IMPACTS OF RECREATIONAL ACTIVITIES ON MARINE AND COASTAL AREAS IN GILI TRAWANGAN, INDONESIA

VLADIMIR CIRJAKOVIC

GRADUATE SCHOOL
BOGOR AGRICULTURAL UNIVERSITY
BOGOR
2015
DECLARATION

I hereby declare that the thesis titled “IMPACTS OF RECREATIONAL ACTIVITIES ON MARINE AND COASTAL AREAS IN GILI TRAWANGAN, INDONESIA” is true of my work under the guidance of the supervising committee and has not been submitted in any form to any college. Resources derived or quoted from works published and unpublished from other writers mentioned in the text and listed in the Bibliography at the end of this thesis.

I hereby bestow the copyright of my papers to the Bogor Agricultural University.

Bogor, January 2015

Vladimir Cirjakovic
E352128091
Bogor Agricultural University

Hak Cipta Milik IPB (Institut Pertanian Bogor)
This research aims to identify the impacts of marine and coastal recreational activities on the island of Gili Trawangan, one of the three small islands located in the protected area called marine tourism park ‘Gili Matra’, Indonesia. In the last decade the island has faced a rapid tourism growth, due to the phenomenon of recreational activities based on the marine and coastal environment. These activities as a non-consumptive sector promote an ideal combination of economical income and natural conservation. However, recent tourism growth led the marine recreational sector towards mass tourism, implying threats to the quality of the environment and its role for conservation.

The method to identify the impacts of marine and coastal recreational sector on the environment, economy, and socio-culture, have been recognized through management strategy approaches including regulatory, physical, economical and educational approach as the main parameter for marine ecotourism management. In addition, analyses of the outcomes, thus, tourists, local residents, and employees of the recreational sector based on Likert scale questionnaire method where responders could rank 7 different stages of satisfaction and opinion was also conducted. The environmental conditions were analyzed by general observation and by the technique of coral reef transect on the popular dive site Halik. The finding of the coral reef transect was compared with data from 2012, which was conducted by Gili Eco Trust, who utilized the same method.

Therefore, this study has identified the current position and impacts of marine and coastal recreational sector, its role of conservation and contribution to the social community. Recognizing potential of the management’s ability and willingness to face challenges and organize the recreational sector in manner of ecotourism to protect the nature and provide long term economical development in the future.

Key words: Recreation, Marine and Coastal Environment, Marine Ecotourism Management, Gili Trawangan
RINGKASAN

Dampak Aktivitas Rekreasi Terhadap Kawasan Perairan dan Pesisir di Gili Trawangan, Indonesia oleh Vladimir Ćirjakovir Dibimbing oleh RICKY AVENZORA DAN RITA ROSTIKA


Metode untuk mengidentifikasi dampak sektor rekreasi laut dan pesisir terhadap lingkungan, ekonomi, dan sosial-budaya, telah dilaksanakan melalui terbagai pendekatan strategi manajemen termasuk pendekatan regulasi, fisik, ekonomi, dan pendidikan sebagai parameter utama untuk menajemek ekowisata bahari. Selain itu, analisis hasil, dengan demikian, wisatawan, masyarakat lokal, dan karyawan di sektor rekreasi, juga diselenggarakan berdasarkan metode pustaka yang ada dari tahun 2012 yang dilaksanakan oleh Gili Eco Trust, yang memanfaatkan metode yang sama.

Oleh karena itu, penelitian ini telah mengidentifikasi posisi saat ini dan dampak dari sektor rekreasi laut dan pesisir, perannya dalam proses konservasi dan kontribusi kepada masyarakat sosial. Penelitian ini mengenali daya potensial kemampuan dan ketersediaan manajemen untuk menghadapi tantangan dan mengatur sektor rekreasi dengan cara ekowisata supaya dapat melindungi alam dan menyediakan pengembangan ekonomi jangka panjang di masa depan.

Kata kunci: Rekreasi, Lingkungan Perairan dan Pesisir, Manajemen Ekowisata Laut, Gili Trawangan
Prohibited to citing in a part or whole of this paper without including or citing sources. The quotation is only for educational purposes, research, scientific writing, report writing, criticism, or review of a problem; and citations are not detrimental to the interests of the Bogor Agricultural University.
1. Mencari fungsi pendekatan acu sebelum karya tuli di kolam berbilang opipun lumpur hijau.
2. Mencari fungsi pendekatan acu sebelum karya tuli di kolam berbilang opipun lumpur hijau.
3. Mencari fungsi pendekatan acu sebelum karya tuli di kolam berbilang opipun lumpur hijau.

Bogor Agricultural University
Hak Cipta milik IPB (Institut Pertanian Bogor)
IMPACTS OF RECREATIONAL ACTIVITIES ON MARINE AND COASTAL AREAS IN GILI TRAWANGAN, INDONESIA

VLADIMIR CIRJAKOVIC

Thesis as one of the requirements to obtain the degree of Master of Science in Study Program of Ecotourism & Environmental Services Management

GRADUATE SCHOOL
BOGOR AGRICULTURAL UNIVERSITY
BOGOR
2015
Title of Thesis: Impacts of Recreational Activities on Marine and Coastal Areas in Gili Trawangan, Indonesia

Name: Vladimir Cirjakovic

Student Number: E352128091

Approved by

Supervising Committee

Dr. Ir. Ricky Avenzora, MScF.
Head of Supervising Committee

Dr. Ir. Rista Rostika, MP.
Member

Acknowledged by

The Head of Study Program on Management of Ecotourism and Environmental Services

Dr. Ir. Ricky Avenzora, MScF.

The Head of Graduate Studies

Dr. Ir. Dahrul Syah, M.Sc Agr.

Date of Examination: 30 JAN 2015
Date of Graduation: 26 FEB 2015
ACKNOWLEDGMENT

First of all I would to give thanks to the Great Lord for giving me the life opportunity to live and experience this beautiful country and chance to provide a micron part in ocean conservation through ecotourism development. Definitely, I would never be here without a good diplomatic realtion between Serbia and Indonesia and long tradition in students exchange program. Thus, I would like to acknowledge the Indonesian Second secretary for education and culture in Belgrade Mrs. Srianri Diponegoro, His Excellance the Amabassdor of Indonesia in Serbia ‘10/’14 Mr. Samuel Samosn and Serbian consul in Indonesia Mr. Vladan Soskic‘10/’14 for the improvement the program of student exchange between two countries. At the first I would like to acknowledge Mrs. Prof. Dr E.K.S Harini Muntasib, Mrs Sarah and Prof. Dr Ir Muladno MSA providing me with information about the Ecotourism department at IPB and convincing me to come.

The crucial person for redirecting my research from the rainy forest to the blue ocean is a marine biologist Mareike Huhn. She made me aware of the importance of ocean protection and the role of tourism in conservation This thesis would never be possible without the great team of my supervisors made of ecotourism expert Mr. Dr. Ir. Ricky Avenzora MScF. and marine biologist Mrs Dr. Ir. Rita Rostika MP, together with my classmate Mrs Ghoitsa they were more than supervisors, thank you very much for your patience and advice during my studies. Big thanks to the International Coastal and Marine Tourism Society (ICMTS) and its founders Dr. Mrak Orams and Dr. Michael Luck for sharing with me the various literature and providing access to publications. I would like to acknowledge the energy and help of Mrs. Delphine Robbie (the head of Gili Eco Trust) as a crucial person for my field work and decision for the case study, the young team of BKKPN (Pak Lubis, Ibu Hottmaria and Pak Hadrin) and staff of Diversia dive club, they were always up to share data and give an answer for all my questions. For the reef check and eco license I received big support from the Gili Eco Trust and Marko Vraz but crucial support was given by Mr. Ali Sahami (manager of PT. Lorax) who financially and technically supported the reef check. Dear Ali thank You so much for your understanding and help. My time in Indonesia would never be that nice without the great host mom Ibu Ing Sarajar, she made me feel at home, thanks Ibu. The most of all i would like to thank to my parents, especially to my mom Vesna for her love, belief and prayers. I love you Mom. There are a lot of people that I would like to acknowledge and thank for their contributions for this work that is not possible to frame one page. However, I am sure they are going to recognize themselves.

Bogor, January 2015

Vladimir Cirjakovic
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>xv</td>
</tr>
<tr>
<td>LIST OF ILLUSTRATIONS</td>
<td>xv</td>
</tr>
<tr>
<td>LIST OF APPENDIXS</td>
<td>xvi</td>
</tr>
<tr>
<td>LIST OF ACRONYMS</td>
<td>xvi</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>Research Problems</td>
<td>2</td>
</tr>
<tr>
<td>Benefits of Research</td>
<td>3</td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>4</td>
</tr>
<tr>
<td>Sustainable Tourism Development and Ecotourism</td>
<td>4</td>
</tr>
<tr>
<td>Ecological Aspect of Marine and Coastal Environment</td>
<td>5</td>
</tr>
<tr>
<td>Tourism Impacts on Environment and Socio-culture</td>
<td>7</td>
</tr>
<tr>
<td>Characteristics of Marine and Coastal Tourism Management</td>
<td>9</td>
</tr>
<tr>
<td>RESEARCH METHOD</td>
<td>11</td>
</tr>
<tr>
<td>Place and Time of Research</td>
<td>11</td>
</tr>
<tr>
<td>Study Approach</td>
<td>12</td>
</tr>
<tr>
<td>Method of Data Collecting &amp; Analysis</td>
<td>12</td>
</tr>
<tr>
<td>RESULTS AND DISCUSSION</td>
<td>15</td>
</tr>
<tr>
<td>Natural and Anthropological Characteristics of Gili Trawangan</td>
<td>15</td>
</tr>
<tr>
<td>Development and Condition of the M&amp;C Recreational Sectoron Gili Trawangan</td>
<td>17</td>
</tr>
<tr>
<td>Management of the Marine Tourism Park ‘Gili Matra’</td>
<td>21</td>
</tr>
<tr>
<td>Management Strategy Approaches</td>
<td>23</td>
</tr>
<tr>
<td>Management Future Strategy</td>
<td>30</td>
</tr>
<tr>
<td>Impacts of M&amp;C Recreation on Environment</td>
<td>31</td>
</tr>
<tr>
<td>Impacts of the M&amp;C Recreation on Economy</td>
<td>34</td>
</tr>
<tr>
<td>Impacts of M&amp;C Recreation on Socio-culture</td>
<td>38</td>
</tr>
<tr>
<td>Tourists’ Perception and Motivation</td>
<td>39</td>
</tr>
<tr>
<td>CONCLUSIONS AND SUGGESTION</td>
<td>48</td>
</tr>
<tr>
<td>Conclusions</td>
<td>48</td>
</tr>
<tr>
<td>Suggestion</td>
<td>49</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>50</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>55</td>
</tr>
<tr>
<td>ANOVA</td>
<td>55</td>
</tr>
<tr>
<td>BIOGRAPHICAL NOTE</td>
<td>64</td>
</tr>
</tbody>
</table>
LIST OF TABLES

1. Conceptual model for the marine tourism management 3
2. Spectrum of marine recreational opportunity 11
3. Regulations for the recreational activities in the Integrative Marine Zone Management in Gili Matra 25
4. The index mean of perception of the local residents about positive and negative environmental impacts of the M&C recreational sector on Gili Trawangan 34
5. The profile of local employees in marine recreational sector 35
6. The index mean of perception of the local residents about positive and negative economic impacts of the M&C recreational sector on Gili Trawangan 38
7. The index mean of perception local employees about positive and negative socio-cultural impacts of M&C recreational sector on Gili Trawangan marine 39
8. The profile of tourists on Gili Trawangan 40
9. The index mean of tourists’ importance and satisfaction about recreational activities 42
10. The perception between divers about diving industry on Gili Trawangan 47

LIST OF FIGURES

1. Technique the coral reef transect 14
2. Dive sites around Gili Trawangan 18
3. The annual growth of water sport agencies since 1989 on Gili Trawangan 20
4. Management communications among stakeholders in the MTP Gili Matra 23
5. The map of the Integrative Marine Zoning Management of Gili Trawangan 26
6. The map of the Integrative Marine Zoning Management of the MTP Gili Matra’ 26
7. Donations for the environmental and social programs on Gili Trawangan January/July 2012 29
8. The substrate condition of Halik reef on ’12 and ’14 32
9. The abundance on dive site Halik reef 6-7m depth on Gili Trawangan 33
10. Positions versus incomes of the local employees in marine recreational sector on Gili Trawangan 36
11. The index mean of perception of the local residents about potential positive influences of the M&C recreational sector on economy 37
12. The index mean of perception of the local residents about potential negative influences of the M&C recreational sector on economy 37
13. The index mean of tourists’ motivation to visit Gili Trawangan 41
14. The index mean of tourists’ perception about environmental condition on Gili Trawangan 41
15. The percentage of utilization of recreational activities by tourists 42
16. Importance – Performance index analysis of recreational activities on Gili Trawangan 42
17. The index mean perception of tourists about condition in M&C sector (except diving) on Gili Trawangan 43
18. Times of visit and perception of tourists about environmental condition on Gili Trawangan 44
19. The length of stay and perception of tourists about the environment on Gili Trawangan 44
20. The mean of tourists’ perception about negative impacts of marine recreation on Gili Trawangan 45
21. The mean of tourists’ perception about positive impacts of marine recreation on Gili Trawangan 45
22. The percentage of certified divers among tourist on Gili Trawangan 46
23. Divers’ perception about the environment on Gili Trawangan 46
24. The reason to choose again Gili Trawangan for holiday 47

LIST OF APPENDIXS

ANOVA 55
QUESTIONNAIRES 56

LIST OF ACRONYMS

1. BKKPN : Balai Kawasan Konservasi Perairan Nasional (the National Institute for Aquatic Conservation)
2. GET : Gili Eco Trust
3. GIDA : Gili Islands Dive Association
4. IMZM : Integrative Marine Zoning Management
5. M & C : Marine & Coastal
6. MMAF : Ministry of Marine Affairs and Fisheries
7. MTP : Marine Tourism Park
8. SATGAS : Security Task
INTRODUCTION

Background

Tourism as the fastest growing industry presents a real economic, cultural and social phenomenon of 20th century, having influence on many sectors (Miller, 1990). The phenomenon has become a necessary part of the modern society and a way to broaden people’s awareness of the natural and anthropological World’s heritage. Since 1950, the tourism industry was recording an annual growth of 6.5% on average (WTO, 2006) and in 2012 reached a historical milestone of 1 billion international tourists’ arrivals globally (WTO 2013). Apart from positive social and economic influences, tourism also causes a lot of issues threatening to degrade environmental resources, social values and be self-destructive (Pigram, 1991).

In the beginning of the new millennium and century, humanity is looking forward to actions and solutions, especially the ones ‘How to decrease negative human influences on environment?’ (Orams, 2004). A solution to manage tourism in a sustainable manner is commonly called ecotourism. This type of tourism is less conventional and the opposite of the mass tourism with the main aim to protect natural resources, to improve tourist awareness of conserving nature, to involve and promote identity of local people as well as to achieve long term economic and environment sustainability (Fannel, 1999, WTO, 2004).

Therefore, in this topic is not possible to skip the coast and the sea which attracts millions of tourist annually worldwide. A type of travel that occurs on the coast and in the marine environment is commonly referred as the coastal and marine tourism. The phenomenon of marine and coastal tourism is that it is growing at a faster rate than the rest of the tourism industry and presenting significant negative environmental influence (Orams, 1999). As is shown on an example of European development in the marine and coastal tourism growth 3% per year from 2005 to 2009 for the whole European Union EU GDP (OSPAR Commission, 2008).

