

Original paper

INSTITUTIONAL CHANGE AT LOCAL LEVEL: HOW GILI INDAH VILLAGERS BUILD AN EFFECTIVE LOCAL GOVERNANCE OF CORAL REEF MANAGEMENT?

Aceng Hidayat*

Research Fellow at the Center for Coastal and Marine Resource Studies - Bogor Agricultural University
Lingkar Akademik Kampus IPB Darmaga, Bogor, Indonesia 16680

Received: November, 12, 2005 ; Accepted: January, 25, 2005

ABSTRACT

This paper aims at explaining the process of institutional change in coral reef management at the village level, and mainly seeks to answer two research questions: How do the processes of local institutional change take place? What are incentives that drive local communities to participate in them? Investigations in Gili Indah village, West Lombok Indonesia show that the process of the institutional change was initiated and done by villagers whose livelihood strongly depend on coral reef ecosystems. There are also strong indications that the changes were affected by the local and external economic conditions, which inevitably force resource users and economic actors to alter their economic strategies. The entering of industrial tourism and the emergence of tourism-related livelihoods in Gili Indah has driven economic actors to adapt to the altering environmental condition. Tourism Business Operators (TBO) and fishermen, two main actors, have played important roles in the change process. TBOs, whose livelihood depends on coral reef ecosystems, have a strong interest in protecting the ecosystems from degradation. The same goes for the fishermen, who claim themselves as main beneficiaries of coral reef ecosystems, and insist on maintaining the status quo as an attempt to protect their economic interest. Two different economic interests have been incentive for an evolution process of local institutions (awig-awig) to construct a governance structure that accommodates the varied economic interest. So far, this governance structure has been effectively forcing the actors to comply with the rules that drive themselves to use the coral reef ecosystems in a sustainable way.

Keywords: Analysis of institutional change, awig-awig, local governance, distributional conflict theory, level of institutional analysis

***Correspondence:** Tel. 0251 625 556; 624815 Fax. 0251 621086
E-mail: a.hidayat@gmail.com; hid2005@yahoo.com

INTRODUCTION

1. Institutions: Definition, Roles and Function

Institutional economics scholars give varied definitions of institutions. North (1990: 4) defined them as constraints devised to shape political, economic and social interactions. Schmid (1972) argued that institutions are a set of ordered relationships among people that define their rights, exposure to the rights of others, privileges and responsibilities. Schotter

(1981) viewed institutions as regulations on behavior that are agreed to by all member of a society, and which prescribe behavior in specific, recurrent situations.

Ostrom (1990: 51) defined institutions as a set of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions. A more

philosophical definition is given by Hamilton (1932), who defines an institution as a way of thought or action of some prevalence and permanence, which is embedded in the habits of a group or the customs of a people. A similar definition comes from Knight (1992: 2), who considers an institution to be a set of rules that structures social interaction in particular ways. Bromley (1989) also regards conventions and entitlements as institutions. Furubotn and Richter (2000) include property rights among the institutions that play an important role in allocating economic returns. As an institution, based on both formal and informal rules, property rights must be enforced (Libecap, 1989).

In the sense of being rules of the game—constraints on social interaction, regulating the behavior of human beings—institutions can be classified into informal and formal. The first can be social norms, customary laws, habits and customs which may be created unintentionally or evolve spontaneously (North, 1990; Knight, 1992). Informal institutions are very important. In a chaotic or crises situation due to, for example, war, they can be persistent as rules that sustain a social construction. Jews, Kurds and countless other groups have persisted through centuries, despite endless changes in their formal rules due to wars, revolutions and military occupation. A state may be in ruin, but the social norms, culture and habits embedded in its communities may continue to exist (North, 1990: 35).

Informal institutions are differentiated from formal ones by looking at their forms: written or unwritten (North, 1990). Informal institutions like taboos, customs and traditions are commonly unwritten, while formal institutions which include political rules, economic rules, contracts and agreements generally have a written form. Formal institutions have taken a unidirectional move from formerly informal ones. Such changes are a necessary response of people who are moving from less to more complex societies, which need standardized weights and measurements, and, because they may face more complex disputes, naturally need to formalize constraints in writing. A move that may lower information, monitoring and enforcement costs (North, 1990).

The objective of institutions, both formal and informal, is to reduce uncertainty

by establishing a structure for human interaction (North, 1990: 3); to create a degree of predictability in human interaction (Kasper and Streit, 1998: 1); to channel the behavior of human beings in the direction expected by community members, to increase certainty and social order (Ostrom, 1990: 52); and to reduce opportunistic behavior (Ostrom, 1997: 3). An institution must also be able to constrain individuals, who tend to behave rationally and strategically to prioritize their personal interests (Knight, 1992: 3), and to equally distribute economic returns among economic actors (Libecap, 1989).

In order to avoid misunderstandings about the meaning of institutions, it seems necessary to clarify the definitions of institution and organization. This is so because many parties consider the two terms to have the same meaning. North (1990: 5) defined organizations as structures for human interaction, such as political, economic and educational bodies. That is, a group of individuals tied together by some common purpose, to achieve specific objectives. North analogizes an organization to a sport team, whereas an institution is the set of rules of competition that must be complied with by all team members. He emphasizes: “the purpose of the rules is to define the way the game is played. But the objective of the team within that set of the rules is to win the game—by a combination of skills, strategy, and coordination; by fair means and sometimes by foul means”. A similar definition to North’s is given by Knight (1992: 3), who calls organizations collective actors which may be subject to institutional constraints that generally have an internal structure: an institutional framework governing the interaction of the persons who constitute the organization.

In respect to this distinction, Uphoff (2002) has a rather different view. Instead of contrasting institutions with organizations, he prefers to classify the first into three classes. There are institutions that are not organizations, institutions that are also organizations and vice versa, and organizations that are not institutions. He proposes that land tenure, laws, collective bargaining, marriage and money belong to the first category; federal reserve systems, the supreme court, national revenue systems, government land registry and the family

belong to the second category; and a local bank branch, a tutoring service and a surveying firm belong to the third. A similar opinion is also advanced by Knight (1992), who considers a firm, a governmental bureaucracy, a church or a university to be simultaneously institutions and organizations.

In addition to being classified in terms of differences in kind, Uphoff (2002: 27) also argues that institution and organization should be understood as matters of degree. Therefore, it is often heard of institutions being described as 'more institutionalized' or 'less institutionalized,' or one can also consider an institution as being stronger or weaker. This means that an institution can be thought of as being stronger or weaker depending on how public opinion perceives it. If public opinion considers that it has a good reputation and legitimacy, it will be classified as strong, and vice versa. The same approach also applies to an organization. It will be regarded as 'more organized' if public opinion views it as reliable, predictable and productive. The more reliable, predictable and productive the organization is, the stronger it becomes in the eyes of the public. In other words, the strength or weakness of an institution or an organization depends on its capacity, as well as its perception by public opinion.

Further, organizations as well as institutions at all levels must deal with four basic tasks: decision-making, including planning and evaluation; resource mobilization and management; communication and co-ordination; and conflict resolution (Uphoff, 2002). The capacity of the institution or organization are assessed by their success in performing these basic tasks. The organization's capacity itself depends on the number, empowerment and coordination of roles, so that activities both within and outside of the organization become greater in volume and effectiveness, whereas institutional capacity refers to the extent to which the behavior of people is rendered more concerted and consistent, due to shared norms and evaluations; status and legitimacy, respect and allegiance are accorded and shaped by shared beliefs about what is right and proper with regard to what each individual should do.

Regarding the important relationship between institutions and organizations, North (1990: 6) argued that the emergence of organizations and how they evolve is

fundamentally influenced by institutional frameworks, the evolution of which is likewise affected by the behavior of organizations. In the interaction between institutions and organizations, the latter serve as agents of institutional change, while the former act as the rules of the game.

To sum up, for the purpose of institutional analysis I propose a general definition of institution that contains elements of the previous explanations. Institutions, both formal and informal, are the rules of the game for groups of people, communities or organizations whose aims are to increase the certainty and predictability of interaction among human beings by clearly defining the limits of legitimate action. The expectation is that these rules can give rise to the emergence of a well-arranged social order that is free of opportunistic and other unproductive behaviors.

2. Different Levels of Institutional Change Analysis

The classification of institutions into formal and informal, as explained above, is unfortunately not very useful for conducting an institutional change analysis. Instead, another way of classification is required. Here I discuss the classificational schemes of Oliver Williamson and Elinor Ostrom. Williamson bases his work on a concept of social analysis classified institutions into four levels (Williamson, 2000: 569). He calls the first level the social embeddedness level (Figure 1). Norms, customs, traditions and so forth are located here. The changes at this level occur very slowly: possibly taking place over the course of 100 to 1000 years. Due to their slowness, institutional economists do not usually treat them as variables of analysis. In addition, Williamson also adds that informal institutions at this first level may have spontaneous origins and stem from an evolutionary process (Williamson, 2000). This is in line with the classical accounts of institutional emergence, as represented by the works of David Hume, Adam Smith and Herbert Spencer (Knight, 1992). How changes to such institutions affect economic performance is not clear. Williamson (2000) admits that it is a perplexing question to which he has no answer.

Somewhat opposite in character to the first level, the second level refers to the formal institutional environment, which is in part intentionally designed. However, the criterion of intentionality is not absolute, because some formal institutions can also derive from the evolutionary processes of informal institutions

(Williamson, 2000: 598). Some currently effective formal laws on fishery management in Japan, for example, come partly from informal institutions that have existed for hundreds of years, and are embedded in Japanese culture and values (Ruddle, 1993).

