a new and exotic destination with an attractive image.

Product disadvantages:

- Limited contact with the local population and the local culture, an important motive for long-distance travellers in general.
- Limitations in the types of attractions. Monotony in the physical surroundings. To the tourists one island is very similar to another.
- The feeling of being restrained in the physical movement possibilities.
- Limitations in the types of activities and amusements.

One of the main purposes for the tourists from the industrialized countries to come to the Maldives is the realization of the dream of a holiday on an exotic uninhabited tropical island far away from civilization.

The Maldives are in this respect in a unique sales position, but the great advantages also lead to the great disadvantages. For instance, all disadvantages listed above are consequences of the unique natural advantages. However, the greatest danger is if tourists are attracted with the wrong impression of what the holiday will be like.

The greatest danger - the unfulfilled expectations - can be caused by several things:

- If the tourists find that the product is just another type of mass tourism (overcrowding of the islands, polluted beaches etc.).

- By giving the tourists the impression of being exploited (taking money for everything and high prices for low-quality services).
- Through attracting tourists not knowing the above product limitations. For instance, tourists who think that the Maldives have fashionable luxury hotels.

Therefore, the Maldivian marketing efforts should concentrate on making sure that the products offered are of a type and quality as expected by the tourists and on avoiding to attract tourists with wrong expectations. While the first point is part of the general framework for the tourism master plan, the second point is part of the day-to-day work of DTFI, furnishing tour operators and travel agents with an exact picture of the Maldives and giving comments to sales catalogues and other tourist information material received.

Some of the above components of the "relaxed holiday" can be developed into more elaborated products. For instance, holidays or international competitions for wind surfing or big game fishing. A product particularly developed for the international clients for sailing could also be developed.

The number of visitors having these special requirements is limited, but the existence of such products will strengthen the touristic image of the Maldives.

Competition with Other Destinations

In spite of unique natural endowments the Maldives are faced with strong competition on the tourism markets. The competition first and foremost comes from other countries offering similar tropical-island types of products. Examples of such competing countries are: The Caribbean, Indonesia, the Philippines, South Pacific and other countries in the Indian Ocean like the Seychelles and Mauritius. However, there is also competition from the exotic beaches of Sri Lanka, East and West

Africa and Asia in general. In the questionnaire survey of arriving tourists thus a long list of alternative destinations was given. From the same survey it was found that the alternative mentioned by the largest number of respondents was the beaches of Sri Lanka.

Facing this competition the Maldives will have to underline the advantages of the Maldivian tourism products. The location fairly close to the European markets, the many small islands, the underwater life, the Robinson Crusoe holiday image, and the possibilities for relaxation and water sports (no mass tourism) are all such advantages. Another advantage is the possibility for product combination of the Maldives with Sri Lanka and South India. Such product combinations will strengthen the products offered by all countries involved.

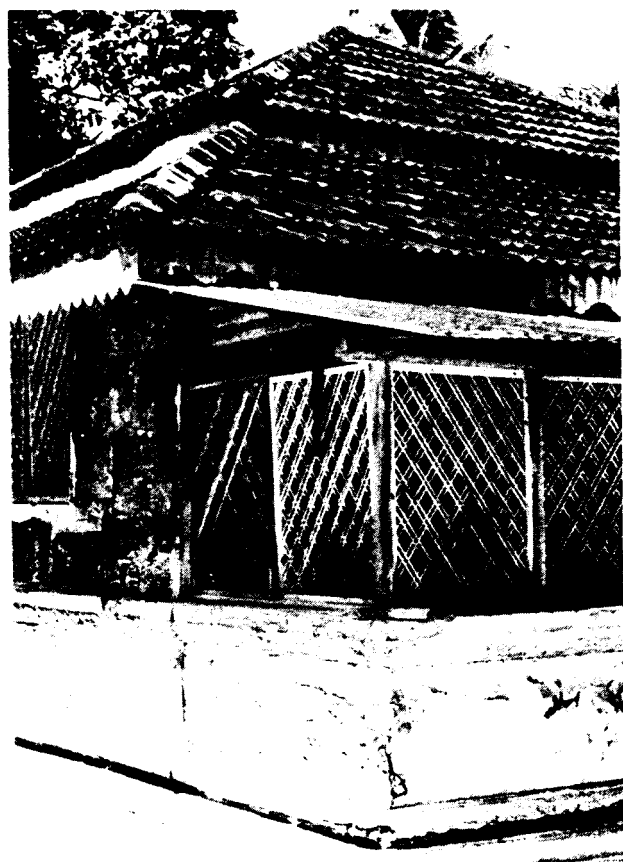
5.2 Concepts for Physical Developments

Traditional Maldivian Constructions

The vernacular architecture of the Maldives is determined by the climate and the availability of building materials. Furthermore, the lay-out of individual buildings and villages reflect the socio-cultural forces.

The dominating building material for walls is coral stone which is cut into rough pieces and laid in lime mortar. It is usually left unplastered. It has a characteristic texture and mellows to a dark colour which blends very well with the natural surroundings. Dressed stone masonry worked very delicately can be seen on public buildings like mosques but also on some few dwelling houses.

Traditional roofs are without exception thatched with roofing material fabricated of palm leaves. With their steep pitch and wide overhang they are the dominating architectural feature of the houses.



TRADITIONAL MOSQUES
ALIF ATOLL

Carpentry work is unusually well executed with refined details. Most probably the traditions of boat building are influencing the craftsmanship.

Openings in the walls closed by decorative screens of wood to permit air circulation are found in certain parts of the country.

During the last decades new materials have been introduced into the Maldives. Corrugated metal sheets are imported from overseas and are much in demand because of their easier maintenance. From an aesthetic point of view this development is deplorable. Particularly where thatched roofs and tin roofs are mixed together in the same village, the architectural unity is broken up.

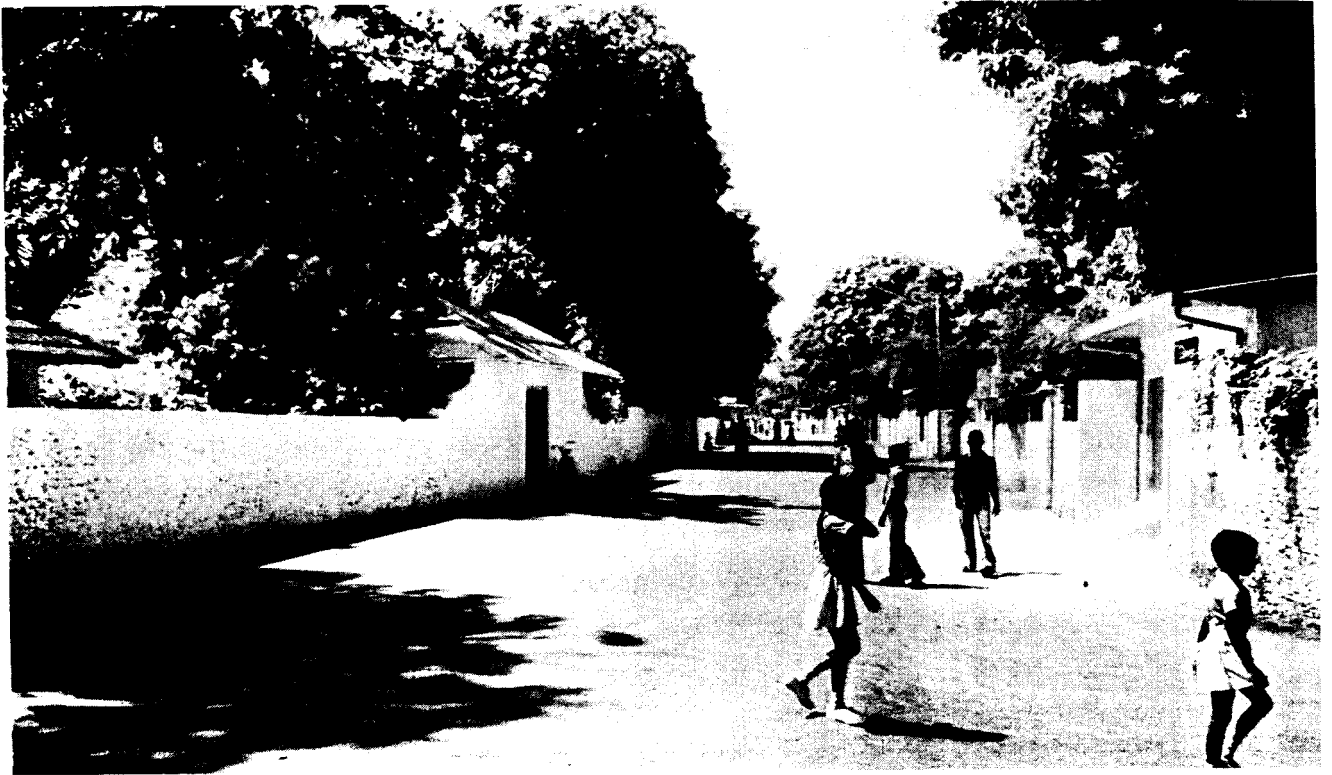
General Design Guidelines

These guidelines combined with conceptual design sketches presented in Vol. II of the report should form an instrument which could lead investors in the right direction with regard to planning and design of the holiday villages. At the same time they could be a help to the tourist authorities in evaluating proposals submitted to them.

The guidelines are based on the identification of the clients' profile and the product concepts and serve the purpose of creating an optimum setting for a relaxed informal holiday life.

They also include the objective to use a great proportion of local materials and workmanship for at least three reasons:

- The better adaptation of the vernacular Maldivian architecture to nature.
- The expectations of the tourists with regard to local character.
- The benefit of employment for a great number of Maldivians both during the construction period and for maintenance works.



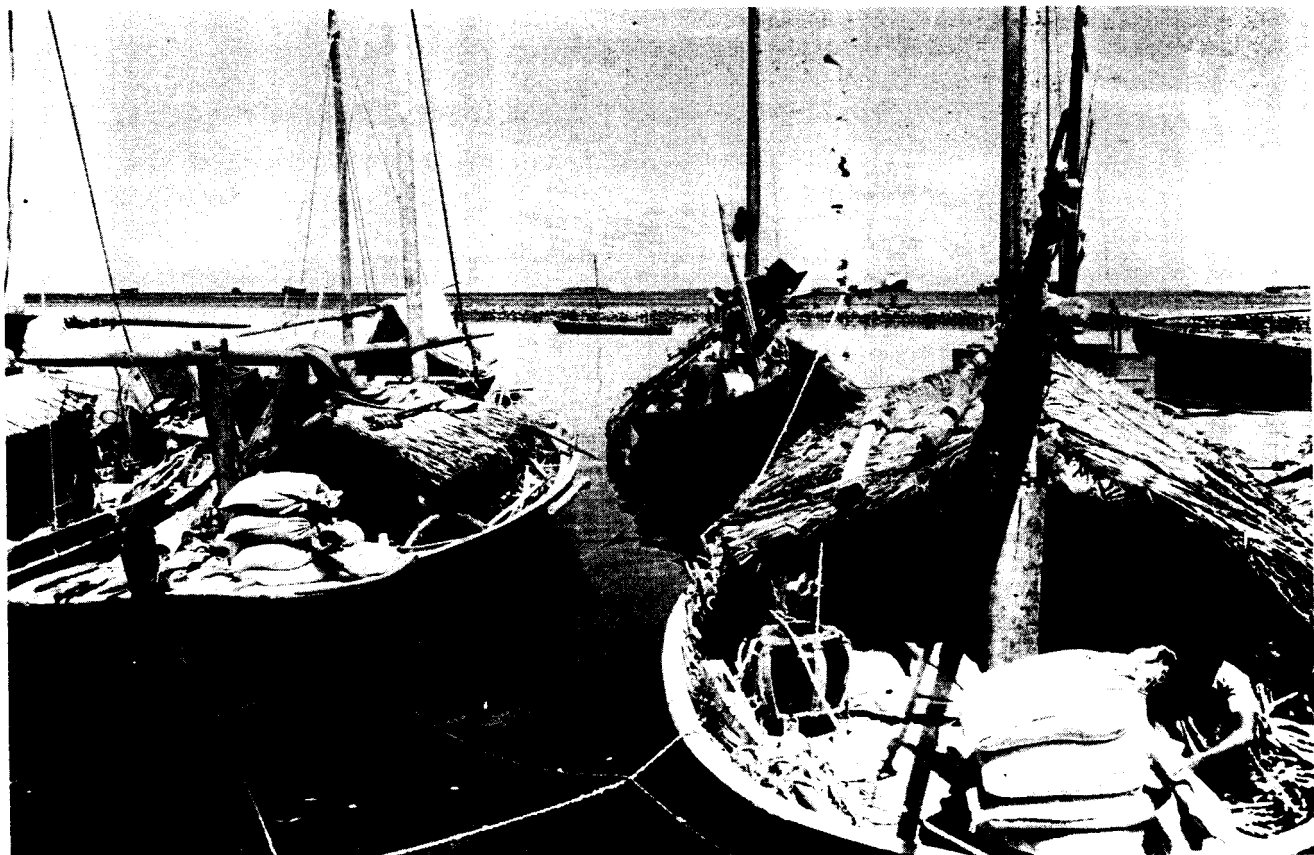
RESIDENTIAL AREA
MALE

As the designation "holiday villages" already indicates, the general lay-out should be informal, open, and take its inspiration from the Maldivian village.

The holiday villages should be designed in such a way that they can be built in stages.

However, the main group of buildings incorporating the reception area, an office, lounge, bar, dining room, kitchen and services should be dimensioned for the full development of the unit.

The functional requirements of a typical holiday village and the overall guidelines for the lay-out are given in a draft programme presented in Vol. II of this report.



HARBOUR SCENE, MALE

II.6 THE PRESENT CONDITIONS OF INFRASTRUCTURE

6.1 The Present Transportation System

In 1981 60,400 tourists arrived at Hulule Airport and were distributed to 35 tourist resorts and to Male.

The transport between the airport and the tourist islands mainly takes place in small or medium-sized boats from 5 to 50 passengers.

The majority of the resorts lie within easy distance of the airport. More than 50% of the present bed capacity lies within a range of 12 nautical miles of Hulule Airport and almost 90% of the bed capacity lies within the 24 nautical miles range. Only a few resorts and diving camps are located more than 36 nautical miles away.

The transfer time for the majority of the tourists from Hulule Airport to the resorts is thus not more than 2-2½ hour, with the nearest resorts only 15 minutes away.

Boat Types Used in the Transportation Sector

Although the number of tourists has increased rapidly, there has only been insignificant problems in getting sufficient traditional vessels equipped for the purpose of tourist transportation.

The fleet of vessels for the tourist related transportation mainly consists of converted local fishing boats, the so-called "yacht dhonis" and various smaller fiberglass craft of European or US origin.

The original fishing dhoni (MAS DHONI) is an open sailing boat, about 9-13 metres long and about 3 metres beam. Normal draught of the dhoni is about 1 metre. The dhoni is built in numerous places throughout the Maldives, mainly of local palmwood and hardwoods. The slim hull

has fine sailing capabilities and good stability. The dhoni has been used for centuries as a combined fishing and transportation vessel both inside the atolls and between them.

Mechanization of the fishing dhonis started in 1975 and has now reached about 40% of the original sailing fleet. Although the mechanization programme, which is sponsored by IDA and other development agencies, was meant solely to improve the productivity of the fishing fleet, it is evident that a large number of the "engine dhonis" is now employed in the more profitable transportation sector. To avoid this development the boat owners, who receive loans on easy terms for the engine conversion, have to sign a loan contract which requires the boat to be employed exclusively in the fishing trade for up to 8 years. This period can, however, be shortened by high downpayment.

The rebuilding of an engine dhoni to a "yacht dhoni" for tourist transportation means that the boat will be fitted with full deck and a passenger area for approx. 25 to 40 persons amidships, covered by a wooden roof. The original diesel engine (normally a Japanese YANMAR of 22 or 33 HP) gives the yacht dhoni a cruising speed of about 6-7 knots, i.e. enough to cover most of the present tourist areas within 2-3 hours.

Tentative prices of dhonis in 1981 of the different types are as follows:

- Sail mas dhoni	15- 20,000 RS (2- 2,500 US\$)
- Engine dhoni	60- 75,000 RS (8-10,000 US\$)
- Yacht dhoni	90-100,000 RS (12-13,000 US\$)

(Source: Quest Enterprise, Male).

The mentioned prices are based on well kept second-hand boats, the normal lifetime of a dhoni being approx. 25 years. There has been a rapid price increase during the last couple of years. The price of a well-kept sail mas dhoni was 2-3 years ago only about 5,000 RS.

There are no reasons to believe that this price development will stop. Building of new dhonis is now being held back because of restrictions in the use of local wood.

An accurate survey of the existing dhoni fleet is not possible as only a non-specified registration of Maldivian vessels exists. Estimates from relevant ministries show, however:

- that there are 780 engine dhonis (converted sailing dhonis) today,
- that there will be about 1,200 engine dhonis in 1983, and
- that the final goal of mechanized dhonis for the inter-atoll fisheries will be approx. 1,500.

But with the high rate of conversion from sail to engine dhonis (planned to be 150 a year, more than the present tourist dhoni fleet) the ministries do not consider it a problem that a smaller amount of engine dhonis is being transferred permanently from the fishing fleet to the tourist related transportation.

The price level, 100,000 RS for a yacht dhoni, will also prevent excessive use of this type of vessel.

The converted dhoni is excellently suitable as passenger transportation vessel within the existing pattern of tourism.

- A capacity of 25 to 50 persons is sufficient for most tourist resorts.
- The average transportation time is acceptable.
- Comfort on board can be reasonably acceptable.
- The type of boat is generally safe and seaworthy for traffic inside or near the atoll.
- The vessel with its low draught is easy to handle in the shallow water and easy to maintain with good local hull repair facilities and reasonably good engine repair facilities.
- The 22-33 HP diesel engine is reliable with low fuel consumption.
- The vessel being a converted local type of boat makes it especially well suited for the tourist trade.

Detailed data as to the types of boats used in the tourist related transportation fleet with specifications such as numbers, types, sizes and capacities are, as mentioned above, not available. A provisional listing from the Department of Tourism and Foreign Investment (DTFI) indicates that the size of the fleet permanently operating in the tourist transportation sector is of a magnitude of about 300, with an average capacity of 7-8 persons. This capacity reflects a great share (more than 200) of small outboard craft with a capacity of 3-8 persons.

The normal outboard craft is a small, halfdeck, fiberglass boat of 12-18 feet. Well known makes as WHALER or FLETCHER with JOHNSON gasoline outboard motors dominate the fleet. The boats have a capacity of 3-8 persons, run about 10-20 knots and are used as "water taxis" in the sheltered water inside the atolls. Problems occur in rough weather and in connection with frequent engine troubles. Facilities for maintenance and repair of outboard motors are still somewhat below acceptable standards.

Estimated price levels for typical imported small craft are as follows:

- 14 feet open boat, 50 HP outboard, 4-5 persons, about 15 knots, approximately 6,000 US\$.
- 15 feet halfdeck, 70 HP outboard, 6-7 persons, about 18 knots, approximately 10,000 US\$.
- 17 feet cabin cruiser, 140 HP outboard, 7-10 persons, abt. 22 knots, approximately 13,000 US\$.

Besides being less reliable this sort of transportation also suffers from high operating costs due to high gasoline consumption. A one hour ride in a 70 HP WHALER outboard craft (5-7 passengers) covering a range of 18 nautical miles will cost approximately 25 US\$ in fuel.

The same distance in a "yacht dhoni" (25 passengers) will take 2.5 to 3 hours and cost approximately 10 US\$ in fuel consumption.

A rough estimate of fuel cost of transportation per passenger per nautical mile is thus (1981):

	<u>Fuel Cost per Passenger per NM</u>
Dhoni with diesel engine, 6-7 knots	0.02 US\$
Outboard craft, gasoline engine, 18-20 knots	0.2 US\$

On top of this difference the outboard craft carries much higher cost of depreciation, maintenance and repairs.

The Government at present (1981) imposes an import tax of 10% on fuel and 30% on imported vessels and motors.

Organization of Tourist Transportation

Up to recently there has been no attempt to organize a common transportation system for the tourist sector. Each resort operates its own independent fleet to and from the airport and Male. For a medium-sized resort the fleet typically consists of:

- one passenger engine dhoni (yacht dhoni) for 25-40 people,
- one combined passenger/transportation dhoni for 20-25 people,
- one minor dhoni with full deck used as diving support vessel,
- 2 speed boats (WHALER or FLETCHER), 7-8 persons.

Within recent years some of the larger resorts have imported various second-hand diesel boats with capacities from 50 to 100 persons.

Most of the resorts have a combination of hired and bought vessels. The typical hire for a 25 person yacht dhoni is quoted to be 1,500-2,000 RS a month, based on long-time leasing.

The normal need for transportation of a tourist consists of:

- transfers from and to the airport
- 1 or 2 trips to Male
- 1 or 2 trips to a nearby fishing village
- local cruising around the island with a diving dhoni or small craft
- night fishing.

The present transportation system can handle these tasks but the tourist survey carried out in connection with the present study shows a strong request from visitors for an alternative centralized "bus service" in order to get cheaper transportation facilities and in order to get more scheduled transportation possibilities to and from Male and the shopping centres.

A Government sponsored transportation company with 2 or 3 identical fairly fast transportation vessels for up to 50 passengers could for the present tourist area near Male form the basis of a reliable bus service. The boats do not have to offer transportation from each resort to Male every day but trips to Male could be scheduled two or three times a week.

The vessels should be selected with special emphasis on speed, passenger comfort and safety and also with regard to reliable diesel engines and navigation equipment.

It must, however, be emphasized that this service should be an alternative to the individual transportation and not compete with the present traffic between the resorts and the airport where a large number of passengers have to be distributed to almost all destinations in the Male area within a very short span of time.

The newly founded company The Maldivian Transport and Contracting Co. with 60% governmental ownership could be the basis for such a new enterprise, which will increase service and cut costs for both tourists and operators.

This company is planned to cater for all types of internal transport including air and land. Their plans include a "taxi service" to the airport from Male in connection with arrival and departure of flights.

Transportation Safety

Questions concerning safety at sea in the Maldives are handled by the Ministry of Transport. Problems with regard to safety can be divided into:

- Navigational hazards, especially in connection with night sailing.
- Lack of specified demands and control as to adequate number of life jackets, fire fighting equipment and emergency radios.
- Lack of distress signals or communication possibilities in connection with engine failures.

In spite of the missing safety regulations the present safety record is quite good because of high-quality seamanship, short distances and the fair weather in the tourist season. The lack of standard safety equipment, however, creates uneasiness for most tourists accustomed to safety procedures related to the colder environment of Western Europe.

It is understood that the Ministry of Transport will very shortly start to issue compulsory safety certificates to all boats involved in tourist transportation.

It is recommended that this certificate should cover items such as:

- Certification to a maximum number of passengers.
- Easily accessible life jackets for all passengers.
- Life-buoys.
- Suitable radio equipment with contact to shore stations with continuous service.

- Distress signals.
- Fire extinguishers for all vessels above 5 metres.
- Anchors with suitable chain/rope.
- Compass (certificate for day sailing).
- Compass and radar (certificate for night sailing).
- Navigational lights (certificate for night sailing).
- Yearly survey (recertification) as to the general seaworthiness of the vessel.

6.2 Communication System

The telecommunication system of the Maldives is handled by the Telecommunication Department (TDC) in Male. TDC is a state agency responsible for all telecommunication in the country, for instance administration of licences, frequencies used in radio communication, and the national telegraph and telephone services.

All atolls (atoll chiefs) outside the Male Atoll have daily contact with the Male central telegraph exchange by means of voice transmissions on HF radio (8 megacycles band).

Each inhabited island in an atoll has daily contact with the atoll office by means of VHF walkie-talkie sets using the citizen band (27.5 megacycles). The HF radio sets used for communication between the atoll offices and Male are not quite up to modern standards and operate only a few fixed times a day with a relatively low level of reliability.

The telephone system in the Male area with now up to 3,000 connections is also handled by TDC. The international telephone connections and 80 telex connections are handled by the British company Cable and Wireless (C&W) on a management contract from TDC. The C&W station in Male is equipped with a satellite antenna which gives excellent possibilities for direct international telephone and telex communication.

All resorts in the Male area have telephone (radio link) and international telex connections either on the island itself or in the resort operator's office in Male.

Besides telephone and possibly telex, all major resorts have radio connections with their Male offices by means of VHF radio sets. This connection is expanded to cover some of the vessels belonging to the resort.