Besides the allure of sandy beaches, the sea and sunny days, marine and coastal ecosystem varies; from coral reefs to coastal mangrove, rich range of species; from whales to sea horses and on range of activities based on these areas varies from whale watching to scuba diving (C.Cater & E.Cater, 2001). Thus, it includes wide spectrum of recreational activities: scuba diving, surfing, fishing, sailing, water skiing, windsurfing, observing, mammal and bird watching, cruising, beach activities, sea kayaking, visits to fishing villages and lighthouses, maritime museums, sailing and motor yachting, maritime events, Arctic and Antarctic tourism, and much more’(ICMTS, 2009). The specific character of Marine and Coastal (M&C) recreational activities mostly occurs in an environment where people cannot survive and requires proper equipment and well trained skills to be applied (Orams, 1999).

These activities mostly treat natural resources as an attraction and presents the perfect combination of economical income and conservation. Apart from positive facts, the most common issues in managing M&C recreational activities are: over-frequency of marine vessels and activities in a certain place, improper
waste disposal, anchoring, wildlife disturbance, lack of tourist awareness of underwater biodiversity and an irresponsible approach of operators, increasing boat traffic, led to the decline of marine environment (Graci, 2010).

Similar issues were encountered on the small Indonesian island of Gili Trawangan, where the economical sector is primarily focused on marine and coastal tourism. The island belongs to a marine protected area with status of Marine Tourism Park (MTP) ‘Gili Matra’ located north of the island of Lombok, Indonesia. The MTP Gili Matra consists of three small islands Gili Air, Gili Meno and Gili Trawangan offering turquoise color of the sea, white sand beaches and rich marine biodiversity (Cahyadi, 2012). Gili Trawangan is the largest and most valorized island in marine tourism industry and faces the growth stage toward to mass tourism (Graci, 2013).

In general, these issues can be addressed as consequences of a lack of management collaboration among stakeholders, inefficiency of planning systems, decision-making policy and complicated bureaucracy (Garrod & Wilson, 2005). Therefore, it is crucial to establish a good management policy created by various institutions, which support the recreational use of marine and coastal resources to maintain their health and viability. Otherwise, the consequences of recreational activities might be devastating for the environment and social economy in the future. However, as a non-consumptive sector, recreational activities based on marine areas still have a potential to create small scale of impacts and provide huge beneficial effects on ecotourism aspects by contributing to environmental protection, education and conservation.

Research Problems

The M&C recreational activities as a part non-consumptive industry promote a perfect mix of natural preservation and economical viability for the island of Gili Trawangan. The tourism industry has however developed recently and rapidly at Gili Trawangan, implying negative threats and impact for the natural environment, socio-economical sector and tourists’ satisfaction for the future. Thus, it is important to recognize the ability of the management of the MTP Gili Matra to closely monitor and follow the development of this sector and set the standards of ecotourism to secure a sustainable industry.

Goals of Research

1. To identify regulations base of the M&C recreational sector through various stakeholders
2. To identify support by the facilities necessary for the M&C recreational development
3. To identify economical contribution from M&C recreational sector to the local community and environment protection
4. To determinate potential negative and positive environmental impacts on the M&C recreational sites
5. To state the influence of the M&C recreational activities on socio-economic and satisfaction of tourists and the local people
Objectives of research

The objectives of this research paper are to better understand the influence of the M&C recreational sector on crucial aspects of ecotourism. To recognize the challenges for the management in arranging the M&C recreational activities at Gili Trawangan and keep the environmental purity, economical viability, prosperity of the local community and preserve the uniqueness of tourists’ experience as further base of development.

Benefits of Research

Implementing management strategies designed to direct tourism toward the achievements:
1. Recognition of the management current policy of M&C recreational sector
2. Identifying position and role of the M&C recreational activities in conservation with all advantages and disadvantages and direction of the further development.
3. Use the data to inform the management decisions of local stakeholders, improve the system of information sharing among them and set flexible regulations toward sustainability
4. Improving the awareness of readers about the M&C recreational activities on fragile resources and tiny islands

Conceptual model

A similar following model that represents a conceptual framework is used by Orams (1999) as a base for understanding and accessing the effectiveness of marine tourism management. Thus, between different types of activities and their outcomes there is a management with its various regimes, which is crucial to manage and control potential impacts (See Table 1).

Table 1 Conceptual model for the marine tourism management

<table>
<thead>
<tr>
<th>Environmental resource</th>
<th>INTERVENTION</th>
<th>Outcomes indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Easily accessible (activities on a shore)</td>
<td>Management strategy regimes</td>
</tr>
<tr>
<td>Class II</td>
<td>Accessible (activities in intertidal zone – 100m)</td>
<td>Regulatory Physical Economic Educational</td>
</tr>
</tbody>
</table>
2 LITERATURE REVIEW

Sustainable Tourism Development and Ecotourism

Tourism is the largest business sector of the world economy, accounting for 10% of global GDP and 35% of the world’s export services. Since 1985, tourism has been growing an average of 9% annually and reached 1 billion international tourist arrivals in 2012 (WTO 2013). International tourism receipts grew up to 1.03$ trillion (€740 billion) in 2011, corresponding to an increase in real terms of 3.8% comparing with 2010 (WTO 2012). This data presents the significant contribution and impacts of tourism to the economy, culture and environment with a new challenge for the modern human society to minimize negative environmental, social impacts and simultaneously maximize economical benefit for the long term. Due to the complexity of the industry, World Tourism Organizations (WTO), The United Nations and governments are trying to stop negative trends and redirect tourism towards sustainable tourism development. The initial step of sustainable ecotourism development is to increase the awareness of negative tourism impacts (Smith, 1977, Grady, 1990) and improving partnership and collaboration among various stakeholders as an essential requirement for managing the actual process of tourism (Weaber, 2003).

The definition of sustainable tourism development has been interpreted in many different ways by various organizations, authorities and tourism experts. Anyway, each of them involves preservation of natural resources, protection of indigenous cultural identity, and benefit for the local community.

The WTO (2004) defines three following principles necessary for sustainable tourism development:

1. Make optimal use of environment resources that constitute a key element in tourism development, maintaining ecological processes and helping to conserve natural biodiversity
2. Respect the socio-cultural authenticity of host communities, promote their cultural heritage and contribute to inter-cultural understanding
3. Establish the long-term economic operators, providing socio-economic benefit to all stakeholders, by contributing to poverty alleviation through the stable employment and income opportunities to local communities.

Definition of ecotourism is surrounded by much confusion and controversy as it attempts to take into account the dual objectives of protecting areas and local communities in the one hand, and implement tourism industry in another. Despite differences in interpretations and convenient deployment of the term “ecotourism” all definitions certainly involve: nature based tourism, environmentally educated, and sustainable managed development. Thus, ‘Ecotourism presents responsible travel to natural areas that conserves the environment and improves the well-being of local people’ (TIES,1990).
Definitions selected by Encyclopedia of Ecotourism (Weaver 2001)

1. Traveling to relatively undisturbed or uncontaminated natural areas with the specific object of studying, admire, and enjoying the scenery and its wild plants and animals, (Ceballos – Lascurain, 1987)

2. Responsible travel to natural areas which conserves the environment and improves well being of local people The Ecotourism society (1991)

3. Ecologically sustainable tourism that fosters environmental and cultural understanding appreciation and conservation (Ecotourism Association of Australia 1992)

These definitions recognize ecotourism development as based on ecological and socio-cultural components as the key of sustainability with the appropriate return to the local community and long term natural conservation. However, there are many new definitions with slightly modified principals of money generation, tourism quality and local participation (Ross & Wall 1999). Nowadays ecotourism slowly takes a role and is becoming internationally accepted as not only as the naturally based tourism, but also as tourism in highly modified human areas such as plantations, farms, and urban zones (Higham & Luck 2002).

Marine & Coastal Ecotourism

Marine and Coastal tourism is a selective kind of tourism based on a unique resource combination at the interface of land and sea offering amenities such as water, beaches, scenic beauty and rich coastal and marine biodiversity. Orams (1990) defines marine tourism as including "those recreational activities that involve travel away from one’s place of residence and which have as their host or focus the marine environment (where the marine environment is defined as those waters which are saline and tide-affected)". Regarding the same at there are several facts which distinguish this type of tourism from others.

1. Occurs in an environment in which humans cannot live and are strongly dependent on equipment to survive.
2. Growing at a faster rate than most of the rest of the tourism industry.
3. Significant negative impacts
4. Presents special management which is involving multidisciplinary sector

Marine tourism presents the allure and tradition of the sea, sand and sunny holidays, presenting an attraction for millions of people worldwide. Thus, it is a challenge for humanity with potential to destroy or protect coastal and marine environment (Miller & Auyong 1991).

Ecological Aspect of Marine and Coastal Environment

According the International Union for Conservation of Nature definition of marine environment as “Any area of intertidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features” (IUCN, 1991).
This environment reflects the enormous complexity and diversity of natural resources necessary for our planet.

Coast and island environments share many of the same challenges and opportunities, which can be labeled as critical, vulnerable, environment with similar changes. This understanding is recognized in 25 of the Program of Action from the United Nations Conference for sustainable development of small islands developing states, says: “Sustainable development in small islands developing States depends largely on coastal and marine resources, because their small land area means that those States are effectively coastal entities”. Thus, coasts and islands are sharing the same challenges of human effects which degrade natural marine and coastal resources such as coral reef, sea grass, marine life forms and mangrove. This practice is highly critical on small islands which possess very limited resources and space, but definitely better opportunity in controlling the waste management and negative impacts from the land (Halpeny, 2001).

Characteristics of Coastal and Marine Ecosystem in Indonesia

The Indonesian archipelago lies along the equator from the south of Thailand up to the northeast coast of Australia, thus, has undoubtedly enormous treasure of marine and coastal biodiversity and huge potential to develop ecotourism industry. The largest archipelago in the world consisting of 17,480 islands and the fourth longest coastline of the world, with the tropical climate and its rich biodiversity, it presents an immense potential to become the world’s leading country in marine ecotourism industry (Avenzora & Teguh, 2013). The Indonesian coastal zone characterized by the tropical marine ecosystem, such as, estuarial beaches, mangroves, lagoons, coral reefs, sea grass and algal beds and small island ecosystems which are home of varieties of living communities with various types of mode association as well as richness in species diversity.

Coral reef

Indonesian archipelago has approximately 75,000km² of coral reef ecosystem which are distributed throughout the archipelago. All types of coral reef including fringing reefs, barrier reefs, atolls, and patch reefs occur in Indonesian marine waters. These marine life forms are one of the most ecologically diverse, valuable and productive living systems on the planet that faces the decline in the health globally and requires immediate action for conservation. (Bellwood, Hughes, Folke & Nystrom 2004; Dearden, Bennett & Rollins 2006.)

Unfortunately, a rapid decline of coral reef worldwide brings up the question, why are they important? Coral reefs are important for a number of reasons: to protect coast from storms, erosion, remove a tremendous amount of carbon dioxide from the water, provide habitat for a huge diversity of invertebrates and fish, human food, necessary connections with pharmacological industry, and is favorite place for recreation which attracts millions of tourists worldwide (Karlskint , 2006).

The mangroves of Southeast Asia are extremely diverse, where 76% of this forest belongs to Indonesia. Mangrove creates special diversity of birds and live organisms, encourages multiplicity of recreational activities where bird watching is placed as the most popular tourism activity. Marine fishes and sea turtles are
very diverse around the Indonesian archipelago, as well. The number marine fish is 3,215 species only around Flores island and from Komodo there are 736 species of 254 genera based on unpublished data and six sea turtle species occur in Indonesia, including the green (Chelonia mydas), hawksbill (Eretmochelys imbricate), Olive ridley (Lepidochelys olivaceae), and Letherback turtle. (Dermochelys coriceae) which do nest loggerhead and flat back turtle. The green turtle is the most abundant species and is valued particularly for its meat, and its eggs. It seems that over 25,000 females are breeding annually in western Indonesia (Hutomo & Kasim 2004).

Tourism Impacts on Environment and Socio-culture

Any form of tourism involves travel to and from site, accommodation on site or on tour, and various recreational activities depending on areas (Andreak 1995). Globally tourism makes many environmental issues in terms of carbon dioxide, but locally tourism can be potential to preserve the nature and provide long economical perspective. Regarding ecological perspective, a critical part is the impact of ecotourism on the natural environment, which depends on the ecosystem as well as the activity. Thus, different activities, under various management regimes, cause different impacts in different ecosystems (Nail, 2009).

Tourism activities on Aquatic biota or Water-based recreation mostly depends on vessels and they can cause of a lot of negative impacts by propeller-driven boats affecting aquatic species, over-frequency, increased turbidity, petroleum, anchoring and so on (Arthington, 1989). Common picture on touristic destination is overcrowded by activities and people on spots, improper waste disposal, anchoring and direct docking of marine vessels on the beach, lack of tourists’ awareness of biodiversity, irresponsible approaches by operators, high frequency of boat traffic, and an overuse of the environment by recreation (Graci and Dodds 2010). This trend is a typical example for a mass tourism destination where crowds ultimately shift services for lower cost which leads to environmental degradation and downscale the economic profitability, and whole value of destination itself (Wearing and Neil, 2009).

Tourism activities on large marine species

Whale, dolphins, manatee rays and dugong nowadays support a large scale tourism industry worldwide. Watching these animals includes helicopter, boats, air craft and makes very close distance to the wildlife. In Florida, USA, where manatees support a major recreational boating industry, over 10% of the total population were killed by propeller cuts and boat impacts in 1989: this was more than the population replacement rate (Shackely, 1992). The risk of boats and ships cause colliding and noise disturbance to the large marine species from maritime traffic - which affects the behavior of these mammals - have become a cause for concern (Gonzalvo, 2014). This fact presents the complexity of marine tourism industry and its challenge to control impacts and follow the future direction.

Socio-cultural Aspects of Tourism Development

The socio-cultural aspects is the most important of any kind of people’s activities, especially in tourism which is the main product present on a spectrum
of different services. One crucial fact of sustainable development is the interaction between tourists and the local people which is a necessity for economic development and preservation of natural & cultural heritage.

Demographic segmentation involves defining the market by variables such as: age, gender, life cycle stage, occupation, income and education. Along with these socio-economic (demographic) characteristics are range of attitudinal and behavioral patterns (psychographic characteristics) that significantly allow us to differentiate eco-tourists. Generally, eco-tourists demonstrate the following, seven psychographic characteristics:

1. Possession of an environmental ethic
2. Willingness not to degrade the resources
3. Anthropological orientation
4. Aiming benefit to wildlife and environment
5. Striving for the first-hand experience with the natural environment
6. Education and appreciation
7. High cognitive and affective dimension (Ballantine and Eagles, 1994)

Tourist Motivation
Motivation is aroused when individuals think of certain activities that potentially satisfy their needs, and motivate them to travel away (Pyo, 1989). Motivational research is based on the early works had identified that ‘push’ and ‘pull’ factors of motivation. ‘Push’ factors are motives concerned with the social and psychological status of the individual, while ‘Pull’ factors, on the other hands, are motives aroused by the destination rather than emerging exclusively from the traveler himself. Push motives are: Escape from urban environment, exploration and evaluation of self, relaxation, prestige, regression, enhancement of kinship relationship, facilitation of social interaction. Pull motives novelty and education (Dann, 1981).

Host Communities
A host community refers here to a group of people who share a common identity such as geographical location, class and ethnic background. The host community is a necessary part of any development and there are numerous reasons why host communities may consider an ecotourism approach to tourism development. The main principles or elements of ecotourism are designed to maximize the social benefits of tourism while minimizing the socio-cultural impacts. Some of these principles are:

1. Increase demand for accommodation facilities
2. Provide additional revenue to local retail business and other services
3. Increase the market for local products
4. Involve labor and expertise (eco-tour guide, retail sales assistant)
5. Conservation and maintenance of natural attractions and symbols of cultural heritage
6. Increase Education
7. Increase awareness of the value of local culture and the natural resources (Wearing, 2001).
Conservation and Community

Ecotourism significantly contributes potential for the benefit to the communities in remote areas without environmental and social destruction (Taylor, 2003). Local communities are significantly vulnerable to the deleterious impacts of tourism development – particularly indigenous cultures – as they directly experience the socio-cultural impacts of tourism (Mabawia, 2004). The subsequent impact of tourism’s dynamic growth on communities has in some cases caused strong protest by community groups, which, being sensitive to the impacts of tourism, have actively opposed large-scale tourism development locally (Brammen, 2004). The issues and problems are commonly expressed by representatives of the host communities to tourism development generally fall into a number of interrelated categories. Lack of opportunities for involvement in decision-making and financial benefit, inadequate responses from governments and in many cases it significantly accelerates social change (Wearing and Nail, 2009).