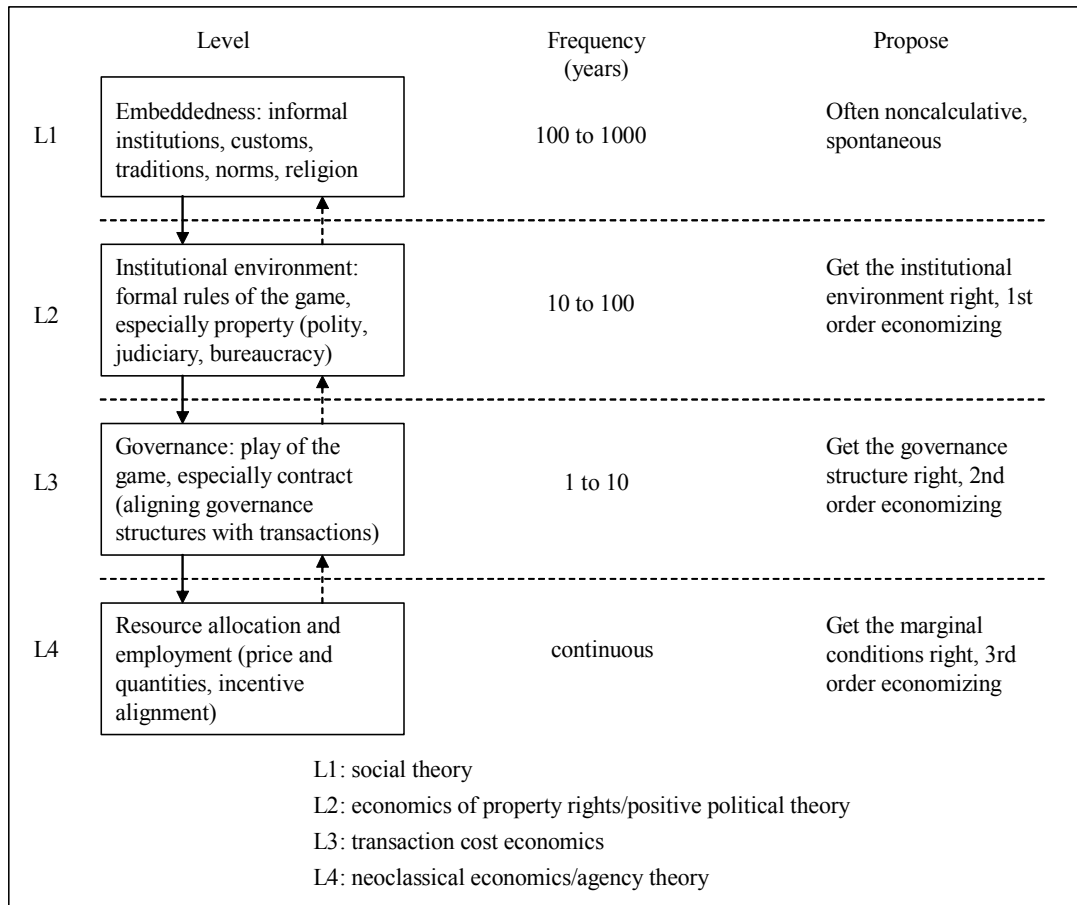


Fig. 1. Four Levels of Social Analysis
Source: Williamson (2000: 597)

The analysis of institutional change at the second level was initially dominated by the economics of property rights, debates on which flourished in the 1960s (Williamson, 2000: 599). The debates began with the argument that private-enterprise systems cannot function properly unless property rights are created over resources. Some scholars of institutional economics argued that a legal system which can define property rights and arbitrate disputes on resources is necessary; even they then considered property rights to be the central point as if they (property rights) could resolve all problems of resource allocation. Those scholars consider that once property rights have been defined

and their enforcement assured, resources are allocated to their highest value (Williamson, 2000: 599).

Such statements indicate both the strength and the weakness of property rights theory. The strength is to place property rights at the forefront, while the weakness is that property rights are given an overly important role. The claim that “legal systems will eliminate chaos upon defining and enforcing property rights assumes that the definition and enforcement of such rights is easy (costless)” (Williamson, 2000: 599), and is the consequence of giving too great a role to property rights. The process of change at this level will take decades, or even centuries,

unless massive disruption, such as through war or military occupation occur.

Williamson (2000: 599) clearly rejects these conceptions because the definition and enforcement of property rights is not without cost. It involves many costly transactions. This leads to the third level of analysis, at which the governance structures (institutional arrangements) are located. The main idea behind this level of analysis is that transactions such as definition and enforcement of institutions is not costless, and much in the way of contract management and dispute settlements are dealt with directly by the parties through private negotiation. Therefore, the governance of contractual relations becomes the focus of analysis at this level. This means that parties involved in

constructing institutional arrangements will attempt to find an efficient governance structure, i.e., one that economizes transaction costs, through which actors can create order, mitigate dispute and realize mutual gains. The institutional change process at this level still occurs discontinuously, taking from one to ten years. Continuous processes occur at the fourth level, where institutions change all the time following change in economic incentives and the effects of prices on resource allocation and employment. Institutional changes of this level may be a response or an adjustment to changes in prices and/or production output, the typical subjects of Neoclassical Economics.

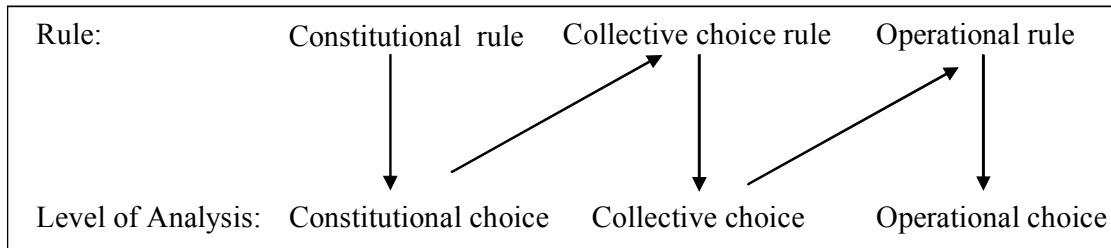


Fig. 2. Linkage between Rules and Levels of Analysis
 Source: Ostrom (1990: 53)

A similar classification of institutional change comes from Ostrom (1990: 53), who bases her classification on levels of actors' roles in an action situation. She classifies institutional change, in the sense of rules, into the levels of operational choice, collective choice and constitutional choice (Figure 2). This classification is useful for analyzing institutional change taking place in an action arena. Like Williamson's classification, Ostrom also distinguishes institutions by their formal and informal status.

Analysis at the operational-choice level aims at analyzing institutions directly affecting everyday decisions made by resource users concerning when, where and how to withdraw resource units; who and how action should be monitored; and what sanctions should be assigned to rule-breakers and what rewards given to those complying with the institutions. A higher-level analysis occurs at the collective-choice level, where analysts are challenged to examine the rules used by the resource users—or at least those assigned to occupy collective-choice positions or positions of external authorities—in making the operational rules. In other words, the analysis is aimed at examining the rules upon which the creation of operational rules is based. The way common-pool resources are used is actually decided at this level.

The most important decisions are taken at the constitutional-choice level, the aim of which is to examine rules deciding who is eligible to work at the collective-choice level and to determine the specific rules to be used in making collective-choice rules. In other words, an analysis of such decisions uncovers the rules that shape collective-choice rules. In short, according to Ostrom (1990: 53), the processes of appropriation, provision, monitoring and enforcement occur at the operational level. The processes of policy making, management and adjudication of policy decisions occur at the collective-choice level. Formulation, governance, adjudication and modification of constitutional decision occur at the constitutional level.

3. Theories of Institutional Change

With respect to institutional change, Kasper and Streit (1998: 396) have classified institutions into two kinds: internal and

external. Internal institutions are the values, cultures or norms embodied in a community or organization. Such institutions evolve through natural mechanisms. The institutions that work well for individuals and organizations are adopted and emulated, while those that do not are discontinued. External institutions refer to formal rule systems usually designed by the government. They are enforced following a top-down pattern on the basis of authority and political power. Institutions are usually difficult to change, even when the outside environment has changed.

Schlüter and Hanisch (1999) have classified different theories of institutional change into three kinds: (1) institutional change based on economic efficiency, whose basic idea is to economize transaction costs; (2) institutional change based on distributional conflict theories; and (3) institutional change based on public-choice theory. These three basic theories derive from different perspectives, which will be elaborated below.

3.1 Institutional change based on economic efficiency

The economic theory of institutional change has three branches (Schlüter and Hanisch, 1999). First branch, which is proposed by Hayek (1968), holds that institutional change takes place unintentionally. Hayek considered institutional change to be an unintended result of intentional action, and put a lot emphasis on the insecurity of the process and the limited possibility of cognition of the interaction of individuals. The second branch contends that institutional change is affected by efforts to protect (enforce) and to distribute property rights. Scholar whose work related to this property right school is, among others, Richard Posner who proposed that institutional change goes in the direction of atomistic property rights (Posner, 1992). The third branch bases thinking about institutional change on the concept of economizing transaction costs.

For all of their differences, the essence of these three economic theories of institutional change is that institutional changes occur due to Pareto improvement and constitute an unintended process, placing efficiency as the main driving force. From such a perspective, change in relative price

and preferences are the main incentives driving institutional change (North, 1990). Change in the ratio of factor prices (such as changes in the ratio of land to labor, labor to capital or capital to land), in the cost of information, and in technology alter the incentives of individuals in their interaction with each other, which in the end may induce institutional change. North (1990) argued that change in relative prices leads parties who are engaged in an exchange transaction to perceive that the parties could do better with an altered agreement. The changes would force them to renegotiate existing contracts. However, the alteration of contracts or agreements is difficult to undertake without the changing of the rules of game. Thus, they must change the rules, which is principally a change of institutions. Those who have a sufficient interest in the change may be willing to spend a lot of their capital to restructure the institution so that it will favor their self-interest.

Changes in preference or taste could also undermine the existing rules. A custom, tradition or norm ignored become unenforced or gradually replaced by a new one when individuals come to feel that hitherto existing rules are no longer relevant in a new environment (North, 1990). This process could also be driven by the external economic situation. There are many social groups or communities willing to change local informal institutions in order to reap short-term economic gains. Local institutions prohibiting fishermen from capturing coral reef fish during a certain period, for example, will be considered as an obstacle to getting an economic return when the price and/or the demand for such fish increases significantly. The actors involved in this situation will then attempt to negotiate in order to change or remove the existing rules.

A question emerges: who are the agents of change? According to North (1990), the process of institutional change is mainly undertaken by individual entrepreneurs in a group or organizations responding to the incentives embodied in an institutional framework. The organizations in which institutional change may occur include firms, political organizations, government agencies, and communities. Thus, agents of change can include not only the individual entrepreneurs, or a group of economic actors, but also any

actors who become involved in activities that cause dynamic change in organizations where institutions exist.

3.2 Distributional-conflict theories of institutional change

Distributional-conflict theories of institutional change are principally based on the assumption that each strategic actor in an action situation has different interests and power, which dispose the actors to become involved in conflicts of interest. To resolve the conflict, the actors attempt to find some solution according to power resources that they have. The actors who can control power resources such as information, political access and capital, tend to control and influence the process of institutional change and, finally, resolve conflicts by changing or creating rules that favour their interest. The target of such change is to satisfy the interests of individuals, not to achieve collective interests (Knight, 1992: 146). The change processes themselves can emerge either intentionally or merely as a consequence of the pursuit of strategic advantages.

