

Environmental Guidelines for Tourist Resort Development & Operation in the Maldives

A GUIDE FOR PLANNERS, MANAGERS & OPERATORS

Editor

Moosa Zameer Hassan, Ministry of Tourism

Consultant

Simad Saeed, Commerce Development & Environment (CDE) Pvt. Ltd.

Layout & Design

Hassan Mohamed, Ministry of Tourism

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Foreword

Maldives is a renowned sustainable tourism developing destination with its international reputation as an idyllic island paradise with white sandy beaches and turquoise blue lagoons. In order to manage these attractive and delicate natural settings environmental management has been made an important and intrinsically linked component of the Maldivian tourism development. Environmental aspects are taken into consideration and incorporated by the Ministry and the project developer from the initial tourism development stages up to the operational stage. Environmental management measures deemed appropriate for the industry has been issued by the Ministry from time to time in consultation with the industry and the process is expected to continue as newer developments in environmental management and technology increase in this rapid development age.



This Guideline provides the first attempt to encompass a comprehensive set of environmental guidelines for the industry, described in one publication. The Guideline is not only an industry tool but attempts to highlight the environmental principles and policies of the Ministry and the government at the time of publication. It will be reviewed from time to time as necessary and published for the wider tourism industry participation and guidance. It is my sincere hope that this guideline provides a useful tool for better environmental management and operation of the tourist resorts for a brighter and sustainable tourism industry in the Maldives.

I take this opportunity to thank the invaluable cooperation and assistance provided to develop the guidelines from the Environment Section of the Ministry of Environment & Construction and all those who contributed to this publication.

Mustafa Lutfi
Minister of Tourism

01 July 2005

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Abbreviations & Definitions

COT	Crown of Thorns, starfish
DDT	Dichloro-diphenyl-trichloroethane, a potent insecticide used for the prevention of malaria
EER	Environmental Effect Register, an environmental record
EIA	Environment Impact Assessment, environmental study evaluating the likely environmental impacts of the development, together with an assessment of how the severity of the impacts could be reduced
EMAS	Eco-Management and Audit Scheme, voluntary European environmental management standard similar to ISO 14001
EMP	Environmental Management Plan, site specific plan that sets out an environment management framework for monitoring programs and preparing statutory reports
EMS	Environmental Management System, overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining an organization's environmental performance
EPPA	Environmental Protection and Preservation Act, of the Maldives
HACCP	Hazard Analysis Critical Control Point, internationally recognized and recommended approach to food safety that anticipates and prevents hazards associated with ingredients
HIV	Human Immunodeficiency Virus, the virus that causes Acquired Immuno-Deficiency Syndrome (AIDS)
HVAC	Heating, ventilation and air conditioning system, installed in a building to regulate temperature
IFC	International Finance Cooperation, part of the World Bank group
ISO 14001	International voluntary standard for environmental management systems
MOEC	Ministry of Environment & Construction, Maldives
MOFAMR	Ministry of Fisheries Agriculture and Marine Resources, Maldives
MOT	Ministry of Tourism, Maldives
MPA's	Marine Protected Areas, includes the protected dive sites
MSI	Musculoskeletal injury
MWSA	Maldives Water and Sanitation Authority, Maldives
NCPE	National Commission for the Protection of the Environment, Maldives
NDP	National Development Plan
NEAP	National Environment Action Plan
NSS	National Security Service, Maldives
STMP	Second Tourism Master Plan, Maldives
UNEP	United Nation Environment Program
USEPA	United States Environment Program Agency
WHO	World Health Organisation
WTTC	World Travel and Tourism Council

Overview

The Guidelines

This is the Environmental Guidelines for Tourist Resort Development and Operation in the Maldives developed by Ministry of Tourism and issued in July 2005. The Ministry of Tourism has statutory responsibilities to set policies and standards for the development of tourism in the Maldives and evaluating the extent to which tourist facilities incorporate and uphold the policies and standards. The vision and goals of the Ministry of Tourism are enclosed in Annex 1. The aim of this publication is to assist resort and hotel developers and operators to understand the practical application of Maldivian Government policies, regulations and guidelines on ecologically sustainable tourism as applied to both common and unusual circumstances.

The Maldives is a beautiful coral reef ecosystem and is a world renowned home for rare and endangered marine species. This fragile ecosystem could be damaged irretrievably by insensitive and unplanned development. The natural ecosystem, its flora and fauna, clean air and sense of remoteness are the basis of the expanding, economically important, nature-based tourism industry in the Maldives. The sustainability of the tourism industry and the nation will involve careful planning, management and development.

These guidelines primarily are intended to ensure that all future tourist resort development, tourist resort operation and expansion or upgrading of existing facilities in the Maldives maintain a high product quality and are ecologically sustainable tourism developments.

This report provides a useful summary of important legal requirements and a general guidance in resort development and operation, although it does not attempt to be comprehensive. Where particular legislation or Ministry directions apply, readers should find out about those provisions directly and not rely solely on this document and this document must be read in conjunction with the Tourism Law (2/99), Environmental Law (4/93) and the regulations issued under these laws. This document also provides information about good practice, in situations where legislation allows for discretion, including situations that occur infrequently.

These Guidelines do not answer every question about good environmental practice and conduct. The principles and policies identified will point to an answer in many cases and you are encouraged to discuss issues you have with the staff of Ministry of Tourism and relevant Government Agencies.

Basis for environmental guidelines

Tourism in the Maldives exists solely due to the physical and geographic features of coral islands.

It is the beauty of underwater world at the reefs, clean water in the lagoons, white and pristine sandy beaches, the rich island vegetation and ideal tropical climate that attract tourists to the Maldives.

With the present high level of awareness and sensitiveness to nature, environmental protection is a major factor in competitiveness and marketing.

In the present era, protecting the environment is a basic requirement for a company or organisation's long term social recognition and acceptance.

The developers of the Maldivian tourist resorts share a commitment to develop a high premium tourism product and this includes introducing to the global tourism market the most environment friendly resorts in the world, that will set the standard for global eco-tourism in the years to come.

All tourist resorts will have to contribute to sustainable tourism development in the Maldives and demonstrate through innovative programmes that tourism can be developed environment friendly without much adverse effects.

Adverse effects of improper environmental management do occur in some tourist resorts in the country and elsewhere in other tourist destinations, and the management of those resorts pay very high costs to remedy the negative environmental effects.

Pressure for upgrading and expansion has intensified in the tourism industry over recent years due to the positive growth in tourist arrivals spurred by increased efforts in destination promotion. A growth in the sector would mean there is a greater need for higher environmental standards and clearer guidelines for sustainability.

Purpose

The purpose of these guidelines is to:

Provide proponents with clear environmental guidance regarding aspects of tourist resort development and operation.

Help preserve, protect and enhance the environment of the Maldives to ensure sustainable development.

Content

Sustainable tourism development can be ensured when good principles and policies are applied in all facets and stages of tourist resort development. Thus these guidelines cover the four critical stages of tourist resort development in the Maldives: namely selection of islands for tourist resort development, the design and approval process, construction of resorts and finally operation of resorts.



Island selection phase

1. Location

Location

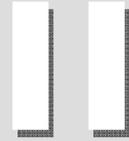
Policies

P1. New tourism developments are located consistent with the expansion policies of the Government and inline with National Development Plans and the Tourism Master Plans.

P2. The Ministry of Tourism selects islands for tourist facility development such as resorts, marinas and picnic islands after rapid assessments based on the environmental, economic and equity objectives. These baseline surveys cover vegetation, land area, coastal conditions, cultivation and economic activities and proximity to inhabited islands and transport infrastructure.

Adopted Guidelines for Island Selection

- G1. Proposed tourism developments are located to ensure habitats of declared rare or priority flora and fauna species are avoided or protected, and disturbance to important breeding or feeding areas is minimized.
- G2. In the selection of islands, consideration is given to minimize potential impacts upon protected areas, good fishing grounds and other sensitive environmental areas.
- G3. In the screening for islands the stability of beaches, stable ground conditions and the availability of natural lagoons for harbour development are considered.
- G4. In selection of islands those islands which may pose risks and hazards to visitors and may need significant environmental modifications are avoided.
- G5. The potential for further expansion or upgrading are subject to environmental impact assessment and permission is given to those projects that can be accommodated without significant impact on the environment.



Design and Approval Phase

1. Environmentally sound architectural design
2. Planning approval
3. Environmental approval

Environmentally sound architectural design

Issues

Due to the small size, fragile environmental setting and limited natural resources in the islands, the type, extent and magnitude of resort development on the islands is obviously restricted. Development without careful design and planning and due consideration to the size, natural environment and available resources in the island, would impinge the carrying capacity, deteriorate the quality of the environment and may exhaust the resource base of the islands.

Ecologically and Geomorphologically Sensitive Areas

Resort amenities and infrastructure located on ecologically valuable habitats such as bird and sea turtle nesting areas and geomorphologically sensitive locations such as sand spits can generate irreversible environmental implications such as loss of terrestrial biological diversity and disrupt coastal environmental processes with consequential implications such as acceleration of beach erosion and loss of beaches. Constructing piers for water bungalows and jetties and dredging harbours disrupts natural settings and processes of the lagoons and is a cause for increased erosion of the shoreline in many islands, thereby creating the need for building unattractive artificial coastal protection structures. Hence, alternative designs and planning for the functions of these structures are worthwhile to be explored.

Mature and Coastal Vegetation

Removal of mature island vegetation for construction of infrastructure can generate environmental effects that can reduce protection of the island from increased wind speed as well as affect low vegetation types such as bushes and shrubs due to decreased shelter. Similarly, removal of coastal peripheral vegetation for construction of beach bars, jetties, piers and other coastal structures can lead to accelerated beach erosion and alteration of natural ecological succession of the island vegetation.

Carrying Capacity

Development of resort amenities, infrastructure and service facilities throughout the island without giving good consideration to how much development that the island can take up may exceed the carrying capacity thresholds of the island. Contamination of the groundwater resources as a result of inappropriate fuel handling, waste and sewage disposal practices have been experienced in the past. If the pressure of development exceeds the carrying capacity or natural limit of the island, the island can no longer sustain in its natural state. Therefore, prior to all major tourist developments, the natural limits of the island has to be considered as well as appropriate location of necessary facilities need to be ensured for long-term sustenance of the island and its resources.

Policies

In order to ensure that the carrying capacity of the island is not exceeded and the environmental and ecological processes are not deteriorated from tourism development, the Ministry of Tourism currently implements carrying capacity limits. Carrying capacity standards form the basis for deciding the number of rooms and extent of resort facility development allowed on each resort island, and the aspects covered under this policy include:

Protection of the aesthetic values of the islands

- P1. Felling of trees to provide space for construction of buildings are required to be minimized and mature trees protected.
- P2. No buildings (on land) are required to appear above the tree tops of the island and no buildings are required to be constructed that disrupts the natural façade of the island.
- P3. During land clearing for construction of buildings, enough vegetation is required to be left untouched to conceal buildings as much within the vegetation.
- P4. Large parts of the island are not allowed to be left barren while removing trees to allow for construction.

Protection of the island environment

- P5. The maximum area to be utilised on buildings are required to be 20% of the total land area.
- P6. Two storey buildings are allowed in order to protect the natural vegetation and economize the total build-up area provided that sufficient vegetation will conceal such buildings.
- P7. Buildings inside the island are required to be sited at a minimum set back limit of 5 meters from the vegetation line of the island
- P8. Buildings could be constructed in the lagoon with the aim of enhancing the physical look of the island, but not due to lack of space on the island.
- P9. For buildings constructed in the lagoon, equal open space is required to be left free on the island.
- P10. Design of the boat piers and jetties are required to be in such a way that they minimise the obstruction of the flow of currents and sediment in the lagoon.
- P11. Some designers tend to place swimming pools close to the shoreline (Infinity view concept) without due consideration of the shoreline conditions and natural aesthetics. Ministry of Tourism restricts location of Swimming pools on the beach space of islands and the design and layout plan require approval from MOT.

Tourist image of the island resort

- P12. All guest rooms are required to be facing the beach, and a minimum of 5 linear meters should be available for each guest room.
- P13. Not more than 68% of the total length of the beach is required to be utilized for guest rooms.
- P14. From the remaining 32%, 20% are required to be left for general facilities like jetty, the reception, restaurant, etc, and 12% should be empty space between the guest rooms.
- P15. At least 2 meters are required to be allowed in between any two buildings.
- P16. Construction of buildings that are out of touch and do not blend in with the natural environment of the islands would not be permitted.

Guidelines

- G1. The detailed design and engineering drawings of the resort development plan required by MOT should be completed after the initial environmental assessment, the reef survey and vegetation survey of the island are completed. These studies would help to identify the most appropriate locations for the various buildings and infrastructure in terms of environmental sensitivity. The studies would also help in improving the design for better environmental performance.
- G2. Based on the findings of initial environmental assessments, avoid environmentally-sensitive, ecologically-important and geomorphologically dynamic locations during the planning and designing of the resort infrastructure, buildings and amenities
- G3. Define and establish appropriate zones for development and buffer areas for environmental protection, based on the findings of the environmental assessment and surveys.
- G4. Integrate development concept to utilize the unique features of the island and environment
- G5. An important aspect of environmental site design is aesthetics. Buildings must not look as if they have dropped onto a location from outer space. All the buildings in a resort have to be designed to integrate well into the small island landscape found in the Maldives and reflect the heritage, culture and art forms of the Maldives.
- G6. Avoid removal of mature trees for locating buildings, instead Identify locations of mature trees on the island and make the buildings layout plans to conserve such trees and landscapes.
- G7. Design narrow walk-ways and locate walk-ways and paths in areas where removal of mature trees and vegetation will be minimal.
- G8. Ensure that construction materials and methods are compatible with the island environment and all buildings should be designed with due consideration to the tropical environment.

G9. Ensure all buildings have enough natural daylight during daylight hours to eliminate the need for artificial lighting on fine days.

G10. Use of coral stones and sand as a construction material are strictly prohibited by MOT; however the sustainable use of other local materials are encouraged as building materials in construction and development of tourist facilities.

The main complex

G11. Design the main complex to take the maximum benefits from the tropical climate. Place emphasis on natural ventilation and natural lighting. All the areas of the complex can be open sided and not have air-conditioning. Build natural ventilation into the design to create cooling and save energy.

Water bungalows

G12. Any water bungalows should be located after a study of the lagoon and the reef to minimise impacts on the marine environment.

G13. Water bungalows should be constructed on columns or stilts in such a way that there will be no significant disruption to the flow of currents and sediments.

G14. Study how water bungalows have been constructed in other resorts and learn from their experiences on minimisation of negative environmental impacts.

G15. Wooden stilts previously used in the water bungalows continue to be replaced by concrete columns after the 24th December 2004 tsunami experience.

Jetties

G16. It is recommended that there be a single jetty in resort islands. However for the purpose of loading and unloading supplies, fuels and in larger islands an additional jetty may be constructed with a permit from MOT.

G17. Jetties must be designed and constructed in such a way that there is minimal disruption to the current flow and sediment movement resulting from currents.

G18. Corals (stones and sand) are not permitted to be used as construction material for Jetties and piers.

Swimming pool

G19. In the design of the pool, special emphasis should be given to the health and safety of users. Water quality maintenance, safe designing and material use, clear notices and depth indication are some important aspects.

G20. Infinity view pools are attractive and built on high grounds in other destinations to blend with low lying seascape. Due to lack of high ground in Maldives, Infinity view swimming pools tend to be constructed very close to the shoreline, exacerbating erosion of the beach in

front and elsewhere around the island. Pool structure therefore should be placed well inside the island to allow island and beach dynamics.

Coastal Protection

G21. In case of beach erosion due to unusual weather conditions it is recommended to curb erosion with sand bags as an immediate temporary solution. Natural accretion should be expected and allowed as it usually occurs after change of season.

G22. Natural methods of shoreline protection should be sought instead of construction of seawalls, detached and submerged breakwaters.

G23. Shoreline protection through hard engineering solutions and or relocation of sand should only be carried out with the prior permission of the Ministry of Tourism. Generally such permits require a shoreline study and a statement of impacts.

Planning approvals

Any proposed tourism development will be required to seek approval from the Ministry of Tourism. For specific projects that require environmental clearance, Ministry of Tourism will notify developers on procedures for environmental clearance from the Ministry of Construction and Environment.

Planning Approval under the Tourism Act from the Ministry of Tourism

Act no. 15/79, the main law on tourism in the Maldives was passed by the Citizen's Majlis in November 1979, outlining the basic regulations for the resorts on registration and operation, and tax policies. The original law had seven clauses in it and amendments were made to the original law through law no: 11/80, 14/80, 4/82, 6/83 and 2/87. The present Tourism Act (law 2/99) came into force on the Sixteenth of May 1999 (Refer Annex 2).

With the Tourism Law as the basis, a number of regulations, standards and controls have been specified by the Ministry of Tourism for operations within the tourism sector. The tourism regulations obtainable from the Ministry of Tourism comprises of important regulatory measures including the Building Standards, Sanitation Standards, Disposal of Garbage, Carrying Capacity, Electricity Code and Tourist Behaviour. Reviews of these and other tourism regulations are also issued in the form of Circulars and Notices from time to time. These may be viewed from the website www.maldivestourism.gov.mv

Environmental approval

Environmental approval under the Environmental Protection and Preservation Act (4/93) by the Ministry of Environment and Construction

In April 1993, the Citizen's Majlis approved the Environmental Protection and Preservation Act which provides the Ministry of Planning and Environment, now the Ministry of Environment and Construction with wide statutory powers of environmental regulation and enforcement. This umbrella law (Refer Annex 3) covers issues such as environmental impact assessment, protected areas management and pollution prevention. An environment impact study has to be submitted to the Ministry of Environment and Construction before implementing any project that may have a significant impact on the environment.

Environmental Impact Assessment

Environmental Impact Assessment (EIA) is an effective tool that enables incorporation of environmental issues into decision-making and helps make projects more sustainable. EIA should be an integral part of the overall planning process of a project and it assists, but does not control, the planning and implementation process in ensuring that environmental considerations are incorporated from the start. The underlying philosophy of EIA is to enable projects to proceed within defined limits to minimise negative environmental impacts. Most financial institutions and donor agencies now require project proponents to undertake an EIA. Environmental assessments are intended to enhance overall quality of a project and improve its performance over the project lifecycle. EIA also helps to minimize economic costs of environmental degradation.

Environmental Impact Assessment involves three basic phases:

Assessment of potential impacts at the outset of a proposed development project
Mitigation of potential impacts during construction and operations
Monitoring of impacts during construction and operational phases to aid future planning and decision making

Environmental monitoring has been covered under a separate chapter in these guidelines due to its importance in the sustainable development and management of tourism in the country. The generic EIA process in the Maldives is illustrated in Figure 1.

The overall benefits of EIA in the context of tourism development are:

EIA helps to prove to all stakeholders that a potential tourism development project is based on the principles of sustainability.

It also gives the management an understanding of the site conditions, the surroundings environment, vulnerable and ecosystems, and their fragile nature and potential impacts of the project and what measures can be taken to reduce these impacts. (E.g., resort selected for development could have seasonal flooding which when identified in the EIA study can lead to better planning and design to benefit the developer by identifying flood prone areas and from potential recurring costs to protect structures on the island.

EIA should not be treated as just a project approval process but a continuing process for the sustainable management of the tourism development. EIA provides a framework for ongoing improvement by monitoring and mitigating or adopting appropriate responses and measures to critical issues. EIA facilitates consultations with other stakeholders and provides the management with an understanding of their views and commitments. EIA also helps to find ways to involve stakeholders in the long-term by communication, education and awareness creation.

Issues

Environmental impact assessment and environmental monitoring are often treated as a 'JUST TO PLEASE REGULATORS' process rather than a 'NEED TO HAVE' process. There is a need for everyone in the tourism sector to understand and believe that they have a responsibility to protect and preserve the environment and environmental resources on which tourism depends. The newly emerging voluntary dimension to environmental management described in Box 1 is an important step forward in this direction.

In the environmental management process in the Maldives, local inhabited islands and tourist resorts are treated as separate entities, although in reality they are linked by environmental process and decision making. In fact, local people have an important and central role to play in environmental management and their roles and responsibilities must be incorporated in the environmental management of the tourism sector as well.

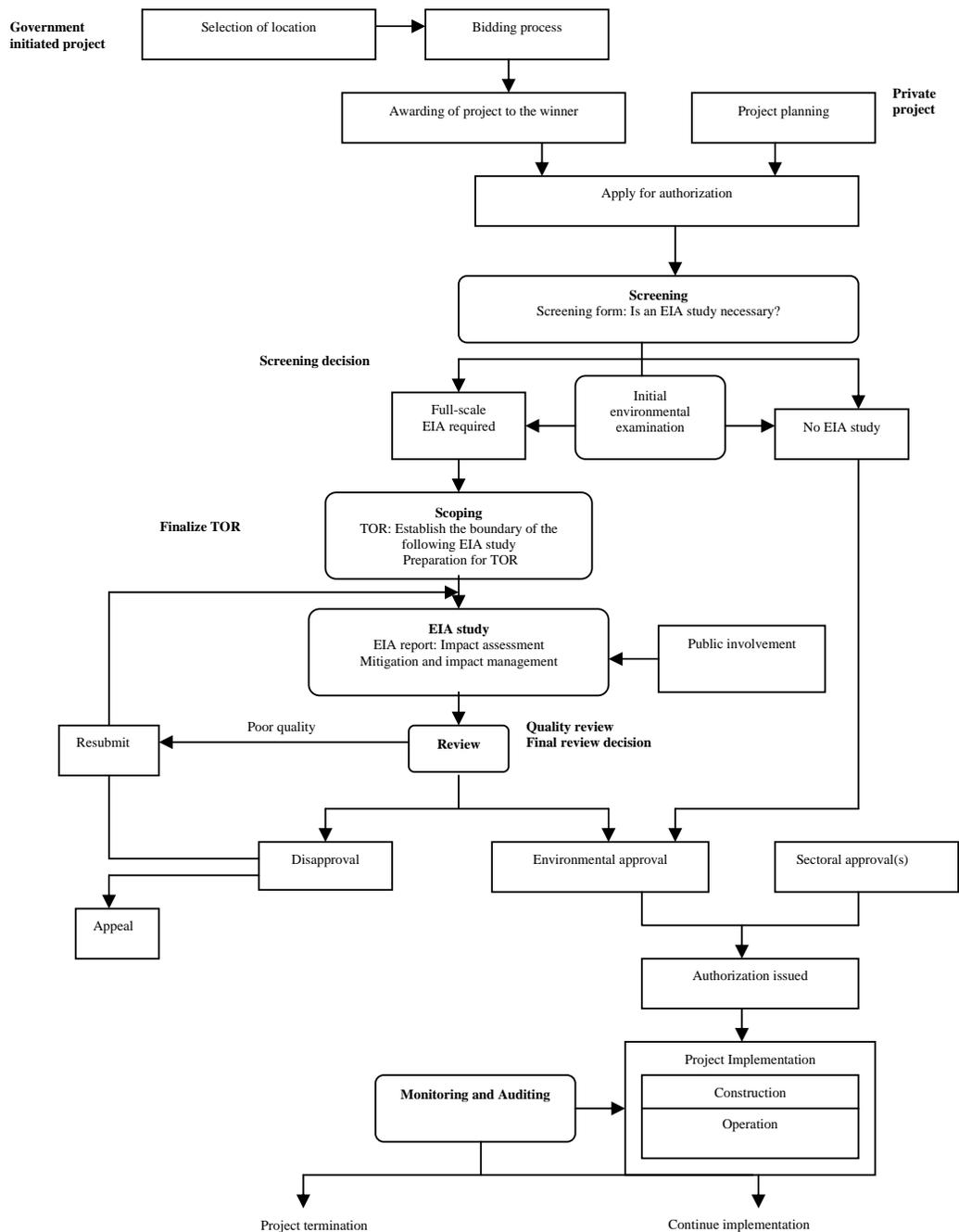


Figure 1 : Generic EIA process in the Maldives - Steps in an EIA process
 Courtesy: Ministry of Environment and Construction

Policy

P1. The Environmental Protection and Preservation Act of Maldives (4/93) provides the basic framework for the Environmental Impact Assessment (EIA) process in the Maldives. Under article 5 (a) of the Act, an impact assessment study shall be submitted to the Ministry of Environment and Construction (MEC) before implementing any activity that may have an impact on the environment. According to the EIA guidelines issued by MOEC all new resort developments require an EIA study before approval for development.

P2. The Tourism Law (2/99) requires that written permission be obtained from the Ministry of Tourism for the felling of coconut palms and trees on the island or land leased for development as a tourist resort, dredging of the lagoon of such an island, reclamation of land or any other activity deemed by the Ministry to be likely to cause a permanent change to the (natural) environment. The Ministry would consider permission to such activities in accordance with relevant laws and regulations on the protection of the environment of the Maldives.

P3. The EIA Decision Note issued by the Ministry of Environment and Construction regarding the development is construed as a binding document of the lease agreement for tourist facilities.

P4. Second National Environment Action Plan states that for sustainable tourism development, tourism sector shall “assess the environmental impacts of tourism and sustainability issues continually”.

Guidelines

G1. Environmental impact assessments (EIA) shall be undertaken for all new resort and tourism developments and redevelopment in the Maldives. The EIA shall be undertaken by qualified personnel in accordance with the guidelines adopted by the Ministry of Environment and Construction.

G2. An Initial Environmental Examination (IEE) report shall be prepared for all modifications and additional structures and services proposed under an existing resort project.

EIA process

G3. The EIA process in the Maldives is coordinated by the Environment Section of the Ministry of Environment and Construction (MOEC) in consultation with relevant government agencies. The first step in the environmental assessment process involves screening of the project to be classified as one that requires an Initial Environmental Examination (IEE) or one that requires a full Environmental Impact Assessment (EIA). Based on this decision, the scope of the EIA is developed. The consultants then undertake the EIA starting with baseline studies, impact prediction and finally reporting the findings with impact mitigation and monitoring plan. The EIA report is reviewed by the Ministry of Environment and Construction and NCPE following which an EIA Decision Note is given to the proponent who will have to implement the Decision Note accordingly. As a condition of approval, appropriate environmental monitoring may be required and the proponent will have to report monitoring data at required intervals to the Ministry of Tourism.

G4. The assessment of the initial environmental conditions of the proposed project site shall provide the baseline data against which subsequent changes to the natural environment may be referenced. The baseline data will also assist in predicting impacts and drawing up a mitigation and monitoring plan.

G5. EIA is a decision making tool and therefore an EIA shall consider alternatives (if necessary) to the project or propose alternative ways of carrying out the project or alternative project locations.

G6. The EIA report shall include mitigation measures. The mitigation measures proposed in an EIA report will help ensure effective environmental performance of the proposed project and help maintain a clean record of environmental compliance. Mitigation is an integral part of impact evaluation. It looks for better ways of doing things so that the negative impacts of the proposed development are eliminated or minimized and the benefits are enhanced.

G7. A monitoring programme shall be suggested in an EIA. The objective of the monitoring programme is to provide the necessary data and lessons learnt for future planning, to verify the predicted impacts of the proposed project and demonstrate satisfactory compliance with environmental legislation.

G8. The methodologies available to undertake EIA processes are numerous and are contained in textbooks and published articles. Internationally recognized methods would have to be used in environmental evaluation and assessment

Environmental Management System (EMS) or Plan (EMP)

G9. An Environmental Management System (EMS) or Environmental Management Plan (EMP) helps to manage the environmental impacts of proposed projects over the life span of a project. Environmental Management Plans facilitate ecologically sustainable development and integrated decision-making. EMPs help to integrate and implement corporate environmental policies, commitments and regulatory or statutory requirements. They promote self-regulation and integration of environmental issues into planning and operations.

G10. An Environmental Management Plan (EMP) incorporates protection of the environment, health and safety and long-term monitoring and ongoing improvement of environmental performance of the resort. An Environmental Management Plan effectively puts into perspective the environmental issues addressed in the Environmental Impact Assessment report and integrates appropriate management measures to mitigate impacts and make provisions for continuing improvement of environmental performance.

G11. Environmental management is a continuous process. Therefore, EMPs need to be regularly reviewed and updated to reflect past experiences and new knowledge and policy developments including new standards.

G12. EMPs may be prepared for specific areas or as an integrated plan. Some resorts develop Coastal Management Plans while some call it Resort Environment and Safety Management Action Plans (as is the case with Villa Hotels and Resorts).

G13. The EMS policy of a resort often includes two central elements: compliance with relevant environmental legislation and a commitment for continuous improvement (Plan-Do-Check-Act cycle). EMS certifications include European Union's Eco-Management and Audit Scheme (EMAS), ISO14001 or the Green Globe Certification.

Baseline Surveys

G14. It is recommended to undertake a detailed reef survey and a bathymetric survey before detailed design begins. A reef survey would determine the quality, diversity and richness of the reef in the island. The reef survey would assist tremendously in determining which areas of the reef need to be protected and where the reef entrance needs to be located to provide access to the island. The bathymetry survey would help in determining the ideal location of the jetties and where the harbour should be developed.

Ecological Survey of Vegetation

G15. An extensive vegetation survey is also recommended before any construction activities begin. The vegetation survey would identify the various types of trees, their predicted age, rarity of the plants and such other information that would be useful for conservation and protection of local flora, fauna, habitats and landscapes.

Socio Economic Survey

G16. A brief survey of existing economic use of the island as well as existing historical and archaeological findings is recommended in the EIA. This will help to identify heritage areas for conservation, promotion and education in the future.

G17. The Law on Archaeological and Historical Sites and Artefacts of the Maldives (Law No. 27/79) requires all historic places and cultural monuments of historical nature to be protected in the Maldives and to obtain permission for research. The Ministry of Tourism requires historical sites, monuments and artefacts to be reported and protected found in the islands leased for tourism purposes and in the tourist dive sites.

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BOX 1:

A New Voluntary Dimension to Environmental Management

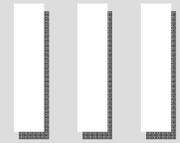
A survey conducted by the World Travel and Tourism Council (WTTC) indicates that in much of the private sector, the pursuit of sustainability measures in tourism is gradually becoming a matter of sound business practice. Little by little, recognition of the link between conservation measures on the one hand and profitability and competitiveness on the other is taking hold. Some private sector companies involved in travel and tourism have reported positive results from conservation measures, in the form of increased profitability, a rise in staff morale and an enhanced image among their clientele. In order to develop voluntary practice approaches, tourism industry associations have emphasized the use of voluntary environmental codes of conduct and guidelines.