The tourist sector relies heavily on the international part of the communication services. The present capacity more or less covers these needs, both with regard to capacity and with regard to reliability and prompt connections.

6.3 Water Supply

The limited size of most of the resort islands and the increasing number of tourists mean that the present facilities for supply of fresh water for cooking, drinking and washing purposes are becoming inadequate.

The method of water supply and the quality of water vary from resort to resort, but on many islands the main sources of water supply are still collection of "fresh water" from the water lens floating on sea water within the boundary of the island and from the roof tops. The water collected from shallow wells is normally elevated to a water tower from which the water is gravity fed to the various tap points.

Due to the increased demand for water, excessive pumping has taken place in the wells with the result that the water has become saline (brackish) and unfit for drinking purposes, in some instances also for showers.

Furthermore, most resorts have a sanitation system consisting of septic tanks with soakaways. These facilities are also located in the fresh water lens with grave risk for further contamination of the water.

In order to reduce the health risk most resorts have established a programme for daily chlorination of the wells.

The resorts have generally shown interest in improving their water supply system, and depending on its purpose the water supply system can be divided into three categories as follows:

Drinking water

Most of the resorts collect water for drinking and cooking from roof tops covered with iron sheets. The water is stored in a number of steel or concrete tanks each containing about 2-5 m³. The capacity of these tanks is generally sufficient for 3-4 months' consumption, and with few rain showers in the dry season (which is also the peak holiday season) the resorts are able to collect and store water enough for a full season.

Water for drinking is boiled and passed through a filter before being used for drinking.

Water for Washing

Water supply for washing, cleaning and bathrooms inclusive of toilets is collected from shallow wells dug on the islands. The water is pumped into water tanks elevated about 5 to 6 m above ground level and supplied to the various tap points through a closed piping system. The water is brackish, and the tourists are complaining about the salinity and the smell of the water.

Three resorts, the Thulagiri, Baros and Club Méditerranée, have taken the consequences of the complaints and installed a Reverse Osmosis Plant for treatment of the brackish water. None of these plants have been supplied with equipment to provide drinking water, but it does remove the saline content to a satisfactory level for washing and showers. Furthermore, the treated water is aerated in an aeration tank in order to remove part of the chlorine and brackish smell. From the aeration tank the water is pumped into elevated water tanks and gravity fed to the various tap points.

Other resorts such as Villingili, Bandos, Nackacha, Valasaru, Embudu, and Kurumba have all ordered desalination plants to be installed.

Water for Flushing

The Thulagiri Resort has gone one step further than the other resorts, as water for flushing of toilets is collected directly from the sea and through a separate piping system supplied to each toilet. All fittings are made of plastic in order to avoid corrosion.

6.4 Sewerage

In general, the sewerage system is based on a number of 2-chamber septic tanks with soakaways. A septic tank is usually placed in connection with a group of huts or a single building accommodating about 20 persons. The sewerage effluent is discharged through a soakaway directly into the fresh water lens of the islands, the result being that fresh water on most islands has become contaminated, and in order to reduce the health risk chlorine is added daily.

Sewerage System

The sewerage system as mentioned above is based on septic tanks with soakaways and is used by 95% of the resorts.

Few resorts such as Thulagiri and Club Méditerranée have taken the consequences of the increasing contamination of the fresh water lens and have started construction of a combined sewerage system using 150 mm diameter PVC pipes. In these two resorts waste water is carried to a major septic tank, and the effluent is pumped about 300 m into the sea beyond the coral reef surrounding the island and discharged about 2-3 m below sea level at a point where a strong current is known to prevail.

There is a small difference between the two systems as Thulagiri Resort has installed a grinding mill in the main tank and discharges the effluent after minimal sedimentation, whereas Club Méditerranée is using an ordinary septic tank system and discharges the effluent after sedimentation has taken place.

The limited Government requirements for the construction of sewerage systems including septic tanks are specified in the "Sanitation Code for Tourist Resorts" which is, however, used as a guideline only. However, an official inspection of the sewerage installations is carried out before a resort will be permitted to start operations.

6.5 Waste

At present there is no specific Government regulation concerning waste disposal, therefore, this problem is handled individually by the resorts.

Waste Disposal

Paper waste is separated and burned in drums. Food waste and empty tins are collected in drums or plastic bags and thrown into the sea, usually far away from the resorts. In many cases, however, the current tends to bring the waste from one resort to the beaches of another.

Although the tins cannot be considered a major pollution problem, they ruin the impression of unspoiled nature for the divers. For a resort of 80 beds the management estimates the number of empty tins per day to be about 2,500 in the season.

In order to reduce the tin can problem some resorts such as Kurumba, Villingili, Baros, Nackacha and Kuramathi plan to get a minor plant for pressing tin cans. The pressed cans will be sold at intervals to a collector.

Other resorts are interested, i.e. if the Government would undertake the waste handling, in bringing their waste to a collection point in Male.

6.6 Energy

The electricity supply of the resorts is provided by diesel operated generators of various size and capacity. Usually there is a major generator used during peak hours and minor generators used outside peak hours.

A typical 24 hour period could be divided as follows:

1. Period 18-24 Energy consumption max. (peak hours)
2. Period 24-09 Energy consumption $\frac{1}{2}$ of max.
3. Period 09-13 Energy consumption $\frac{1}{10}$ of max.
4. Period 13-18 Energy consumption $\frac{1}{2}$ of max.

Generally, the engine, the standby plant, the overall maintenance, etc. are well organized. However, under occasional break-downs difficulties in getting spare parts is a major problem. It can be concluded that most resorts have more than adequate generator capacity.

Electrical Wiring

Except for a few resorts, all wiring is overhead placed on poles or buildings. There is little control as to who actually does the wiring and installations.

The Electricity Department is only operating in Male and the electricity regulations in force there are much stricter than on the resort islands.

Before a resort is finally approved, the Department of Tourism will ask the Electricity Department to check the wiring and installations.

Solar Energy

Some resorts have been investigating the possibility of installing a solar energy plant for electricity supply of kitchens, incl. cold store, laundry and guest rooms with air condition. However, no projects have as yet materialized.

Wind Energy

Wind energy as a source for electricity supply has not been introduced to any of the resorts, mainly due to the fact that there is little wind during the peak tourism season.

6.7 Landing Facilities

All resorts have constructed adequate landing facilities and break-water protection from coral blocks. Some of the coral blocks used have been obtained from the digging of a channel through the surrounding coral reef in order to allow free and safe passage to and from the resorts.

Hulule International Airport

The reconstruction of Hulule International Airport was finalized by November 1981.

The previous runway was only able to handle medium-size aircraft such as Boeing 737. But the new runway has been extended to a total length of 2,840 m and is able to receive aircraft up to the size of DC 10 and Airbus. The new control tower is equipped with modern navigation equipment. The management of the airport is undertaken by a British consultant company.

In addition to the improved airport facilities 5 new jetties have been built in order to accommodate the increase in boat traffic to and from the airport. The jetties can handle 10 boats each having up to 50 passengers.

A tourist information office and a duty free shop is situated inside the new terminal building. A restaurant extended outside in a garden is the main waiting area before entering the departure lounge.

The new terminal building has a capacity of 350 passengers each way per hour. This means that only one major aircraft can be handled at a time. The in- and outflow of passengers is designed to follow modern airport handling methods minimizing queuing time.

The Department of Civil Aviation is presently looking into the possibilities for a further enlargement of the airport as to cater for the 747s.

At present, tourists entering the Maldives are either coming via Colombo Airport in Sri Lanka, via Trivandrum in India or by charter flight from Europe to the Maldives. Negotiations are presently undertaken with several scheduled airlines concerning the introduction of Hulule in the international route net with direct connections from Europe.

6.8 The Supply of Goods

The supply of input to the resorts is heavily dependent on import. The present import system consists of the following channels:

- Fresh meat, eggs, fresh vegetables and fruit are brought in by air to Hulule from Colombo.

- Frozen meat, canned food, beverage and general supplies are shipped regularly from either Singapore (the major part), from Europe/South Africa by a shipping line arriving every six weeks, or in some cases from Colombo.

As storage capacity in Male is very limited and the stocks at some of the resorts are only sufficient for relatively few days' consumption, an interruption in the regular supplies from Sri Lanka and Singapore will quickly result in shortages. A particular problem in this connection is the supply of fuel. Fuel shortages will very quickly give major problems for the tourist trade.

Another problem is the spoilage of perishable goods like frozen meat. Because of the heat and several loading and unloading activities the meat may have been defrozen and frozen again several times resulting in low quality or even spoilage.

The lack of a developed wholesale business with sufficient buffer stock and a reliable distribution system makes the tourist trade very vulnerable. This is further underlined by occasional internal transportation problems from Hulule/Male to the resorts located far from the centre. Furthermore, some resorts have a serious lack of working capital and are therefore forced to buy supplies from day to day.

Because each resort has to ensure its own supplies and because of the lack of easy and established supply channels the system is far

from the optimum, resulting in too high costs and occasional shortages.

Some goods are locally supplied such as bread, coconuts, bananas, papayas, lime, mangoes (when in season), fish, lobsters and a number of vegetables. The supply system to the resorts is organized via the market in Male. The products are brought in mainly from close-by atolls to the Male market where the Male offices of the resorts buy the items for later transportation to the resorts. On the way from the farmer to the resort the products go through the hands of several middlemen each taking his profit. The Consultants were thus informed that in 1981 a bunch of bananas available at 20 to 30 Rupees at the place of production might end up being sold to the resorts at 100 Rupees or more. Because of this system incentives in the form of increased demand and higher prices normally do not reach the producer but disappear in between to the benefit of the middlemen. As the supply is fluctuating heavily, the resorts cannot be sure of the availability when needed and products in principle available in the Maldives are often imported in order to be sure of reliable supplies without much price fluctuation.

Direct supply from the producers to the resorts only takes place in few cases. One of these cases is the delivery of eggs from a recently established chicken farm in the Male Atoll. This farm has started to make direct deliveries to the Male offices of some of the resorts. In December 1980 the production was reported to be 3,000 eggs daily with an expected production of 6,000 eggs by March 1981 which is sufficient to cover the demand.

The above case shows that it is possible to develop local farm products directly supplying the tourist resorts to the advantage of the producer, the resort and the general public as part of such production will be available for general consumption.



II.7 CONCEPTS FOR THE FUTURE INFRASTRUCTURAL DEVELOPMENT

7.1 Water Supply

Resources

Collected rain water, ground water and sea water constitute the three available water resources on the resort islands. It is obvious from the survey of the existing conditions and from test samples from some islands (Dagati, Kurumba and Gashurifinolhu) that the two first resources are scarce and in some cases stressed to their limits or even beyond.

For these reasons it is very important to perform a water resource planning, through which the future demands are compared with the yield of the resources available on the individual island. Otherwise, unplanned use may lead to detrimental effects on the environment. Especially, a long-term over-pumping from the ground-water resource may not only mean that the water resource itself is spoiled by increasing salinity. Increasing salinity might also create problems for the growth of indigenous plants and trees.

Water Consumption

In Table II.11 estimates are given for the water demand for different purposes. The water consumption may vary from one resort to another, dependent on the lay-out, the number of technical installations, and on the management. Also, the water consumption generally has a tendency to increase with time due to an increasing service level in the resorts. Often an increase of 1-2% per year is forecasted on top of any increases in the number of beds. Such factors should of course be taken into account when planning new resorts and upgrading old ones.

Table II.11 Estimates of Water Consumption

	Liter/Person x Day
Personal use (drinking, cooling, washing, dish washing etc.)	5-15
Showers, washing	50-60
Flushing of toilets	40-50
Total	120

Water Quality

As part of a water resource planning, quality criteria should be developed for the different water usages. In Table II.12 an incomplete set of quality criteria for different water usages has been compared qualitatively with the WHO recommendations and with the results of test samples of piped ground water used at three of the existing resorts.

From this it is seen that the ground water on some of the islands (sample No. 4 and 7) has already been mixed with saline sea water, which has made it unsuited for certain purposes. In all three cases the bacterial standard made the water unfit for drinking without boiling it first.

Proposed Future Improvements

The scarcity of the water resources calls for a differentiated and refined approach. Depending on the specific conditions of the water resources on each island it must be decided whether to construct one integrated supply system or two or three separated supply systems for the different water usages. It is recommended that the water supply in general is based on one system using a reverse osmosis plant for desalination of sea water. A modern reverse osmosis plant will produce 12 m^3 fresh water per day. The water is of drinking quality.

Table II.12 Comparison of Water Quality Criteria with Samples from Existing Ground Water Systems

	Water Quality Criteria for			Ground Water		
	Drinking (WHO recommendations)	Washing, showers, etc.	Toilet flushing	Sample no. 2	Sample no. 4	Sample no. 7
<u>Bacterial standard</u>						
Coliform bacteria/100 ml	0	~1000	*	50	23	20
Faecal coliforms/100 ml	0	~ 10	*	23	23	20
Total germs, 37°C/ml	5-20	-	*	2140	5360	2500
Total germs, 30°C/ml	-	-	*	3400	7200	530
Total germs, 21°C/ml	50-200	-	*	1740	2080	160
Fluorescent germs, 21°C/ml	5	-	*	<1	<1	<1
<u>Chemical standard</u>						
(main parameters)						
Chloride g/l	0.2-0.6	~ 1	*	0.3	2.7	11
Total alkalinity $\frac{\text{meqv}}{1}$	~ 5	~ 5	*	3.6	8.3	6.1
Calcium and magnesium $\frac{\text{m mol}}{1}$	5	5	*	2.9	12	35
Salinity 0/00	1.5	~ 2	*	0.54	4.9	20
Hardness, as CaCO ₃ mg/l	90-500	<500	*	360	830	610
Agressiveness (free carbon dioxide)	0	0	little	-	-	-
Colour	absent	absent	little	-	-	yellow
Smell	absent	little	little	-	-	some

- Not measured or no specific criteria set.

* Unimportant for the specific use of the water.

The plant can use sea water as input, and the fuel consumption will be as little as 30 litres of oil a day. 12 m³ of water should be sufficient to cover the total water consumption of one resort with 100 beds. The technique, however, calls for a higher level of maintenance and technical management and therefore requires special training of

staff. Another alternative would be to use the separate solution as further described in the following. In the case of the separated system the risk of misconnections and user mistakes should be borne in mind and prevented as far as possible (clear marking of pipes, different pipe materials or colours, separated pipe positions, clear user instructions etc.).

Drinking Water

Although rain water is soft water and poor in mineral content, it is generally suggested also in the future to base the drinking water supply on collected and stored rain water.

Generally a rain water collection area of 3-6 square meters per bed seems reasonable for drinking water supply.

On a long-term basis it seems a better idea to use some sort of plastic roof sheets for collection than the existing galvanized iron sheets. This is due to the risk of zinc and traces of cadmium being released from the surfaces.

For storage a volume of 1-2 cubic meters per bed seems to be a reasonable and accepted value. Tanks of concrete or steel may be used, but again glass fibre reinforced plastics may be the best solution on a long-term basis.

At present, all the drinking water is boiled, but it should be possible to achieve a safe water quality without boiling if the stored water is treated in a slow sand filtration unit. Provided that it is constructed and run properly, it will show a high degree of purification also with respect to bacteria. This is due to the biologically active layer forming on top of the sand. Slow sand filtration may be supplemented with a simple aeration stair and a chlorination may be performed in a post-treatment storage tank as an extra safeguard.

Slow sand filters should be based on a filtration rate of $5-10 \text{ m}^3 / \text{m}^2 \times \text{day}$ or approximately $0.2-0.5 \text{ m}^2$ per resort (100 beds). However, there is a certain minimum size for practical reasons, $0.5-1.0 \text{ m}^2$, and at least two units should be built due to the need for cleaning the sand surface.

Water for Washing and for Showers

In some cases, when problems of increased salinity in the ground water arise, these can be overcome by ensuring that the fresh water is drawn from the fresh-water lens in a more even way. Wells must be spread over a larger area.

However, in some cases it seems more appropriate to apply a desalination plant in the form of a reverse osmosis plant.

From a water conservation point of view it is suggested to use sea water as input to the reverse osmosis plant although this may mean increased running costs compared to input of brackish water.

Water for Flushing

Provided that the supply system has been planned for it from the beginning (only plastic pipes and fittings used), it seems a good idea to use sea water for flushing.

However, it must be pointed out that using sea water for flushing should be done only when the sewage is discharged directly into the ocean outside the reef. The salinity of the flush water will at best trouble the biological processes in a sewage treatment plant - at worst make the treatment impossible.

Cost Estimate for Rain Water Collection and Storage

The estimated cost for collection and storage of rain water for a 100 bed resort is estimated as follows (cost refers to 1981 price level):

Cast in situ concrete storage tank 150 m ³	US\$ 12,000
Sand filter	US\$ 4,000
Chlorination unit	US\$ 1,500
Miscellaneous 10%	US\$ 1,500
Estimated total	<u>US\$ 19,000</u>

Split between foreign and local cost component 30/70.

Cost Estimate for Reverse Osmosis Desalination Plant

Construction cost estimate for reverse osmosis desalination plant (brackish water)¹⁾ for a 100 bed resort is as follows:

Reverse osmosis desalination, capacity 7 l/min.	US\$ 11,000
Pretreatment and storage tank 50 m ³	US\$ 5,000
Transport of plant	US\$ 2,000
Miscellaneous 10%	US\$ 2,000
Estimated total	<u>US\$ 20,000</u>

Split between foreign and local cost component 80/20.

7.2 Sewerage

Proposed Future Improvements

The contamination of the ground water from existing septic tanks, soakaways and salination on the resort islands is a major problem which, due to the increasing number of tourists, is becoming more and more critical. Except for a few major islands, groundwater (brackish) is only used for washing and cleaning.

1) Sea water approx. extra US\$ 20,000.

Few resorts have taken the consequences of this situation and improved the sanitary system by introducing a piped waste and sewerage water system for the island. The sewage water is then pumped into the sea beyond the coral reef normally surrounding the island after a minimum of purification in a septic tank. Such a system is, of course, a great improvement to the pollution problem facing the island's ground water. However, the quality of discharge at present is not satisfactory from a marine biological point of view, described elsewhere in this report.

For future resorts it is recommended to construct a sewerage system capable of carrying all waste water to a minor treatment plant or a number of treatment plants which are able to purify the waste water to such a degree that the water can be discharged directly into the sea within the coral reef without damaging effects to the marine life.

However, in order to avoid damaging effects in case of power failure or breakdown of the treatment plant and for aesthical reasons, it is recommended that waste water, although purified, should be discharged beyond the coral reef which will also reduce the effect of detergent foam likely to occur under certain circumstances.

Purification requirements of discharge should be as follows:

Biological Oxygen Demand (BOD5)	20 mg/l
Ammonia Nitrogen	2-4 mg/l
Suspended Solid	20 mg/l

The demands can be met e.g. by a Trix micro biological plant. For a 60 PE (hotel 120 PE) the plant is installed in a tank having a diameter of 2.5 meter and a depth of 3.0 meter.

The tank should be emptied at least once a year. However, as the waste is free of smell, it could be utilized as fertilizer in connection with vegetable-growing.

In order to control the construction activities including sewerage system and treatment in the tourist resorts, a Building Regulation should be introduced specifying the Government's requirements in this respect.

The present "Sanitation Code for Tourist Resorts" is considered insufficient for the purpose of making detailed requirements on the design and construction of a sewerage system and treatment plant.

Cost Estimate

The estimated construction cost for a sewage treatment plant as described above is as follows (the cost refers to January 1981):

125-150 PE

Cast in situ concrete tank 2.5 m diameter	
incl. excavation & reinforcing	US\$ 6,300
Plant and equipment	US\$ 10,700
Transport of plant	US\$ 2,000
Miscellaneous 10%	US\$ 2,000
Total	<u>US\$ 21,000</u>

Split between foreign and local cost component is estimated at 75/25.

7.3 Solid Waste Handling

The principal problem of solid waste handling is not merely organizing the collection and deposit of the generated waste but a problem of preserving the environment by minimizing the environmental effect of waste disposal. This applies especially to small islands like the Maldives with great tourist potential.

The Government of the Maldives is greatly concerned about the problems of environmental protection in general, and protection of the coral reefs in particular.

The objective of planning the future handling of solid waste becomes an important factor in protection of the environment and in the planning of new resorts.

Solid waste handling for the resort islands has been separated into two systems as follows:

- i) Solid waste treatment plant on the resort island.
- ii) Solid waste treatment for a group of islands.

Solid Waste, Definition and Quantities

Solid waste is defined as that waste other than sewage to be disposed of by a normal household.

Normal domestic waste consists of a mixture of various organic matters such as food residues, wrapping paper, plastics etc. and non-organic matters such as glass and metal.

Disposal rates for domestic solid waste vary from country to country dependent on the local culture and standard of living, and for an average resort the waste quantities are estimated as follows:

Waste from room	0.35 kilo/person/day
Waste from 3 meals	1.45 kilo/person/day
	<hr/>
	1.80 kilo/person/day
Tin cans	10 Nos./person/day
	<hr/>

In the following calculation of annual quantities the resort has been assumed fully occupied from December to May and half occupied outside this period.

Assuming an average size of the resorts of 100 beds, the daily (D)/annual (A) quantity of waste is as follows:

<u>Persons</u>	<u>Waste quantities</u>			<u>Tin cans</u>
	<u>Kilos/D</u>	<u>m³/D</u>	<u>T/A</u>	<u>Nos./D</u>
100	180	0.9	46	1000

Gravity of waste 200 kilos/m³.

Solid Waste Treatment on the Resort Island

This alternative is based on treatment of solid waste on the island and only export of pressed tin cans and bottles to possible collectors. For this reason, the waste of tin cans and bottles should be separated from the main solid waste.

Bearing in mind the size of the islands and the handling and area requirements of other treatment processes, it is recommended to use an incinerating plant.

Incineration of combustible waste takes place in a specially designed incinerator reducing the total volume to be deposited to approximately 5%.

The advantages of this system are that the waste is totally sterilized by the process; sewage sludge may be incinerated together with solid waste if necessary.

Furthermore, hot water can be produced in the process sufficient for washing and kitchen purposes.

For a 100 bed resort the plant should be able to process 30 kilos/hour equal to about 6 hours of burning which is recommended by the manufacturer as being the most feasible.

The waste is fed into the incinerator manually.

Cost Estimate for Incinerating Plant (100 Persons)

The estimated cost of an Incinerating Plant, transport and setting-up, is as follows (the cost refers to 1981):

Incinerating Plant complete	US\$ 26,000
Heat Recovery Plant	US\$ 7,700
Transport and setting-up of the plant in the Maldives	US\$ 3,800
Miscellaneous 10%	US\$ 3,500
Incinerator	US\$ 41,000
Tin can compactor	US\$ 2,000
Estimated total	US\$ 43,000

Some income will occur from sale of the pressed tin cans.

Average cost per person: US\$ 430.--.

Fuel Consumption

The annual consumption of diesel for an Incinerating Plant is approximately 15% of the weight of the waste and is as follows:

$$\text{Diesel} \quad \frac{46,000 \times 15\%}{(\text{gravity } 950)} = 7,300 \text{ l/annum}$$

Heat Recovery

The recovery and utilization of all heat developed in the process for hot water etc. are equal to a diesel consumption of 10,300 l. This is probably sufficient to cover the complete heat demand on the island.

Solid Waste Treatment for a Group of Islands

The second alternative is based on treatment of solid waste for a group of islands. The number of islands to be included in a group depends on transport distances and the possibility of utilizing the hot water production, e.g. washing of clothes could be carried out for all resorts in the group at the resort which accommodates the plant.

Furthermore, when the waste exceeds 50 kilos/hour (about 300 persons) the feeding of the incinerating plant cannot be done manually but requires automatic feeding transmission equipment.

Cost Estimate for Incinerating Plant (300 Persons)

The cost estimate for the Incinerating Plants shown in the following is based on 1981 price level.

Incinerating Plant complete	US\$ 42,000
Heat recovery plant	US\$ 7,700
Transport and setting-up of the plant in the Maldives	US\$ 6,300
Miscellaneous 10%	US\$ 5,000
Incinerator	US\$ 61,000
Tin can compactor	US\$ 3,000
Estimated total	US\$ 64,000

Average cost per person: US\$ 214.- + transport cost of waste, depending on the location.

Fuel Consumption

Referring to the above, the fuel consumption is as follows:

Diesel 7,300 x 3 = 21,900 l/annum.

Heat Recovery

The recovery and utilization of heat development depend on the size of the resort at which the incinerating plant is located.

The potential amount of heat recovered corresponds to 32,000 l oil, but 50% of this may be more realistic.

