

Institutional Change in Agriculture and Natural Resources  
Institutioneller Wandel der Landwirtschaft und Ressourcennutzung

edited by/herausgegeben von  
Volker Beckmann & Konrad Hagedorn

Volume/Band 22

**Aceng Hidayat**

## **Institutional Analysis of Coral Reef Management**

A Case Study of Gili Indah Village, West Lombok, Indonesia

Gedruckt mit Unterstützung des Deutschen Akademischen Austauschdienstes

Shaker Verlag  
Aachen 2005

**Bibliographic information published by Die Deutsche Bibliothek**

Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the internet at <http://dnb.ddb.de>.

Zugl.: Berlin, Humboldt-Univ., Diss., 2005

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Printed in Germany.

ISBN 3-8322-3815-8

ISSN 1617-4828

Shaker Verlag GmbH • P.O. BOX 101818 • D-52018 Aachen

Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9

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## Preface of the Editors

Coral reefs are one of the most complex ecosystems on earth. With over 4,000 different species of fish, 700 species of coral and countless other plants and animals they are often called “rainforests of the sea”. Their beauty and wealth of biodiversity provide tangible and intangible benefits for millions of people worldwide. However, it’s mainly the livelihood of coastal communities that relies on the reefs as a major source of income from fishing and tourism and as a protection from the forces of the sea. These benefits are increasingly at risk: Coastal development, destructive fishing practices, pollution, sedimentation and most recently ocean warming have been identified as factors contributing to a continuous decline of coral reef health. In order to halt degradation there is a need to understand the causal mechanisms and to develop strategies that could address the driving forces at local, national and global levels.<sup>1</sup> Economists, up to now, have contributed to this knowledge mainly by estimating the economic value of coral reefs (e.g. Cesar 1996) and pointing out the importance of community involvement in coral reef management (e.g. White and Vogt 2000).

This book by Aceng Hidayat contributes to the latter line of research by analyzing coral reef management in Indonesia from an institutional point of view. Indonesia as the largest archipelago country in the world holds about 18 percent of the worlds’ coral reef ecosystems, which – being no exception from the rule - have degraded increasingly. Aceng Hidayat questions, however, the conventional interpretation of the causes. Saying that pollution or destructive fishing practices cause reef degradation would touch merely the surface of the problem. Instead, Aceng Hidayat argues that the problem is more deeply rooted in the underlying institutional structure of coral reef management. Studying Indonesian history, he identifies a combination of conflicting property rights, contradicting sectoral policies and the inability of the state and its agencies to enforce their property claims as main reason for economic activities that led to degradation of coral reefs. As in many other cases, unclear property rights and inconsistent public policy is likely to create a vacuum where state property turns into open access with its well-known negative consequences for sustainable resource use. The question then arises if property rights or governance structures should change to enhance sustainable resource use. Aceng Hidayat reveals that this actually has happened in Indonesia where coastal resource management was decentralized in 1999 and where since then local governance structures have developed supporting sustainable coral reef management.

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<sup>1</sup> The first global initiative to preserve coral reefs worldwide started in 1994. It was the International Coral Reef Initiative (ICRI) which further developed into the International Coral Reef Action Network (ICRAN) in the year 2000. See <http://www.icarn.org>.

Aceng Hidayat analyzes this institutional change in Indonesia by means of the case study of Gili Indah village in West Lombok, using the analytical frameworks of Ostrom (1990) and Hagedorn et al. (2002). The latter explains the development of property rights and governance structures for sustainable resource use as influenced by the actors and their transactions. Over time, changing actor constellations or changing transactions may lead to institutional innovation and adjustments of property rights and governance structures that rule the sustainability of resource use. In Gili Indah village, Aceng Hidayat identifies fishermen, tourist business, nature protection agency, and village administration as the most important actors, and fishing and tourism as the two main activities that show different but interrelated transactions. For centuries, coral reefs were managed as an open access resource and subsistence fishing was the main source of the livelihood of coastal communities. The commercialization of fishing and the rise of destructive fishing practice since 1958 has endangered many fish species and damaged the coral reefs. When in 1978 the local tourist industry began to develop, livelihood strategies of the villagers started to change as well, leading to conflicts with the existing fishing practice. In 1993, the Indonesian government declared the area a conservation zone to protect coral reefs and to support the development of the tourist industry. However, the government agencies were unable to enforce the conservation regulations. This changed in 1999 when the management of natural resources was decentralized and local institutions, the so-called *awig-awig*, developed for coral reef management too. Driving force of that institutional change and its effective enforcement at local level has been the local tourist industry.