Despite a large potential role of conservation and protection of the cultural heritage and natural resources, ecotourism commonly faces uncontrolled planning, responsible approach and lack of cooperation among stakeholders, placing tourism as a potential threat to future development. Therefore, ecotourism management needs to place priority on environment protection, local benefit and tourism experience on higher level as a base of development.

Characteristics of Marine and Coastal Tourism Management

Ideally, marine ecotourism management should be a link between tourism and the natural marine environment. As a subset of ecotourism, it has considerable global significance in terms of its economic, social, cultural and environmental impacts. This ideal stage of management can be reached through strong partnership and collaboration among stakeholders as a key of a good policy and planning through cross-sector of partnership (Bramwell & Lane, 2000).

The specific position of marine tourism management is first of all the necessity of collaboration with stakeholders among various fields including non-economic based natural and socio-cultural aspects as the base of future development. Secondly, by involving stakeholders from various fields of activity, with related interests, there may be greater potential for the integrative approaches to policy-making that can help to promote sustainability. Thirdly, an involvement of multiple stakeholders affected by tourism development should raise awareness of negative impacts. Fourthly, broad participation in policy-making could help democratize decision-making, empower participants, and lead to capacity building and skill acquisition amongst participants and those whom they represent (Bramwell & Lane, 2000).

Unfortunately, most of marine destinations are prioritized by financial interest as the highest criteria of development while the environment is taken as guarantee only concern on short projects based to mitigate negative impacts. This situation commonly leads to the unsustainable development of coastal areas which is not only destructive to the environment and society but most of time it is a self-destructive industry.
Management Strategy Approaches

The model explained in the introduction defines a couple of necessary stages of well established management regimes that are been divided into four main categories of approaches: Regulatory, Physical, Economic, Educational approach.

Regulatory management practices traditional methods of controlling tourist activities in a marine setting (Plimmer 1992). Rules and regulations are commonly utilized to restrict visitor action, access, times, and numbers, and are usually posted on signs, notices, and written material. Examples of regulations commonly used to manage tourists are: Visitor number restriction limit: time and location, types of visitor activity permitted: spatial and temporal zoning, Types of equipments permitted: Noise level, speed level, permits, licenses permit requirements. **Techniques:** Limit of visitors’ number, prohibit certain activities, separate activities, requiring minimum skill level.

Physical approaches to management are those human made structures that control human activity by restricting the movement or type of activity which can be undertaken. Additional examples include underwater observatories, mooring, buoys for vessel in coral reefs areas. **Techniques:** site hardening, facility placement and design, sacrifice areas remove attraction rehabilitation

Economic strategies use prices as incentives or disincentives to modify people’s behavior. Although these techniques have received little explicit recognition, they have been used in many natural areas for many years. **Techniques:** Differential fees, damage bonds, fees, rewards.

The goals of education – based management strategies are to reduce the incidence of inappropriate tourist behavior. View of education as a potential “win-win” situation for both the marine environment and the tourist (Forestell, 1990). These factors include the diverse characteristics of tourist group, such as different group size, age and educational attainment.

Classification and Spectrum of Marine Recreational Activities

According the classification of the Spectrum of Marine Recreational Opportunity (SMRO) is separate on experience, characteristics of natural environment and location. There are five different classes but this paper focusing only on the first two as the most common on a small island (See Table 2).
Table 2 Spectrum of marine recreational opportunity

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Class I Easily accessible</th>
<th>Class II Accessible</th>
<th>Class III Less Accessible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>High degree of services and support. Usually crowded</td>
<td>Often contact with others</td>
<td>Some contact with others</td>
</tr>
<tr>
<td>Environment</td>
<td>Many human influences and structures. Lower –quality natural environment</td>
<td>Human structures/influences visible and close</td>
<td>Few structures close by – some visible</td>
</tr>
<tr>
<td>Locations</td>
<td>Beaches and intertidal areas</td>
<td>Intertidal – 100m offshore</td>
<td>100m – 1km offshore</td>
</tr>
</tbody>
</table>

The SMRO provides a diverse range of opportunities for tourists to recreate in the marine and coastal environment and its distance from shore strongly influences the activities. At one extreme of the spectrum, near the shore where tourists are able to undertake a wide variety of coastal activities which are easily accessible and commonly influenced by human-built structures (Orams, 1999).

Marine Tourism Park

A popular and successful management regime utilizes protection of natural resources and facilitates recreational use of them is the establishment of marine parks. The most popular is the ‘multi-use’ marine protected area (Slam and Clark 1990). These marine parks seek to manage recreational and commercial use of the marine resources while protecting them from unacceptable damage. Considering data of the Indonesian Ministry of Marine Affairs and Fisheries (MMAF) which aims to reach 20 million hectares of marine protected area around Indonesia by 2020 and integrate the multiple use of resources to reach long term environmental protection and economical sustainability (Sale, 2005. The implementation is going to be conducted through different protection models. One protection model for integrative use of fishing and marine tourism is the (MTP) which includes six areas around Indonesia. One of them is the MTP Gili Matra with three islands of Gili Meno, Gili Air and Gili Trawangan, surrounded by fringed coral reefs, rich in marine diversity (Yulianto, 2007).

3 RESEARCH METHOD

Place and Time of Research

This thesis is based on fieldwork that was conducted on the island of Gili Trawangan, Indonesia, over two visits in May 2013 and December 2013 – February 2014. A pilot study was conducted in May 2013 and data collection was conducted from 20 of December 2013 until 20 of February 2014.
Study Approach

In the frame of a case study, the positive and negative impacts and the sustainability of the M&C recreational sector on Gili Trawangan were investigated. Due to the complexity of the ecotourism industry, it is always a question how to estimate the impacts of a particular activity among many other activities at same environment. Thus, this research involved several methods of data collection, separated on several phases involving quantitative and qualitative methods. The qualitative methods included a case study, semi formal and informal interviews, while the quantitative methods included a site survey, Likert scale questionnaires and secondary data.

The approaches consisted of five phases:

1. The first phase was a pilot study to identify the case study and tourism development based on the marine and coastal environment
2. The second phase was an observation on each M&C recreational activities based up to the class II (100/m offshore) and the survey of tourist’s perception and motivation about the recreation
3. The third phase was to identify the position and sustainability of the M&C recreational sector based its policy, institutional background, and management approaches
4. The fourth phase was based on method of direct observation of the environmental condition with a focus on coral reef check based on snorkeling and dive sites
5. The fifth phase was an investigation of the impacts of the recreational industry in economic and socio-culture. Including a survey of the local residences and local employees of M&C recreational sector.

Method of Data Collecting & Analysis

Pilot study

A number of formal and informal qualitative interviews were conducted in order gain additional information and opinions about marine ecotourism on the Gili islands. Interviews were conducted with Mrs. Irma Provincial Tourism Office of the province of Nusantara Barat in Mataram, Mr. Wahy head by the Ministry of the Marine Affairs and Fisheries (MMAF) department of North Lombok in Tanjung, Mr. Lubis, National Institute for Aquatic Conservation Areas (BKKPN) in Bangsal and Mrs. Delphine the head of local organization Gili Eco Trust (GET) main non-governmental organization for the Gili Islands. Due to the diversity of the M&C tourism development, complexity of tourism management, numbers of tourist arrivals and support during the field work Gili Trawangan was the most appropriate selection.

Observation of the M&C recreational activities

The second phase of the research presented the initial phase, took place on the field site. This phase identified the spectrum of recreational opportunity based
on marine and coastal environment and its position in conservation through tourism development and evaluation as a tourism attraction. Observation of each recreational activity involved the secondary data by determining the history of development, number of economical providers, density of recreationists on the sites, implementation of the activity, general environmental condition of the sites, and survey of tourists by informal interviews and the of Likert scale questionnaires. The questionnaire comprised of 30 samples and express tourist’s opinion through different valued aspects that can be scored on seven different levels from the smallest to highest value.

The questionnaire was used to show the level of motivation and perception that can be obtained by a visitor: (1) The number of activities which can be performed by visitors to obtain the perception in enjoying the object, and (2) the level of satisfaction and experience of marine and coastal recreational activities.

**Identifying the management and its approaches**

The third phase of the research has identified the management strategy approaches of the MTP management. This using the simplify model through crucial management’s approaches of regulation, physical, economical and educational.

Regulatory approach identified various stakeholders Governmental Institutions, Non-Government Organizations (NGOs) and tourism sector. The method for identifying this segment was based on an in-depth and semi – interviews and obtaining the secondary data. The interviews were conducted with the main governmental bodies for marine matters of the MTP Gili Matra BKKPN and the MMAF of North Lombok as main institutions for creating and applying the zoning system and main NGO’s, GET, and Wild Life Society Indonesia. The aim of the interviews was to identify the policy orientation and the barriers toward sustainable development, position in zoning system, determining the position and role of recreation in conservation and specific regulation.

While physical, economical and educational approaches management approaches were recognized through the direct observation and on secondary data, including the multi sector of observation of stakeholders. These aspects identify the necessary support for the M&C recreational sector in facilities, direct economical contribution and encouraging appropriate behavior of the recreationalist

**Environmental condition monitoring**

Beside the general observation of potential negative impacts on marine environment, in this research a real physical check of coral reef as popular setting for recreation has been done. For coral reef check, the technique of reef transect was used, which is recognized worldwide and licensed by the Reef Check Organization (RCO). This technique presents robust scientific data of the reef slope, the diversity and abundance of fish and percentage of soft corals, hard corals, rocks and sand on the reef. The selected reef for monitoring was in one of the most popular sites for snorkelers and divers, called “Halik reef”. The site is located on the north shore of Gili Trawangan 60m off shore. The same technique
of reef check had been done by the GET in 2012, which will be the parameter for data comparison.

The technique was conducted with 100m line, divided into four 20m segments with a 5m gap in between them to ensure sample independence. The survey was conducted with three segments:

1. Fish belt transect. Four 5m wide, by 20m long segments were sampled specific fish species
2. Substrate line used. The same transect line as the fish and invertebrate belt transect was used, but in this section points were sampled at each 0.5m interval along the tape to determine the substrate types and direct impacts on the reef. (See Figure 1)

Tools: boat, 3 sets of complete dive gear, transect line, underwater slates/paper and attached pencil, buoys, plum line (RCO, 2009).

![Figure 1The technique of coral reef transect check](image)

This data was analyzed through basic statistic including mean (average) percentage for the substrate survey and abundance. Useful method for interpreting data is used by the Standard deviation showing us how widely the distribution of observation is distributed around mean and standard error which shows how accurately a sample mean estimates the population mean.

**Impacts of M&C recreational industry on community**

This segment of research was focused on the socio-economic sector and included a survey of the local residents based on *Likert* scale and the local employees in the M&C recreational industry. The survey for the local employees besides their basic data of their origin, age, duration in the industry was analyzing the position and incomes of the employees in the recreational sector. The questionnaires comprised 30 samples for each group. The *Likert* scale from 1 - *Completely Untrue* to 7 - *Completely True* method show their opinion through different valued aspects that can be scored on seven different levels from the smallest to highest value. The questionnaire for the local people identified seven potential negative and positive impacts of three crucial segments of ecotourism: environment, economy and socio-culture. The aim was to identify their perception and attitude about the M&C recreational industry as a big part of tourism development of Gili Trawangan.
4 RESULTS AND DISCUSSION

Natural and Anthropological Characteristics of Gili Trawangan

The village of ‘Gili Indah’ is composed of three islands Gili Air, Gili Meno, and Gili Trawangan located northwest of the island of Lombok. Administratively belong to the regency of North Lombok, province of Nusa Tenggara Barat (NTB), Indonesia. The marine area of the village is an environmentally protected area with status of the MTP Gili Matra with 2.954ha, which includes terrestrial area of 169.73ha, where Gili Trawangan is more or less 340ha with a circumference of 7.5 km (Cahyadi, 2012).

Topography and Oceanographic

The island of Gili Trawangan is mostly flat area 1-3m on the north and central part, with the hill on the south part of the island height of ±20m (Yulianto, 2007). Oceanographic conditions in the three islands have the same pattern, which have generally flat and sandy beaches with water depth of 1-3m with tidal range of ±3m. Direction of surface flow between the months of December to April/May move from the north with an average speed of 0.25 m/sec, while in June and November flow heading to south with the same speed. The highest waves occur during the rainy season in the months of December and January with the velocity flow reaches ±0.40 m/sec (WLS, 2012).

Climate

The MTP Gili Matra has the same type of the climate like others areas on the west part of Indonesia with less rain fall. According the Ferguson’s classification, on Gili Trawangan the dominate climate is ‘type C’ (Regional somewhat wet) and ‘type D’ (regional average) with a component of the west monsoon (BKKPN, 2012). During the west monsoon, wind blows from the northwest with a peak speed of 35 knots which occurred in rainy season. The average air temperature vary between 20-30ºC during the year, while maximum air temperature occurred in November of 32ºC and the minimum temperature occurred in June of 20ºC. During the wet season, the average monthly solar irradiation is below 60%, while in dry season the solar irradiation reaches above 70 % (WLS, 2012).

Natural Characteristics of Marine and Coastal Environment

All three islands of the MTP are surrounded by a coral reef ecosystem which includes type of reef edge - Fringing coral. It is distinguished from the other two main types (barrier reefs and atolls). Fringing reef grows directly on shoreline, the reef flat extends right to the beach and there is no back reef. (Kennedy and Woodroffe 2002). This position makes this reef very influenced from the shore. Vast potential of coral reefs is 236.25ha in whole Gili Matra, with 101.27ha around the shore of Gili Trawangan. The coral reefs provide grazing for many marine species and the total estimation of species number of fish that exists is 511 species of fish in the MTP Gili Matra based on Allen and Werner’s formula.
for accounting fish species richness. The coastal area of Gili Trawangan is surrounded by sandy beaches, with a few mangroves on the south part of the island (BKKPN, 2012).

**Demography**

Gili Trawangan was an uninhabited island until the mid-seventies. A colony of ten families was sent to the island to be the farmers of coconut plantations after a war in central Lombok (Soemodinoto and Wong, 2004). The last record of number residence Gili Indah village numbered 3,561 inhabitants. Most of the residents of Gili Indah village are Muslims (99%), the rest are Hindus and Christians. Majority of ethnic composition are Bugis (75%) from South Sulawesi, Sasak form Lombok, Balinese, Javanese and Maduranese. The level of education level in the village of Gili Indah is on low stage with junior high school 23%, senior high school by 11%, and only 2% college education (BKKPN, 2012). The educational level most of time is crucial aspect about the readiness of the local community to be involved in tourism industry.

**Tourism Development**

The first flow of tourists started with snorkeling trips from the island of Lombok at beginning of the 80s, while the significant tourism development occurred between 1984 and 1991, together with industry of hospitality and diving and snorkeling sector which is still on leading position for the local economy. At the beginnings of the nineties the government stepped in with the aim of relocating uncontrolled tourism facilities and providing control and well sustained future of the island, which marks the first conflict between the public and private sector (Somodinoto and Wong, 2004).

