

Land Property Rights and Coastal Resource Management: A Perspective of Community Based Mangrove Conservation in Indonesia ¹

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Abstract

The coastal areas generally have a greater diversity of ecosystems associated with a complex array of natural resources that provide both economic good and services. Due to the large-scale amenity values of coastal ecosystems and resources, coastal areas are densely populated. The scale of human activity has increased over time, so that the pressures of human activities on natural ecosystems and coastal resources are large and multifarious, with clear implications for the loss of various natural resources and destruction of coastal ecosystems. The deterioration of mangrove forests and their ecosystem is currently one of the most important and urgent environmental issues in coastal areas of Indonesia. Human settlement, expansion of agricultural or salt-making lands, development of coastal industries, and more recently, expansion of coastal aquaculture, have caused the damage of mangrove forests.

It is remarkable noted that the local people in coastal area of South Sulawesi Province, Indonesia have succeeded in rehabilitating the coastal environments by their own initiatives through mangrove conservation and management. The local people of Sinjai District expanded the mangrove plantation of about 32 ha since 1980s and the mangrove plantation has also generated potential lands for local people's livelihoods. The President of the Republic of Indonesia has awarded an Environmental Prize called Kalpataru in 1995 to the community group, ACI, Aku Cinta Indonesia or I Love Indonesia for their achievement in mangrove conservation and management as well as rehabilitation for coastal environments.

Since then, conflicts between local government and local people in terms of property rights of the artificially established mangroves and lands were taken place. The local people have recognized de facto ownership of the established mangroves and lands, however, the government have not yet approved the property rights of the local people. This study shows that mangrove conservation and management requires the long-term maintenance for 10 to 15 years until their products could be harvested and local people participation is highly needed in maintaining the mangroves. To involve the local people, economic benefits derived from the mangroves should be taken into consideration by providing the property rights of their artificially established mangroves and lands.

Keywords: Coastal resource management, community based mangrove conservation, land property rights, Indonesia.

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1. Introduction

Situated between the land and the sea (Vantomme 1995:1), mangroves represent the richest form of natural resource and an ecosystem that shelters the coastal areas of tropical and sub-tropical countries. The role of mangroves and their ecosystem is divided into two categories: namely tangible and intangible benefits. The tangible benefit of mangroves comprises timber and non-timber products (Zamora 1989: 51), while the intangible benefits include coastal protection against wave and current abrasions, shelter and habitat for wildlife, a buffer against pollutants, entrapment of upland run-off sediment, and a reduction in seawater turbidity, climate regulation and ecotourism (Vantomme 1995:2; Macintosh 1996: 4; Ellison 2000: 220).

The deterioration of mangroves and their ecosystem, however, is currently one of the most important and urgent environmental issues in Southeast Asia. Human settlement, expansion of agricultural or salt-making lands, the development of coastal industries, and more recently, the expansion of coastal aquaculture, have caused considerable damage to mangrove forests (FAO 1985: 10; Inoue *et al.* 1999: 28). Indonesia is no exception to such circumstances (Soemodihardjo and Soerianegara 1989: 95). For the last three decades, the conversion and exploitation of mangroves have taken place over many coastal areas in Indonesia. For instance, due to the recent expansion of the market economy, mangroves and their resources in the coastal areas of South Sulawesi, Indonesia, have been exploited in an unsustainable mode. The Provincial Development Planning Board of South Sulawesi (1998: 7) revealed that, due to the conversion to fishponds and other uses, the area of mangrove forests had decreased markedly from 67,200 ha in 1982 to 34,300 ha in 1998.

Under such general circumstances, the presence of a village where mangrove forests were artificially established through local initiatives was remarkable. Villagers in Tongke Tongke, Sinjai District, located on the southeast coast of South Sulawesi, planted mangroves and rehabilitated the coastal conditions without any direction and assistance from governmental institutions. They had expanded mangrove plantations step by step by planting seedlings of *Rhizophora mucronata* since the 1980s and established 32 ha of mangroves along their village coastline. The mangrove plantation thus represented opportunities to gain potential new land for agriculture, coastal aquaculture and settlements.

However, disputes between the villagers and the local government over the ownership of the mangrove lands have been a crucial issue in Tongke Tongke. The condition has influenced the activities of local people concerning the utilization and management of the established mangrove lands, and the sustainability of the villagers' initiatives in mangrove plantation and coastal resources management. The study aims at clarifying the historical process of the mangrove plantation conducted by local people and analyzing the present social condition of their society with regard to the mangrove plantation, in order to illuminate the role of local people in environmental conservation and elucidate appropriate measures for managing mangrove plantation and for establishing sustainable coastal resource management.