An emerging feature among some multinational businesses, particularly in the hotel sector in the Maldives, is application of voluntary measures for conservation, primarily with a view to securing strategic advantages, but also as a means of precluding more costly retrofitting that may be required by future government regulations. However, to date, most efforts have focused on energy and water conservation, waste minimization and product purchase. New tourism developments should more often incorporate improved plant designs, and improved energy-efficient features that will enable greater natural lighting, natural cooling of accommodation facilities, and waste treatment and water recycling.

Already, some progress can be noted: hotel staffs are being trained to adopt energy- and water-saving, and waste-minimization measures during cleaning; and hotel guests are being encouraged to minimize water use by the reuse of towels and linens. Product purchase measures are being instituted, for example, through switching from phosphate-free cleaning products to those known to have less harmful properties. In the Asia-Pacific region, the development of integrated resorts is setting a new trend in resort development with the key objective of exercising greater control over environmental quality as a means of providing a guarantee of quality to guests. New complexes are built with all facilities on site, with particular emphasis on water conservation and recycling, energy supply and conservation, and waste management.

Construction phase

S E C T I O N



1. Reef Entrance
2. Constructions of Jetties & Harbours
3. Beach protection management
4. Construction Practices
5. Gardening and landscaping
6. Seagrass Removal
7. Import of fertilizers and pesticides
8. Import of soil

Reef entrance

Issues

Erosion and accretion

For development of a resort it is deemed vital to have easy access to the island. Blasting the house reef to create one or more channels to provide access to the island may seriously alter local lagoon dynamics and undermine the house reef's protective capacity thus changing the erosion and accretion pattern of the island.

Impacts on coral

Blasting destroys the habitat of many marine creatures and significantly affects the visual quality of reefs. Underwater explosions cause considerable physical disturbance to both the water column and the benthic habitats. The explosives with higher detonation speeds are more damaging and impacts are proportionately greater the closer to the detonation site. In the immediate vicinity of explosions, substratum material is pulverized and a crater is formed. At intermediate distances substratum is shattered or dislodged while at greater distances substrate or corals projecting above the bottom are fractured or broken. Up to 100 m away from explosions coral heads and rocks may be sheared and dislodged from the substrate. Wave action amplifies these negative impacts by carrying away the many dislodged or sheared corals.

Impacts on reef dependent fauna

Fish populations can suffer massive mortality or injury from the use of explosives. Fish and small marine reptiles or mammals with air cavities (bladders, lungs) are more prone to injury from the use of explosives. Organisms above or to the side of explosions are more likely to be injured or killed compared to organisms at greater depths than the explosions. Consequently, deeper water explosions tend to generate higher mortality and casualties. Open water blasting or the placement of explosives on the bottom surface causes the most damage to the coral reefs.

Reef friendly entrances

In most of the resorts in Maldives, reef entrances have been blasted. If an island requires a reef entrance the most common method of creating an entrance is by the use of explosives. However, with the increasing environmental awareness there is now a shift away from using explosives in the resorts. In the resorts developed recently under the New Tourism Master Plan, many developers opted for mechanical means for creating reef entrances rather than using blasting techniques.

Policies

P1. The Ministry of Tourism would not permit development of entrance channels, harbours and other destructive activities of the environment if the developer indicates otherwise in the bid proposal. Proposals that specify environment friendly solutions score high on the “Environmental Aspects” component.

P2. Prior written permission has to be obtained from the Ministry of Environment and Construction before any reef blasting activities.

P3. Prior written permission has to be obtained from the Ministry of Defence and National Security if explosives are required for reef entrance blasting.

Guidelines

G1. Use natural reef entrances as much as possible and avoid dredging and explosives to create reef entrances.

G2. The reef entrance should be located after initial assessment of site conditions and strategically designed to reduce maintenance dredging requirements.

G3. Inform concerned agencies, the exact location and dimensions of the required reef entrance and obtain a permit to carry out work on reef entrance.

G4. For entrance clearance, first reef materials shall be hand removed to reduce impact of sedimentation.

G5. Machinery may be used following permission form the Ministry if reef substrate becomes too hard for hand removal.

G6. If blasting is required for clearing the entrance, special permission shall be obtained from the concerned agencies.

G7. Minimum detonation force shall be applied while undertaking blasting.

Construction of jetties & harbours

Issues

Restricted circulation

The construction of solid jetties and piers restrict seawater circulation, and obstruct sand movement around the island. This normally causes accretion on the up-drift and erosion on the down drift side of the structure and affects the natural sand balance of the island severely. The increased erosion and disturbance to the fringing reef result in the need for costly beach replenishment and protection. Improperly designed jetties also reduce the aesthetic integrity of small coral islands, which is one of the most important features of the Maldivian tourist product. The physical changes from jetty construction result in changes to the biological life around the concrete structures. The diversity of fish is changed considerably and only certain species of fish are found near these structures.

Dredging

Dredging of the lagoons are commonly carried out to place pylon footings for jetties or piers of water bungalows. Dredging of harbours is also an activity proposed in most instances during the construction stage of a resort. Dredging of the inner lagoon, for harbour development alters the current movement through creation of rip currents and also causes greater sedimentation on the coral colonies during the process of dredging leading to coral death by suffocation. Dredging physically disturbs or removes the bottom substrate, deposits sediments on the substrate, suspends sediments in the water column, reduces light penetration, increases turbidity, changes circulation, reduces dissolved oxygen and increases nutrient levels in the water column. Dredging also results in the direct elimination of the benthic habitat in the dredged area and a reduction of associated demersal species. The magnitude of the physical impacts on the reef varies considerably depending on the method used for dredging.

Many coral reef communities are sensitive to both suspended and accumulating sediments and require long time periods for re-colonisation. Accumulating sediments pose more severe and longer lasting impacts to reefs. Though many corals live elevated above the bottom and are adapted to withstand episodal deposit of sediments, other associated epibiota and infaunal on the bottom or in the depressions can be buried or smothered from sediments. Small encrusting species or those living in crevices are more likely to succumb to accumulating sediments.

In an analysis of 26 species of coral, to determine the ability of them to remove sediment particles of different sizes, strong differences that correlated with polyp size and morphology were found. As a consequence of these differing abilities, sediment load can have a major effect on the distribution of coral species and thus, the composition of the reef community.

Suspended sediments generated during construction can have negligible to major impacts on coral reefs, depending on the species, techniques used and the degree of sedimentation. Species common in sandy environments, including back reefs and lagoon floors are naturally resistant to sediments compared to species adapted to wave exposure on ocean reef slopes where sediments tend to be less prevalent. Most significant impacts occur on reefs during open water disposal of slurry from pipeline dredging. Pipeline dredging generates a lot of sediment and can smother coral reefs unless controlled.

Aesthetic Impacts from Construction of Jetties, Piers and Harbours

Boat jetties and piers leading to water bungalows can obstruct natural view and looks of the seascape. It can get in the way of people walking along the beaches.

Harbour dredging and construction may lead to sedimentation that reduces visibility inside the lagoon for years. Enclosed harbours and dredged lagoons in some of the islands cause increased algal growth on the lagoon bottom and beach sands.

Murky lagoons are not recommended for swimming and can be hazardous.

Policies

P1.The Ministry of Tourism does not encourage hard engineering solutions such as heavy breakwater structures, groynes, solid jetties, seawalls and revetments on tourist resorts of the Maldives in order to ensure that the geographical attributes, which makes the islands of the Maldives a special place for tourists, are protected and preserved.

P2.Clause 15 of the Maldives Tourism Act (Law No. 2/99) requires that dredging, reclamation or any other activity determined by the Ministry of Tourism as may likely cause a permanent change to the (natural) environment of a resort, may only be implemented after obtaining written permission from that Ministry and in accordance with relevant regulations. Application for such activities shall include evidence that the proposed change is absolutely necessary for the provision of services and an Environmental Impact Assessment report shall be submitted and approved by the Ministry of Environment and Construction.

P3. By its circulars CIR/64/96 and CIR-ES/98/07, the Ministry of Tourism has reminded tourist resorts of the need to obtain necessary approvals before commencing any coastal development activities.

Guidelines

G1.A temporary service jetty may be constructed as one of the initial construction activities to bring in materials to the island safely.

G2.Jetties shall be developed on pillars and designed to have minimum obstruction to the flow of currents and sediment.

G3.Wherever possible, extend the jetties to the deep lagoon, such that near shore dredging will not be required.

G4.Where dredging is required, silt screens shall be used to retain the fine sediment and to reduce the impact on the marine environment.

G5.Use bund walls to reduce the impact of sedimentation from dredging activities.

G6.Dredging shall be undertaken only after ensuring minimal sedimentation. This can be achieved by undertaking dredging activities at low tide and during calm weather conditions. However, it should be noted that the best time from a resort operation perspective for such activities is during the off-peak season which coincides with the southwest monsoon, especially during June to September when the

winds are strong and prevailing climatic conditions do not favour dredging operations. Therefore, dredging has to be done on calmer days and as quickly as possible to reduce the impacts of siltation.

Beach protection and management

Beach is an important product of the Maldivian holiday makers. Hence, resort developers and operators place very high regard for the protection and management of the beach in the island. At the same time, recognising the importance of this aspect of the holiday makers and the image of the island destination, the Ministry of Tourism has developed regulations specific to protection and management of the beach. Some of these regulations are to encourage maintaining natural shoreline defences of the coral islands, such as protection of the house reefs, avoidance of deepening of the natural shallow lagoons and protection of the natural buffer vegetation 'Heylhi' of the island. Some of the proposed hard engineering methods of protection and management of beaches by developers include beach replenishment with sand filling or pumping, land reclamation, and constructing protection barriers such as offshore wave breakers, onshore retaining walls and groynes.

Issues

Coastal Erosion

Beach erosion is an important issue facing most of the islands during development and operation of the resort. However, beach erosion and accretion in the islands are a natural phenomenon and generally not an issue in larger islands and where infrastructure is built with a maximum setback from the shoreline. Many islands are in a state of severe erosion. The main reasons for severe erosion are now understood to be due to human intervention in the coastal zone and due to extreme weather conditions associated with climate change. Deepening of harbours, modifications of the shoreline and clearance of large reef entrances can alter current movements that may not allow retaining an existing natural beach. Building jetties and piers can also cause disruption to current and sediment movements along the shore.

Shoreline or Beach Modification

Sand filling and land reclamation has been undertaken in some of the resorts in the past. This is undertaken during the construction or redevelopment phase of the resort, and is generally associated with harbour and channel deepening projects. It is generally viewed that reclamation could solve land shortages on the islands and is usually the case in local inhabited islands. However, there is a direct and indirect high cost to reclamation in tourist resort islands where natural aesthetics and beauty are vital.

Reclamation leads to the loss of important coral reef habitats and the loss of important natural sea defences of the islands. Reclamation permanently converts the habitat to dry land and can destroy many hectares of valuable coral reef habitat. Large reclamation projects also block circulation and long shore transport affecting the nearby habitats and islands. The shape and composition at shoreline of newly reclaimed land can also affect reefs. Fill material without protection usually erodes after few seasonal changes and suspend sediments onto coral and other reef life suffocating and reducing coral growth. This may leave only coral rubble and coarse material on the beach.

Further, if buildings and structures are constructed on a reclaimed land then additional sand and or hard engineering solutions will be required ultimately to protect it. This may not favour the guests or the

resort's image intended to create. Protection structures such as solid vertical shoreline (retaining) walls around the reclaimed land are not only unsightly but it also reflects rather than dissipate wave energy. Consequently, sand may be removed offshore by reflected waves and currents into the nearby coral reefs.

The bottom-line is, major shoreline modifications, especially land reclamation has been a costly affair and with no end to it for those resorts that has so far undertaken the challenge of maintaining an artificial beach in a natural setting to the satisfaction of their guests.

Policies

P1. Following advice from the National Commission for the Protection of the Environment (NCPE), the Ministry of Tourism has decided not to grant approvals for land reclamation in an island leased for tourist resort development.

P2. Any land filling, pumping of sand or beach replenishment activities intended deliberately to increase the land area of a resort island is not approved.

P3. The Ministry of Tourism will only grant approval for beach replenishment or restoration where beach is lost due to severe beach erosion. Prior permission shall be obtained for any such beach replenishment or restoration activities (Refer Annex 4).

P4. The Ministry of Tourism regulations require beaches and other public areas of resort islands to be swept clean daily

Guidelines

G1. Develop resort development and buildings layout plans considering erosion factor and allowing sufficient set-back distance from the shoreline.

G2. Retain or promote growth of shoreline buffer vegetation (Heylhi) to curb seasonal erosion. Their roots are strong and salt tolerant and will hold back sand at times of bad weather.

G3. Do not remove the rotating sand from the island system (lagoons and beach) or undertake activities that will negatively affect it (such as constructing a harbour) as this affects the "sand budget" of the island available for movement seasonally.

G4. Do not remove natural beach rock on the shores even if it may not have appeal or coral from the reef to build an artificial beach protection wall. In doing so the natural protection systems of the coral islands are removed.

G4. Minimise deepening of areas in the lagoon. In doing so, sand from the lagoon and beach will get collected in the pit and cause erosion of the beach.

G5. Large reef entrance channel allow loss of sand from the lagoon into the deep sea and is irretrievable. Hence, ensure size of reef entrances is minimal and they are located optimally away from the island.

G6. Undertake a study with assistance from professionals and obtain permission from the Ministry to undertake measures to control erosion and coastal modification activities (e.g. constructing breakers, beach replenishment, creating reef entrance channels, harbour deepening, etc.).

G7. Identify measures for rapid response to seasonal beach erosion beforehand, such as temporary sand filled bags around impact areas.

G8. Never consider constructing permanent structures over replenished beaches as replenished beaches erode over time. All structures built close to the shore should be over piles to allow the transition during opposing seasons. In some islands over-water bungalows tend to be on dry land in certain seasons.

Construction practices

Issues

Environmental impacts of construction are usually felt on a short term basis. Construction activities can sometimes generate immediate adverse implications on the marine environment and the potential exists for impacts to be felt on a large-scale and consequences may continue to long term duration.

Vegetation Clearance

Clearance of vegetation for movement of heavy vehicles and machinery and the clearance of site for the construction of buildings is one of the main impacts of development on uninhabited islands. Temporary storage areas are also cleared for keeping construction materials and goods as building spaces are required to be kept ready to commence work. The undergrowth is also heavily impacted as it is cleared during the construction stage for preparation of landscaping works. This vegetation clearance would scare away habiting fauna mainly birds in small islands and leave only some of the larger trees and any areas proposed for conservation and protection by the developer. Clearance of peripheral vegetation in the past for improving guest view of the seascape is also now identified to an environmentally unfriendly practice as this practice has sometimes lead to loss of beach to erosion.

In recent development proposals considerations have been given to leave undisturbed areas as part of the product and to retain as much of the peripheral vegetation of the island intact. However, still little could be done to reduce disturbance to any fauna on the island.

Extraction of groundwater

Groundwater is sometimes extracted during the construction phase of tourist facilities for various uses and needs. Use of groundwater for construction can reduce the freshwater available for the vegetation of the island, as well as affect the quality of the concrete mix thereby reducing the age of the structures. Newer buildings use desalinated water for all construction works for maintaining quality and for conserving groundwater.

Dewatering for the laying of foundations of buildings can cause depletion of fresh water from the ground water table, salination and foul smell in the water, especially if the water is pumped into the sea. Hence it is essential that appropriate measures are taken to allow percolation of extracted water back into the water table.

Construction waste

Improper disposal of domestic waste, construction waste and hazardous waste such as waste oil and paints can have serious implications on the environment. Significant impacts associated with waste disposal include reduced aesthetic beauty of the surrounding beaches and the reef environment, marine pollution, water quality deterioration, increased sedimentation, increased turbidity as well as changes in the reef community structure. Construction material and waste if disposed into the marine environment will become a tremendous task to cleanup and will take long after operation of the resort for the reef to recover.

Sewage disposal

A large workforce is often temporarily accommodated on the island during the construction stage, and if raw sewage runs into the marine environment, lagoon environment gets contaminated with increases in faecal coliform bacteria, eutrophication and water pollution problems. Disposal of sewage can also lead to increase in the nutrient level of the water and result in growth of seagrass patches. Seagrass patches affect the visual quality of the lagoon environment and is often a difficult problem to address.

Extraction of Reef Resources

Recreational fishing on the house reef by workforce may lead to reduced marine biodiversity. Sand mining from the beaches and coral mining from the house reef for minor construction activities are also known to occur during construction stage. Such activities may lead to reduced abundance and diversity of reef fish, coral communities and erosion of the beach.

Policy

P1.All infrastructure development areas have to be clearly demarcated and these areas will be inspected by the planning officials of the Ministry of Tourism before commencement of construction.

P2.The number of mature trees to be felled and the vegetation that needs clearing will have to be noted and prior permission is required for any vegetation clearance.

P3.Use of groundwater is not permitted for construction purpose. Instead installation of a desalination plant or other methods of obtaining water for construction is required by MOT.

P4.Use of Coral stones and sand from the island and lagoon are not permitted for construction by MOT. Instead other materials such as gravel and river sand use is encouraged. These materials are exempted from customs import duty during the initial resort development period.

P5.Fishing and extraction of materials are not permitted within the lagoons and reefs of islands leased for tourism development by MOT.

Guidelines

Awarding of contracts and construction guidelines

G1.Construction practices should ensure minimal site disruption.

G2.Proponents should develop on-site guidelines or controls for contractors specifying appropriate construction practices.

G3.Proponents should provide briefing or training sessions for all contractors and their employees, specifying the desired practices and consequences of non-compliance.

G4. Contractors should be asked to provide a performance bond or deposit which can be used to repair any environmental damage inconsistent with the Environmental Management Plan.

Mitigating impacts from workforce and initial activities

G5. Minimise vegetation clearance by using existing pathways and employing appropriate and or essential vehicles only on the island.

G6. Desalination plants should be installed prior to the construction works to ensure that the groundwater will not be affected from the construction activities. Temporary generator sets can be utilised for producing the necessary power for desalination.

G7. Use soak pits or catchments for pumped water percolation back into the ground were dewatering is required for laying the foundations.

G8. Technically competent personnel should be employed to supervise the activities of the workforce throughout the construction phase.

G9. Sanitary toilet systems with septic tanks should be laid out prior to initiation of all mass construction activities.

G10. Construction waste or domestic waste during construction process should not be dumped into the marine environment.

G11. All the waste from construction shall be separated categorically and stored for future waste management practices.

G12. Domestic waste such as food items and leaf litter should be composted in designated areas to enhance future gardening and landscaping.

G13. Recreational fishing from the reef areas should be banned for all construction workers and informed to all contract workers as Ministry of Tourism does not permit fishing from the resort lagoons or house reef.

Gardening and landscaping

Issues

The image of a palm fringed sandy beach and lush tropical vegetation is integral to the perception of, and satisfaction, with Maldives as a tourist destination. In the resort construction process, trees and shrubs are cut down and coastal vegetation is removed. Exotic ornamental and fast growing species are imported to replace the vegetation removed. The introduction of exotic species not only reduces the ability of the island to recover to its natural state but also the exotic species may outcompete local ones directly or through introduction of pests. Soil and fertiliser have largely been imported to improve the growth prospects of exotic imports. Import of soil may also introduce soil associated pests and diseases for which local plants have limited resistance.

Intensive landscaping during the construction of resorts poses major environmental impacts due to direct removal of local vegetation, which results in disruption of local environmental conditions and deterioration of its ecological processes. Gardening and landscaping throughout the operation of resorts to create an aesthetically appealing environment also generates long-term environmental consequences such as gradual replacement of local vegetation types due to increased utilization of imported ornamental plants. This creates artificial or foreign environments in the islands.

Permanent loss of local vegetation and habitats

Removal of local vegetation, mature trees and coastal vegetation for construction of resort infrastructure and service facilities result in permanent loss of native vegetation from the islands. Due to the small size of the islands and fragility of the island ecosystems, loss of local vegetation types alters the natural environmental condition of the islands and decreases the ecological integrity and susceptibility of the island. Together with the removal of plants, habitats for a number of island fauna such as birds are also removed, which threatens the very sustenance and survival of such fauna as an integral part of the island ecosystem.

Acceleration of coastal erosion

Removal of coastal vegetation for construction of coastal infrastructure such as jetties, rooms and other facilities increases the potential for coastal erosion since coastal vegetation are known to hold a large amount of sand within the coastal environment. Removing coastal vegetation loosens the sediments, which gets easily washed away from wave action. Since coast-associated facilities are very popular, a large area from the coastal environment is utilized for tourist facilities and services. This also creates additional pressure on the coastal environment due to increased services and facilities. A large amount of coastal vegetation is indiscriminately removed to make way for such facilities and services where coastal erosion and loss of shoreline becomes a very prominent feature.

Introduction of pests

Throughout the operation of the resort, landscaping and gardening by use of imported exotic plants are largely undertaken to create an aesthetically appealing environment. Vegetation removed during the construction of resort amenities are also replaced with introduced plants to increase the physical condition of the island. However, use of such plants has a number of implications. The most significant environmental threats are introduction of pests from introduced plants, which threatens the survival of native plants since these plants are not adapted to withstand such pests and replacement of local plants due to introduced fast growing ornamental plants. Other impacts include increased competition for space between local and introduced plants where local plants are often disadvantaged.

Impacts from imported soils and fertilizers

Soils and fertilizers are largely imported to supplement the growth of imported ornamental plants and are widely used during resort gardening and landscaping. Since local island vegetations are not used to other soil types and intensive use of fertilizers, their growth and sustenance is often affected. Local plants are also affected from imported soil associated pests and diseases. Details of environmental impacts from imported soils and fertilizers will be discussed in the relevant sections.

Policies

During the construction of resort infrastructure, services and amenities, protection of the island from intensive landscaping is dealt with by certain aspects of the Carrying Capacity Measure currently being regulated by the Tourism Ministry under the Tourism Law. Although there is no regulatory measure for landscaping and gardening undertaken during the resort operation stages, the import of exotic ornamental plants and fertilizers are currently regulated by the Ministry of Fisheries, Agriculture and Marine Resources through quarantine for plants and issuing of permits for the types and amounts of fertilizers.

Policies relating to protection of natural beauty of the islands from intensive landscaping during construction of resorts include:

- P1. Control and mandatory replacement of certain trees and plants that are cut down during site clearance for construction.
- P2. Avoidance of rare and large trees during the construction of buildings.
- P3. All the buildings have to be located 5 meters away from the shoreline to ensure protection of adequate coastal vegetation.
- P4. Allocate at least 2 meters for vegetation in between the buildings.

Though there are no regulatory measures for landscaping and gardening undertaken during the resort operation, the following measures with respect to import of foreign plants, soils and fertilizers are implemented by the Ministry of Fisheries, Agriculture and Marine Resources:

- P5. Quarantine requirement for import of exotic ornamental and other types of plants and vegetation.

- P6. Type and amount of fertilizers imported for landscaping and gardening purposes has to be approved by the Ministry of Fisheries, Agriculture and Marine Resources.

Guidelines

- G1. During the initial planning and designing of the resort, undertake environmental assessments to understand and locate local vegetation types that are found on the island.
- G2. Based on these assessments, carefully plan and design the resort infrastructure, buildings, service facilities and other amenities in areas where local vegetation removal will be minimal.
- G3. Remove trees and vegetation only from the construction sites and in areas where absolutely necessary.
- G4. As much as possible, avoid removal of mature and rare vegetation from the island and if such vegetation is required to be removed, replant them in a different location.
- G5. Locate all the buildings 5 meters away from the vegetation line in order to protect the coastal vegetation.
- G6. Allocate at least 2 meters for vegetation in between the buildings.
- G7. Protect through appropriate measures important vegetation such as rare, indigenous and mature trees in the construction sites.
- G8. Once the construction activities have been completed, plant local vegetation types in required areas including around the buildings and cleared areas.
- G9. During the operation of the resort, use ornamental plants that are already adapted to the island conditions.
- G10. Use local flowering plants as much as possible and reduce the import of foreign plants for landscaping and gardening purposes.
- G11. Avoid mixture of local and foreign plants.
- G12. Reduce import of foreign soils for gardening and utilize soils excavated for construction of buildings.
- G13. Use organic fertilizers and natural pest control methods to reduce the amount of chemical fertilizers and pesticides.
- G14. Set up nurseries for cultivation of plants on the island for use during landscaping and gardening activities.
- G15. Compost plant and grass clippings and leaf litter to enrich the local soil condition.

- G16. Chip woody garden waste and use it as mulching material.
- G17. Use drip irrigation methods to water plants, which uses less water than conventional irrigation methods.
- G18. Water plants during early hours in the morning and in the evening to minimise evapotranspiration.
- G19. Undertake resort greenery programmes by planting local fruits and vegetables
- G20. Use information boards around the island to create awareness on local flora among tourists and staff.
- G21. Seek expert advice with regards to proper landscaping and gardening activities during the resort operation.

Seagrass removal

Issues

Although seagrass play a vital role as an important habitat, shelter, feeding ground and breeding ground, and are regarded as highly productive and economically valuable in other parts of the world, it has shown some disadvantages for the tourism industry in the Maldives. The marketing products of Maldivian tourism are clean white sandy beaches and lagoons and diverse coral reefs that are excellent for snorkelling and diving, and the presence of seagrass can affect the quality of the product provided. Seagrass coverage in the lagoon of a tourist resort could limit the snorkelling area, mooring space, and bring seagrass debris onto the beaches which can be aesthetically unattractive to tourists. A number of issues are associated with seagrass removal (Refer Box 2).

Direct removal of habitat

Seagrass habitats provide shelter and food for juvenile and post larvae marine life, breeding grounds and prey for a number of marine organisms, thus, removal of seagrasses can eliminate the above mentioned functions from that particular environment.

Alteration of the topography and hydrodynamics

Major physical impacts associated with direct removal of seagrass habitats are the alteration of substrate topography and hydrodynamic regime. This in turn will change the sediment transportation pattern within the house reef and around the island since the depths and current movements within the seagrass removed area will be altered.

Sedimentation and consequential effects

Often seagrass habitats are removed by means of dredging. Apart from permanent loss of seagrass habitats, and changes in the physical environmental condition of the area, dredging can cause sedimentation that can have a number of implications on the environment. The main implications of sedimentation on the marine environment include smothering of corals, changes in the community structure, decrease in light intensity due to suspended sediment particles in the water column, and deteriorated water quality due to increased turbidity and siltation.

Policies

Currently, there are no laws or regulations that deal with seagrass removal. However, Tourism Ministry enforces preparation of Environmental Impact Assessments (EIAs) for all activities related to removal of seagrasses

Guidelines

- G1. Since early prevention is better than cure, undertaking preventive measures as early as possible will reduce large-scale environmental implications.
- G2. Proper timing of seagrass removal activities such as during at low tides and on calm days reduces long distance transport of sediments.
- G3. Use of physical barriers such as silt screens, settling ponds can reduce impacts of sedimentation and can confine sediments to a certain area.
- G4. Consider alternative and environmentally-friendly methods for seagrass removal.
- G5. The growth of seagrasses are enhanced by increased input of nutrients into the marine environment, therefore, it is important to regularly monitor possible sources of nutrients such as sewage outfall.
- G6. Undertake regular seawater quality assessments, particularly at outfalls to monitor changes in the water quality.

BOX 2:

An alternative seagrass removal method



Seagrass is a flowering plant, complete with blade-like leaves, a rhizome (an underground usually horizontally oriented stem) and a root system. They are found in marine or estuarine waters. In the Maldives they are usually found in calm and shallow lagoon areas close to the islands. Most seagrass species are located in soft sandy bottoms. Seagrass habitats are important environments that provide food, shelter and nursery for a number of marine organisms.

Presence of seagrass in the Maldives is normally observed around inhabited islands whereas uninhabited islands usually have crystal clear lagoons without any seagrass. The growth of seagrass is encouraged by input of nutrients into the lagoon environment as a result of erosion of vegetation from the island, disposal of organic wastes such as raw sewage and biodegradable garbage. Such wastes could act as fertilizers in the lagoon waters and seagrass being a plant, its growth is often facilitated.

The presence of seagrass in resort islands are aesthetically unappealing since an important selling product of the Maldivian tourism is unpolluted, clean and turquoise marine environment. Therefore, it is very important from the tourist perspective that the growth of seagrasses is eliminated from the shallow lagoons used for swimming and recreation.

An environment friendly method of eliminating seagrass growth is covering the seagrass bed by a plastic cover and keeping covered for 3-5 months to prevent from sun light penetration. As no light is passed through the plastic cover, the photosynthetic process of the plant is terminated and the plant dies off eventually. Once the plants are died, they could be removed manually. This method has been used to kill-off the extensive seagrass beds found in Thulhaadhoo Island in Baa Atoll. The main advantage of this method is that the impacts on the marine environment from sedimentation will be very minimal, while the main disadvantage of this is that the cover has to be left for a long time for effective results.

Import of fertilizers and pesticides

Issues

Inappropriate methods of application and the amount of use of fertilizers, pesticides and other chemicals can deteriorate the environmental quality and harm human health. Large quantities of fertilizers are applied during resort landscaping and gardening practices without realizing the damaging effects of them. Similarly, pesticides, herbicides and other chemicals used to control pests have the potential to implicate other life forms.

Groundwater contamination and land degradation

Indiscriminate use of fertilizers during gardening and landscaping can contaminate the groundwater found on the island, which has the potential to degrade the soil and land. Soil and land degradation deteriorates the vegetation and habitats found on the island.

Seepage

Fertilizers, pesticides and other chemicals are often rich in nutrients, which when applied seepages into the marine environment through soil. The enrichment of nutrients in the marine environment encourages growth of algae and seagrass in the lagoon, which reduces the oxygen content and that can affect marine life.

Impacts on non-target fauna

When pesticides, herbicides and other chemicals are used to control outbreaks of pests on the island, as a result of application of such chemicals, they are passed on to various non-target species such as birds and lizards through the food chain. Since birds and lizards feed on a number of insects found on the island, they are the first ones to be affected. Such chemicals are potentially harmful to their life.

Policies

- P1. There is no law or regulation on the import of and use of fertilizers, pesticides and chemicals to the country. Prior written consent is required from the Ministry of Fisheries, Agriculture and Marine Resources for import of chemicals to the country. The following information has to be submitted to the Ministry for approval of the chemical to be imported to the country:

Name of the chemical (in English), common name and principal trade name of the chemical, use (as insecticide/ fungicide/ rodenticide), country where it is being imported, amount that needs to be imported, reason for the import and if the chemical is retailed, name of the retailer.