This case study by Aceng Hidayat contributes to the knowledge of how to protect coral reefs in two ways: First, it illustrates that institutions of sustainability can only become effective when they are supported by adequate governance structures. Governance structures are, however, linked with property rights that influence legitimacy and incentives. There are good arguments that local actors that are mostly affected by coral reef degradation should have ownership of the rules of resource use so that they would have an incentive to effectively monitor and control it. Second, the case shows that the tourist industry is a key actor of the coral reef ecosystem protection due to its strong economic interest in the resource system. Tourism obviously is able to create a win-win association between protected areas and local communities, that fosters the support for nature protection (see also de Oliveira 2002). The development of tourism seems therefore essential for coral reef protection. Whether or not this outcome can be generalized must be left to further research that should particularly investigate the role of the tourist industry for the development of property rights and governance structures for natural resources.

## Acknowledgements

Before expressing my thanks to the individuals and institutes that facilitated my study and research, both in Indonesia and Germany, let me recall the way I joined the Department of Resource Economics at Humboldt University, Berlin, headed by Prof. Dr. Dr. h.c. Konrad Hagedorn. In June 2000, after I had been in Germany for two months, without any certainty at the time of who would supervise my work, I got an invitation from Prof. Hagedorn to talk about the topic of my research. After a short discussion, he agreed that I could join his department and formally issued an acceptance letter, explaining that I would be a PhD student there. This letter was crucial for me. Without it, the German Academic Exchange Service (DAAD), from which I had received a four-year scholarship, would have been obliged to send me back to Indonesia in October 2000—thus, in effect, burying my dream to study in Germany. Therefore, my first thanks go to Prof. Hagedorn, my supervisor, for his invitation, guidance, support, and the necessary degree of academic freedom during my four-year collaboration with his department. This is really my luck to have an opportunity for working with him who possesses the academic excellence and great collaborative spirit.

My second thanks go to colleagues at the Department of Resource Economics for a conducive academic environment, particularly to Dr. Volker Beckmann, Dr. Ramesh Chennamaneni, Dr. Franz Gatzweiler, Dr. Thomas Sikor, and Dr. Markus Hanisch for being discussion partners and providing comments on my work. Also thanks to my other colleagues, the “Ress” family members, for numerous discussions at colloquia, workshops and seminars. All of their comments helped me to find direction and focus for my work, particularly when I became disoriented. I also appreciate the efforts of Mrs. Sigrid Heilmann and Mrs. Ines Jeworski, who were always kind and ready to help, as well as Mrs. Renate Judis who dealt with my English-language issues. She introduced me to Dr. Christopher Hank, from the Language Centre at Humboldt, who helped me add the final touches to my writing, with American English style. Thanks Chris! I am also grateful to the DAAD, from which my study and research received financial support, as well as to Humboldt University, which gave me a six-month grant when I was finalizing the dissertation.

On the other side of the world, many thanks go to the fishermen, tourism business operators, village elites and village administration officials who, in the course of my fieldwork in Indonesia, spent much time to answer questions concerning coral reef ecosystems, to explain coral reef governance structures and the processes and mechanisms of institutional change at the village level: the main concerns of this study. Special thanks go to Pak Haji Damsiah and Pak

Zakaria, the former and incumbent heads of the village of Gili Indah, for their unreserved support during my research there, as well as to Sanati Damsiah (Ana), who introduced me to several village elites, fishermen, and tourism business operators. Her great help in gathering data is also highly appreciated. The same also goes to Mas Dahir from the Association of Gili Air Entrepreneurs (APGA); Pak Malik from Ecotrust; Mas Usman Ali from SATGAS; and Pak Taufik, Pak Hanaming and Pak Saefudin, heads of the subvillages of Gili Trawangan, Gili Meno and Gili Air, respectively.