Cost Estimate for Incinerating Plant (1,000 Persons)

Incinerating Plant complete	US\$ 94,000
Transport and setting-up of the plant in the Maldives	US\$ 5,800
Power plant	US\$ 13,000
Miscellaneous 10%	US\$ 10,000
Incinerator	US\$ 123,000
Tin can compactor	US\$ 7,000
Estimated total	US\$ 130,000

Average cost per person: US\$ 130.- + transport cost of waste depending on the location.

Fuel Consumption

Referring to page 177 the fuel consumption is as follows:

Diesel 7,300 x 10 = 73,000 l/annum.

Heat Recovery

Recovery and utilization of heat are not considered feasible for major plants, except in case of a major concentration of people.

Conclusion

On basis of the above it is recommended to carry out a detailed study for waste disposal in order to establish the location, number and size of plants required based on the possibility of grouping various resorts together.

In collaboration with the Government a waste disposal regulation should be prepared involving all existing as well as new resorts.

7.4 Energy

A future alternative to the present energy sources could be the application of non-conventional energy technologies based on renewable energy sources such as wind power, solar cells, wave power etc. These energy technologies are under a continuous development although they are not economical at present on the scale in question. Another problem to overcome before the non-conventional energy technologies become feasible is that of energy storage. Various research is going on in this field, but so far no marketable systems have been developed. A common way of harmonizing the electricity production with the electricity consumption is that of co-generation, i.e. surplus production is fed into the public grid from where electricity is drawn when the production is less than the demand or stopped as for wind mills on calm days. This method is, of course, not applicable for self-relying systems as those necessary in the Maldives.

The possible "breakthrough" for marketable non-conventional energy technologies is difficult to estimate, but a fair guess would be in the range of five to ten years.

Diesel Generator Sets

At present all existing resorts and planned new resorts are relying on diesel generator sets for their supply of electricity despite the

rising cost of fuel. New engines being developed are focusing on fuel saving arrangements and the minimizing of maintenance costs and thereby improving their competitive standing.

In case a number of new resorts are developed on islands lying as a string of pearls a centrally located electricity plant might be feasible. However, such a system will need a specific survey related to the physical characteristics of the area in question.

Wind Power

Several wind mills are at present in operation in various countries, mainly for research purposes with little commercial value. Commercially produced and marketed wind power systems are, however, becoming available in an increasing number. The main problems at present are that the designs are still being developed and the produced numbers of each type are small resulting in high production cost and difficult and expensive maintenance.

Other disadvantages are the lack of energy storage facilities and the need for a back-up system during calm days.

It is, however, likely in the future when production of wind power systems is more advanced that wind power combined with diesel powered generator sets could be an alternative energy source for the resorts.

A combined system will be necessary as the wind record for Male Atoll shows very little wind during the tourist season.

Cost Estimate for a Wind Power System

The cost estimate for the wind power plants shown in the following is based on January 1981 price level:

50 bed resort, 30 KVA installed capacity

Wind power plant complete	US\$ 25,000
Transport and setting-up of the plant	US\$ 3,000
Miscellaneous 10%	US\$ 3,000
Estimated total	<u>US\$ 31,000</u>

100 bed resort, 2 x 30 KVA installed capacity

Wind power plants complete	US\$ 50,000
Transport and setting-up of the plant	US\$ 5,000
Miscellaneous 10%	US\$ 5,000
Estimated total	<u>US\$ 60,000</u>

300 bed resort, 4 x 55 KVA installed capacity

Wind power plants complete	US\$ 150,000
Transport and setting-up of the plants	US\$ 15,000
Miscellaneous 10%	US\$ 15,000
Estimated total	<u>US\$ 180,000</u>

Electrical Energy from Solar Cells

Today it is possible to generate electricity with the sun as a primary source of energy by using solar cells.

The solar cells, for instance consisting of one-crystalline silicium, are built together in series or parallel circuits which theoretically can be adjusted to arbitrary consume sizes. However, the present stage of production and development of solar energy plants is not yet so advanced that the plants are economically attractive (see fig. II.11).

The reason for the solar cell plants to be mentioned in this connection is partly that the alternative electricity production in the Maldives today is made via diesel operated generators being a rela-

Figure II.11 Expected Cost Relations for Complete Solar Energy Installations

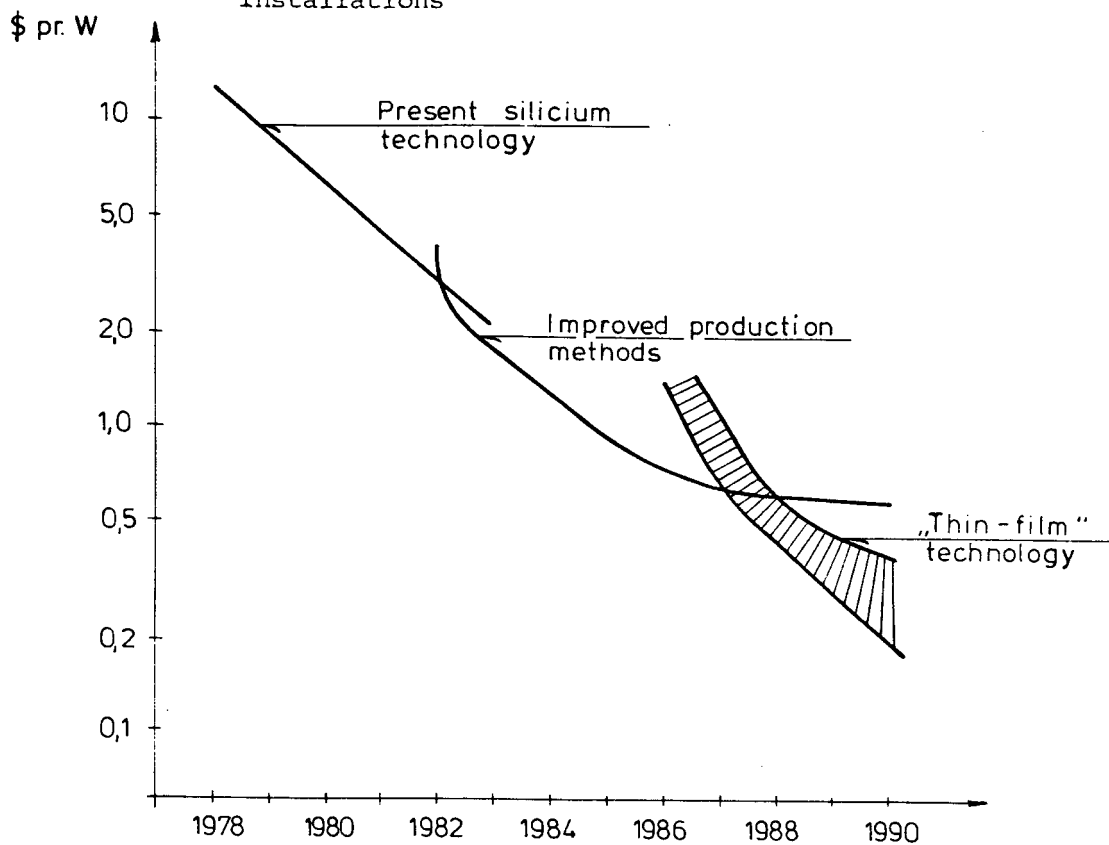
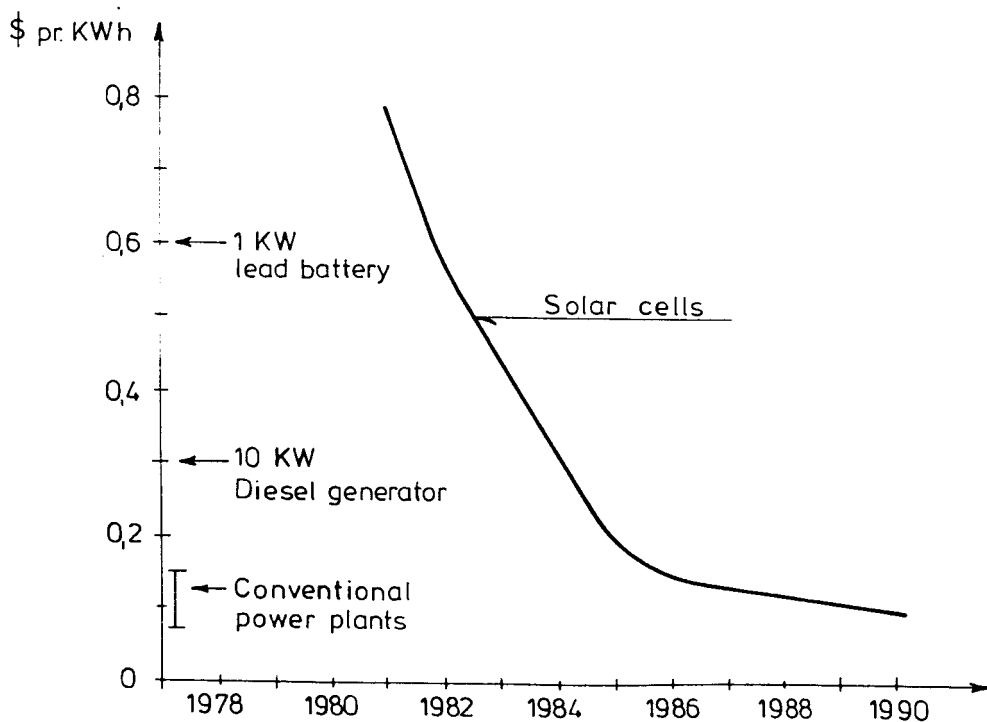


Figure II.12 Cost of Solar Energy Systems Compared to Conventional Systems



tively expensive production method, and partly that the usable solar radiation in the area is high. Annually it amounts to approximately 360 kWh/m² (total solar radiation at sea level 2000 kWh/m²). Prognoses made by the American Ministry of Energy DOE (Department of Energy) show that if the development within the technology of solar cells continues, such plants will become economically attractive within a period of 5 years (see fig. II.12).

Consequently, when designing new resorts, the possibilities should be considered of a later installation of solar cell panels and supplementary equipment such as accumulators (batteries) and control panels.

7.5 Construction Cost

In order to arrive at costs for construction of a resort and its facilities, information has been collected from both public and private enterprises concerning construction methods and basic cost components such as that of labour, equipment and materials, together with material sources and transport costs.

There are several building projects at present going on both in Male and on the islands, and the construction cost has been based on information obtained from these projects.

Unit Construction Cost

A typical construction cost break-down for a 50 room resort has been established based on the following general assumptions:

- Walls made of coral stone.
- Thatched roof on guest rooms and on the restaurant. Corrugated iron roof on other buildings.
- Ceramic tiles.

- Bathroom with shower.
- Sewerage system with microbiological treatment plant, discharge outside the coral reef (estimated at 300 meters).
- Water supply for cooking and drinking collected from the corrugated iron roofs and stored in concrete tanks.
- Water supply for washing and bathroom to be supplied from wells and purified through a reverse osmosis treatment plant.

In the context of this report, the unit cost is defined as the comprehensive or total cost combining labour and material into a finished "product".

The unit construction costs for a 100 bed resort are shown in Table II.13. All unit costs include contractor's general overhead and profits, mobilization, basic haulage distance, but exclude taxes.

The difference in construction cost shown in Table II.13 between a local and foreign contractor is mainly due to higher cost of camps establishment, labour, transport, profit and overhead. Furthermore, a foreign contractor is often required to supply generally higher quality of material and equipment.

Estimated construction costs for proposed improvements such as biological sewage treatment plant, waste handling, water supply treatment, etc. have been established and are presented in connection with the relevant chapters.

Foreign contractors might be needed in case of construction of more complicated or sophisticated buildings, or if a short building period is desired. In case of building of a tourism centre including several more complicated items, foreign contractors will probably be needed.

Table II.13 Estimated Unit Construction Cost for a 100 Bed Resort
in 1982 Prices

Description	A US\$	B US\$
<u>Construction Cost</u>		
50 rooms	110,000	180,000
Sewage system including biological treatment plant	55,000	70,000
Reception and administration building	8,000	20,000
Shops and bar	2,600	7,000
Restaurant and kitchen	9,800	17,000
Laundry	1,300	4,500
Stores	7,400	11,900
Staff quarters	3,400	7,200
Jetties	2,500	10,000
Launch service building	1,500	4,800
Power plant building	2,400	6,000
Water supply incl. desalination plant	60,000	80,000
<u>Fittings and Equipment etc.</u>		
50 rooms	60,000	84,000
Reception and administration	9,600	11,000
Cutlery and crockery	4,700	5,500
Shops and bar	2,700	3,600
Stores	1,000	1,400
Kitchen incl. cool and freeze	22,400	26,000
Generators, wiring etc.	70,000	90,000
Transport: 2 Diesel Dhonis 2 Speed boats	37,000	42,000
Tin can compactor	2,000	2,300
Estimated total ¹⁾	473,300	684,200

1) Excl. cost of an incinerating plant.

Column A: Constructed by local contractor.

Column B: Constructed by foreign contractor.

The split between foreign and local cost component: Column A: 60/40

Column B: 70/30

7.6 Transportation and Communication

Transportation within Kaaf (North and South Male Atolls)

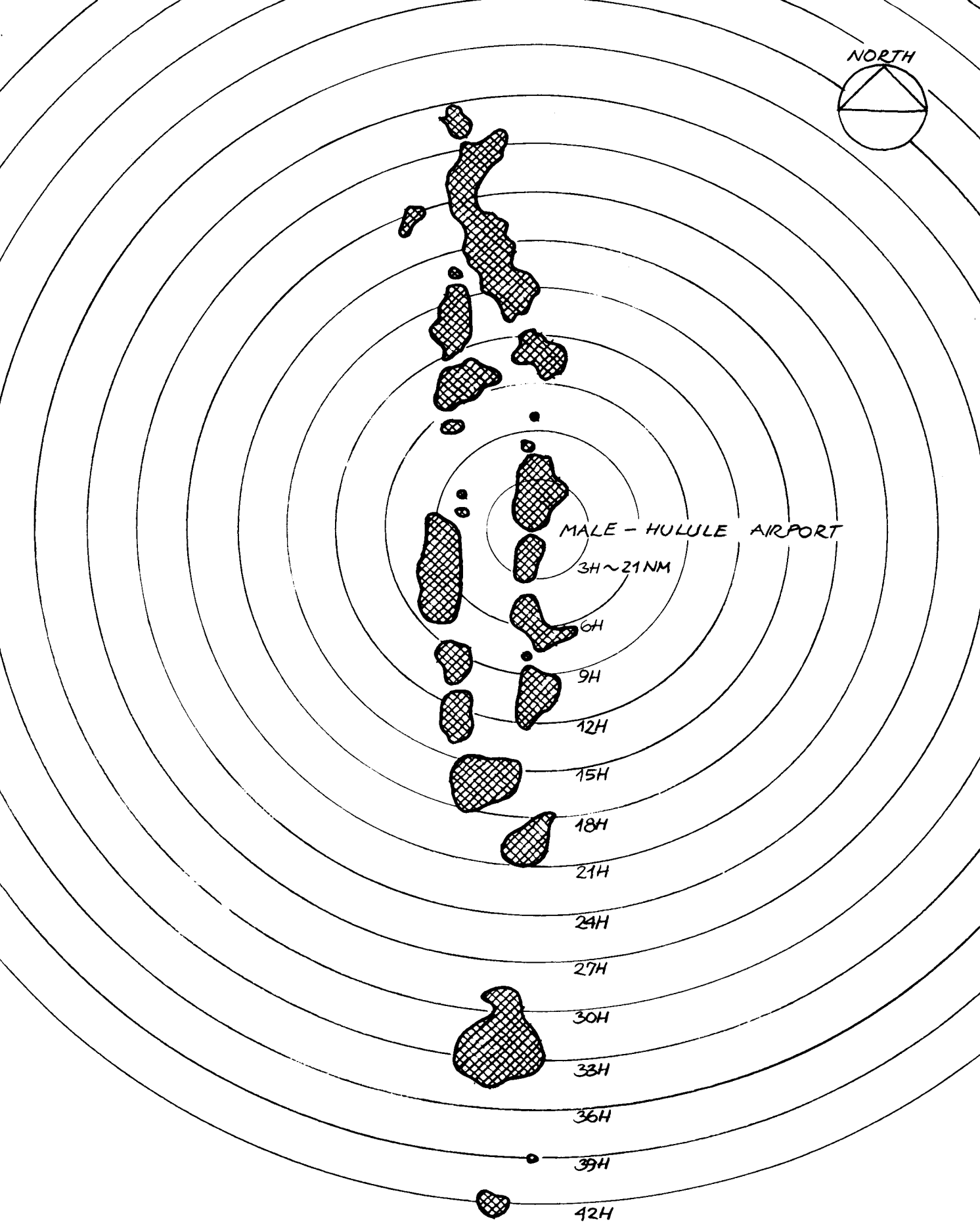
The present transport system is primarily based on rebuilt fishing vessels. In 1981 60,000 tourists were thus brought from the island of Hulule to the tourist resorts and Male by a fleet of rebuilt local fishing vessels (25-40 persons), speed boats (5-7 persons) or various other second-hand diesel boats.

The tourists arrive at Hulule from Colombo, Sri Lanka, by scheduled ordinary flights once or twice a day or by direct charter flights from Europe.

The majority of the resorts lie within easy distance of the airport. More than 50% of the present bed capacity lies within 2 hours' sailing with the slowest existing form of transport, the rebuilt fishing vessel (the dhoni). 90% of the tourist resorts lie within a 24 nautical mile zone, i.e. they may be reached in 3-4 hours in an engine dhoni, or less than 2 hours in a speed boat.

With a few exceptions all the resorts are located within the protecting reefs of Kaaf Atoll and can therefore be reached through reasonably calm waters in all kinds of weather. However, even in the case of Kaaf Atoll, the open channel between North Male and South Male Atolls can be frightening and dangerous for tourists being transported in small boats.

With a few exceptions transport inside the North and South Male Atolls can only take place in the daytime as there are no navigation aids such as buoys, lights etc. to map out the complicated reef systems of the inner atolls. Daytime in the Maldives may roughly be defined as the 12 hour period between 6 o'clock in the morning and 6 o'clock in the evening.



H : HOURS BY ENGINE DHONI - NM : NAUTICAL MILE

MALDIVE ISLANDS : TRANSPORTATION DISTANCES BY ENGINE DHONI

Today, only a few resorts are situated more than 36 nautical miles away. But the number of arriving tourists and the number of islands with newly established tourist resorts have expanded so rapidly in the last couple of years that islands for future development will have to be found further and further away.

This reflects one of the basic problems in connection with the rapid expansion of the tourist sector in the Maldives.

In relation to transport this can be seen in connection with the problems of establishing reliable transfers to the airport. A four to six hours' boat ride, especially when part of the route is located outside the atoll, calls for fast sea-going vessels with reliable machinery.

It happens not infrequently that a group of departing tourists miss the ordinary flight because of engine break-down, foul weather or other reasons connected with long trips in unsuitable transport vessels.

In most cases tourists who miss the departing flight will have to spend the night in Male, where proper accommodation may be difficult to find. They then proceed to Colombo from where their charter flight has left, meaning that they either have to be transferred to another charter flight or have to take the ordinary flight back.

It has not been possible (for good reasons) to get an exact record of the number of "missed departures", nor the cost connected herewith. Our inquiries showed, however, that this has been an increasingly important problem, especially the last couple of years, and that the problem solely occurs in connection with transfer of passengers from resorts more than, say, 20 nautical miles away.

A 20 minutes' delay for 3 passengers caused by head wind and choppy sea was reported to cost the tour operator almost US\$ 2,000 plus the inconvenience for both the tourists and the involved administration.

One of the difficult aspects of transport is that the transfer cannot be started before 6 o'clock in the morning, because night navigation inside the atoll is impossible.

If the remotest resorts within Kaaf shall be reached with a high degree of reliability within 2 hours from Hulule in all kinds of weather, one or more modern 50 passenger vessel must be put into operation. Such a type of vessel would cost more than 1 mill. US\$ and in order to service both north and south at least two boats will be needed. The individual resorts, who cater for their own transport material under the present system, will hardly have the possibility of making such investments.

If the Government should invest in such boats the problem would be how to cover the costs, as the boats would only serve a limited number of resorts.

It can be concluded that the present area used for tourism in the Maldives cannot be expanded without substantial investments in the transport sector. The present fleet used in the tourist related transport, based on either rebuilt local vessels, light outboard craft or old second-hand vessels, must be supplemented by new tonnage especially designed for the purpose as large, fast, sea-going and reliable vessels. However, such investments can hardly be recommended within Kaaf as the economic benefits will not be able to cover the costs.

Tourism Developments outside Kaaf

As described in Part I, the future tourism development can follow three alternative strategies. If the laissez-faire strategy is followed, resorts will be developed in the nearby atolls like Ari, Lhaviyani, Baa and Vaav. If the private sector shall solve the transportation problem involved, the solution will be partial. It can thus be feared that the resorts cannot afford the high investments needed,

and risky solutions with unsuitable boats will be the result. Furthermore, the substantial costs involved will give financial problems for the resorts as they will not be able to take substantially higher rates than resorts within the Male area. All in all, the laissez-faire policy will result in either unfeasible and risky solutions or in introduction of resort projects with 1,000 beds or more. Such a project might be able to cover the transportation costs, but this type of project will probably not fit into the Maldivian type of tourism and cannot be recommended on the basis of the general development principles. It can therefore be concluded that the laissez-faire policy will lead to overcrowding in Kaaf and financially risky projects, projects which will also be risky in the sense of the safety of the tourists.

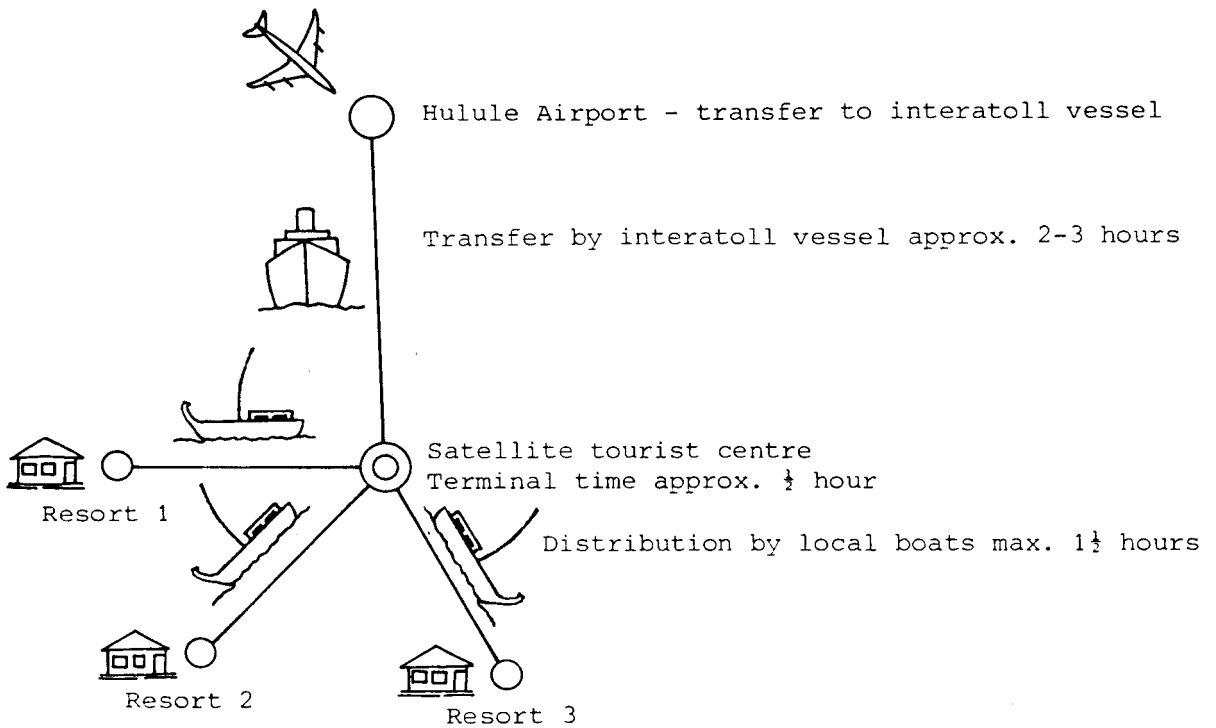
The second alternative would be a planned development of satellite resort centres in some of the abovementioned nearby atolls. Such a planned strategy calls for investments in tourist centres and new vessels for inter-atoll tourist transportation as to obtain a reliable and safe connection from the tourist centres to and from the Hulule Airport.