- P2. Import of Class A chemicals into the country is banned (Box 3).

Guidelines

- G1. All the applications of pesticides, insecticides, herbicides and other chemicals on the island have to be done by professionals in order to reduce problems associated with them.
- G2. Identify which pesticides, herbicides and chemicals are being used and the specific problems intended to resolve.
- G3. Use a selective chemical that has the least effect on non-target species.
- G4. Use pesticides, insecticides, herbicides and other chemicals only on the area affected.
- G5. While using these chemicals, take care to avoid the contamination of food and drinking water.
- G6. Time the treatments to coincide with the presence of the pests.
- G7. Use the most suitable chemical, in minimum necessary amounts to achieve the desired results.
- G8. Store chemicals in properly labelled containers and away from food.
- G9. Apply chemical fertilizers only when necessary.
- G10. As much as possible try and replace chemical fertilizers with organic fertilizers to reduce problems of seepage of chemicals into the marine environment.
- G11. Undertake staff training on health and safety measures of pesticide use.
- G12. Inform guests when chemical applications such as spraying are in progress to keep them away from the area in which it is taking place.

BOX: 3

Import banned class A chemicals

Common Name	Trade Name
Insecticides/Acaricides	
Aldrin	Aldrex, Aldrite
Chlordane	Chlorotox, Octachlor, Pentichlor
Endvin	Hexadrin
Dieldrin	Dieldrex, Dieldrite, Octalox
DDT (dichloro diphenyl trichloroethane)	Neocide, Pentachlorin, Chlorophenothate
Heptachlore	Dromex, Heptamol, Heptox
Mirex	
HCH (<99% gamma isomer)	Hexachlorohexane
Hexachlorobenzene	
Campechlor	Toxaphene, Polychloro camphene
Nitrofew	
1,2 Dibromoethane	
1,2 Dichloroethane	
Monocrotophos	
Bromochloromethane (CH ₂ BrCl)	
Methylbromide (CH ₂ Br)	
Fungicides	
Mercury Compound (Hg)	
Selenium Compound (Si)	
Rodenticides	
Talium Compounds	
Herbicides	
2,4,5T	Brochfox, Decamine Veon

Import of soil

Issues

Foreign soils are often used in the resorts during construction of resort amenities and for landscaping and gardening practices during resort operations. Proper care has to be taken while using imported soils as they may contain alien soil organisms and plant materials not found on the island, which may lead to introduction of alien organisms and plants to the island. Together with such organisms, new diseases may also be introduced to the island.

Policies

- P1. A large volume of foreign soil is imported in the form of river sand and used for resort constructions. The import of foreign soils is currently not regulated under any law or regulation. Due to the limited availability of construction materials in the country, the government has reduced tariff on imported building materials including soils.

Guidelines

- G1. The condition of imported soil should be properly checked prior to use during resort landscaping and gardening to avoid problems associated with foreign soils such as introduction of new organisms to the island.
- G2. Minimize use of imported soil for landscaping and gardening purposes.
- G3. Since local vegetation will be more adapted to local soil conditions, use local soils that are excavated from the island during construction of resort amenities for gardening and landscaping.
- G4. Enhance local soil conditions by use of organic fertilizers and compost.

Operational phase

S E C T I O N

IV

1. Water production and conservation
2. Sewage treatment and disposal
3. Solid waste disposal
4. Health and safety
5. Conserving species and habitats
6. Introduced species
7. Coral reef protection
8. Vector and pest control
9. Diving and snorkelling
10. Tourist excursion & boating
11. Game fishing
12. Environmental awareness and education
13. International certification
14. Environmental marketing
15. Environmental monitoring

Water production and conservation

In the islands of the Maldives, the groundwater aquifers exist as water lenses floating on saltwater. Groundwater is a precious source of drinking water and can easily become polluted or contaminated since the groundwater table lies less than a meter below the ground surface. If contaminated groundwater may pose serious health hazards. Groundwater quality deterioration could be caused through increasing abstraction of groundwater which depletes the already thin freshwater lens; salt water intrusion into the freshwater aquifer; and contamination of groundwater from sewage discharges. In addition to sewage, groundwater can also be contaminated through the use of contaminated soils; the excessive use of fertilisers; the use of pesticides; and inappropriate solid and liquid waste disposal. Groundwater pollution is generally difficult and expensive to clean up.

Rainwater is an important source of water in the islands. Rainwater becomes an suitable source of water if it is collected and stored in an appropriate way. Although the amount of rainfall is high the intensity of rainfall is low and it is difficult to provide rainwater collection facilities to cater for the water needs of the three month dry period during the northeast monsoon due to lack of space for water collection and storage in the islands. Hence, alternative sources of water supply, especially drinking water has to be sought and desalination is deemed to be the best possible alternative solution.

Issues

Health issues

Availability and safety are the two main health issues related to water. Due to the hot tropical climate and high humidity in the Maldives, the human body will require a greater level of fluid intake. The body can easily be dehydrated in the humid tropical environment. Hence, it is important to have adequate supply of drinking water available to tourists and staff in the resort islands at all times.

Microbiological contamination (bacteria, viruses and other micro-organisms such as legionella) is the main health concern. Presence of coliform bacteria in the water indicates biological contamination of the water and indicates the presence of harmful pathogens. Coliform by itself is present in the environment; however, its presence in water used for bathing or consumption poses a risk to human health. Therefore, water sources, especially sources of water used for direct human consumption such as drinking and cooking or washing food must be free from coliforms. In addition, viruses and other disease causing micro-organisms may also be present in water.

The presence of excessive levels of coliforms in swimming pools and perhaps in the lagoon also may pose risks to health. Therefore, it is important to disinfect swimming pools regularly and keep track of coliform levels and free chlorine to ensure the water is safe. Excessive chlorination can also cause eye/nose irritation and stomach discomfort.

In the resort islands, desalinated water has been used since the late 1970's and every resort now has its own desalination system. Bottled water is generally used for drinking while desalinated water is used for cooking and bathing. Rainwater is collected in some resorts for staff to drink though this resource is

not used to its optimum level, and groundwater is mostly used for irrigation. On a few resorts treated wastewater is used for irrigation.

Although the intake water in resort islands is free from pollutants, it may be useful to know that if contaminated water is used as raw water for desalination, the ammonia and methane in the water could react with chlorine to form tri-chloromethanes or similar by-products of disinfection which can cause liver, kidney or central nervous system problems and increased risk of cancer (USEPA, 2002).

Heavy metals and organic compounds in water have not been an issue in Maldivian resorts so far. However, it is important to undertake a full chemical analysis of the water at least once a year to maintain that water is free from chemical contamination.

Ecological issues

The Maldivian islands are low lying coral based islands where groundwater supplies are limited and protected only by a layer of thin permeable soil. The fresh water requirements of a modern resort could not be met by the groundwater aquifer. Since the water lens plays an important role in the maintenance of the tropical vegetation of the island the groundwater needs to be sustainably managed

Policy

- P1. The Ministry of Tourism does not permit use of groundwater for construction works and for other activities that would deplete or pollute the freshwater aquifer. The use of groundwater is allowed for other sustainable uses where the quality and quantity of freshwater aquifer is not affected.
- P2. The Ministry of Tourism requires that desalination plants be installed before the construction works begin on the island.
- P3. The Ministry does not accept sewage systems that will flush out groundwater to the sea.
- P4. Tourism Regulations emphasize the need to supply SAFE drinking water. Resort operators are required to provide adequate, wholesome and potable water 24 hours a day. Fresh drinking water shall be placed, free of charge, in guest rooms and refreshed daily while guests have the opportunity to buy bottled water.
- P5. The Desalination Regulation introduced by the Maldives Water and Sanitation Authority requires all desalination plants to be registered with that Authority. Resorts have been informed of the requirement by the Ministry of Tourism circular no. CIR-TS/2003/04 (Refer Annex 5).
- P6. All drinking water and water used for food preparation or any other direct consumption in the resort islands are expected to meet the drinking water quality guidelines recommended by the Maldives Water and Sanitation Authority (MWSA) (Refer Annex 6).

Guidelines

Groundwater extraction

- G1. Where groundwater is planned for any use in the resort prior permission should be sought from the Ministry of Tourism.
- G2. Water reuse and recycling needs to be implemented in resorts where cost effective to meet the demand for freshwater.
- G3. Improve the recharge rate of the water lenses of the islands. Allocation of football grounds and parks, with appropriate land use change, could increase the groundwater recharging capacity of the islands by acting as catchments or recharge areas.
- G4. The groundwater lens in most of the resorts is fresh. In order to preserve the freshwater lens, appropriate technologies should be used to drain rainwater.

Rainwater collection and storage

- G5. Since rainwater is a potentially free source of freshwater, it is vital to ensure that rainwater is harvested to its maximum. Increasing the rainwater harvesting roof catchments and the water storage capacity would ensure a reliable supply of water even for the dry period of the northeast monsoon.
- G6. If rainwater is to be collected and used, appropriate measures to reduce contamination and regular disinfection mechanism must be in place.

Salt water desalination

- G7. For desalination, seawater should be surged from an intake point at sufficient depth and pumped into a settling tank. After passing through a multi-media filter it can be processed through the desalination plant. The water produced shall be pumped into the storage tanks. The concentrated brine may be discharged into the sea preferably after dilution and not directly onto the reef.
- G8. Ensure that brine does not seep to the groundwater aquifer from the collection tanks or through leakages. Regular monitoring should be undertaken to check the salinity of the groundwater.
- G9. The desalination plant shall be operated in accordance with manufacturer instructions and according to the conditions set out in the Maldives Desalination Regulations issued by the Maldives Water and Sanitation Authority (Refer Annex 7).
- G10. Saltwater intake for the desalination plant and discharge points for the brine shall be fixed after investigating the local conditions.

G11. Cleaning and disinfecting the desalination plant shall be done according to the suppliers recommendations for service and maintenance.

G12. Biodegradable cleaning and disinfecting agents shall be used for service and maintenance of the desalination system.

Distribution network

G13. Avoid wastage of water supplies by regularly checking flow rates and testing for leaks in the distribution pipes in the potable water supply circuit, the toilet flushing circuit and any other water supply networks. Installation of water meters in the distribution network could measure the water consumption pattern of different departments in order to target areas for water conservation.

Water quality

G14. Monitor water quality regularly to ensure water supplies, especially potable water meets World Health Organisation (WHO) water quality standards and the requirements of the desalination plant operation license issued by the Maldives Water and Sanitation Authority.

G15. For providing safe water to guests and staff, it is recommended to collect representative samples of potable water supplied to guest and staff facilities, test the water, review results and take corrective actions promptly as and when necessary.

G16. The quality of potable water and possibly other sources of water used by tourists must be made known by appropriate labelling of bottles.

Water conservation

G17. Reducing water consumption will significantly lessen operational costs and to take advantage of the saving the management can invest in water saving devices.

G18. All kitchen and bathroom taps as well as showers can be equipped with percolators (spray taps) and flow restrictors, which will reduce the amount of water used up to 50 percent compared to conventional taps.

G19. Low flush and/or dual flush toilets can reduce the amount of water consumed and the volume of wastewater significantly thereby reducing the burden on local aquifer or other water sources used.

G20. Reuse of grey water or treated/recycled wastewater for toilet flushing will also reduce water consumption, however, the re-used effluent must be treated and should not have foul smell.

G21. Use of treated/recycled wastewater effluent provides a useful and high-nutrient fertiliser and source of water for gardening and irrigation.

G22. The option to request bed linen and towel change for the guest may be introduced in the house keeping department to save water and reduce laundry detergent use.

G23. Special staff training sessions on water conservation shall be run to educate them on water conservation measures, with special attention to laundry, restaurant and kitchen staff. Conservation of water can be integrated into environmental awareness and education programs.

G24. Guests shall be given information on water conservation through leaflets and cards placed in guestrooms.

Sewage treatment and disposal

There are significant issues related to disposal of untreated sewage and wastewater effluent. The issues can be categorized as aesthetic, health, ecological socio-cultural or technology and know-how, which are interrelated. In the Maldives, due to the small size of the resort islands, the volume of wastewater disposed is quite low and the impacts are not readily visible. However, nutrients from sewage could build up over time, especially if the process of discharge is not managed well. Conventional septic systems are widely used in the tourism industry. Inappropriate designs of such systems involve the leaching of nutrients and other pollutants which may affect subterranean fauna, lagoon water and groundwater quality and coral ecosystems.

Issues

Aesthetic issues

Inappropriately designed sewerage systems can easily cause sewage to become septic due to low and inadequate self-cleansing flow causing foul smell. Even in islands with treatment plants, the treatment process may be hindered if provisions for oil and grease trapping are lacking, and result in smelly and low quality effluent. This involves a cost to the management in terms of redesign of the sewerage system or making necessary changes.

The sight and smell of sewage and wastewater is distracting. If septic tanks or sewage treatment plants are inconveniently located or poorly designed, the smell emanating from sewers would be a cause for tourist complaints. Even the use of treated effluent for gardening can be prohibitive if it is smelly. The psychological effects of smelly sewers to tourists as well as staff could be a hidden cost.

In some resorts, outfalls pipes are placed on the lagoon floor in such a way that the pipes as well as the anchor blocks that hold the pipes in place are visible during low tide. It is better to conceal outfall pipes for guest satisfaction and aesthetics.

Health issues

Untreated sewage has excessive levels of harmful bacteria such as E-Coliform and also have high levels of nutrients such as nitrogen and phosphorus. If disposed directly into the ground, or if sewerage systems are leaky, faecal matter can build up in the soil and groundwater and the soil and groundwater may go septic causing foul smell and releasing dangerous gases such as hydrogen sulphide. Hydrogen sulphide can reduce the available oxygen for breathing and cause fainting. Long-term exposure may also affect short-term memory. Therefore, it is essential to ensure the sewerage systems are leak free and has good self-cleansing flow or velocity. Staffs that clean the sewers should be made aware of the dangers and precautionary measures taken to avoid fatal accidents.

Contamination of the groundwater aquifer

Due to the superficial nature of the groundwater aquifer in the islands of the Maldives, sewage would easily contaminate the groundwater aquifer with high concentration of nutrients ((nitrates, phosphates,

ammonia) and causing it to smell with hydrogen sulphide, if sewers are not appropriately constructed, well ventilated and properly maintained. This in turn will create smell and discolouration in toilets where groundwater is used for flushing. In the same way, if untreated sludge is buried in the ground, it will pollute the aquifer with organic material as well as detergents and oils.

Eutrophication of coastal waters

Wastewater has a high concentration of nutrients, especially nitrogen and phosphorus. If untreated sewage and wastewater were to be disposed into shallow coastal waters, it would cause eutrophication of lagoons and contribute to the growth of algae and seagrass, which are not considered aesthetically suitable to the product that Maldivian resorts are trying to sell. The removal of weeds and grass may also be costly and time consuming. Wastewater treatment helps to reduce the level of nutrients and overcome short or long-term pollution of the environment.

Damage to reef strata

The sewerage systems constructed in the resorts are designed to have deep water ocean outfalls. The disposal of sewage into the ocean is permitted as the currents would provide adequate dilution and the impact on the marine environment would be insignificant. However, in some instances high pollution load and inappropriate location of the outfall inhibits the appropriate dilution to be achieved.

Inappropriate location of the outfalls can result in impacts on the coral reef system of the islands. The marine environment is sensitive to nitrogen. Coral reef systems are very low in nutrients and small increases can result in a significant ecosystem response.

Due to the small size of the islands, sewers are laid with 4 or 6 inch outfall pipes, which may be usually damaged or dislodged due to ocean currents (if they are not appropriately located) causing the leakage of sewage and wastewater into the lagoon and onto the reef.

Technology and know-how

Packaged wastewater treatment plants are now being utilised to treat sewage and wastewater to secondary and postsecondary level which could be disposed to the environment. Alternative treatment units for secondary and post secondary treatment produce effluent containing nutrients, metals and sludge which require disposal. Evaporative or digestion ponds may produce odour, be highly visible and represent a risk to the environment if containment mechanisms fail. Tertiary treatment of sewage is likely to be uneconomic, given the anticipated scale of development and current technology.

Inappropriate designs of sewerage networks fail the system to function in the tropical climate of the Maldives. Blocking and leaking in the system can cause negative impacts on the ground water of the islands. Similarly, the designs faults in the sewers and septic tanks inhibit the system to treat the sewage and wastewater appropriately.

Due to the absence of adequate training in health, environment and safety aspects of sewage and wastewater handling and disposal, there have been some incidences of reported health problems related to sewer gas during cleaning and maintenance of sewerage systems.

Policies

P1. According to the Tourism Regulations, the sewerage system should be prepared such that pollution of water supplies, beaches and other areas are prevented; nuisance, ugly sights, and unpleasant odours do not occur, human wastes do not come into contact with people, animal and food; and breeding of flies and mosquitoes will be prevented.

P2. The Maldives Water and Sanitation Authority is the government agency responsible for development of national standards for sewage and wastewater treatment. MWSA has yet to develop national standards for treated effluent to be discharged into the ground or into the marine environment. Hence, the Ministry of Tourism has adopted the guidelines for all tourist facilities and resort islands.

Guidelines

Sewage can be regarded as a resource rather than a nuisance. The water and nutrient content can be usefully applied for landscaping, gardening or for other agricultural purposes.

- G1. In order to avoid any contamination of the aquifer and the lagoon with nutrients, organic material and pathogens; as well as to ensure highest recreational water quality, all sewage and wastewater resulting from operation shall preferably be treated in a Biological Wastewater Treatment Plant installed on the resort.
- G2. Sewage treatment infrastructure should produce negligible odour and should be appropriately located preferably far from guest bungalows, main complex and staff area.
- G3. Kitchens, coffee shop and restaurants shall be equipped with grease traps to enhance wastewater treatment process.
- G4. Water conservation measures described in these guidelines should preferably be implemented to reduce the volume of wastewater for treatment.
- G5. Treated sewage effluent should not contain more than a maximum of 2.5g/m³ total nitrogen, 1g/m³ total phosphorus, 5g/m³ biological oxygen demand, 5g/m³ suspended solids and 100 thermotolerant coliforms in 100ml sample.
- G6. The treated effluent should be monitored continuously using appropriate testing kits and to internationally recognized effluent testing standards.
- G7. Treated effluent should preferably be re-used for toilet flushing and gardening purposes. Treated effluent can be disposed via trickle irrigation to natural vegetation (not within 100m of beaches or wetlands) rather than disposal to the lagoon environment, injection to groundwater or evaporation ponds. However, disposal should not be limited to one particular area or spot.

- G8. Contingency plans should be developed for cases of infrastructure failure or where criteria are exceeded. During emergencies effluent may be discharged into the sea preferably at a distance of 10m from the reef edge. Location of emergency discharge point has to be fixed after investigation of the local conditions.
- G9. Screened solids and sludge should be transported to a designated disposal facility for final disposal or could be dried and applied as nutrient for plants in minute quantities.
- G10. The selection and design of an appropriate sewerage system for a resort should be made after appropriate detailed site investigations. The design must also go hand in hand with the environmental impact assessment process.
- G11. Those involved with the operation and maintenance of sewerage system must be given adequate training required for their job. They should know the treatment process as well as routine maintenance procedures. They should also have an understanding of the health and environmental aspects of sewage and wastewater management. Therefore, the choice of technology must be understandable and within the capability of the people responsible for operation and maintenance.
- G12. Record the number of days when untreated or partly treated wastewater has to be diverted to the emergency outfall owing to treatment plant bottle-necks, maintenance shut-down or other reasons.
- G13. Undertake monthly inspections of the pipeline (e.g. at low equinoctial spring tides), and check area around outfall for any unusual growth of algae or mortality of benthos.
- G14. Biodegradable detergents and agents shall be used for all cleaning purposes (sanitary installations, bungalows, kitchen, laundry, etc.) in order to facilitate wastewater treatment and minimise the impact of such agents on the environment.

Some Secondary Treatment Options for Maldivian Resorts

Treatment Process	Description	Key Features
Rotating biological contactor (or biodisk)	Series of thin vertical plates which provide surface area for bacteria to grow.	Plates are exposed to air and then the sewage by rotating with about 30% immersion in sewage. Treatment is by conventional aerobic process. Used in small-scale applications in Europe.
Trickling (or 'percolating') filters	Sewage passes down through a loose aggregate bed of bacteria on aggregate treat sewage	An aerobic process in which bacteria take oxygen from the atmosphere (no external mechanical aeration). Has moving parts, which often break down in developing-country locations.
Activated sludge process (ASP)	Oxygen is mechanically supplied to bacteria which feed on organic material and provide treatment	Sophisticated process with many mechanical and electrical parts, which also needs careful operator control. Produces large quantities of sludge for disposal, but provides high degree of treatment (when working well).
*Upflow Anaerobic Sludge Blanket (UASB). Other anaerobic processes exist but UASB is most common at present	Anaerobic process using blanket of bacteria to absorb polluting load	Suited to hot climates. Produces little sludge and no oxygen requirement (no power requirement) ó but does not produce as high a quality effluent as processes such as ASP.

Source: Water and Environmental Health at London and Loughborough, WELL (1998)

Septic tanks

A septic tank comprises one or two chambers through which sewage passes slowly. These are sized according to the expected flow so that the sewage is retained in the tank for at least one day. During this time, solids settle out of the sewage and form 'sludge' at the bottom of the tank, while floating material forms a layer of 'scum' on top (see fig).

This scum layer helps to create anaerobic conditions in the sewage below, enabling anaerobic bacteria to thrive. These bacteria feed on the sludge and break much of it down into water and gases (mainly CO₂ and CH₄). These gases escape through a vent pipe, either plumbed into the house or near the inlet to the tank. The remaining solids accumulate slowly, so that it is generally necessary for a septic tank to be 'desludged' every 3-5 years.

The effluent from a septic tank contains less suspended solids than raw sewage (80-90% are removed) but is still anaerobic and contains pathogens. It should therefore be disposed off carefully. The two chamber septic tanks discharge to a soakaway. Ideally, a soakaway should be some distance above the water table, so that the soil layers beneath it can partially treat the effluent.

Small-bore or shallow sewerage systems

The best way to protect the shallow groundwater in Maldives seems to be to build sewers which carry the effluent from septic tanks to a point where it can be treated or disposed safely. The fundamental principle behind the design of 'small bore (or settled) sewerage' systems is that they should carry 'settled' sewage. That is, the effluent from septic tanks which is free of solids and which is partially treated by the anaerobic processes.

Because the sewage is free of solids, sewers can be laid at shallow gradients without increasing the risk of blockages occurring. This makes them particularly suitable for Maldives where there are only very small differences in height within islands. It means that sewerage systems can be built which operate under gravity, without the need for any mechanical pumping and attendant costs and problems with maintenance & spare parts.

The systems installed in number of islands are better described as 'shallow' sewerage. The underlying principle is that over-conservative design standards are relaxed to allow lower gradients to be used, while sewers are laid in areas where they will not be subject to high (vehicular) loads from above, therefore at relatively shallow depths. In addition, and in contrast to conventional sewer layouts, several septic tanks are connected to the same sewer so that the overall length and depth of the pipe network is reduced.

The sewerage systems installed in Maldives, then, are more akin to shallow sewerage than small-bore sewerage, though the gradients are still too low to prevent blockages occurring. Shallow

Solid waste disposal

Solid waste disposal is one of the most obvious impacts of tourist resort operation and one of the easiest environmental management problems to deal with. The pollution of the sea with garbage and piles of waste close to the tourist bungalows do not fit into the tourists' image of the Maldives. In the second Tourism Master Plan solid waste is identified as a major issue for resort islands and it is stated that at current tourism levels, problems are probably more aesthetic than environmental. The Plan also points out that while solid waste itself may not currently pose a serious environmental threat, its impact in conjunction (e.g., synergistically) with the effects of other human activities should be considered.

The disposal of waste is an issue for resorts and it is clear that current arrangements for disposal are not totally effective, particularly in resort islands far from Thilafushi. In some cases, resort generated litter is ending up on the shores of inhabited islands and in other cases the reverse is true, particularly where solid waste is tipped essentially along the backshore of the beach. This is principally an aesthetic and health issue but there are also serious implications for the future environmental image of tourism in the Maldives.

Issues

Aesthetic and health issues

Rubbish on beach is a very serious aesthetic issue, which does not fit into the tourist's image of the Maldives. Rubbish on beach mainly results from waste dumped at sea irresponsibly by neighbouring resorts and inhabited islands that get washed ashore onto islands with the current and to some extent from the messy habits of certain tourists and staff.

Lack of appropriate knowledge about waste handling and management could also lead to health risks for those involved with waste management. These include the incomplete combustion of plastics due to incineration at low temperatures releasing carcinogens into the atmosphere. The handling of hazardous wastes can also pose health risks to workers.

Ecological issues

Lack of adequate collection, improper storage and disposal of solid waste can result in a number of environment problems such as insect infestation, fire, obnoxious odour, degradation and deterioration of natural beauty and pollution. Improvements in collection, storage and disposal as part of the solid waste management system are important to reduce the impact on the environment.

Current waste disposal practices adversely affect the environment through habitat destruction and pollution. Dumping of solid waste in wetland areas such as swamps and mangroves of the neighbouring inhabited islands are often considered acceptable practice for reclamation of such areas to increase free land space. Dumping of solid waste near beaches also has adverse effects on the reefs and lagoons of the islands.

The groundwater at the island could be polluted by inappropriate waste management practices. The site at where waste is temporarily stored at the island if not properly designed could pollute the groundwater of the island. The islands have high permeable soil and leachate from the waste site could soak through the soil into the freshwater lens.

Technology and know-how

The quantity of waste generated in a resort is relatively large and coupled with limited land area, the archipelagic nature of islands, and lack of appropriate technology makes the disposal of waste a challenge for the resorts.

Ineffective use of technology for waste management is also known to take place. Incinerators have been noted as not being effectively used at the correct temperatures and as a result can give off toxic and carcinogenic compounds.

Whilst efforts are made to recycle waste where possible, and efforts are being made to reduce imported packaging waste (particularly notable with regard to reducing detergent packaging) there is a general lack of accountability for waste disposal in general.

Classification of waste types

The waste generated in resorts can be classified into the following internationally used waste categories.

Classification	Description
domestic waste (excl. kitchen waste)	All solid waste excluding organic kitchen waste. It contains recyclable materials that can be separately collected and recycled/treated.
kitchen waste	Organic material from kitchens (food scraps, vegetable and fruit peels, fish and meat rests etc.).
green wastes	Organic material like grass, leaves, flowers and tree cuttings from site clearing and green area maintenance.
hazardous waste	Toxic waste, which, because of its composition and quality, has to be treated separately from other waste fractions. The hazardous waste to be treated includes solid waste (such as battery cells) as well as liquid waste like oils and lubricants (waste water is not included).
Sewage sludge	Sludge or mud from waste water treatment.

Policies

- P1. Clause 7 of the Environmental Protection and Preservation Act (EPPA) of the Maldives (Law No. 4/93) states that: any type of waste, oil, poisonous gases or any substances that may have harmful effects on the environment shall not be disposed within the territory of the Maldives.

In cases where the disposal of substances mentioned above becomes absolutely necessary, they shall be disposed only within the areas designated for the purpose by the government. If such waste is to be incinerated, appropriate precaution should be taken to avoid any harm to the health of the population.

- P2. According to the Tourism Regulations, the waste management scheme in a resort should be guided by the following principles:
- The waste management of the resort will be in accordance with government regulations
 - The first priority would be to minimise the amount of waste generated
 - Practical and feasible separation of solid waste into a valuable material fraction and a residual waste fraction.
 - Separate handling of the different fractions
 - Practical feasible treatment and disposal measures
 - Attention to specific comfort and safety requirements of the resort
 - Avoidance of odour and visibility and strict observance of fire protection requirements.
 - Registration by amount of respective waste type/type of valuable material as a base for further decisions concerning waste management.

P3. According to Tourism Regulations:

- Waste should be collected in closed containers and these should be emptied daily.
- Waste containers should be kept outside the restaurant area and should be kept closed at all times.
- Food waste should be disposed daily.
- Waste from resorts should be disposed off in a manner that causes the least damage to the environment.
- Plastic or polythene bags should not be thrown into the sea.
- Tourist resorts are required to have incinerators and compactors of adequate size to burn all flammable materials and crush all the cans respectively. Those who lack these facilities are not allowed to operate.
- All food waste disposed into the sea should be done as far away into the sea as necessary considering the direction of the current and wind in order to ensure that it does not get washed onto any islands with the current.

P4. The Tourism Regulations sets out that the following equipment for treatment and disposal of waste shall be installed in the resort:

- waste incinerator
- can compactor
- Furthermore, new resorts developed under the second Tourism master Plan are contractually obliged to acquire the following equipment;
- glass / bottle crusher
- garden waste shredder

P5. The Ministry of Tourism brought to the attention of resorts and safari vessels, Circular No. CIR-ES/97/94 dated 23 October 1997 regarding waste disposal, especially concerning floating garbage and the threats to biodiversity. A circular on the same issue was circulated in May 2002 (Circular No. 88-ES/CIR/2002/12). The floating matter found in the garbage often finds its way into the atoll environment depending on the circulation of ocean waters (Refer Annex 8).

P6. A circular regarding the disposal of expired and unused beer cans into the sea was issued in December 1997.

Guidelines

Waste management programme

G1. Resorts need to have a comprehensive waste management programme. The management programme would consist of the following activities: assessment of the amount and composition of waste; minimisation of waste generated; collection and separation of solid waste; intermediary storage; treatment/recycling inside the resort area; treatment / recycling outside the resort area; and final disposal.