Distributional-conflict theories of institutional change are a universal theory in the sense of its capability to explain institutional change at all institutional levels, and applicable to both formal and informal institutions. Changes in informal rules such as conventions, social norms and values that are inherent in a community can be accomplished intentionally, due to different interests and asymmetries of power (Knight, 1992: 147). According to Knight (1995), changes in the distribution of power give self-interested actors an incentive to change their institutional setting toward one that favors their interest (Knight, 1995). He further emphasized that the new institutional setting reflects the self-interest of the economic actors, regardless of whether the change will generate a more efficient institution or not. Knight (1992) contends that it is better to explain the on-going development of social institutions as a by-product of conflict over distribution gain than as a Pareto-superior response to collective goals or benefits.

Regarding power, Knight (1992) defined it as people's ability to affect other people to act in accordance with their wishes. With respect to institutional development, he

provides the following example: 'A' is more powerful than 'B' if A intentionally or unintentionally can force B to adopt a rule whose main idea comes from A or which is made by A, even though, in the end, the benefit of the institution may be distributed to both A and B. The actors or groups of actors who possess more power will be in a better bargaining position to force the weaker groups to comply with institutional rules, whether they want to do so or not. They respect these institutional rules not because they agree with them, nor because the rules evolve as Pareto improvements, but simply because they cannot do better than to do so.

Having discussed asymmetric power's influence on institutional change, we arrive at a question: What kind of power needs to be possessed by strategic actors in order to influence institutional change or to create a new social institution? With respect to this, Knight (1992: 175) offered several key components, which he calls "power resources"; these include information, organisability, credible commitment and sanction power.

- (1) Information is needed in order to compete. Strategic actors who endeavor to control information and are familiar with the expectations and strategy of those with whom they interact have a greater potential to win the competition. With the mastery of information, they can choose a strategy that can maximize their individual benefits. In other words, they can change an established institution or create a new one in accordance with their wishes.
- (2) Organisability is important primarily at the political level because they can influence decision-making process. The actors who have good organisability will likely have better bargaining power than those who do not. They can better organize and act collectively.
- (3) Credible commitment is a believable attitude demonstrated by actors that they will in fact do what they claim to. Actors with good credibility of commitment, in other words those with a good reputation, will more easily convince other actors. With this power resource an actor can determine the choices of other people (Knight, 1992).

- (4) Sanction power is a mechanism used to enforce external institutions, that is, a threat of sanction by a third-party enforcer. It is a common feature of many social institutions, such as state or powerful group enforcement of sanctions against prohibited actions. With this power, a group of actors can force others to accept their alternative. It can be employed so as to discourage a certain strategy of actors. To be a successful deterrent, the sanction must be sufficiently severe so as to reduce the potential benefit of violating the institution, to the point that this is no longer the dominant and preferred strategy (Knight, 1992).

3.3 Public choice theories of institutional change

Public choice theory may also serve as an approach for explaining institutional change. Schlüter and Hanisch (1999) considered it to be a very young branch of institutional-change research. It focuses on discussion of government's role in changing or creating institutions, and maintains that government or political parties act as the driving force or the central agent of change (Sened, 1997). Therefore, public choice theory of institutional change focuses on intentional change of formal institutions.

To sum up, we have discussed different theories of institutional changes. Having sorted through an abundance of references on the subject, we find three main perspectives for explaining institutional change. First, institutional change is explained on an economic basis where efforts to obtain efficient transaction costs become the main driving force. Second, institutional change is explained by distributional-conflict theories, which consider redistribution of coercive and bargaining resources of power to be the main source of institutional change. Third, institutional change can be understood through public choice theories, according to which government or political parties act as the main driving forces of change. In explaining institutional change, the economic approach has three branches. The first says that institutional change occurs unintentionally, and that changes themselves are only by-products of intentional actions.

The second branch argues that institutional changes are affected by efforts to design, enforce or protect property rights, and the third is based on transaction-cost theories, which argue that institutional changes are the consequence of efforts to minimize transaction costs. Distributional-conflict theories hold that institutional changes are triggered by conflict of interest. Efforts to resolve conflict bring about the emergence of a new institution. These theories emphasize that those parties that control power resources such as information, organisability, and sanction power will be able to control conflict and direct institutional changes in accord with their interests.

4. Materials and Method

This research was conducted in Gili Indah village, West Lombok, Indonesia, from May until June 2003. In collecting empirical information, we applied a triangular technique: i.e., a combination of interviews, direct observations and document analysis. Data collection with interviews involved 42 respondents representing different stakeholders from varied levels. The interviews were guided with semi-structured and open-ended questionnaire, while observations were carried out through participating in community activities that relate to the research questions. The analyzed documents were books, journals, official archives, project reports, personal as well as official documents. The collected empirical information was then analyzed qualitatively using mainly analytical framework developed by Ostrom (1990).

5. Empirical Findings and Study Results

5.1. Role of Local Institution in Coastal and Marine Resource Management in Indonesia

Coastal communities in a number of regions of Indonesia, particularly in the eastern parts, recognize traditional concepts of marine resource property rights, which, they call *Hak Ulayat Laut* (HUL). Conceptually this refers to a sea tenure system, i.e., an institutional arrangement embedded in coastal communities that traditionally regulates a bundle of rights and responsibilities over marine resources (Wahyono, 2000). These

consist of a number of local institutions restricting the pattern of marine resource use, setting physical boundaries of resources, imposing sanction systems, determining property right holders, and so on. Generally, these rules relate closely to fishing rights over a certain fishing ground, which includes rules on fishing methods, fishing equipment, fish size, and patterns of fish collection, sharing and purchase.

Furthermore, Wahyono (2000) expressed that these local rights vary from one place to another. In Maluku, we recognize *sasi* system. It is a social agreement among community members on how to manage and use fish resources. Bugis-Mandar communities in South Sulawesi know a local institution that they call *rompong* system, i.e., a traditional set of claims to marine areas, in terms of both marine fish cultivation and fishing grounds, which exist in the Bugis-Makassar communities of South Sulawesi (Satria et al., 2002). In the district of Sangihe-Talaud, North Sulawesi, fishermen are tied with a *seke*, i.e., a mechanism of fishery resource management. According to the *seke*, coastal communities in this district recognize three main fishing grounds: (a) *Sanghe*, i.e., fishing grounds within or around coral reef systems, (b) *Elie*, i.e., offshore, the furthest fishing grounds from the mainland, (c) *Inahe*, i.e., fishing grounds between the other two (Wahyono, 2000). In Lamalera village, District of Lembata, East Nusa Tenggara, there is a tradition of *Ola Nua* restricting fish capturing activities. They apply some restrictions, such as focusing on catching large-sized fish and fishing restriction only from May to September (Oleona and Bataona, 2001). In addition, *Ola Nua* also prohibit fishermen from catching whales in puberty or ones that have recently given birth and apply selected fishing equipment. These traditions that regulate fish size, establishment of a closed season and so on are attempts to protect the resources from greedy exploitation.

Local institutions on coastal and marine resource management are also recently found among coastal communities of Lombok, such as in the villages of Tanjung Luar, Pemongkong, Ekas Bay, Sariwe Bay and Jukung Bay, in the district of East Lombok. These *awig-awig* are on zoning of inshore fishing ground, coastal zoning and restriction of fishing equipment. For instance, *awig-awig*

in Ekas Bay divides the region into three zones: (a) Zone I, from the coastline up to three miles into the sea, measured at the lowest ebb tide; (b) Zone II, between three and six miles from the coast; and (c) Zone III, over six miles from the coast. The first zone is allocated for traditional fishermen who apply simple fishing technology, such as *pancing*, *jala* (casting nets), *bubu* (plaited rattan or bamboo fishing traps), *bagang*, spears, arrows and other simple fishing tools. In this zone, trawl/dragnet, mini trawl, long line, *muroami* and other fishing devices of the same or higher class are forbidden. The same restrictions apply to Zone II as well. All fishing devices allowed in Zone I can be applied here, however. Zone III is allocated for all fishermen in the sense that all fishing technologies except bombs and other destructive fishing tools can be used (Satria et al., 2002). In addition to a zoning system, the regional *awig-awig* also sets a number of more specific restrictions.

In communities along the coastal region of West Lombok district, a number of local rules with respect to marine resource protection also exist. In Kayangan and Sukadana, coastal villages located in the northern part of Lombok Island, two local rules regarding marine resource protection are found. The fishermen community of Kayangan applies a *sawenan* concept (Hidayat, 2005), i.e., a closed season for fishing, usually from the first of July or August to the 31st of July or August every year. The exact schedule (whether in July or in August) is usually determined through a convention of all fishermen members of the village, led by the *mangku* (the leader of traditional fishermen). The beginning of *sawenan* is signaled by hanging out flags at the border of the village.

The *Sawenan* is effective not only for Kayangan fishermen but also for those who come from other villages. Therefore, as the closed season begins, the Mangku will send letters to other village leaders, informing them that during a certain period of time the fishing activities within Kayangan waters are prohibited. Therefore, those from other villages cannot break the restriction by pretending that they do not know the closed season schedule. The end of the period is signaled by a big traditional ceremony called *nyawen*. On that day, the fishermen are

allowed to capture fish again. However, all of caught fish must be dedicated to the ceremony's needs. No fisherman is allowed to take the fish home. Other food needed like rice, spices, vegetables or cakes will be provided by the fishermen's families. In addition to the feast, the community member will present any kinds of traditional shows, such as dances, songs and so on to brighten the occasion.

The prohibition of fishing during the *sawenan* is highly respected due to the heavy sanctions imposed on violators (Hidayat, 2005). Those who offend against the restriction will be made to stay in the beach waters for one hour while being watched by all villagers. In addition, he must also hold a party at the beach dedicated to the villagers, especially the fishermen and their families, for which he needs to slaughter a goat, and provide rice and other food. This is considered to be a ceremonial meal in consequence of the violation. This sanction is so effective that no fisherman ever fishes during the period. Fishermen of Kayangan village respect the restrictions established by their *awig-awig*.

In addition to the prohibition of fishing during the *sawenan* period, the community of the village is also prohibited from applying destructive fishing methods. According to the local rules, bombs, poison, *Muroami* and other fishing methods considered damaging to the marine environment are not allowed. The rules also forbid cutting down mangroves or other kinds of coastal trees and taking away pieces of coral reef, either dead or, moreover, live specimens. The sanctions related to these restrictions vary, ranging from the necessity of putting the reef back into the sea, to social sanctions or handing the violators over to the police, particularly those suspected of using destructive fishing methods.