A vessel to run regular inter-atoll services, for instance to the Ari Atoll, with a capacity of 50-100 passengers and a maximum of 2-3 hours' transfer time from Hulule to one or two selected transit centres within Ari Atoll would cost approximately 3 mill. US\$, the price dependent on design and standard.

As the reliability of such a service is imperative to ensure safe arrival to the flights in Hulule, a route must be planned so that at least one alternative transport possibility exists. This means that either a similar transport vessel from other atolls should be able to make detours to pick up stranded passengers or that the inter-atoll passenger fleet should have a reserve vessel to be used for emergencies.

Added to the abovementioned transfer time should be the local distribution and terminal time. Therefore, the total time from arrival in Hulule to the final destination would probably add up to about 5 hours (see the figure).

Figure II.13



The total of 5 hours' travel time must be taken as a maximum because tourists having travelled far before arriving at Hulule will not accept a much longer time. Therefore, the interatoll vessels must be fast and have sufficient comfort. Furthermore, the distribution from the tourist centres to the respective resorts cannot exceed more than about 1½ hours limiting the range of islands to be covered to max. 10-12 nautical miles from each centre. Because of these limitations 3 or 4 transit centres, probably located in Baa, Lhaviyani and Ari Atolls, will be needed involving the investment in 4 interatoll vessels.

The establishment of the transport system as well as the new transit centres must basically be covered by the public sector as to open up for potential tourism areas and avoid the exploitation of the Kaaf Atoll.

A full picture of total investments and running costs in connection with this strategy cannot be given on the present basis, but a rough estimate indicates that total investments to cover one interatoll tourist service to the Ari Atoll would amount to approximately 5 mill. US\$ with yearly running costs of about 1.5 mill. US\$. Three or four satellite centres will therefore involve investments in the range of 15 to 20 mill. US\$ with yearly running costs of about 4.5 to 6.0 mill. US\$.

As mentioned above, costs in connection with the interatoll passenger traffic should be covered by the public sector, for instance on the basis of tax on the tourism sector as a whole. If resorts established in other atolls than Kaaf will have to cover fully the costs involved, the price levels between tourist resorts in the Male Atoll and the new resorts will be distorted.

It can be concluded that heavy Governmental investments will be necessary, new satellite centres will be selected more in respect to easy reach from Hulule than to touristic values, and that even with heavy investments a 100% reliable system cannot be developed. Finally, with a number of satellite centres around Male, it will probably be difficult to restrict the tourism development to confined areas and to avoid the uncontrolled spread of new developments.

Development of Independent Tourist Centres

The third alternative will be to develop two new tourist centres, one in the south and one in the north, in order to spread the economic effect of tourism to other parts of the Maldives. The centres should be selected in accordance with a whole set of selection criteria as described in Part I.

The most important factor in the planning strategy is the transportation. The atolls pointed at, even with a fast interatoll passenger boat, will be at least 5 to 6 hours away. Transfers of these lengths are not acceptable, leaving air transportation as the only realistic solution for a reliable and swift inter-centre transportation system. Tourists sailing with cruise boats from for instance Hulule to the tourism zone or vice versa will of course also be a possibility, but the number of such tourists will be limited and the transport will be an attraction in itself.

The proposed tourist centres shall thus be equipped with landing strips and terminal facilities according to the normal international practice for STOL aircraft (STOL: short take off and landing).

This implies a field length of about 1,050 metres and a field width of 100 metres (30 metres runway and 2 times 35 metres safety zones). This applies to present North European practice and more than fulfils the North American FAA requirements.

Among the available aircraft with STOL characteristics, a 50 passenger plane, the Canadian DASH 7, has been selected as basis for further investigations for the start phase.

This corresponds to the planned size of the start phase of the new centres. A start bed capacity of 1,000 persons and an average length of stay of 10 days imply that approximately 100 passengers at the start will have to be transported to and from the centres to adjoining flights in Male every day.

Scheduling of routes and number of flights will have to be worked out in detail when the areas for development have been selected.

The "normal" daily utilization of a plane of this type is about 7 to 10 hours.

It is, however, strongly recommended to use at least 2 identical aircraft for the operations as the STOL flight connection will be the only transfer possibility between the centres and the adjoining flights. The DASH 7 is recorded to have a reliability of more than 97%. But even if the necessary overhaul centre for DASH 7 engines is situated as close as Bombay, it is safe to expect a somewhat lower reliability than the one stated by the manufacturer.

With a fleet of two DASH 7 aircraft there will be sufficient capacity for some time to serve the tourists arriving during the first development phases.

The development of a new tourist centre will require a high degree of flexibility in the aircraft fleet. At the start, only small aircraft will be needed taking a few passengers. Later, when the centre is operational with about 1,000 beds, the DASH 7 type of aircraft seems to be a good solution. The required high degree of flexibility could be obtained through a "wet" leasing arrangement. This can be made under the auspices of MIA, the Maldives International Airways (or the Maldivian Transport and Contracting Co.) and will ensure establishment of proper maintenance and operational procedures. After a suitable running-in period the Maldivian company could take over ownership of the aircraft and as much of the management as wanted. The "wet" leasing arrangement is a full package including technical and operational management and implies that the operation in the transient period during the upstart of the projects could use smaller 10 to 25 seat aircraft. Another advantage of the leasing arrangement is that MIA can make use of the favourable options that most relevant leasing companies have to obtain aircraft at the right time and at the right price.

Leasing contracts may be arranged in several ways to suit specific needs. It is therefore difficult to give a detailed cost estimate until a final settlement is reached. However, below is shown an estimate:

Based on two DASH 7 aircraft engaged in the route Male - new tourism centre, costs including:

- capital costs
- depreciation
- insurance
- fuel
- maintenance (incl. spare parts)
- flight crew and mechanics)

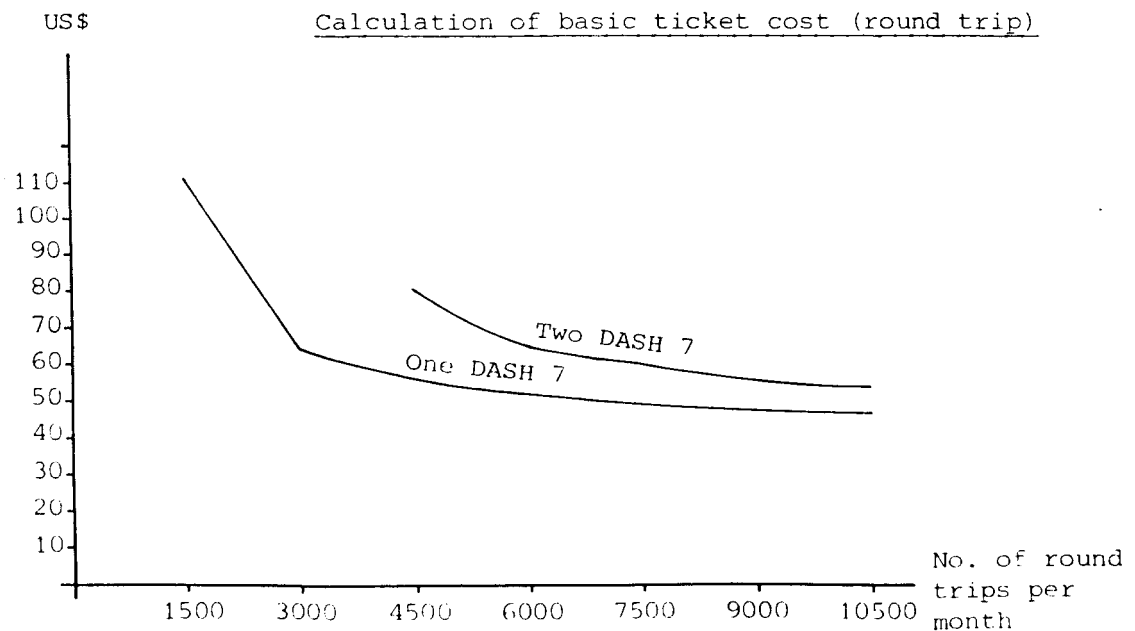
would amount to approximately:

Basic costs consisting of a fixed amount of 150,000 US\$/month + 200 US\$ per hour (block time) for the first 150 hours each month. Exceeding hours will cost 700 US\$ per block hour. On top of this the operator will have to cover all costs in connection with landing and in-flight fees, taxation and en-route accommodation (cabin staff).

Based on these standard figures and a capacity of 50 seats per aircraft the following two examples have been calculated.

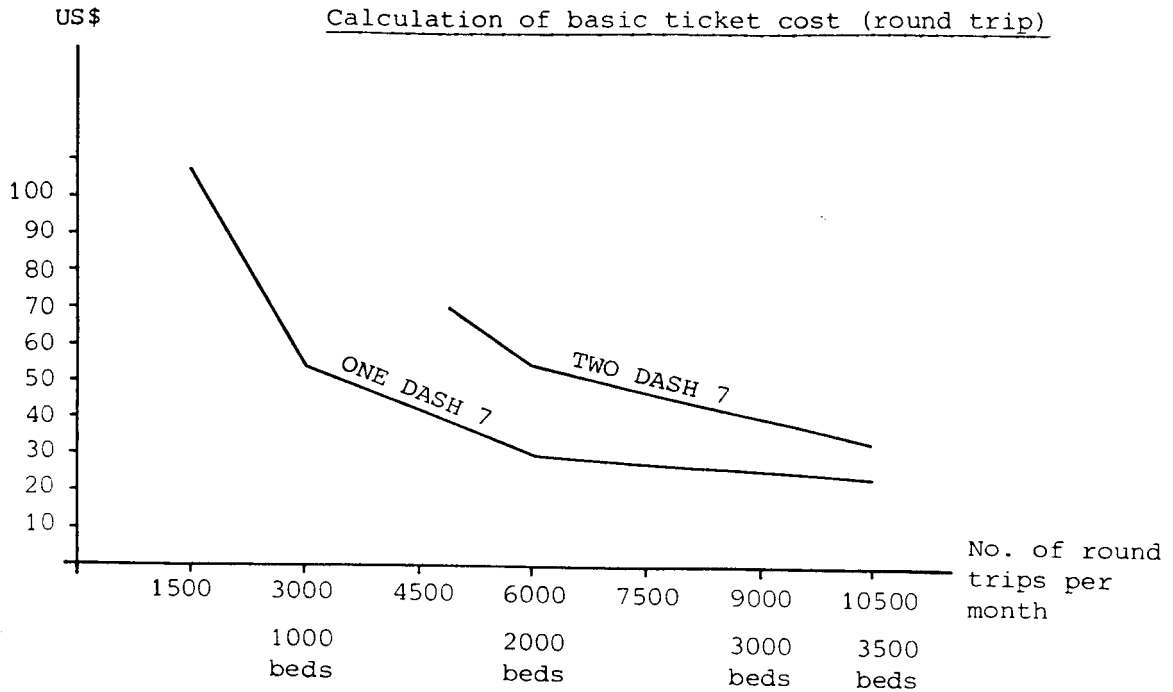
Example one (Huvadū Atoll)

Block time from Male to tourist centre: 1.4 hours.



Example two (Alif Atoll)

Block time from Male to tourist centres: 0.6 hour (estimated).



By following the above suggestions the cost of a round trip including all costs would approximate 60 US\$ for a distance corresponding to Huvadu Tourist Centre and 30 US\$ to Alif Atoll.

If the aircraft shall be purchased, the present price level for a standard DASH 7 aircraft inclusive of normal spare parts will be approximately 6.25 million US\$. The 1983 price level will probably be close to 8 million US\$. Running costs are estimated to be close to the same costs as the wet lease arrangement.

Another alternative to the DASH 7 aircraft would be a Boeing 737. This type of aircraft would need a landing strip of a length of 1,500 metres at an estimated cost of 3 mill. US\$. The "wet" leasing arrangement is estimated to cost 300,000 US\$ for the first 150 hours per

month. Exceeding hours are estimated at 1,500 US\$ per block hour. The capacity of a Boeing is 128 passengers. Block hours from Hulule to Huvadu are calculated at 55 min. and to Alif at 25 min.

On this basis the comparative costs for the two types of aircraft are calculated as follows:

Calculation of basic ticket cost (round trip), Hulule to:

	<u>Huvadu</u>			<u>Alif</u>		
	<u>Round trips</u>			<u>Round trips</u>		
	<u>3000</u>	<u>6000</u>	<u>10500</u>	<u>3000</u>	<u>6000</u>	<u>10500</u>
One Boeing 737	100	50	30	100	50	30
One DASH 7	64	52	46	55	30	24
Two DASH 7	-	64	53	-	55	34

From the above calculations the following general recommendations can be given:

	<u>Suggested availability of aircraft¹⁾</u>							
	<u>Up to 1,000 beds</u>		<u>1,000 to 2,000 beds</u>		<u>2,000 to 2,500 beds</u>		<u>2,500 to 3,500 beds</u>	
	<u>Huvadu</u>	<u>Alif</u>	<u>Huvadu</u>	<u>Alif</u>	<u>Huvadu</u>	<u>Alif</u>	<u>Huvadu</u>	<u>Alif</u>
Season	A	A	B	B	D	B	D	B*)
Off-season	A	A	A	A	B	B	B	B

*) C or D solutions are also possible as cost differences are limited.

A: smaller aircraft (25 seats)

B: 1 DASH 7

C: 2 DASH 7

D: 1 BOEING 737

In the above it is not taken into account that the aircraft can serve other purposes like transportation of tourists from Colombo to Male or domestic flights in the Maldives on other routes.

1) Only based on running cost considerations.

Within the tourist centre the same type of transportation as found at present within the Male Area is suggested. In addition to the individual transportation offered by the resorts, the centre as such shall offer a kind of bus service by "centre dhonis" making a scheduled route, for instance two connections every second day to all major resorts within the area. As the areas have been selected on the basis of a great number of possible tourist islands within a short distance, such a bus service can be operational with a limited number of dhonis (1 or 2). The total transportation to the resorts can then be illustrated as shown in figure II.14.

Future Communication System

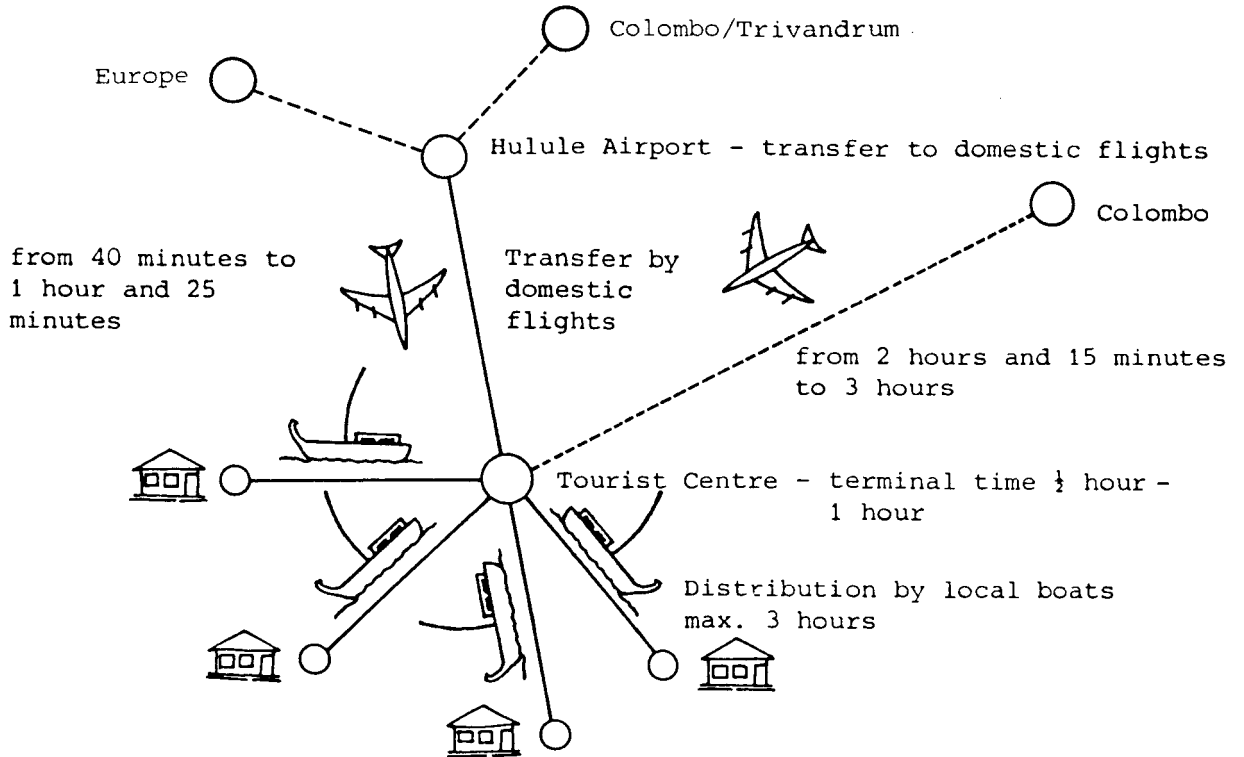
Future development of the tourist sector, for instance to cover atolls situated far away from Male, will make greater demands on the present telephone/telex radio link system. A group of tourist resorts, for instance situated in the Huvadhu Atoll in the south, 235 nautical miles away from Male, will not be able to use the present radio link system.

Telex and telephone with quick and direct access to international connections is a must for an independent tourist centre.

A study sponsored by the International Telecommunication Union (finished May 1981) has investigated the future needs of modernization of the TDC activities. Four items have been identified:

- Training programme for TDS personnel.
- Coastal radio station with ship to shore traffic.
- Local cable network in Male for improvement of existing telephone system.
- Radio links between all atolls to replace existing obsolete inter-island communication system.

Figure II.14



The corresponding costs are quoted to be in the range of 20-30 million US\$, the last item, radio links, being by far the most expensive project.

Future decentralized tourist development will either have to wait for the implementation of these radio links or must take into account that an independent domestic satellite communication station will have to be included in the project. The price of such a station will be 2-3 million US\$ and will represent the cheapest way of access to the international communication systems in case the integrated radio system for all atolls in the Maldives is not carried out.

II.8 MANAGEMENT OF THE TOURISM SECTOR

8.1 The Present Control System

The Department of Tourism and Foreign Investment

The overall control of the tourism sector is administered by the Department of Tourism and Foreign Investment (DTFI), directly connected to the President's Office. DTFI is headed by one director in overall charge, a deputy director in charge of the tourism section and an assistant director in charge of the foreign investment section. The general staff, which is joint for the two sections, consists of a total of 28 employees including secretaries, clerks and messengers. DTFI is in great need of trained personnel and the key staff is overworked with day-to-day cases. The collection and processing of bednight statistics from the resorts and the collection of the corresponding tax has further increased the workload. Elaborated statistical information is available within the Department, but no statistical publications are as yet produced. The promotion budget is limited and the total tourism promotion was in 1980 US\$ 15,000 with US\$ 18,000 as the 1981 budget.

The Overall Control System¹⁾

The construction of new resorts or extensions of existing resorts cannot take place before the project has been accepted by DTFI. An application for authorization to develop tourist resorts has to be filed with the Department. In this application details of the investor, the name of the agricultural lessee and details of the project must be given. The form has to be signed by the investor and the agricultural lessee in order to show the latter's acceptance of the project. Having been considered by the Government's architect and other concerned Government offices the project may be approved or changes

1) Law No. 15/79 (Law on Tourism in Maldives) from January 1979 gives the legal procedures.

of the project may be requested. In this approval procedure no standard guidelines are laid down, but some general rules-of-thumb are used.

The project will thus be evaluated from common sense factors and in accordance with the realism of the project. Some general rules are furthermore in force. Resorts are not accepted on inhabited islands, the height of buildings is restricted and the size of rooms, restaurants, staff quarters etc. has to fulfil general standards.

After the construction has been finished, the resort, before the opening, has to be registered with DTFI. In order to obtain this registration a detailed application form has to be submitted. Together with the form a plan of the resort has to be enclosed. Before the registration document is issued, a team of Government officials from the Department of Tourism, Public Health, the Water and Sanitation Authority, the Electricity Board and the Government's Architect will inspect the resort buildings and the technical installations. The inspection will include a verification of the actual resort compared with the plans forwarded and an inspection of whether the installations fulfil the sanitation code for tourist resorts.

Foreign Investments

As per law No. 25/79 related to foreign investments in the Maldives all investments have to be registered with the Department of Tourism and Foreign Investment. An application with details of the investor and the project has to be submitted to DTFI, and the Department will appraise the technical and financial aspects of the project. If the Government's decision is favourable to the project, a development licence is issued which remains valid until the project is implemented. In some cases the investor is furthermore required to deposit one fourth of the approved capital with a local bank prior to the commencement of the project. Finally, an agreement has to be signed with DTFI outlining the rights and obligations of the investor. The agreement is valid and binding for a given period, normally five

years, and often with a renewal option for a further 5 year period. Within this agreement the investor binds himself to do his utmost to employ Maldivian nationals in all grades of employment. However, where Maldivian labour is not available or local recruitment of suitable personnel is not possible, engagement of non-Maldivian nationals is permitted after written sanction of the Department.)

Foreign Staff

As stipulated above, a foreign investor is bound to do his utmost to employ Maldivian staff. However, when suitable staff for key positions is not found, foreigners can be employed. As no work permission is needed in the Maldives DTFI just has to recommend the application for prolonged visa. Maldivian investors are not bound to train and use local manpower in the same way as foreign investors. As Maldivian investors have higher needs for recruiting foreign expertise, they will normally have easier access to employ foreigners. Key staff such as restaurant managers, heads of other departments, trained accountants, cooks, engineers and other trained technical staff will typically be staff which can be accepted. '

Other Rules and Regulations

Several other rules and regulations issued by various Government Departments are of importance for the tourism sector. The most important of these are briefly mentioned below.

For protection of the natural environment:

- fishing with spearguns is only allowed for licensed persons,
- export of unprocessed turtle shell and unprocessed black coral is not allowed,
- export of live coral fish is only allowed through special licence,
- fishing of egg bearing lobsters and lobsters below a minimum size is prohibited.

For protection of the social environment:

- import of restricted products like alcoholic drinks is not allowed without a special permit,
- tourists must be properly dressed when visiting inhabited islands.

For protection of the tourists:

- tourist transfer boats must carry life jackets, have navigation lights and be furnished with communication equipment (under preparation).

Several of the existing rules and regulations must be widened and strengthened, especially where the protection of the natural environment is concerned, as the natural environment is the major source for the future of the tourism sector.

8.2 Taxes and Duties

The existing system of taxes and duties is in general terms found easy to operate¹⁾ and not laying a too hard burden on the shoulders of the tourist trade. A specific advantage of the bed-night tax is the prevention of a large number of "low-cost travellers". This type of travellers, if coming in a large and uncontrolled number, is found to present a socio-cultural threat giving only a limited economic benefit.

The tourist trade has complained about the bed-night tax, but the complaints have generally concerned the short notice given before the introduction of the tax. The tax can be carried by the resorts where it represents about 10% of the room rate. For the small guesthouses, however, the 3 US\$ bed-night tax even exceeds the per night charge, but as tourism on inhabited islands is not recommended, the tax is an important discouraging factor.

1) An exception is the guesthouses in Male. They are generally very small and have difficulties in keeping proper records.



OUTDOOR ACTIVITIES IN A TYPICAL VILLAGE

Although it is found that the resorts can carry the US\$ 3 bed-night tax, it is recommended that the tax is kept at the present level for a period of time after which changes can take place according to the inflation, giving a reasonably long notice to the resorts.

It is important that the tourist trade is ensured that no new and heavier tax burdens are laid on the sector. If the costs of the resorts are increased, too many new investments will be stopped, and the Maldivian tourism will be in danger of pricing itself out of the market. It is thus important to study the revenue and cost situation of the resorts before any major increases of taxes and duties.

The introduction of charter flights directly to Hulule Airport and the expected opening of internal airline routes to new tourist centres will lead to specific problems concerning rating the internal routes. If the rate is based on costs plus a minor profit, the ticket price might be a prohibiting factor for the internal distribution of passengers arriving by charter flights. This problem could be solved through various means (see Part I).

8.3 The Land Lease System

The existing land lease system is a source of inequality. A person who has leased an uninhabited island from the Government at a very low rent will, in case the island is later found suitable for tourism development, be in a position to obtain a considerable income. In order to avoid the inequality and to increase Government revenues changes in the system are recommended. These changes could be brought about in the following way:

- Within the tourist zones all uninhabited islands of potential value for tourism development excluding islands of importance for local agricultural production are declared "potential tourist islands" and in principle transferred to DTFI.