In addition, in Mataram, the capital of West Lombok district, I would like to mention several persons who gave crucial help during my fieldwork there. Arief Herutomo, head of a section of the Data and Information Center of West Lombok district, who provided me with secondary information, deserves my thanks, as well as Taufik Hidayat (Opik), a staff member of the Local Marine and Fisheries Agency (DISLUTKAN) and Pak Bursan from the Natural Resource Conservation Agency (BKSDA) office, both of whom never tired of accompanying me to see fishermen in the coastal villages of the North Lombok region. With their help, I was able to travel—via motorcycle—through the coastal villages of West Lombok: from Mataram to the villages of Pemenang, Tanjung, Kayangan, Sukadana, up to the northernmost coastal village, Bayan—120 km from our starting point—to meet with fishermen there. In addition, my great appreciation goes to the officials of the district government of West Lombok, particularly the head of DISLUTKAN; the head of the Local Tourism, Art and Culture Agency (DISPARSENBUD); the head of the Natural Resources Conservation Agency (BKSDA); the head of the Board for Investment and the Environment (BPMLH); and the head of the Regional Planning and Development Board (BAPPEDA), as well as to the commander of the Indonesian Navy in Mataram, for their cooperative attitudes and help in conducting my research. Notwithstanding all of the help I've received along the way from those mentioned, it is I alone who am responsible for any shortcomings of the present study.

Above all, my great thanks go to my parents, who have never given up praying for my success in life, as well as to my teachers—from those who introduced me to literacy, to those who have helped me to become an academician. Nevertheless, my highest and sincerest gratitude is addressed to my dear wife, Yogi Vidyaztutie (Ade), who accompanied me during my four-year stay in Berlin. Her sincere love, patience, and care have been a necessary moral support, which constantly encouraged me to continue working on my research project. I have to thank God for giving me Ade as the best wife that I could have imagined. Thus, I dedicate this work to her alone.

Aceng Hidayat  
Berlin, February 2005

# Contents

List of Figure.....	xiii
List of Table .....	xvi
Abbreviations and Glossary .....	xvii
<b>1 Introduction .....</b>	<b>1</b>
1.1 Problem Statement .....	2
1.2 Objectives of the Study and Research Questions .....	4
1.2.1 Objectives of the Study .....	4
1.2.2 Research Questions .....	5
1.3 Structure of the Book .....	6
<b>2 Characteristics of Coral Reef Ecosystems .....</b>	<b>9</b>
2.1 Biological Characteristics of Coral Reef Ecosystems .....	9
2.2 Coral Reef Benefits: Ecosystem Functions, Goods, and Services ...	10
1.3 Threats to Coral Reef Ecosystems .....	14
1.4 Coral Reef Ecosystems as Common-pool Resources .....	20
1.5 Characteristics of Indonesian Coral Reefs .....	23
<b>3 Concepts and Theoretical Frameworks .....</b>	<b>27</b>
2.1 Concepts of Institution .....	27
2.1.1 Institutions as Rules of the Game .....	27
2.1.2 Different Levels of Institutional Analysis .....	30
2.1.3 Theories of Institutional Change .....	33
2.2 Concepts of Property Rights .....	37
3.2.1 Property Rights as Institutions .....	37
3.2.2 Rights, Duties, and Rules .....	39
3.2.3 Property Rights to Natural Resources .....	40
3.2.4 Property Rights and Incentives .....	44
3.2.5 Property Rights Regimes over Commons-pool Resources ...	45
3.2.6 Property Rights over Coastal Resources .....	49
3.2.7 Conservation: From Centralized State Property Rights to Community- based Conservation .....	50
3.3 Community-based Natural Resource Management and a Solution to Commons-pool Resource Problems .....	53
3.4 Conditions for Successful Collective action in Commons-pool Resource Governance .....	54
3.5 Challenges of Community-based Natural Resource Management and Emergence of the Co-management Approach .....	57
3.6 Challenges of Coral Reef Ecosystems Management .....	59