2. Outline of Study Area and Methods

2.1. Study Area

The study was carried out in a village called Tongke Tongke, through frequent visits over four years following 2000. As shown in Fig. 1, it used to be one of the sub-villages (*dusun*) in the Samataring village (*desa*), administratively part of the East Sinjai sub-district (*kecamatan*) of the Sinjai District (*kabupaten*), and the biggest sub-village in Samataring in terms of population (Table 1). It faces the Gulf of Bone and is located 7 km southeast of Sinjai, the capital city of Sinjai District, at a latitude of 120°16'19" E and a longitude of 05°09'1" S. The topography of Tongke Tongke consists of plains and hills situated at elevations ranging between 0 – 150 meters above sea level. Two rivers called the Sungai Baringeng and Sungai Sanjai stream down to the village coast covered by mangrove forests of 32 ha, which have been planted by the villagers since the 1980s. Meanwhile, fishponds, paddy fields and mixed forests are distributed within the western inland region of the village (Fig. 2).

Table 1. Area and population of sub-villages in Samataring village, Sinjai District.

Sub-village	Area (km ²)	Population
Pangasa	1.15	448
Mangarabombang	1.25	880
Batu Lappa	2.10	1,287
Tongke Tongke	2.25	1,809
Maroanging	2.50	1,166
Total	9.25	5,590

Source: Samataring Village Office, 2000

Following the reformation of administrative divisions in 2003, the Tongke Tongke sub-village was reformed to a new village (*desa*), Tongke Tongke, merging with another of the sub-villages, Maroanging. It consists of five sub-villages, of which Cempae, Babana and Bentenge belonged to the former Tongke Tongke sub-village (Table 2). When the word, Tongke Tongke villagers (or simply, villagers), is used in the following descriptions, it refers mainly to the people living in four sub-divisions, excluding Baccara, because they are incorporated in the activities of the mangrove plantation.

Tongke Tongke villagers belong mainly to the *Bugis* ethnic group, and their main occupation is fishing, as shown in Table 2. In particular, in the former Tongke Tongke sub-village, fishermen occupied more than 60 % of the total number of households. They are engaged in in-shore fishing using various kinds of traps and off-shore fishing using net and angling equipment. Among other occupations, there are many householders engaged in fishing-related occupations, such as fish farmers who cultivate shrimp or fish in fishponds located in the west of the village compound and

entrepreneurs and fish-sellers engaged in the processing and marketing of the fishery products.

Table 2. Occupation of Tongke Tongke villagers

Occupation	Sub-village					Total
	Cempae	Babana	Bentenge	Maroanging	Baccara	
Farmer	10	8	35	20	75	148
Fisherman	300	150	35	50	25	560
Fish Farmer	93	30	13	15	25	176
Civil Servant	10	18	15	5	20	68
Entrepreneur	3	25	7	10	7	52
Smoked-Fish Seller	10	12	-	1	-	23
Fresh-Fish Seller	7	2	4	1	3	17
Total	433	245	109	102	155	1044

Source: *Buku Perencanaan Desa Tongke Tongke* (Planning Book of Tongke Tongke), 2004

2.2. Research Methods and Activities

A mix of qualitative and quantitative methods consisting of interviews, observation and literature studies was employed. Interviews were conducted with the leader of the plantation group and all the members; including those who initiated the mangrove plantation and those who held mangrove forests in the village, focusing on their experience in terms of mangrove plantation, their perception of the coastal environmental rehabilitation and “ownership” of the established mangrove lands, and knowledge concerning fish and shrimp culture. Interviews were also carried out with district officers and staff of the relevant governmental institutions, such as the Forestry and Estate Department, the Fishery Department, the Agrarian Department and the Development Planning Board, in Sinjai District as well as with sub-district officers in order to gain a broader perspective and additional information concerning maps and written documents in relation to the utilization and management of mangrove forests and the registration of mangrove lands.

The areas of mangrove plantation, the physical condition of the mangroves, and the utilization and management of established mangrove lands as well as the socio-economic condition of the villagers, were measured and observed in order to verify the results obtained from the interviews. Each plot of planted mangroves was carefully measured and the “owners” of planted mangroves were identified. Furthermore, detailed information concerning the changes in the coastal environment, the process of the mangrove plantation and the fishpond construction was respectively collected in order to better understand the actual activities of the people engaged in establishing mangrove forests, developing fishponds, and rehabilitating the coastal environment.

3. Historical Process of Mangrove Plantation

3.1. Prior to the Formation of the Planting Group

In early 20th century, the coastline of Tongke Tongke used to be a harbor for domestic transportation. Mangrove forests, in particular *Rhizophora mucronata*, were not found on the coastal side of the residential areas, while *Nypa frutican*, *Avicennia* spp. and *Bruguiera* spp. were distributed within the lagoon and the estuary of Sungai Baringeng. During this period, the villagers of Tongke Tongke, who were mainly fishermen, carried out daily activities for a subsistence livelihood, such as fishing, sailing, collecting coastal and marine benthic resources, and agricultural farming. In the 1930s, Raja Bulu-Bulu Timur, the chief of a petit kingdom, constructed fishponds in the lagoon and along the coast of Tongke Tongke for rearing various coastal fisheries resources, such as black tiger shrimp, milkfish, and mud crabs.