- In case an acceptable tourism project is presented to DTFI, the island can be leased to the investor (this investor can, of course, also be the former lessee of the island) but at a rate fixed by DTFI in accordance with laid down principles for the type of project, size of the island and the potentiality of the island.
- The former agricultural lessee may, in case the island is leased to a tourism investor, be paid a recompens, for instance corresponding to 3 years' agricultural lease fee.
- In order to ensure the investor time enough for getting his investment back, a relatively long lease period shall be offered such as 8 to 10 years. Within this period the lease should be fixed for the first 3 years, then increased by for instance 5% year 4 and 5, whereafter the lease shall follow a kind of general inflation index for the remaining lease period.
- A legislation covering leasehold property shall enable borrowing from banks.

8.4 The Future Tourism Development

In order to cope with and control the planned tourism development the organizational set up should be strengthened as per the suggestions stipulated in Chapter 5.3 of Part I of this report. A Tourist Board, Regional Associations of Tourist Resorts and a permanent Government Tourism Committee together with DTFI are the main bodies for controlling and planning the future developments. DTFI will have to play a very important role in the organizational set-up, and it is therefore suggested that expertise within various fields is at the disposal of DTFI within the Tourism Development Secretariat.

As stipulated in various parts of the report, it is furthermore suggested that the control with the resorts, the transportation, and

the protection of nature is further strengthened. Particularly in the intermediate phase, until a second tourism zone is developed, heavy utilization of resources in the Kaaf Atoll is expected, calling for strict control in order to avoid problems.

The transportation service is one of the major problems. The problem could be faced partly through the establishment of specific transportation rules (as per the Maldivian News Bulletin of June 1st, 1981, the first step in this direction has been taken through a set of rules and regulations to ensure the safety of life at sea established by the Ministry of Transport). These rules should be further strengthened in order to offer the tourist a safe and convenient transfer. Secondly, a scheduled transportation system between Male and Hulule and between Male and an inner zone of tourist resorts should be developed. The tourists should be offered an alternative possibility (an alternative to what the resort can offer) at least two times a week.

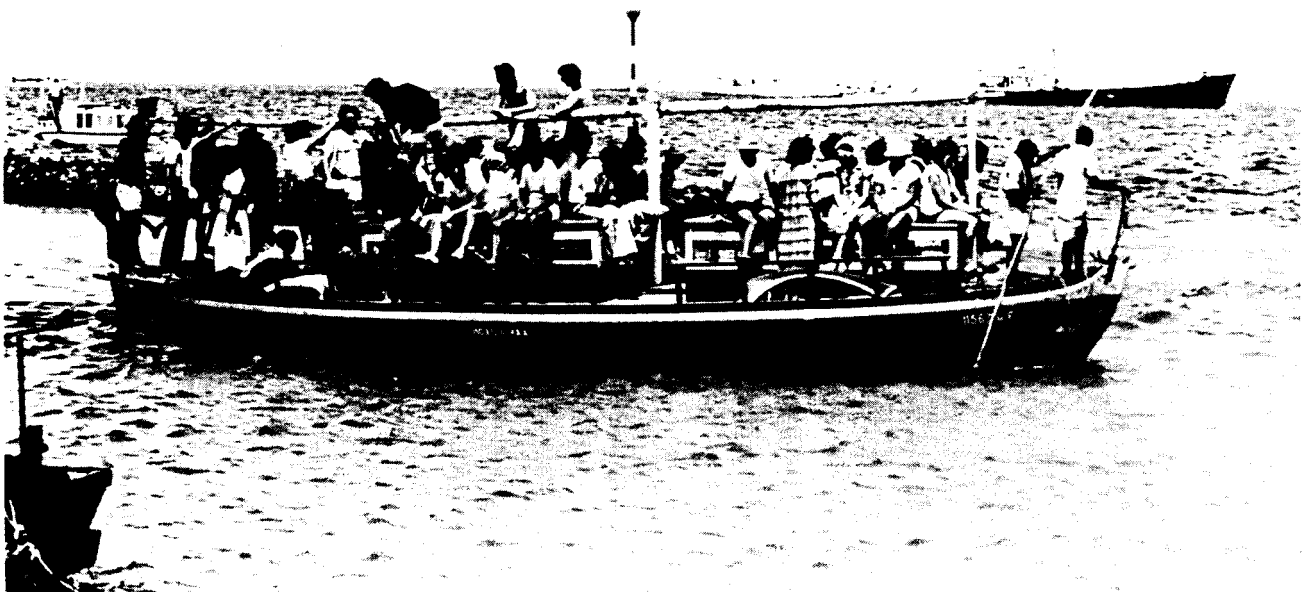
The present sewerage, water, and garbage disposal systems present many problems. Therefore, improvements of the present systems are suggested. As these improvements will involve investments, they cannot be forced from one day to another upon the existing resorts. They can, however, be part of the future building regulations¹⁾ and could be demanded also from existing resorts (where necessary) within a given time limit, for instance three years.

The existing conservation rules and regulations need to be strengthened in several ways as described in Project 5 in Vol. II. The conservation policy needs primary attention because it concerns the future tourism development possibilities.

It has been observed that accommodation facilities are being built at an increasing rate on inhabited islands. This development should be controlled and it is suggested that no further development on inhabited islands should be allowed.

1) One of the obligations of the Tourism Development Committee.

ENGINE DHONI TRANSPORTING TOURISTS



In order to control the spread of tourism within the country and to avoid severe tourist transportation problems a suggested zoning law should be introduced as soon as possible. In this law specific tourism zones shall be designated. The Male Tourism Zone is suggested in principle not to exceed the Kaaf Atoll. Any new development outside a tourism zone should not be allowed.

8.5 The Private Sector

The present system in which each resort is in principle operated completely separately from all other resorts and without specific collaboration between resorts results in a far from optimum use of resources. With the increasing importance of the tourism sector, the Government will need a higher degree of control with the behaviour of the individual resorts. If such a control should be carried out directly, it would result in increasing administration costs. It is therefore suggested that resorts within a given tourist zone form a tourist association with the following purposes:

- Collaboration concerning the solution of joint problems like transportation, supplies, staff training, etc.

- Internal control with members under guidance of DTFI.

Such a joint problem could be regional sales efforts to be undertaken jointly with DTFI and the Tourist Board, and regional tourist information.

How the internal control shall function should be discussed and jointly decided with DTFI. Examples of subjects which will need control are: overbookings, prices for transportation of tourists, prices for food and drinks, tourist complaints, standard of service and facilities, etc.

8.6 Tourist Centres

A tourist centre consists of elements which together form a coherent, integrated and well functioning system. The elements can in principle be grouped in the following three types:

- Tasks of regional importance which should therefore be a public investment, like airport and telecommunication.
- Tourist centre tasks like medical clinic, tourist information, exhibition centre, shops, transportation, storage of supplies, staff training, all tasks specifically orientated towards the tourists and the resorts in the region. Investments could be completely private or public or a joint investment with public and private participation. The resorts could be shareholders directly or through the regional tourist resort organization.
- Private investments in resorts.

New tourist centres will be undergiven a different cost structure from the present centre in Male. The differences are due to higher construction costs because of inflation and expected higher standards and higher transportation prices for the tourists and some of the supplies arriving via Male. Although some cost reductions can be expected because of a more rational distribution and storage system, and although somewhat higher prices can be asked for because of an expected higher product quality, a gap between the profit of resorts within the Male Atoll and new resort centres is expected. The regional disparity will probably need a levelling out by DTFI, for instance through differentiated tourist taxes as per region, through differentiated land leases or through special steps as to keep the costs of internal flights down.

Imported Supplies

A centralized purchase and storage system will give several advantages like:

- lower purchase prices,
- less stock at individual resorts,
- a more constant supply,
- higher product quality.

It is therefore suggested that centralized purchase and storage of basic items are made by the tourist centres.

Local Supplies

To further local involvement in the tourist industry, to secure a regular supply of agricultural products, and to lessen the level of foreign expenditure on food items, the build-up of the new tourist areas should be combined with an agricultural programme to boost cultivation in the chosen atolls (see Project 6 in Vol. II).

The agricultural areas used should preferably be located on permanently inhabited and uninhabited islands under local control (Island Offices, Atoll Office) to further the incomes of local communities as well as to secure maximum interest in furthering production. Lands should be given as rights to use, when used, and not as leases or re-leases.

Crops grown should be well adapted local varieties of food crops as well as imported types of proven value and ability to cope with the special Maldivian conditions (high permeability of soils, lack of significant minerals, low organic content etc.).

In the past, Maldivian products have been underutilized in the tourist resorts, partly because of the underdeveloped transportation sys-

tem (Male Atoll is poor from an agricultural point of view, and almost all agricultural products have to be imported), partly because of lack of knowledge of European tastes and how local vegetables, tubers, fruits and grains can be used for preparing "Western" or "Western/South Asian" meals. However, on the basis of the availability of products this is quite feasible, and actually most tourists prefer that some part of the meals is of "exotic" origin. (For further details see Vol. II of the Report).

Several varieties and preparations of fish should be utilized. As Maldivian eating habits are traditional, and only a few types of fish are considered valuable, this tends to influence the choice of fish served on the tourist islands. Many tourists would like a choice from a wider spectrum of fish and methods of preparation: The option of a different fish every day has a market value that should not be underestimated.

To be a success a project aiming at a limited agricultural self-sufficiency for the resorts would involve a number of crop experiments as well as the assistance of a western chef in creating dishes and recipes based on local agricultural products and fish not traditionally used by Maldivians. The use of local agricultural products and fish should be a significant part of the curriculum for cooks at the planned hotel school.

More direct supplies from the producers to the resorts avoiding too many middlemen should be promoted. Such a direct contact will result in a higher elasticity in the production, and impulses originated from the resorts can reach the producer in a much stronger form than the present very weak form found in Male.

This more direct form of contact might be introduced through contacts between the management of the tourist centre and the island chiefs of the potential agricultural islands within the region.

Manpower and Training

For new tourist centres efforts should be made to attract manpower from within the atoll. Workers coming from nearby inhabited islands should be transported to and from work every day in order to have a normal family life. Workers living farther away within the atoll should be able to visit their family every week. Staff originating far from the region should be kept down at a minimum.

Staff training is generally the duty of the resort management. In this respect it is important to inform the staff of tourist resorts about the major travelling motives of the tourists, the image they have of the Maldives, and the major tourist product components. Without such background knowledge the staff will not be able to carry out their jobs in a sufficient way. Training on the spot should be supplemented by schooling within key areas. The most urgent need for a programmed class training is within the following fields:

- Languages, first and foremost English, which should be compulsory but also German, French and Italian should be offered.
- Receptionists. The receptionists are the key persons in contact with the tourists. The chief receptionist could also be named the personnel relation manager. His skill has a high influence on the level of satisfaction among the tourists.
- Accounts. Without a well functioning accounting system the resorts cannot be operated sufficiently.
- Cooks. Preparation of local and imported food, how to treat frozen and refrigerated food and how to produce tasty food with limited basic resources are all skills which are in high need in the resorts.

The training of staff should be divided into two types. The first type is training which shall take place as short-term courses within the low season. Such courses could have a duration of two months and could be held during May and June in one of the existing resorts. Each step of training should end with obtaining a certificate. Training in languages and training of receptionists will be such types. The second type is the training of cooks which should take place at permanent schools connected with each tourist centre. As food poisoning is a very serious matter, it is suggested that only cooks with certificates from the training school are allowed to be in charge of resort kitchens. Exemptions should be cooks trained abroad. The school for cooks should be offering courses of 3 to 6 months' duration. Special efforts should be made in these courses regarding the utilization of local food components in the preparation of tasty meals for Europeans.

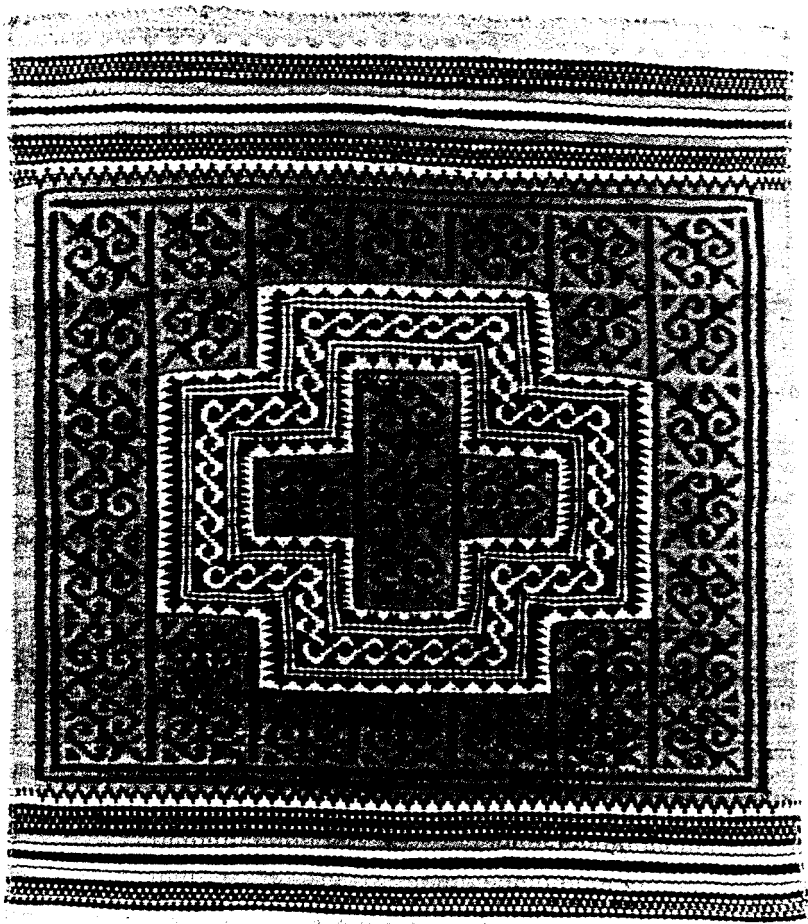
The training of resort accountants could be made in connection with general training of accountants. It could be concentrated to short-term summer courses building up to a general certificate in accounting or it could be connected with the permanent school for cooks.

Arts and Crafts

An important activity for the tourists during their holiday is to study the local handicraft production and to buy some of the items as remembrance of the stay and as gifts to friends and relatives. At the same time the tourists have a great need for getting in contact with the Maldivian population and the local culture. As a too strong contact between the tourists and the inhabited islands including the handicraft producing islands generally should be avoided, a system to control and canalize the above needs is required. If such a system is not provided, the tourists will go "hunting" on the handicraft producing islands in order to get a nice piece at a bargain price.



SHOPPING "BAZAAR"
IN A MALDIVIAN
VILLAGE (HURA)



TRADITIONAL WOVEN MAT

An "Arts and Crafts" area (Exhibition Centre) within each tourist centre, in addition to the normal tourist shops found on the resort islands, is thus proposed. These Centre shops should be selling traditional Maldivian handicraft together with imported souvenirs¹⁾.

Tourists are ready to buy good quality handicraft at fairly high prices. Long-distance tourism has been rapidly growing, and the experienced travellers are getting tired of buying cheap tourist souvenirs and want to buy genuine handicraft items. These tourists just have to be informed about the cultural background and the traditions behind the production methods in order to be interested in a purchase and if at the same time they are shown what is good and what is bad quality, they will only buy good quality items. This fact should be supported by the management of the tourist centre by following the concepts for an exhibition centre.

Songs, Music and Dances

Within some parts of the Maldives, particularly in the north, long traditions for performance of dances and songs accompanied by music are found. Groups of men, women and girls make performances with great skill on various occasions, and even festivals are undertaken. If such traditions are found within the tourist area there would be a high interest among the tourists in seeing such shows. However, the number of shows should be kept within certain limits in order not to change the traditions and the cultural background of the performances.

Regional Adaptation

The adaptation of a new tourist centre into the socio-economic system of the region requires the undertaking of an adaptation programme to be started well ahead of the building of resorts. The adaptation programme should contain elements of the following types:

1) Further details of the Exhibition Centre are presented as Project 3 in Vol. II of the Report.

- Information to the island chiefs and the local population in general about the creation of the new tourist centre and the expected regional consequences of such a centre.

- Development of local agricultural and handicraft products as to make the region able to absorb the linkages originating from the tourism development.

- Creation of a potential interest among local manpower in getting jobs within tourism.

- The offering of possibilities for local participation in the development of tourist facilities.

The last point is found to be of great importance. The development of a new tourist centre should involve a high degree of local participation. This participation will have the form of local supplies of goods and manpower but could also take the form of development of tourist facilities. An uninhabited neighbouring island to an inhabited island could for instance be furnished with a number of tourist cottages and the supplies and manpower be delivered from the inhabited island. Such a primitive type of "resort" could be financially supported by a tourism development fund for local projects. If a number of this type of fairly primitive facilities on uninhabited islands are built up, the tourist centre will be able to offer primitive safari cruises where a limited number of tourists are transported in Dhonis from one to another of the above local resorts. Such a local tourist product could be sold at an attractive price and be an important component in the overall tourist image for the region.

8.7 Manpower and Training

In the Male Tourism Zone it is estimated that close to 3,000 persons are employed in the tourism sector excluding construction workers. Most of the manpower working in the resorts are male workers at the age of 20 to 30 years. It has been easy to recruit new staff, as young Maldivians have been sent to Male in search of jobs, and as stated in the 1977 population census not all of them have been successful, as the capital then accounted for 47% of the nation's unemployment. The major part of the unemployment was in the age group of 15 to 24 years. A second source of manpower has been former employees from the Gan base (3,000 persons from Addu are reported to be in the Male Atoll). While the young Maldivians looking for jobs generally are unskilled, the manpower from Gan generally have had some sort of training, for instance as cooks, mechanics, accountants, mess men etc.

No formal hotel training system exists at present. This means that the staff is trained on the spot by more experienced staff or the management. Employment and training of Maldivian staff is specially underlined in foreign investment agreements. In some of the resorts key staff has been brought in from abroad because of shortage of sufficiently skilled manpower. Maldivians are generally very flexible and adaptable to new types of work, and their job mobility has made staff recruitment and training relatively easy. In general, therefore, the service in the resorts is pleasant.

Up to now the only programmed training within the sector consists of a UNDP hotel traineeship in Sri Lanka for 15 resort employees in 1979/80. However, it must generally be concluded that traineeship of a larger number of Maldivian resort staff abroad is not to be recommended if the Maldivian tourism shall be built on a special Maldivian identity.

The educational background of the staff is generally the Primary or Secondary School with some technical staff trained at the Vocatio-

nal Training Centre (VTC). VTC was established in 1975 with assistance from UNDP and ILO and provides training in electricity, diesel and petrol engine repair and maintenance, machinery and welding. A course on refrigeration was planned to be started in 1980. All the above courses are of importance for the tourism sector. Furthermore, a possible hotel training section at VTC was mentioned to the Consultants, but no confirmation of such plans was obtainable.

The training needs stipulated in Chapter 8.6 (Tourist Centres) also concern the present tourism in the Male Atoll. The particular needs concern: front office and reception, housekeeping, accounting, food and beverage service and kitchen and food production. Courses could be held in the off-season at a hotel school which could be located at one of the existing resorts followed by on-the-spot training.

The Maldivian resorts should not work towards conformity and an international service level, but should try to obtain a technically sufficient service system with an individual Maldivian touch.

The training of hotel managers is a particular problem. The development of a new tourist centre will require about 35 new managers. Already the existing management is not adequate and many problems in the resorts are due to managerial shortcomings. In order to cope with the problem of insufficient management resources, the following steps are recommended:

1. It should be an obligation that all existing resorts should have assistant managers trained for the future.
2. Particular management short-term courses should be held at the hotel school in the off-season.
3. Hotel management seminars of a few days' duration should be held in the off-season.
4. Scholarships for a limited number of assistant managers for short-term training abroad should be made available.

II.9 IMPLICATION OF THE PRESENT TOURISM

The Maldivian society is characterized by partly self-contained economic units (islands) depending upon the surrounding sea and the availability of agricultural land for subsistence farming. The social and cultural traditions and systems have long roots and neither the economic system nor the social and cultural structure are easily affected by influence from outside. In this connection the transportation barrier is an advantage for controlling undesirable socio-cultural impacts from outside, but a disadvantage for utilizing the economic linkages through which socio-economic benefits can be obtained. International tourism is a growth industry with many economic, social and cultural impacts. The international tourist industry was established in the Maldives in 1972, and it has since been developing fast. The development of international tourism has been possible through the establishment of a dual economy. From the start, major inputs for building, maintaining and running the resorts have been imported from outside, and through the whole period all transactions between tourists/tour operators and resorts have been made in US dollars. The economy of the tourist resorts has therefore in many ways been separated from the general Maldivian economy. The same sort of separation found in the economic system is also found in the socio-cultural system. The tourist resorts are located on islands exclusively for tourist purposes and the tourists therefore only have very sporadic contacts with the Maldivian population besides the resort staff. The impact of the past tourism development has therefore been relatively limited and controlled.

9.1 The Economic Impact of Tourism

Taxes and Duties

From 1980 an import duty was introduced. The rates vary from 10% to 35%. The 10% are due on rice, flour, sugar, fuel and stationary, 20%

on other food items and textiles, 30% on cigarettes and all other types of imported goods including technical equipment but excluding goods requiring special permits such as alcoholic drinks; the latter items are due to a 35% duty. The duty is calculated on the FOB value using the official exchange rate for the calculation. As the official exchange rate is MR 3.93 for one dollar (the bank rate being MR 7.50)¹⁾ the actual duty on the CIF value is only around half of the above percentages.

Generally, investors are exempt from import duty on construction material and equipment used for the development of resorts.

From November 1980 a new bed-night tax system was introduced chargeable on all accommodation facilities. The tax is payable by all resorts and hotels whether Government owned or not, and irrespective of the amount of the room rate charged to the tourist. The tax is payable by the middle of the month following the month of the stay of the tourist. Although several negative consequences of this tax system can be pointed at, it is considered to be easy to operate and it functions in accordance with the objectives of the Government. As the tax is fixed, it has to be re-evaluated time by time according to the inflation. Because of the importance of the tax for resort rates, increases should be carefully evaluated as not to price the Maldivian resorts out of the market or to cut the profits so much that reinvestments are made difficult. It is also important that changes in the rates are given with a long notice enabling the resorts to adjust room rates as per what the market is ready to carry.

As per the end of 1980 an airport tax of US\$ 6 is charged the departing passengers.

Overall Effect

In a document report from April 1980 the World Bank estimated that the Maldivian tourism earnings made up 60% of all visible exports

1) Exchange rate was changed to MR 7.00 for one dollar by March 1982.

and that tourism value added was 12% of the national income. The recent increases in the number of tourists and the number of resorts have further underlined the overall economic importance of the tourism sector. Based on a survey of the accounts of selected resorts, interviews with the supply sector, and a tourist questionnaire survey the Consultants have made the following estimate of the key economic factors. The calculations are made per tourist night and are in principle related to the end of 1980.

Table II.14 Overall Economic Impact per Tourist Night

	Total US\$	Import Component US\$	Local Component US\$
Tourist Expenditures			
General Expenditures ¹⁾	34.5	16.0	18.5
Purchase of Souvenirs ²⁾	4.0	1.0	3.0
Airport Tax	0.7	-	0.7
Total	39.2	17.0	22.2
Relative Distribution	100%	43.4%	56.6%

Notes: 1) Based on resort accounts and covers accommodation, food, transport, excursions and sports (scuba diving).

2) Including post cards and stamps.

Source: Consultants' estimate.

In 1980 the estimated number of bed-nights was 317,600. If the above key expenditure figures are related to the whole of 1980, the overall local expenditure component was US\$ 7.1 mill. This estimate is on the high side as the expenditure figures are related to the end of 1980 and not the total year, but it shows the importance of the tourism sector and also that the overall local component has been substantially increased from the World Bank estimate of US\$ 3.7 mill. based on 1978 expenditure figures. On the basis of a 10% increase in 1981 from the above figure and the number of bednights of 445,500, the overall local expenditure component in this year was US\$ 9.9 mill.