Nowadays, Gili Trawangan according the travel book of ‘Lonely Planet’ (2012) is one of the top ten destinations recommended to be visited in Asia. The uniqueness of the attractions on the Gili islands are three constitutional rules of the village, which are: no motor vehicle, no dogs and the height of buildings up to palm tree (personal communication with the head of the village of Gili Indah Pak Taufik 21.01.’14). These rules placed this destination on better position than others islands. Thus, the Gili Islands contributes to the province of Nusa Tengara Barat 23.3% of international tourist arrivals, and this percentage of international arrivals getting higher after the liberalization of tourism industry for the ASEAN countries in 2010 (Cahyadi 2012).

The islands faced a real touristic ‘boom’ in last decade where the number of visitors has increased from an annual number of 9,518, in 2003, up to the historically point of 373,422 visitors in 2012, with 93%, foreigner tourists (WLS, 2012). According to the last research provided by BKKPN (2012) it is proved that more than 95% of the tourists come attracted by phenomenon of Sun, Sea, and Sand (3S) and these motives are correlating well with MRAs which provide special opportunities for people to experience marine nature.
Development and Condition of the M&C Recreational Sector on Gili Trawangan

Recreational opportunity spectrum focuses on the environmental setting where recreation occurs with the combination of physical, social, biological and managerial conditions that give value of the peace (Clark and Stankey, 1979). The environmental setting estimates the carrying capacities for possible recreational areas establishing conditions of use which are considered for each type, and provides means of assessing relative numbers of persons and activities (Stankey, 1991).

Surrounded by the coral reefs and sandy beaches the island of Gili Trawangan provides perfect conditions for a wide spectrum of the M&C recreational activities. Along the east coast lies the main beach of the island is well protected from the open ocean and presents the most appropriate place for human activities and access to the island. The easy access to the east side causes a high frequency of marine traffic and human activities which directly affect the coastal development and increase tourism facilities. The island’s north coast is mostly suitable for snorkeling and diving on the site called ‘Halik reef’, while the beach activities strongly depend of the ocean’s tide due to the effect of beach erosion. The west and south coasts of the island are exposed to the open ocean with its big waves, mostly appropriate for coastal recreational activities with the highlight of attraction of sunset watching with very limited tourism facilities.

As it mentioned before according Oram’s classification of the SMRO, activities can be separated by type of activities, locations and environmental conditions. Among the five classified groups, on Gili Trawangan the most common are first two categories of the SMRO.

Easy accessible (based on the shore)

The first category of marine recreation is commonly called Easy Accessible activities, mostly located on the beach or intertidal zone, with the high tendency of facilities and services. On Gili Trawangan easy accessible activities are mostly distributed along the main beach on the east and southeast side, supported by beach front bars and restaurants.

Accessible (intertidal – 100 m)

The second class of recreational opportunity spectrum are accessible activities characterized from intertidal zone until 100m off shore, such as: snorkeling, swimming, diving, surfing, stand up paddling, kayaking, glass bottom boats, wind surfing, marine walking and etc. All these activities are mostly occurring on the east side among the high frequency of activities. Due to location and necessity of equipment, the second class of recreational activities presents a challenge for the management to arrange them in a safe and sustainable manner.

Beach activities

As it mentioned, most of the restaurants, dive operators, and cafes, are located at the main beach providing the opportunity to the customers to have meals or drinks on lazy bags or sun chairs with the view on the turquoise sea. Along the east side operating more than 30 bars and restaurants providing service
directly located on the beach front. Sunbathing as the main activity is directly connected with the industry of hospitality limiting space for beach’s sports and other coastal recreational activities. Along the beach there is the main street, called ‘Jalan Raya Gili T’, where there are numerous cafes, restaurants, stores, market, the harbor, dive shops, snorkeling and water sport gear renters, and many others economical subject of tourism industry.

This situation, gives a picture of a typical mass tourist destination where all services are based for human joy and needs, without paying attention on the environmental degradation. Much quieter sides are the west and south coast of the island, along these sides are facilitated by several bungalows, one big resort, and several small cafes. As has been mentioned before, due to the open ocean these sites are not appropriate for the accessible activities (100m off shore), thus, the highlight of attraction on these sides are coastal activities: sun set watching, horse riding. The North coast is very affected by erosion, thus beach activities are strongly depending on the ocean tide, but 50m offshore, there is an attractive reef ‘Halik’ suitable for snorkeling and diving. Despite of opportunity south and west sides are still not valorized in the beach sports, there is only one proper court for beach volley, according to the BKKPN northwest site is common place where turtles laying the eggs but still there are no signs for that. One of the positive sites of coastal activity is Turtle Conservation Centre, based on the east site with free access for everyone. The center provides opportunity for everyone to release turtle for contribution of 20$.

SCUBA Diving

The richness of the marine biodiversity of the area placed this sport as a highlight of tourists’ attraction on the island with high chance to see reef shark, green turtles, stingrays, bumphead parrotfish, lion fish and other unique form of the marine tropical Indo-pacific region. There are eleven dive sites around the island, Deep Turbo, Shallow Turbo, Halik reef on the north, Shark point, Manta point on the east side of the island, Biorocks, Good Heart, Surfpoint and Meno Slope, Turtle Heaven, Bounty Wreck on located west reef slope of the island of Gili Meno (See Figure 2).

Figure 2 Dive sites around Gili Trawangan
The high intensity of tourism development in the last seven years has doubled the number of dive operators and in 2014 reaching 18 SCUBA operators and one for Free diving, equipped with 30 marine vessels and various services offered. All dive operators on the island are supported by the international standards of PADI (Professional Association of Dive Instructors) and SSI (SCUBA School International) that provides the offer of internationally accepted diving certifications. These standards are attracting tourists to get first touch with the marine world and get ‘Discover SCUBA Dive’ or ‘Open water dive’ certification, as well as experienced divers to stay longer on island and gain better dive skills.

A decade ago diving entrepreneurs had played a crucial role in stopping destructive fishing practices on the island by providing financial and technical support to the local community and involving NGOs for environmental and social projects. Nowadays, this sector is still most organized on the island, the new alliance of divers is called Gili Islands Dive Association GIDA. It is an association of professional and responsible dive operators on Gili Trawangan. GIDA is a non-profit organization striving for regulated diving professionalism and safety by providing high standards of equipment, instruction and its members have obligation to join the system of dive tax (personal communication: with head of GET 19.01.2014). There are three dive shops that do not support GIDAs rules and do not contribute the eco tax. According one of them, ‘GIDA is only a business organization suitable for big dive operators to control competition and for me personally dive eco tax are not solution for the environment’ (personal communication with the owner of dive shop Gili SCUBA – non members of GIDA 14.07.2014)

Despite the unity operators and their willingness to contribute to the environment, the recent development of the diving industry on the island is obviously based on business priority, which leads diving to be a part of mass tourism. Thus, unlimited numbers of divers on the site, open site access for divers outside, large group of divers, unregulated distance to wildlife, unregulated dive sites for beginners and experienced divers, anchoring and improper docking vessels on the beach site, a lack of educational briefing and interpretation of dive guides are some of the issues common on the island in diving industry. Especially during the peak tourism season when many people do this sport for the first time and they commonly have problems with keeping buoyancies kicking and stepping on corals.

Based on the testimony of an experienced recreational diver says:
‘I counted more than 50 divers on area of 100m² and I think it is a lot. It was hard to see the wildlife; many turtles were obviously stressed and unmovable while divers petting and taking a picture of them. Most of time, I was surrounded by bubbles and divers. Although, it was overcrowded, this dive site is still beautiful, but I am afraid with a uncontrolled number of divers the quality of the environment might be decreased, because I remember this place much calmer and nicer’. Dive site Bounty Wreck, December 2013, Iva Vujovic, Certification level: Dive master
Hence, an unlimited number of divers obviously make the diving industry head towards mass activity with an increasing pressure on the environment and a loss in providing the unique experience and education to the customers. The fact of a decreasing marine wildlife is also referred to by the one of the oldest dive instructors on the island who has lived on Gili Trawangan for more than for 30 years.

‘Only fifteen years ago it was possible to feed reef sharks and manta rays from the jetty. I would go snorkeling and see them close to the shore. Gili Meno and Trawangan were connected with the coral reefs. Today, with all these development and human activities, had decreased more than 60% of corals. Still is common to see shark on the east side, while Manta and other bigger rays are very rare seen around Gilis’ Mr. Herman, dive instructor and guide of ‘Diversia’ dive shop.

Snorkeling and other water sports agencies

This sector as relatively cheap and easy to set is recording the highest rate of growth on the island. In the last three years the curve shows a doubled number of snorkeling operators and renters of water sports gears (see Figure 3). There are 39 agencies equipped with 27 glass bottom vessels providing jobs for 120 employees permanently involved in renting, training and guiding.

Figure 3 The annual growth of water sport agencies since 1989 on Gili Trawangan

Since 2013 new water sports on the island are: stand up paddling, sea kayaking, kite surfing and marine walking. Marine walking has increased on four operators in only three months. These facts show the huge economical influence and interest of the people in marine sports, but considering the fact that most of these activities are located on the overcrowded east coastline, the question arises ‘how sustainable and safe they are?’

Most people are able to do some of these activities individually, thus, proper physical approach is crucial to control more and inform about potential danger and appropriate behavior hazards increase. Considering the east shore as the busiest side of the island, with the high frequency of marine vessels, numerous activities and common strong currents seriously threatening the safety and satisfaction of the snorkelers, swimmers and other recreationalists. During the Christmas and New Year holidays the average number of snorkelers after 4pm was more than 50 on 100m. Based on the testimony of a snorkeler, saying:

‘My two kids and I were snorkeling and suddenly appeared a dive boat heading to the shore and we were in real danger of being hit. It would be nicer
and safer to mark snorkeling areas. Anyway, I am happy I touched a turtle’ Jeremy, in front of ‘Gili Divers’ café. 20.12.2013. This testimony shows the position of the snorkeling industry in environmentally protected which is an alarming call for the governmental sector to support activities by proper facilities and inform of the tourists about an appropriate behavior and approach to the wildlife.

The suitable wave-breakers for surfing occur on the southeast and northwest reef breaks. The southeast one is very popular among tourists and mostly appropriate for recreational surfers. A lack of signs, flags and knowledge of the service providers, commonly causes the mismatch of surfers’ abilities and the actual wave break. There is only one place for surfboard renting available, in a Surf bar where people on the sandy beach can enjoy surf watching.

Recreational and Spearfishing are another popular sport on the island. Normally, this recreational activity should not exploit the fish, but the lack of proper regulations this activity is a new threat for fish density and endangered species. Fishing rods and spearfishing gear are available for rent in seven shops on the island, where tourists can independently rent a spear gun beside snorkeling gear. Due to lack of law enforcement regulations about ways of fishing and specific rules for endangered species, this activity has increases the hazard for other recreationalists. Renters are usually young and low educated which complicates providing important information about safety standards and endangered species. Apart from destructive environmental practices this threatens human safety, which shows the low level of the management awareness.

As is seen, the recreational industry based on the marine and coastal areas on Gili Trawanagan presents the sector which supports economical income, employment, and other sectors, however, increasing development presents another threat for the environment with high potential to increase in the future. Anyhow, all these activities as non-consumptive sector with better institutional background and responsible policy have a huge potential to reduce its negative impacts and redirect development toward conservation and economical incomes.

Hence, the question arises. Where is the position of the recreational sector in institutional organizations? Who regulates recreational marine industry in the MTP Gili Matra? Whether the participation of the recreational industry is based on the principles of ecotourism to protect the environment and raise people’s awareness about the ocean?

Management of the Marine Tourism Park ‘Gili Matra’

The prevalent environmental issues and rapid coral decrease in the area of the Gili Islands had changed the status of the village since 1998 into marine protected area (Botema, 2010). The initial management of MTP was under special authority assigned by decree of the Ministry of Forestry. The authority was called ‘The Agency for Natural Resources Conservation’. The MTP was designed in two marine zones: a protected and utilized zone for economic activities where the management assigned only tourism as economic activity, while fishery was not
involved in the system even though that was an original activity of the locals (Satria 2006).

Due to the inefficiency to preserve the marine environment and stop destructive fishing practices on the island. Since 2009 the management of MTP Gili Matra has been officially transferred to the jurisdiction of the MMAF (No.:BA.01/Menhut-IV/2009- BA. 108/MEN. KP/III/ 2009). The MMAF has established a new regulatory body called ‘the National Institute for Aquatic Conservation –Balai Kawasan Konservasi Perairan Nasional - BKKPN (Cahyadi 2012). The technical body of BKKPN mandates to be the link between the regional government of North Lombok, ministry of tourism and MMAF on one side and NGOs and the local community on the other side (WLS, 2012). BKKPN has aim to arrange fisheries and marine recreational activities in sustainable manner.

Non-governmental sector

The environmental destructive practices at the beginning of 2000’s encouraged the Non Governmental Organizations (NGOs) to step into action and improve the policy of the park. The local community of Gili Islands has established the first organization called ‘Yayasan Front Pemuda Satgas Gili Indah’ (SATGAS – Security Task), registered as a local organization. Their task was to monitor and implement local regulations in response of the government’s unwillingness to stop destructive environment practices by fishing methods (Bottema 2010). In 2002, dive operators established the organization called Gili Eco Trust (GET), which initially had the role of collecting the diving eco tax of 3$ and 1$ from snorkeling operators, in order to help SATGAS for patrolling around islands (Graci, 2013). Nowadays, GET is an independent NGO which has expanded its activity to many other environmental and social programs, such as: the biorock reef restoration program, fisherman agreement, patrolling the marine park, clean up days, beach anti-erosion program, turtle hatchery, vet clinic and many others. The NGOs play a very important role in linking the marine recreational sector and governmental institutions.

Thus, BKKPN is the official governmental body responsible for technical implementation of marine affairs on the MTPs whose role is to regulate the use of activities in a responsible and sustainable manner and communicate with other stakeholders (see Figure 4). The technical body of BKKPN mandates to be the link between the regional government of North Lombok, ministries of tourism and MMAF on one side and NGOs and the local community on the other side (WLS, 2012).
Management Strategy Approaches

To establish the real marine ecotourism in a protected area a management needs to minimize changes on the environmental use, maximize benefit of local residents and ensure long term economic stability. The crucial part is the management strategy approaches necessary for the whole development. As mentioned before this regimes based on regulatory, physical, economical and educational approaches. All these approaches are interrelated with each other and closely connected to reach the sustainable goal of a certain activity.

Regulatory approach

This approach presents the base of any activity to be controlled and properly conducted. The common practice of the M&C recreational sector in protected tourism areas the set of regulation which limits the number of people, activities and facilities on certain natural points and regulates their applying.

In Gili Matra however, some rules in diving provided by GIDA for its members, there are no specific regulations for marine recreational activities. The most obvious fact that there is no specific service of the management to remind, control, and punish potential inappropriate behavior or activity. GIDA rules regulate the number of boats pre dive operator, certain distance between vessels on the sites and improve the safety standards of diving. Except a good safety standard, in terms of ecological approach in practice is not very well implemented (personal communication with the manager of Diverisa dive shop).

Since BKKPN had taken the technical responsibility to arrange and regulate marine affairs. It had been made a first step toward regulation in long terms. Thus, on 2012 according to the large ecological survey done by BKKPN, Wild Life Society Indonesia, SATGAS, USAID and several NGOs has resulted
the first Integrated Marine Zone Management (IMZM) by integrating fishing, marine recreation and other activities in a single zoning system of Gili Matra. This new spatial zone has potential to be the biggest and crucial step toward the ecological and economical sustainability of the area that presents the base of the policy in allocating the spatial and temporal distribution of human activities (Ehler, Charles and Funny Douvier, 2009).

The IMZM for the MTP Gili Matra is separated on seven different zones consisted of: Core zone, sustainable fishing on reef, sustainable fishing on non-reef area, beneficial zone, protected zone, rehabilitation zone and harbor zone. This zoning management for the first time arranges and manages status of marine recreational activities and fishing practices. In case of marine recreational activities are involved: Diving, snorkeling, swimming, surfing, sailing, spearfishing, and jet skiing.