Since the 1940s, the socio-political situation in Tongke Tongke and its surroundings had become unstable due to Dutch colonialism, the Japanese occupation and the Kahar Muzakkar movement (Cribb 1992). As the villagers of Tongke Tongke were forced to move out to other areas, such as Kendari and Pulau Sembilan, coastal abrasion in Tongke Tongke began to take place due to their absence. Moreover, as nobody could take care of the fishponds, all those located on the coastal side were destroyed by abrasion and totally disappeared during this period.

In the early 1960s, just after the end of the Kahar Muzakkar movement, the villagers returned from exile under their own initiative, and their former subsistence economic activities gradually revived. On the other hand, the villagers of Pangasa and Mangarabombang, neighboring sub-villages of Tongke Tongke, also returned from exile and began to plant mangroves within the outer-fringe of the remaining natural mangrove forests to protect the fishponds they had previously established by cutting mangrove forests during the Dutch colonial period. In contrast to the Tongke Tongke case, the fishponds in Pangasa and Mangarabombang were not destroyed by abrasion, since the fringe of natural forest remained uncut and functioned as a protection for the fishponds. However, since the remaining forests were too thin to protect the fishponds, they began to further shelter them by planting mangrove seedlings. They used the seedlings of *Rhizophora mucronata*, introduced from the Siwa District, which did not originally grow in the Sinjai District. This was the first introduction of *Rhizophora mucronata* into the Sinjai District, and it is said that a descendent of the Raja Bulu-Bulu Timur, who had left the petit kingdom to avoid the political conflict and stayed in Siwa, brought it to Pangasa. Following the initial introduction, the villagers in Pangasa and Mangarabombang continued to plant mangroves to protect the fishponds and when the mangrove forest had expanded to some extent, they cut more down and constructed fishponds. They kept mangroves uncut just adjacent to the fishpond dikes, river banks and the outermost fringe of the fishpond areas as protection against waves and current abrasion. Accordingly, the villagers of Pangasa and Mangarabombang gradually expanded their fishpond areas following their return.

Observing the experiences of the Pangasa and Mangarabombang villagers, some villagers in Tongke Tongke began to follow suit and plant seedlings in the border areas between Mangarabombang and Tongke Tongke during the 1970s. They planted *Rhizophora mucronata* obtained from Pangasa and Mangarabombang, and constructed fishponds by cutting planted mangrove forests once the forests were established. They also utilized them for firewood and timber for house building.

Following the successful planting of mangroves in the border areas, the villagers in Tongke Tongke began to extend their plantation to the coast of their residential areas, the present day sub-villages of Babana, Cempae and Maroanging, in early 1984. There were various motives for the villagers to plant mangroves, namely: getting firewood, securing property rights of the land, and protecting their residential areas from coastal abrasion and other natural hazards like storms. It is generally recognized that the intertidal areas of coastal ecosystem are open access and public space that nobody could own the resources. However, the local people claim them as private property when the mangrove forests have been established. In the initial stage, the plantation caused a conflict between the planters and the fishermen who did not join the plantation, since the planted mangroves disturbed their operations. However, the conflict was solved among themselves by providing spaces as corridors to allow passing fishing boats through and for setting fishing traps and operating collection of shrimp and fish larvae with a tool made of banana leaves. Regarding the conflict between the planter and other sectors e.g. shellfish or other benthos gatherer is negligible, because they could collect shellfish and other benthos at the mangrove roots and at the tidal mud flat that was established due to mangrove plantation.

In 1985, a group for mangrove planters, headed by Mr. BB, was established to organize the villagers who planted mangroves. At the same time, a group for football know as ACI, "*Aku Cinta Indonesia*" or "I Love Indonesia" was also created and managed by Mr. ZD in Tongke Tongke. However, the group of mangrove planters did not function so well because the leader was too busy marketing fish products in Lappa, in the north Sinjai sub-district. On the other hand, the ACI football group flourished. Although the planter group was no longer functioning, the activities of the villagers in the mangrove plantation continued year by year. Ideas for rebuilding the organization of mangrove planters re-emerged and the previous members were reorganized into a new group called ACI, in 1988, after the name of the football team. The management of the ACI group was handled by a leader, Mr. MTY, a secretary, Mr. ZD, and a treasurer, Mr. AMR, upon the recommendation of the chief of Tongke Tongke sub-village. The management of the ACI group started by reorganizing the mangrove planters and promoting the planting activities of the villagers. Since then, the planted area has more intensively expanded. Consequently, the mangrove forests of Tongke Tongke began to draw public interests, and in 1988, the Youth Generation Association, *Karang Taruna*, sent members from all over South Sulawesi to learn about how the local people managed their mangrove plantation. It was a good occasion for every member of *Karang Taruna* to learn and obtain knowledge which would be applicable to the coastal areas in their homelands. The government of Sinjai District also began to pay attention to the villagers' activities and tried to promote the development of mangrove forests in Tongke Tongke.