The Local Component

Most of the tourists coming to the Maldives are having the same type of travel pattern. The tour has been prearranged by a tour operator or travel agent and only few tourists are travelling completely on their own. After the arrival at Hulule Airport the tourist is picked up by the representative of the resort at which the booking has been made, the tourist is transferred to the resort in question by a transfer boat owned or leased by the resort and he will then stay one or two weeks in this resort. During the stay all meals are normally taken at the resort, and the boats belonging to the resort are used for excursions and leisure. Almost all the expenditure undertaken by the tourists accordingly goes into the accounts of the resorts. A few exceptions, however, exist from this standard. First of all, the tourists will normally visit Male where souvenirs including stamps and postcards are bought in various shops and at the post office. Secondly, souvenirs bought in the resorts will generally be bought in special shops not run by the resorts themselves, but by separate establishments leasing the shops from the resorts. Finally, the scuba diving and special sports activities like water skiing and wind surfing are generally run by special companies owned by foreign specialists. However, as the resorts get a commission (normally 15% on scuba diving and 10% on surfing and water skiing) the overall expenditure on these items can also be calculated from the accounts of the resort.

Out of the total tourist expenditure of 39.2 US\$ per guest night shown in Table II.14 the major part (34.5 US\$) therefore can be estimated from the resort accounts. The 34.5 US\$ are further divided into 18.5 US\$ as the local component and 16.0 US\$ as the import component. The local component is further distributed as shown in Table II.15.

The daily expenditure on purchase of souvenirs is in total estimated at US\$ 4 as shown in Table II.14. Out of the US\$ 4 it is estimated that half of the amount is spent on imported items like dresses from

India, t-shirts from Hong Kong, and Sri Lanka souvenirs. As to the imported items, it has been estimated that the purchase price is 50% of the selling price. Therefore, the total local component including gross profit will be US\$ 3.0.

Table II.15 Distribution of the Local Component (General Expenditure)

	US\$ per Guest Night
Food	2.0
Salaries	2.0
Other services ¹⁾	1.5
Estimated gross result ²⁾	9.0
Government taxes and duties	4.0
Total	18.5

Notes: 1) Boat rent, transportation, cable and telephone.

2) The gross result not taking into account the lease of land, payment of management fees, interest on loans and similar capital costs.

The most problematic of the estimates undertaken above is the gross result of US\$ 9.0 per guest night. The estimate is calculated on the basis of few data as resorts do not like to give data of this sort, and furthermore the result will vary considerably from one resort to another according to the skill of the management and the type of the resort. The estimate must therefore only be taken as indicative.

The local component of US\$ 22.2 per day on an average will create income in the Maldives depending upon how the Government uses the taxes and duties and how the gross result is distributed. Most of the income created will remain in the Male area. However, some regional distribution will take place as a portion of the salaries will be sent to relatives living in other atolls such as Addu, most of the food-stuffs will be supplied from other atolls, and some of the souvenirs will likewise be produced outside Male Atoll. Because of the seasonality of the demand and the structure of the trade, the middlemen in

Male will take a major part of the income from the sales of outer Male products as prices for handicraft and agricultural products are being multiplied on their way to the tourist resorts. All in all, only about 10% of the local income is expected to flow outside the Male Atoll excluding the Government spendings made possible through revenues from tourism.

Import Component

Out of the import component of 17.0 US\$ per guest night shown in Table II.14 the 16.0 US\$ are related to the resorts and the remaining one dollar is due to the abovementioned import of souvenirs from India, Sri Lanka, Hong Kong and Singapore. The import component related to the resorts can be further distributed on the following items:

Table II.16 Distribution of the Import Component (General Expenditures)

	US\$ per Guest Night
Food and beverage	6.5
Oil products ¹⁾	4.0
Supplies for maintenance and repair	2.0
Other supplies ²⁾	2.0
Sports ³⁾	1.5
Total	16.0

Notes: 1) Used in kitchens, for boats and generators.

2) General supplies for running resorts.

3) Includes payments to foreign instructors (scuba diving, wind surfing, water skiing).

Source: Consultants' estimate.

Most of the above import components are difficult to reduce as oil products and industrial products cannot be substituted by Maldivian production. Only as regards food and beverage some possibilities, although limited, will be open for import substitution.

Government Revenues

The Government's revenue from tourism consists of income from a US\$ 3 bed-night tax, import duties on supplies to the resorts and a US\$ 6 airport tax. The bed-night tax of US\$ 3 per night was introduced from November 1980, and import duties with rates varying from 10% for oil products to 35% for alcoholic drinks were introduced from the start of 1980. Based on information from resort accounts the following key figures can be estimated:

Table II.17 Government Revenue per Tourist Night

	US\$
Bed-night tax	3.0
Import duties on tourist consumption	1.0 ¹⁾
Airport tax	0.65
Total	4.65

Note: 1) Includes all types of import duties paid on supplies to resorts. This duty, when fully in force, will probably rise to about 1.5 US\$ per bed-night.

Because the import duty did not get through with its full impact before the middle of 1980, and because the bed-night tax system in the period up to November 1980 followed a different and less revenue giving system, the actual Government revenues for 1980 were less than the above calculated key figures. The actual Government revenue figures for 1980 were as follows:

Bed-night taxes:	US\$ 702,100 ⁴⁾
Estimated import duties: ¹⁾	US\$ 150,000
Airport tax ²⁾	US\$ 209,400
Government income from:	
Management contracts of resorts ³⁾	US\$ 796,000
Lease of resort islands	US\$ 479,400
Estimated total	US\$ 2,336,900

Notes: 1) Consultants' estimate. 2) Based on 34,000 pleasure tourists of 6 US\$. 3) The Government owns 5 resorts all under management contracts with various companies. 4) In 1981 bed-night taxes increased to US\$ 1.3 mill.

The Government costs are substantially less, consisting of the following items:

Total costs of DTFI:	US\$ 82,900
Total costs of running Hulule Airport including customs	US\$ 305,900
Estimated total	<u>US\$ 388,800</u>

All in all, it can be concluded that the net revenue from the tourism sector is of high importance for the total Government revenue and spending.

9.2 The Employment Effect

By July 1979 the World Bank¹⁾ estimated that 1,118 persons were working in 17 resorts with a total capacity of 652 rooms corresponding to 1.7 employees per room. Interviews undertaken by the present Consultants at all major resorts in the period between December 1980 and February 1981 show some changes in the situation. In 33 resorts with 1,231 rooms were found 1,845 employees - or 1.5 employee per room.

Generally higher-standard resorts had an employee-room ratio between 1.6 and 1.9 and lower-standard resorts had a ratio between 1.0 and 1.3. As the resorts have their own transportation system, the above figures include staff working with transportation of guests (to and from the airport, on excursions etc.).

Other Types of Accommodation

The four hotels in Male are estimated to have 75 employees. A further 50 employees are estimated to work on board cruising boats, and 50 persons are estimated to work at the 33 guest houses in Male. Outside Male there are 22 guest houses, and it is estimated that about 25 persons are engaged here. In total a general estimate for employees in other types of accommodation is 200.

1) World Bank Report, page 52.

Tourist Shops

Based on interviews in Male it is estimated that 45 shops in the capital, including a few stalls in the streets, are having their main trade from pleasure tourists. In total it is estimated that about 150 persons are employed in these shops. Within the resorts tourist shops are either run by the resorts themselves or by individual shopkeepers (some shops in Male also have one or two shops within the resorts). If persons employed in the individual shops in the resorts are added, a total estimate of persons employed in tourist shops is 200. This figure excludes employees in tourist shops run by the resorts, as these are included in the general staff in the resorts.

Other Types of Direct Employment

27 travel agencies are registered in Male employing 63 persons. Several of these companies are not active and several are directly connected with a resort or group of resorts or they are connected with boat rental enterprises. As for the latter group of enterprises, employees on cruising boats are included above under the accommodation sector, however, also some general employees and employees working on speed boats and transfer and day-excursion launches are found.

If employees of this type, working directly within tourism but without being included in the staff of resorts, are added together, they are estimated to make up about 100 persons.

Indirect Employment

The resorts are supplied with local fish, local production of eggs and chickens is steadily increasing, and local fruits and vegetables are bought when available at the market in Male either for consumption by the tourists or by the staff in the tourist resorts. The employment effect caused by tourism on the agricultural sector and on fisheries is, however, of a non-measurable character. It is even possible that no extra employment is involved, but the consequences of

the demand from the tourist sector are higher prices obtained by the producers or, what is more likely, by the middlemen.

Tourist souvenirs are for an important part either fully or partly produced in the Maldives. Products like lacquerware, wooden boat models, items of tortoise shell, black coral items, and mats are fully locally produced. Dresses and materials are imported from abroad, mainly from India, but are in the case of some items like t-shirts completed with Maldivian decorations. From information obtained from the tourist shops it can be estimated that about 50% of the local production of souvenirs takes place outside Male. Wood items and lacquerware are coming from the north and mats and silver items are coming from the southern parts of the Republic. In Male there are about 35 workshops employing about 150 persons. It can thus be estimated that a similar number of persons are employed outside Male. However, while the employees in Male are fully employed with the souvenir production, the production outside Male is generally performed as extra jobs besides other duties performed.

Much of the retail and wholesale business in Male is dependent upon direct or indirect sales to the tourism sector. A bakery, a cold storage business, several of the merchants etc. are all involved in supplies to the tourism sector.

Because of the traditional economic system of the Maldives with the relatively few economic linkages from the tourism sector, and because of the organizational system in which each resort takes care of nearly all the needs of the tourists, general rules-of-thumb for indirect employment cannot be used. These rules say in general that for each person employed in the direct tourism business one person will be employed in the indirect tourism business. A crude estimate would be that for the Maldives this ratio is closer to 1/4 indirectly employed for each directly employed. In this is not included the employment caused by the income multiplier effect.

Estimated Total Employment Effect

The above estimates of the direct and indirect employment effect are summarized in Table II.18.

Table II.18 Employment Caused by the Tourism Sector, February 1981

Source	No. of Employees
Resorts	1,845
Other Types of Accommodation	200
Tourist Shops	200
Other Types of Direct Employment	100
Total Direct Employment	2,345
Estimated Indirect Employment ¹⁾	585
Total Employment Effect	2,930

Note: 1) 25% of the direct employment.

The above figures do not include the employment within the construction sector. The fast build-up of the tourist resorts has resulted in a high demand for skilled construction workers like masons, plumbers and electricians. The employment effect of the construction is fluctuating widely and as a sufficient number of unskilled manpower is available, the major problem is to get the needed skilled manpower. The most important construction work caused by the tourism development is the airport development. In February 1981 as many as 400 people were working on this project.

Characteristics of the Employment within the Tourism Sector

A dominant part of the employees in the tourism sector are young Maldivian males, and only few females are working in the sector. More than 90% of the staff in the resorts is Maldivian. The foreigners, mostly coming from Europe and Sri Lanka, generally have positions in the management and as cooks. Former staff from the Gan Airbase in Addu Atoll are widely found in managerial positions, as waiters, and

cooks. Trained staff is a major problem and with the fast expansion of the sector, training has not been able to meet the demand sufficiently. Staff training is done on the spot, and new resorts try to attract trained key personnel and then undertake training programmes before the opening of the resort.

The staff is generally very flexible and adaptable to the new type of work and the service-level problem is predominantly a problem of training. In the off-season period some resorts reduce the staff, however, the seasonal unemployment which is only relevant for a portion of the unskilled employees does not seem to create any major problems as seasonal employment is normal and accepted in the Maldivian society.

Salaries vary considerably according to the type of job, the experience and the skill of the employee. Average monthly salaries in the resorts are close to MR 300, with boatmen and cleaning staff earning down to about MR 150, and cooks/managerial staff earning from US\$ 150 to 500 or even more. Salaries include food and accommodation but exclude tips and employees' part of the service charge. The total salaries within the resorts are high compared to salaries in other parts of the private sector and compared to salaries in Government service. Because of the attractive salaries and oversupply of manpower in the Male Region there has been no difficulties in finding staff for the resorts, the major problem being to get skilled staff.

9.3 Social and Cultural Effects¹⁾

The Maldives have always been in contact with the outside world. Since the 900's the nation has been dependent on trade, and traders from all parts of the Old World accordingly visited the islands. Also, Maldivians went to other nations in South Asia, Indochina, Indonesia, West Asia and Arabia as traders, sailors, to study, or for the Haj. There is thus nothing new in seeing foreigners in the Maldives; it is the number of the new travellers and their object for travelling that has changed.

1) This Section is partly based on findings from a questionnaire survey of the attitude towards tourism - see Appendix III.

The spatial outline of the Maldives as a country of numerous uninhabited and few inhabited islands makes the situation ideal for a controlled tourism where Maldivians mainly meet tourists while working on tourist islands and tourists do not interfere with the overall Maldivian socio-cultural system.

Friction between tourists and Maldivians has so far mainly occurred when low-cost travellers have visited Maldivian islands of habitation, and not between tourists and Maldivians in the organized tourist resorts. This type of island-hopping has recently been discouraged by the Government, now making it compulsory for foreigners to obtain a special permit before visiting inhabited islands outside the Male Atoll (Kaaf Atoll).

The Maldivian culture is very homogeneous and quite different from what is found in the neighbouring states of India and Sri Lanka. Maldivians have a clear concept of their own apartness from the rest of the world, and accordingly generally hold the beliefs that the Maldivian culture and world-view all in all is better suited for Maldivians than anything that could be brought from outside.

As such, the socio-cultural impact of tourism has been small until today, and it would be difficult to sort out any tourism effect as such from the overall impact of foreign traders, expatriate development staff and the effect of large numbers of young Maldivians sent for study abroad.

Quoted cases of a negative effect of tourism are that certain Maldivians have taken to the use of drugs or alcohol. The incidence of drugs being brought into the country, however, is clearly dependent on the type of tourist coming to the islands. Alcohol abuse has so far mainly been a problem of the Male elite: Young people who have been abroad, Maldivians such as bartenders coming in contact with alcohol in a working situation and a "manager's disease" in the tourist resorts.

Major ill-effects of tourism such as violent crimes, theft and prostitution have so far been avoided; partly because of tourist islands and islands of habitation being apart but mainly due to the general attitudes of Maldivians and the long-standing tradition for non-violence.

Minor indicators of what might come if not controlled in time are incidences of children begging in Male and on inhabited islands in the Male Atoll traditionally visited by tourist excursions. Also cases of tourist island personnel demanding tips have been mentioned as well as situations where customs officers have accepted "gifts" from incoming visitors.

Art Handicrafts

The deterioration of Maldivian art handicraft started long before the coming of the first tourist resort. The reason was mainly competition from cheap imported industrial products.

Stone-carving and wood-cutting today has almost died out, and Maldivian lacquerwork is only a shadow of what it has been. However, mat-weaving, cotton-weaving, coconut-braiding and silverwork have survived well even if production still is far less than earlier.

At the moment, however, the tendency is to produce inexpensive souvenir objects based on Indian/Sri Lankan "tourist art". Good workmanship is not highly valued, and at the yearly handicraft exhibition in Male special regard is too often given to products lacking in ideas, workmanship and artistic value, thereby giving the impression that products of the "new", "international" type are better than traditional, local products. Also the Maldivian school curriculum does not place the necessary emphasis on traditional Maldivian art.

As it is, Maldivian art handicraft is threatened not so much by tourism, but more by lack of interest and lack of encouragement.

9.4 Physical and Environmental Impact

Increased human activities will almost always exert negative influences on the environment. Tourism is not an exception from this general rule, and it is often seen that tourism has irreversibly degraded the very attraction which justified the tourism development in the first place.

The important feature of the Maldives is the paradisiac and quiet nature of the coral islands and the sea. The buildings of most of the existing tourist resorts are reasonably well adapted to the nature of the islands. This is not the case for certain storage buildings on islands near Male where their sheer size and the reflecting building materials and colours, contrasting with the surroundings, have a detrimental effect on the scenery.

It is suggested that building regulations are introduced concerning building construction on all islands. Because the scenery is open to a wide view, one ugly shed can spoil the view for many kilometers around.

Uncontrolled disposal of sewerage and solid waste is also a visual form of pollution as well as a health hazard.

As the sea and the coral reefs are the most important features of the Maldivian tourism assets a special survey of the effect of tourism on these assets has been carried out. Further to this survey a conference covering the subject of "Preservation of Natural Resources" was held in Male on January 28th, 1981.

The results from the Conference have been incorporated in the following.

Marine Environmental Impact

Three of the main attractions for tourists in the Maldives are snorkeling, diving and fishing. In itself the corals make up a picturesque view for divers, and ecologically the coral reefs are the biologically most productive systems of all natural communities and thus make up the basis for the large and diverse fish stock in the area. Therefore, in developing tourism great care must be taken not to damage or destroy the corals. The development of tourism may influence the corals in the following ways:

- blasting and removal of corals for constructions,
- dredging and landfill operations,
- dumping of solid waste products and discharge of liquid waste products,
- mechanical damages of corals caused by the tourists,
- ecological changes of the system, i.e. invading of *Acanthaster planci* or Ciguatera,
- discharge of brine, i.e. in case of desalination on a large scale.

The local authorities have already called attention to these potential risks for damaging the corals.

In a letter dated August 1980 from NPA it is thus said:

"The plundering of the coral reef is proceeding at a frighteningly rapid pace. This development causes a great environmental hazard, namely increased island erosion. The increased use of the corals reflects a major growth in the building industry in Male, in the tourist islands and in the atolls. Also, land reclamation in Male and Hulule contributed to this large increase in demand."

and

"Garbage floating in Male atoll mar the beauty of the islands and destroys reef. The main culprit is nondegradable waste, i.e. waste that does not dissolve into biological matter. Paper is degradable, tins are not.

Garbage disposal is a problem for both Male and the atolls. The accepted way of throwing the garbage away is to trust it to the sea. This traditional method was the best method before the appearance of tins, glass and oil in the Maldivian way of life. It is about those non-degradable items that we will concern ourselves here."

To avoid the detrimental impact and to protect the tourist resorts and the marine environment the Department of Tourism and Foreign Investment has initiated the preparation of "Sanitation Code for Tourist Resorts". Concerning the marine sanitation this code says:

"As the local attraction of tourists in Maldives is towards the marine environment, adequate consideration should be given to the conservation of the aesthetics of the water front, coral surroundings and marine fauna and flora.

In this regard adequate supervision should be given by every resort to monitoring the practice of dumping solid wastes in the sea."

The managers and diving instructors in the tourist resorts are aware of the importance of protecting the marine environment as well. This is taken into consideration in the confirmation to be signed by the tourists before permission is given to participate in a diving course. In the diving confirmation from the Vadoo Island it says:

"I oblige myself not to destroy anything under water and not to remove corals, shells etc. from the sea".

As part of the project a survey of the marine environmental impact was undertaken. The scope and conclusions are presented below, while the findings are given in Appendix IV.

Scope of Survey

The scope of the environmental survey has been:

- to examine the present conditions of the marine environment with special emphasis on the corals,
- to evaluate the influence of human activities on the corals,
- to give recommendations for a controlled tourism development and use of the natural resources without damaging the marine environment.

The field survey has comprised:

- reconnaissance along the beaches of several islands in the Male Atoll and the Ari Atoll,
- diving in the lagoon reef flat, the lagoon reef slope, the barrier reef flat and the barrier reef slope areas,
- collection and analyses of water samples,
- interviews with local authorities in Male and at the resorts as well.

Conclusions from the Marine Life Survey

The main attraction for the tourists in the Maldives is the unique nature and pleasant climate. Most of the recreational activities are associated with the marine environment, i.e. swimming, diving, sailing, fishing etc. Therefore, it is of utmost importance that the value of these activities is not reduced by detrimental impacts on the marine environment.

Based on the reconnaissance in the Male Atoll and the Ari Atoll and on interviews with local authorities as well, the following conclusions can be made:

- Quite obviously the marine environment (i.e. especially the corals) near the tourist islands is influenced by the human activities. Most pronounced this influence is seen in the areas preferred by the diving instructors for diving courses. The impact is of the following nature: 1) damaging or killing of corals through sedimentation or breaking of branched corals caused by divers or anchors, and 2) disturbances of the eco-system through collecting of corals, snails, shells and fish.
- In all areas there is a tendency towards increasing accumulation of waste products, i.e. especially tins on the bottom as well as on the shore.
- Areas for professional collection of corals for construction purposes were not visited, however, this definitely will have a detrimental impact on the environment as a whole.
- The few analyses carried out of the water samples, i.e. the chemical and hygienic conditions, indicated that except for the Male Harbour the marine environment is only insignificantly influenced by the human activities.

The Male Conference

The Male Conference on preservation of natural resources was attended by experienced divers and naturalists and higher Government Officials of concerned Departments and Ministries.

The results of the conference support the findings of the field survey with the following further comments:

- Divers do not feel that coral taking for building purposes causes any problems as coral is normally picked at low waters and divers usually go below this level.
- It is not divers but snorklers who cause problems of removal of corals from closeby the resorts.

- It was estimated that about 15,000 cans are dumped into the sea daily and that measures for changing the dumping system are necessary.
- Diving safety should be improved.
- Enforced measures to protect natural resources are needed.

APPENDICES

I QUESTIONNAIRE FORMS

**II THE GERMAN TRAVEL
MARKET**

**III THE ATTITUDE TOWARDS
TOURISM**

**IV THE MARINE
ENVIRONMENTAL SURVEY**

APPENDIX I

DEPARTMENT OF TOURISM AND FOREIGN INVESTMENT
THE REPUBLIC OF MALDIVES

CONFIDENTIAL QUESTIONNAIRE
SURVEY OF ARRIVING TOURISTS

Welcome to the Republic of Maldives. The Department of Tourism wishes you a very pleasant stay. To help us to make your future stay as close as possible to your expectations please complete this questionnaire and hand it over to our representative when arriving to Hulule Airport.

VERTRAULICHER FRAGEBOGEN EINER
UNTERSUCHUNG BEI ANKOMMENDEN GÄSTE

Willkommen in der Republik der Malediven. Das Tourismus-Ministerium wünscht Ihnen einen angenehmen Aufenthalt. Um sicherzustellen, dass Ihr Urlaub Ihren Erwartungen so weitgehend entspricht, wie Sie dies erwarten, bitten wir Sie, diesen Fragebogen auszufüllen und unserem Repräsentanten im Flughafen von Hulule bei Ihrer Ankunft zu überreichen.

Nationality/Nationalität:

Age/Alter:

How many days do you intend to stay in the Republic of Maldives?
Wie viele Tage werden Sie auf den Malediven verbringen?

Please state the name of the holiday resort(s) where you will be staying:
Wo werden Sie Ihren Aufenthalt verbringen

Please state the name of the company which arranged your tour:
Welcher Reiseveranstalter hat diese Reise für Sie arrangiert:
.....

Is this your first visit to the Republic of Maldives? yes/ no/
Ist dies Ihr erster Besuch auf den Malediven? ja nein

No. of people you are travelling with (including yourself)
Wieviele Personen reisen zusammen (Sie eingeschlossen)

What do you expect to enjoy most during your stay (please tick up to 4 or 5 items):
Was erwarten Sie von Ihrem Aufenthalt am meisten. Worauf freuen Sie sich besonderes (Bitte nur 4 bis 5 Antworten):

- | | |
|--|--|
| <input type="checkbox"/> the food/das Essen | <input type="checkbox"/> the sea/swimming/
das Meer/Schwimmen und Baden |
| <input type="checkbox"/> the local culture/
die Kultur des Landes | <input type="checkbox"/> the coral reef/underwater life
die Korallen-Riffe/das
Meeresleben |
| <input type="checkbox"/> the sun/climate/
die Sonne, das Klima | <input type="checkbox"/> water sports/Wassersportarten |
| <input type="checkbox"/> sailing/Segeln | <input type="checkbox"/> the overall feature of a tropical
desert island/
der Eindruck tropischer Inseln |
| <input type="checkbox"/> relaxation/Erholung, Ausspannen | <input type="checkbox"/> fishing/das Fischen |

Other expectations, please state:
Andere Erwartungen, und zwar folgende:

How do you expect the hotels to be/Was erwarten Sie von den Hotels:

- primitive but comfortable/einfach, aber komfortabel
 primitive without much comfort/einfach ohne jeden Komfort
 international standard/internationaler Standard

PLEASE DO NOT
WRITE IN THIS
COLUMN. RESERVED
FOR CODING PURPOSES

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7	8
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9	10
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11	12
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13	14
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15

16

17	18	19	20	21	22	23	24	25	26
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27

PLEASE TURN
BITTE WENDEN

How do you expect the food to be/Wie erwarten Sie, wird das Essen sein:

- simple with limited variations/einfach, mit begrenzter Abwechslung
- international standard/internationaler Standard
- simple but exotic/einfach, aber exotisch

29

How did you learn about the Republic of Maldives:
Wo haben Sie etwas über die Malediven erfahren:

- through travel brochures/durch Kataloge von Reiseveranstaltern
- through friends/durch Freunde, Verwandte, Bekannte
- through newspapers/durch Zeitungen/Zeitschriften
- through travel agent/im Reisebüro
- through diving club/durch den Tauchclub

28

Other sources, please state
Durch andere Stellen, nämlich

Why did you choose to travel to the Republic of Maldives:
Warum haben Sie sich entschieden, auf die Malediven zu fahren:

- because it is an interesting supplement to a stay in Sri Lanka
als interessante Ergänzung zum Aufenthalt in Sri Lanka
- because of the diving possibilities
wegen der guten Tauchmöglichkeiten
- because of the possibilities for a relaxed holiday on an exotic island
wegen der Möglichkeiten, für einen erholsamen Urlaub auf exotischen Inseln

30

Other reasons, please state
Wegen anderer Gründe, nämlich

If your trip is combined with a holiday in Sri Lanka, please state the main reason/attraction for taking the total holiday:
Falls Sie Ihren Urlaub auf den Malediven mit einem Aufenthalt auf Sri Lanka verbinden, was war für Sie der wesentliche Grund für diese Reise:

- the stay in Sri Lanka/der Aufenthalt auf Sri Lanka
- the stay in the Republic of Maldives/der Aufenthalt auf den Malediven
- the combination of the two countries/die Kombination beider Länder

31

If you had not chosen to travel to the Maldives, what would have been your second choice:
Sofern Sie nicht die Malediven besucht hätten, was hätten Sie stattdessen unternommen:

- the beaches of Sri Lanka/einen Aufenthalt an den Stränden von Sri Lanka

32

Other possibilities, please state
Andere Möglichkeiten, nämlich

Have you visited/Haben Sie früher schon einmal folgende Länder besucht:

	yes/ja	no/nein
the Seychelles/die Seychellen	<input type="checkbox"/>	<input type="checkbox"/>
the West Indies/die Karibischen Inseln	<input type="checkbox"/>	<input type="checkbox"/>
Mauritius/Mauritius	<input type="checkbox"/>	<input type="checkbox"/>
The Gambia/Gambia	<input type="checkbox"/>	<input type="checkbox"/>
Kenya/Kenia	<input type="checkbox"/>	<input type="checkbox"/>
Red Sea/Rote Meer	<input type="checkbox"/>	<input type="checkbox"/>

33. 34. 35. 36. 37. 38.