- G2. Within the integrated waste management plan importance should be given to the prevention and minimisation of waste. Prevented waste neither needs disposal nor causes treatment costs or negative environmental impacts.
- G3. The following measures for prevention and minimisation should preferably be given priority in the resort.
- instead of canned soft drinks returnable bottles, taps or tetra-packed drinks may be used
 - only draught beer may be served in the public area, mini-bars may be replenished with bottled beer
 - a returnable packaging system for catering services may be developed
 - buying of over-packaged goods shall be avoided

Domestic wastes (excluding kitchen waste)

- G4. In order to achieve a maximum level of separation, waste bins for plastic, paper, glass, metal and residual waste should be placed in all areas of the resort, where applicable.
- G5. For collection of the respective types of waste, appropriate appliances will have to be provided to concerned staff. All staff involved in collection, handling and disposal of waste must be provided with appropriate safety gears and adequate training.
- G6. For the collection of waste generated from guestrooms waste bins will have to be provided in the guestrooms.
- G7. Waste from the guest rooms can be separated by the room boys into corresponding waste bins or bags.
- G8. All waste bins inside the buildings shall be easily accessible.
- G9. Environment friendly and aesthetically appealing dustbins have to be provided at appropriate distances in the beach area and pathways for collection of litter.
- G10. For intermediary storage, purpose designed containers can be used. Special comfort and safety requirements of the resort (aesthetics, odour, fire protection) will have to be strictly observed in the waste storage area.
- G11. The cleaning personnel shall sort out potential foreign matter when emptying the valuable material bins.
- G12. Total amount of solid waste generated from different departments shall be measured and composition of waste has to be determined on a regular basis.
- G13. A high level of public relations and staff training will be necessary to reach a good system of waste separation at the resort.

Treatment/recycling/final disposal

- G14. Efforts should be made to return bottles and cans to the producer or local supplier for refilling or recycling.
- G15. The resorts could enter into contract with local suppliers such as MAWC to develop appropriate incentives schemes for return of cans and bottles.
- G16. Crush non-returnable glass and reuse crushed glass for construction purposes.
- G17. Cans needs to be compacted and transported to Thilafushi for final disposal or recycling possibilities can be investigated.
- G18. Combustible residual waste should be incinerated on the island according to the MOT requirements. Open pit burning is not allowed.

Kitchen waste

- G19. Organic waste materials from the kitchen and restaurants should be collected in special wet waste collection facilities or in separate bins. This waste stream must not be contaminated with packaging or other contaminating material.
- G20. The environmentally most acceptable way to dispose pure organic waste is to make compost. Resorts should investigate the possibilities of composting all organic wastes in the resorts or in neighbouring inhabited islands and explore marketing chances for the compost. The medium-term aim of resorts could be to produce compost sufficient for selling.
- G21. Non-organic waste material from restaurants and kitchens shall be separated and treated as domestic waste.

Hazardous waste

- G22. The following types of wastes are hazardous wastes and special care should be given to prevention and minimization of the following waste streams: Areas where hazardous waste is handled should have fire prevention and fire fighting measures in place.
- grease, oil and low-viscosity separators in areas of technical installations, fuelling facilities, workshops
 - sludge from grease traps
 - chemicals of all kinds
 - emulsion mixtures from cleaning
 - residues from construction (paint, furnace etc.)
 - dilution solvents - and cleaning agents
 - dry batteries and accumulators
 - special waste from damaged consignments
 - If medical facilities are available, medical waste such as needles should be considered as hazardous.

- G23. Some hazardous waste management measures include:
- G24. Use of rechargeable batteries
- G25. Use of biodegradable cleaning agents
- G26. Further possibilities of prevention and reusing can be regularly explored
- G27. A suitable area for the intermediary storage of hazardous waste will need to be provided. Dimension and location of the hazardous waste storage area will need to be fixed after assessing amount of hazardous waste.
- G28. Disposal of the hazardous waste material shall not take place on the resort area or at sea.
- G29. The hazardous waste should be deposited at Thilafushi or at any other government designated controlled landfill and according to government regulations.

Green wastes

- G30. Green wastes generated during site clearing and from green area maintenance during operation can be used as firewood for barbecues and picnic cooking or surplus wood can be donated to local population for use as firewood to preserve their resources
- G31. Other green waste (e.g. leaves) from clearing can be composted in compost heaps and later used as fertiliser

Sewage sludge

- G32. The non-odorous and anti-septic sludge resulting from the wastewater treatment process can be used as a fertiliser after appropriate treatment (dewatering, drying)
- G33. Surplus sludge may be donated to local people for the use as a fertilizer, after consulting the Ministry of Fisheries, Agriculture and Marine Resources.
- G34. Sludge will have to be periodically analysed according to international requirements.

Health and safety

The regulation on employment in tourist resorts/hotels covers occupational injuries and compensation for medical treatment (Refer Annex 12). All tourist activities such as diving and windsurfing and staff activities such as sanitation and food production shall deal with the health and safety of guests and staff. The tourism regulations contain several safety measures for tourists which include the provision of safe deposit facilities, matters requiring police attention and investigation and emergencies such as capsizing or wrecking of boats.

- Commitment to health and safety yields:
 - Better working conditions and environments
 - Increased worker participation in decision making
 - Heightened work ethics/morale
 - Happy and productive workers
 - Satisfied customers due to enhanced customer service

Working procedures, fire safety, hygiene and sanitation are matters of great importance and are discussed in detail in the “Resort Management Practices: A Reference Manual for Resort Operators in the Maldives” (available from MOT). Although the concept of occupational health is new to the Maldives, the Reference Manual provides basic ‘working procedures’ for resorts with focus on restaurant and kitchen areas. Safe use of chemicals, insecticides and other poisons are also covered. First aid requirements and accident reporting forms are provided. Yet, reporting is low.

Issues

The main issues related to health and safety of guests arise from the provision of safe water and food and beverages, safety aspects of accommodation, transport and recreational activities, and for staff mainly related to working conditions.

Food safety and hygiene

Water, beverages and food may serve as pathways for the transfer of pathogenic organisms. Therefore, care should be taken to ensure that food and beverages are prepared, handled and served in a manner that it is rendered safe for final consumption. Examples of food and water borne diseases include typhoid, salmonellosis, bacillary and amoebic dysentery, cholera, diphtheria and streptococcal infections. Other forms of micro-organisms (Staphylococci) cause food poisoning as a result of multiplication in food and in the production of toxins; while the spores of others (*C. Botulinum*) may contaminate improperly canned food and cause disease when the food is consumed. Parasites such as Giardiasis may cause infection through cysts being transferred from hand to mouth or through contaminated vegetables. Similarly food may serve as the means of transfer of animal parasites such as Trichina and tape worms if poorly inspected meat from infected animals or fish is consumed. Plant foods may be contaminated with eggs or larval stages of parasites capable of developing in the human body. Chemical toxins may also reach food by various means, and pesticides may contaminate foods through their indiscriminate use around kitchens.

A major risk of food contamination lies with the food handler as well. Harmful bacteria and other micro-organisms may be present either within or on the surface of the body. These organisms could be transmitted to others if appropriate measures have not been taken to ensure that food handlers are free from infections and exercises a conscientious approach to food that they handle. Responsibility for appropriate measures lies with both the health authorities and the management staff of tourist establishments.

Claim costs

In the Maldives, the highest claims on health and safety issues most probably arise from the tourism sector. The major areas of claim costs in order of degree of seriousness may be (1) food and beverage (2) accommodation (3) transportation (4) diving and recreation and (5) island hopping. Therefore, it is important to consider ways of minimizing health and safety problems related to both guests and staff.

General issues

Hazards causing injuries may occur in the resorts from water sports and diving activities, the falling of coconuts, cuts from coconut tree roots, slips and falls from wet floors or inappropriate tiles. There was an incident in one of the resorts where a person fell in the toilet where inappropriate floor tiles were used and lost his memory. The resort had to change the floor tiles in all the toilets in order to prevent further incidents and also to meet the requirements of tour operators and insurance company. Most of the resorts are quite concerned about the safety of their clients and ensures wet floor signs are put up and coconut trees on the pathways regularly mulched.

Occupational Health Issues

Heat Stress

Working in excessive heat can cause stress and possible bodily harm such as skin cancer after working for long hours in the sun, fertility problems in men, etc. Since Maldives is a hot humid tropical climate especially those coming from a cold climate who may not be accustomed/acclimatized may suffer more.

Noise

Noise is considered to be unwanted sound. In the resorts, noise is a concern because resorts are meant to provide peace, calm and quietness. Little distractions such as de-rusting operations from pile-iron jetties have been observed to be a cause for guest complaints. Noise becomes an issue for staff working in powerhouse and other noisy areas such as workshops or carpentries where sound levels may exceed peak levels that the human ear can normally withstand.

Chemical and Biohazards

These cover dangerous chemicals such as DDT, needle stick injuries, blood from persons infected with HIV, hepatitis B and C, malaria and syphilis. These hazards do not cover common colds and flus that may also be transmitted from outside the work environment. Chemical and biohazards may be aggravated in ill-ventilated working conditions such as sewerage pump houses where sewer gas could build up and cause death or injury, loss of short-term memory etc. Ventilation would be important for waste storage and chemical storage buildings as well. In waste handling sharp-edged wastes such as

broken glass or metal pieces may have to be disposed of appropriately in clearly identified, separate containers, which are puncture proof.

European Community Directive 2000/54/EC of 18 September 2000 on protection of workers from risks related to exposure to biological agents at work classify biological agents into 4 groups, as follows:

- Biological agents unlikely to cause human disease.
- Biological agents that can cause human disease but are unlikely to spread to the community.
- Biological agents that can cause severe human disease and present a serious hazard to workers and may present a risk of spreading to the community, for which there usually is effective prophylaxis or treatment available.
- Biological agents that can cause severe human disease are a serious hazard to workers and present a high risk of spreading to the community, for which there is usually no effective prophylaxis or treatment available.
- Ergonomics

Ergonomics usually involves ‘musculoskeletal’ injury (MSI), which is an injury to the muscles, tendons, ligaments, joints, nerves, blood vessels or related soft tissue including strain, sprain and inflammation that may be caused or aggravated by work. The factors that may cause such injury mainly include physical demands of work such as postures, working heights, floor conditions, duration, repetition and force required. Luggage handlers, for instance, are often at risk of musculoskeletal injuries.

Job satisfaction and social issues

Maldivian resorts are separate islands, separated from inhabited islands by the sea and transport is restricted. Work is also often characterized by long hours, split shifts, and seasonality. Consequently, staffs live on the resort. There is hardly the venue and time for social or family relationships. Workers also have migrant attitudes and social norms and values cannot be developed to stabilize the resort environment. As outlined in the Workshop on Monitoring the Social, Economic and Environmental Impacts of Tourism in the Maldives resort workers were not generally happy and complained about the poor living conditions, isolation from family, leave, rates of pay and lack of contracts. The migration of males to work in resorts has possibly left many families in isolation and lack of mobility resulting in family breakdowns.

Policies

- P1. The Tourism Regulations lays down tourist resort building standards, electricity supply regulations, diving regulations, windsurfing regulations, transport of tourists, dress of tourists, employment of expatriates, hygiene and sanitation standards, garbage disposal standards, safety measures for tourists and information required by the Ministry. These standards and measures are being updated to suit prevailing conditions.
- P2. The Tourism Regulations specifies standards and procedures for recreational activities. Diving regulations give information on minimum certification of dive instructors, maximum diving depths, standard equipment for diving instructors, and standard equipment for divers, diving boat standards, dive centre standards and maintenance of diving equipment. For windsurfing, supervision is required and windsurfing at night is not permitted.

P3. For the transportation of tourists only classified sea crafts are allowed and cruising limited to atolls where tourist facilities are available.

P4. The regulations on food hygiene specifies in detail aspects of food handling and serving and the disposal of garbage from the restaurant and kitchen, insect and vermin protection and provision of adequate hygiene facilities for staff involved in food preparation. In addition, the storage of food supplies including frozen foods and refreezing is discussed in depth.

The Ministry of Tourism issued Circular No. 88-TS/CIR/98/38 in July 1998 informing important guidelines regarding food safety and hygiene (Refer Annex 9).

P5. According to the Tourism Regulations, all tourist resorts, hotels and guest houses are required to report to the Ministry of Tourism details of tourists resident in those establishments. These reporting requirements include:

- If a tourist or staff member comes across an unusual incident or meets with a grave accident or in case of a death, details should be sent to the Ministry as early as possible. Such incidents or accidents may be immediately notified by telephone and a detailed report sent afterwards. Such details may be required to be sent to other government agencies if required.
- In case of fire or storm damage details shall be sent to the Ministry or other concerned government agency immediately by phone and facsimile.

P6. Although incidents and accidents are required to be reported in the regulations only some fatalities are reported to the Ministry. Due to the lack of reporting of incidents and accidents, a reminder was sent to tourist resorts by the Ministry of Tourism in September 2002 through Circular No. 88-TS/CIR/2002/28 (Refer Annex 10).

P7. The Ministry of Transport and Civil Aviation has made it mandatory through their public announcement number 69-C3/2000/83 on 12 July 2000, to install VHF Emergency Position Indicating Beacon in jet skies and catamarans, if these vessels are to be used in the open sea beyond the lagoon of the island. All tourist resorts were informed of this policy decision through the Ministry of Tourism's Circular No. 88-TS/CIR/2000/51(Refer Annex 11)

Guidelines

Planning

- G1. The main steps to prevent incidents and accidents include:
- Identification of hazards and assessment of risks, so the management can focus on those that are most likely to cause accidents
 - Having written safety procedures for guest activities and informing guests about safety procedures in all guest activities
 - Safe work procedures, which spell out how work is to be done safely
 - Orientation, education, training, and supervision, which are particularly important for new recruits
 - Safety inspections to identify workplace hazards so that they can be eliminated or controlled
 - Investigation of accidents and incidents, to find out why they occurred so that the causes can be corrected
 - Regular health and safety meetings with workers
 - Provision of first aid, in order to reduce the severity of injuries
 - Keeping records and statistics, which can help identify recurring problems and ensure that hazardous conditions are being corrected
- G2. G2. Together the steps in G1 would make up a health and safety programme for the resort, which every resort in the Maldives is recommended to have.
- G3. G3. Resorts shall have a written Health and Safety Policy communicated at all levels and made known to staff and guests.

Health and safety of guests

Their own safety and well-being is the greatest concern for the tourists and therefore should also be of utmost concern for the resort management

- G4. Regular mulching of coconut trees is required to avoid the risk of head injuries from any falling coconuts and palm fronds.
- G5. Diving regulations and professional diving practices have to be adhered to.
- G6. Swimmers and lone snorkellers must be given advice on how the currents around the island vary and in which areas there would be strong currents. Resorts must also identify and indicate clearly deepened/dredged areas in the lagoon.
- G7. Resorts must keep a log of incidents and accidents and make sure that areas in which incidents occur frequently are made known to all and necessary steps to reduce or eliminate hazards are taken.

Food safety and hygiene

- G8. A medical examination and health certificate is important for people who handle and prepare food, at regular specific intervals. In between successive examinations, particular diseases or infections should be made notifiable.
- G9. Food handlers must be trained in food hygiene and conduct regular education and awareness campaigns on food hygiene and safety.
- G10. Periodic inspections by the Department of Public Health, the Maldives Water and Sanitation Authority or private firms may be useful in ensuring that hygiene and sanitation practices in the resort are regularly improved and ensure compliance.
- G11. Ensure that food handling areas are provided with adequate sanitation facilities including soap or cleaning solvents and adequate lighting and uninterrupted and safe water supplies.
- G12. The management may need to have a HACCP Plan including operational procedures to execute the plan and continuous third party monitoring of the Sanitary and Operational Procedures laid out in the HACCP Plan. The HACCP plan will provide the management with a checklist for their own insurance of best sanitary practices in the resort.

Staff education and training

- G13. The employer shall provide basic occupational health and hygiene training and ensure that workers prior to commencement of their particular jobs have a sound understanding of the hazards of work and are able to protect their health and that of others from hazardous ambient factors that may be present. They should be made aware of the hygiene requirements, protective equipment and clothing requirements and appropriate response to extreme operational conditions, incidents and accidents. Employees should be well equipped for personal hygiene, cleanliness, safe handling of materials (Material Safety Data sheets), signage, accidents and incidents reporting forms, and first aid.
- G14. The training must adequately cover: a) knowledge of materials, equipment, and tools; b) known hazards in the operations and how they are controlled; c) potential risks to health; d) precautions to prevent exposure; e) hygiene requirements; f) wearing and use of protective equipment and clothing; and g) appropriate response to operation extremes, incidents and accidents.
- G15. The resort management should also ensure that adequate signage is provided in work areas to prevent occupational injuries and incidents.

Buildings and structures

- G16. Surfaces, structures and installations shall be easy to clean and maintain, and not allow for accumulation of hazardous compounds and breeding of germs and biological agents as described in Resort Management Practices: A Reference Manual for Resort Operators in the Maldives.

G17. Buildings must be structurally safe, provide appropriate protection against the climate and have acceptable light and noise conditions.

G18. Fire resistant, noise-absorbing materials should, to the extent feasible, be used for cladding on ceilings and walls.

G19. Floors should be level, even, and non-skid.

Confined spaces and temporary work areas

G20. Confined spaces must be avoided to the greatest extent possible by appropriate design of infrastructure. Unavoidable confined spaces, such as general and hazardous material storage units, shall, to the extent possible, be provided with permanent safety measures for venting, monitoring and rescue operations.

G21. Temporary work areas must be clearly marked for guests and 'unauthorized persons' to avoid such areas. Temporary work areas must provide for safe, appropriate and easy access by those involved in the works.

Workplace lighting and ventilation

G22. Workplaces should, to the degree feasible, receive natural light and be supplemented with sufficient artificial illumination to promote workers' safety and health. Emergency lighting of adequate intensity must be installed and automatically activated upon failure of the artificial light source to ensure safe shut-down, evacuation, etc.

G23. Sufficient fresh air must be supplied for indoor and confined work spaces. Factors to be considered in ventilation design include physical activity, substances in use and process related emissions. Mechanical ventilation systems shall be maintained in good working order. Point-source exhaust systems required for maintaining a safe ambient environment must have local indicators of correct functioning.

G24. Re-circulation of contaminated air is generally not acceptable. Air inlet filters must be kept clean and free of dust and micro-organisms. HVAC and industrial evaporative cooling systems shall be equipped, maintained and operated so as to prevent growth and spreading of disease agents (e.g. Legionella pneumophila) or breeding of vectors e.g. mosquitoes and flies of public health concern.

G25. Air distribution systems must be designed so as not to expose workers to draughts.

Noise

G26. Appropriate measures to mitigate noise risks include engineered noise control, regular noise measurement, education/training, hearing protection gear, signs in noisy areas, and hearing tests are recommended.

G27. Ensure that ear protection is provided to workers if LAeq, 8h is greater than 85 dB(A). The maximum noise levels given in Table 1 may be adopted.

Table 1: WHO, International Finance Cooperation (IFC) and World Bank Guidelines for noise limits for a daily 8 hours average exposure and maximum exposure at fast response in different working environments. Ear protection shall be provided if LAeq, 8h is greater than 85 dB(A).

Location / activity	Equivalent level LAeq, 8h	Maximum LAmax, fast
Heavy industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Light industry (decreasing demand for oral communication)	50 – 65 dB(A)	110 dB(A)
Open offices, control rooms, service counters or similar	45 – 50 dB(A)	-
Individual offices (no disturbing noise)	40 – 45 dB(A)	-
Classrooms, lecture halls	35 – 40 dB(A)	-
Hospitals	30 – 35 dB(A)	40 dB(A)

Cleaning

- G28. All water supplied to food preparation areas or for the purpose of personal hygiene (washing or bathing) must meet drinking water quality standards (Refer Annex 6).
- G29. Washbasins with running hot and cold water shall be installed in sufficient numbers where demanded by the character of the work and when contaminants or pollution must be confined to the place of work.
- G30. Washbasins must have soap and/or other appropriate cleaning agents. Liquid soap dispensers and air dryers or paper towels are recommended for hygiene.

Fire detection and fire fighting

- G31. Fire fighting systems required by the NSS Fire Safety Guidelines must be easily accessible, staff must have the know-how to operate fire safety equipment, must be regularly inspected and maintained.
- G32. A fire safety specialist consultant firm could be engaged by the resort to develop a fire safety plan, train staff, maintain equipment and assist in carrying out fire drills.

Heat and stress

- G33. Heat and stress may be avoided by providing personal protective equipment and enhanced working conditions such as air-conditioning.
- G34. Heat and stress may also be avoided by provision of work-rest cycles, allowing time for acclimatization, scheduling/organization of work shifts, making water/fluids available at work place or close to work area, etc.

Working alone or in isolation

G35. Employers shall make provision (preferably in written form) for checking the well-being of a worker working alone in isolation and provide necessary training to him/her and those assigned to check on persons working alone or in isolation. Effectiveness of checking systems shall be reviewed annually.

Violence in the workplace

G36. Risk assessments, which take into consideration factors such as past incidences or experiences in the same or similar working conditions and environments, may be undertaken

G37. Provide necessary guidelines for prevention of violence and violence-related risks to workers.

Ergonomics

G38. Employers must identify factors that may pose risks of musculoskeletal injuries to workers.

G39. Provide necessary guidelines for prevention of injuries to workers such as labelling of heavy luggage, hazards in using machinery, etc.

Employee welfare

G40. Satisfied employees contribute better to the services the resorts offer. Therefore, it is important to have staff welfare programmes to ensure that staffs are happy.

G41. Employers must control, eliminate or minimise identified risks after a risk assessment and continue to provide necessary education, training and awareness and continue to provide safe working conditions.

Conserving species and habitats

Issues

The biological resources of the Maldives can be divided into two different components; terrestrial biodiversity found on the island environment and marine biodiversity found in the coral reef environment. The terrestrial biodiversity is very limited due to the limited availability of land. Yet, the terrestrial habitats such as sand banks, bushes and coral cays are very important for bird nesting and bird roosting. Some resorts also have mangroves and water bodies which can be conserved and promoted for eco-tourism. The terrestrial biodiversity is currently under threat due to increased alteration of the habitats as a result of population pressure and increased economic activities.

The marine biodiversity is amongst the richest in the world and vastly distributed throughout the reefs and open seas found in the country. Although, the marine biodiversity is rich, it is also currently under pressure primarily due to exploitation and habitat loss. Given the sources of threats to the biological resources of the country, tourism is no exception as tourism development and its activities also contribute certain threats.

Tourism's relationship with the environment is complex, which involves many activities that can have both positive and adverse environmental effects. Many of the adverse impacts are linked with the construction of general infrastructure such as guest rooms, restaurants and other resort amenities. Apart from tourist infrastructure development, tourist activities during resort operation such as diving, snorkelling and other recreation activities also pose threats to biological diversity.

Loss of terrestrial habitats

Island environment is composed of a number of habitats for terrestrial flora and fauna. The removal of trees and vegetation, and excavation of soil for tourist infrastructure development destroys these habitats and makes certain habitats unfavourable. Since the islands are small in size and lacks alternative locations, the habitats removed are permanently destroyed.

Loss of terrestrial fauna

Often fauna are associated with suitable habitats found on the island such as mangroves, mature trees, bushes and shrubs. Removal of these habitats has direct implications on the survival of associated fauna. These fauna are often compelled to non-habitat locations, which alters their feeding habits and breeding patterns. Also, during site clearance, a large number of fauna are removed, which reduces the biological diversity found on the island.

Impacts on coastal biodiversity

The coastal environment, particularly the beach environment is a very favourable habitat for visiting shore birds for feeding and sea turtles for nesting. Construction of coastal infrastructure such as jetties, piers, beach bars and tourist recreation activities in most instances disturb shorebirds and sea turtles. Due to the presence of development and large number of tourists, the behaviour and habits of coastal fauna are often affected. In many instances, they cease to be part of the island ecosystem.

Loss of marine habitats

Development of coastal and marine infrastructure for resort operations such as jetties, piers and harbours also affect the marine habitats. Often the lagoon environment is dredged for the development of harbours, which permanently removes suitable habitats for marine biodiversity. The lagoon environment is also often cleared to create aesthetically appealing lagoons for swimmers, which destroys many habitats for juvenile fish and marine organisms. Sedimentation from dredging and reclamation activities is potentially harmful to the survival of marine biodiversity.

Impacts on marine biodiversity

Development of coastal structures often compels marine biodiversity to shift, which ultimately affects the overall ecological integrity of the ecosystem. Often developments in the marine environment bring irreversible impacts to the physical environment, making them unfavourable for certain marine species. This affects the biological environment and community structure of the area. Since a large number of marine fauna is dependent on other fauna for survival, changes in the biological environment reduces the biological diversity of the particular area.

During the operation of resorts, a large number of tourist activities are undertaken in the marine environment, of which diving and snorkelling are amongst the most popular. Impacts on marine biodiversity as a result of uncontrolled diving and snorkelling include alteration of the natural behaviour and habits of species due to increased number of visits on popular locations. Other recreational activities such as jet skiing disturbs marine wildlife, which also affects their behaviour, breeding and reproductive cycles.

Increased demand for marine resources by tourists also increases the pressure on marine biodiversity. Often certain marine resources such as lobsters are in great demand to meet the needs of tourists and unsustainable and destructive methods are used for exploitation, which has implications on both marine habitats and other biodiversity apart from the targeted individual.

Increased demand for souvenir items made from local marine biodiversity such as turtle shells and other marine animals compelled to protect some of these species. Also, increased marine souvenir collection such as corals and shells by tourists has negative implications on the marine environment. Since, tourism is highly dependent on the quality of the marine environment; such activities may bring negative publicity on the tourism industry itself.

Policies

Recognizing the importance of conservation of both terrestrial and marine biodiversity, a number of policy directives and measures are currently in place, which are being implemented by various government agencies, namely Ministry of Tourism, Ministry of Environment and Construction, and Ministry of Fisheries Agriculture and Marine Resources(MOFAMR). Conservation of biodiversity is often focussed on species-protection, habitat protection or research, education and awareness.

With regard to protection and conservation of biological diversity, Ministry of Tourism implements the following measures under the Tourism Law, Tourism Regulations and Policy Directives;

- P1. Replacement of trees and plants that are cut down during site clearance for construction.

- P2. Location of buildings around rare and large trees during design of buildings to avoid felling.
- P3. All the buildings have to be located 5 meters away from the shoreline to ensure protection of coastal vegetation.
- P4. Allocate at least 2 meters for vegetation in between the buildings for protection of vegetation.
- P5. Fishing from the house reefs of resort islands is prohibited.
- P6. Ministry of Tourism issued Circular 88-ES/CIR/2005/30 on conditions for keeping turtles in resort islands (Refer Annex 12)
- P7. Collection of marine souvenirs and any material from the reefs such as corals and shells is banned.
- P8. Anchoring on the house reefs of resort islands is prohibited.

Under the Environmental Protection and Preservation Act (Law No. 4/93), implemented by the Ministry of Environment and Construction, the following measures are been implemented for the protection and conservation of biological resources found in the Maldives.

- P9. The Ministry of Environment and Construction has designated 25 popular dive sites as Marine Protected Areas (Box 5). All extractive activities except bait fishing by use of traditional methods are prohibited in these areas.
- P10. 47 bird species including land birds, shorebirds and sea birds as well as 5 subspecies of birds that are endemic to the country have been designated as "Protected Species" from capture, captivity and trade (Box 6).
- P11. The Ministry of Fisheries, Agriculture and Marine Resources has prohibited the logging of 20 species of plants. Prior written consent of the Ministry of Fisheries, Agriculture and Marine Resources has to be obtained for the felling of trees from these species (Box 5).

Under the Fisheries Law (Law No. 5/87), implemented by the Ministry of Fisheries, Agriculture and Marine Resources, a number of regulatory measures have introduced for conservation of living marine resources. These include;

- P12. Use of dangerous weapons and toxic chemicals and non-target species gear for fishing are banned. Spear, poison and dynamite fishing are strictly prohibited.
- P13. Use of nets and trap fishing except for bait fishing are prohibited.
- P14. Use of new types of fishing gear other than that used by Maldivian fishermen in coastal waters must be approved by the Ministry of Fisheries, Agriculture and Marine Resources.
- P15. Shark fishing has been banned in designated 7 atolls (Box 6).
- P16. A 10-year moratorium on the catch or killing of any sea turtle species was placed in 1995 and trade in all turtle products is banned

- P17. Harvesting and exploitation of dolphins, whales, whale sharks, sea turtles, napoleon wrasse, berried female lobsters and lobsters less than 25cm in total length, giant clams and triton shells is prohibited.
- P18. Export of black corals, trochus shells, triton shells, pearl oysters, lobsters and lobster meat, all types of corals except organ pipe coral, sea turtles, puffer fish, eels, bigeye scad under 6 inches, skates, rays, dolphins, whales, parrot fish and all types of bait fish is prohibited.