**Core Zone.** This zone is located on the west side of island, with 53.94ha. This zone is commonly called ‘no take zone’ as a strictly managed without allowing any of human activities, without special permit, including marine recreational activities. Available activities with special permit are: research and educational activities, recovery and rehabilitation of natural resources. This zone involved a part of a dive site called ‘Shark point’.

**Sustainable Fisheries Zone.** The MTP involving six locations with a total area of 1803.65 ha (61.06% of the total area). This zone is consists of two zones:

1. Sustainable fisheries in reef zone is separate on five zones and
2. Sustainable fisheries in non-reef fisheries zone as the biggest area

Sustainable Fisheries in Reef zone belong to Gili Trawangan with an area 76.54ha and this zone is located on the northeast and south part of island. Permitted activities are: Diving, Snorkeling, Swimming, Sailing, Anchoring marine vessels up to 10 GT, Traditional ceremonies, religious rituals

Prohibited activities: Spearfishing, Anchoring vessels < 10GT, and other destructive fishing practices

**Beneficial Zone.** The zone occupies 162.89 ha (5.51% of the total area) and present the biggest beneficial area in the park. There are two locations in Gili Trawangan, one of them along the east shore and another one is on the northwest. Available activities in these zones are: Diving, snorkeling, swimming, cultivation, sailing, anchoring vessels (capacity vessels >10 GT), Traditional ceremonies, religious rituals, dive for biota, fishhook stretching (handline), Trolling lines (troll line), basic long line.

Prohibited activities: Spearfishing, Anchoring vessels < 10GT, and other destructive fishing practices

**Rehabilitation and Protected Zones.** Rehabilitation zone consists of three locations with a total area of 37.03ha (1.25% of the total area). The rehabilitation zone is located on the southeast side of the island with an area 53.94ha and the protection zone is 3.35ha wide located on southwest of Gili Trawangan. These
two zones have same policy for activities, rehabilitation zone involve the most of structures of biorocks from but also most popular surfing site. Permitted activities: Diving, snorkeling, swimming, sailing, anchoring vessels (capacity vessels < 10GT) and traditional ceremonies, religious rituals

Prohibited activities: Spearfishing, surfing and water sports, cultivation, anchoring (vessel capacity > 10 GT), and dive for biota. In the rehabilitation zone which is the best wave break for surfing, it might be banned, however, there is no clear explanation by the management what kind of negative impacts can be caused by surfing.

**Harbor Zone.** This is sacrifice zone for human activities, mainly provided for the transportation of goods and people necessary for the island. According to the regulation in this zone none of the recreational activities are available, except spearfishing. For the further explanation about the recreational activities and fishing practices (see Table 3, Figure 5 and Figure 6).

<table>
<thead>
<tr>
<th>No.</th>
<th>Activities</th>
<th>Core Zone</th>
<th>Beneficial Zone</th>
<th>Sustainable fishing in reef zone</th>
<th>Sustainable fishing in non-reef zone</th>
<th>Rehabilitation Zone</th>
<th>Protection Zone</th>
<th>Harbor Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diving</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Snorkeling</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Swimming</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>4</td>
<td>Spearfishing</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>✓</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>Surfing and water sports</td>
<td>X</td>
<td>✓ (Except jetski)</td>
<td>✓ (Except jetski)</td>
<td>✓ (Except jetski)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>Scientific research permit</td>
<td>permit</td>
<td>permit</td>
<td>Permit</td>
<td>permit</td>
<td>permit</td>
<td>permit</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Cultural happening purposes</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8</td>
<td>Educational Purposes</td>
<td>X</td>
<td>X</td>
<td>✓</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>9</td>
<td>Sailing</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>10</td>
<td>Anchoring (Capacity &lt;10 GT)</td>
<td>X</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>11</td>
<td>Anchoring (Capacity &gt;10)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>12</td>
<td>Diving for Biota</td>
<td>X</td>
<td>X</td>
<td>✓ (Depend of species)</td>
<td>✓ (Depend of species)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Hand line fishing</td>
<td>X</td>
<td>X</td>
<td>✓ (Depend of species)</td>
<td>✓ (Depend of species)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>14</td>
<td>Long line fishing</td>
<td>X</td>
<td>X</td>
<td>✓ (Depend of species)</td>
<td>✓ (Depend of species)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Figure 5 The map of the Integrative Marine Zoning Management on Gili Trawangan

Figure 6 The map of the Integrative Marine Zoning Management of the MTP Gili Matra
The IMZM robustly classified activities by zones without specific details about activities. Thus, the management besides regulating the type of activities, needs to follow the scope of these activities, regarding the carrying capacity of the reef and beach sites which necessarily managing the volume of the mentioned activities. In terms of SCUBA diving, where existing five different skill levels and none of them have been mentioned in the zoning use. This issue can be seen at the beneficial zone which approximately covers 300m along the main beach and this site is overcrowded by boats, swimmers, snorkelers and others activities increasing the hazard for human life and decreasing the satisfaction of tourists. An indicator of poor planning activities by proper standards is allowing the spearfishing in the harbor zone which is unacceptable according the safety standards of recreational management.

However, these zones supposed to manage activities, conduct the monitoring of the sites and maintain its function in the marine conservation area. Thus, the preparation of the management plan has been elaborated by the general directions of the Indonesian MMAF.

1. The general condition of the area includes a description of the condition of the biophysical, social, economic, and cultural data.
2. Identify issues and problems of the management
3. Management policy involves: national policy, provincial, and policy of district area
4. Structuring zoning includes a core zone, utilization zone, sustainable fisheries zone, the zone of protection, rehabilitation zone, and the zone of the port
5. The management plan includes a long-term plan, medium-term plan
6. Phasing and scheduling

The process of preparation and acceptance of this strategy requires involvement of all stakeholders from governmental, provincial, regency, village, and community levels. The process of approval has reached the central government level as a crucial stage of planning strategy in the future. On August 2014 the program IMZM is still on the waiting list to be accepted by the Central Government of Indonesia. Delay of the IMZM acceptance causes other problems where tourism and recreational activities are developing at a faster rate than regulations. In 2014 on the island there are other activities, such as marine walking, stand up paddling, and aqua flying absolutely out of regulation.

Physical condition

Physical management approach presents support by proper facilities and infrastructure as necessary part of tourism development and crucial fact of controlling the human activities by restricting movement, improve safety of recreationalists and reduce negative impacts on environment. These facilities in case of the M&C recreational activities are usually boardwalk across wetland, mooring buoys for vessels in coral reef area, jetties, flags, signs, beach pathways, biorocks and so on (Orams, 1999)

Despite the rapid increase of people and activities on the island, proper physical approach is still at a low stage of develop. The life of Gili Trawangan
necessarily depends of daily connection with mainland to Lombok and Bali. Thus transportation of goods and people are based on marine traffic.

Taking into account the number of vessels in 1996 was counted at 32 in the whole area MTP Gili Matra and at the beginning of 2014 only the number of recreational vessels only on Gili Trawangan was 64. On the east side of the island where occurs most of the activities existing only two jetties with very limited capacities and with 50 moorings which are not able to support activities. Thus, nowadays due to this issue the island faces a huge problem in arranging marine traffic which threatens the safety of recreationalists and causes the harmful consequences to the environment by anchoring and improper docking on the beach.

The necessary facilities such as signs, flags, and buoys which have an aim to send information to the recreationalists about potential danger and warn inappropriate behavior do not exist on Gili Trawangan. Except few signs for environmentally appropriate behavior provided by BKKPN, for ‘do not step on corals’ and ‘do not anchor’

*Biorocks* or artificial reef structures deserve a special attention in this study, used to regenerate coral reefs, re-populate damaged reefs with coral and fish, break the wave action and protect beaches and be another attraction for tourists. Hard corals on a Biorock structure can grow from 2 up to 6 times faster than in natural conditions, the corals on the Biorock reef are exceptionally bright colored and densely branched, heal from physical damage at least 20 times faster, have up to 50 times higher adaptable for temperature changing (GET, 2009).

The initial idea to install the first structure of biorock on the island, was started from a few dive instructors, one of them the current manager of GET, Mrs. Delphine Robbie, who was a dive instructor then. They have made the first structure giving an example to the private sector of an easy and cheap way to contribute to the environment (Bottema, 2010)

As it is seen in terms of physical approach NGOs and organizations (GET, SATGAS, and GIDA) play the crucial role for implementing the infrastructure which decreases the pressure and improves the environment and support activities. However, non-governmental sector is not strong enough to develop infrastructure for the whole island. Especially in the beneficial zone, including the main beach and main swimming site where many speedboats and recreational vessels have free access on overcrowd area.

**Economical approach**

The role of economical management approach is to increase the income from M&C industry and support the environmental and social program in aim to increase its quality and service. This approach on Gili Trawangan is not yet well recognized by the governmental institutions, most of its actions come from non-governmental and marine recreational sector.

The diving sector has the leading position in establishing the certain mechanism of increasing income for environmental and social projects through the diving industry. As is mentioned above, since 2002 dive operators provide a direct economic influence to the environment and social community involving dive eco tax in the service and keep contributing to the local organization of GET.
In 2012 for the first six months GET collected 94% of donation from diving sector. (see Figure 7) (personal communications with the head manager of GET).

Except the mechanism of paying fees through diving industry, the rest of marine recreational activities do not have the same system of charging fees for the customer. At the beginning, snorkeling operators were joined to charge eco tax for its service 1$, but due to unwillingness of management to control their rapid development, this practice is not common anymore.

Most of the marine protected areas, beside the additional fees, include the punishments for an inappropriate behavior of recreationalists and operators. This is not a case of for the MTP Gili Matra. Thus, BKKPN as the main governmental institution for the conservation affairs in the protected area should take main role through the special fees from tourists and operators. The BKKPN as a new institution limited in financial, technical and human resources still is not able to take an action, however, potential chance can be considered by the implementation of the IMZM as the first step toward sustainability.

Educational approach

On Gili Trawangan there is no compulsory set of educational standards required by the management for conducting recreational activities. Considering that all dive operators are supported by international associations of PADI and SSI which officially guarantee standards about the environmental education, however, in practice, this is not so effective way and educational sound of activity most of time depends of the operator.

The influence of educational approach on the islands is mostly provided by GET in cooperation with dive shops and other tourism sectors. GET regularly organizes educational projects and workshop for environment and society: beach cleaning, educational movies, veterinary clinic, installing and maintaining the biorocks structures. The turtle conservation center supported by the village government located on the main street, with free entrance people can learn about turtles. The special offer of GET is course for international Eco Dive License, supported by international reef check organization. This unique opportunity gives...
the chance to the certified open water divers to learn how to check the health and viability of the coral reef and increase their awareness about the marine diversity.

These various strategy approaches are interrelated with each other and present the readiness of the management to set a policy toward sustainability which prioritized to involve all sectors of tourism industry and activities in environmental protection and set long term economy. Despite the involvement of various stakeholders in the MTP Gili Matra, management presents the ineffectiveness to follow and support the rapid tourism development which implying threats to increase the negative impacts on environment, economy and socio-culture.

Management Future Strategy

The IMZM has the crucial function for the managements’ approaches and to set the future development, where all mentioned approaches supposed to be involved and develop through zoning system. According to the plan and strategy of the implementation there are two phases for the marine zone: Medium and Long term of the management plan.

The management plan in medium term is valid for five years. This plan has the four main objectives: institutional strengthening, improvement of regional resource management, strengthening the social, economic and cultural resource and infrastructural improvement.

1. Institutional strengthening strategy will be carried out through the program which includes: Improving human resources, specific regulation supported by proper infrastructure, development of partnerships and network with stakeholders in this case fishermen and marine recreational sector with the aim of establishing a sustainable funding for monitoring and evaluation.

2. Strengthening of regional resource management strategy will be carried out through several programs of habitat protection which includes fish populations and reef rehabilitation as the main conservational object of this zoning system. These programs will be implemented through academic researches, supervision and reef monitoring.

For an adequate implementation of the zoning management, in 2015 the management should establish standard procedures of operational management that includes patrolling systems, strengthening social adaptation, the implementation of the marine natural tourism, aquaculture, fisheries, and law enforcement through technical implementation by BKKPN. The management is going by divide physical support into the basic facilities and support facilities. Basic one supposed to be an office manager, information center, control gate, ticket booth, and patrol vessels and support one is necessary for operation (personal communication with vice manager of BKKPN Mrs. Hotmaryah 19.01.2014).

Long term vision of MTP Gili Matra is realization management effectiveness in order to ensure the sustainability of marine biodiversity, social, cultural and
community welfare. These aims should be reached in 2018 by establishing the partnership mechanism in areas involving stakeholders in the management. This mechanism has an aim of the management to enhance and improve natural resources by increasing the percent of hard coral cover by 27% and 2023 percent hard coral cover by 30%, in 2028 percent hard coral cover by 33%, 2033 percent hard coral cover by 36% (WLS, 2012).

Considering the numbers of stakeholders and complicated procedures of applying the rules for the IMZM it will take time to be fully implemented according the plan. This is a big challenge for BKKPN as young institutions limited in financial, human and technical resources to collaborate with all stakeholders and take leading positions to manage marine affairs in a sustainable manner.

**Impacts of M&C Recreation on Environment**

The small island like Gili Trawangan limited in space and resources, facilitated by diverse and high intense of human activities faces visible environmental degradation. Regarding a lack of tourism planning and development it is very hard to recognize and estimate the impacts of one activity in particular.

The main environmental issue on the island refers to the coral reef degradations mostly caused by human activities such as: destructive fishing in the past and nowadays, development of tourism facilities, recreation, high frequency of marine traffic, improper trash disposal and erosion. These issues have influenced the reef by nutrients, green alga, plastic, oil and sands, breaking coral which rapidly increases pollution and decreases viability of coral reefs and made the loss of 60 % of coral in the area of Gili Matra (BKKPN, 2012). Despite a rule provided by the MMAF that prohibits the building 50m of tidal zone, on Gili Trawangan this regulation is not very well implemented. There are numerous of restaurants and bars located on the beach front which additionally make ecological pressure on coast, coral reefs, disturb turtles laying eggs and ruin an aesthetic value of the beach. Comparing these issues with direct impacts of recreational sector, it would be said this sector as non-consumptive one provide minimal negative impacts. However, recreational sector increasing negative impacts with the high intensity of development in the last years.

Negative impacts of recreation can be addressed due to the lack of managements’ regulatory and physical approaches, the recreational sector on the marine and costal with its rapid trend of development is just another pressure for the environment on the island. Common practice of unlimited groups, lack of educational briefing, open access for other operators, touching and petting marine wildlife, kicking the corals by fins and anchoring, docking and high frequency of marine recreational vessels causing additional degradation of coral reef and stress for the wildlife.

Unacceptable activity for protected area comes from spearfishing presenting a direct removal of marine species. Most other disturbance on marine species by anthropological noise, the feeding of animals and physical presence of people is common. This example could be seen on sea turtles as a highlight of attraction which presents one of the motivations for people to do snorkeling and diving.
Most of recreationalists are impressed by rare endangered species trying to pet and take a picture of them, which causes additional stress. Considering an average group of snorkelers is 30 people per vessels and 10 divers, without proper behavior and certain distance for some marine species inappropriate practices can be very harmful. Marine walking as the newest activity in expansion on the island is devastating for coral reefs and marine diversity, where people directly stepping on and walking on the reef.

An indicator about environmental decrease on the recreational site has been found on Halik reef by the technique of reef transect check. A survey was done on February 2014 comparing the same technique from 2012 provided by GET. Halik is a popular site for snorkelers and divers, located on the north of the island on depth of 7m. Difference of the substrate on Halik site on 2014 shows very alarming stage of the reef. All soft corals are extinct and reef records high percent of the sands and rocks. Hard coral has decreased for 17%, while cover of non-living coral has increased in sands of 21% and rocks 25% more than in 2012 (See Figure 8).