In Sukadana village, 10 kilometers north of Kayangan, there also exists *awig-awig* prohibiting destructive fishing methods. Violation of this rule will also provoke a heavy sanction: a penalty of between Rp5,000,000 and Rp10,000,000 (\$625 to \$1,250), depending on the severity of the violation (Hidayat, 2005). Bomb and poison users are regarded as the biggest offenders and, without any mercy, will be given the maximum (heaviest) punishment. Besides that, boats, motors or other fishing devices proven to be used during the violation must be

handed over to the fishermen's association. If the violators repeat the same act, they will receive a traditional punishment in the form of severe "beating". A third time offender will be brought to the police and dealt with according to the prevailing formal laws. These rules, as with the others, are normally effective enough to halt destructive fishing activities.

5.2. *Awig-awig* for Coral Reef Management in Gili Indah Village, West Lombok

In Gili Indah, there has been three *awig-awigs* on coral reef management. Two of them are for preventing destructive fishing practices, while the other one deals with conflict resolution.

(1) First *awig-awig* on prohibiting blast fishing

This *awig-awig*, which came into existence in 1999, only consists of two kinds of social sanction applied to those caught blast fishing. First, nobody is allowed to accept any kind of invitation for a social event from the blast-fisherman, and second, no blast-fishermen will receive administration services from the village. This sanction worked effectively only during the first few months of its implementation. There was indeed a case where one blast-fisherman stopped his destructive fishing activities because of this sanction (Hidayat, 2005). However, in the following months, people did not respect it anymore. The community members were not afraid of the social sanctions. Blast-fishermen living outside Gili Indah also did not show any respect to the *awig-awig*. Finally, it became utterly ineffective and fishermen resumed applying destructive fishing methods as before. This raised many complaints from diving companies (Bachtiar, 2000). How this *awig-awig* came into existence and why it was not effective will be further discussed in **Section 5.3**.

(2) Second *awig-awig* prohibiting blast fishing

This *awig-awig* came into force on 19 March 2000. As with the first, this *awig-awig* is also very simple. It merely consisted of three stipulations regarding blast fishing, as follows: (a) fishermen who capture fish using bombs or potassium or other poisonous substances will be arrested. In front of the fishermen's society, SATGAS, and village officials, the arrested violator will be

questioned with respect to their activities. They will then be requested to sign an agreement on not repeating the violation, and must pay a fine of up to Rp10,000,000 (\$1,250). If they cannot afford to pay the penalty, they will be sent to the police to be processed according to formal law. (b) If the violators are rearrested and proven to have repeated the same violation, the fishermen's society will destroy the fishing equipment used during the violation. Additionally, the violator must also repeat the first sanction. (c) If a third time offender is caught, he will be traditionally punished by enduring a severe "beating".

(3) *Awig-awig* on conflict resolution

Another *awig-awig* effective in Gili Indah is one concerning the resolution of conflicts between fishermen and TBOs. It is called the *awig-awig* on Coastal Zoning of Gili Indah Islands. This was the first *awig-awig* formalized by the village administration, issued on 28 September 1998. Three years later, the village made changes to some parts of its content. The revised edition was then launched on 1 September 2001.

The revised *awig-awig* consists of 10 sections and 33 articles. Section one discusses about general definitions, while section two to section four respectively discusses zoning of the coastal areas of Gili Air, Gili Meno, Gili Trawangan. Section five is related to zones for diving and fishing, section six is on stipulations regarding marine biota collection and pearl-clam culture, and section seven concerns with institutions and financial sources for management tasks. Section eight is about sanctions, while section nine lays down transitional stipulations, and the last is a closing section. Based on this *awig-awig*, as stated in sections two to section four, use of the coastal regions of Gili Indah is divided into six zones, A, B, D, E, F and G (see **Figure 3** and **Table 1**).

Of the articles regulating zoning as described above, there is an article that firmly establishes several locations specially intended for diving activities, where other types of activities, particularly catching fish using *Muroami*, are not allowed. Additionally, there are also articles on sanctions, prohibition of fishing using bombs and potassium, prohibition of the mining of coral stones and collection of large shellfish and turtles, neither for commercial nor personal purposes.

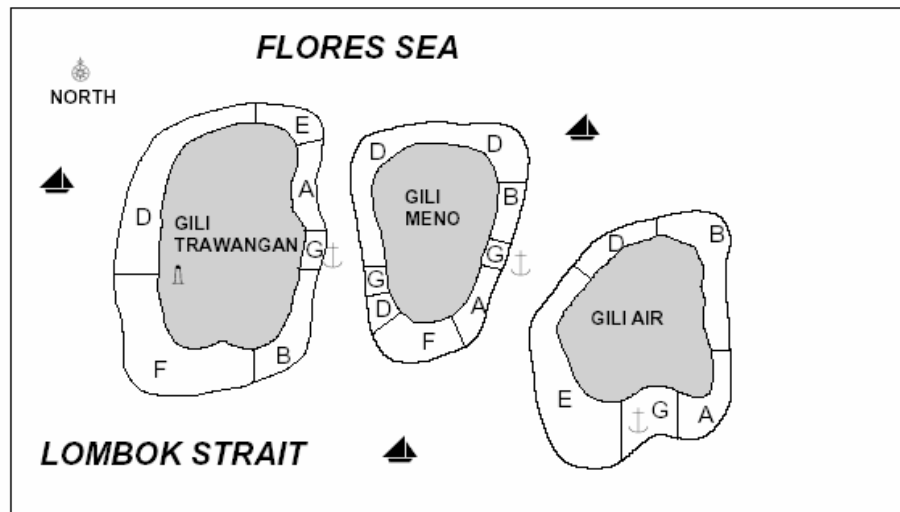


Fig. 3. Zoning of Coastal Areas of Gili Indah according to *Awig-awig* on Conflict Resolution
Source: Bachtiar (2000)

Violation of the stipulations determined within this *awig-awig* will be monetarily sanctioned. Violators must pay Rp15,000 (\$1.8) for anchoring within a forbidden location; Rp1,000,000 (\$125) for fishing using Muroami; Rp100,000 (\$12.5) for using a Mogong; and Rp5,000,000 (\$625) for diving within a prohibited location (i.e., a Muroami fishing ground) (see **Table 7-3**). The money collected from penalty payments are saved by the village administration to be used for public facilities construction.

If we have a closer look at **Table 1** and **Figure 2**, we find that fishermen are prohibited from applying Muroami in all zones. When they fish within diving or landing zones they have to pay Rp1000,000. Actually, diving companies also must pay

Rp5,000,000 to fishermen if there are divers dive within *Muroami* locations (i.e., beyond the zones stipulated in the *awig-awig*); however, they would not dive there, because the coral reefs which exist in these locations are too deep. In fact, these are not good locations either for diving or for fishing. Thus, Muroami users demand that they should be allowed to use the same locations as diving companies. Fishermen considered that the zoning stipulations were unfair and damaged their interests; therefore they became dissatisfied with or did not totally accept the *awig-awig*. This continued to be a source of conflict, which finally erupted into a physical confrontation on 17 August 2002. This conflict motivated the conflicting parties to make changes in the *awig-awig*.

Table 1. Allowed and Prohibited Activities and Sanctions within the Zoning System for the Coastal Areas of Gili Indah

Zone	Allowed Activities	Prohibited Activities	Sanctions
A	<ul style="list-style-type: none"> • Diving • Snorkeling 	<ul style="list-style-type: none"> • Fishing with Muroami • Fishing with Mogong • Angling, spearing or shooting fish with arrows from boats or by trampling • Setting anchors of tourist (regular) boats • Setting anchor of fishing boats • Seaweed cultivation 	<ul style="list-style-type: none"> • Penalty: Rp1,000,000 • Penalty: Rp100,000 • Penalty: Rp15,000 • Penalty: Rp50,000 • Penalty: Rp15,000 • Removal of seaweed cultivation facilities
B	<ul style="list-style-type: none"> • Diving • Snorkeling • Angling, spearing or shooting fish with arrows from boats 	<ul style="list-style-type: none"> • Fishing with Muroami • Fishing with Mogong • Angling, spearing or shooting fish with arrows by trampling • Setting anchors of tourist (regular) boats • Setting anchor of fishing boats • Seaweed cultivation 	<ul style="list-style-type: none"> • Penalty: Rp1,000,000 • Penalty: Rp100,000 • Penalty: Rp15,000 • Penalty: Rp50,000 • Penalty: Rp15,000 • Removal of seaweed cultivation facilities
D	<ul style="list-style-type: none"> • Diving • Snorkeling • Angling, spearing or shooting fish 	<ul style="list-style-type: none"> • Fishing with Muroami • Fishing with Mogong • Setting anchors of regular (tourist) boats 	<ul style="list-style-type: none"> • Penalty: Rp1,000,000 • Penalty: Rp100,000 • Penalty: Rp50,000

with arrows from boats or by trampling	• Setting anchor of fishing boats	• Penalty: Rp15,000
--	-----------------------------------	---------------------

Table continued

Table 1 continued

Zone	Allowed Activities	Prohibited Activities	Sanctions
E	<ul style="list-style-type: none"> • Diving • Snorkeling • Angling, spearing or shooting fish with arrows from boats or by trampling • Seaweed cultivation • Setting anchors of fishing boats 	<ul style="list-style-type: none"> • Fishing with Muroami • Fishing with Mogong • Setting anchors of regular (tourist) boats 	<ul style="list-style-type: none"> • Penalty: Rp1,000,000 • Penalty: Rp100,000 • Penalty: Rp50,000
F	<ul style="list-style-type: none"> • Diving • Snorkeling • Angling, spearing or shooting fish with arrows from boats or by trampling, fishing with nets • Seaweed cultivation • Setting anchors of regular (tourist) boats 	<ul style="list-style-type: none"> • Fishing with Muroami • Unloading passengers 	<ul style="list-style-type: none"> • Penalty: Rp1,000, 000 • Penalty: Rp15,000
G	<ul style="list-style-type: none"> • Setting anchors of regular (tourist) boats • Unloading passengers 	<ul style="list-style-type: none"> • Fishing with Muroami • Seaweed cultivation 	<ul style="list-style-type: none"> • Penalty: Rp1,000,000 • Removal of seaweed cultivation facilities

Source: Kantor Desa Gili Indah (2001); Note: Rp1 ≈ US\$0.125 or US\$1 ≈ Rp 8,000

In March 2003, they agreed to make changes in the rules and add additional points to the stipulation of zoning and sanctions. The additional sanctions say that: (1) the association of fishermen has the right to earn money from Ecotrust amounting to Rp3,000,000 (\$375) per month as a compensation for not being allowed to fish in certain zones. (2) If Ecotrust does not pay the money for three months, the association of fishermen may consider the agreement invalid, and may resume catching fish as they did prior to the existence of the agreement. (3) If association members fish within a forbidden zone, SATGAS has the right to arrest them and confiscate their fishing devices for one month; nevertheless they still have the right to receive the compensation from Ecotrust. (4) If a second violation occurs, the fishermen will receive the same sanction as for the first infraction, but without receiving the compensation. In addition to those changes, the new agreement explicitly gives SATGAS

the authority to implement the rules. It may arrest whomever is suspected of operating *Muroami* within the forbidden areas. These changes in the zoning and other additional stipulations have not yet been formally established as a village decree; however, the concerned parties agreed that these are considered to be a valid change of the rules.