3.2. After the Award of Kalpataru Prize

Since 1980, the President of the Republic of Indonesia has awarded the prize of *Kalpataru*³ to individuals or community groups who have contributed towards environmental conservation and rehabilitation. In early 1995, responding to the call for the application of *Kalpataru* by the Ministry of Environment to whole districts in Indonesia, the government of Sinjai District selected the activities of Tongke Tongke villagers and proposed the ACI group as one of the candidates for the prize. The final selection was performed by the Ministry of Environment and the ACI group was finally selected as one of the community groups to be awarded the *Kalpataru* prize. In order to receive this prize, the government of Sinjai District asked Mr. MTY, the leader of ACI, to go to Jakarta, and it was Mr. MTY that received the prize directly from the President. Since then, the government of Sinjai District has supported him as an important caretaker for conserving the mangrove forests. After the ACI group received the prize, the government of Sinjai District, staff of related institutions at all levels in South Sulawesi, and the ACI group leader tried to preserve and protect the mangrove forests in Tongke Tongke by prohibiting all people, including the group members, from cutting the forests. The mangrove forests in Tongke Tongke came to be valued as reflecting environmental protection and conservation, not only for the people of Tongke Tongke but also those of South Sulawesi Province, Indonesia, and even the wider world.

Since the prize was awarded, Tongke Tongke has become very famous and various kinds of assistance programs have been implemented. The 1995 *Kalpataru* winners, including the ACI leader, were given a chance to visit and observe the silvo-fishery system, *tambak tumpang sari*, featuring a combination of mangrove forests and fishponds, in Cikiong, West Java, which was initially developed and implemented there by the state forestry corporation, *Perum Perhutani*. Following this study trip, the silvo-fishery system was adopted and implemented by the leader of ACI in 1995 with financial support from the provincial government of South Sulawesi. Next year, in 1996, the Island Sustainability, Livelihood and Equity (ISLE 1996) program⁴ was also implemented. The ISLE program included a trial for raising crabs in the silvo-fishery pond. The pond was divided by fencing off several portions, in which the trial was conducted with different densities of crabs, but no production. As Niartiningsih (1996: 27), author of this trial, concluded, the crabs displayed an effective growth rate within

³ *Kalpataru* is the most prestigious environmental prize in Indonesia, which is awarded by the President of Republic of Indonesia to individuals or community organizations for outstanding achievements in the protection and improvement of the environment functions. *Kalpataru* means a livelihood tree, which illustrates the harmony of nature. The symbol of *Kalpataru* is adopted from the relief of Mendut Temple in West Java that pictured forest, land, water, air and other natural environments (<http://www.menlh.go.id/web-kalpa/>). From 1980 to 2003, 195 individuals and community organizations have been awarded the prize in various categories: environmental pioneer, environmental activist, environmental savior, and environmental adviser. The prize is offered every year by the Ministry of Environment to individuals or community groups on a competitive basis.

⁴ The Island Sustainability, Livelihood and Equity (ISLE) program is a cooperative project between seven universities, i.e. Dalhousie University, Nova Scotia Agricultural College, Technical University of Nova Scotia, The University of Prince Edward Island, all in Canada; Hasanuddin University in Indonesia; the University of Philippines in the Visayas, the Philippines; and the University of the West Indies in the Caribbean.

the mangrove ecosystem, but a very low survival rate due to poor water quality, inadequate food management and a lack of uniformity in the crab sizes. It is also observed by the author that the silvo-fishery system introduced into the village appeared to have been unsustainable, because it could not simultaneously combine the environmental conservation and the economic development for the local people. Since the program was more focused on the mangrove conservation rather than the economic development of local people, nobody intended to follow the program. As a result, the implementation did not succeed because of insufficient management by the villagers, due in turn to lack of economic benefits.

On the other hand, certain changes began to occur within the ACI group, such as a degree of criticism aired against the management of the group. The criticism was basically directed towards the leader of ACI, since the members came to believe that the leader had monopolized the group management, in particular, following the awarding of the prize. Consequently, the ACI group was reformed and Mr. HAM elected as the new leader in mid-2000. The following considerations seem to have been made based on his selection, (1) he has the largest mangrove forests, and (2) he possesses considerable capital as a fishery-products businessman in Tongke Tongke.