According to the opinion of the head of GET and BKKPN, the site is equipped by two mooring, thus, there is no anchoring, while influences from divers and snorkelers are always possible. However, they do not increase sand cover. Particularly on Halik reef this huge decrease is a consequence of erosion of the north beach (personal communications with head of GET, 04.02.2014).

Although, this site intensively loses the natural resources, the abundance of fish is still at a high level (see Figure 9). The ‘fish belt chart’ shows still rich abundance of fish species, on this dive site, however, it is common to see black and white tip reef shark, turtles, bumphead parrot fish and others. These species are attractions for tourists but decreasing the quality of coral reefs threatens to influence the abundance of marine species.
Positive impacts of recreation usually coming with the early stage of its development were seen on Gili Trawangan as well. Development of the M&C recreational activities on the island has influenced different philosophy of the use of natural resources. Before, significant development of recreation the island was suffering from dynamite and cyanide fishing.

As mentioned before, first specific action came from diving sector in its early stage of development which had played a crucial role in stopping coral bombing and dynamite fishing. Dive operators contributed to the local organization SATGAS and established GET to do patrolling around the islands and prevent destructive practices. Since then dive operators still contributes dive eco tax, for environmental and social projects through GET. Most of environmental projects biorocks workshops, regular maintain for patrolling, tree plantations, clean up days, rubbish program, erosion are mostly covered by financial support of dive eco tax. Biorock structures as a removal attraction decrease the pressure from the natural reef and make other popular dive sites. Three dive shops Trawangan Dive, Big Bubble and Blue Marlin built their own structure in front of their dive shop and regularly provide electricity. Big bubble gives free dives for divers who clean the reef. These efforts beside encouragement of volunteer engagement are ways of the recreational sector to raise people’s awareness and improve the knowledge about marine and coastal diversity. These actions for environmental protection are fain from dive sector. Anyhow they should be compulsory from the management and not only for diving, than for other tourism sector as well.

According to the survey of the local residence of Gili Trawangan, they were scored six potential negative and positive statements of potential impacts of the recreational sector on the marine and coastal environment. Among positive statements the highest score ‘Preserve Environment’ 5.53 - Mostly True and lowest rate is addressed to ‘Keep Viability of resources’ 5.03 - Somewhat True which is still high index level. In general, they agree that tourism is better the destructive fishing, however, they realized of overuse from people and boats, thus, index said most of them ‘Excessive use of coral reef and beach 4.70 - Somewhat true’ and
lowest level ‘Inappropriate behavior of tourist’ 4.03 Neither true or untrue (See Table 4).

Table 4 The index mean of perception of the local residents about positive and negative environmental impacts of the M&C recreational sector on Gili Trawangan

<table>
<thead>
<tr>
<th>Highest Index Score</th>
<th>Positive Impacts on Environment</th>
<th>Lowest index score</th>
<th>Negative Impacts on Environment</th>
<th>Lowest index score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserve the environment</td>
<td>(5.53 Mostly True)</td>
<td>Keep viability of resources</td>
<td>(5.03 Somewhat True)</td>
<td></td>
</tr>
</tbody>
</table>

Based on the survey it can be seen that most of the residents have a positive attitude about the impacts of recreation on marine environment. The local community appreciates a lot about the huge contribution from dive operators to GET and its workshops for biorocks structure, beach clean day, turtle conservation, reef restoration and others.

Among others other impacts, recreational industry make the least of negative impacts but with this trend of development and irrational interaction between people and environment, this sector might increase the pressure on the environment. Thus, it means this sector should be immediately regulated by the management to decrease the negative impacts on resources and improve its conservational role.

Impacts of the M&C Recreation on Economy

There is no doubt that the recreational sector is unlinked part of marine tourism development which is the main economic sector in the region. Theoretically, from an economic point of view the rapid trend of the tourism growth shows positive economic impacts which encourage cross-sectorial development for the area. Thus, it means that this industry encourages new investments, wider job positions, and increased incomes. The number of 19 dive operators and 39 water sport agencies is a clear fact which brings a significant influx of cash into the area, spread over a wide variety of service industries, such as food, accommodation, transport and other local services. However, ecotourism industry raises the same question ‘How much local residents are included and receive from the benefit from tourism development?’ This question presents necessary pillar for economical development in ecotourism where maximizing the economical benefit for the local community is one of main priority (Heizer, 1965).

Direct involvement of locals is mostly seen in the water sports agencies (snorkeling, fishing, marine walking, stand up paddling, surfing) which is mostly owned by local residences and currently employ 120 permanent workers. While dive sector as the most expensive and most valuable activity is mostly owned by the foreign investors and only two dive shops belong to the local owner. Considering the diving as a specific sport which attracts mainly international customers requires courses, certifications, and training. Thus, due to its
complexity, reasonably diving sector seasonally hire many foreigner employees to remove language and cultural barriers and make offer more competitive (personal communications with manager of Diverisia dive club).

Considering the welfare of the industry, the important part of development is a profile of the local employees directly involved in the M&C recreational industry on the island. This segment has been identified by the questionnaire including 30 responders of the local employees randomly chosen from various recreational sectors. This questionnaire investigated the origin, age, income and position of the local employees directly involved in marine recreational industry. While coastal recreational sector is excluded activities from this survey, due to the lack of its service independency as an economical provider, thus, the research involved employees from the Accessible activities. Almost all local employees were men of a younger age, originally from the Gili Islands and Lombok with mainly educational background of a high school. Another fact that shows a new rapid trend of recreational development that 40% of the employees are less than 3 years in this industry most of them are new comers involved in snorkeling and water sport industry and 23 % are more than 10 years in this industry (see Table 5).

<table>
<thead>
<tr>
<th>No</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male 83</td>
</tr>
<tr>
<td></td>
<td>Female 17</td>
</tr>
<tr>
<td>2</td>
<td>18 -25yo 24.3</td>
</tr>
<tr>
<td></td>
<td>26-35yo 63.3</td>
</tr>
<tr>
<td></td>
<td>36-45yo 13.3</td>
</tr>
<tr>
<td>3</td>
<td>The Gili Islands 48</td>
</tr>
<tr>
<td></td>
<td>Lombok 43</td>
</tr>
<tr>
<td></td>
<td>Other islands 9</td>
</tr>
<tr>
<td>4</td>
<td>Elementary schools 13</td>
</tr>
<tr>
<td></td>
<td>High School 77</td>
</tr>
<tr>
<td></td>
<td>Collage education 10</td>
</tr>
<tr>
<td>5</td>
<td>SCUBA diving 40</td>
</tr>
<tr>
<td></td>
<td>Snorkeling and water sports 40</td>
</tr>
<tr>
<td></td>
<td>Surfing 10</td>
</tr>
<tr>
<td></td>
<td>Free diving 10</td>
</tr>
<tr>
<td>6</td>
<td>&gt; Rp 1.5mil 43.3</td>
</tr>
<tr>
<td></td>
<td>Rp 1.5 – 2.5mil 33.3</td>
</tr>
<tr>
<td></td>
<td>Rp 2.5 – 3.5mil 17</td>
</tr>
<tr>
<td></td>
<td>Rp 3.5 – 5.0mil 7</td>
</tr>
<tr>
<td>7</td>
<td>&lt; 3 years 40</td>
</tr>
<tr>
<td></td>
<td>3 – 5 years 23.3</td>
</tr>
<tr>
<td></td>
<td>5 – 7 years 6.6</td>
</tr>
<tr>
<td></td>
<td>7 – 10 years 6.6</td>
</tr>
<tr>
<td></td>
<td>&gt; 10 years 23.3</td>
</tr>
</tbody>
</table>

Note: The percentage indicates the number of respondents (n) = 30 persons
Comparing the incomes of local employees versus position of the marine sector, the majority of employees earn more than average for the island standards. Diving industry keeps the highest level of monthly incomes while water sport services much less without additional percentage (see Figure 10). In case of diving industry the salaries very much depend on the tourist seasons, when dive instructors can earn more on dive percentage (Personal communication with dive instructor of Blue Marlin 22.01.2014).

Previous figures shows the lower rate of the salaries in snorkeling and other watersport sectors where most of employees working as cheap labor. This trend might increase in coming years with expansion of tourism arrivals and rapid development of this sector. However, considering region of North Lombok as a developing region in Indonesia, the M&C recreational sector provides opportunity for young populations to improve their knowledge about languages and cultural differences with daily contact with international tourists, gain skills and specific certificates to set better base for their career in the future.

Extremely common situation in marine tourism industry is ‘leakage’ this term has come to be used to describe the loss of economic welfare from host community (Orams, 1999). Thus, the opinion of local people is very important to state this crucial aspect. Among six potential positive statements for contribution of the M&C recreational sector economy the local residence rated the ‘Opportunities for small business’ with mean of index of 5.57 – Mostly true and the lowest of positive statements rate got ‘Better Job opportunity than other sectors’ with score 5.13 – Somewhat True. The index differences are lower than 1. Thus it explains, the high rate of positive statements of such as: better salary, improve skills for other jobs, better career are ranked as high index score (see Figure 11).
Figure 11 The index mean of perception of the local residents about potential positive influences of the M&C recreational sector on economy

Potential negative impacts on economy provided by the M&C recreational sector the highest index was addressed to ‘Increasing prices and living cost’ with score of 5.13 - Somewhat true and the lowest index is ‘Workers Exploitation’ with score of 4.03 – Neither true or not true. The highest index mean shows one of the most common economic impacts of tourism development on local communities is that price of inflation. This can impose economic hardship on host communities, especially if they do not receive greater incomes. According the opinion of local people is not happy for foreign capital, owner’s extra profit and better position for foreigners (see Figure 12 and Table 6).
The future of local economy and recreational sector as well strongly depends on the viability of natural resources and welfare of local community. Another threat for the economy is price decrease caused by higher competition and less satisfaction for the customers. Hence, the management including the ministry of tourism should limit the number of recreational provider and set the better standards for employees and increase revenue to the local economy and community.

**Impacts of M&C Recreation on Socio-culture**

This aspect is analyzing the socio-cultural impacts of the recreation on community. The marine recreation based on tropical areas is characterized with warm weather and sandy beaches have inspired people to create new way of freedom, sport and relaxation. Nowadays, many of the movies and fashion brands promote surfing, diving, and other beach’s sports as a part being free and enjoy life. This lifestyle according to the religious and ethical norms promotes inappropriate dress code and behavior.

Although a very religiously orientated, the community of Gili Trawangan is flexible enough to accept and live with different cultures. The village of Gili Indah has regulated the dress code for the beach, which not allowing women sunbathing and swimming in topples. Also during the month of Ramadan when Muslim believers spend the month of fasting, the beach parties on the island are limited by time or specially equipped with earphones commonly called ‘silent party’.

To identify the acceptance of recreational sector by the local community, this research involved 30 examinees based on Likert scale questionnaire. With 95% up to age of 45 equally separated on male and female. 81% were originally from Gili Trawangan, the educational background of 65% are high school 25% have higher education. In this questionnaire each responder as part of the local community could express opinion from 1 to 7 about the impacts of M&C recreational sector on Socio – Cultural impacts. There were six positive and negative statements for each segment.

According the survey of the local community of the island has very positive attitude about the cultural impacts caused by recreational sector. Among the positive statements is ‘Multiculturalism’ 6.07 – Mostly True and the lowest rated is ‘Improvement of Local Culture Standard’ 5.03- Somewhat True. Relatively
highly rated are others statements such as: Better public standards, tolerance, benefit from the sharing values, safer place.

In terms of potential negative statements caused by recreation and tourism generally, the statements scored lower index mean which is positive side of this section. The highest index mean had been addressed to ‘The Loss of cultural identity’ (3.63 – Neither true or untrue) and lowest to the Crime (3.43 – Somewhat untrue). Thus, other statements such as consumptive culture, conflicts, inappropriate behavior are still on low level.

Table 7 The index mean of perception of the local residents about positive and negative socio-cultural impacts of the M&C recreational sector on Gili Trawangan

<table>
<thead>
<tr>
<th>Highest Index Score</th>
<th>Positive Impacts on Socio-culture</th>
<th>Lowest index score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiculturalism</td>
<td>Improve standards of society</td>
<td>(5.03 Somewhat True)</td>
</tr>
<tr>
<td>(6.07 Mostly True)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Highest Index Score</th>
<th>Negative Impacts on Socio-culture</th>
<th>Lowest index score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of cultural identity</td>
<td>Crime</td>
<td>(3.43 Somewhat untrue)</td>
</tr>
<tr>
<td>(3.63 Neither true or untrue)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: The index mean is indicated by 30 respondents (n) = 30 persons

The local community sees many positive things done by the diving and recreational sector. Especially, in terms of environmental protection, where GET as initially established by diving operators still do a lot of works improving the life standards on the island. Dive centers usually provide the space for free vet clinic for cat and horses, rubbish program and biorocks workshop.

The fact that, no responder ever tried the diving and 81% are originally from Gili Trawangan shows also less interest of the local people to be part of recreational industry on the island. For younger generations it is a very expensive activity, thus, the youth of Gili Trawangan is mostly focus on surfing as activity without specific equipment.

Tourists’ Perception and Motivation

This segment presents the final outcomes of the whole industry which is most of the time a crucial part of whole development. This matter the outcome of tourists satisfaction about the things what they expected and what they received, which is a very complex concept, and many factors influence an individual's satisfaction with a holiday experience (Luck, 2007). Thus, the important part is to know tourist’s profile such as age, origin, education, the length of stay and so on. According to the survey most tourists on Gili Trawangan were of a younger age mostly from European countries and their length of stay in average varies between one or two weeks. More than 55% responders have spent more than 200$ only for marine recreational activities in one week (see Table 8). For most of them Gili was destination on the way from between Bali and Lombok.
Table 8 The profile of tourists on Gili Trawangan

<table>
<thead>
<tr>
<th>No</th>
<th>Category</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>47</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 – 25yo</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>26 – 35yo</td>
<td>43</td>
</tr>
<tr>
<td></td>
<td>36 – 45yo</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>46 – 60yo</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Origin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Europe</td>
<td>63.3</td>
</tr>
<tr>
<td></td>
<td>Asia</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>US &amp; Canada</td>
<td>13.3</td>
</tr>
<tr>
<td></td>
<td>South America</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>Australia</td>
<td>13.3</td>
</tr>
<tr>
<td>5</td>
<td>Length of stay</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;1 week</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>1 – 2 weeks</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>2 – 3 weeks</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>&gt;3 weeks</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Spent for the M&amp;C Recreation 7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt; 50$</td>
<td>16.6</td>
</tr>
<tr>
<td></td>
<td>50 – 100$</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>100 – 200$</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>200 – 300$</td>
<td>26.6</td>
</tr>
<tr>
<td></td>
<td>&gt; 300$</td>
<td>26.6</td>
</tr>
</tbody>
</table>

Note: The percentage indicates the number of respondents (n) = 30 persons

Following the travel magazines, web promotion and travel guide books, Gili Trawangan is just another paradise perfect for sunbathing, beach activities, diving, snorkeling, swimming, and surfing. Thus, it is reasonable that more than 95% of the tourists has been attracted by phenomenon of 3S (Sun, Sea, and Sand) and marine recreation. Considering the mainly international tourists this automatically placed Gili Trawangan on world destination map where expenses and expectations are higher (BKKPN 2012).

Apart from the general data, this research was based on Likert scale questionnaire identifying their motivation, expectation, satisfaction and opinion about the M&C recreational activities. Most of visitors have highest ranked motivation to visit the island 3S and Recreational activities, where means indexes were higher than 5.5 Mostly motivated (See Figure 13). These motives are strongly related with condition of natural environment where as index averages of tourists’ satisfaction scored on somewhat unsatisfied (See Figure 14). Thus, it could be assumed that marketing tricks of tour operators and other tourist service creating common unrealistic presentation of one island that produce a contra effect for tourists.
Environmental degradation of marine and coastal have been recognized through five aspects. Including the environment as closely related aspect of the motivations to visit the island it seen that influenced tourists’ satisfaction. The lowest index mean is recorded on the beach cleanliness with index mean of 3.5 - somewhat unsatisfied including in the same category biodiversity protection, viability of coral reefs and diversity of endangers species, while the highest on water visibility with index mean of 4.7 - mostly satisfied (See Figure 14).