Given the process of emergence, community members have formalized the rules intentionally. Therefore, these are categorized as formal rules which are continuously co-evolving in communities, in line with the changes of the environment, in spite of their only regulating simple matters at the village level. This differs from informal rules which only refer to those coming into existence unintentionally through a process of social selection, spontaneous emergence and exchange coordinated by the market (Knight, 1992).

5.3 Processes of Institutional Change

The analysis of institutional change undertaken in this section principally refers to the three levels of institutional analysis elaborated by Ostrom (1990), which have been discussed in **Subchapter 2**. Ostrom divided the analysis into operational rules, collective-choice rules and constitutional-choice rules. **Section 5.3** focuses on analyzing the process of change in operational-level rules taking place at the collective-choice level. At this level, there are different actors and stakeholders involved, such as village officials, village elites, LMNLU, SATGAS, the fishermen's association, and Ecotrust. Meanwhile, at the operational-choice level, there are local communities, SATGAS, Ecotrust, APGA, and *Kelompok Pengelola Lingkungan Terumbu Karang* (KPLTK) acting as the rule enforcers.

Analysis of collective-choice rules (the way the actors at the collective-choice level make operational-level rules) and constitutional-level rules (the way actors come into the collective-choice level and obtain authority to work there) will be found in **Section 5.3.2**. Since the study has predominantly focused on issues of rule implementation and on local institutions, the analysis at the two higher levels is not as detailed as that concerning the operational rules level. This is so because I have not found clearly formalized rules working at these two levels. What I have found was only traditional and governmental regulations that seem to be applied to all kinds of village policy making, and are not specifically related to coral reef management.

5.3.1 Change in Operational Rules

The following three cases demonstrate operational-level rule changes at the village level. The first two are concerned with changes in the rules for stopping destructive fishing practices, while the last case is on conflict resolution.

Case 1. The process of emergence of the first local rule prohibiting destructive fishing

Figure 4 describes the emergence of the first *awig-awig* prohibiting blast fishing. As mentioned several times previously, this *awig-awig* came into existence in order to deal with the uncontrollable proliferation of environmentally destructive fishing practices. TBOs and some fishermen from the local community, who were very concerned with this situation, expected to have a local institution dealing with this problem. Village administration officials and some village elites responded to their concern (Hidayat, 2005). By playing the role of policy makers at the collective-choice level, village administration officials and village elite attempted to formulate an operational rule that sought to restrict destructive fishing activities. For implementation, the rule was then handed over to local community members. This means that the local community plays a role as rule executor at the operational level.

As shown by **Figure 4**, implementation of the rule was handed over to the local community. Why was it not dealt with by the village administration, which officially serves as the village's ruling body? This question can be answered by looking closely at what actually happened. The rule was intended to stop blast-fishing, and this supported the interests of some environmentally concerned fishermen and TBOs. However, on the side of blast-fishermen, the rule essentially hurts their interests. The village administration officers avoided implementing the rule because they did not want to be regarded as treating community members unjustly or to be accused of siding with the TBOs and opposing the interests of fishermen. Both blast-fishermen and TBOs are inhabitants of the same village and have the right to receive equal treatment from village officials. In other words, specific to this case, the village administration officials, who should be the servants of all village groups, would be considered to be unfairly acting against the fishermen's interests if they served as implementers of an *awig-awig* that was seen as being more beneficial for TBOs. For the village officials, this situation became a dilemma; thus they made a decision to hand over implementation authority to local community members

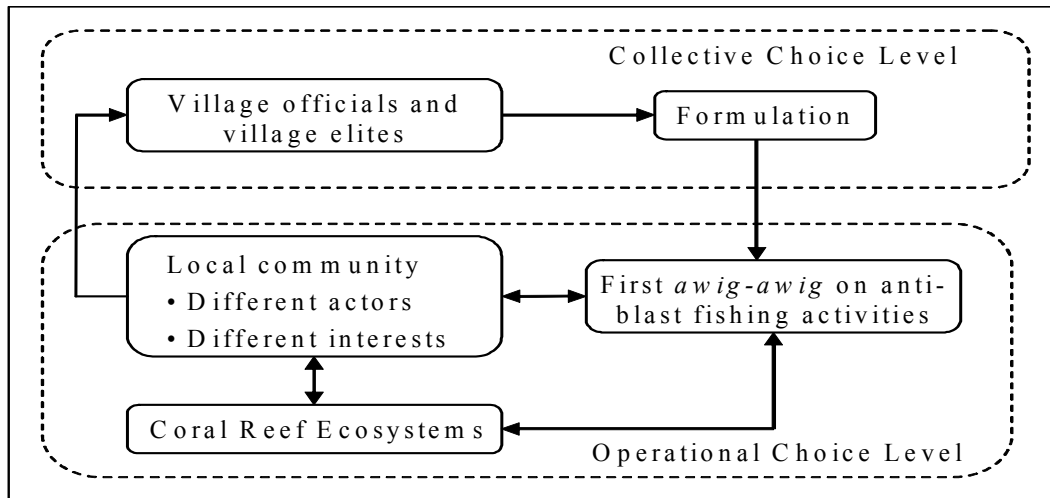


Fig. 4. The Mechanism of the Emergence of the First *Awig-awig* Prohibiting Blast- Fishing in Governing Coral Reef Ecosystems
Source: Hidayat (2005)

However, the implementation was in fact ineffective. This could have been caused by several factors: (1) the *awig-awig* does not specifically determine a group authorized to implement it: to conduct patrol and monitoring tasks. Self-enforcement by the villagers could not work because they tended to flout the rule through, for example, hiding the suspected violators if the latter happened to be their family members, relatives, or at least close friends or neighbors. (2) The *awig-awig* did not receive complete support from the community. They considered that those who played decision-making roles at the collective-choice level were not being representative of all community groups. In other words, they did not represent the entire community but only part of it. (3) It also had no support from the higher government bodies.

Case 2. The process of emergence of the second local rule prohibiting destructive fishing

The ineffectiveness of the first attempt to formulate *awig-awig* that would stop destructive fishing practices resulted in a reaction with protests from the TBOs. They insisted that the village administration was responsible for the failure. In a village meeting with community members that took place on 1 January 2000, they proposed to create a local task force to take over security

tasks regarding the reef ecosystems. However, at that moment the village officials did not give a satisfactory response (Hidayat, 2005). Strongly motivated and willing to take real measures to secure the reef ecosystems, eventually on 16 January 2000 some young people from Gili Trawangan who were concerned with coral reef ecosystem sustainability successfully built the task force called SATGAS. On 1 February 2000, the SATGAS Gili Meno unit was built and followed by SATGAS Gili Air on 15 March 2000. At first, SATGAS could not tackle the work well. This is so because it had no right to work on behalf of the villagers, who did not give them a legal mandate to implement the established rules. Realizing that they were facing institutional problems, they initiated the creation of a new *awig-awig*. Then, they collaborated with North Lombok fishermen, who at the same time were facing fishing problems resulting from blast fishing practices. For easing the achievement of their goal, on 16 March 2000, the fishermen formed LMNLU, which aimed at facilitating the activities of those who were concerned with destructive fishing practices toward establishing *awig-awig* against blast-fishing.

Taking part in the formation process of the LMNLU were the heads of the entire village administrations located along the coastal region of North Lombok, plus the

Camats of the subdistricts of Tanjung, Gangga, Gondang and Bayan. There was also a representative of BKSDA. No sooner had the LMNLU been established than it executed its first task. Together with SATGAS, on 19 March 2000 it created the second *awig-awig* against blast fishing, which gave SATGAS complete authority for implementation. The

awig-awig itself was signed by the heads of LMNLU, SATGAS, and the heads of the village administrations. The strength of this organization at its birth was politically quite robust because it was supported by the village and government officials, which is proven by their presence at the event.

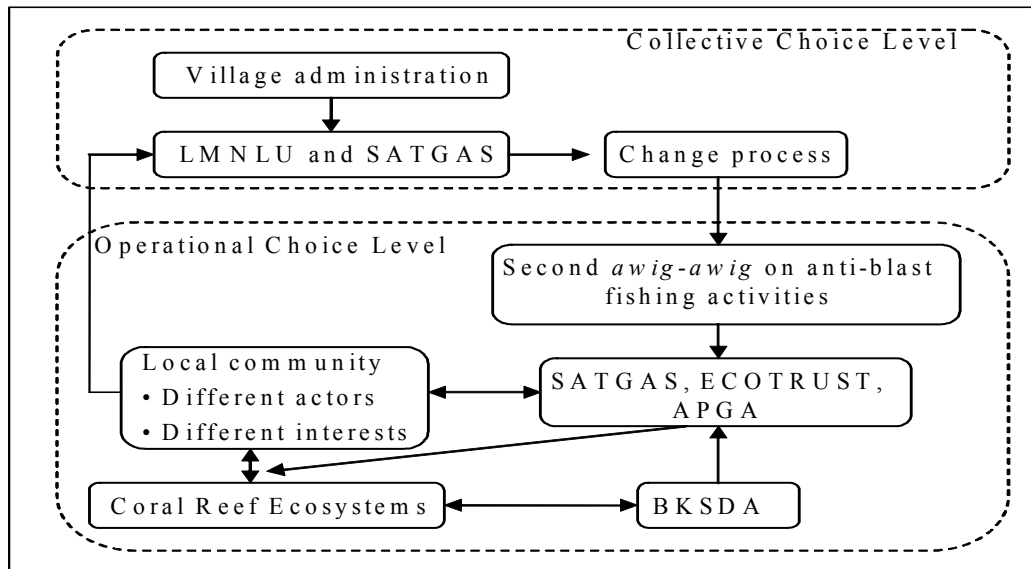


Fig. 5 The Mechanism of the Emergence of the Second *Awig-awig* Prohibiting- Blast Fishing in Governing Coral Reef Ecosystems
Source: Hidayat (2005)

Success in establishing a new *awig-awig* did not, however, mean that SATGAS could immediately undertake the patrol and monitoring tasks. They were then faced with financial problems. In order to patrol and monitor, they needed to cover operational cost. Initially, they managed it through funds raised among SATGAS officers and some TBOs. However, the collected money was still far from being enough to conduct even a weekly patrol. In addition, they could not always count on receiving these contributions regularly. Due to such difficulties, in April 2000 SATGAS officers and some TBOs initiated the building of Ecotrust, which serves as a means for raising conservation funds to support SATGAS's activities. In April 2001, the TBOs residing on Gili Air formed APGA, which has the same purpose. The emergence of the two local organizations has helped SATGAS raise funds so that they can better fulfill the tasks.