Another change took place in September, 2000, due to intervention implemented by the local government. The government of Sinjai District decided to construct a fish-marketing center in Tongke Tongke in order to promote the marketing of local fishery products. The new leader accepted this plan and asked some of the members to allow their mangrove lands to be used as the site for constructing the center. Subsequently, part of the mangrove forests were cut and reclaimed for construction. This was the first large-scale and legal conversion of mangrove forests following the creation of the plantation. The Ministry of Environment also provided 20 million rupiah to the ACI group in order to promote eco-tourism development in Tongke Tongke in December 2000. In order to make use of this provision, the villagers constructed a pier-type walk-way 50 meters long acting as a path for those wishing to enter the mangrove forests.

The existing mangrove forests, covering an area of 32 ha in Tongke Tongke, not only provide a safer place to protect local people and their properties from coastal hazards but also generate potential lands for their economic activities such as settlements, agriculture, and fishponds. Although some Tongke Tongke villagers currently still continue to plant mangrove seedlings, the expansion of plantation areas is not as significant as previously due to the considerable difficulty in enlarging the mangrove plantation due to heavy waves, current abrasion and barnacle attacks. On the other hand, some villagers, although the number was limited yet, began to busy themselves by cutting the established mangrove forests to reclaim lands for fishponds, agriculture and residences due to the change of circumstances, i.e., less control from the present leader of ACI group because of his busy commitment to his fish-marketing business.

5. Mangrove Plantation and Land Property Rights

Coastal water is generally perceived as an open access resource notwithstanding the fact that it is under the direct control of the state (Adger and Luttrell 2000: 77). As Ostrom *et al.* (1999: 278) explained, open access regimes, such as the seas and the atmosphere, have long been considered to be spaces where nobody is authorized to own the resources. The absence of any formal property-right systems allows access from anyone to utilize the existing resources within coastal waters. Article 33 of *Undang Undang Dasar 1945*, the Fundamental Law of Indonesia, stated that the earth and water and their natural resources are controlled by the state and should be utilized for human prosperity. Based on this regulation, the coastal water and the land in Indonesia are defined to be under governmental control and may be utilized and managed by the government for human prosperity. Coastal waters in Tongke Tongke, Pangasa and other areas of the Sinjai District are no exception of this regulation.

The villagers of Tongke Tongke and Pangasa actually recognize that coastal water is subject to open access. However, the mangrove plantation they established in the intertidal areas of coastal water generated newly established land due to the sedimentation process. It usually takes 10 to 15 years until land planted with mangroves can be utilized for fishpond construction and other purposes. In the case of Pangasa, however, the villagers have actually converted the mangrove plantation into fishponds and they have been partially registered by the local government as “private properties.” However, land ownership of such “private properties” has not been recognized by the government. Instead of providing ownership, the government has approved the use of this land as fishponds by rendering them objects of taxation. As a form of compensation for “land ownership,” the local government asked the local people to pay taxes called *pajak bumi dan bangunan*, or taxes for land and building for their registered fishponds.

Similar circumstances could be observed in both Tongke Tongke and Pangasa in terms of their expectations for the use of the mangrove forests. The villagers of Tongke Tongke also expected that the artificially-established mangrove lands could be “owned” by them following the establishment of the mangrove forests. Besides the use of mangroves for timber and firewood, they intended to secure the property rights of the established mangrove lands. However, a different condition has arisen since the *Kalpataru* Prize was awarded. In spite of the *de-facto* ownership recognized among the villagers themselves, the local government has not approved the property rights of the local people and did not allow the people to cut and utilize their mangroves. It can be said that the prize triggered differing perspectives between the governmental institutions and the local people in terms of the utilization and management of the established mangrove lands. Perspective of local people in terms of the utilization and management of the established mangrove lands actually did not change. The local people wanted to obtain economic benefits from their mangrove lands; on the other hand, the local government wanted to preserve them for the purposes of mangrove conservation and coastal environmental protection due to the prize.

Since the prize was awarded, the local government stated that mangrove forests in Tongke Tongke should be preserved for the purposes of environmental conservation under governmental control. Consequently, the villagers became unable to obtain economic benefits from mangrove use, such as collecting firewood and fishpond construction. This fact forced them to find alternative means of obtaining economic advantages, i.e., the transaction of mangrove plantation plots. Since such plots were recognized as private properties by the villagers, it is the course of nature that their sale and purchase should take place among them without any government legal approval.

Table 3 indicates the household-wide distribution of mangrove-land holdings within Tongke Tongke. Out of a total of 101 “owners”, 75.2 % belongs to very small-scale owners, possessing an average of just 1.2 plots with an average holding of 0.1 ha. Their total land occupied just 21.8% of the total area of mangrove lands in Tongke Tongke. During the initial stage of the mangrove plantation, the plantation plots could not be enlarged due to heavy waves and current abrasions. The numbers of available seedlings were also a limiting factor, since they had to be collected from the neighboring villages of Mangarabombang and Pangasa, as considerably arduous task. On the other hand, those who possess large holdings of more than 1 ha account for 6.9% of the total mangrove-land holders. They held 54.8% of the total mangrove-territory in Tongke Tongke, and the average size of holding and number of plots was 2.4 ha and 3.8, respectively. They accumulated mangrove lands by asking other villagers to plant mangrove seedlings in their plantation plots or purchasing mangrove lands from other small-scale holders in the village. Some villagers sold their lands to prosperous villagers in order to gain ample cash. As Table 3 indicates, the fact that more than half of the total mangrove lands are owned by just 6.9% of the total owners suggests that the local people were more interested in obtaining economic benefits than protecting or conserving the coastal environment through the use of mangrove plantations.