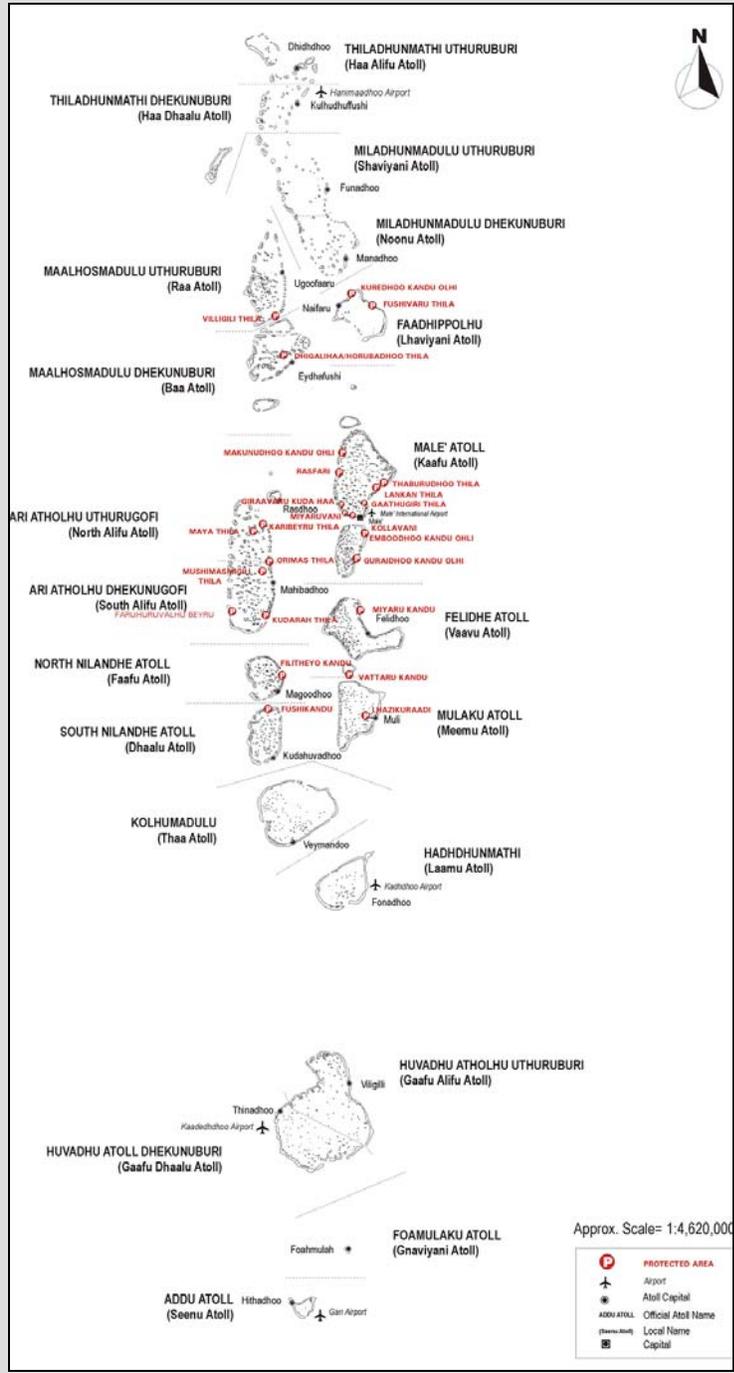
Guidelines

- G1. It is important to undertake an inventory of biological diversity found on the terrestrial and marine environment of the island in order to design good biodiversity conservation plans.
- G2. Locate areas of significant terrestrial biodiversity such as rare plants, medicinal plants, old trees, trees protected by MOFAMR from logging, turtle nesting areas, bird roosting sites and bird nesting sites.
- G3. Locate areas of significant marine biodiversity such as juvenile fish habitats, rare and protected marine life.
- G4. Enlist protected biodiversity that are found in the island under above-mentioned policies.
- G5. Undertake appropriate measures such as enclosure, avoidance and buffering to protect such areas during construction of resort amenities.
- G6. Monitor impacts on biodiversity during construction of resort amenities.
- G7. During the operational phase of the resort, develop a plan for biodiversity protection and conservation including designation of locally protected areas, protected species, management measures and awareness programmes.
- G8. Undertake local conservation programmes such as protection of turtle nesting areas, bird roosting and nesting sites.
- G9. Produce information materials, sign boards and leaflets on local biodiversity to create awareness among tourists and staff.
- G10. Display “DOS AND DO NOTS” during tourist recreation activities such as picnicking, island hopping, snorkelling, scuba diving, recreational fishing, water sports and beach sports.
- G11. Provide environmental briefs prior to all recreation activities.
- G12. Monitor the status of biodiversity in the island and surrounding environment on a regular basis according to the monitoring specified in the EIA Decision Note.
- G13. Develop recovery plans for biodiversity in need of special and urgent attention.

G14. Monitor and evaluate the results of the biodiversity protection and conservation plan for reporting to the Ministry.

G15. Prohibit in the resort all souvenir items made out of protected biodiversity.

Dive sites protected by MOEC



Box: 9

Trees protected from logging by MOFAMR

English Name	Local Name	Scientific Name
Beef wood / casuarina	Fithuroanu gas	<i>Casuarina equisetifolia</i>
Rubber plant	Rabaru gas	<i>Ficus elastica</i>
Jack fruit	Sakkeyo gas	<i>Artocarpus intergrifolia</i>
Burmese rosewood	Ofielhey gas	<i>Pterocarpus indicus</i>
Tecona	Madimas vakaru gas	<i>Tecoma spp</i>
Teak	Haivakaru gas	<i>Tectona grandis</i>
Sapodilla plum	Sabudheli gas	<i>Acharas sapota</i>
Eucalyptus	Bodu aavi gas	<i>Eucalypta grandis</i>
Ebony tree	Kalhuvakaru gas	<i>Diospyros ebenum</i>
Mango	An'bu gas	<i>Magnifera indica</i>
Golden apple	Jahaamuguri gas	<i>Aegle marmelos</i>
Cashew nut	Kaju gas	<i>Anacardium occidentale</i>
Asoka	Asokaa gas	<i>Polythia langifolia</i>
Acacia	Ekeysiaa gas	<i>Acacia auriculiformis</i>
Flame of the forest	Bodu gas	<i>Delonix regia</i>
Norfolk island pine tree	Thurravvaas gas	<i>Araucaria heterophylla</i>
Rain tree	Reethi gas	<i>Samanea saman</i>
Gamboge tree	An'bihi gas	<i>Garcinia cambogia</i>
Nal gall / Chebulic myrobalans	Arolhi gas	<i>Terminalia chebula</i>
Beleric myrobalan	Burolhi gas	<i>Terminalia bellerica</i>

Box: 10

Atolls where shark fishing has been banned by MOFAMR

The Public Announcement No. FA-A1/29/98/38 states that shark fisheries have been banned for a period of 10 years from 8 September 1998 from the inner atolls and within 12 miles from the outer atolls of the following Atolls:

- Baa Atoll
- Lhaviyani Atoll
- Kaafu (Male') Atoll
- North Ari Atoll
- South Ari Atoll
- Vaavu Atoll
- Seenu (Addu) Atoll

Box: 11

Marine life protected from harvesting and exploitation by MOFAMR

English Name	Local Name	Scientific Name
Dolphin	Koamas	<i>Delphinidae - Family</i>
Napolean wrasse	Maahulumbu landaa	<i>Cheilinus undulatus</i>
Whales	Bodu mas	
Whale shark	Fehurihi	<i>Rhincodon typus</i>
Lobster	Ihi	
Sea turtles	Velaa, Kahanbu	<i>Cheloniidae - Family</i>
Giant clam	Gaa haka	<i>Tridacnidae - Family</i>
Triton shell	Sangu	<i>Charonia tritonis</i>
Black coral	Endheri	<i>Antipathidea - Family</i>

Box: 12

English Name	Local Name	Scientific Name
Dolphin	Koamas	<i>Delphinidae - Family</i>
Napolean wrasse	Maahulumbu landaa	<i>Cheilinus undulatus</i>
Parrot fish	Landaa	
Puffer fish	Koli	
Bigeye scad (under 6")	Mushimas	
Baitfish used in tuna fishery	En	
Whales	Bodu mas	
Whale sharks	Fehurihi	<i>Rhincodon typus</i>
Lobsters and lobster meat	Ihi / ihi mas	
Turtles and their products	Velaa, Kahanbu	<i>Cheloniidae - Family</i>
Skates and rays	Madi	
Eels	Ven	
Triton shells	Sangu	<i>Charonia tritonis</i>
Trochus shells	Gonu foo enburi	
Pearl oysters	Ithaa	
Storny corals excluding organ pipe coral	Hiri, gaa, muraka	
Black corals and their products	Endheri	<i>Antipathidea - Family</i>

Introduced species

Issues

Increased introduction of foreign plants and animals, particularly exotic ornamental plants, fruits and vegetables and cage birds have led to introduction of many pests and diseases in the islands. Introduction of pests and diseases in the islands often lead to large scale environmental problems such as destruction of local flora and fauna and degradation of land. Due to limited knowledge about introduced pests and diseases, impacts associated with such introductions are increasing.

Pest infestation and spread of diseases

The demand for ornamental plants, fruits and vegetables in the resorts are met by large-scale imports to the country. Due to the lack of appropriate and strict quarantine procedures, a number of pests and diseases have already been introduced to the country. For instance, the spread of citrus canker (an imported bacterial disease) in the 1980s rapidly destroyed a number of lime trees in the country, and, the periodic spread of Gypsy Moths in many islands have lead to destruction of local vegetation. Also, introduction of Coconut Hispid Beetle associated with import of ornamental palm trees has damaged a number of palm trees in the resorts in 2003. Introduction of cage birds to the country also has the potential to spread unknown pests and diseases that may be harmful to the local environment.

Fig:

Coconut hispid beetle found from south Ari Atoll in 2003, and damaged coconut palm



Courtesy: Ministry of Fisheries, Agriculture and Marine Recourses

Land degradation

In order to maintain the imported plants, different types of soils and fertilizers are also imported. Uncontrolled use of soils and fertilizers could lead to land degradation due to the fragile environmental condition of many islands. Similarly, in order to feed the cage birds, a large volume of bird feed such as seeds are imported to the country, which has the potential to introduce weeds that may be difficult to control.

Displacement of local vegetation

Imported exotic ornamental plants are often fast growing plants, which when in competition for space often displaces the local vegetation types. Loss of local vegetation damages the quality of the natural habitats found on the island and the associated fauna such as birds and insects will be affected.

Lack of knowledge on pests and diseases

There is lack of knowledge on pests and diseases associated with imported flora and fauna, which often leads to difficulties in controlling and managing the problems. Also, very limited information is available on methods used for controlling and managing such problems that are not harmful to the local environment.

Policies

Currently, introduced flora and fauna are not covered under any legislation or regulation making the issues associated with it difficult to manage. However, the Ministry of Fisheries, Agriculture and Marine Resources maintain the following measures with regards to imported biodiversity;

- P1. Plants and animals brought into the country have to be quarantined.
- P2. Prior written consent is required from the Ministry of Fisheries, Agriculture and Marine Resources for import of plants and animals.

Guidelines

- G1. Use plants that are already acclimatized to the country for gardening, landscaping and other uses in order to reduce threats from introduced flora and fauna. Avoid introducing pests by measures such as using locally produced fertilizers from composting.
- G2. Closely monitor fruits and vegetables that are brought into the island for possible pests and diseases.
- G3. Seek technical advice prior to introducing any new plant or animal to the island.
- G4. Seek technical advice on the use of chemical fertilizers and pesticides in order to reduce land degradation issues.

- G5. Take measures to prevent or discourage weed growth by application of mulch or leaf litter on top of the soil and regular clearing.
- G6. Inform appropriate government agencies as early as possible if any pests or diseases are found on the island.
- G7. Maintain appropriate facilities on the island for dealing with emergency situations with regards to managing potential pests and diseases.
- G8. Continuously monitor and keep records of all activities related to landscaping and gardening.

Coral reef protection

Issues

The coral reefs are amongst the richest ecosystems found worldwide and the Maldives has thousands of coral reefs, sand cays and associated marine habitats, making it the single most important natural resource found in the country. Due to the rich biodiversity and resources found in the marine environment, a number of activities such as tourism, fisheries, livelihoods, exports and earnings are directly related to and dependent on the marine environment, particularly coral reefs. Additionally the reefs act as a physical barrier in protecting the islands from waves and tides. As a result of increased economic dependency on coral reefs, they are currently under threat.

Tourism in the Maldives is primarily associated with beaches, lagoons, reefs and the sea, and impacts on the coral reef ecosystem are emerging. These environmental impacts are both direct and indirect in nature and some of which are related to the construction, development and operation of resorts. Direct impacts include physical damage to coral reefs as a result of construction and tourist activities and indirect impacts mostly incurred during resort operations such as increased demand for reef resources and disposal of solid and liquid waste.

Coral and sand mining

During the early stages of tourism development in the country, locally mined coral and sand have been largely used as the primary source of construction material. The introduction of tourism increased the demand for coral and sand for construction purposes, which has led to large-scale degradation and deterioration of coral reefs in the vicinity of Male'. Impacts from coral and sand mining include loss of habitats and reef fish, reduced coral and reef fish diversity, loss of aesthetic quality, and increased erosion of beaches.

Construction on coral reefs

Often resort developments are compelled with construction of coastal structures such as jetties, piers, harbours, water bungalows, coastal reclamation for beach enlargement and as a result a number of activities on the marine environment, particularly on the coral reefs and lagoons have to be undertaken. These activities include dredging, removal of seabed, reef blasting, and large-scale construction. Most of these activities generate negative environmental consequences such as killing of corals and fish due to sedimentation and increased turbidity, water quality deterioration, permanent loss of habitats, reduced species diversity and degradation of the quality of the environment.

Reef-related activities

During the operation of resorts, a number of reef-related activities are undertaken including snorkeling, reef walking, scuba diving, boat anchoring, and souvenir collection. Such activities can cause negative environmental impacts including breakage of fragile and branching corals, lesions of massive corals, changes in the physical environment and community structure, destruction of habitats, changes in the behaviour of reef fish and marine life, and loss of certain marine life.

Disposal of solid and liquid waste

Tourist operations generate large quantities of solid and liquid waste. Indiscriminate disposal of such wastes can generate environmental consequences such as pollution and degradation of the environmental conditions. For instance, disposal of solid waste such as aluminium cans, plastic bottles and plastic bags can decrease the aesthetic quality of the environment and have the potential to harm reef fish and corals. Disposal of liquid wastes such as sewage to the lagoon environment increases nutrients levels, which favours particular species such as algae at the expense of corals. Sewage pollution also decreases water quality, which may be potentially harmful to a number of marine lives including reef fish.

Increased demand for reef resources

The indirect impacts on coral reefs as a result of tourism operation include increased demand for reef resources such as sea food. This leads to declines in certain reef fish stocks and unsustainable practices of reef fisheries for short-term economic gains, which damages the reefs and the fisheries itself. For instance, increased demand for lobsters has affected their stocks and has in certain places damaged the coral reefs due to destructive fishing practices.

Policies

Recognizing the need and importance of coral reefs for the country and linked economic activities that are dependent on them, a number of policy, legal and regulative measures are now in place. The protection of corals reefs and biological diversity found within them are regulated by different government authorities.

Under the Fisheries Law, the following measures have been prescribed;

- P1. Coral and sand can be mined only in designated atolls and designated types of areas, and requires prior permission from the Ministry of Fisheries, Agriculture and Marine Resources.
- P2. Coral and sand mining from inhabited islands (unless specified), industrial islands and resort islands are banned.
- P3. Export of black corals, trochus shells, triton shells, pearl oysters, lobsters and lobster meat, all types of corals except organ pipe coral, sea turtles, puffer fish, eels, bigeye scad under 6 inches, skates, rays, dolphins, whales, parrot fish and all types of bait fish are prohibited.

Under the Environmental Protection and Preservation Act, the following measures have been developed;

- P4. Designation of 25 popular dive sites as Marine Protected Areas. All extractive activities except bait fishing by use of traditional methods are prohibited in these areas.

The Tourism Ministry implements the following policy measures to protect the coral reefs;

- P5. Fishing from the house reefs of resort islands is prohibited.

- P6. Mining of sand, coral and rubble from the resorts is banned.
- P7. Collection of marine souvenirs and any material from the reefs such as corals and shells is banned.
- P8. Anchoring within the house reefs of resort islands is prohibited.
- P9. An Environmental Impact Assessment (EIA) report must be submitted to the Ministry of Tourism for any proposed activities such as dredging, reclamation, reef blasting and construction of coastal structures.

Guidelines

- G1. Undertake initial studies on the marine environment to understand and document the status of the marine environment prior to resort development and operation.
- G2. Undertake appropriate measures during resort construction to protect the marine environment.
- G3. Regularly monitor the condition of the marine environment during resort construction and operation.
- G4. Devise appropriate measures for management and disposal of solid and liquid wastes generated from the island in a way that has minimal impacts on the marine environment.
- G5. Closely monitor all tourist activities such as snorkelling and scuba diving.
- G6. Set standards or limits on number of snorkellers and divers at sensitive locations.
- G7. Undertake environmental briefs on good practice prior to all tourist activities that may harm the environment.
- G8. Produce information materials, sign boards and leaflets on local biodiversity to create awareness among tourists and staff.
- G9. Display “DOS AND DO NOTS” during tourist recreation activities such as picnicking, island hopping, snorkelling, scuba diving, recreation fishing, water sports and beach sports.
- G10. Display protected marine life and protected areas to increase tourist awareness.
- G11. Undertake local conservation programs such as sea turtle conservation efforts.
- G12. Inform MOFAMR on outbreaks of COT, coral bleaching and other natural impacts on the marine environment.

Vabbinfaru coral reef protection project



This project has generated healthy and diverse coral reefs in areas of the Maldives where corals were absent, using a unique new technology which uses solar panels to grow large limestone structures in the sea, speed up the growth of corals, and provide new habitat for fish and other coral reef creatures. This project demonstrates for the first time the possibility to economically restore damaged coral reefs to vitality and create new ones to protect beaches and shorelines from erosion on a large scale. It pioneers the use of sustainable energy to rejuvenate the most complex marine ecosystems and establishes a remarkable new method which will be needed on a large scale in coming years to restore coral reefs damaged by global warming, pollution, sedimentation, and natural or human physical destruction, and to protect whole islands from erosion and rising sea level.

Vector and pest control

Issues

The most common vectors and pests found on resort islands include mosquitoes, flies, cockroaches, ants, rats and mice. Often mosquitoes, flies, cockroaches and ants are considered nuisances and have the potential to transmit diseases that can be harmful to human health. Domestic rats and mice are often found in living quarters, kitchen, storage rooms, buildings, etc. In addition to the fact that they transmit disease, rats and mice can cause substantial structural damage and consume and contaminate large quantities of foodstuff.

Environmental hazards

Often vector, pests and other unwanted life forms in the resorts are eliminated by use of chemicals such as pesticides, herbicides, bactericides and fungicides. They range from simple to complex compounds, and have a correspondingly large range of environmental hazards associated with them. Some kill only the target organisms, others will kill a range of different life forms if used indiscriminately. Once used, the chemicals may take considerable time to break down and become inactive. Additionally, they may become concentrated as they pass up the food chain. Residues may remain in the environment for considerable periods. Environmental problems associated with these chemicals may therefore persist or appear long after the initial application.

Human health concerns

Pesticides, herbicides and other chemicals used to control pests and other unwanted life are by their nature potentially dangerous to human health. Short-term exposure to these substances can cause a range of problems, including eye, lung, throat and skin irritation, dermatitis and poisoning.

Policies

Currently, vector and pest control is not covered under any law or regulation. The Ministry of Health undertakes programs for control of vector and pests and provides technical assistance. Under the Health Master Plan and the Health and Environment Action Plan, a number of measures related to maintaining proper health have been identified. In addition, Public Health undertakes awareness campaigns related to maintaining proper sanitation and hygiene for a better health. The following measures are emphasized;

- P1. Maintain proper hygiene at all areas to reduce vectors and pests and associated diseases.
- P2. Undertake appropriate waste management practices in order to reduce problems associated with flies.
- P3. Use screens and covers in the kitchens to protect food from flies.
- P4. Potential mosquito breeding habitats such as water holding containers have to be eliminated.

P5. Undertake appropriate measures to control rodents such as domestic rats and mice.

In addition the import and use of pesticides, herbicides, fungicides and other chemicals has to be approved by the Ministry of Fisheries, Agriculture and Marine Resources.

Guidelines

- G1. Eliminate or reduce potential breeding areas by control of water collection areas, clearing of bush, and use of rodent-proof construction methods for all buildings and other structures.
- G2. Use mosquito and fly attracting traps.
- G3. Undertake smoke spraying measures to reduce mosquitoes when necessary.
- G4. Properly store waste, and regularly collect and dispose waste.
- G5. Undertake mist spraying for quick kill of flies.
- G6. All food-handling areas should be cleaned frequently to reduce problems associated with cockroaches and ants.
- G7. Undertake special sanitation precautions for all food storage, preparation and service areas.
- G8. Determine the source of rats and conditions that encourage the infestation.
- G9. Use rat poison and traps to reduce rat population.
- G10. Remove all sources of potential rat food and water.
- G11. Undertake measures to educate staff on proper sanitation and hygiene to reduce problems associated with vector and pests.
- G12. All vector and pest control measures involving the use of pesticides, herbicides and other chemicals should be undertaken by trained professionals.

Alternative pest and disease control methods

Organic Pest Control:

If the resort succeeds in creating a healthy, balanced environment for the plants, the need to use chemicals in the grounds will be reduced. There are often naturally occurring predators to control pests, and organic solutions to disease, weeds and fungi.

Fertile soil depends on two key ingredients;

- Organic compost – including kitchen and garden waste
- Leaf mould

If such soil is properly looked after, its good structure minimizes the need for synthetic chemicals of all kinds.

Attracting Natural Predators: If wildlife is attracted into the grounds: insects, birds, worms, and other creatures will help to maintain a natural balance, controlling numbers of many unwanted visitors. Number of snails, slugs, aphids and other insects can all be kept under control by providing habitats for creatures that prey on these pests. Nesting sites and food supplies encourage birds, while a pond provides a home for frogs.

Biological Control:

This calls for the introduction of natural predators or competitors into an environment to control animal or plant infestation. These can include animals, insects, viruses or fungi. Predatory mites, for, example, can counter red spider mites; parasitic wasps will resolve whitefly problems. *Bacillus thuringiensis* will put an end to pest caterpillars, by giving them a natural bacterial disease. The use of such natural biological control can be extremely cost-effective, but needs careful planning. Careful and expert review before implementation is essential.

Source: International Hotels and Environment Initiative, 1996

Diving and snorkelling

Issues

Tourist activities cause significant impacts on the marine environment throughout the operation of the resort, and can have both direct and indirect effects. The country's tourism is largely marine-based, and the most diverse array of environmental impacts from tourist activities originates from popular snorkelling and scuba diving. The most significant impacts from such activities are coral breakage and reef habitat destruction resulting from trampling and standing on corals, collection of marine souvenir items that are largely due to lack of supervision, understanding, awareness and attention. Other impacts associated with the frequency of snorkelling and diving include alteration of physical behaviour of certain organisms. However, the magnitudes of these impacts are not fully understood.

Policies

- P1. A diving regulation has been issued under the Tourism Law, and is being implemented by the Ministry of Tourism and it covers environmental and safety aspects (Refer Annex 14).
- P2. The Ministry of Tourism formulated a draft Tourist Safety regulation since 1992 which identified environmental considerations, safety in recreational activities, and lifeguard and boat requirements in tourist resorts. Some of these recommendations are included as Guidelines in this Section. Ministry of Tourism sent a Circular, 88-TS/CIR/2004/16 regarding caution in using commercial lanes for water sports (Refer Annex 15)

The Ministry of Tourism enforces the following measures for diving and snorkelling:

- P3. Collection of marine souvenirs and any material from the reefs such as corals and shells are banned.
- P4. Anchoring within the house reefs of resort islands is prohibited.
- P5. Use of gloves during diving are prohibited.

Guidelines

- G1. Closely monitor all tourist activities such as snorkelling and water sports by assigning life guards / staff to monitor the activities.
- G2. Closing off areas of the reef to snorkelling, which have a history of strong tides or harmful marine life
- G3. If there are some deep areas in the lagoon, please display the depth and other warning signs if necessary
- G4. Undertake environmental briefs prior to all snorkelling and diving excursions to include information on weather, tides, reef structure and the hazards involved.
- G5. Setting up of platforms in snorkelling areas to act as “resting stations”
- G6. Prepare a house reef plan with entrances and exit points for snorkelling and include them in the information provided in guest rooms
- G7. Set standards or limits on number of snorkelers and divers at sensitive locations.
- G8. Provide environmental briefs on good practice prior to all tourist activities that may harm the environment.
- G9. Produce information materials, sign boards and leaflets on local biodiversity to create awareness among tourists and staff.
- G10. Develop Codes of Conduct for snorkelers and divers and prominently display “DOS AND DO NOTS” in the reception and dive school areas to create tourist awareness during snorkeling and scuba diving
- G11. Training staff to treat rashes or cuts related to contact with corals or marine life.
- G12. Keep a launch to act as a life guard vessel in all resort islands equipped with at least 2 life buoys with rope, 4 life jackets, First Aid kit and dry towels.
- G13. In Diving regularly check if the requirements of the Maldives Recreational Diving Regulations are met.

Tourist excursion & boating

Issues

The demand for tourist boating can increase damage to coral reefs by anchorage from diving boats and safaris. The most susceptible corals to anchor damage are those of the branching varieties as they are highly fragile. In addition to physical damage, boats can cause chemical pollution of the reef environment. Corals can resist floating pollutants, but high concentrations of compounds that dissolve easily in seawater are a threat.

Policies

Currently tourist boating is not regulated under the tourism law or any regulation, however, the Ministry of Tourism implements the following measures:

- P6. Anchoring in resorts are prohibited. Additionally, anchoring is banned in the Marine Protected Areas (MPA's) designated under the Environmental Protection and Preservation Act except in an emergency.
- P7. Waste generated from tourist boats has to be appropriately disposed.

Guidelines

- G1. Closely monitor all activities of tourist boating.
- G2. Fix buoys in areas frequently used for diving and other activities in order to reduce damages incurred by anchoring.
- G3. Advise boat crews on the dangers of anchoring.
- G4. Do not dispose waste generated on tourist boats into the sea, instead, advise the crew to bring all the waste back to the resort for proper disposal.
- G5. Develop a guide to good practice while tourist boating.

Game fishing

Issues

Environmental issues associated with tourist fishing are insignificant. Most of the tourist fishing activities are game fishing, which is mostly undertaken in outer seas and also are undertaken on a target species based. However, frequent fishing activities to selected locations may potentially reduce the target species since they are larger fish having very slow growth rates. Also, fishing undertaken from high speed boats may affect young ones of the target species and behaviour of the target species itself, however, to what extent they are or they will be disturbed is unknown.

Policies

Tourist game fishing is currently not regulated under any law or regulation, therefore, its management is difficult.

Guidelines

- G1. Supervise all activities of tourist game fishing at all times
- G2. Regulate all tourist game fishing activities locally in order for the better management of the activity locally
- G3. Maintain proper statistics on target species game fishing including types of fish, size and number of fish caught per trip
- G4. Encourage tourists not to catch non-target species
- G5. Undertake awareness on good practices of tourist game fishing such as encouraging use of local and sustainable methods while fishing

Environmental awareness and education

By their very nature, hospitality and tourism enterprises operate as high profile business. The production and consumption cycles of tourism are inextricably linked in that producer, consumer and local citizen are brought together for the process of consumption in a way that does not happen for other businesses. Given the critical relationships that tourism in general and resort operations in particular have with the natural environment, awareness and education will have to bring together business ethics issues and environmental management techniques concerning the use of and impact upon a range of ecosystems and environments. Ethical issues notwithstanding, consumer awareness of corporate actions and responsibilities are increasing to the extent that it now forms part of the competitive framework in which firms have to operate: better understanding of sustainable issues from the practical management point of view will enhance a company's financial and market position. In developing the environmental awareness and education resorts must give attention to:

G1. Explore the full range of business benefits that arise from environmental management including reduced consumption costs, customer loyalty and enhanced public image and better staff morale.

G2. Provide a theoretic basis for understanding relationship between hotel/ resort and tourism operations and the natural environment.

G. 3 Foster a culture of conservation through managed community relationships, tourism with dignity and the development of capacity controls.

G4. Critically review and assess recent developments in environmentalism, development dilemmas, consumer awareness and environmental management.

G5. Critically evaluate the advantages and disadvantages of management vs. in action in regard to environmental management.

G6. produce strategic policies and implementation strategies for environmental management at a range of levels

G7. Understand ecosystems and the links with sustainability and 'green development'.

G8. Understand the resort operations that impact on the environment such as energy usage; solid waste; water(recycling/horticultural/agricultural usage);effects and missions; contractors and suppliers and approaches to integrating environmental management with business issues.

G9. Understand the issues and dilemmas in working with nature: snorkelling, diving, and water/land-based protected areas.

G10. All resorts must ensure that they are suitably equipped to practice in an environmentally responsible manner:

G11. Resorts must recognize and respect the boundaries of their competence and must only undertake the environmental evaluation of those aspects within this competence. Where necessary, resorts must

seek out expert advice on environmental assessment and sustainability issues. Resorts should take a consultative and interdisciplinary approach when valuating projects with respect to the environment.

G12. Resorts must ensure that all engineering work take into consideration applicable current environmental regulations, requirements and practices, and the concepts of sustainability. This may be accomplished through experience, formal education, or through informal continuing competence activities. They should also be knowledgeable of and understand public views and concerns.

G13. Resorts must ensure that all engineering work take into consideration applicable current environmental technologies, innovations and solutions to environmental problems (best available technologies), and currently accepted practices.

G14. Environmental education and awareness raising shall be an integral part of the environmental management system. For staff, comprehensive environmental training programmes shall be developed in order to raise environmental awareness and to make environmentally informed decisions every day life of all staff.

G15. The management shall encourage and also seek strong support, commitment, and participation from the tourists, tour guides, and travel agents to develop a culture of proactive environmental awareness.

G16. Environmental awareness material shall be placed in the reception area and leaflets shall be provided in guestrooms. These can indicate environment friendly practices for tourists. In the reception area special boards can be placed showing things that tourists should not do, such as picking corals as souvenirs or fishing from the house reef.

G17. In resorts where in-house movies are provided, resort can consider developing 3 minute long environmental conservation video messages.

Participation of all

G18. Resorts shall promote environmental awareness among employees through the constant flow of information and through training. An open and comprehensive dialogue between management and employees help to attain the common goal of continuously improving environmental protection in all areas of a resort.

Resorts shall ensure that environmental guidelines and goals are adhered to at the whole of the resort. Resort must ensure compliance by all tourists, tour operators and travel companies. Resorts should endeavour to inform clients about achievements in the area of environmental protection, and provide them ideas that can help them support local efforts.

International certification

ISO 14001 certification

ISO 14001 is a management tool for businesses to improve efficiency and profitability by minimising use of resources, reducing waste, and adapting to changes in technology.

ISO 14001 is a universally accepted standard. An ISO 14001 certificate is awarded to organisations and companies who's Environmental Management System complies with the requirements described in the ISO 14001 standard.

Pre-audit

First, an internationally recognised environmental institute has to be invited to review the resort's Environmental Management System (EMS) plans, operational procedures and other documents. Information on all environmental aspects, policy, objectives, regulations, implementation, internal audit and review has to be presented to this institute. The institute will then inform the resort, if it is ready for the main audit. If a major problem is found they will inform corrective action and a period to bring about this action.

Main audit

If the pre-audit is satisfactory, the main audit will be conducted. The institute will prepare the audit schedule after completion of the pre-audit stage and ask for confirmation. An assessment team from the Institute will review the resort's environmental management system to confirm its conformance with the ISO 14001 standard using interviews, observation and review of system documentation and records, including practice against the plans.

Certification process

Upon successful completion of the pre-audit and main audit, the certification committee will review the granting of the certificate. The institute will issue a certificate of approval to the resort when approved by the committee.

Environmental marketing

The clean and green image of the Maldives is the greatest asset the tourism industry has and makes a difference to its customers. Tourists from the more developed world wouldn't like to spend their holiday was it not for the coral reefs and the tropical islands the reef systems create. Therefore, our marketing and management policies should concentrate on glamorising the very natural resource base on which tourism in the Maldives depend.