Figure 5 shows the mechanism of the emergence of the second local institution (*awig-awig* on blast fishing), which principally is similar to the first one. What makes it different is the presence of LMNLU and SATGAS at the collective-choice level. As occurred during the first process, their tasks are also to formulate *awig-awig*, the implementation of which is then handed over to SATGAS, Ecotrust and APGA each of whom has clearly defined authority and responsibility. In addition, the new *awig-awig* also obtained informal political support from BKSDA.

Compared to the first edition, the modified *awig-awig* had the possibility to work more effectively. There are some factors that may have contributed to this: (1) the appearance of LMNLU and SATGAS at the collective-choice level. The former represents a fishermen's community that is concerned with the ecosystems and the latter is much closer to TBOs, which also have the same interest. (2) The handover of authority to SATGAS for the implementation of the *awig-awig* has enabled them to work on behalf of the community members and to be able to implement the ruled fairly, aiming only at safeguarding coral reef ecosystems. Thus, they could treat the violators fairly in spite of having to face their own family members, relatives, close friends or neighbors. (3) The support from the village administration and

BKSDA is also very important. Despite not being involved at the collective-choice level, their encouragement played a strategic role. The BKSDA's involvement could be taken to mean its willingness to share monitoring authority with others. (4) The existence of a clear sanction system, monitoring authority, recognition of rights to organize, and collective-choice arrangements are also very influential. These could be seen to approximate the conditions for successful collective action in CPR management (Ostrom, 1990).

Case 3. The process of how rules on conflict resolution come into existence

The lasting conflict of interest between fishermen (Muroami users) and TBOs (diving companies) led to institutional change. The change occurred within the framework of finding a solution to this conflict. Investigation by Hidayat (2005) revealed that people were very concerned about the conflict. They suggested to create an *awig-awig* on how to deal with the conflict. Some others proposed that the coastal areas of the village be divided into several zones, which they discussed in several meetings with village administration officials. The idea for zoning was very simple: there could be zones for fishing, diving, seaweed cultivation and boat landing. Each zone would be based on economic activities taking place at the moment in the locality. However, there was a lack of capability regarding how to organize and materialize the idea. In addition, there was insufficient knowledge of how to make measurements for drafting a simple map.

The idea of the local community to formulate *awig-awig* on the issue matched with the concerns of the Coral Reef Rehabilitation and Management Plan (COREMAP) project, whose part in the program was to build the capacity of the local community to conduct resource management. The Regional Planning and Development Board (BAPPEDA), which at that moment became a regional partner of the project, offered the village administration help to facilitate their creation of *awig-awig* on coastal zoning. The BAPPEDA then asked the Research Center for Language and Culture (P2BK) of Mataram University to facilitate the local community in making the *awig-awig*.

Then, the work became the responsibility of P2BK. In other words, P2BK received a project from BAPPEDA in which it would play a decision-making role at the collective-choice level (see **Figure 6**).

In executing the work, P2BK did a survey regarding the coastal zoning wished by the local community. Unfortunately, the survey was not well received. The first meeting (16 May 1998) between local community and facilitators was only attended by a few local representatives of fishermen and none of the TBOs (Hidayat, 2005). The aim of the fishermen coming to the meeting was not actually to participate in the process

of creating *awig-awig*; rather, they expected to receive a soft loan or any kind of financial aid from the government. The second meeting (10 June 1998) was only attended by village officials and some village elites who absolutely did not represent the conflicting groups. However, because the making of the *awig-awig* was a “government project”, which was already budgeted, it had to be continued. Therefore, they continued to carry out the third meeting, on 23 July 1998, with a single agenda to establish zones for the coastal areas of Gili Indah. Finally, on 28 September 1998, Gili Indah village issued its first formalized *awig-awig* (i.e., in written form).

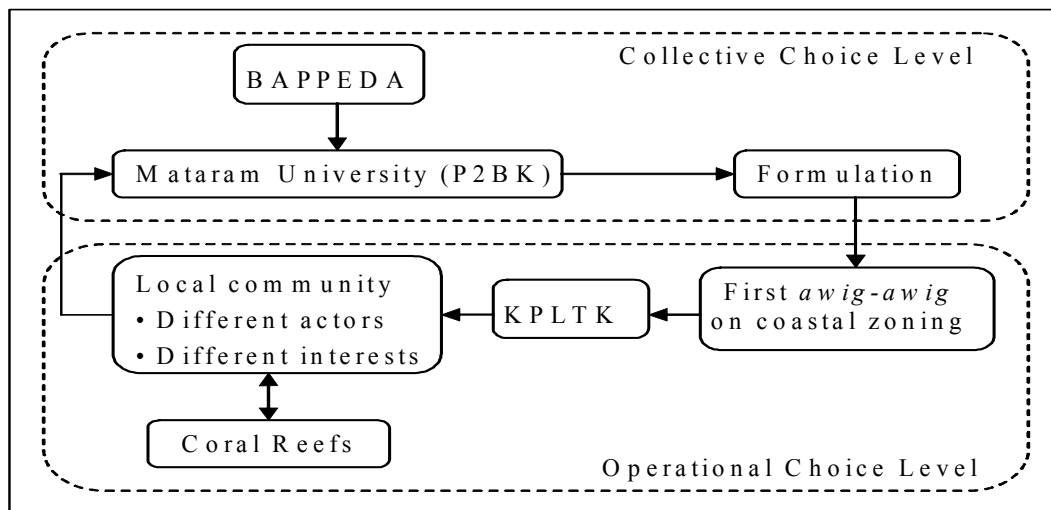


Fig. 6 The Mechanism of the Emergence of Local Institution on Conflict Resolution in Coral Reef Management
Source: Hidayat (2005)

In spite of being totally supported by BAPPEDA, representatives of district governments, and village officials, this *awig-awig* was still ineffective. Based on the findings of this study, there are some likely reasons that may explain this outcome:

- 1) P2BK played a decision-making role at the collective-choice level without having a mandate from the local community. It was only a consultant that carried out an order from the BAPPEDA (government) with the target of formulating and putting in place a new set of rules (*awig-awig*). Because of this situation, it did not receive any support from the local community. This was worsened by the community's antipathy toward the government, due to its bad reputation. The local community called the *awig-awig* a 'government project product'. Therefore, it is not surprising that it did not work at all.
- 2) The *awig-awig* specifically assigns KPLTK (see footnote 5) as the implementer. However, the group, which must be led by the head of the village administration, was never formed. It was to be a top-down-determined organization,

one which would not grow from the ground up. According to Hidayat's findings, the whole people whose names stated in the organization structure of KPLTK have never been consulted for their approval for the position; they were only chosen unilaterally by P2BK (Hidayat, 2005).

- 3) After having had BAPPEDA know the ineffectiveness of the KPLTK, BAPPEDA, always in a command role, then handed the *awig-awig* over to the village administration. The latter was asked to socialize the *awig-awig* among the local community members. The community members categorically refused it, because they felt no necessity to be bound by an institution made without their real participation. Naturally, given this rejection, the village administration had trouble convincing the people to respect the new rule. Therefore, even though it was totally supported by the government, the new *awig-awig* could not function as hoped. This could be a clear indicator that the local community support is far more important than that of the government.

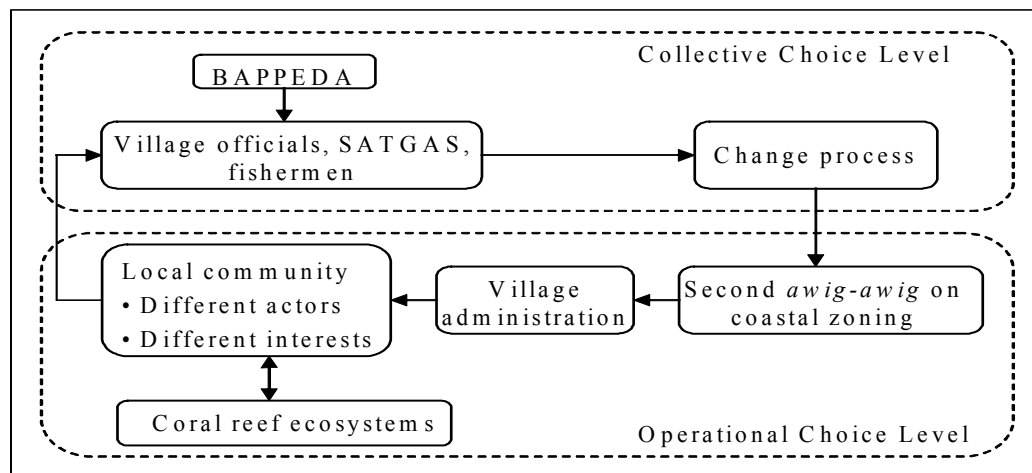


Fig. 7 The Process of Institutional Change on Conflict Resolution in Coral Reef Management
Source: Hidayat (2005)

BAPPEDA, as well as some NGOs which are concerned with the three islands, considered the *awig-awig* to be a failure. As the project initiator, BAPPEDA, was not satisfied with the unsuccessful *awig-awig*. It assumed that the failure resulted from a lack of local community support. Accordingly, it intended to change the rule so that the local community would be given more opportunities to be involved. The change process was executed by the village administration officials, along with some representatives of the fishermen's group and SATGAS (Figure 7). They became new players in the collective choice arena, aiming to change the institution. To achieve the purpose, BAPPEDA provided them with a budget. The change process initially succeeded in drawing elements of the local community to participate. The first meeting for discussing the *awig-awig* revision, on 4 August 2001, was able to attract a number of group representatives. Those who received the mandate from BAPPEDA were also formally successful in executing their task, as proven by the changes in some parts of the institution.

The revised *awig-awig* was published on 1 September 2001. Present at the event were village officials, head of the district government, representatives of BAPPEDA, and other officials. They were satisfied with the rule revision and believed that the new *awig-awig* would work. However, in its implementation, the *awig-awig* failed again. The conflicts of interest between *Muroami* users and TBOs still existed, and people did not show any respect to the newly revised *awig-awig*. Again, the rules existed only on paper. The physical conflict between *Muroami* users and TBOs, which erupted on 17 August 2002, convinced everyone of their failure. The following paragraphs attempt to explain possible reasons behind the repeated failures.