Visits at other comparable destinations, please state names of countries:
Andere vergleichbare Länder, die Sie evt. besucht haben:

39. 40.

.....

CONFIDENTIAL QUESTIONNAIRE
SURVEY OF DEPARTING TOURISTS

We hope that you have enjoyed your stay in the Republic of Maldives and will be coming back again. To help us plan ahead and to make your next stay even better we ask you kindly to complete this questionnaire and hand it over to our representative before leaving Hulule Airport.

VERTRAULICHER FRAGEBOGEN EINER
UNTERSUCHUNG BEI ABREISENDEN GÄSTEN

Wir hoffen, Sie hatten einen angenehmen Aufenthalt auf den Malediven und werden wiederkommen. Wir wären Ihnen dankbar, wenn Sie uns den folgenden Fragebogen ausfüllen würden, der uns helfen soll, Ihren nächsten Urlaub auf den Malediven noch angenehmer zu gestalten. Bitte übergeben Sie den ausgefüllten Fragebogen unserem Repräsentanten im Flughafen von Hulule, bevor Sie abreisen.

PLEASE DO NOT
WRITE IN THIS
COLUMN. RESERVED
FOR CODING PURPOSES.

1. 2. 3. 4.

5. 6.

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9. 10.

11. 12.

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21.

Nationality/Nationalität:

Age/Alter:

How many days did you stay in the Republic of Maldives
Wie viele Tage sind Sie auf den Malediven gewesen

Name of the resort island(s) where you have stayed
Auf welcher Insel sind Sie gewesen

Name of the company which has arranged your tour
Welches Unternehmen hat Ihre Reise durchgeführt

Is this your first trip to the Republic of Maldives? yes/ no/
Ist dies Ihr erster Besuch der Malediven gewesen? ja nein

Number of people you are travelling with including yourself
Wieviele Personen reisen Sie zusammen (Sie eingeschlossen)

Did you stay in the Republic of Maldives fulfil your expectations so
that you enjoyed your holiday (please specify):

Hat Ihr Aufenthalt auf den Malediven Ihren Erwartungen entsprochen, so
dass Sie Ihren Urlaub wirklich genossen haben:

Very much Much Moderately Not much Not at all
Ja, sehr Ja Mässig Nicht so Ganz und gar nicht
sehr

Would you like to return: yes/ no/ maybe/
Würden Sie in Zukunft noch einmal wiederkommen: ja nein vielleicht

Direct to the Republic of Maldives
Direkt auf die Malediven

In combination with a stay in Sri Lanka
In der Kombination mit einem Urlaub auf
Sri Lanka

How did you like the accommodation facilities:
Wie hat Ihnen Ihre Unterkunft gefallen:

Very much Much Moderately Not much Not at all
Ja, sehr Ja Mässig Nicht so Ganz und gar nicht
sehr

How did you like the sea transportation facilities:
Wie hat Ihnen der Transport auf dem Wasser gefallen:

Very much Much Moderately Not much Not at all
Ja, sehr Ja Mässig Nicht so Ganz und gar nicht
sehr

PLEASE TURN
BITTE WENDEN

How did you like the food:
Wie hat Ihnen das Essen gefallen:

Very much Much Moderately Not much Not at all
Ja, sehr Ja Mässig Nicht so Ganz und gar nicht
sehr

24.

Please state about your specific likes and dislikes:
Bitte sagen Sie uns offen, was Ihnen besonders gefallen und was Ihnen nicht gefallen hat:

Like:
Es hat mir gefallen:

25, 27, 28.

- a)
- b)
- c)

Dislike:
Es hat mir nicht gefallen:

26, 29, 30.

- a)
- b)
- c)

If there are any specific things you have been missing/wanting to change or special problems, please inform briefly:

Falls es irgendwelche Dinge gibt, die Sie vermisst haben bzw. die Sie geändert haben möchten, teilen Sie uns dies bitte kurz mit:

29, 30, 31.

.....
.....
.....
.....

Did you find the availability of local souvenirs sufficient:
Fanden Sie die Möglichkeiten, spezielle Souvenirs zu kaufen, zufriedenstellend:

yes/ja no/nein

32.

How much money did you spend during your stay per person on buying souvenirs:

Wieviel Geld haben Sie während Ihres Aufenthaltes pro Person für Souvenirs ausgegeben:

US Dollars
US Dollar

33, 34, 35.

APPENDIX II

THE GERMAN TRAVEL MARKET

The adult population of the German Federal Republic (Western Germany) consists of approximately 47 mill. people (above the age of 14). In 1980 27 mill. of these made at least one holiday trip of more than four days' duration, corresponding to a travel intensity of nearly 58 per cent.

Totally, these 27 mill. German holiday makers made 32.8 mill. trips, including the trips of those who took a second or third holiday.

These travels were distributed on the various regions, as follows:

Table A. Structure and Dimensions of the German Travel Market in 1980

Total no. of holiday makers in 1980	32.8 mill.	
- within Western Germany	13.1 mill.	40.1%
- within Europe	18.1 mill.	55.2%
- outside Europe	1.5 mill.	4.7%

Source: Aderhold-Vielhaber-Association AGRA: Urlaubsreisen 1980, StfT, Starnberg 1981.

The present long-distance travel market in Western Germany thus represents about 1.5 mill. travels, i.e. 4.7 per cent of the total travel market.

In spite of economic recession this market has been steadily growing over the past years. It grew from about approximately 650,000 travels in 1977 to nearly 800,000 in 1978 and reached about 1.2 mill. in 1979. Thus the later years have brought an annual increase in this market segment of about 300,000 persons according to a representative survey.

Distributed on the various regions, the long-distance travel market has developed as follows:

Table B. Long-Distance Destinations in 1978 and 1979

	1978	1980
Holiday trips outside Europe	800,000	1,500,000
Visits to the U.S.A./Canada	350,000	460,000
Visits to North African countries	200,000	350,000
Visits to other countries outside Europe	250,000	680,000

Source: See Table A.

Thus the volume of the German long-distance travel market has almost doubled in the last three years. As Table A shows, the increase above all results in a strong growth in travels to long-distance destinations in countries in the Third World.

Here again, it is predominantly Latin American countries (Mexico, The Caribbean) and Asian countries (Sri Lanka, Thailand, Indonesia) as well as East and West African countries that have benefited from the increase.

Demographic Structure of Long-Distance Travellers

Travellers who visited countries in the Third World in 1980 can be characterized through the demographic description shown in Table C.

The major part of the travellers belong to the age groups 20-30 years old. There is a heavy over-representation of these groups, as it appears from a comparison with the age structure of the West German population.

Also, there is a marked predominance of those groups who have received a qualifying education. They contribute with approximately two thirds of all long-distance travellers although they only represent a bare third of the total population.

Table C. Socio-Demographic Characteristics of Visitors to the Third World in 1980

	Total Population %	Travellers to the Third World 1980 %
<u>Age</u>		
14-20	11	4
20-30	16	33
30-40	15	23
40-50	20	13
50-60	14	12
60-70	13	11
70 and above	11	4
<u>Educational Level</u>		
Low	68	36
Medium	22	29
Higher	9	35
<u>Household Net Income</u> ¹⁾		
Below DM 2,000	35	13
DM 2,000-DM 3,000	36	27
Above DM 3,000	29	62
<u>Social Stratum</u>		
1. stratum	11	31
2. stratum	18	27
3. stratum	30	31
4. stratum	23	11
5. stratum	17	

Source: See Table A. Note: 1) Per month.

Closely related to the educational level, it appears that nearly two thirds of all travellers to the Third World are recruited from income groups of DM 3,000 and above, although they only represent a bare 30 per cent of the total population.

As to social class, of which education, income, and profession are all indicators, it similarly appears that there is a heavy over-representation of the two upper social strata among travellers to the Third World. They constitute nearly 60 per cent whereas they barely make up 30 per cent of the total population.

Travelling Motives and Types of Holiday

The motives of the Germans who travel to the Third World for their holidays differ considerably from the motives of those holiday makers who stay within West Germany or the other European countries.

Table D. Travelling Motives of Holiday Makers

Question: What were the most important factors in your choice of this particular holiday?				
Answer: (selected)	Domestic Travellers %	Travellers within Europe %	Travellers to North Africa %	Other Long-Distance Travellers %
Relaxation	70	67	66	26
Recreation	56	48	41	26

New impressions	35	48	59	76
New experiences/ change	25	37	34	56
Adventurous experiences	13	22	39	56
Broadening of outlook	14	22	25	41
Educational purposes	12	22	30	30
(The respondents have given more than one reason)				

Source: See Table A.

As the results of the analysis indicate, there are clear differences between the people who spend their holidays in the North African countries and the other long-distance travellers.

While the travellers to North Africa like the travellers within Europe give predominantly passive motives for their choice, more active motives prevail among the other long-distance travellers. Only about 25 per cent of the long-distance travellers have stated relaxation and recreation as their main motive. Reversely, between 50 and 75 per cent have given primarily active motives.

This impression is enhanced when the travel purpose is taken into consideration.

Table E. Travel Purpose

	Domestic Travellers %	Travellers within Europe %	Travellers to North Africa %	Other Long-Distance Travellers %
Adventure	8	22	34	60
Recreation	73	67	59	27
Education	2	3	5	3
Other types	17	8	2	10

Source: See Table A.

Holiday trips to far-off countries are thus first and foremost adventure trips motivated by the urge to experience new things, to get new impressions and to see something outstanding. About 60 per cent of the long-distance market are found in this segment. The holiday makers above all seeking relaxation and recreation, on the other hand, only make up about 25-30 per cent of this market segment.

To the Maldives this means that of the 700,000 persons who in 1980 spent their holidays away from Europe in Third World countries (i.e. excluding North Africa) about 140,000-230,000 have primarily chosen a recreational holiday of the kind to be had in the Caribbean, in West and East Africa, the Indian Ocean and parts of the Far East, but also in the Maldivian Islands. This is the basic segment for the Maldives on the German market.

Besides, some of the people who choose an adventure holiday in the form of a round trip combine it with a recreational holiday. A typical combination is a round trip of one or two weeks' duration combined with one or two weeks' relaxation at a resort.

This is the other market segment of interest to the Maldives.

Considering that between 60,000 and 70,000 Germans spent their holidays in Sri Lanka in 1980 and that this figure is expected to be higher in the years to come, this constitutes an interesting market potential.

It seems realistic to estimate that one third of the Germans who spend their holidays as a round trip in Sri Lanka (or in South India) can be attracted to take a further recreational holiday in the Maldives, this alone would mean an annual volume of between 20,000 and 25,000 visitors.

It also seems realistic that the Maldives can attract about 10 or 15 per cent of the purely recreational long-distance market of 140,000-230,000 persons; this would correspond to a number of 15,000 or 30,000 holiday makers primarily motivated by recreation.

Viewed together with tourists purely coming for diving purposes, the annual Maldivian market share of the German market can in total be estimated at 40,000-60,000 visitors against a little more than 11,000 visitors in 1980.

This is, of course, only a rough estimate of the German market potential, but the abovementioned dimensions are evaluated to be realistic and fairly conservative estimates.

Future Development

Out of a total of approximately 47 mill. adult Germans, about 7 mill., i.e. 15 per cent, will visit countries in the Third World (incl.

North Africa) in the next three years. Approximately 2.8 mill. have stated that they were rather sure to do so, while another 4.2 mill. were not so sure, but stated that they were "likely" to go on such a trip.

As a matter of course, not everybody who intends to make such a trip fulfils his intentions. Experience shows that about 50-60 per cent let action follow words.

This corresponds to 3.5-4.2 mill. long-distance travellers who will visit countries in the Third World, i.e. 1.2 to 1.4 mill. annually. Considering the fact that a little more than 1 mill. Germans spent their holidays in Third World countries in 1980, this estimate seems quite realistic.

These world-wide figures form the basis of the following estimate of the Maldivian market potential for the next three years to come.

Table F. Maldivian Market Potential on the German Market for the Period 1981-1983

	Total	Maldives
Total potential for travels to the Third World 1981-83	3.5 mio.-4.2 mio.	
hence:		
Those purely interested in a beach holiday	0.7 mio.-0.8 mio.	10%-15%: 70,000-126,000
Those purely interested in a round-trip holiday	1.4 mio.-1.7 mio.	
Those interested in a combination of beach holiday with round trip	1.4 mio.-1.7 mio.	
hence Sri Lanka:	0.3 mio.	20%-30%: 60,000- 90,000
		130,000-216,000

Source: See Table A.

If the Maldives attract 10-15 per cent of the market for pure beach holidays and 20-30 per cent of the visitors to Sri Lanka to take an additional beach holiday in the Maldives, a total of somewhere between 130,000 and 216,000 tourists from the German market in the next three years can be expected.

This corresponds to a market potential of 40,000-70,000 German visitors per year.

APPENDIX III

THE ATTITUDE TOWARDS TOURISM

Organization of the Survey

In order to get an impression of the ideas and concepts of tourists and tourism in general held by the Maldivians, a questionnaire survey on attitudes towards tourism was carried out in Male from January 28th to February 17th. The main object of the survey was to find out which general beliefs were held by the capital's population concerning the positive and negative aspects of tourism seen both as the impact of existing tourism on the everyday-life of the citizens of Male and as the more abstract ideas about how tourism could influence the overall development of the country in the near future.

The questionnaire¹⁾ was kept in a simple form to eliminate possible misunderstandings between the interviewer and the person interviewed. Eight young Maldivians were used as interviewers, all with a very good knowledge of English and some previous experience in interviewing.

For the interviews 4 areas were chosen in the western, south-eastern and central part of Male. The areas chosen were all primarily residential areas, and furthermore chosen on the basis that the survey should include persons from all income groups from the poorer sections of society to the well-to-do. Also, the areas were chosen to include all of the four Male wards: Galolhu, Henveyru, Maafannu and Machangoli.

In order to make the choice of respondents as random as possible the interviewers were instructed to visit every house in the streets designated for the interviews and to put the questions of the questionnaire to the first adult person met - or the first adult person willing to answer - in the household.

1) See the form on the next page.

QUESTIONNAIRE FORM

Household Survey on the Attitude towards Tourism

- 1) Name of house:
- 2) Part of town:
- 3) Person interviewed Sex M F Age:
- 4) Occupation(s):
- 5) How many persons sleep in this house?
- 6) How many persons eat in this house?
- 7) Who are the persons living here (in numbers)
 Close family members ___ Servants ___ Others ___
- 8) Does anybody in the house own a: Bicycle ___ Radio ___ TV ___
 Telephone ___ Shop ___ Bokura ___ Waadu doani ___ Mas doani ___
 Engine doani ___ Batteli ___ Boat ___
- 9) Do you speak any languages except Maldivian?
 If YES, which languages:
- 10) Do you think tourism is good for the Maldives?
 If YES, why:
- 11) Do you think tourism can be harmful to the Maldives?
 If YES, why:
- 12) Why do you think tourists come to the Maldives?
- 13) Did you ever go to a tourist resort? YES NO
- 14) Do/did you ever have any tourist friends? YES NO
 If YES, explain:
- 15) Are there any persons in the household making money through
 tourism? YES NO
 If YES, explain:
- 16) Is there anything that the tourists do wrong (are offensive)?
 If YES, explain:
- 17) Additional comments from interviewer:

The response to the survey was excellent as all persons contacted were willing to answer to their ability. In some cases they were even too willing and tried to find answers to questions which they in reality did not know anything about. Because interviews were carried out in the daytime with many men being away on work, the number of women interviewed is far larger than the number of men (129 to 73). This, however, seems to have little impact on the validity of the results of the survey as the attitudes of the interviewed women and men in general are quite similar and focusing on the same points.

To ensure a comparative material from other inhabited islands in and outside the tourist zone a number of structured/unstructured interviews were carried out in Male Atoll - notably on the island of Guraidhoo - and on islands outside Male Atoll visited by the team.

Survey Findings

In Male 202 households were interviewed. As each household had an average size of 10.5 persons, the total number of persons covered by the survey is 2,121 persons corresponding to about 6% of the Male households.

The basic data from the survey were distributed as shown in Table A.

"DO YOU THINK TOURISM IS GOOD FOR THE MALDIVES?"

To this question the answers were, as expected, overwhelmingly positive as 89% or 179 persons answered YES and only 3 persons (1.5%) said NO. The remaining 20 persons did not reply to the question.

The three all negative respondents stated as reason for their "no" that 1) Tourists had a negative influence on the religious values in

the Maldives, 2) Maldivian children and young people were "spoiled" through access to alcohol, drugs and foreign habits and 3) That tourism had made the price of local food go up on the market.

Table A. Distribution of Interviews by District, Sex, Average Age and No. of Persons in the Households

District	Persons interviewed				Average Age Years	No. of Persons in Household
	Male		Female			
	No.	%	No.	%		
Galolhu	11	37	19	63	30	10.6
Henveyru	28	39	43	61	71	10.6
Maafannu	27	34	52	66	79	10.2
Machangoli	7	32	15	68	22	11.4
Total	73	36	129	64	202	10.5

Source: Consultants' Male Household Survey.

"DO YOU THINK TOURISM CAN BE HARMFUL TO THE MALDIVES?"

The replies to this question indicated a general awareness that tourism could have a long-term negative effect. 35 of the respondents (17%) affirmed that tourism could be harmful while 70 (35%) denied such negative effects. However, no reply/don't know accounted for 97 respondents (48%) showing a great degree of uncertainty about the question. This uncertainty could probably be taken as an indication of doubts of the future overall benefits of tourism.

"WHY DO YOU THINK TOURISM IS GOOD?"

The replies to this question have been grouped in 6 categories of which the overall economic benefit to the country is the most important.

Table B. Distribution on Reasons why Tourism is Good

	Replies	
	No.	%
1. The country benefits financially	86	36
2. People get more prosperous through trade, leasing of houses and islands etc.	64	27
3. Gives access to better jobs	42	17
4. Serves the overall development of the country	3	1
5. Various reasons *	11	5
6. No specific reason	33	14
Total	239	100

* As "Various reasons" were given: "Things of no use (to Maldivians) can be sold", "People learn foreign languages", "Maldivians get introduced to the outside world", "Uninhabited islands come into use" and "As the industry is sanctioned by the Government it must be good for the country".

Note: As some respondents have given more than one reason, the number of replies differ from the number of questionnaires.

Source: Consultants' Household Survey.

"WHY IS TOURISM HARMFUL?"

The answers to this question were grouped in 8 categories as shown in Table C.

Reasons 1 to 5, constituting 58.2% of the answers, all deal with threats to the special Maldivian-Muslim culture/tradition. Drugs and alcohol figure prominently, as the Maldives hitherto have had no tradition for intoxicants (leaving out mild stimulants as tea, tobacco, areca-nut and betel-leaves), and only 3 persons see an actual economic threat from tourism in the form of a possible lowering of living standards for the less affluent inhabitants of the capital.

Table C. Distribution on Reasons of why Tourism is Harmful

	Replies	
	No.	%
1. Tourists bring drugs to the Maldives	9	21
2. Tourists teach Maldivians to consume alcohol	6	14
3. Tourists have a negative influence on Maldivian traditions	4	9
4. Tourists do not follow Muslim norms	4	9
5. Tourists have a negative influence on the young generation	2	5
6. Tourism inflates prices of local products	3	7
7. Various reasons*	9	21
8. No special reason	6	14
Total	43	100

* As "various reasons" were given: "Increased pressure on land", "Fear of having tourists living in local communities" and "Security problems".

Note: Some respondents have given more than one reason.

At the end of the questionnaire survey a follow-up question to the above was given. In this question was asked whether the tourists do anything wrong or are offensive. The answers were close to the answers to "Do you think tourism can be harmful to the Maldives" confirming the already given opinions. To the question "What do the tourists do wrong?" the following replies were recorded (see Table D).

This follow-up question gave a larger number of replies and an increased variation in the attitude. It is significant that more respondents name nudity and semi-nudity as things tourists do wrong.

Table D. What do the Tourists do wrong

	No. of Replies	%
1. Drinking	15	25
2. Drugs	12	20
3. Not properly dressed/behaviour	21	36
4. Offend the religion	4	7
5. Other reasons*	7	12
Total	59	100

* "Do not respect Maldivian laws", "Children are afraid of them", "Children learn their way of living", "Their spending habits", "They get the natural resources illegally" and "Bad influence concerning language".

"WHY DO YOU THINK TOURISTS COME TO THE MALDIVES?"

To this question the respondents did not give any particularly unexpected answers. Replies were centered on: for pleasure, the sun, the sea, beaches, corals, spend holiday etc. 19 persons or 8% stated that business was a main reason for the tourists.

The contact between the Male population and the tourists has only been sporadic as only 18% of the respondents had been at tourist resorts and only 6% have had tourist friends.

"PERSONS IN THE HOUSEHOLD MAKING MONEY THROUGH TOURISM?"

In 52 households (26%) one or more persons were getting income from tourism. A total of 72 persons were working within tourism compared to 3.4% of the persons covered by the survey. Of the persons working within tourism the major part (50 persons) were working within resorts/hotels/guest houses. 14 persons were working in the supply sector and 8 persons within tourist shops and boat operation.

As mentioned, the respondents showed no significant differences in attitude depending on sex, neither did the relative economic level

of the household influence answers on the general level; all in all the only difference in response was that males and older women were more willing to answer the "complex/dangerous" questions relating to the reasons for tourism being positive/negative.

In general, the attitude towards tourism is very positive, although with some reluctance concerning the future.

Interviews carried out on the island of Guraidhoo and on inhabited islands all showed a very great and positive interest in tourism. The response was almost too positive, and respondents showed little interest in discussing what type of persons tourists were and what interests tourists could have in the Maldives. As it was, tourism was clearly and only seen as an easy way of making money, and questions of whether tourism could be harmful or tourists could be offensive or dangerous to Maldivian traditions were always answered in the disaffirmative or evaded.

APPENDIX IV

THE MARINE ENVIRONMENTAL SURVEY

Field Survey Findings

Based on diving in the vicinity of a series of islands in the Male Atoll and the Ari Atoll the following general description of the area can be given with special emphasis on the corals.

None of the islands have exactly the same topographical structure. All islands within the main atoll, however, are surrounded by a shallow area, i.e. the lagoon reef flat followed by a lagoon reef slope.

The islands making up a part of the main atoll, i.e. the fringing reef, are to the seaward side surrounded by a barrier reef flat and a lagoon reef slope. Only observations on the reef flats have been made.