With green consumerism and environmental awareness, the consumer's interest in the impact made by a product or service on the environment has increased in recent times. In the tourism sector, this may be easily related to the tourist's desire for relatively untouched, remote and pristine natural beauty, peace, calm and quiet. However, the use of vague words like "environment friendly", "green", and "ecologically sustainable" in marketing our tourism product may not necessarily show the existence of these qualities that the visitor is interested in our product.

In tourism, a high quality visitor experience is necessary. It is very important to provide accurate information according to the expectations of the tourist and place the product offer effectively in the market place. Some important considerations of this sort for the Maldivian product may be:

- Cleanliness
- Peace and tranquillity
- Remoteness and lack of hassles and bustle
- Privacy
- Pristine, untouched natural beauty
- Cultural indifference and hospitality

In a world where "green" and "ethical" tourism is promoted and becoming widely accepted, there is every reason to undertake green or environmental marketing. Environmental marketing involves showing our customers that we care about the environment because the environment makes a difference to our customers.

In the tourism sector, the growing environmental consciousness has led to the development of two particular groups of travellers known as "eco-tourists" and "green tourists". An eco-tourist seeks a travel experience that offers a close encounter with nature and special natural areas such as whale watching, turtle nesting sites and coral reefs whereas the "green tourist" may not have a strong interest in nature but would like to ensure that the facilities that they use have a minimal impact on the environment. Both these typologies of tourists have a desire to minimize their impact while they seek an enhanced experience. Therefore, there is a growing concern by European travel agents to seek or ask for the "environment friendliness" of the resort. The criteria for assessing the "environment-friendliness" of a resort include how the facilities, operational procedures as well as the services cater towards protecting, preserving and enhancing the environment. This is most often done by implementing an Environmental Management System to acceptable standards such as ISO14001 or Green Globe Certification.



Policies

- P1. The Second Tourism Master Plan (STMP) identifies promotion of Maldives as a marine eco-destination.
- P2. The Ministry of Tourism has awarded The President of Maldives Green Resort Award to the most environmentally outstanding tourist resort of the year annually since 1999 (Refer Annex 16 for Award Guidelines).
- P3. Promote responsible tourism marketing, and develop facilities to meet specific niche markets, particularly in ecotourism, nature and cultural tourism (Second National Environment Action Plan, 2nd NEAP).
- P4. According to the Sixth National Development Plan(6th NDP), tourism marketing shall focus on the following aspects of tourism development.

Diversify the tourist markets and local tourism products (including domestic tourism)

Promote sustainable tourism by encouraging responsible planning and management practices consistent with the conservation of the natural and cultural heritage of the Maldives

Promote public and private sector participation in supporting the development of the tourism industry through strategic marketing, sales, planning, co-ordination, and research

- P5. According to the Tour Operators' Initiative, "we are committed to developing, operating and marketing tourism in a sustainable manner; that is, all forms of tourism which makes a positive contribution to the natural and cultural environment, which generate benefits for the host communities, and which do not put at risk the future livelihood of local people".
- P6. Tourism activities which directly or indirectly contribute to the conservation of nature and biological diversity and which benefit local communities should be promoted by all stakeholders. (Berlin Declaration 2)
- P7. Ensure that the organization's marketing gives a true representation of the destinations character and advises clients on how they can help conserve its unique environmental and cultural qualities (Agenda 21 for the T & T).
- P8. Market tourism in a manner consistent with sustainable development of tourism (UNEP Draft Principles, 3.1)
- P9. Help consumers to make informed choices about environmentally responsible tourism products by adopting or developing appropriate and meaningful green labels (Agenda 21 for the T & T)

Guidelines

- G1. In view of sustainable tourism development, marketing and promotion should emphasize environmentally sound and socio-culturally equitable behaviour on the part of the tourists and on the tourism industry in general.
- G2. A collective effort to promote sustainable use and management of the tourism product is essential. Natural areas of the islands such as forested areas, water bodies, mangroves are ecologically important areas and can be marketed as wilderness and natural areas for tourism.
- G3. The marketing vision should be to promote the product (the environment) so that tourists enjoy the beauty of the product whilst keeping the product intact and causing no harm or damage.
- G4. Be open, honest and realistic about our environmental and social impacts, targets and achievements in the context of our business objectives.
- G5. Strategies to diversify the tourism product(s) must be consistent with sustainable tourism practices such as limiting tourist numbers to reduce any negative impacts of mass tourism and maintain class. Even the development and marketing of domestic tourism must be based on a set of standards to maintain environmental and service quality.
- G6. In marketing, do not use ambiguous words like “environment friendly” or “ecotourism”. Use words that tourists can easily understand. Tourists do not necessarily understand the phrase, “environmentally friendly” but rather phrases like “white sandy beaches kept clean and free from pollution”
- G7. As much as possible, use descriptions instead of technical words or codes
- G8. It may be useful to provide potential tourists with information on the environmental impacts of the tourism product based on the initial EIA report
- G9. Official labels shall be used only if the product has been given the rights to use such labels. These include international labels such as “Green Globe 21”.
- G10. G10. Specify as much factual information as possible about the environment to give tourists absolute reasons to come to the Maldives. The overall impression shall be based on facts.
- G11. Marketing and promotional materials shall emphasize the special environmental character of the tourism product by using pictures, colours and sounds.
- G12. Implement an Environmental Management System that fits acceptable standards such as ISO14001 and Green Globe Certification. The costs of development and implementation of an EMS is not prohibitive and may serve as a useful marketing tool although the cost of certification may be significant. However, certification may be obtained for groups of resorts, which may be considered viable and useful.

G13. Environmental marketing should focus on reducing leakage of foreign exchange from gross tourism receipts.

G14. When marketing the resort, we should make sure that we provide assurance to tourists that at all stages of development, we are aware of the impacts of the product(s) we offer... including travel/transport, supplies, etc.

G15. Management and marketing should focus on

- expanding markets while promoting and protecting natural resources, cultural heritage and lifestyles.
- Developing careers, education, employee relations, promoting smaller firms, raising environmental awareness, and helping in its own way to narrow the gap between the 'haves' and 'have-nots'.
- Sensitive provision of traditional tourism products and imaginative product diversification that reduce seasonality and increase yields.
- Improving the quality of tourism products and services, and adding value for money while increasing consumer choice.
- Recognize the strength of team work and work in collaboration with Tourism Promotion Board, MATI and government and share information and experience at all possible venues or create such venues for mutual respect and benefit.

G16. Some options for improvement in marketing include:

- Develop maps with historical, cultural and geographic information
- Improve marketing for cultural, historical and recreational experiences
- Identify suitable areas for development and areas to be protected
- Establish a destination theme and market identity
- Collect reliable information on participation rates, user profiles, economic and environmental impacts

Environmental monitoring

Monitoring helps to detect problems at an early stage and enable action to prevent the possibility of more serious damage in future. The key areas that must be the focus of any environmental monitoring programme in the tourism industry are:

- Beach and coastal areas
- House reef and marine biodiversity
- Island flora and fauna
- Wastes and emissions (including pollutants, wastewater, noise and vibrations)
- Health and safety
- Socio-economic environment

These guidelines provide the basic requirements for existing and future monitoring programmes in the tourism sector in these five areas separately.

Policy

- P1. Assess the environmental impacts of tourism and sustainability issues continually (National Environment Action Plan II)
- P2. Environmental monitoring is an integral component of environmental impact assessment and the Ministry of Environment and Construction enforces environmental monitoring for all the new projects that are subject to article 5 of Act 4/93.

Guidelines

- G1. Environmental monitoring shall not be merely a regulatory process but a voluntary process as well since monitoring would help resorts to improve their environmental performance and reduce costs thereby inspiring staff and providing quality service to the tourists.
- G2. The monitoring programme implemented in resorts must be cost-effective and easy to implement. It should assist the resort management and decision-makers in gradual improvement of the environment – social, economic and physical.
- G3. The starting point in a monitoring programme is the collection of baseline data. Therefore, monitoring effectively starts at the onset of a development project, i.e. with the EIA report, which examines the initial site conditions. Baseline data often involves historic accounts of processes and observations from local inhabitants who have a long-term experience of the local conditions. The monitoring programme should develop from the main findings of the initial programme and continue to monitor changes against the baseline. In most of the resort developments in the Maldives, EIAs are undertaken during the project implementation period

when changes or modifications have already been brought to the natural or physical environment of the island.

Beach and coastal areas

G4. The white sandy beaches and the coastal areas are the focus areas for all tourist activities in the Maldives. Monitoring changes in beaches and longshore movement of sand deposits around the island is fundamental to consider appropriate management options for the island environment including setback limits.

Table 2: Coastal monitoring considerations

Impact Area	Data sought	Min. Frequency	Purpose
Hydrodynamic conditions	Waves Currents Water levels (tides)	Every three months	Planning of appropriate docks, water sports and beach management
Bathymetry	Aerial reconnaissance surveys Bathymetric surveys		Appropriate access, cost-effective dredging Sand pumping options
Beach and shoreline conditions	Aerial photos Periodic photos Beach profiles Sand transport (sand traps) Existing structures' condition	Every three months	Maintain healthy beaches and appropriate location and design of coastal structures (breakwaters and groynes)
Lagoon water quality	pH, temp, turbidity, nitrates, phosphates, TSS and TDS preferably on-site	Every three months for the first year and then every six months	Understand how the sediments suspended within the water column varies and how water quality is affected.
Seagrass beds	Extent, Condition and Density	Every six months	Promote the crystal clear lagoons' image

House reef and marine biodiversity

G5. The key attraction in the tourism product offered by the Maldives is the marine environment, the coral reefs and the diversity of life found in the marine ecosystem. Unsustainable management practices and limited understanding of the importance and role of coral reefs and marine biodiversity could basically kill tourism in the Maldives. Thus it is very important to monitor the changes in this area

Table 3: House Reef and Marine Biodiversity monitoring considerations

Impact Area	Data sought	Min. Frequency	Purpose
Reef health	Photographic records Visual impacts (waste/snorkeller) Line Intercept transects Fish census Coral death and regeneration Sedimentation and water quality	Once a month during construction phase; once every six months thereafter	Maintain and assess the condition of one of the major attractions of the Maldives, i.e. reefs. Provide a great snorkelling experience
Protected dive sites	Photographic records Aesthetic quality accounts Guest complaints/comments Use nos. and frequency	Every three months	Maintain healthy and quality dive sites
Protected Species	Conservation programmes Habitats, such as turtle nesting sites	Every six months	Promote conservation of biodiversity in the Maldives

Island flora and fauna

- G6. The impacts of introducing alien or imported species into the existing landscape and vegetation of the island may be quite significant. The tropical vegetation of the islands of the Maldives gives the island environment a unique character.

Table 4: Island flora and fauna monitoring considerations

Impact Area	Data sought	Min. Frequency	Purpose
Pest control	Use of pesticides	Monthly records	Reduce use of chemicals
Gardening and landscaping	Nos. and species removed Nos. and species planted/imported Amount and type of fertilizer Photographic records	Monthly or quarterly records and surveys	Improve landscape Increase aesthetic quality and tourist satisfaction
Existing major trees	No. and species Photographic records Quadrat surveys	Every six months	Protect existing tropical landscape Protect particular species

Socio-cultural and economic issues

- G7. One of the key aspects of ecotourism development or sustainable tourism management is the contribution that tourism businesses make towards social and community development. Therefore, resorts must be able to demonstrate their contribution towards social and community development through written records of economic contributions and awareness creation

Table 5: Monitoring socio-economic condition

Impact Area	Data sought	Min. Frequency	Purpose
Community development	Financial contributions Community involvement Activities with communities No. of island hopping activities	Resort records	Communities will accept tourism businesses more readily Promote sustainable growth of tourism
Community awareness	No. of awareness/training sessions No. of participants Participant responses/comments	Resort records	Aware communities yield improved conditions for business
Cultural tourism	Cultural events Extent to which cultural events and activities are included	Resort records	Help promote cultural tourism

Wastes and emissions

- G8. The tourism industry generates the largest amount of wastes in the Maldives. Waste management and disposal has been identified as one of the key environmental aspects of tourism development in the Maldives. Appropriate mechanisms for effective disposal of waste can only be designed when accurate and useful data on the types and methods of disposal and especially impacts of waste have been collected over a useful period of time. Monitoring can also provide policy and decision makers with the necessary information on health risks involved in inappropriate waste disposal to the ecosystem, guests and the general public.

Table 6: Monitoring of wastes and emissions

Impact Area	Data sought	Min. Frequency	Purpose
Garbage Disposal	Quantity and type of waste Method of disposal Frequency of disposal Soil quality Quality of beach sediments	Regular records and monitoring aesthetic quality every month	Reduce impacts of waste floating onto beaches and on impacts on biodiversity & corals Reduce eutrophication of lagoons
Hazardous wastes	Quantity and type Disposal methods Frequency of disposal	Regular records	Reduce safety risks and health risks from inappropriate handling and disposal
Soil and Groundwater	Physical quality (pH, TDS, etc) Biological quality (coliforms) Chemical quality (incl. salinity) Leaks in sewerage system Waste oil and lubes Oil handling areas Pesticide use and handling	Every six months	Avoid nutrient buildup in soil and groundwater to improve landscape and reduce smells in toilets Improve aesthetic appeal of white sandy soil
Wastewater effluent and sludge	Effluent quality (BOD, TSS, etc) Water quality at disposal areas Sludge handling and disposal Failures of wastewater plant	Every six months	Control pathogens Control odours Protect ecosystems Reduce health risks
Brine and cooling water discharges	Water quality at disposal areas	Every six months	Protect ecosystems Reduce health risks
Atmospheric emissions	Use of fossil fuels Air quality (esp. particulates)	Once a year	Reduce air pollution and cumulative impacts on global climate change and foster healthy environment

Health and safety

G9. Island resorts are discrete management units existing on their own and where all facilities are provided on site. Health and safety risks can occur in resort islands from natural and human caused hazards. Some of the human caused hazards include fuel, chemical and waste handling; and fires. Identification and monitoring of hazards help to minimize risks.

Table 7: Monitoring of health and safety

Impact Area	Data sought	Min. Frequency	Purpose
Incident/accidents	No. of fatalities No. of lost workdays Incidence of accidents/incidents No. of falls from wet surfaces No. of stepping on sharp objects No. of cuts and burns	Regular records	Reduce incidents/accidents Understand safety hazards and eliminate or reduce risks
Training/Awareness	No. of training sessions No. of fire drills No. of awareness sessions	Regular records	Promote health and safety
Fire safety	No. and frequency of fire detection system inspections Frequency of refilling fire extinguishers	Regular records	Reduce the risk of fire
Safety equipment	No. and types of equipment Frequency of equipment maintenance or inspection	Regular records	Provide safe working environment for staff
Food safety	Inspections against HACCP plan	Every three months	Ensure health and safety of guests

Other considerations

G10. Resorts are also encouraged to monitor their use of natural resources such as water, their efforts to conserve resources and the effectiveness of those measures. Resorts may also monitor the level of technology and their effectiveness in improving environmental quality. It is also recommended that resorts keep an Environmental Effect Register (EER) to record guest complaints regarding environmental issues such as beach erosion or quality of reef/snorkelling experience.

ANNEXES

Annex 1

Ministry of Tourism, Organisation Functions and Objectives

1.1. Purpose of the Organization

The Ministry of Tourism develops tourism at a national level and carry out long-term planning, development, monitoring and regulatory functions to ensure a sustainable tourism industry for the benefit of the people of the Maldives.

1.2. Vision

Maldives to be the best example of sustainable tourism development – a nation with an economically profitable tourism industry in harmony with its natural environment, cultural resources and the values of its people.

1.3. Mission

Improve the quality of life of the Maldivian people by optimizing and balancing the economic, environmental, socio-cultural benefits of tourism, with equitable distribution of these benefits to the society, while minimizing the possible negative impacts of tourism.

1.4. Goals / Objectives

- Increase economic benefit of tourism including growth of national income, more and better employment opportunities, increased net foreign exchange earnings, regional development and increased revenues to the government.
- Ensure equitable distribution of the economic benefits of tourism to the society.
- Make tourism a vehicle for protection of conservation of natural resources, and the revitalisation and preservation of the nation's cultural assets.
- Maintain the strong private sector role in the industry while enhancing the operating environment and facilitating the private sector to achieve the desired benefits of tourism.
- Increase Maldivian participation at all levels of the industry, and especially increase the participation of women in tourism industry.
- Nurture a society that understands that value of tourism to the nation, and its critical role in the future prosperity of the country and its people.
- Remain competitive in the global market by continuously expanding and diversifying the product, enhancing the quality of services, and become established as a quality tourism destination delivering good value-for-money.

- Develop support infrastructure and activities, to ensure hassle-free travel and the safety and security of tourists during their holiday.

1.5. Functions of the Organisation

- Formulation and implementation tourism development policy
- Long-term planning of tourism development at national level
- Coordination of development implementation
- Formulation and implementation of laws and regulations for tourism
- Establishment and administration of facility and service standards
- Adoption of sound environmental principles in tourism development and operation
- Statistical collection, compilation and reporting
- Conducting of research studies
- Planning and implementation of human resource development for tourism
- Establishment and administration of trade standards, in coordination with the concerned authorities
- Leasing of land for tourism and registration of all tourism operators and facilities

Annex 2

Maldives Tourism Act (Law 2/99) – Unofficial Translation

1. Introduction and Title

- a) This Act provides for the determination of zones and islands for the development of tourism in the Maldives: the leasing of islands for development as tourist resorts, the leasing of land for development as tourist hotels and tourist guesthouses, the leasing of places for development as marinas, the management of all such facilities; and the operation of tourist vessels, diving centres and travel agencies, and the regulation of persons providing such services.
- b) This Act shall be cited as the “Maldives Tourism Act”

2. Leasing of land for development as tourist resorts and tourist hotels, leasing of places for development as marinas and management of such establishments.

The leasing of islands and land for development as tourist resorts and tourist hotels, the leasing of places for development as marinas, the management of tourist resorts, tourist hotels, establishments such as tourist guest houses and marinas; and the operation of tourist vessels, shall all be in accordance with this Act and regulations made under it.

3. Provision of diving and travel agency services

The management of diving centres and travel agencies and the provision of their services in the Maldives shall be in accordance with regulations made under this Act.

4. Determination of tourism zones, islands for development as tourist resorts and places for development as marinas

Zones for the development of tourism in the Maldives, islands for development as tourist resorts and places for development as marinas shall be determined by the President.

On tourist resorts

5. Leasing of islands and land for development as tourist resorts.

Islands and land for development as tourist resorts shall be leased to the party that submits the best-qualified bid in respect of such islands or land in accordance with pre-established procedures in a public tender held by the Ministry of Tourism. Islands or land in which the Government makes an investment wholly or in joint venture shall be exempted from the procedure provided herein.

6. Entering into and the contents of lease agreements.

A tourist resort on an island or land leased under this Act shall be developed under a (lease) agreement to be entered into between the Government and the lessee of such island or land. This (lease) agreement shall contain the following:-

- a) (the name of) the island or land being leased;
- b) the period of the lease;
- c) where a specific time period is granted for construction (of the tourist resort) during the term of the lease, such period and commencement date of the operation of the (tourist) resort;
- d) circumstances warranting premature termination of the agreement and the procedures to be followed upon such circumstances arising;
- e) the amount of the lease rent, method of its assessment and the manner of its payment;
- f) the procedures to be followed in the event of a sublease of the (tourist) resort or the transfer of management of the resort to a third party; and
- g) the procedures to be followed in the event of a breach of the agreement by the lessee.

7. Return of (tourist) resort to the government upon expiration or annulment of the (lease) agreement

- a) An island or land for development as a tourist resort shall be leased subject to the condition that such island or land shall, upon expiration of the period specified in the lease agreement or upon premature annulment of the agreement, be returned to the Government in the same condition as it existed when the resort was under operation, in order for the Government to act in accordance with subsection (b) of this section.
- b) Upon expiration of the lease period of an island or land for development as a tourist resort or upon annulment of the agreement prior to the expiration of its terms other than either at the request of the lessee or on breach of the agreement by the lessee, and upon return of the island or land to the Government, the monetary value of the buildings and items on the island or land, after an assessment has been made in accordance with principles determined by the Auditor General of the Maldives and after deducting an amount for depreciation until the date of return of the island or land to the Government, shall be paid by the Government to the former lessee within two years from the date of the return of that island or land.
- c) Where an island or land returned to the Government in the circumstances specified in subsection (b) of this section either upon expiration of the lease period or upon annulment of the (lease) agreement prior to the expiration of its term, is leased under section 11 of this Act to the former lessee of the island or land, the monetary value in respect of the buildings and items on the island or land as provided in subsection (b) of this section shall not be payable to that lessee.

8. Lease period

Save for islands and land leased for development as tourist resorts as provided in section 9 of this Act, islands or land for development as tourist resorts shall be leased for a maximum period of 25 years from the date of possession of the island or land is granted to the lessee.

9. Circumstances where lease is granted for a period exceeding 25 years

- a) Where the initial investment made for the development of a tourist resort on an island or land exceeds US\$ 10 million, the Government may in its discretion grant a lease of the island or land for a maximum period of 35 years after due consideration is made of the size of the investment and the standard of the proposed resort.
- b) Where the lessee of an island or land for development of a tourist resort is a public company that meets all of the conditions specified below, such island or land may be leased for a period of 50 years.
 - i. the (public) company is registered in the Maldives;
 - ii. the development and operation of tourist resorts is included as an object in the memorandum of association of the (public) company;
 - iii. the (public) company's shareholders are all Maldivian citizens and at least 50% of the company's shares are sold to the public;
 - iv. no more than 1% of the publicly-held shares are held by a single shareholder except where the shareholder is an investment company, in which case no more than 5% of the publicly-held shares should be held by that investment company; and the shares were sold to the public in a manner feasible for members of the public to purchase them and the shares were not sold to a determinate group of persons.

10. Extension of (lease) periods

- a) Upon the coming into force of this Act, an additional 4 years shall be granted to the lease period of an island or land leased for development as a tourist resort prior to the coming into force of this Act.
- b) An additional 25 years shall be granted to the lease period of an island or land leased for development as a tourist resort upon application for such extension provided that the lessee has registered as a public company, has sold at least 50% of its shares to the public and satisfies the conditions specified in subsection 9(b) of this Act, and provided further that the application for the extension of the lease period was made within 4 years from the date of the coming into force of this Act or within 4 years from the date of possession of the island or land was granted in the case of a lessee to whom an island or land was leased after the coming into force of this Act.
- c) If a lessee of an island or land leased for development as a tourist resort has registered as a public company, has sold at least 50% of its shares to the public and has made an application for an extension of the lease period in respect of such island or land, then, provided such company satisfies the conditions set forth in subsection 9(b) of this Act, an additional 20 years shall be granted to the lease period of such island or land where the application was made after a lapse of 4 years from the commencement of the lease period but before the expiration of half of the term of the lease period, and if the application is made at any time after the expiration of half of the term of the lease period, then an additional period equivalent to the term of the lease period shall be granted to the lease period.

11. Procedure upon expiration or annulment of lease

- a) Upon expiration of the term of the lease agreement of an island or land leased for development as a tourist resort or upon expiration of the period extended under section 10 of this Act or where the lessee is divested or possession of the island or land due to

annulment of the agreement prior to the expiration of the lease period, then a fresh lease in respect of such island or land may be made in accordance with the manner provided in section 5 of this Act and for a period specified in this Act.

- b) Parties wishing to lease an island or land placed in public tender to be leased afresh in accordance with subsection (a) of this section shall when submitting their bid undertake that in the event the lease is granted to such party, they will pay to the Government the monetary value of the buildings and items on the island as assessed in accordance with the principles determined by the Auditor General of the Maldives after an amount has been deducted for depreciation, within 1 year from the date of possession of the island or land is granted to such party; provided, however, that where the former lessee of such an island or land submits a bid to lease the island or land afresh, such a lessee shall not be required to undertake to pay the monetary value of the (buildings and) items on the island.

12. Assigning lessee's rights to third parties

An investment made on an island or land leased by the Government for development as a tourist resort may be sold or the leasehold rights accruing to a lessee under an agreement made between the Government and the lessee may be sold or transferred or the shares of a lessee on an island or land that is a company may be transferred upon obtaining written approval from the Ministry of Tourism and in accordance with any conditions stipulated by that Ministry. The transfer of shares of public companies is excluded from this provision.

13. Conversion of a public company to a private company while having a lease of an island

Where the lessee is a public company that has the lease of an island or land for a period of 50 years under section 9(b) of this Act or for a period extended under section 10, and either converts to a private company or fails to satisfy any of the conditions specified in section 9(b) of this Act, then the period of extension of the lease granted to such company by reason of being a public company shall be deducted.

14. Divesting possession for the defence of the Maldives

- a) Where an island or land leased under this Act for development as a tourist resort is required for defence of the Maldives, possession of such island or land may be divested from the lessee without any prior notice being given to that effect. Save as provided herein, the possession of an island or land may be divested from the lessee prior to the expiration of the lease only in accordance with the provisions of the [lease] agreement of such island or land.
- b) Where possession of an island or land leased for development as a tourist resort is divested pursuant to sub-section (a) of this section on the grounds of it being required for defence of the Maldives, equitable compensation shall be paid in respect of the investment made on such island or land.
- c) Felling of coconut palms and trees on an island or land leased for development as a tourist resort, dredging of the lagoon of such an island, reclamation of land, or any other activity determined by the Ministry of Tourism as may be likely to cause a permanent change to the [natural] environment of such places, may only be carried out after obtaining written permission from that Ministry and in accordance with relevant regulations made by it.

15. Felling of coconut palms and trees, dredging of lagoon and carrying out such activities.

- a) Felling of coconut palms and trees on an island or land leased for development as a tourist resort, dredging of the lagoon of such an island, reclamation of land, or any other activity determined by the Ministry of Tourism as may be likely to cause a permanent change to the [natural] environment of such places, may only be carried out after obtaining written permission from that Ministry and in accordance with relevant regulations made by it.
- b) Any application pursuant to subsection (a) of this section for permission of the Ministry of Tourism to carry out dredging of the lagoon of an island or reclamation of land or any other activity that may cause a permanent change to the [natural] environment of such a place shall contain the following.
 - i. evidence that the proposed change is fundamental for the provision of services from such a place; and
 - ii. an environmental impact assessment report submitted to and approved by the Ministry of Home Affairs, Housing and Environment.

16. License to operate tourist resort.

- a) Every resort developed on an island or land leased in accordance with section 5 of this Act shall be operated after registering the same at the Ministry of Tourism and after obtaining a license issued by the Ministry of Tourism to operate a tourist resort.
- b) A license to operate a tourist resort shall be issued in respect of establishments that satisfy the following conditions:-
 - i. the construction [of the tourist resort] is completed in accordance with guidelines determined by the Ministry of Tourism; and
 - ii. the services determined by the Ministry of Tourism to be necessary at such establishments are made available at the tourist resort.

On tourist hotels and tourist guesthouses

17. Registration and obtaining license for operation

Neither a tourist hotel nor a tourist guesthouse shall be operated in the Maldives except after registering the same at the Ministry of Tourism and after obtaining a license issued by the Ministry to operate such establishments.

18. Establishment to which licenses shall be issued

A license to operate a tourist hotel or a tourist guesthouse shall be issued to those establishments that satisfy the following conditions:-

- i. the building and facilities are in accordance with guidelines made by the Ministry of Tourism;

- ii. the services determined by the Ministry of Tourism to be necessary at such establishment are made available at the tourist hotel or tourist guesthouse.
- iii. the registration fee prescribed in section 21 of this Act is paid; and
- iv. the establishment is situated on an island determined pursuant to section 4 of this Act for the development of tourism.

19. Leasing of land for development as tourist hotels and tourist guesthouses

Where the Government leases any land for development as a tourist hotel or a tourist guesthouse, such a lease shall be made in accordance with the provisions of this Act relating to the leasing of islands or land for development as tourist resorts. Furthermore, the provisions of this Act relating to tourist resorts shall also apply [equally] in respect of tourist hotels and tourist guesthouses.

20. Tourist hotels and tourist guesthouses where tourists can be accommodated

No tourist shall be provided accommodation for payment in any establishment other than a tourist hotel or tourist guesthouse registered and licensed under this Act or a tourist resort or tourist vessel licensed under this Act.

21. Registration fee

Every tourist hotel or tourist guesthouse shall be registered upon payment of a registration fee of MRf 10,000 in the case of a tourist hotel and MRf 5,000 in the case of a tourist guesthouse.

On tourist vessels

22. Obtaining license to operate tourist vessels

No tourist vessel shall be operated in the Maldives except after obtaining a license from the Ministry of Tourism to operate such a vessel.

23. Vessels to which license shall be issued

A license for the operation of a tourist vessel shall be issued to vessels that satisfy the following conditions:-

- a) the vessel and its facilities comply with guidelines determined by the Ministry of Tourism
- b) the services determined by the Ministry of Tourism to be necessary on such vessel are made available on the vessel; and
- c) The vessel is duly registered at the Ministry of Transport and Civil Aviation.

24. Operation of foreign tourist vessels in the Maldives

- a) No foreign-registered tourist vessel arriving in the Maldives shall travel or anchor within any of the territorial waters of the Maldives except after obtaining permission from the relevant Government authorities and from the Ministry of Tourism in accordance with its determined regulations.

- b) The permission referred to in sub-section (a) of this section for traveling and anchoring in the Maldives shall be issued by the Ministry of Tourism upon payment of a fee of MRf 5,000. The [foreign-registered tourist] vessel's local agent in the Maldives shall be liable for the payment of this fee.

On marinas

25. Places for development and operation of marinas

Marinas shall be developed and operated in the Maldives at such places leased pursuant to section 26 of this Act.

26. Leasing of places for development as marinas

Places for development as marinas shall be leased in accordance with the provisions of this Act relating to the leasing of islands and land for development as tourist resorts. Furthermore, the provisions of this Act relating to tourist resorts shall also apply [equally] in respect of marinas

27. Conditions for issuing the license

The license referred to in section 27 of this Act for the operation of marinas shall be issued in respect of marinas that satisfy the following conditions:-

28. Development and operation of marinas

Marinas shall be developed and operated after obtaining a license issued by the Ministry of Tourism to operate such places and in compliance with guidelines determined by that Ministry in relation to the development and operation of marinas.