<b>4 Analytical Framework and Research Methodology .....</b>	<b>61</b>
4.1 Introduction to Analytical Framework .....	61
4.2 Analytical Framework for Institutional Analysis of Common-pool Resources .....	61
4.2.1 Oakerson's Analytical Framework .....	61
4.2.2 Rapid Appraisal Fisheries Management Systems .....	62
4.2.3 Institutional Analysis Development .....	63
4.2.4 An Extended Institutional Analytical Framework for Common-pool Resources Use .....	64
4.2.5 Framework for Institutional Analysis of Coral Reef Management .....	66
4.3 Qualitative Method .....	69
4.4 Research Process .....	70
4.5 Data Collection Procedure .....	72
4.6 Selection of Actors and Classification of Respondents .....	73
4.7 Data Analysis .....	74
4.8 Background of the Study Location .....	75
4.8.1 Geographical Setting and Physical Characteristics of Gili Indah .....	75
4.8.2 Population and Culture .....	77
4.8.3 Livelihood and Education .....	79
3.8.3.1 Livelihood .....	79
3.8.3.2 Education .....	80
4.8.4 Coral Reefs Status .....	81
4.8.5 Gili Indah as a Tourist Village .....	82
4.8.5.1 Historical Background of the Tourism Industry .....	82
4.8.5.2 Tourist Visits and Recreational Activities .....	83
4.9 Reasons for the Selection of Study Site .....	84
<b>5 Regulation Systems and Allocation of Responsibilities: How Governance Governs Coral Reef Ecosystems .....</b>	<b>85</b>
5.1 National Level Regulations Affecting Coral Reef Management .....	85
5.2 National Level Organizations Involved in the Management of Coral Reef Ecosystems .....	91
5.3 Linkage of Centralized Policies, Multiple Regulations and Governmental Agencies to the Coral Reef Management .....	93
4.3.1 Centralized Policies .....	93
4.3.2 Multiple regulations and Governmental Agencies .....	94
5.4 Allocation of Authority and Decision Power at the National Level .....	98
5.5 State Governance of Coral Reef Management at District Level .....	101
5.5.1 Local Government Regulations Affecting Coral Reef Management .....	101
5.5.2 Allocation of Authority among Stakeholders .....	102



5.5.3	Characteristics of State Governance at the District Level .....	104
5.5.3.1	Compulsory Relationship between Lower and Higher Levels of State Agencies .....	104
5.5.3.2	High Transaction Costs .....	104
5.5.3.3	Lack of Coordination .....	105
5.6	Summary and Preliminary Conclusions.....	106
<b>6</b>	<b>Determinants Institutional Change: Actor Characteristics and Features of Transactions .....</b>	<b>109</b>
6.1	Actors Involved in Gili Indah Coral Reef Management and their Management .....	109
6.1.1	Fishermen .....	110
6.1.2	Tourism Business Operators .....	115
6.1.3	Village Administration .....	117
6.1.4	<i>Yayasan Front Pemuda SATGAS</i> .....	121
6.1.5	Natural Resource Conservation Agency .....	122
6.2	Properties of Transactions among Actors and Technological Externality .....	123
6.2.1	Fishermen .....	123
6.2.2	Fishing Technologies and their Externality .....	126
6.2.3	Tourism Business Operators .....	130
6.3	Summary and Preliminary Conclusions .....	132
<b>7</b>	<b>Explaining the Process of Institutional Change at the Village Level</b> .....	<b>135</b>
7.1	Local Institutions for Marine Resource Management .....	135
7.2	Local Institutions Effective in Lombok (Awig-awig) .....	139
7.2.1	Background Information: Awig-awig as Social Rules .....	139
7.2.2	Awig-awig on Marine Resource Management .....	139
7.2.3	Awig-awig of Gili Indah Village .....	143
7.2.3.1	General Awig-awig .....	143
7.2.3.2	Awig-awig for Coral Reef Management in Gili Indah Village .....	144
7.3	Process of Institutional Change.....	149
7.3.1	Change in Operational Level .....	149
7.3.2	The Effect of Collective- and Constitutional-Choice Level on the Change in Operational Rules .....	160
7.4	Preliminary Conclusions and Discussions.....	161
<b>8</b>	<b>Explaining Changes in Property Rights and Governance Structures for Coral Reef Management: From Open Access and State Property Regime to Local Governance .....</b>	<b>165</b>
8.1	Before 1993: Pre-State Property Regime Era .....	165
8.1.1	Before 1977: Pre-Tourism Industry Era .....	165
8.1.2	1977-1993: the Early Stage of Tourism Industry Era .....	167