Table 3. Distribution of mangrove plantation plots by land holding size division

Land Holding Size Division (ha)	Number of "Owners"	Number of Plots	Total Land (ha)	Average Size of Holding (ha)	Average Number of Plots
0 - 0.25	76 (75.2)	89 (60.5)	7.0 (21.8)	0.1	1.2
0.26 - 0.50	13 (12.9)	22 (15.0)	4.1 (12.8)	0.3	1.7
0.51 - 0.75	4 (3.9)	8 (5.4)	2.6 (8.0)	0.7	2.0
0.76 - 1.00	1 (1.0)	1 (0.7)	0.8 (2.5)	0.8	1.0
1 <	7 (6.9)	27 (18.4)	17.5 (54.8)	2.4	3.8
Total	101	147	31.9	0.9	1.9

Source: Fieldwork Data, 2001

Even though the property rights of the planted mangroves have not been well defined by the government, the local people have already generated a revenue earner for their livelihood. This case clearly shows how land holding is so important in daily life of the people of South Sulawesi. This condition seems to be significantly associated with the socio-cultural characteristics of the people of South Sulawesi, particularly the Bugis people, whose livelihood basically depends on agriculture. Mattulada (1986:105) explains that the livelihood of the South Sulawesi peoples is basically influenced by two environments, the land and the sea. However, he also emphasizes that the Bugis and Makassar peoples are greatly concerned with possessing the land for agriculture even though they are famous for their characteristics as seafarers and migrants. The land generated between the sea and the land in Tongke Tongke also represents a space that has been created with such concerns.

A similar observation is offered by Tanaka (Tanaka 1986a; Tanaka 1986b), who studied the adaptation process of the Bugis migrants to new environments in Riau Province, Sumatera and Kabupaten Luwu of South Sulawesi. He revealed that the Bugis people practiced a wider variation of agricultural adaptation when compared to other ethnic groups, such as the Javanese in Riau and the Torajanese in Kabupaten Luwu. In both cases, the Bugis migrants had a tendency to establish their economic base by combining multiple activities, such as agriculture combined with aquaculture. They obtained agricultural lands by clearing forests for growing rice and/or commercial crops, and additionally opened the fishponds for aquaculture, or vice versa. Bugis migrants in the coastal lowland of Riau Province and Kabupaten Luwu established paddy fields and fishponds by clearing natural forests or coastal forests such as mangroves. However, Pangasa, Mangarabombang and Tongke Tongke villagers constructed fishponds by planting mangroves in their coastal environment. Although the method for creating a new opportunity to obtain economic benefits from their environment differs between migrants and residents respectively, their behavior seem to unify the common characteristics of the Bugis people.

6. Involving Communities in Coastal Resource Management

Results of this study on the role of local people or communities in coastal resource management, in particular, in the mangrove rehabilitation are summarized in Figure 1.

As shown in Figure 1, mangrove maintenance requires 10-15 years until its products and benefits, such as planted mangroves, newly established lands and fishponds can be utilized. This fact has been observed in mangrove rehabilitation initiated by local people in Tongke Tongke of Sinjai District. On the other hand, time allocation of mangrove rehabilitation under the GNRHL Program⁵ is just 1-2 years or less than 5

⁵ Gerakan Nasional Rehabilitasi Hutan dan Lahan (National Movement for Land and Forestry Rehabilitation) initiated and implemented since 2002/2003 by the Department of Forestry in collaboration with the concerned institutions and agencies in order to conserve and rehabilitate the land and forestry sectors. Actually, there were so many programs initiated by the concerned institutions and agencies in regard with mangrove conservation and management in South Sulawesi before GNRHL Program, however, the programs seemed unsustainable.

years. When the program is being implemented, the local people support them to maintain the sustainability of the program because they are provided with wages. It could be categorized as the short-term economic benefits. When the wages are not available, however, no body will maintain the plantation. As a result, the whole mangrove forests are disappeared and the GNRHL Program has failed. It is revealed that there are various barriers of the program, such as short time implementation, inadequate budgets, and insufficient human resources that have caused the failure. Due to these limitations, who will maintain the mangroves and sustain the program for the further 5-10 years when the program is finished? How could we solve these problems?