Among the M&C recreational activities that dominate marine activities where tourists mostly, except sunbathing and spending time on the beach, only 33% did some coastal sports. Among marine recreational activities swimming and snorkeling which are reasonably popular, due to less necessity for equipment for these activities. Diving is third popular activity with 76.7% of use among responders, then surfing 36.7, kayaking 26.7% and stand up paddling 13.3% (See Figure 15).

---

**Figure 13** The index mean of tourists’ motivation to visit Gili Trawangan

**Figure 14** The index mean of tourists’ perception about environmental condition on Gili Trawangan
Figure 15: The percentage of utilization of recreational activities by tourists

Taking into account the most popular recreational activities, such as: Diving, snorkeling, kayaking, surfing, stand up paddling and beach sports, respondents were asked to indicate, on a seven point Likert-type scale ranging from 1 = completely unimportant to 7 = Completely important, how important the M&C recreational activities were in their decision to come on Gili Trawangan. Then, they were also asked how mentioned activities were performed, again rated on a seven point Likert type scale, ranging from 1 = completely unsatisfied 5 = completely satisfied. The means of the recreational activities were then plotted in an I-P graph or action grid (Figure 16 and Table 9).

Figure 16: Importance – Performance index analysis of recreational activities on Gili Trawangan

Table 9: The index mean of tourist’s importance and satisfaction of performance and satisfaction

<table>
<thead>
<tr>
<th>Activities</th>
<th>Score of Importance</th>
<th>Score of satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – Diving</td>
<td>Mostly Important</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>B – Surfing</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
<tr>
<td>C – Kayaking</td>
<td>Neutral</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>D – Snorkeling</td>
<td>Mostly Important</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>E – Swimming</td>
<td>Mostly Important</td>
<td>Somewhat Satisfied</td>
</tr>
<tr>
<td>F – Stand up Paddling</td>
<td>Mostly Unimportant</td>
<td>Neutral</td>
</tr>
<tr>
<td>G – Beach sports</td>
<td>Neutral</td>
<td>Neutral</td>
</tr>
</tbody>
</table>
Q2 shows that performance mostly fulfills the predictions of three most popular activities of diving, snorkeling and swimming. Although most of these activities were highly rated, however, the index mean shows slight differences, which can be an indicator of the trend of decrease of their performance. The Q3 presents less popular activities, where index mean of this survey cannot indicate real position in their performance. These activities are less popular and require good body shape and well trained skills for high quality performance. However, kayaking in this survey presents potential with a new trend of good performance.

Considering seven crucial aspects of water sports tourists, except diving, such as: Natural condition of the site, facilities, safety standards, quality of operators service, quality=price, cleanliness. Tourists expressed quite indifferent perception, where the index mean goes from 4.09 up to 4.58 with keeping the level of Neither Satisfied or unsatisfied (see Figure 17).

<table>
<thead>
<tr>
<th>Natural condition of the Sites</th>
<th>Facilities</th>
<th>Safety</th>
<th>Quality of operators service</th>
<th>Price = quality</th>
<th>Visitor density</th>
<th>Cleanliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.58</td>
<td>4.49</td>
<td>4.49</td>
<td>4.58</td>
<td>4.50</td>
<td>4.42</td>
<td>4.09</td>
</tr>
</tbody>
</table>

Satisfaction: 1 - Completely Unsatisfied; 2 - Mostly Unsatisfied; 3- Somewhat Unsatisfied; 4 - Neither Unsatisfied or Satisfied; 5 - Somewhat Satisfied; 6 - Mostly Satisfied; 7 - Completely Satisfied

Figure 17 The mean of perception of tourists about condition in M&C sector (except diving) on Gili Trawangan

The Figure 17 shows alarming stage of the tourists’ satisfaction of condition in recreational industry where most of responders have tried swimming and snorkeling as an accessible activity. The cleanliness scored the lowest index, many of diving operators and snorkeling renters do not clean gear properly. This fact shows the management’s ignorance about the hygiene standards on the island.

Considering tourists’ warning stage of the index mean of the environmental conditions, the question arises ‘what mostly matter for tourists to realize environmental condition?’ where satisfaction mostly depends on number visits and length of stay on the island it. In following charts (see Figure 18 and Figure 19) analyzed and compared visitors’ length of stay and times of visit by method of anova. According the “p value (0.888) < α (0.05)” , which shows that number of visit does not significantly effecting the perception of the environment condition.
However, Figure 18 shows very critical opinion about the environment with index score 3.70 and 3.95 was scored in all three categories. Out of the statistical method and according informal interviews with tourists, says, who has been on the island before more than one time are more critical. Most of them were motivated by satisfaction based on previous experience, clearly see the huge development which obviously has a negative influence on their satisfaction. The Figure 19 shows, while visitors who stay longer on the island their satisfaction about the environment is lower. Most of tourists complaining an out trash disposal, horse treatment, degradation of coral reefs and overcrowding of people.

Considering that most of the responders had tried snorkeling, swimming and diving, the question rises ‘how aware they are of their impacts during one of these recreation?’ They have been asked to express their opinion on the five common issues in the marine recreational sector on Gili Trawangan. The index mean mostly shows lack of awareness of tourists about the potential treatments of the marine recreation on environment. Anyhow most of them agree that touching
marine biodiversity with index mean of 5.09 - somewhat agree and overcrowd of boats seriously threaten to the environment with index mean of 5.93 – agree (See Figure 20)

**Figure 20** The mean of tourist’s perception about potential negative impacts of marine recreation on Gili Trawangan

Positive statements took better place in tourists perceptions where index mean vary from 4.53 up to 5.53. This means people mostly see these activities more positively, as well as their participation in them. They mostly agree with statements that M&C recreation *improve people’s awareness about the ocean* where highest index mean took 5.53, then as better economical solution for the local economy, contribution to rehabilitations of marine resources, eco infrastructure and protection of the environment (See Figure 21)

**Figure 21** The mean of tourist’s perception about potential positive impacts of the M&C recreation on Gili Trawangan
These charts present an importance of recreational industry in marine areas in their motivation and their satisfaction. Although the M&C environment receives low index score of its quality and viability, people are still satisfied with recreational activities. In the future researchers should be focused on the particular activity and figure out its position with all advantages and disadvantages.

**Diver Analysis**

Focusing on divers as a high spending customer this research pays a special attention on them. Among 30 random tourists responders 76.67% were certified divers and 27% of them got their open water certification on Gili Trawangan (see Figure 22 and Figure 23).

![Figure 22 The percentage of certified divers among tourist on Gili Trawangan](image)

Diving as an activity which requires certification and presents natural marine resources as a main attraction, thus logically divers’ perception about conservation and quality of environment is significantly different than for non-divers. This hypothesis has been proved and experienced divers are more critical and less satisfied with environmental condition than non-diver visitors. This is analyzed in test One Way Annova and shows significant difference about environmental perception difference between divers and non-divers (See Figure 23).

![Figure 23 Divers’ perception about the environment on Gili Trawangan](image)
Differences among divers were observed through experienced divers (Not licensed in Gili) and less-experienced divers (licensed in Gili). Divers who got their license somewhere else and come to Gili with the main motive to dive are more critical. Their index of satisfaction is for index less on three aspects then licensed divers on Gili, most of them are less experience and they receive what they expected (see Table10).

Table 10 Perception between divers about diving industry on Gili Trawangan

<table>
<thead>
<tr>
<th>Quality Aspects of diving</th>
<th>Diver not licensed in Gili</th>
<th>Licensed in Gili</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Condition of the Site</td>
<td>5.17(Somewhat satisfied)</td>
<td>5.88(Mostly satisfied)</td>
</tr>
<tr>
<td>Facilities</td>
<td>5.57(Mostly satisfied)</td>
<td>5.75(Mostly satisfied)</td>
</tr>
<tr>
<td>Safety</td>
<td>5.87 (Mostly satisfied)</td>
<td>6.00(Mostly satisfied)</td>
</tr>
<tr>
<td>Quality of operator service</td>
<td>6.00(Mostly satisfied)</td>
<td>6.38(Completely satisfied)</td>
</tr>
<tr>
<td>Price = Quality</td>
<td>5.26(Somewhat satisfied)</td>
<td>5.50(Mostly satisfied)</td>
</tr>
<tr>
<td>Visitor density</td>
<td>4.57(Somewhat satisfied)</td>
<td>5.00(Somewhat satisfied)</td>
</tr>
<tr>
<td>Hygiene standards</td>
<td>4.00</td>
<td>4.25</td>
</tr>
</tbody>
</table>

According to the index mean of divers’ preference of importance and satisfaction, divers licensed on Gili Trawangan received what they expected, while divers not licensed in Gili are less satisfied. The average index of level of importance was 6.20 Completely Important and they received 5.27 Somewhat satisfied. This fact shows the awareness of divers on environment which shows potential for diving to improve its service.

Although, negative issue and complaining, on the question ‘Would You like to visit again Gili Trawangan?’ the 83.33% percent of tourists said ‘Yes’ only 13.33% said ‘No’, while the rest are not sure’. People who marked ‘Yes’ they mostly like the Atmosphere with 43% while second place is Activities20% of the island (see Figure 24). As an atmosphere for tourist the Gili Islands are specific place without motor vehicles, bikes, horses and relaxed people on holiday presents the unique atmosphere for visitors. The people who would not like to be on the island again marked Gili Trawangan as too crowded and too loud for holiday.

Figure 24 The reason to choose again Gili Trawangan for holiday

The tourists definitely presents crucial category of development on the island, considering this the Gili Islands as protected area deserve real focus of the management to improve their awareness about natural interpretation to the
tourists. Management action should develop the system of receiving the feedback from tourist where responders at least can express their opinion, satisfaction and give a short recommendation. Tourism authority and management of the MTP Gili Matra need to know and to follow motivation, opinion and satisfaction of tourists, and according to it to find flexible solution for the area.

According the previous figures and tables, it is clear the rapid developments M&C recreational activities decrease the performance of recreational service. Hence, this situation with this trend getting harder to be controlled and followed by management and simultaneously provide proper standards.

5 CONCLUSIONS AND SUGGESTION

Conclusions

Despite the fact that the island of Gili Trawangan, has the status as a marine environmentally protected area, the island faces uncontrolled rapid tourism development. This includes the recreational sector which may lead to the further degradation of the environment, and consequently imply negative effects on the economic development in the future. This trend of growth is mainly a consequence of ineffective management, which is characterized by the lack of cooperation between stakeholders, low investments in proper infrastructure and enforcement of regulations.

The main barrier to move the sustainable agenda forward and reduce the negative impacts of recreational sector lays in the separation between the stakeholders. On the one side there is the governmental sector; identified with slow and complicated legislative procedures to apply the ordinances, build infrastructure and regulate the area in a conservational manner. On the other side is the fast development of the recreational business sector; mainly focused on the short term economic growth and profits. Thus, the position of the NGOs is to try and mitigate the negative environmental and social impacts, share the data and information between the governmental and tourist sector, and get them to cooperate for a sustainable development of the area.

As identified in this paper the recreational sector provides financial support to the local organizations of SATGAS and GET, to improve the environmental and social condition on the island. These efforts improve the social standards of the locals and increase tourists’ satisfaction, but the efforts are not able to outweigh the negative trends and ensure future development in a sustainable manner. This represent a real challenge, for institutions such as the Ministry of tourism and BKKPN the island of Gili Trawangan on “how to set the recreational sector in manner of ecotourism by improving the role of the conservation, maximizing benefit to the local residence and simultaneously keep satisfaction of the tourists”.

However, for establishing ecotourism of the whole destination, it is not possible to achieve sustainability of only a few sectors when they are all linked and dependent on each other (Butler, 1998). Thus, a big step toward unity and sustainability can be the new zoning system which initially can regulate and reduce the identified negative impacts of fishing, the marine tourism and the
marine traffic. Besides improving the current practices, this step is a new beginning to improve the collaboration among the key identified stakeholders, contribute to a necessary database, address the negative threats and raise awareness about the consequences of rapid tourism development on the small islands.

This research study argues that ecotourism, as a multidimensional sector, requires every segment to be linked in aims to reach long term sustainable growth of the tourism destination. Gili Trawangan beside a challenge of the management how to redirect development presents also a good example for preventing the same practices of development on the future potential destination on the small islands.

**Suggestion**

For ecotourism improvement on the environmentally protected area, the most important step for the management is to establish a specific mechanism of control from an open area to the booking system for each segment. On Gili Trawangan this approach should be based on carrying capacity which consequently secures the base of their tourism attraction, improve control and slowdown the rapid growth of recreational sector. Thus, limiting the number of marine recreational entrepreneurs, people on the spot, regulate practices of marine recreation, the size of vessels and improve educational and conservational role of its service.

An initial feasible solution for the recreational sector is an information sharing system, which could serve as the base for ecotourism management that would aim to collect a good database and address the potential issues and impacts. One of the ways of getting and sharing information is to organize the Integrative Information System (IIS). The IIS should be a perfect link between the governmental institutions and recreational sector, together with the local organizations. In this system, the marine recreational sector can play a crucial role of sharing information, especially GIDA as a dive association and the most organized sector among marine recreational activities.

This system should be based on an open access system for all stakeholders providing them the chance to share, monitor and closely follow potential issues and recommend solutions. Thus, a new obligation of the dive and snorkeling operators would be to provide a daily report from the sites; including the number of the customers, number of specific species, and warn for the negative impacts and report irresponsible behavior. For coastal activities it is necessary to establish special services for the beach monitoring, with the same duties.