8.2	1993-2000: State Property Regime Era .....	168
8.2.1	Role of the Natural Resource Conservation Agency .....	168
8.2.2	Reasons for the State Property Regime .....	169
8.2.3	The structure of the State Property Regime .....	169
8.2.3.1	Property Rights and Rules .....	169
8.2.3.2	Authority and Boundary Rules .....	170
8.2.3.3	Law Enforcement and Monitoring System .....	171
8.2.3.4	Challenges of Fishermen to the State Property Rights and the Failure of State Governance .....	171
8.3	2000-present: Local Governance Era .....	176
8.3.1	The Structure of Local Governance .....	176
8.3.1.1	The Local Organizations Involved .....	176
8.3.1.2	Allocation of Authority and Responsibilities .....	177
8.3.1.3	Monitoring and Systems of Graduated Sanctions ....	179
8.3.2	Determinants of Local Governance Structure .....	183
8.3.3	Governance Structure Characteristics .....	184
8.3.3.1	Voluntary Transactions and Relatively Low Transaction Costs .....	184
8.3.3.2	Simple Coordination Mechanism .....	186
8.3.4	The Weakness of the Local Governance Structure .....	187
8.4	Toward A Sustainable Property Rights Regime for Coral Reef Management .....	190
8.5	Preliminary Conclusions .....	194
<b>9</b>	<b>Summary and Conclusions .....</b>	<b>195</b>
9.1	Summary .....	195
9.1.1	Objectives .....	195
9.1.2	Coral Reef Characteristics .....	196
9.1.3	Theoretical Backgrounds .....	196
9.1.3.1	Theories of Institutions and Institutional Change ....	196
9.1.3.2	Concepts of Property Rights .....	197
9.1.3.3	Self-Governance and Co-Management .....	199
9.1.4	Analytical Framework and Research Methodology .....	199
9.1.5	Regulation Systems and Allocation of Responsibilities .....	200
9.1.6	Determinants of Institutional Change .....	200
9.1.7	Explaining Process of Institutional Change at the Village Level .....	202
9.1.8	Change of Property Regime in Coral Reef Management and Policy Recommendations .....	203
9.2	Conclusions .....	206
	References.....	209
	Appendices.....	227

## Figures

Figure 1-1: Logic of Indonesian Coastal Resource Management, Change of Policy and the Emergence of Local Authority's Spirit of Participation .....	3
Figure 2-1: Status of Indonesia's Coral Reef Ecosystem .....	24
Figure 3-1: Four Levels of Social Analysis .....	31
Figure 3-2: Linkage between Rules and Levels of Analysis .....	32
Figure 4-1: A Framework for Institutional Analysis of Common-pool Resources .....	62
Figure 4-2: A Rapid Appraisal Fisheries Management System .....	63
Figure 4-3: Factors Affecting Common-pool Resource Use .....	65
Figure 4-4: A Framework for Institutional Analysis of Coral Reef Management .....	66
Figure 4-5: Research Process Steps of Institutional Analysis of Coral Reef Ecosystems .....	70
Figure 4-6: Procedure of Qualitative Data Analysis .....	75
Figure 4-7: Map of Study's Location .....	76
Figure 5-1: Allocation of Authority and Responsibility between the Department of Marine Affairs and Fisheries (DKP), and the Local Marine and Fisheries Agency (DISLUTKAN) in the Management of Coral Reef Ecosystems .....	99
Figure 5-2: Allocation of Responsibility for Coral Reef Management and Conservation among the Deaprtment of Forestry, Natural Resources Conservation Agency (BKSDA) and Local Community .....	100
Figure 5-3: Allocation of Authority and Coordination Mechanism for Coral Reef Management among Stakeholders at District Level .....	103
Figure 6-1: Hierarchy of Governmental Structure in Indonesia .....	118
Figure 6-2: Former Village Administration Structure .....	119
Figure 6-3: Scheme of Links between Village Administration and Village Parliament .....	120
Figure 7-1: Zoning of Coastal Areas of Gili Indah according to Awig-awig on Conflict Resolution .....	146
Figure 7-2: The Mechanism of the Emergence of the First Awig-awig Prohibiting Blast-Fishing in Governing Coral Reef Ecosystems .....	150
Figure 7-3: The Mechanism of the Emergence of the Second Awig-awig Prohibiting Blast-Fishing in Coral Reef Ecosystems .....	153