1) The change process had failed to involve representatives of all relevant groups, in particular those involved in the conflict. According to my investigation, not all of *Muroami* users participated in the change process. They were not interested in getting involved because they mistrust the village administration, due to the bad reputation of the latter. They knew that the village administration received money from BAPPEDA, amounting to around Rp15,000,000 (\$1,765), to be used for the process of changing the *awig-awig*,

including its familiarization within the community. Unfortunately, according to some interviewed fishermen (05/F/50; 09/F/30), SATGAS officials, and subvillage leaders, the allocation of the money was not transparent; hence, they strongly suspected that there was a misuse of it by village officials for personal interests. This has resulted in some upsets within the groups, creating a feeling of indifference toward changes in the *awig-awig*. Therefore, in spite of getting support from many elements at the first stage of the process, in the next steps a decline in participation was evident. As a consequence, the change was only executed by a few people, who indeed did not represent all conflicting parties.

- 2) In addition to the increasing indifference to the change process, the rules did not become workable due to the failure of determining who should actually be responsible for their implementation. There were some changes made, but important stipulations were still missing. SATGAS, which had been successful in enforcing the *awig-awig* prohibiting blast fishing, was not given the mandate to execute the new version. In other words, unclarity in allocation of responsibility among entities at the operational-choice level also contributed to the failure. The implementation itself was handed over to the village administration.
- 3) The failure to change the institution also resulted from BAPPEDA's attitude, which tried to rush the completion of the work. This is again related to the outcome-oriented approach to the project. As the new rules were receiving resistance or refusal from some community elements, particularly fishermen, BAPPEDA should actually have been more patient: trying to convince them that the *awig-awig* would be beneficial for them, and that they themselves would not be victimized by it. Because the local community has developed a deeply imprinted negative perception toward government officials, it is time consuming to change it.

Let me emphasize that the key to the failure was the disagreement of some fishermen regarding the established coastal area zoning system. The situation of failed attempts at coming to a satisfactory solution

for all concerned moved all parties to conscientiously attempt to again modify the rules toward a workable means of conflict resolution. This process was initiated by the conflicting parties themselves. Both fishermen and diving companies expected to immediately end the conflict, which was counterproductive for both sides. Learning from experience, they did not want to repeat the same failure. Therefore, they made the changes by themselves without much

intervention from external stakeholders. The village administration, which previously dealt with the failed attempts at change, now only acted as a facilitator. Those who played roles at the collective-choice level were Ecotrust, SATGAS, and the Fishermen's Association. The first represent diving companies, while the last represents fishermen, specifically Muroami users. Meanwhile, SATGAS also got involved, with respect to its role as law enforcer.

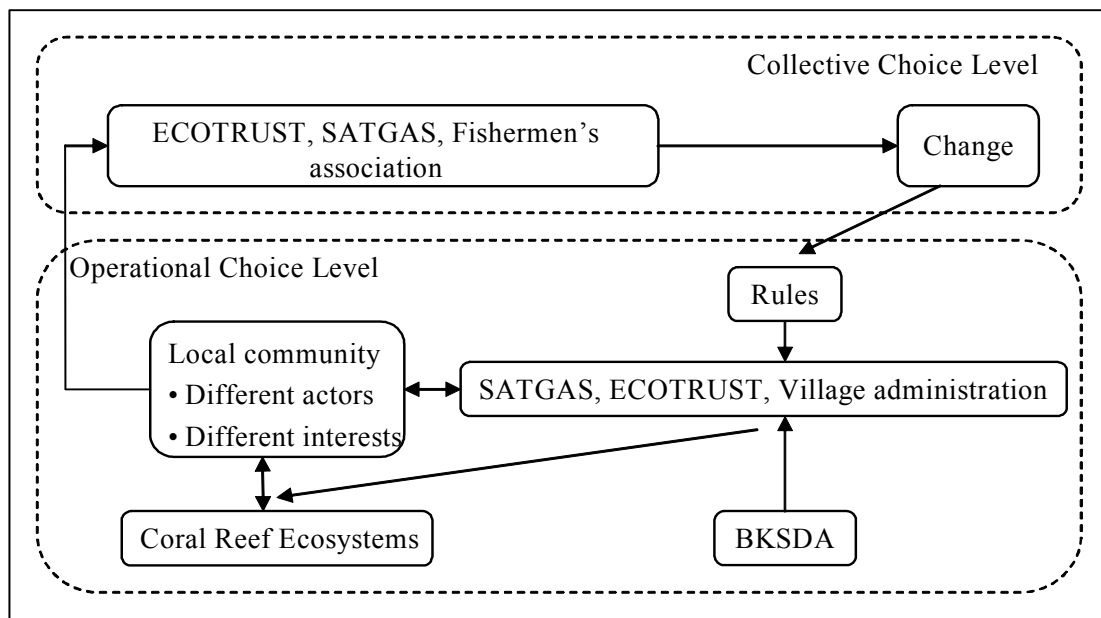


Fig. 8 The Final Process of Institutional Change on Conflict Resolution in Coral Reef Management

Source Hidayat (2005)

The process of change took place between 17 August 2002 and 5 March 2003: a time of negotiation, within which many meetings and discussions on coastal zoning took place. Ecotrust, SATGAS, and the fishermen's representatives participated in these negotiations, whose principal aim was to change the local rules so as to satisfy all interests and make way for a solution to the chronic conflict. After eight months of tough negotiation, finally, on 5 March 2003, an agreement concerning the establishment of a new coastal zoning system was signed by the head of the fishermen's association and the head of Ecotrust, along with the heads of the village and SATGAS. According to the new

agreement, *Muroami* users are not allowed to fish within certain areas; however, they have the right to receive compensation fees. In addition, SATGAS has the authority to conduct monitoring activities as well as take necessary action against violators of the agreement.

Figure 8 shows how the representatives of each conflicting group changed the local institution. Ecotrust, representing TBOs, and the fishermen's association, speaking on behalf of fishermen, as well as SATGAS, all played an active role in the collective-choice arena. They became involved in negotiations, discussions and made agreements that were satisfactory to all. Meanwhile, the village administration, which in the previous process

had played a central role, only facilitated and mediated the new change process, which took place in a transparent and democratic environment.

According to my investigation, all groups claim to be satisfied with the local rule change. They consider it to be a significant advance. The satisfaction arises from the involvement in the process of representatives of the groups who were actually involved in the conflict. The fishermen, who during the former process of making and changing the rules did not have any role, also feel satisfied because the new agreement can accommodate their interests. The involvement makes them feel that their voice, existence, and interests receive sufficient attention. In addition, SATGAS, which was formerly never completely involved in the process of decision-making, feels satisfied as well, because its role as coast and marine guard is now appreciated. It also conceives the delegation of authority and responsibility to protect marine resources within the Gili Indah area according to the new rules to be a sign of trust from the community to handle the task. Thus, SATGAS officers will have no doubts in implementing them.

5.3.2 The Effect of Collective- and Constitutional-Choice Level Rules on the Change in Operational Rules **Collective-choice level rules.**

Collective-choice rules concerning the way actors and stakeholders make operational rules regarding coral reef management in Gili Indah were not clearly disclosed. I found only two phenomena that could be considered to be collective-choice rules. These are: a tradition of *musyawarah* (meetings) and Act No. 22/1999 on regional government, particularly article 104 concerning a village parliament's (BPD) authority to make village-level policies. In the followings, I explain them and how they may have affected the change of operational rules on coral reef management.

Musyawarah is a tradition in this community to discuss and to find out solutions to village problems. When the community faces an important problem, the village leader, informal leaders, and other village elites representing relevant groups in the community

will meet together at the village office to discuss how to resolve it. This practice can be effective for making agreements among groups in the community or for making rules-in-use, agreed upon by all community members.

As mentioned, article 104 of Act No. 22/1999 authorizes BPDs to make village-level policies. In response to this act, according to an interview with the village leader of Gili Indah, this village has made a policy requiring BPD members to meet at least four times a year to discuss all kinds of village issues, including coral reef management issues and other problems being faced by the village. I consider the tradition of *musyawarah* and the quarterly meetings of village parliament members as collective choice-level rules, which villagers may refer to when they need to define an operational rule or merely to make a change in an existing one. In other words, when villagers need to change an operational rule they will make it through an incidental *musyawarah* or a quarterly meeting.

Constitutional-choice rules.

Another point of interest that need to be looked at more closely is on the question of constitutional-choice rules, i.e., how actors and stakeholders playing the decision roles at the collective-choice level come into this level and have authority to work there. Both of these can be based on tradition and on formal rules. First, a tradition positions leading figures (formal village leaders, informal leaders, influential and prominent figures) as sources of advice for people. Villagers will come to them and consult with them when they need to find solutions to village problems. This tradition has indirectly placed the leading figures at the collective-choice level and has given them, to a certain extent, authority to play important roles, such as policy-making at the village level.

Second, article 104 of the act of 22/1999 may also function as a constitutional-choice rule. As explained above, this act has authorized BPDs to make village-level policies. To a certain extent, this directly allows some leading figures, most of them are members of BPD, to work at the collective-choice level. Moreover, BPD members have

social legitimacy because they are nominated by members of the communities and represent relevant groups existing therein. Therefore, this formal act could be considered to be a constitutional-choice rule, which to a large extent influences the way local elites enter and operate at the collective-choice level. Thus, we see that the tradition positioning leading figures as a source of advice for people and article 104 of the regional government Act enable some actors (individuals) to come into the collective-choice level and have authority to play decision-making roles there, and can therefore be regarded as constitutional rules.

At the end of this section, I will explain on how actors played decision-making roles at the collective-choice level work. According to Hidayat (2005), village officials and village elites (**Figure 4**) made the first *awig-awig* prohibiting blast fishing through the tradition of *musyawarah*. They held a number of meetings before coming into an agreement on making the *awig-awig*. The same method was used by LMLNU and SATGAS when they made the second *awig-awig* prohibiting blast fishing (**Figure 5**). Ecotrust, SATGAS, and the fishermen's association revised the third *awig-awig* on conflict resolution (**Figure 8**) also following this procedure. Some interviewees argued that this end product of *musyawarah* could be accepted as a reliable decision as long as those involved represent all relevant groups in the community.

A somewhat unusual case is the involvement of P2BK (**Figure 6**) at the collective-choice level. According to my investigation, there does not seem to be a single rule on how P2BK should work at the collective-choice level, how it should formulate *awig-awig* and interact with local communities. It is only an external organization that does not have any relationship with the village, except as a consultant that executes an order. Moreover, there are no constitutional rules which brought P2BK into the collective-choice level, giving it authority to work there, except a project contract from BAPPEDA (the project owner). These deficiencies may all have contributed to the failure of the *awig-awig*.