29. Conditions for issuing the license

The license referred to in section 27 of this Act for the operation of marinas shall be issued in respect of marinas that satisfy the following conditions:-

- c) [the marina] is built in compliance with the guidelines determined by the Ministry of Tourism and is in possession of the required permission from the relevant Government authorities; and
- d) the services determined by the Ministry of Tourism to be necessary at such place are made available from the marina.

On diving centres

30. Registration and obtaining license for operation

No diving centre providing services to tourists shall be operated in the Maldives except after registering the same at the Ministry of Tourism and after obtaining a license [to do so] issued by that Ministry.

31. Parties to which license shall be issued

The license referred to in section 29 of this Act for the operation of a diving centre shall be issued to parties that satisfy the following conditions:-

- e) where the party is a company or other business organization, the operation of diving centres is included as an object in the memorandum of association of that company or business organization;
- f)
- g) where the party is a foreign company or business organization, it is registered at the Ministry of Trade and industries as a company or business organization carrying on business in the Maldives;
- h)
- i) the [physical] presence of a diving centre operated in accordance with the guidelines provided in the regulations made under this Act, and the services determined by the Ministry of Tourism to be necessary at such centre are made available at the diving centre; and
- j)
- k) the registration fee prescribed in section 31 of this Act is paid.

32. Registration fee

A diving centre referred to in section 29 of this Act shall be registered upon payment of a registration fee of MRf 5,000.

On travel agents

33. Registration of travel agents and obtaining license

No person shall provide travel agency services in the Maldives except after obtaining a license *[to do so]* issued by the Ministry of Tourism.

34. Parties to which license shall be issued

A license to provide travel agency services shall be issued to parties that satisfy the following conditions:-

- l) where the party is a company or other business organization, the provision of travel agency services is included as an object in the memorandum of association of that company or business organization;
- m) where the party is a foreign company or business organization, it is registered at the Ministry of Trade and Industries as a company or business organization carrying on business in the Maldives; and
- n) the [physical] presence of an office operated in compliance with guidelines provided in regulations made under this Act, and the services determined by the Ministry of Tourism to be necessary at such office are made available from the travel agency.

35. Acting as tour guides

- o) No person shall act as a tour guide in the Maldives except after obtaining permission from the Ministry of Tourism in accordance with regulations made by that Ministry.
- p) Every person acting as a tour guide shall, whilst acting in the course of business as a tour guide, attach to his attire in a manner identifiable to others the permission issued to him.

Tax

36. Tax

- q) The sum of US\$ 6, or its equivalent in a foreign currency acceptable to the Maldives Monetary Authority, shall be collected as tax payable to the Government of the Maldives from each tourist per day of stay at a tourist resort, tourist hotel, tourist guesthouse or tourist vessel. The management of the establishment where the tourist was provided accommodation shall be liable for collection of that tax from tourists and payment of the due amount to the Government. The amount of tax due in respect of the preceding month shall be paid before the 15th day of the current month.
- r) The tax referred to in subsection (a) of this section shall be collected for each day of stay in the Maldives from every tourist that is on board every tourist vessel which has been granted permission under section 24 of this Act, except for those vessels referred to in subsection (c) of this section. The tax shall be paid to the Government prior to the departure of the tourist vessel from the Maldives. The liability as regards payment of the tax shall be borne by the tourist vessel's local agent.
- s) Any foreign-registered tourist vessel arriving in the Maldives and staying within its territorial waters for a period not exceeding 24 hours shall not be required to pay the tax referred to in subsection (a) and (b) of this section.

37. Provision of information relating to tourists

Information regarding tourists that were resident in the tourist resort, tourist hotel, tourist guesthouse or tourist vessel during the preceding month shall be submitted to the Department of Inland Revenue before the 8th day of the current month. Such information shall be submitted in accordance with regulations made by that Department and in a format as may be determined by it.

38. Imposition of fine and revocation of licenses on failure to pay tax

- t) Where the management of a tourist resort, tourist hotel or tourist guesthouse or the operator of a tourist vessel is in violation of this Act as regards payment of tax due, a fine of MRf 1,000 per bed registered at such establishment or vessel at the time of such violation shall be paid to the Department of Inland Revenue in addition to the payment of overdue tax.
- u)
- v) The tax referred to in section 35 of this Act and the fines referred to in subsection (a) of this section shall be paid by the end of the current month. In the event of default in payment during that period, the license issued to operate such an establishment shall be revoked.

w)

x) Where a license is revoked under sub-section (b) of this section, it shall be re-issued upon settlement of the defaulted payment of tax and fine.

39. Guests exempted from collection of tourism tax

Guests of the Government that are accorded special immunities and privileges shall be exempted from the collected of tax specified in this Act.

Miscellaneous matters

40. Foreigners engaging in any tourism related activity

No foreign party shall engage in any tourism related activity referred to in this Act in the Maldives except after entering into the agreement specified in Act No. 25/79 (Maldives Foreign Investments Act) and after registering the investment at the Ministry of Tourism in accordance with the provisions of that Act.

41. Exemption of import duty on construction materials

The President shall have the discretion to determine the principles for exemption of import duties on materials imported for the construction of tourist resorts or tourist hotels situated on land leased for the development of such under this Act, the construction of marinas or for the purposes of the up-gradation of such establishments, and to exempt such duty in accordance with those principles.

42. Provision of information to Ministry of Tourism.

All parties engaged in tourism related activities shall, in accordance with regulations stipulated by the Ministry of Tourism, provide it with information required to prepare the tourism statistics of the Maldives.

43. Duration and renewal of licenses.

Licenses for the operation of tourist resorts, tourist hotels, tourist guesthouses, marinas, tourist vessels, diving centres and travel agencies shall be issued under this Act for a period of 5 years. All other licenses shall be issued for the period stated in regulations made by the Ministry of Tourism. Licenses shall be renewed upon expiration of the period for which they have been issued.

44. Display of Licenses

All licenses issued under this Act shall, unless otherwise provided in this Act, be displayed in a prominent manner in the establishment to which the license was issued.

45. Determination of standard of services

The Ministry of Tourism shall have the discretion to classify tourist resorts, tourist hotels, tourist guesthouses and tourist vessels into various classes and to determine the services and standards of those services to be provided by such establishments based upon their classifications.

46. Right to monitor standard of services

The Ministry of Tourism shall have the discretion to monitor tourist resorts, tourist hotels, tourist guesthouses, tourist vessels, marinas, diving centres and travel agencies and to ensure that the services provided by such establishments are in accordance with guidelines determined by the Ministry of Tourism, the provisions of this Act and any regulations made under it.

47. Imposition of fine and suspension of license on failure to meet standards.

Where the standard of service provided by a tourist resort, tourist hotel, tourist guesthouse, tourist vessel, marina, diving centre or travel agency falls below the guidelines determined by the Ministry of Tourism, then the Ministry may in its discretion impose upon such establishment a fine not exceeding MRf 1,000,000 and, taking into account the extent of the default, suspend the license issued to the establishment until the default is rectified.

48. Penalty

Except where it is otherwise stated in any other provision of this Act, a party in default of a provision of this Act shall be fined by an amount not exceeding MRf 100,000.

49. Registration and obtaining licenses by establishments not registered or licensed prior to the coming into force of this act

Those establishment specified in this act as being required to be registered or licensed but which are not either registered or licensed prior to the coming into force of this Act, shall be registered or licensed within 1 year of the date of the coming into force of this Act.

50. Formulation of regulations.

Any regulations that are required to be made under this Act, unless specified otherwise, shall be made and enforced by a party determined by the President for such purpose.

In this Act, unless the context otherwise requires:-

- y) “tourist resort” means an island or a designated area of an island that has been developed to accommodate tourists and to provide board and lodging facilities for them;
- z) “tourist hotel” means an establishment, other than a tourist resort or tourist guesthouse, that has been developed to provide board and lodging or [only] lodging for tourists for a payment decided at a certain rate per day of stay;
- aa) “tourist guesthouse” means an establishment, other than a tourist resort or a tourist hotel, that has been developed, in compliance with standards determined by the Ministry of Tourism, to provide board and lodging or [only] lodging for tourists for a payment decided at a certain rate per day of stay;
- bb) “tourist vessel” means a seagoing vessel that has been developed, in compliance with standards determined by the Ministry of Tourism, to provide board and lodging for tourists for a payment decided at a certain rate per day of stay on board such vessel;
- cc) “marina” means harbours developed for anchoring yachts and such vessels and to provide various services to those vessels;
- dd) “diving centres” means diving schools, diving bases and all other parties that provide diving services for tourists;
- ee) “travel agency service” means services provided by travel agents, tour operators and other parties engaged in arranging travel on a commercial basis for persons travelling

to or from the Republic of Maldives and excludes those organizing Hajj and Umra [pilgrimages] for Maldivian citizens;

- ff) “investment company” means bank, insurance companies and such financial companies and institutions formed to manage and invest funds of various persons; and
- gg) “tourist” means every person that enters the Maldives who is not a Maldivian citizen and is not possession of a “resident permit”. A ‘resident permit’ is a permit issued pursuant to regulations of the relevant authorities permitting an individual to be resident in the Maldives whilst not being a tourist.

51. Laws repealed

Upon the coming into force of this Act, Act No. 15/79 (Law on Tourism in the Maldives) and Act No. 3/94 (Law on Leasing of Uninhabited Islands for the Development of Tourist Resorts) shall be repealed.

Annex 3

Environment Protection & Preservation Act. Law 4/93

Introduction

2. The natural environment and its resources are a national heritage that needs to be protected and preserved for the benefit of future generations. The protection and preservation of the countries land and water resources, flora and fauna as well as the beaches, reefs, lagoons and all natural habitats are important for the sustainable development of the country.

Environmental Guidance

3. The concerned government authorities shall provide the necessary guidelines and advise on environmental protection in accordance with the prevailing conditions and needs of the country .All concerned parties shall take due considerations of the guidelines provided by the government authorities.
4. The Ministry of Environment and Construction shall be responsible for formulating policies, as well as rules and regulations regarding the environment in areas that do not already have a designated government authority already carrying out such functions.

Protected Areas and Natural Reserves

5. (a). The Ministry of Environment and Construction shall be responsible for identifying protected areas and natural reserves and for drawing up the necessary rules and regulations for their protections and preservation.

(b). Anyone wishing to establish any such are as mentioned in (a) of this clause, as a protected areas or a reserve shall register as such that area at the Ministry of Environment and Construction and abide by the rules and regulations laid down by the ministry.

Environmental Impact Assessment (EIA)

6. (a) . An impact assessment study shall be submitted to the Ministry of Environment and Construction before implementing any developing project that may have a potential impact on the environment.

(b). The Ministry of Environment and Construction shall formulate the guidelines for EIA and shall determine the projects that need such assessment as mentioned in paragraph (a) of this clause.

The Termination of projects

7. The Ministry of Environment and Construction has the authority to terminate any project that has any undesirable impact on the environment. A project so terminated shall not receive any compensation.

Waste Disposal, Oil and Poisonous Substances

8. (a). Any type of waste, oil, poisonous gases or any substances that may have harmful effects on the environment shall not be disposed within the territory of the Maldives.

(b). In cases where the disposal of the substances stated in paragraph (a) of this clause becomes absolutely necessary, they shall be disposed only within the areas designated for the purpose by the government. If such waste is to be incinerated, appropriate precaution should be taken to avoid any harm to the health of the population.

Hazardous / Toxic or Nuclear Wastes

9. Hazardous / Toxic or Nuclear Wastes that is harmful to human health and the environment shall not be disposed anywhere within the territory of the country. Permission should be obtained from the Ministry of Transport and Shipping at least 3 months in advance for any transboundary movement of such wastes through the territory of the Maldives.

The Penalty for Breaking the Law and Damaging the Environment

10. (a) . The penalty for minor offences in breach of this law or any regulations made under this law, shall be a fine ranging between RF 5. 00 (five Rufiyaa and Rf 500.00 (five hundred Rufiyaa), depending on the actual gravity of the offence. The fine shall be levied by the Ministry of Environment and Construction or by any other government authority designated by that ministry.

(b) . Except for those offences that are stated in (a) of this clause, all major offences under this law shall carry a fine of not more than MRF 100,00,000.00 (one hundred million Rufiyaa) depending on the seriousness of the offence. The fine shall be levied by the Ministry of Planning, Human Resources and Environment.

Compensation

11. The government of the Maldives reserves right to claim compensation for all damages that are caused by activities that are detrimental to the environment. This include all the activities that are mentioned in clause No.7 of this law as well as those activities that take place outside the projects that are identified here as environmentally damaging.

Definition

12. This law:
 - (a). The "environment "means all living and non living things that surrounds and effects the lives of human beings.

 - (b). A “project “is any activity that is carried out with the purpose of achieving a certain social or economic objective.

Annex 4

REF: CIR-ES/98/07

DATE: 27 January 1998

Subject: Coastal Constructions and Developments

Sender: Mohamed Seed, Deputy Minister of Tourism

Our recent inspections reveal that many resort islands have a significant area of the beach/ coast with constructed groynes, breakwaters, retaining sea-walls and other structures which have a negative impact on the visual aesthetics of these islands. Other developmental projects such as dredging lagoon and reef entrances also have their negative environmental impacts. In most cases these are irreversible impacts and a cause to opt hard engineering solutions.

We have also come to notice that many resort islands in their construction of new rooms and development projects have included these hard engineering solutions to the coastal areas for the convenience of solving beach erosion and land reclamation in a particular area. We all agree that beaches are dynamic and prone to erosion and accretion naturally to the demands of the prevailing season and currents.

Permissions have been given by this Ministry to construct some of these structures and works on resorts after consultation and surveying by the Ministry of Planning Human Resources and Environment on a case by case basis. However, we regret to inform that those resorts that go ahead with coastal developmental projects without prior authorisation and consultations may have to abandon the project and depending on the severity of the case pay fines and reparation costs.

Hence, we remind all resort operators to send their proposals and obtain permission before commencing any coastal developmental works.

Annex 5

REF: CIR-TS/2003/04

DATE: January 30th 2003

Subject: Registration of Desalination Plants

Sender: Ahmed Solih, Assistant Director Trade Standards

'Maldives Water and Sanitation Authority (MWSA)' has introduced a regulation on operation of desalination plants in the Maldives on October 17, 2002. Under this regulation, all such operations need to be registered with MWSA within 3 months from October 17th, 2002. Hence, those resorts who have not yet registered with MWSA are requested to do so without any further delay. Please find attached a copy of the said regulation for your information.

Annex 6

Guidelines on water & sanitation standards for tourist facilities

Developed by MWSA, Ministry of Health

Introduction

In the development of the small islands of the Maldives as resorts, care must be taken to minimize any adverse impacts on the fragile and sensitive environments, including the shallow groundwater table, the versatile reef system, the lucid waters and the beautiful beaches. Use of water resources, and sewage and waste disposal could have potential long term impacts on these environments and on the health of the people.

Water Supply

Groundwater has been the basic source of water in our islands. Although rainwater collection is also widely practiced, the catchment area is too small to provide adequate water during the 88-day dry period. However, the islands are surrounded by seawater. Thus, resorts, being able to afford these costs, are expected to have desalination plants of adequate size. In this way, local aquifers can be preserved and sustained.

Nonetheless, there are other factors affecting the groundwater and other water resources on the island. These include sewage, wastewater and solid waste disposal.

Sewage and Wastewater Disposal

Untreated sewage disposal in the ground can contaminate the groundwater with faecal matter and cause diarrhoeal diseases. Inadequate sanitation has been a major cause of diarrhoeal diseases in the country.

Disposal of sewage into the lagoon is considered inadequate as lagoons of most islands would not provide necessary mixing volumes and currents. Disposal in to the deep sea is not very feasible because the islands do not provide adequate gradients to extend the gravity pipes to such lengths or pumping requirements are not cost-effective. Disposal onto or near the reef would provide adequate mixing ratios but may cause undesirable impacts on the immediate ecosystem. So sewage treatment plants become an important element.

Sewage Treatment Plants

Biological methods of sewage treatments are preferable for environment and long-term economic reasons. The plant design and capacity shall be adequate to treat all wastewater produced in the resort. Modern advances in the field provides varieties of practicable and easy-to-operate, low maintenance

technology that can produce low pathogen or pathogen free and high nutrient content sludge which can be used for gardening or landscaping.

Guidelines and Recommendation

The 'Maldives Water and Sanitation Authority' is presently in the process of developing national water and sanitation regulations. Standards for quality of drinking water, bathing waters and bottled water and wastewater disposal regulations are being developed.

However, in the absence of existing national legislation pertaining to water supply and sanitation, the following recommendations and guidelines may be provided.

Drinking/ Desalinated water

Drinking water of bacteriologically, chemically, physically and aesthetically acceptable quality shall be provided for 98 percent of the time. The water must be free from pathogens. The chloride concentration shall be below 200 mg/l, preferably at 150 mg/l on average.

Ground water

Groundwater lens of the island must be truly conserved. All sources of contamination must be prevented.

Bathing waters

The following minimum quality shall be maintained in general:

No abnormal change in colour.

pH: 7.5 – 8.2

Mineral Oils: <0.3 mg/l

Phenols: <0.005 mg/l

Specifically:

For Open Bathing Areas

0-100 coliforms in 100ml sample

0-20 faecal coliforms (E-coli)

For Swimming Pools (with disinfectant systems)

0-20 coliforms in 100ml sample

No faecal coliforms (E-coli) or streptococci

Sewage and Industrial Effluents

Minimum dilution factor of 20:1

If dilution factor >20:1, the discharging water shall have the following quality criteria.

BOD: < 20 mg/l

Total Suspended Solids: < 30 mg/l

Inspection, Monitoring and Reporting

The resort water and sewerage systems shall be periodically inspected by the resort management at adequate intervals, preferably 4 times a year. All resorts may be required to have their own water surveillance programme to cater for the needs of tourists. As such, they may have their own water quality lab or send samples to the Public Health Laboratory, Male', at adequate intervals to ensure compliance and safeguard health of guests. The MWSA may also inspect the resorts once or twice a year with the assistance of the Ministry of Tourism as has been in the past.

Swimming pools shall be cleaned once daily or more often as required. Swimming pools and other public swimming areas shall be operated under the supervision of a qualified attendant (trained in First Aid).

Annex 7

Regulations for installing and operating desalination plants in the Maldives

(Unofficial Translation)

25 September 2002

In these regulations, a desalination plant is defined as any system that is successfully capable of producing fresh water to an acceptable standard for domestic consumption such as drinking and cooking and for other basic needs. This regulation will refer to such systems as a desalination plants.

1. Any party who wishes to install and operate a desalination plant in the Republic of Maldives for their private needs or to satisfy the needs of another party must register the plant with the Maldives Water and Sanitation Authority (MWSA) in accordance with these regulations.
2. Such systems may only be registered if the system is going to provide desalinated water for a minimum of 200 people or for irrigation or for the tourism sector or for industrial purposes. In addition to this the government at its discretion may grant special permission in cases where a need is established on the basis of the nature of a particular project.
3. The following information must be provided when applications are lodged to install a desalination plant.
 - a) The water supply situation of the island or site upon which the desalination plant is going to be installed
 - b) The reasons for installing the desalination plant
 - c) The quality of water which is going to be produced and the intended purposes for which the water is going to be produced
 - d) The source and methods of obtaining feed water that would be used to produce desalinated water
 - e) Brine discharge location and how it would be discharged
 - f) If arrangements are made to discharge the brine through an existing sewerage system, a permit must be obtained from the owner or operator of the sewerage system
 - g) Necessary design specifications and drawings of the desalination plant
 - h) Evidence of professional expertise and skills of the party that is going to install the desalination plant
 - i) Proposed water quality monitoring and reporting procedures
 - j) Evidence of professional skills and expertise of the party operating the desalination plant
4.
 - a) Before installing a desalination plant in the Maldives, an Environmental Impact Assessment (EIA) report may have to be done and the EIA Decision from the Ministry of Home Affairs Housing and Environment shall be forwarded to MWSA with the application for installing desalination plants

- b) If the desalination plant is going to be installed as a component a specific project a copy of the EIA Decision Note and the relevant sections of the EIA report for the project must be submitted when submitting an application for registering a desalination plant.
- 5. If a party requires supplying water to the public, they shall only do so upon approval from the MWSA and according to conditions set out by MWSA. An exception to this may only be permitted if the National Security Service or any other government agency is required to supply water in an emergency situation
- 6. The feed water required for the desalination plant must meet the following conditions.
 - a) Feed water required for the desalination plant may be drawn from the sea or from the ground
 - b) If seawater is going to be used, provisions shall be made to remove the suspended matter in the feed water. A container or storage tank provided to collect feed water to allow suspended matter to settle must hold a minimum capacity of 50% of the water required by the desalination plant
 - c) If feed water is going to be extracted from the sea ensure that the feed water intake pipes are not prone to damage by weather conditions or human interference
 - d) If feed water for the desalination plant is going to be drawn from a beach well, guidelines provided by MWSA for constructing such wells must be adhered to
 - e) If feed water is drawn from the ground it must be drawn from below the fresh water lens
 - f) If feed water is drawn from the ground, water from the freshwater lens shall not seep into the borehole or dug well
 - g) The intake pipelines for the desalination plant must be designed to prevent fluctuation of temperature of the feed water. The pipelines and containers used to feed water into the desalination plant must be protected from heat or constructed of heat resistant material so as to protect the feed water from excess heat
 - h) If boreholes or wells are used to draw feed water for the desalination plant, ensure that the level of the water in the borehole or well does not fluctuate by more than 50mm. To ensure that this is so, a borehole test must be conducted in the presence of an MWSA official or someone approved by MWSA
 - i) The intake pipelines must be laid down in such a way that it does not spoil the natural beauty of the area and integrates with the environment
- 7. Ensure the capacity of the desalination plant installed is of adequate size to be used for the intended consumption. A desalination plant that is of a larger capacity than required shall not be installed. The capacity for a desalination plant to be installed shall be based on the following considerations.
 - a) 150 litres /person/day, if the desalination plant is going to be installed for domestic purposes, based on the total number of people consuming the water including the estimated number of consumers for the next 5 years
 - b) 60 litres per square metre of area to be irrigated, if the desalination plant is going to be installed for irrigation, or as MWSA allows based on the information provided.
 - c) 250 litres per person per day, if the desalination plant is going to be installed on a tourist resort.
 - d) If the desalination plant is going to be installed for industrial purposes, the maximum daily consumption of water will be decided by MWSA based on the information provided.

- e) In addition to these, a standby desalination plant half the size of the full capacity required may be allowed.
8. Water must be drawn from the ground in accordance with dewatering guidelines or standards laid down by MWSA. If such a guideline does not exist any such requirements or policies of MWSA must be adhered to.
- 9.
- a) Brine must be discharged into the lagoon or at a distance of at least ten meters from the reef into the deep sea as to avoid any negative effect on the marine environment. Under no circumstances should brine be discharged on to the fringing reef or into the ground.
 - b) If brine is going to be discharged into a sewerage system, permission must be obtained from the owner or operator of the system.
 - c) If arrangements have been made to discharge the brine through an existing sewerage system the owner or operator of the sewerage system may impose a charge on the user of the sewerage system. Based on the total capacity of the desalination plant up to Rf. 50.00 per cubic metre may be charged. For example, if the capacity of the plant is 50 tons, the maximum that could be charged would amount to Rf.2500.00 per month. If the fees are not paid within the proposed deadline, the owner or operator of the sewerage system shall allow new deadlines for making payments. If payments are not made within the new deadline, it is at the discretion of the party who owns or operates the sewerage system to cease or continue providing the service.
- 10.
- a) The desalination plant must be installed at an appropriately designed site so as to provide shade and prevent any damage to the system that may occur in the event of flooding.
 - b) The chemicals or any other hazardous substances used at the desalination plant shall not cause injuries to persons and/or pollute the environment. To prevent spillages from escaping or seeping into the environment, floors should be designed to allow spillages to flow into sludge retention tanks or similar devices.
 - c) The plant shall be installed in such a way that neighbouring residents are not disturbed by noise.
 - d) If the noise level inside the desalination plant exceeds 85dB(A) hearing protection devices must be made available at site.
11. The parts of the desalination plant must be made of corrosion resistant material
12. An operation and maintenance manual of the desalination plant must be made available and readily accessible to the concerned employees.
13. If desalinated water is provided or supplied for public use, the quality of water produced must be monitored on a regular basis and maintained at an acceptable level. The quality of the feed water also must be checked regularly. Daily reports of these tests must be sent to MWSA and any additional information to be submitted will be determined by MWSA. Water quality parameters to be tested regularly will be determined by MWSA.
14. Private parties who operate desalination plants for their personal use must also send in reports on the quality of water produced, as and when required by MWSA

15. If a party other than the registered party wants to operate a registered desalination plant, they can only do so upon renewal of the registration.
16. Desalination plants that had been installed and had been in use prior to enforcement of these regulations must also be registered with MWSA within three months of these regulations being put into effect.
17. If a desalination plant that had been in operation needs to be replaced at the time these regulations come into force, the new desalination plant must be registered with MWSA in accordance with these regulations.
18. Any party who wishes to register a desalination plant must pay a registration fee of Rf.1000.00 (one thousand Rufiyaa) to MWSA. This fee also applies to parties mentioned in 16 and 17.
19. If a party that operates a desalination plant is suspected to have breached these regulations it is at the discretion of MWSA to act upon as described below.
20. If the conditions of registration are not being met, withhold the registration until the conditions of registration are resumed
21. Impose a fine between Rf.100.00 (one hundred Rufiyaa) and Rf.2000.00 (two thousand Rufiyaa) depending on the extent of breach of the regulations
22. If breach of regulations persists, MWSA reserves the right to invalidate the registration permanently

Annex 8

Circular No: 88-ES/CIR/2002/12

Date: May 5, 2002

Attn: Resort Manager / Operator

Sender: Moosa Zameer Hassan, Assistant Director

Subject: Waste Disposal & Management

We wish to bring to the attention of the tourist resorts and generally to the tourism industry that we have been receiving reports regarding observance of floating garbage in the major tourism zone atolls.

As you would understand this is a threat to the important economic sector, not so much for its environmental or health hazards but more for possible bad publicity.

Hence, we wish to share our concern and recommend that resort operators ensure that if your resort is transferring garbage to Thilafushi Island that these are not ending up in the sea. Additionally if others including safari boats are not complying with the environmental regulations and guidelines please do not hesitate to contact us.

Annex 9

Circular No: 88-TS/CIR/98/38

Date: July 30, 1998

Attn: The Resort Manager

From: Ahmed Solih, Assistant Director Trade Standards

Subject: Hygiene in Food- Service and Mass Catering Establishment

We are pleased to send a copy of some important guidelines regarding the above subject.

We believe that this information will assist you in guiding food handlers in your establishment to avoid food contamination.

Hygiene in food-service and mass catering establishments personal hygiene, clean premises and kitchen tensils as weel as hygienic handling of food prevent foodborne diseases (“food poisoning”)

Personal hygiene

Wear clean clothes!

Why? To avoid contaminating food with microorganisms and any foreign objects. The cleaner the clothes, the lower the risk of contamination.

Always cover your hair while working in the kitchen!

Use headgear provided!

Why? Because this prevents hair from falling into food.

Remove jewelry (rings, watches) before starting work!

Why? Jewellery makes hand washing less effective.

Hands should always be washed before work and especially after visiting the toilet!

Why? Hands can be contaminated with disease-causing microorganisms, particularly after visiting the toilet. In some situations, use of gloves may be advisable.

If suffering from an illness involving any of the following report to the employer before commencing work!:

Jaundice	Sore throat
Diarrhoea	Skin rash
Vomiting	Other skin lesions (boils, cuts, etc., however small)
Fever	Discharge from ears, eyes and nose

Why? It may be necessary to be temporarily assigned to another task.

Wounds on the hand and arm should be carefully bandaged with waterproof material!

Why? Wounds may be infected with microorganisms, which cause diseases.

Turn away from food and cover your nose and mouth when sneezing/coughing!

Why? Even healthy people have microorganisms in their nose and throat. Use a paper handkerchief which should then be thrown away. Hand should be washed afterwards.

Refrain from smoking!

Why? Cigarette ash and butts can fall into food.

Hygienic handling of food

Perishable food should not be stored under refrigeration!

Why? Multiplication of most microorganisms is slowed down or sometimes stopped by chilling. Therefore, food should be cooled to a temperature of 10°C, preferably lower.

Perishable food should not be stored too long, even at refrigeration temperature!

Why? Chilling prevents the growth of many microorganisms. For some, however, chilling only slows down the growth.

Thorough defrost frozen meat and poultry before cooking!

Why? If all parts are not completely defrosted, the temperature increases in some thicker parts of the products, e.g. chicken breast, may not be sufficient to kill all microorganisms during cooking.

Discard all drips accumulated during defrosting of meat and poultry, and thorough wash refrigerator shelves, table tops or utensils if soiled!

Why? These drips may contain disease-causing microorganisms.

Cook food thoroughly!

Why? Thorough cooking will kill microorganisms. But remember that thorough cooking means that all parts of the food must reach a temperature of at least 70 °C. Use special thermometers if in doubt!

Keep cooked food hot-at a temperature of at least 60 C!

Why? Most microorganisms multiply at temperature between 10 and 60 °C. Therefore, food which is already for consumption, but need to be stored for some time, should be kept either hot (more than 60° C) or be cooled quickly (below 10 °C).

Refrigerate cooked food in shallow containers!

Why? Shallow containers allow for faster cooling than deeper pans.

Reheat cooked food to at least 70 °C!

Why? Proper reheating kills microorganisms, which may developed during storage. This rule also applies when left-overs are added to freshly cooked food.

Keep cooked food separate from raw food!

Why? This reduces the risk of cross-contamination.

When preparing mixed dishes, which will be consumed cooled, e.g., potato or noodle salad, always cool the cooked component before adding other ingredients!

Why? Large amounts of hot food cool down very slowly, and during that period microorganisms from other ingredients may multiply.

All work with perishable food must be carried out quickly!

Why? The longer the food is exposed to the warmth of the kitchen, the higher is the risk of an increase in microorganisms.

Cooked food should not be touched by hand!

Why? Microorganisms are present even on a clean hand and may be transferred to food.

Premises and kitchen utensils

Keep kitchen area and adjoining rooms clean!

Why? Every food scrape, crumbs or spot is a potential reservoir of germs.

Keep kitchen tidy?

Why? Tidy kitchens are more easily kept hygienically clean. Personal belongings, for example, should be left in the cloakrooms provided.

Frequent cleaning up as you go along ensure hygienic kitchen!