Figure 7-4: The Mechanism of the Emergence of Local Institution on Conflict Resolution in Coral Reef Management .....	154
Figure 7-5: The Process of Institutional Change on Conflict Resolution in Coral Reef Management .....	160
Figure 7-6: The Final Process of Institutional Change on Conflict Resolution in Coral Reef Management .....	156
Figure 7-7: Dynamic Process of Institutional Change .....	162
Figure 8-1: Pattern of Monitoring among Key Actors in the Governance Structure over the Coral Reef Ecosystems of Gili Indah .....	180
Figure 8-2: System of Graduated Sanctions .....	181
Figure 8-3: Illustration of the Vertical Relationship of Natural Resource Conservation Agency (BKSDA), Local Governance and Local Government .....	189
Figure 8-4: Vertical Linkage in Co-management: (a) Beverley Camanirjuaq Caribou Co-Management Board, and (b) James Bay and Northern Agreement .....	191
Figure 8-5: Illustration of Co-Management Arrangements for Fisheries in Bangladesh .....	192

## Tables

Table 2-1: Approximation of Sustainable Annual Economic Net Benefit per Square Kilometer of Healthy Coral reef in Southeast Asia over 20 Year Period.....	14
Table 2-2: Total Net Losses of Southeast Asian Coral Reefs by Activity in \$ 000 over 20 Year.....	19
Table 2-3: Classification of Goods and Resources .....	21
Table 3-1: Bundles of Rights Associated with Position .....	42
Table 4-1: Distribution of Respondents .....	74
Table 4-2: International Tourist Visits to NTB, West Lombok and Gili Indah 1993-2002 .....	83
Table 5.1: Coordinative and Sectoral Organizations and their Authority in the Management of Coastal and Marine Resources .....	92
Table 6-1: Characteristics of Actors .....	110
Table 7-1: Rotation System of Traditional Fishing Groups (Seke) in the Four Fishing Location of Para Village, Sangihe-Talaud, North Sulawesi .....	138
Table 7-2: Sanctions for Violation of East Lombok Awig-awig .....	141
Table 7-3: Allowed and Prohibited Activities and Sanctions within the Zoning System for the Coastal Areas of Gili Indah .....	147
Table 8-1: Characteristics of Village Level Governance of Coral Reef Management .....	185



## Abbreviations and Glossary

AGPA	<i>Asosiasi Pengusaha Gili Air</i> , the association of Gili Air's entrepreneurs
APPKA	<i>Anggaran Pengeluaran dan Penerimaan Kas Desa</i> , village administration budget for development activities
Awig-awig	Local institutional arrangements in Lombok and Bali
Bagang	A local name for specially designed motorboats, equipped with lift nets and kerosene lanterns for trapping fish at night
BAPPEDA	<i>Badan Perencanaan dan Pembangunan Daerah</i> , Regional Planning and Development Board
BKSDA	<i>Balai Konservasi Sumberdaya Alam</i> , Natural Resources Conservation Agency
BNP	Bunaken National Park
BPD	<i>Badan Perwakilan Desa</i> , village parliament, a new village administration element derived from Act No. 22/1999 on Regional Government. It acts as a controller as well as partner of village administration
BPMLH	<i>Badan Penanaman Modal dan Lingkungan Hidup</i> , a local government board for investment and environment
Bupati	Head of <i>Kabupaten</i> , administration elected by local parliament
Camat	Head of <i>Kecamatan</i>
CBNRM	Community-based Natural Resource Management
COREMAP	Coral Reef Evaluation and Management Plan
Co-management	Collaborative management, a model of natural resource management that advances a partnership relationship and the sharing of authority and responsibility
CPR	Common-Pool Resources, a natural or man-made resource system that is sufficiently large so as to make it costly to exclude potential beneficiaries from obtaining benefits from its use
Desa	Village administration
DKP	<i>Departemen Kelautan dan Perikanan</i> , Department of Marine Affairs and Fisheries
DISLUTKAN	<i>Dinas Kelautan dan Perikanan</i> , Local Marine and Fisheries Agency
DISPARSENBUDE	<i>Dinas Pariwisata, Seni dan Budaya</i> , Local Tourism, Art and Culture Agency
DPRD	<i>Dewan Perwakilan Rakyat Daerah</i> , Local Parliaments
Ecotrust	Association of Gili Trawangan's diving companies
HUL	<i>Hak Ulayat Laut</i> , a traditional sea-tenure system in Indonesian communities
IUCN	International Union for the Conservation of Nature and Natural Resources
Jaring Sret	Pull-down mini purse-seine, a mini seine (dragnet, trawl) designed to be set around a school of fish and then closed at the bottom by means of a line pulled down by fishermen
Jaring Mogong	Fishnet specially designed to catch coral fish called, in local language, Mogong (family of Scaridae)
Kabupaten	District administration under provincial government