5.4 Discussions and Conclusions

The three described cases—regarding the two failed attempts to formulate *awig-awig*

prohibiting blast fishing and the eventually successful resolution of the conflict between the TBOs and fishermen—lead us to the question: what actually are the motives behind the processes of institutional change? There are strong indications that the changes are affected by the local and external economic conditions, which inevitably force resource users and economic actors to alter their livelihood strategies. The entering of industrial tourism and the emergence of tourism-related livelihoods in Gili Indah have driven economic actors to adapt to the altering environmental situation. The economic actors, mainly consisting of TBOs and fishermen, have therefore played important roles in the change process. Their endeavours in doing so, however, cannot be separated from their economic interests. TBOs, whose livelihood depends on coral reef ecosystems, have a strong interest in protecting the ecosystems from degradation. The same goes for the fishermen, who also insist on maintaining the status quo as an attempt to protect their economic interest. Figure 8 schematically depicts the logic of institutional change phenomena.

Different economic motives among the coral reef users have resulted in a serious conflict between them. Each party in the conflict has claimed that they have the most legitimate right to the resources and, accordingly, their economic interest deserve to be the priority. The lasting, chronic conflict has actually driven some of the actors to re-create or modify institutions. The economic motive is only a trigger, driving the emergence of the conflict. If the different economic motives could be harmonized in such a way that each of the conflicting economic actors receives a fair share of revenue from the resources, there would no longer be an incentive for institutional alteration. The actors wanted to change the rules only in order to resolve the conflict. Both fishermen and TBOs have desired peaceful conditions. They admit that the conflict is counter-productive for their economic activities. The institutional change was merely an attempt to search for a new institutional arrangement that can distribute the benefits equally to the resource users. In other words, the changes are only a by-product of distributional conflict among economic actors.

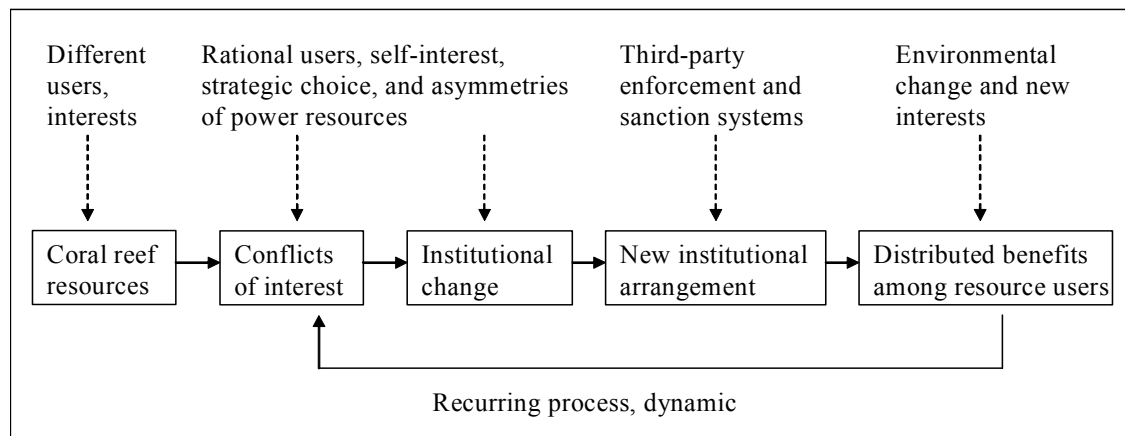


Fig. 9 Dynamic Process of Institutional Change

Source: Hidayat (2005)

The change process itself is affected by actor characteristics. The self-interest of actors, combined with asymmetries of power and resources compels each of the actors to develop a strategy that tries to drive institutional change processes in the direction of their self-interest. The socially distributed benefits are only a by-product of the efforts made toward realizing economic interests. These facts actually only vindicate Knight's (1992) theories of distributional conflict. The lasting conflict among resources user entails that they create a new institution or modify the existing one. This is a recurring phenomenon, in the sense that the institutional change process will not stop at a certain point but, rather, will continually occur in response to changes of external and internal environmental conditions. Change of economic conditions will drive the strategic resource users to change the institutional arrangements in order to continually obtain revenue through them.

The accounts of Knight (1992) about asymmetries of power propose that actors who can control power resources, such as information, organizational capacity, time preferences, sanction power and resource ownership, may control institutional change processes, driving them toward their own self-interest. In Gili Indah, the TBOs could successfully create a new institution, drive institutional change processes, force fishermen to stop their environmentally destructive fishing practices, and exclude them from a certain area. Both cases of institutional changes—on coastal zoning and destructive fishing practices—also vindicate

the Knight's accounts of distributional conflict. The chronic conflict encouraged each of the conflicting parties to create a new institution or to sustain the existing one. Clearly, fishermen prefer to retain the status quo, that is, in this context, a situation without any restrictions. The TBOs wanted to create a new institution, or reactivate the unworkable one, so as to support their economic interests and property rights over the resources.

In the locality, TBOs have actually played the role of strategic actors who think rationally concerning how to maximize their self-interest. They create expectations regarding the resources, based upon which they make institutions that can compel other actors to comply in ways that will finally lead to the outcome they prefer. The expectation the TBOs formed was clearly one of sustainable use of the area's coral reef ecosystems. They expected that the resources would continuously provide them with revenue. The issue of coral reef protection was regarded by them as the way to share social expectations among resource users. The role of social institutions, in this context regarding constraints on coral reef use, is to provide social actors (TBOs and fishermen) with information about how to realize the social expectation. Without the institutions, the expectations (sustainable use and continuous yield of revenue) will not be fulfilled.

TBOs have mastered information and successfully formed the institutions through which they have the possibility of realizing their expectations and gaining better payoffs. What became a big obstacle to deal with was how to transform their expectation into a

commonly recognized social expectation. This was very important in order to reduce the possibility of resistance from other resource users (i.e., fishermen). The third-party enforcement that the local governance applied (played by SATGAS) was caused by the fact that local community member still had different expectations. Self-enforcement by the community could only be possible if the expectations regarding the resources are socially shared. Otherwise, the system of governance will collapse. Accordingly, third-party enforcement, at this moment, is still the right choice even though it is relative costly.

REFERENCES

- Bachtiar, I. (2000). Community Based Coral Reef Management of the Marine Recreational Park Gili Indah, Lombok Barat. *Komunitas* 3(1): 67-77. Jurusan Pendidikan Biologi Universitas Mataram, Indonesia.
- Bromley, D.W. (1992). The Commons, Property, and Common-Property Regimes. In: D. W. Bromley (ed.). *Making the Commons Work: Theory, Practice and Policy*. ICS Press. San Francisco, California
- Furubotn, E. G and R. Richter (2000). *Institution and Economic Theory. The Contribution of New Institutional Economics*. Ann Arbor. The University of Michigan Press.
- Hamilton, W. H. (1932). Institution. In: E. R. A. Seligman and A. Johnson. (eds.). *Encyclopedia of Social Sciences* 8: 84-89.
- Hayek, F. A. (1968). Bemerkungen über die Entwicklung von System von Verhaltensregel. In: F. A. Hayek. „*Friburger Studien*“. Tübingen. Mohr: 144-160.
- Hidayat, A. 2005. *Institutional Analysis of Coral Reef Management. A case Study of Gili Indah Village, West Lombok, Indonesia*. Shaker Verlag, Aachen, Germany.
- Kantor Desa Gili Indah (Village Office) (2001). *Awig-awig Desa Gili Indah*. Kantor Desa Gili Indah, Lombok Barat, NTB, Indonesia.
- Kasper, W. and M. E. Streit (1998). *Institutional Economics, Social Order and Policy*. Edward Elgar. Cheltenham, UK. and Northampton, MA. USA.
- Knight, J. (1992). *Institutions and Social Conflict*. Cambridge University Press.
- Knight, J. (1995). Model, Interpretation and Theories: Constructing Explanation of Institutional Emergence and Change. In: J. Knight and I. Sened (eds.). *Explaining Social Institutions*. University of Michigan. Ann Arbor.
- Libecap, G. (1989). *Contracting for Property Rights*. Cambridge University Press. Cambridge.
- North, D. C. (1990). *Institutions, Institutional Change and Economics Performance*. Cambridge University Press.
- Oleona, A. and P. T. Bataona (2001). *Masyarakat Nelayan Lamalera dan Tradisi Penangkapan Ikan Paus (The Fishermen Community of Village Lamalera and its Tradition of Catching Whales)*. Lembaga Gelagat Lefo Tanah. Depok, Bogor, Indonesia.
- Ostrom, E. (1990). *Governing of the Commons. The Evolution of Institutions for Collective Action*. Cambridge University Press.
- Ostrom, E. (1997). *A Behavior Approach to the Rational-Choice Theory of Collective Action*. Workshop in Political Theory and Policy Analysis. Download: <http://www.indiana.edu/workshop>.
- Posner, R. A. (1992). *Economic Analysis of Law*, 4th ed. Little, Brown, and Co, Boston.
- Ruddle, K. (1993). External Forces and Change in Traditional Community-Based Fisheries Management System in the Asia-Pacific Region. *Maritime Anthropological Studies* 6 (1-3): 1-37.

- Satria, A.; A. Umbari; A. Fauzi; A. Purbayanto; E. Sutarto; I. Muchsin; I. Muflikhati; M. Karim; S. Saad; W. Oktariza and Z. Imran (2002). *Menuju Desentralisasi Kelautan (Toward a Marine Decentralization)*. CIDESINDO, Pusat Kajian Agraria-Institute Pertanian Bogor (PKA-IPB) and Partnership for Governance Reform in Indonesia, Jakarta, Indonesia.
- Schlüter, A. and M. Hanisch (1999). *Theories of Institutional Change and their Applicability to the Privatization Process in Agriculture in a Transition Economy*. Working Paper. Chair of Resource Economics, Humboldt University of Berlin. Berlin, Germany.
- Schmid, A. (1972). *The Economic Theory of Social Institution*. American Journal of Agricultural Economics 54: 893-901.
- Schotter, A. (1981). *The Economic Theory of Social Institutions*. Cambridge, Cambridge University Press.
- Sened, I. (1997). *The Political Institution of Private Property*. Cambridge University Press. Cambridge.
- Uphoff, N. (2002). *Building Partnership with Rural Institutions in Developing Local Capacity for Agricultural Research and Development. International Potato Center-User's Perspective With Agricultural Research and Development (CIP-UPWARD)*. CIP-UPWARD, Los Banos, Laguna, Philippines.
- Wahyono, A. (2000). *Hak Ulayat Laut di Kawasan Timur Indonesia (Sea Tenure System in Eastern Regions of Indonesia)*. Media Pressindo, Yogyakarta.
- Williamson, O. E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature* 38: 595-613.