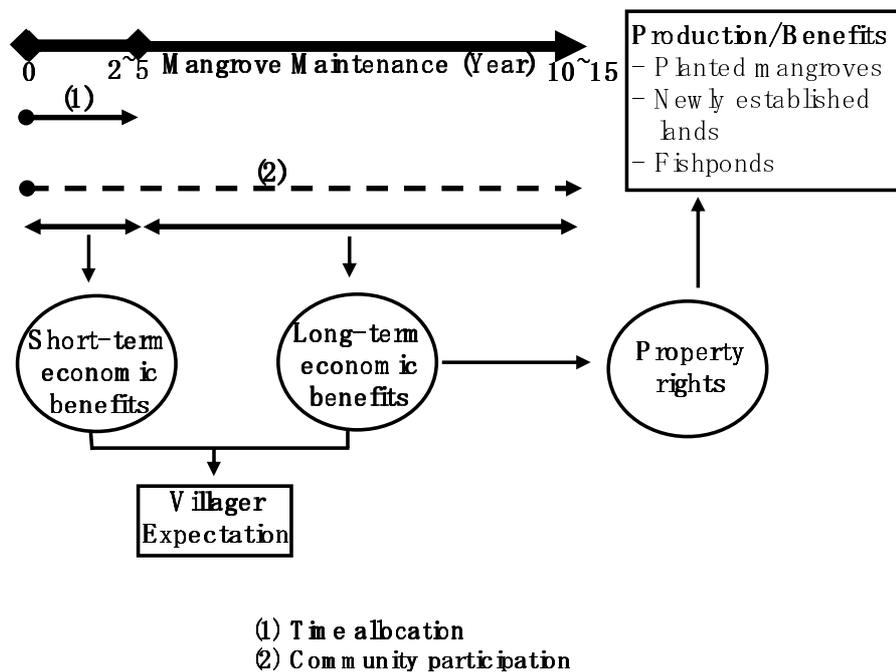


Figure 1. Mangrove maintenance and community participation

White *et al* [1994] noted that coastal resources management (CRM) is best accomplished by a participatory process of planning, implementing, and monitoring for sustainable uses of coastal resources through collective action and sound decision-making. Furthermore, community-based or collaborative management approaches to coastal resource management are based on the principle of involving local coastal communities in managing the resources upon which they depend [Pomeroy *et al* 1997; ICLARM/IFM 1998]. It is important to recognize that the local community members are the real day-to-day managers of coastal resources [Olsem 2003: 348]. In the case of mangrove rehabilitation, due to the mangrove rehabilitation and maintenance require the long range period, community participation is highly required. The local communities could play the important role in maintaining the mangrove plantation and sustaining the program. How could we involve local communities in mangrove rehabilitation program in order to maintain the mangroves and sustain the program?

This study reveals that the local people are highly motivated by economic orientation rather than the concept of mangrove conservation and coastal environmental rehabilitation. There are two economic expectations of the local communities in mangrove conservation and rehabilitation program, namely: short-term and long-term economic benefits. Short-term economic benefits consist of wages and other subsidies mentioned above, while long-term economic benefits comprise of providing property rights on the planted mangroves, newly established lands, and the fishponds. As the study indicates, economic benefits of local communities should be taken into account in order to involve the local communities to participate in mangrove conservation and rehabilitation program and it could lead the people to self-mobilized participation.

7. Government Regulation and Socio-Economic Aspect of the Villagers' Mangrove Plantation

The President of the Republic of Indonesia has enacted the Decree No. 23/1997 with regard to natural resource management in Indonesia. The decree, the first point of the article 41, noted "when anyone breached the law by destroying the living environments, he/she would be jailed for 10 years or fined 500 million rupiah (about US\$ 60,000)." Following the Presidential Decree, the government of Sinjai District also enacted the Regulation No. 8/1999 to specifically control the utilization, conservation and management of mangrove forests. The article 12 noted that the "utilization of mangrove forests could be practiced in the manner of selective cutting with considering the sustainability of mangrove resources." Furthermore, it stated "the planted mangroves which have covered an area of over 50 meters width in coastal areas could be utilized for household requirements." (Government of Sinjai District 1999: 8) The regulation actually afforded an opportunity to the villagers to utilize the planted mangroves, but it did not clearly define which parts of the mangrove lands could be utilized for their livelihood. For this reason, the local government and the former ACI leader did not allow the villagers to cut the mangroves and utilize their lands for other purposes.

Even though the government has enacted regulations, such as the Presidential Decree No. 23/1997 and Regulation No. 8/1999 of Sinjai District, the implementation of such regulations remained insufficient. It seems as if the regulations were specifically implemented with the people of Tongke Tongke in mind, because cutting mangroves and conversion to fishponds in other coastal areas of Sinjai District have been always overlooked by the relevant officers of the Sinjai District. However, recently, the same situation also became apparent in Tongke Tongke. Observing measures of mangrove utilization and management in Pangasa, some "owners" of the mangrove lands in Tongke Tongke also tried to convert their lands to fishponds by cutting down the forests. It reflects the actual situation in the village that although field officers of Sinjai District were aware of the activities of such villagers, they could not do anything to stop them, because the mangrove forests were established by the villagers without any governmental support. Even though legal regulations were enacted, they did not actually function due to the lack of operating and controlling systems.