Kades	<i>Kepala Desa</i> , head of village administration, elected directly by community members occupying a certain village administrative area
Kepmen	<i>Keputusan menteri</i> , ministerial decree
Kecamatan	Subdistrict administrative office under <i>Kabupaten</i>
KPLTK	<i>Kelompok Pelestari Terumbu Karang</i> , a group of coral reef conservationists in the village of Gili Indah
LMD	<i>Lembaga Musyawarah Desa</i> , village convention board
LMNLU	<i>Lembaga Musyawarah Nelayan Lombok Utara</i> , convention board of the North Lombok Fishermen's Society
MPA	Marine Protected Area
Muroami	A kind of fishing device, also known as <i>Jaring Jepang</i> or 'Japanese Net'
NGO	Non-government organization
NIE	New Institutional Economics
NTB	The province of <i>Nusa Tenggara Barat</i>
Pancing	Hook-and-line, a kind of fishing tool
P2BK	<i>Pusat Penelitian Bahasa dan Kebudayaan</i> , Center for Language and Cultural Research
Perda	<i>Peraturan Daerah</i> , regional government regulations, issued by both provincial and district governments
PKA	<i>Direktorat Jenderal Perlindungan Hutan and Konservasi Alam</i> , Directorate General of Forest Protection and Natural Resource Conservation
PP	<i>Peraturan Pemerintah</i> , national government regulations
Rompong	A tradition of claims over marine areas existing in Bugis-Makasar communities, South Sulawesi
TLM	Transect Line Method, a method of measuring coral reef coverage
TNC	The Nature Conservancy
TNP	Takabonerate National Marine Park
TBO	Tourism Business Organizers
UUD 1945	<i>Undan-undang Dasar</i> , Indonesia's Constitution of 1945
Sasi	A model of marine resource management of local communities, in Maluku province
Sawenan	A closed season system, whereby fishermen in Kayangan village, West Lombok, are restricted to fish only during certain parts of the year
SD	<i>Sekolah Dasar</i> , elementary school, a six-year, school after kindergarden
Seke	A structure of fisheries resource management in Para village, district of Sangihe-Talaud, North Sulawesi
SIMAKSI	<i>Surat Masuk Kawasan Konservasi</i> , a letter of permission to enter a conservation area
SMU	<i>Sekolah Menengah Umum</i> , upper secondary school, a three-year school attended after lower secondary school
SLTP	<i>Sekolah Lanjutan Tingkat Pertama</i> , lower secondary school, a three-year school attended after elementary school
SATGAS	<i>Satuan Tugas</i> , a task force formed by some villagers to deal with coral reef problems in Gili Indah
Subak	Traditional water management systems in Bali and Lombok based on awig-awig
UNEP	United Nations Environmental Program
USAID	United States Aid for International Development



Village elites	People who are respected due to their higher social status, such as informal subvillage leaders, religious leaders, and so on
WFI	Watch Forest Indonesia
WRI	World Resource Institute
WWF	World Wide Fund