With this approach marine recreational operators can be officially and directly involved in the conservation and simultaneously strengthen the collaboration with governmental institutions. Thus, the IIS can clearly expose the evidence of the reef conditions, monitor the amount of endangered species, inform the management about negative practices and their consequences and ultimately improve the behavior of tourists and operators through sharing knowledge and best practices. A good database and effective sharing system, can greatly contribute to the sustainable development and implementation of the zoning system, through finding the root of the problem and recognizing the solution for the future.
REFERENCES


Bottema, M. 2010. ‘Ecological Modernization of Marine Conservation’ A case study of two entrepreneurial marine protected areas in Indonesia, Wageningen University – Department of Environmental Science Environmental Policy Goup 66- 85;


Forestel, P.H. 1990 ‘Marine education and ocean tourism: replacing parasitism with coastal symbiosis’ In M.L Miller and Auyong (eds), Proceeding of the 1990 Congress on Coastal and Marine Tourism Vol. 1. National Coastal Resources Research Institute, Corvalis OR


GET 2009 the official web of Gili Eco Trust http://giliecotrust.com


Graci S. and Dodds, R. 2010. Sustainable Tourism in Island Destinations London: Earthscan


Hall 1993. Ecotourism in the Australian and New Zealand Sub – Antarctia Island, Tourism Recreation Research 13-21


Hetzer W. 1965. Environment, tourism, links, culture (July) 1 -3


Hutomo & Kasim M. M. 2004 Research Centre for Oceanography, Indonesian Institute of Science: Indonesian marine and coastal biodiversity 89-96

IUCN, 1991. Guidelines for Establishing Marine Protected Areas IUCN, Gland, Switzerland
Luck M. 2007 Tourist perception of beach-cast seaweed and coral reef at Likuri Island, Fiji, Auckland University of Technology
Orams M.B. 2001. The Encyclopedia of Ecotourism Weaver David Bruce, Chapter 2 Types of Ecotourism, p 23-27p
OSPAR 2008 Commission – “Assessment of impacts of tourism and recreational activities”369/2008 11 - 27 th


Shackely, M 1992 ‘Manatees and Tourism In South opportunity or therath?’ Marine Tourism: Development, impacts and management. London: Routledge


Somedinoto, A. and Wong, P.P. 2004. ‘Patterns and process of tourism development on the Gili Islands, Lombok, Indonesia’, ASEAN Journal on Hospitality and Tourism, 3 (2) 77-89


APPENDIX

ANOVA

1. Number of visits versus Perception of environmental conditions

Descriptives

<table>
<thead>
<tr>
<th>Satisfaction of Environmental Condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>18</td>
<td>3.9444</td>
<td>1.2113</td>
<td>2.8551</td>
<td>3.3421</td>
<td>4.5468</td>
<td>6.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 times</td>
<td>7</td>
<td>3.7143</td>
<td>0.9519</td>
<td>0.5958</td>
<td>2.8346</td>
<td>4.5040</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 times</td>
<td>5</td>
<td>3.8000</td>
<td>0.8366</td>
<td>0.8374</td>
<td>2.7611</td>
<td>4.8389</td>
<td>5.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>3.8667</td>
<td>1.0742</td>
<td>1.9613</td>
<td>3.4656</td>
<td>4.2678</td>
<td>6.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>147</td>
<td>.120</td>
<td>.888</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27</td>
<td>1.229</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>33.467</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Length of stay versus Perception of environmental conditions

Descriptives

<table>
<thead>
<tr>
<th>Satisfaction of Environmental Condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-7 days</td>
<td>16</td>
<td>4.9253</td>
<td>1.2593</td>
<td>3.2234</td>
<td>3.3754</td>
<td>4.7496</td>
<td>1.00</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>8-21 days</td>
<td>7</td>
<td>3.8771</td>
<td>.8907</td>
<td>.14007</td>
<td>3.0250</td>
<td>4.8893</td>
<td>2.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>22-35 days</td>
<td>2</td>
<td>3.5000</td>
<td>.7071</td>
<td>.50000</td>
<td>2.8531</td>
<td>5.8531</td>
<td>3.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>&gt;36 days</td>
<td>5</td>
<td>3.4000</td>
<td>.4772</td>
<td>.24495</td>
<td>2.7189</td>
<td>4.0801</td>
<td>3.00</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>3.8667</td>
<td>1.0742</td>
<td>1.9613</td>
<td>3.4656</td>
<td>4.2678</td>
<td>1.00</td>
<td>6.00</td>
<td></td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>657</td>
<td>.543</td>
<td>.657</td>
</tr>
<tr>
<td>Within Groups</td>
<td>26</td>
<td>1.211</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>32.467</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Divers’ perception about the environment on Gili Trawangan

Descriptives

<table>
<thead>
<tr>
<th>Perception of Environmental Condition</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>95% Confidence Interval for Mean</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diver certified in Gili</td>
<td>8</td>
<td>3.8250</td>
<td>.51755</td>
<td>.36269</td>
<td>3.3623</td>
<td>4.2577</td>
<td>3.00</td>
<td>4.60</td>
<td></td>
</tr>
<tr>
<td>Diver not certified in Gili</td>
<td>16</td>
<td>3.7733</td>
<td>1.06333</td>
<td>2.7465</td>
<td>3.1465</td>
<td>4.3622</td>
<td>1.60</td>
<td>5.80</td>
<td></td>
</tr>
<tr>
<td>Non-Diver</td>
<td>7</td>
<td>4.2286</td>
<td>.83669</td>
<td>.31601</td>
<td>3.4583</td>
<td>5.0019</td>
<td>3.60</td>
<td>6.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>3.8933</td>
<td>.88928</td>
<td>.16223</td>
<td>3.5612</td>
<td>4.2254</td>
<td>1.60</td>
<td>6.00</td>
<td></td>
</tr>
</tbody>
</table>

ANOVA

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1</td>
<td>.520</td>
<td>.641</td>
<td>.535</td>
</tr>
<tr>
<td>Within Groups</td>
<td>27</td>
<td>.811</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>2.939</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONNAIRES

VISITOR SURVEY

Questionnaires No._________

Date : ______________________ □ Holiday □ Non-Holiday
Full Name : ____________________ (optional)
Gender : □ Male □ Female
Age : □ 18 – 25 □ 26 – 35 □ 36 – 45 □ 45 – 60 □ over 60
Occupation: ______________________

What is your level of education?
□ Primary school
□ Secondary/high school
□ University or college
□ Vocational/technical training
□ Others ______________________

Origin
What is your country of regular residence? ______________________
What is your country of citizenship? ______________________

Duration of stay in the Indonesia:
Date of arrival in Indonesia (yyyy-mm-dd) : ______________________
Date of departure from Indonesia (yyyy-mm-dd) : ______________________
How many times have you been in Indonesia, including this journey? ______________________ time (s)

Duration of stay in Gili Trawangan
Date of arrival in Gili Trawangan (yyyy-mm-dd) : ______________________
Date of departure from Gili Trawangan (yyyy-mm-dd) : ______________________
How many times have you been in Gili Trawangan including this one? ______________________ time (s)

Purpose of your travel
What is the main purpose of your visit?
□ Leisure
□ Business
□ Visiting friends and relatives
□ Others ______________________

Are you certified diver? YES / NO
Have you got your dive license in Gili Trawangan? YES / NO
How much did you spend for marine and coastal recreational activities?

☐ Less than 50$
☐ 50$ - 100$
☐ 100$ - 200$
☐ 200$ - 300$
☐ More than 300$

A. What was Your motivation to visit Gili Trawangan?

B. Could You please score the importance and satisfaction of yours on the following Marine and Coastal Recreational activities in Gili Trawangan?

Note:

<table>
<thead>
<tr>
<th>Preference of Importance (PI)</th>
<th>Preference of Satisfaction (PS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Not at all important</td>
<td>1 = Completely dissatisfied</td>
</tr>
<tr>
<td>2 = Low importance</td>
<td>2 = Mostly dissatisfied</td>
</tr>
<tr>
<td>3 = Slightly important</td>
<td>3 = Somewhat dissatisfied</td>
</tr>
<tr>
<td>4 = Neutral</td>
<td>4 = Neutral</td>
</tr>
<tr>
<td>5 = Moderately important</td>
<td>5 = Somewhat satisfied</td>
</tr>
<tr>
<td>6 = Very important</td>
<td>6 = Mostly satisfied</td>
</tr>
<tr>
<td>7 = Extremely important</td>
<td>7 = Completely satisfied</td>
</tr>
</tbody>
</table>
C. Could you please score your satisfaction of marine and coastal recreational activities on the following aspects in Gili Trawangan?

Note: 1 = Completely dissatisfied 2 = Mostly dissatisfied 3 = Somewhat dissatisfied 4 = Neither satisfied or unsatisfied 5 = Somewhat satisfied 6 = Mostly satisfied 7 = Completely satisfied

D. Could you please score your general perception about environmental impacts of the marine and coastal recreational activities in Gili Trawangan?

<table>
<thead>
<tr>
<th>Valued Aspect</th>
<th>Natural condition of the sites</th>
<th>Facilities</th>
<th>Safety</th>
<th>Quality of operators service</th>
<th>Price = quality</th>
<th>Visitor density</th>
<th>Cleaness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surfing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kayaking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snorkeling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand up paddle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beach sports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Positive impacts
   a. Protect marine environment
   b. Less harmful than fishing
   c. Improve people’s awareness of the ocean
   d. Contribute to rehabilitation of the marine resources
   e. Provide eco-friendly infrastructure

2. Negative impacts
   a. Inappropriate behavior of tourists and operators
   b. Water/noise pollution
   c. Overuse of coral reef by diving and snorkeling
   d. Touching disturbs marine biodiversity
   e. Overcrowd of boats threaten to destroy the coral reef

Your score

<table>
<thead>
<tr>
<th>Completely disagree</th>
<th>Disagree</th>
<th>Somewhat disagree</th>
<th>No idea</th>
<th>Somewhat agree</th>
<th>Agree</th>
<th>Completely agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
E Could You please score the condition of Marine and Costal Environment in Gili Trawangan

<table>
<thead>
<tr>
<th>Valued Aspect</th>
<th>Your score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

1. Cleanliness of the Beach
2. Biodiversity protection
3. Viability of the coral reef
4. Water visibility
5. Diversity of endangers species

Would you like be back in Gili Trawangan? YES / NO
What is the reason? ______________________________________

Thanks for Your time and have a nice traveling!

SURVEY MASYARAKAT LOKAL

Nama : ______________ (optional)
Tempat tinggal : ______________
Jumlah anggota keluarga : ______________  Jumlah anak di bawah 16 tahun : ______________

Pendidikan terakhir:
□ a. Sekolah Dasar
□ b. SMP/SMA
□ c. Perguruan Tinggi/Universitas
□ d. Kursus/Pelatihan Keterampilan
□ e. Lainnya ______________

Pekerjaan : ______________
Penghasilan : ____________
PERSEPSI

A. Bagaimana menurut Anda pengaruh Ekonomi dari Kegiatan Rekreasi Laut dan Pesisir di pulau Gili Trawangan, seperti: menyelam, surfing, snorkeling, berenang, dll?

<table>
<thead>
<tr>
<th>Aspek yang dinilai</th>
<th>Penilaian anda</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sangat tidak benar</td>
<td>Tidak benar</td>
<td>Agak tidak benar</td>
<td>Netral</td>
<td>Agak benar</td>
<td>Benar</td>
<td>Sangat benar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Memberikan posisi kerja yang lebih baik daripada jasa wisata lainnya (seperti: hotel, restoran, dll).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Menyiapkan jenjang karir yang lebih baik.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Meningkatkan keterampilan khusus untuk masyarakat lokal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Memberikan gaji (pendapatan) yang lebih baik daripada bekerja secara tradisional (contoh: menjadi nelayan, bertani).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Memberikan kesempatan bagi usaha kecil dan menengah untuk berkembang.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Harga-harga semakin meningkat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Kepemilikan tanah oleh para investor, bukan masyarakat lokal (capital flight).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Eksploitasi tenaga kerja (contoh: jam kerja banyak, sedikit istirahat, tidak ada uang lembur).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Manfaat ekonomi hanya dirasakan oleh pemilik usaha.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Pekerja asing mendapatkan posisi kerja lebih baik daripada masyarakat lokal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Bagaimana menurut Anda pengaruh Kegiatan Rekreasi Laut dan Pesisir terhadap Lingkungan di pulau Gili Trawangan?

<table>
<thead>
<tr>
<th>Aspek yang dinilai</th>
<th>Penilaian anda</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sangat tidak setuju</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

1. **Dampak Positif**
   a. Kelestarian alam laut dan pesisir semakin terjaga.
   b. Aktivitas rekreasi laut meningkatkan kepedulian terhadap kondisi lingkungan.
   c. Daerah objek wisata (site) menjadi tertata dengan baik.
   d. Kondisi infrastuktur semakin baik dan lengkap.
   e. Tercipta kondisi aman dan nyaman untuk berwisata.
   f. Tercipta kebersamaan masyarakat untuk menjaga kelestarian lingkungan.

2. **Dampak Negatif**
   a. Pencemaran lingkungan laut
   b. Penataan kawasan berjualan pedagang menjadi tidak teratur
   c. Eksploitasi alam yang berlebihan untuk kegiatan rekreasi
   d. Hilangnya lahan-lahan hijau untuk dijadikan fasilitas wisata
   e. Perilaku turis mengancam kelestarian lingkungan
   f. Penggunaan alat transportasi air mencemari laut.
C. Bagaimana menurut Anda pengaruh kegiatan Rekreasi Laut dan Pesisir terhadap Sosial-Budaya masyarakat di pulau Gili Trawangan?

<table>
<thead>
<tr>
<th>Penilaian anda</th>
<th>Sangat tidak dapat diterima</th>
<th>Tidak dapat diterima</th>
<th>Agak tidak dapat diterima</th>
<th>Netral</th>
<th>Agak dapat diterima</th>
<th>Dapat diterima</th>
<th>Sangat dapat diterima</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

1. Dampak Positif

a. Masyarakat lebih mencintai budaya lokal sebagai aset yang dapat meningkatkan daya jual pariwisata.

b. Pariwisata membuat lingkungan menjadi lebih teratur dan aman.

c. Masyarakat dapat lebih meng toleransi hal baru.

d. Mencetus kreativitas dan inovasi seni masyarakat.

e. Membuka peluang bagi masyarakat untuk mengenal budaya berbagai negara.

f. Terjadi hubungan yang baik antara masyarakat dengan turis.

2. Dampak Negatif

a. Hilangannya nilai budaya lokal (cara berpakaian, bergaul, dll).

b. Timbulnya penyakit masyarakat (kriminal, perjudian, prostitusi, narkoba, dll).

c. Menimbulkan konflik budaya diantara masyarakat dengan turis.

d. Perilaku turis menimbulkan konflik dengan agama/kepercayaan setempat.

e. Menimbulkan pola hidup konsumtif (mementingkan kemewahan dan prestise).

f. Berkurangnya sifat kebersamaan masyarakat (individualis).

Terima kasih atas waktu Anda.
SURVEI EKONOMI UNTUK PEKERJA

Tanggal : ______________________
Nama Lengkap : ______________________ (opsional)
Asal daerah / domisili : ______________________

Jenis Kelamin :
☐ Laki-Laki   ☐ Perempuan

Usia :
☐ 18 – 25   ☐ 26 – 35   ☐ 36 – 45   ☐ 45 – 60   ☐ > 60

Status Perkawinan :
☐ Single   ☐ Menikah   ☐ Bercerai

Tingkat pendidikan terakhir Anda?
☐ Sekolah Dasar (SD)
☐ Sekolah Menengah Pertama (SMP) / Sekolah Menengah Atas (SMA)
☐ Universitas / Pendidikan Tinggi
☐ Pendidikan Kejuruan / Pelatihan teknik
☐ Lainnya ______________________

Apa bidang pekerjaan Anda saat ini:
☐ SCUBA Diving
☐ Selancar
☐ Pesiar
☐ Kayak
☐ Olah raga renang
☐ Snorkeling
☐ Free diving
☐ Berlayar
☐ Olahraga pantai
☐ Lainnya ______________________

Berapakah Pendapatan Bulanan Anda dengan pekerjaan saat ini?
☐ < Rp. 1.5 Juta   ☐ Rp. 2.5 Juta - 3.5 Juta   ☐ > Rp. 5 Juta
☐ Rp. 1.5 Juta - 2.5 Juta   ☐ Rp. 3.5 Juta - 5.0 Juta

Jumlah anggota keluarga : ___________ (orang) Jumlah anak di bawah 16 tahun: ___________ (orang)

Sejak kapan Anda bekerja di bidang Industri Pariwisata Laut dan Pesisir?
☐ < 3 tahun   ☐ 3 – 5 tahun   ☐ 5 – 7 tahun   ☐ 7 – 10 tahun   ☐ > 10 tahun

Terima kasih atas waktu Anda.
BIOGRAPHICAL NOTE

Vladimir Cirjakovic is a master student of the Management of Ecotourism and Environmental Service at Bogor Agricultural University, Indonesia. His research topic is ‘Impacts of Recreational Activities on Marine and Coastal Areas in Gili Trawangan, Indonesia’. He graduated bachelor degree in Serbia from Belgrade’s Collage of Tourism ‘06/10 and simultaneously he was worked as a travel consultant for educational and tours for youth for Kon Tiki Travel, Serbia. joined Indonesian cultural exchange program of ‘Daramsiswa”06/11at Sahid’ Institute of Tourism, Jakarta and where he was simultaneously involved as an intern assistant for ecotourism. During his master studies he gained practical skills on various field programs for ecotourism development. The program of ‘Mangrove Plantation and Coral Restoration’ in Pangandaran area Java, Indonesia and master plan for ecotourism development of the National Park ‘Alas Purwo’, Indonesia.