The inner zone of the reef flat often consists of loose-picked sand with small calcareous debris. These shallow water areas make up the habitat for the littoral and sublittoral fauna. At some of the islands these shallow areas are covered by sea grass beds consisting of the angiosperms *Thalassia* and *Thalassodendron*. The dominating corals on the reef flats are given in Table A. In this table the corals are ordered alphabetically, i.e. neither the taxonomical group nor the dominance of the species are taken into consideration.

From Table A it is seen that a great part of the coral species are found on the lagoon reef flats as well as on the barrier reef flats. No measurements of the coral coverage have been made. However, there is a higher coral coverage on the barrier reef flat (i.e. about 70%-80%) than on the lagoon reef flat (i.e. about 50%-70%). The reason for this is that the corals on the barrier reef flat presumably have better life conditions (more fresh water and oxygen supply) than corals on the lagoon reef flat. This is also reflected by the species composition on the two reef types. Generally the corals on the lagoon reef flats are better adapted to withstand stress as high turbidity, low oxygen, etc.

Table A. The Most Common Coral Species Observed on the Reef Flats as an Average for the Reef Flats Inspected

Coral Species	Lagoon Reef Flat	Barrier Reef Flat
<i>Acropora humilis</i>	X	X
<i>Acropora formosa</i>	X	X
<i>Acropora hemprichi</i>	X	
<i>Acropora irregularis</i>	X	X
<i>Acropora palifera</i>	X	X
<i>Acropora hyacinthus</i>		X
<i>Acropora abrotanoides</i>		X
<i>Acropora robusta</i>	X	
<i>Echinopora lamellosa</i>	X	
<i>Favia pallida</i>	X	
<i>Favia speciosa</i>	X	
<i>Favites abdita</i>	X	
<i>Favites flexuosa</i>	X	
<i>Fungia repandes</i>	X	
<i>Fungia fungites</i>		X
<i>Fungia scutaria</i>	X	
<i>Galaxea fascicularis</i>	X	X
<i>Gardineroseris ponderosa</i>	X	X
<i>Goniastrea retiformis</i>	X	X
<i>Leptoria phrygia</i>	X	
<i>Lobophyllia corymbosa</i>	X	X
<i>Pavovia varians</i>	X	X
<i>Platygyra lamellina</i>	X	
<i>Pocillopora verrucosa</i>	X	
<i>Pocillopora eydouxi</i>	X	X
<i>Pocillopora molokensis</i>	X	X
<i>Porites lutea</i>	X	
<i>Porites solida</i>	X	X
<i>Porites andrewsi</i>	X	
<i>Porites convexa</i>		X
<i>Psammocora togianensis</i>	X	
<i>Symphyllia recta</i>	X	
<i>Stylophora mordax</i>	X	

The coral reefs of the Maldives have been examined previously (Stoddard, 1966, 1969 and 1971, Stoddard et al. 1966, Davies et al. 1971, and Scheer 1971 and 1974). For further information concerning the coral reefs of the Maldives reference is made to these authors.

During the diversions no observations of *Sigüatera* or *Acanthaster planci* were made. Probably *Sigüatera* is not a problem in the Maldives. Through discussions with several diving instructors we were informed that *Acanthaster planci* has been and still is a problem. A large area in the north-western part of the Male Atoll north of Kudahitty is invaded by this serious coral-eating starfish.

Water Quality

During the reconnaissance in the area sea water samples for chemical and bacteriological analyses were collected from:

- the channel between Dagati and Viligilivaru, Alif Atoll
- Kurumba Village
- Gashurifinolhu
- Male Harbour.

The results of the chemical analyses are given in Table B and the results of the bacteriological analyses are given in Table C.

Table B. Results of Chemical Analyses of Water Samples Collected at 4 Localities in the Male Atoll and the Ari Atoll, December 1980

Locality	Cl ⁻ Salinity g/l ~ o/oo	Total-N µg/l	NH ₃ -N µg/l	(NO ₂ +NO ₃)-N µg/l	Total-P µg/l	PO ₄ -P µg/l
Channel between Dagati and Viligilivaru (3°38'N - 72°57'E)	19.0~ 34.6	333	41	<10	17	<10
Kurumba (4°16'N - 73°30'E)	19.5 35.5	181	15	20	11	<10
Gashurifinolhu (4°25'N - 73°40'E)	18.9 34.4	125	6	<10	19	<10
Male Harbour (4°10'N - 73°30'E)	18.0 32.8	812	228	180	78	62

Salinity has been measured because it is an ecologically important state variable for marine organisms.

Nitrogen (N) and phosphorous (P) have been measured because they are important state variables for growth of autotrophic organisms as angiosperms and algae (including the symbiotic zooxanthellae of the corals). Most often nitrogen and phosphorus are the growth limiting factors for further growth of autotrophic organisms.

Table C. Results of Bacteriological Analyses of Water Samples Collected at Kurumba and in the Male Harbour, December 1980

Locality	Coliform bacteria per 100 ml	Faecal coliform bacteria per 100 ml	Total number (21°C) per 1 ml
Kurumba (4°16'N - 73°30'E)	<25	<25	3,300
Male Harbour (4°10'N - 73°30'E)	2,400	490	8,500

The bacteriological measurements were carried out in order to estimate the potential risk for diseases by using the water for recreational purposes. The bacteria measured are in themselves harmless but are used as indicators for more serious bacteria which may cause human diseases.

Coliform bacteria include bacteria from the natural environment as well as bacteria from the faecal polluted environment.

Faecal coliform bacteria are used as indicators for faecal pollution only.

Total number (21°C) is an indication of the total number of bacteria which are able to grow at 21°C. In unpolluted sea water this number amounts to about 10^4 - 10^5 number per 1 ml.

The conclusion of the chemical analyses given in Table B is as follows:

The salinity is within the range of normal oceanic water. The lowest concentration is found in the Male Harbour and is due to the discharge of fresh and brackish water into a semiclosed area with reduced possibility of water exchange with the more saline surrounding waters. The salinity inside and outside the main atolls are of the same order of magnitude which indicates an effective water exchange over the atoll barrier. No current measurements have been made but based on the work by Binnie and Partners, 1975, the average tidal variations in the area make up about 70 cm. A tidal variation of this order of magnitude will cause an effective water exchange.

The concentration of nitrogen and phosphorus in the Male Harbour is high compared to other areas with the same concentration and type of human activities. This, however, is only what could be expected. Outside the Male Harbour the nitrogen and phosphorus concentration is on a level which is normal for an unpolluted tropical area.

The conclusion of the bacteriological analyses given in Table C is as follows:

The concentration of bacteria, i.e. coliform, faecal coliform and total number (21°C) in the Male Harbour is on a much higher level than outside the harbour. This indicates that the harbour is strongly polluted by human waste products. According to the EEC-standard (76/160/EØF) the concentration of bacteria in water used for recreational purposes may at a maximum of 5% of the time exceed 10,000 coliforms per 100 ml and 1,000 faecal coliforms per 100 ml. In spite of the high bacteria concentration found in the harbour the concentration does not exceed the limit of the EEC-standard for water quality used for bathing. In the bacteria analysis, however, only indicator bacteria were used and not those causing diseases.

Influence on the Marine Environment by Human Activities

During the divers and discussions with the diving instructors an impression of the influence of the human activities on the marine

environment has been obtained. This impression can be summarized as follows:

Without doubt the coral communities in the vicinity of the tourist islands are influenced by the tourists. The strongest effect is seen at the "diving places", i.e. the areas where the diving instructors usually have their diving courses. These areas are visited several times a day all the year round. Nearest to the shore in these areas a great number of corals are killed, mainly because of sediment which is stirred up by the swimming and settles on the corals. Further seaward on the reef flat as well as on the reef slope many of the branched corals are broken. This happens accidentally as well as purposely when divers are swimming around in the reef system in order to study the corals. Through the diving instructors the Consultants were informed that this pressure on the marine environment has been increasing over the last 5 years.

Corals destroyed by anchors is another serious problem. On several occasions the Consultants observed whole tracks of damaged corals caused by anchors which have been drawn over the reef flat.

Collection of corals, seashells and other marine organisms is not allowed. In spite of this, several tourists collect these things, even in great numbers. On several occasions the Consultants observed seashells and corals on the beaches where the tourists had placed them for sun drying. Also professional collection for sale to tourists, mainly of seashells, is taking place. Furthermore, professional collection of corals on a large scale is taking place for construction purposes. Solid corals as *Porites* and *Platygyra* are used for construction elements and branched corals as *Acropora* are used for cement mortar.

Another serious problem which is increasing according to the diving instructors is the solid waste products. Such products are often found drifting on the surface or trapped on the bottom by the corals.

Of the solid waste products it is mainly the tins which cause a serious problem. The seriousness of this problem can best be illustrated by a comment given by one of the diving instructors: "Today you can hardly go diving without finding tins on the bottom". It is obvious that such conditions strongly reduce the pleasure of diving in the area.

During the Consultants' reconnaissance in the area no oil spills were observed. However, there will always exist a potential risk for oil spill partly from the motor boats and partly during the distribution of fuel oil to and from the "oil island". For aircraft purposes the present storage capacity amounts to about 3,000 m³. According to the present plans for extension of the airport the storage capacity of fuel oil will increase to about 11,000 m³. It has not been possible to obtain information on the annual flow through the oil terminals.

The influence on the fish stock is another result of the human activities. This problem is not recognized as directly as the influence on the corals and the presence of waste products. Hunting with spear guns is not allowed. These activities are still taking place, however. Another problem is the professional collection of fish for aquaria purposes. The seriousness of this problem has recently been stressed by a Swedish marine biologist, Niels-Ove Hilledén, Tjärnö Marine Biological Laboratory, who over the last year has arranged marine biological courses in Kurumba Village. Concerning the collection of fish for aquaria purposes he states:

"Due to former informations coral reef fishes have not been collected at Maldive Islands for aquaria purposes. At my visit to the islands in January 1981, it showed, however, that such export is coming forth to Sri Lanka and the firm Pearl Island Aquatics there.

During a former visit to the Maldives it struck me that certain in aquaria not uncommon, spectacular fishes were pretty rare along the reef although they had their main distribution area over the Maldives. The species concerned are known for territoriality, but these large areas were not expected.

During my recent stay on Kurumba I therefore made the following investigations: The three species Balistodes conspicillum, Pygoplites diacanthus and Pomacanthodes imperator were counted at eight different areas. Each counting was done during one hour's SCUBA-diving at 25 m depth and over about 200 m length. The areas were - 1. Furana-fushi, 2. the port of Male, 3. Pierre's hide-away, 4. Canon reef, 5. Furana-fushi outer reef, 6. Banana reef, 7. Hulule outer reef, and 8. Manta point. These names are the ones used by divers within the area.

<u>Survey Result</u>								
<u>Area</u>	1	2	3	4	5	6	7	8
<u>B.cons</u>	2	1	1	0	3	0	2	3
<u>P.imp.</u>	1	1	3	0	1	0	1	1
<u>P.diac.</u>	2	7	3	2	3	4	3	2

The results showed that the three species concerned have a wide distribution with their territories (or home ranges?). Further observations also showed that the two species B. conspicillum and P. imperator are very aggressive territory holders with distinct borders along the reef. Of these two species have no juveniles been observed. Due to uncertain informations these two species can grow as old as over fifteen years. In the price-lists of Pearl Island Aquatics the three investigated species were the most expensive ones: B. Cons. 35 \$, P. imp. 10 \$ and P. diac. 8 \$. The other species on the list cost between 20 cents and 5 \$ most of them costing one to two dollars.

The result of fish collecting to the reef is in this case not known. I have myself not been diving within areas where fishes have been collected, but there are reasons to believe that the collection has influenced the species configuration, which lead to a disturbance of the eco-system itself.

Another aspect is the methods of collection used. Some methods give mechanical damages to the corals and chemical methods can

dest destroy the whole reef biotope and the sensitive interrelations within the organisms there.

What to do?

- Survey of the occurrence of reef fishes by transect countings within different areas. As there is nothing like that done before we can not see any changes by i.e. disturbances from collecting of divers.
- Comparison of areas where fishes have been collected to areas not disturbed.
- Finding out whether the methods of fishcollecting damage the reef.
- With help of these informations make a positive list of fishes possible to collect without greater disturbances to the reef.
- We must keep in mind that practically none of these fishes exported are alive one year after they have been collected for aquaria."

Ecological Requirements of Coral Reefs

The primary building blocks of the reef are the coral animals which secrete mineralized skeletons of calcium carbonate. These, along with coralline skeletons, provide the reef topography and internal structure.

Coral animal tissue is mutualistically associated with photosynthetically active dinoflagellate algae (zooxanthellae). The tiny algal cells gain a safe residence in the coral tissue, and the coral animal is aided through energy supply from algal photosynthesis and also by removal of metabolic waste products. It is thought that the success of hermatypic corals in terms of their high growth rate and abundance is in part predicated on the coral-algal relationship. Photosynthetic activity of the algae indicates that light is required and hence corals are restricted to the photic zone (approximately the upper 50 m). The most vigorous growth occurs in approximately the upper 20 m.

Temperature

Temperature is an important forcing function controlling the structure and function of corals. Generally corals flourish best in the range 25°C-29°C. They can withstand limited exposure to temperature as low as 16°C-17°C, and the upper limit for continued growth has been found to be about 36°C.

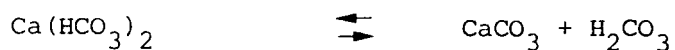
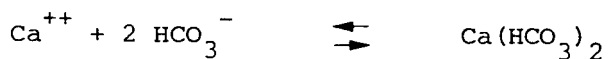
Salinity

Salinity has no direct influence on the rate of ecological processes. However, salinity is an important environmental variable because the organisms in the marine environment metabolically have adapted to function within a restricted salinity spectrum. Reef corals appear to flourish best when salinity is in normal, open-ocean, range (i.e. approximately 36 o/oo). Dilution to 27 o/oo and concentrations to 40 o/oo are tolerated.

Light

Light is an important forcing function for photosyntheses. The photosynthetic products of the zooxanthellae, i.e. carbohydrates and liberated oxygen, are directly used by the coral and it has been demonstrated that the calcification process is closely connected to photosynthesis. Photosynthesis is dependent on light (energy and spectral distribution). In increased water depth the energy is decreased and the spectral distribution is altered.

The calcification process is the most important in building the coral reefs. According to the most widely held hypotheses the proposed calcification reaction is as follows:



These relations are increased by the photosynthetic fixation at or near the calcification size. The mechanism in coral calcification has not yet been resolved, but no doubt a decrease in the rate of photosynthesis will bring along a decrease in the calcification rate.

Increases in the turbidity e.g. from dredging or discharge of sewage will decrease the energy available for photosynthesis. The result of this may be:

- decreased production of photosynthetic carbohydrates,
- decreased production of photosynthetic oxygen,
- decreased calcification.

Natural and Man Made Influence on Corals

Due to natural and man-made influence on the marine environment the ecological conditions for normal coral function may be influenced so that optimum growth conditions are no longer achieved. These influences are of the following nature:

- natural influences,
- influences of non-recreational human activities,
- influences of recreational human activities.

Natural Influences

Storms, Hurricanes and Cyclones

The major cause of natural catastrophic coral mortality on reefs is the destruction caused by storms. Mortality is mainly due to colony breakage, overturning, current force stripping tissue from the colony, and sediment abraision of the living coral as well as by attendant resuspension of sediments blanking light and settling on coral tissue.

Sedimentation and the associated turbidity can be detrimental to corals for a variety of reasons. As mentioned turbidity may reduce illumination and hence a vital source of energy. In addition rejection

of sediment particles by a coral requires time and energy which could otherwise be used for food capture, growth, skeletal repair or reproduction. Branching corals are relatively better able to withstand sedimentation than massive corals; others, especially those with large polyps, have developed efficient mucus and ciliary cleaning mechanisms. Certain Atlantic coral species have been found to survive acute deposition of 1-3 mm of sediment and a prolonged deposition of 1.5 mm/day. Energy loss by excessive mucus production, however, may kill the reefs in turbid water.

The efficiency of the sediment removal process at least for hemispherical corals is expected to depend on coral size. Coarse particles are shed by distension of the coenosarc with water which allows the sediment to slough off. Direct ciliary action removes finer grains. Both processes require energy expenditure and no coordinated transport of sediments by the shortest route from point of impact to edge. Such a random walk rejection procedure would be relatively efficient in young hemispherical corals because the small radius gives a high chance of quickly removing particles. In larger and older corals this sediment rejection mechanism would require disproportionately more energy. These considerations help explain why growth is lowered with increase in sedimentation and why larger corals stand in lower chance of survival.

Exposure to Air (Emersion)

As a reef grows upwards the corals on it, of necessity, approach the water surface. The maximum height of a living reef is often determined by the depth near the low tide. Occasionally, and sometimes in concert with meteorological events such as storms, shoreline topography and geography, an earth-moon-sun position produces extremely low tides which can expose living reef corals to the atmosphere. In this case duration of exposure and synergistic effects such as solar radiation intensity, air temperature and rainfall are extremely important in determining the effective mortality and survival of the corals. Most resistant species are inner flat types (e.g. *Favia fragum*, *Siderastrea radians* and *Manicinia areolata*) and those with

porous skeletons (e.g. branching *Acropora* and *Montipora*) while the more massive species are less resistant.

During exposure the corals are extremely subjected to oil and other pollutants drifting on the surface.

Non-Recreational Human Activities

Collection of Corals

Collection of the corals for construction purposes influence the environment directly as well as indirectly. Directly, the corals in the area affected are killed, and thus an important source of energy production is destroyed. Indirectly, the removal of corals increases the potential risk for erosion of the shores and the areas directly affected may be invaded by the starfish coral predator *Acanthaster planci* and the blue green algae causing *Sigaterra*.

Unfortunately, too little is known about *Acanthaster planci*. Levin (1971) states that there are two likely possibilities for the rapid growth of *Acanthaster planci*:

1. a change in the environment, or
2. a change in the animal.

Changes in the physical environment that result in improved survival of *Acanthaster planci*. Biological changes that result in release of pressure from predators at some stage in the *Acanthaster planci* life cycle.

Most evidence points to biological changes as the most likely cause of infestation. Such biological changes could be caused by blasting and dredging activities that occur on the reefs.

Mechanical damage to coral reefs caused by dredging or blasting may decrease the predation pressure on starfish larvae by corals. Settling areas for the larvae are provided by the dredging and blasting thus leading to sudden large increases in population through increased survival in localized areas.

Chesher (1969) reports that: *Acanthaster planci* is undergoing a population explosion in many areas of the Pacific Ocean. Data on feeding rates, population movements and stages of infestation were collected along coral reefs at Guam and Palau. Direct observations on destruction of Guam's coral reefs indicate that narrow, fringing reefs may be killed as rapidly as 1 kilometer per month. In a 2½ year long period, 90% of the coral was killed along 38 kilometers of Guam's shoreline.

The greatest mortality of *Acanthaster planci* occurs during the larval stages. Destruction of reefs by blasting, dredging and other human activities has provided fresh surfaces, free of filter feeder (such as coral), that are capable of eating the larvae. Therefore, suitable settlement areas are provided where enough larvae can concentrate together thus providing the necessary seed population for an infestation. Infestations near Guam, Rota and Johnson Island were first noted near blasting and dredging activities.

Algae are generally among the first macroscopic organisms to colonize any fresh surface in reef areas, including the surfaces of blasted or dredged areas of newly deposited sediments, artificial reefs, skeletons of corals eaten by *Acanthaster planci*, sunken ships, abandoned war materials, and other human artifacts. The apparent connection between these new algal growths and fish poisoning was first noted by Dawson et al. (1955) and discussed in detail by Randall (1958) and Dawson (1959). These authors pointed at the correlation between:

1. the availability of new surfaces in the reef environment,
2. the rapid growth of algae,
3. the development of toxicity, known as ciguatera, in normally edible species of reef fish in the immediate area.

They theorized that toxic algae growing unusually fast on new reef surfaces are the basis for a toxic food chain which sometimes leads ultimately to man, causing serious illness and sometimes death. These algae possibly belong to the blue-greens: *Lyngbya mafiscula*.

The theory is still under investigation. Progress has been slow; algae upon which fish graze are maintained by this grazing as thin films on the reef surface making it difficult to obtain adequate samples of these species to toxicity studies.

Dredging

Dredging will always produce some alterations in the area of ecology. These may be minor and of short duration or major and of a more permanent nature, the latter being the more significant. Dredging changes the original interface between the water and the bottom and:

- creates new deep water areas,
- increases the potential for the release of toxic or nutrient materials from the bottom,
- causes suspended sediments which eventually result in turbidity and deposition.

All of these conditions can affect a coral reef community.

Sewage Discharge

In natural unpolluted coral reef systems the nutrients (mainly nitrogen and phosphorus) are growth limiting factors. Discharges of sewage into such a system will accelerate the growth of plants (phytoplankton and macrophytes). An increased phytoplankton population will increase the turbidity of the water. Increased turbidity and increased growth of macroalgae on the corals will decrease the available light for the zooxanthellae. By increased sewage loading local disagreeable eutrophication situations may occur with the result of decreased oxygen concentration in the water.

In discussion of the impacts due to sewage discharge the potential risk of diseases caused by viruses and bacteria must be taken into consideration as well. For various sites in Jamaica, Barnes (1973) has reported very high coliform bacteria levels in the vicinity of hotel sewage outfalls. She stresses the potential danger to human health and to the coral reefs.

Solid Waste Products

Solid waste products which accidentally or actively are dumped into the water will according to the prevailing currents be transported in different directions. Some of the solid waste products will sink to the bottom while others will be drifting on the surface. If current and wind conditions are in the direction of land these waste products may be washed on shore or captured by the near shore coral reefs. Environmentally as well as aesthetically this is a very disadvantageous situation.

Oil Pollution

There seems little doubt that oil can and does adversely effect corals in various ways. Rutzler and Sterrer (1970) in a 4 day site visit found damage from oil spill along the Caribbean coast of Panama to various marine and terrestrial communities. Reefs were found least affected presumably because an abnormally high tide coincided with the spill and prevented any physical contact of corals and oil.

Johannes et al. (1972) exposed 22 species to crude oil, when the corals were emersed during low tide. Tissue death ensued within a few days at areas where the oil adhered. Birkeland et al. (1976) conducted experiments and observations of oil and corals in Panama. Depending on the environmental state and species tested, the responding death rate varies considerably. Long-term effects were suggested that were not immediately obvious after initial contact. Fishelson (1973) described high mortality on a reef 7 km south of Eilat, Red Sea, occurring during the years in which an oil terminal and mineral and phosphate facility were developed at Eilat. Frequent oil spills and phosphate eutrophication were considered responsible for increased algal growth and coral demise.

During exposure corals are extremely susceptible to surface oil. Once corals are killed by emersion they may repopulate, but also the reef may remain essentially dead. Loya (1975) suggested that chronic oil pollutions and phosphate eutrophication prevented recolonization of a reef decimated by an extremely low tide. Control reefs, not influenced by pollution but equally experiencing the low tide mortality, nearly completely recovered.

Recreational Human Activities

Recreational activities associated with the marine environment are:

- swimming
- diving
- sailing
- fishing.

From the literature there are several examples of how these activities influence the marine environment.

Dustan (1977) detailed the many effects of physical destruction on the Florida reefs such as anchor and anchor-chain breakage of branching coral, breakage and entanglement by fish and lobster traps and lines.

Wycherley (1969) discussed the major threat to reefs in West Malaysia from intensive collection pressure from skin divers. Johannes (1975) considers the physical destruction of shallow reef flats by trampling, the overharvesting of corals, gastropods and aquarian fish by amateurs and professional collectors, the use of crowbars to overturn coral heads by shell collectors, and related activities. All these activities are widespread, growing, and dangerous to reef health.

Voss (1973) discussed the above and other aspects of the problem for Florida reefs citing extensive human use of a recently created underwater reef park as contributing to its early degradation and demise. These are important considerations when planning a beach resort area with attendant coral reef areas for observation and use by tourists. Voss (1973) has suggested strict management plans including such things as emplacement of permanent moorings at the reefs most frequently visited and stringent regulations of diver behaviour enforced.

It has been suggested (Endean, 1973) that human collection of the giant triton, a known and effective predator and potential population regulator of *Acanthaster planci* by professional and amateur divers has contributed to the epidemic increase of this coral predator on certain Australian and Pacific reefs. In the Sudanese Red Sea, on the other hand, Ormond and Campbell (1971) found *Acanthaster planci* at "approximately normal or pre-plague rates". The population of *Charonis tritonis* (the giant triton) appeared to be too low to be an important controlling factor, although 25% of *Acanthaster* observed had missing or damaged arms suggesting predation from some source.