Such circumstances illustrate a considerable gap of interests between local people and government respectively concerning the utilization, conservation and management of mangrove forests in Tongke Tongke. As mentioned earlier, the local people wanted to obtain the economic advantages derived from the mangrove lands such as obtaining firewood and land ownership. On the other hand, the local government wanted to promote environmentally-sound programs by conserving the mangrove forests and protecting the coastal environment. The local government seems to be more interested in the benefits to be obtained from the promotion of successful conservation of the coastal environment in Tongke Tongke rather than the economic advantages to be obtained from land taxation of the established fishponds, because the environmentally-sound program would be a better trade-mark indicating economic development of Sinjai District. Such polar opposite views between them regarding management of the mangrove lands created inevitable conflict.

It is also interesting to see the area of mangrove forests in Tongke Tongke, as reported by the government of Sinjai District. The Government of Sinjai District (2000b: 7) wrote in its report that there were mangrove forests in Tongke Tongke with an area of about 783 ha. On the other hand, to ensure the total area of mangrove forests in Sinjai District, the District Office of Forestry and Soil Conservation of Sinjai conducted a survey in 2000, and revealed the figure to be around 496 ha, of which 76.5 ha was located in Tongke Tongke (Government of Sinjai District 2000a: 5). Both reports seem to have been prepared just for providing the information concerning the area of mangrove forests in Sinjai District for the people who visit Tongke Tongke to learn community-based mangrove plantation. However, the measurement of this study revealed that the mangrove forest areas of Tongke Tongke numbered only about 32 ha. This big gap was supposed to be derived from an intentional over-estimation of the Sinjai District government, who was in the position of proposing the ACI group as a candidate for the *Kalpataru* Prize.

As mentioned earlier, the President awarded the *Kalpataru* Prize to the ACI group due to their achievement in coastal conservation and rehabilitation through mangrove plantation initiatives. However, this study revealed that the motivation of the Tongke Tongke villagers was to obtain firewood, secure land property rights and protect the residential areas from coastal abrasion. In conclusion, it can be said that the villagers were highly motivated by economic orientation rather than the concept of mangrove conservation and coastal environmental rehabilitation, and that the conflict was provoked by government intervention which intended to make the name of Sinjai known to the public.

Even though the governments have provided the honor of an environmental prize and financial support to the people in Tongke Tongke, they remain some questions regarding the mangrove plantation. How to use the mangrove forests and obtain economic benefits from them? How to acquire governmental approval in order to utilize the mangroves and how to obtain the registration of land property rights? These questions are yet to be resolved.

8. Concluding Remarks

The community-based approach is generally introduced as the most relevant example of efforts in many developmental schemes and environmental conservation programs. However, this study reveals that getting into local society and institutions also represents a key task for those implementing the projects and programs. In the case of conserving and rehabilitating coastal environment or mangrove forests, the participation of local people is also the most important prerequisite. However, as the case of Tongke Tongke suggests, focusing on the economic incentives of local people seems inevitable when the participatory or community-based approach would be implemented.

In the case of Tongke Tongke, due to discrepancies between local people and government, the conflict arose concerning the management of artificially-established mangrove forests. Such conflicts seem to persist in future until the proper legal status of the mangrove lands is settled. Short-term economic benefits such as financial support from the government are important factors in order to promote environmentally-sound activities of the people. However, the long-term economic benefits derived from the mangrove plantation, such as providing property rights on mangrove lands, should also be taken into consideration. It is a matter of course, as this case study shows, that the role of leaders in local community also represents an important factor in order to retain the balance between short- and long-term benefits and to finally solve the conflicts.

Even though the government has enacted regulations such as the Presidential Decree No. 23/1997 and the Regulation No. 8/1999 of the Sinjai District concerning the utilization, conservation and management of mangroves, they were not properly implemented. As this case study shows, different management systems were observed between Tongke Tongke and its neighboring villages, and based on this, it is evident that, in addition to provision of economic benefits to the local people, the enforcement of legal systems and proper implementation of regulations should be taken into account in order to provide suitable circumstances for sustainable coastal resources management.

The findings of this study provide valuable lessons with regard to the management of mangrove forests, which are voluntarily and artificially established by local people. Although it is certainly a difficult issue to allocate property rights for land created in the sea, which is legally defined as a "public" space and actually recognized as an open access space, the local government should try to observe the real motivation of local people and take this into account in order to devise a real solution that could accommodate both the interests of the local people and the local government.

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