Why? Dried and encrusted left-overs are hard to remove from surface and utensils. The working area must therefore be cleaned thoroughly after each process of production.

Cloths and drying towels that come into contact with dishes and utensils should be changed every day!

Why? Thorough washing at high temperature removes dirt and kills microorganisms. Separate cloths should be used for cleaning the floors, and these also require frequent washing.

Protect kitchen and storage area from insects and other vermin!

Why? These pests may carry disease-causing organisms.

Keep dangerous/poisonous substances, e.g. detergents, disinfectants and insecticides outside the kitchen area in labelled and closed containers!

Why? Accidents can easily occur when food and poisonous substances are confused.

Avoid overcharging the cold-storage equipment!

Why? This leads to slow and ineffective chilling of the food, which may promote an increase in microorganisms.

Does not charge dish washer timings/ techniques/ temperatures!

Why? Food particles may remain on the objects in dishwasher and bacteria may survive if the temperature is not correct or the specified amount of detergent is not used or the timings are inadequate. The manufacturers' guidelines must be followed when using equipment.

Annex 10

Circular No: 88-TS/CIR/2002/28

Date: 19th September 2002

Attn.: All Tourism Related Establishments

Sender: Mohamed Saeed, Deputy Minister of Tourism

Subject: Accidents / Incidents

Under the existing tourism laws and regulations and the lease agreements signed with the resorts, it is a requirement to inform this ministry about accidents and unusual events occurring in tourist establishments as soon as possible. However, in spite of several reminders, we regret to say that some of the operators do not inform us about accidents involving tourists and staff. Recently we have been informed about a food poisoning outbreak in a tourist establishment by a government authority rather than from the tourist establishment. There had been other similar accidents and unusual events such as resort fires that were not informed.

Hence, we are facing difficulties in responding to queries from the government authorities as well as from overseas organizations. Therefore, we would like to take this opportunity to request you to inform this Ministry and other concerned government agencies, should an accident / incidence occur in your establishment.

Furthermore, we will be compelled to take necessary actions against those who fail to inform us of these events in the future. Below mentioned are the contact details of officials of this Ministry who shall be informed in case of emergency.

Mr. Ahmed Solih – Assistant Director, Trade Standards

Mobile: 783753

Office: 317809, PABX 323224 (ext 234)

Residence: 313078

Mr. Moosa Zameer Hassan – Assistant Director (Environment Section)

Mobile: 772155

Office: 332649, PABX 323224 (ext 246)

Residence: 321683

Annex 11

Circular No: 88-ES/CIR/2000/16

Date: 31st August 2000

Subject: Artificial Shipwrecks

From: Mohamed Saeed, Deputy Minister of Tourism

This is to inform that the National Commission for Environmental Protection has raised concern over the increase in number of requests for creating artificial shipwrecks close to the house reefs of tourist resorts.

We would also like to inform that as a result we will soon be carrying out a comprehensive survey to determine the numbers and locations for future wreck placement sites. Hence, we regret that applications for creating dive wrecks will not be processed until this study is complete. And as a precaution we request that resort operators and interested parties refrain from undertaking preparatory works (which may incur costs) for creating artificial dive wrecks.

We hope that the study will help in the planning process and be an important tool in keeping the attractiveness and fascination of wreck diving in the Maldives.

If you require any further information please do not hesitate to contact us.

Annex 12

Circular No: 88-ES/CIR/2005/30

Date: September 14th, 2004

From: Moosa Zameer Hassan, Assistant Director

Re: Keeping Turtles

We are pleased to inform that according to the Ministry of Fisheries Agriculture and Marine Resources, notice no: FA-A1/29/95/40 dated 6th July 1995, with effect from August 1st 1995, any individual or party who wish to keep turtles in captivity is required to obtain authorization from the Ministry of fisheries Agriculture and Marine Resources.

Notice regarding breeding or research on turtle has also been circulated to all tourist resorts by this Ministry in our Circular 43/95, dated 22 November 1995.

However, from various Resort inspections we have come to notice that turtles continue to be been kept in some of the resort islands without proper authorization, either by the management or by individual staff on the island.

Hence, if your resort is involved in keeping turtles in captivity for any reason without proper authorization, we urge you to release them immediately, and ensure that no such activities are taking place in your Resort illegally.

Annex 13

Circular No: 88-TS/CIR/2000/51

Date: 29/10/2000

Attn: All Tourist Resorts/Water Sports Centres.

Sender: Moosa Zameer Hassan, Environment Analyst

Subject: VHF Emergency Position Indicating Beacon Installation

We would like to inform you that the Ministry of Transport and Civil Aviation has made it mandatory by their notice number 69-C3/2000/83 (12 July 2000) to install VHF Emergency Position Indicating Beacon in Jet Ski's and Catamaran's, if they are to be used in the open sea beyond the lagoon of the island.

Attached with this circular is a copy of the above-mentioned notice of the Ministry of Transport and Civil Aviation. The above mentioned rule will be effective from 1st November 2000.

Annex 14

Maldives recreational diving regulation

Recreational scuba diving is an important tourism activity in the Maldives. Diving can contribute to the further development of tourism only when diving is regarded as safe and enjoyable. Recreational diving in the Maldives continues to maintain and enjoy an excellent safety record.

Section 1: Recognised Diver Training Agencies: Minimum Certification Requirements

1. The minimum certification level for divers wishing to participate in diving in the Maldives is an entry level certification from a Recreational Scuba Training Council (RSTC) associated Diver-training agency or a 1 star Confederation Mondiale Des Activities Subaquatiques (CMAS) certification from a CMAS-affiliated diver training agency.
2. Other diver-training agency's entry-level certificates must have as performance requirements for Open Water Training Dives encompassing the knowledge and skills as outlined in the RSTC entry-level performance requirements.
3. A diver is required to submit proof of his/her training by means of a diving certificate and to submit proof of his/her diving experience by means of a logbook.
4. A diver who cannot submit an entry-level or higher certification must be considered a trainee and may only participate in training dives according to the standards of the training programs as sponsored by the aforementioned diver training-agencies, until certified as an entry-level diver.
5. A diver who cannot submit proof of his/her dive experience by means of a log book must demonstrate to the dive instructor that he/she has mastered the skill as outlined in SECTION 11: ORIENTATION DIVE

Section 2: Supervision of Diving Activities.

1. All diving activities, both land and boat based, must be supervised by Dive Centre Staff either directly or indirectly. If a Dive Centre Staff is found to be negligent in supervision, the Dive Centre Staff and the Dive Centre will be subject to appropriate action as deemed fit by the government authorities.
2. In order to function as a Dive Centre Staff, a person must meet all the prerequisites as mentioned under SECTION 10: RECOGNISED QUALIFICATIONS OF DIVE CENTRE STAFF.
3. "Direct Supervision" is defined as Dive Centre staff being physically present and in control of the diving activities and being able to personally evaluate the behaviour of the divers and being capable to prevent or correct problems when they occur.
4. "Indirect supervision" is Dive Centre Staff organising the diving activity and being available to respond correctly and timely to problems when they occur.
5. Prior to a dive, a dive briefing has to be given to the divers by the Dive Centre Staff.
6. For all diving activities a dive roster must be kept stating the divers' dive time, maximum depth and remaining tank pressure after the dive.

7. For independent land based dive activities, a Dive Centre Staff member is required to note the time the divers enter and exit the water.
8. Dive rosters are to be kept by the Dive Centre Staff for reference by the Maldivian Authorities for a period of not less than one year.
9. Certified divers may dive with another certified diver without the immediate supervision of a Dive Master when environmental conditions are similar to the conditions in which the diver has been trained, or proof of experience of diving in more demanding conditions can be demonstrated by entries in their logbooks.
10. Certified divers that do not have the skill or experience necessary to dive safely and comfortably in given environmental conditions, must dive under the immediate supervision of Dive Centre Staff.

Section 3: Maximum Depth Limitations

1. The maximum depth for all-recreational diving in the Maldives is 30 meters.
2. This applies to divers training in Deep Diving Techniques who participate in recreational diving activities within the Maldives, tourists, Dive Centre Staff, Instructors on or off duty and all instructors and students involved in Advanced and Deep Diving Training.
3. This maximum depth limitation also applies without exception to diving activities on live-aboard and safari boats.
4. Any person repeatedly and deliberately violating this regulation may be excluded from further diving. Furthermore, any Dive Centre Staff repeatedly and deliberately violating this regulation will be subjected to disciplinary measures as deemed fit by the concerned Maldivian Authority.
5. Entry level divers may dive to a depth of 20 meters or within the limits as set forth by standards of their certification agency, but not exceeding 20 meters.
6. Not until entry-level divers have received training in Deep Diving techniques may they go deeper than 20 meters.
7. Instruction in Deep Diving techniques must be provided in compliance with the standards of the program the instructor is qualified to teach according to the Diver Training Agencies as mentioned in SECTION 1: RECOGNISED DIVER TRAINING AGENCIES.
8. The fact that an entry level diver is diving under the supervision of an instructor shall not be grounds to dive deeper than 20 meters unless the diver is trained or is receiving training in Deep Diving Techniques as per standards.

Section 4: Decompression Dive Limitations.

1. Only no decompression diving is allowed in the Maldives. This applies to everybody who participates in diving activities within the Maldives, tourists and dive Centre staff, instructors on and off duty, also instructors and students involved in Advanced and Deep Diving Training. This no-stage decompression limitation also applies to live-aboard or safari boats. No exception whatsoever is allowed.
2. Any person repeatedly and deliberately violating this regulation may be excluded from further diving. Furthermore, any Dive Centre staff repeatedly and deliberately violating this regulation shall be subjected to disciplinary measures as deemed fit by the concerned Maldivian Authority.

Section 5: Dive Centre Requirements

1. All Dive Centres must register with the Ministry of Tourism and obtain an operating license.
2. All Dive Centres must be equipped with pure Oxygen and have an emergency plan ready in case of diving related accidents. The emergency plan must include mechanisms for:
 - a) Searching methods in case of missing divers.
 - b) Providing First Aid Care.
 - c) Transport method to the next appropriate medical facility.
 - d) Reporting to the appropriate Authorities (Police, Coast Guard, Ministry of Tourism, etc.)
3. All Dive Centre Staff must be familiar with his/her Emergency Plan and be able to act appropriately.
4. A Dive Centre must have an employed Base Leader who is responsible for the Dive Centre and who is present at the Dive Centre on a daily basis. In case the Base Leader is absent, an Assistant Base Leader must assume responsibility for the Dive Centre.
5. A Dive Centre must have adequate equipment spare parts, equipment and course materials for all courses conducted.
6. A Dive Centre must have a list of all dive services and courses conducted and their rates available in writing.

Section 6: Dive Centre Equipment

1. Dive Centres must provide well-maintained dive equipment.
2. Dive cylinders must be hydrostatically tested by a facility authorised to do so by the Ministry of Tourism.
3. Buoyancy Compensators Devices (BCD's) must be approved for recreational diving by the manufacturer and must have a Low Pressure Inflator. The BCD must be maintained according to the manufacturer's instructions.
4. Regulators must be approved for recreational diving by the manufacturer and must be maintained according to the manufacturer's instructions.
5. Dive Centres must provide Alternative Air Sources, depth and timing devices as standard rental equipment.

Section 7: Standard Equipment for Divers and Instructors

1. During all recreation diving activities divers must be equipped with:
 - a) Mask, Snorkel, Fins
 - b) Regulator with submersible pressure gauge and Alternative Air Source or redundant air supply.
 - c) Buoyancy Compensator Device (BCD) vests with oral and low pressure Inflator.
 - d) Time and depth measuring device.
 - e) The use of dive computers are highly recommended for all divers
 - f) Emergency signalling device comprising inflatable surface balloon and whistle.

During all night diving activities divers must be equipped with:

- g) Underwater torch and night signalling device that includes every diver in possession.
- h) Reflective surface marker buoy (SMB),

In addition, all dive instructors supervising diving activities must be equipped with;

- i) Knife and emergency signalling device

Section 8: Dive Boats

1. Dive Boats are the responsibility of the Dive Centre and the crew.
2. Dive Boats must have at least a crew of three, and must be dedicated to the safety of the divers and support the divers in any way they can
3. The Dive boats operated by Dive Centres must be able to communicate to the Dive Centre at all times during the dive through a functioning walkie-talkie or hand phone and radio telephone or CB set.
4. The Dive boats must have sufficient fuel to make the prearranged dive trips and any changes there to.
5. In case weather conditions deteriorate while divers are under water, the crew must be proficient in recalling methods.
6. The Dive Centre Staff is responsible for the provision of a spare tank, spare diving equipment, First Aid, Oxygen Kit, dive flag and a boat ladder that allows for comfortable exit from the water.
7. The Dive Flag illustrated in ANNEX 1 shall be clearly visible when the divers are in the water and must be lowered when the last diver has exited the water.
8. An operational Search Light must be onboard, in all night dives involving dive boats.

Section 9: Safety Considerations.

1. All Dive Centres must have an Emergency Plan as mentioned under SECTION 5: DIVE CENTRE REQUIREMENTS.
2. The Dive Centre Staff must brief the divers prior to every dive. The brief must include information about safety regulations, depth limits, dive site characteristics, currents, entry and exit techniques, environmental considerations and potential hazards.

3. After all dives, a Safety Stop must be made for at least 3 minutes at 5 meters. Divers must commence their safety stop with a tank pressure not less than 50 bars. A safety stop at 5 metres for 5 minutes is recommended for all dives deeper than 9 metres.
4. The use of a Buoyancy Control Device (BCD) is absolutely mandatory for all diving activities.
5. Solitary Diving is NOT allowed under any circumstances.
6. For practical reasons the term "diving" is used to describe recreational diving only. Commercial and military divers and other occupational divers must adhere to these regulations when participating in recreational diving activities.
7. Familiarisation sessions with the oxygen equipment must be provided on the dive centre for all dive staff and this training session must be held at least annually.
8. No exceptions to the Maldives recreational diving regulations are allowed unless expressly permitted in writing by the Ministry of Tourism.

Section 10: Recognised Qualifications of Dive Centre Staff.

1. In order to supervise diving activities or exercise leadership in diving activities, a person must: be a Dive master (RTSC) or 4 Star diver (CMAS) or equivalent as per RSTC standard, have a Work Permit and a Resident Permit Visa if not a Maldivian national, carry professional liability insurance and personal accident insurance covering diving accidents and chamber treatment.
2. All training and certification of divers is to be done exclusively by Instructors, who may be assisted by Assistant Instructors and/ or Dive Masters as per standard.
3. In order to function as an Instructor an individual must, in addition to the above: be certified as an Instructor (RSTC) or 2 Star moniteur (CMAS) or equivalent as per RSTC standard; be in teaching status with the diver-training agency whose diver training program he/she chooses to teach. Strictly adhere to all the standards that apply to the diver-training program he chooses to teach.
4. In order to function as a Base Leader or Assistant Base Leader, an individual must be a Dive Instructor.

Section 11: Orientation Dive

1. If a diver is certified as an entry level diver or above, but cannot show proof of at least 30 dives and/or has not been diving in the last 3 months, the diver is required to make an Orientation Dive.
2. An Orientation Dive is NOT a test, but is a dive in shallow water under quiet, controlled circumstances, where the diver is given the opportunity to regain confidence in his/her skills, including but not limited to: mask clearing, regulator recovery, neutral buoyancy, ascents, descents and alternate air source breathing.

Section 12: Definitions

1. In this regulation, unless the context otherwise requires:-
 - a) “diving” means underwater recreational scuba diving
 - b) “Dive Centre” means dive schools, dive bases and all other parties that provide diving services for tourists
2. Following are some of the abbreviations used by International Diving Associations stated in this regulation;

PADI	- Professional Association of Diving Instructors
NAUI	- National Association of Under Water Instructors
RSTC	- Recreational Scuba Training Council
CMAS	- Confederation Mondiale Des Activities Subaquatiques
SCUBA	- Self Contained Underwater Breathing Apparatus
BARACUDA	- Baracuda International Aquanautic Club
VIT	- Verband Internationaler Tauchschulen (<i>Association of International Diving Schools</i>)
POSEIDON	- Poseidon Nemrod International Diving Club

Diving guidelines

Section 1: Planning the Dive

1. It is essential to “PLAN YOUR DIVE AND DIVE YOUR PLAN”. Dive centres must be aware of any changes to the dive plan of the dive boat and divers.

Section 2: Weather Checks

1. It is recommended that dive centres keep aware of local weather conditions and inform divers of any special conditions at each dive site prior to the dive.

Section 3: Low-Risk Conditions

1. Maximum depth of dive site does not exceed 20 m
2. Swell and/or wave height does not exceed 0.5 m
3. Current is nil to slight (diver can swim against it with minimum exertion)
4. Underwater visibility is greater than 4 m
5. Dive starts and ends in full daylight

Section 4: Prohibited Dives

1. Decompression dives
2. Dives deeper than 30 m
3. Dives less than 12 hours before flying(a pressurised aircraft)
4. Dives in restricted /no dive areas (Refer SECTION 10: DIVING RESTRICTED AREAS)

Section 5: Diver Qualifications

1. A diver must present the following documents to the dive centre:
 - a) Dive certification card from a recognised agency that allows the person to dive without supervision in open water.
 - b) Log book validating open water diving experience of at least 900 minutes, excluding training dives.
 - c) Medical certificate dated within 12 months of diving or self-declaration stating that the person is fit to scuba dive.
 - d) Completed diver registration form at the dive centre.
 - e) An orientation dive may be required for persons who have not dived within the last 3 months. The dive centre may impose restrictions on a diver's activities on the basis of his/her logged experience.

Section 6: Dive Tables and Computers

1. Use of dive tables and dive computers are highly recommended for all divers.
2. Dive tables must be available at the dive base for divers to workout their dives manually.

Section 7: Dive Flag

1. The wide transport activities around the islands in the Maldives make it essential that divers mark their presence clearly. Therefore, any boat with divers operating from it must always display signals by day or night to inform other boat users. In the Maldives the daytime signal for divers is the International Code Flag "A" (white and blue split flag) approved by the Ministry of Tourism as an indication of a submerged diver (Annex 1). The flag must be at least 750mm in length and 600mm in width.
2. Dive flag can be used anywhere where divers are diving and should always be displayed by dive boats when it has divers in the water. The use of dive flag is to signal any boat, jet-ski or

anybody else in the vicinity that divers are underneath and hence should keep distance, or take care when approaching.

Section 8: Diving from Boats

1. For all dives away from the dive centre, it is recommended that a person with the following qualifications and experience remains on the surface during diving operations:
 - a) A boat driving/captains license from the Ministry of Transport & Civil Aviation and with significant experience.
 - b) Dive Centre staff with adequate knowledge of the dive location or other person approved by the Base Leader.
 - c) First aid certificate.
 - d) Oxygen resuscitation and therapy certificate or PADI /DAN Oxygen Provider Course.

Section 9: Cylinder Pressure Testing

1. Those who are professionally engaged in the filling of compressed air are forbidden to fill cylinders that have not been hydrostatic pressure tested within the last two years. Persons employed by dive centres to fill cylinders (such as compressor boys) must be made aware of these regulations

Section 10: Diving in Restricted Areas

1. Generally diving is fairly free in Maldives, but in the vicinity of closed national security installations diving is not permitted. These areas are not always marked on maps, hence it is recommended that divers consult the Coast Guard/ Ministry of Defence & National Security or the Ministry of Tourism in advance, to find out about possible restrictions.
2. All the above stated are valid for the whole of Maldives. Other restricted areas are;
 - a) Ports, traffic route accesses, passages and alike. Permission has to be obtained from the Maldives Ports Authority / harbour authorities before attempting to dive in designated commercial harbours and ports.
 - b) Vicinity of areas under the Ministry of Defence & National Security and near maritime vessels.
 - c) In the atolls where tourism is undeveloped (outside the tourism zone), except in designated dive sites.

Section 11: Diving Wrecks and Underwater Artefacts

1. Maldives being a seafaring nation, it is expected that there will be many wrecks among the atolls. The imperative rule for wreck diving is: "Look but don't touch!" Those who do not observe this rule are not only damaging the underwater wrecks, but are also obstructing future wreck diving in the Maldives. This rule applies not only to wrecks, but also to any separate objects found under water.
2. Should you discover an underwater object, the correct procedure is to mark the spot and then report to the National Centre for Linguistics and Historical Research and the Ministry of Finance and Treasury. A list of wrecks is available from the Ministry of Tourism

Section 12: Protection of Underwater Cultural Monuments

1. Nothing should be taken out from the sea, and particularly this prohibition refers to cultural monuments. Please contact the National Centre for Linguistics & Historical Research and the Ministry of Finance & Treasury should you find any.
2. Damaging and extracting cultural monuments is prohibited, as well as taking the same abroad. Underwater archaeological researches may be performed only with permits issued by the Maldivian government authorities, and the procedure is NOT covered under these regulations.

Section 13: Environment Protection

1. As responsible divers, reasonable care should be taken to protect the marine environment, its associated living organisms and their habitats. Divers should be briefed by the dive instructor on responsible behaviour whilst diving, such as buoyancy control, avoiding damage to corals and physical contact with marine animals. Shark feeding is NOT permitted for the divers and the dive centre staff alike.
2. Activities that are detrimental to marine protected areas and protected species and their habitats are prohibited under the Environment Protection & Preservation Act (Act No. 4/93) of Maldives. Marine Protected Areas are living marine aquariums. Look but don't touch is the message in these areas, and ONLY permitted activities can take place. Protected areas, as their name suggests, are there to protect typical areas of the coral reef system, and its resident fish and other animals, in as near to a pristine condition as possible.
3. Permit to dive in marine protected areas may be required. Please check before you venture.

Section 14: Damage Due to Anchoring

1. Dive boats are not allowed to anchor on dive sites. Drift boat diving is the norm in Maldives. Boat anchors destroy fish habitats especially corals and even sea-grass beds. If anchoring is required for any reason, prevent reef damage by anchoring in sandy areas or using mooring buoys.

Section 15: Diving in Bait Fishery Areas

1. Bait fishing is an important activity for the traditional pole and line tuna fishery in the Maldives. Hence, occasionally divers may encounter fishermen collecting bait. In order to reduce conflict between local fishermen, diving should be avoided in the same area whilst fishermen are engaged in bait fishing. Any such conflicts should be reported to the Ministry of Tourism through the responsible dive centre as soon as possible. Dive centres should also keep divers informed of these traditional economic activities in the country.

Section 16: Diving for Commercial Fishing & Marine Research

1. Diving for marine resources and marine research are not covered under these regulations. Permission should be obtained from the concerned government authorities before engaging in such activities.

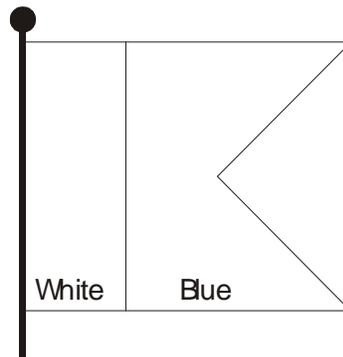
Section 17: Confiscation of Equipment

1. The Maldivian legislation provides the Police the right to confiscate objects unlawfully taken up as well as equipment in cases where a diver has applied his or her equipment illegally.

Annex 1

International Dive Flag 'A' (Blue Flag)

Length of flag: 750 mm,
Width of flag: 600 mm



Annex 15

Circular No: 88-TS/CIR/2004/16

Date: Sunday, 09 May 2004

Sender: Ahmed Solih, Deputy Director Trade Standards

Subject: PRECAUTIONARY MEASURES - WATER SPORTS ACTIVITIES

This is to inform all those engaged in organizing water sports activities in the tourism sector regarding an issue of safety concern that has been brought forward to this Ministry.

Currently, water sports activities are organised with minimum regulations except for recreational diving and is taken for granted that all safety and precautionary measures would be taken by the organisers of these activities.

However, we have been informed that few of these do not take the necessary precautionary measures in providing these services such as demarcation of the areas for some of the activities such as water-ski, jet ski, banana boat riding, catamaran, parasailing, etc.

Furthermore, these sport activities are also being carried out on commercial channels where maritime vessel movements are high. Hence, we inform for the safety of everyone involved to designate water sport activity areas, refrain from using commercial lanes and any water sport activity to be supervised by the organisers within a safe visible distance for potential rescue.

We are confident that this advice on safety measures would be received positively and the necessary steps will be taken to ensure the safety of the participants in these activities

Annex 16



MINISTRY OF TOURISM
Republic of Maldives



PRESIDENT OF MALDIVES GREEN RESORT AWARD GUIDELINES & INFORMATION

The Republic of Maldives with over 1190 islands offers a unique natural setting for tourism. Today, this natural environment through tourism attracts over 70 percent of the foreign exchange earnings and about 30 percent to the Gross Domestic Product (GDP) to the Maldivian economy. With the potential to develop tourism further in the islands and to increase growth of tourism annually, protecting the natural resources are essential for a sustainable tourism industry and for the benefit of the country as a whole.

His Excellency the President Maumoon Abdul Gayyoom; while addressing the country to commemorate the World Tourism day and Visit Maldives Year in 1997 to celebrate 25 years of sustainable development of tourism in the country, emphasised on the need for environmental protection in the tourism industry. In the same meeting, an annual award by the President of the Maldives for the most environmentally outstanding tourist resort was revealed by the Minister of Tourism.

President of Maldives Green Resort Award is a prestigious, one of its kind in the country, specially designed to the tourism industry. The award aims to generate environment consciousness and reward good practices of the resort hotels. At the same time this award provides an objective for the resort management and thereby facilitates sustainable development of tourism in the country. The overall effort will involve creating awareness, initiation of environmentally beneficial projects and giving due consideration to the environment and the local people in the development and operation of resorts.

President of Maldives Green Resort Award is awarded to the resort operators and management only. There is a limitation on the number of awards awarded at a given year and the Ministry of Tourism reserves the right not to present an award for a given year, or to revoke the award from the recipient. The award is presented to the recipient at the annual national function to celebrate the Tourism Day.

The winner of the President of the Maldives Green Resort Award receives the Green Resort Award Shield and a soft copy of the Green Resort Award logo for their promotional activities.

Award criteria

The following general areas are evaluated to be considered for the award;

- Compliance and adherence to existing laws and regulations
- Over-all environmental commitment
- Initiating environmentally beneficial projects
- Taking the environment into account in planning and development
- Environmentally-sound management practices
- Participation in environmental campaigns and programs
- Creating environmental awareness and marketing the tourism product
- Environmental record keeping and reporting

Eligibility

The President of the Maldives Green Resort Award is open to all tourist resort hotels operating in the Republic of Maldives.

Application method

Applications for the President of Maldives Green Resort Award may be submitted to the Ministry via mail or electronic mail addressed to info@maldivestourism.gov.mv directly by the management of the resort or nominated by another. The submitted application should consist of the filled questionnaire (also available from the Ministry of Tourism) and a letter from the applicant. Any other attachment notes and relevant materials to support the application for the award, such as photographs, leaflets, newspaper clippings, video recordings, etc. should be sent to the Ministry within a week of submission of the application.

Submission deadline

All applications must be received to the Ministry of Tourism by 19th August, before 2:30 pm to ensure full and fair evaluation of submissions. Official deadlines will be strictly observed.

Evaluation

The evaluation period for The President of the Maldives Green Resort Award is from July (previous year) to July (present year). All applications received will be acknowledged receipt from the Ministry of Tourism. Applications are reviewed by an Award Evaluation Committee comprising of public and private sector. Short-listed resort hotels and their initiatives will be selected for a further field inspection.

Guidelines

The following guidelines will help to understand our environmental policy and help the resort management to fill the application for the award.

1. **Participation in the national and international environment campaigns and programs-** Annual programmes are organised by the Government, non-governmental organisations and the international community to protect and enhance the environment. By participating in such programmes we can create awareness on protection and sustaining our environment, and promote a sustainable industry.
2. **Initiating environmentally beneficial projects-** Carrying out projects, which involve new technology and innovative ideas to protect, conserve and enhance the natural environment in the operation of the resort, indicates the commitment of the management.
3. **Environment friendly marketing and promotion of the Maldivian product-** Protecting the environment produce quality, and an up-market product that will prove easier to sell. It is also essential to inform guests and tour operators on the environment friendly policy and product of the resort.
4. **Information collection, compliance and reporting to the Ministry to measure the environmental performance-** Certainly reporting the status and management measures taken are important to assess the results.
5. **Conservation of species and areas, including for scenic aesthetics-** An area remaining unspoiled is important for nature-based tourism. Hence, conserved areas in the resort and efforts to conserve the flora and fauna will bring better results and will be a rewarding attraction for the guests.
6. **Energy conservation-** Measures taken to conserve energy, such as on electricity, water, fuel etc. will assist to cut costs. Most energy saving devices can be introduced immediately without enormous changes by using a plan to invest for gradual replacement of energy costing devices. Investments on energy conservation should be looked into so that there will be cost cuts in the long run.
7. **Solid waste management-** Consider the amount of solid waste generated in the island, and if this could be reduced consider the cost cuts that would be gained. Most of the solid waste coming into the resort is via the packaging. Plans to minimise solid waste (e.g. from excessive packaging) will relieve the management of unwanted waste transfer expenses and working hours.
8. **Sewage and effluent management-** Understand the problems of improper sewage disposal methods, the outfalls and their effects, the aquifer pollution and long-term effects. If the resort is treating wastewater and sewage, the type of treatment and recycling of water will be helpful.
9. **Control of emissions-** Emissions from power generation, boats, vehicles and the noise generated will require to be minimised for the convenience of guests and enhance the living environment. How the resort controls and minimises pollution of air, water and the seas (from used oils etc.) is equally important.
10. **Exercise due regard for the interest of local population, including history, tradition, culture and their future development-** An industry that does not respect the culture, history and traditions of a society and that does not assist in their development will find conflicts. On the other hand if the industry enhances the

environment of the local populace and their living by providing opportunities, they would welcome growth and prosperity of the industry. This is also essential to maintain a hospitable culture that secures future tourism growth.

11. **Provision of environmentally healthy standards for the staff and guest-** The people who serve the resort guests require to be motivated, lively and hospitable to offer a competitive and excellent service. Hence investments on improving the living and built environment (services and facilities of the staff) is a guaranteed worthwhile investment.
12. **Sensitising guests and staff to the importance of environmental protection-** Create awareness, through displays, management action and supporting programmes. Knowing what the resort does and what the resort could do to protect the environment and to keep it unspoiled is the first step to minimise environmental damage.

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