

C27. Imam Bachtiar

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Management challenges of marine protected areas in Indonesia: case study of the Aquatic Recreation Park Gili Matra District of Lombok Utara, Nusa Tenggara Barat

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Abstract

Indonesia is in progress of accomplishing its international commitment to have twenty million hectares of marine protected areas (MPA) by 2020. Many new MPAs are now developed every year since 2003, but their management status is struggling in implementation. Aquatic Recreation Park (ARP) of Gili Matra, District of Lombok Utara, used to be an example of the best practise of effective MPA management when it was under authority of the Ministry of Forestry. Its management was handed over to the Ministry of Fisheries and Marine Affairs in 2009. Since then its former management plan was stopped but newly management plan has difficulties in implementation. This challenges provide many opportunities to learn factors inhibiting implementation of the new management plan. Institutional issue is the most challenging issue as its revision needs to be adopted on future legislation and governance. The current management body of the ARP Gili Matra is not sufficient to accomplish its big responsibility, i.e managing one of the fastest growing tourist destination area in Indonesia. Changes of local authority in land-based management also affected ARP Gili Matra with uncontrolled number of boats and accommodations beyond environmental capacity of the ARP Gili Matra.

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Keywords: Gili Matra, conservation, marine, tourism, and management

1. Introduction

Indonesia is in progress of accomplishing international commitment to have twenty million hectares of marine protected areas (MPA) by 2020. Many new MPAs are now developed every year since 2003. In the Ministry of Fisheries and Marine Affairs (MoFMA) there are four types of MPA, i.e. Aquatic National Park (Taman Nasional Perairan), Aquatic Nature Reserve (Suaka Alam Perairan), Aquatic Recreation Park (Taman Wisata Perairan) and Fisheries Sanctuary (Suaka Perikanan). There are four other types of MPA under Ministry of Forestry and Environment (MoFE), i.e. National Marine Park (Taman Nasional Laut), Marine Nature Recreation Park (MNRP, Taman Wisata Alam Laut), Marine Nature Reserve (Cagar Alam Laut) and Marine Fauna Reserve (Suaka Margasatwa Laut). Target of 20 million hectares MPA seems to be achieved before 2020, but many of them are struggling in effective management implementation.

The Aquatic Recreation Park (ARP) of Gili Matra, District of Lombok Utara, used to show effective management under authority of MoFE (Satria and Matsuda, 2004; Hidayat, 2007). Since it was handed over to MoFMA in 2009, however, the effective management was rapidly faded away and there is no management at all in 2010. After hand-over, management authority of ARP Gili Matra is BKKPN (National Agency for Conservation of Aquatic Park, Balai Konservasi Kawasan Perairan Nasional), a regional level conservation agency of MoFMA. At present, 2016, management plan has been set up but it is potentially experiencing hard ways in implementation.

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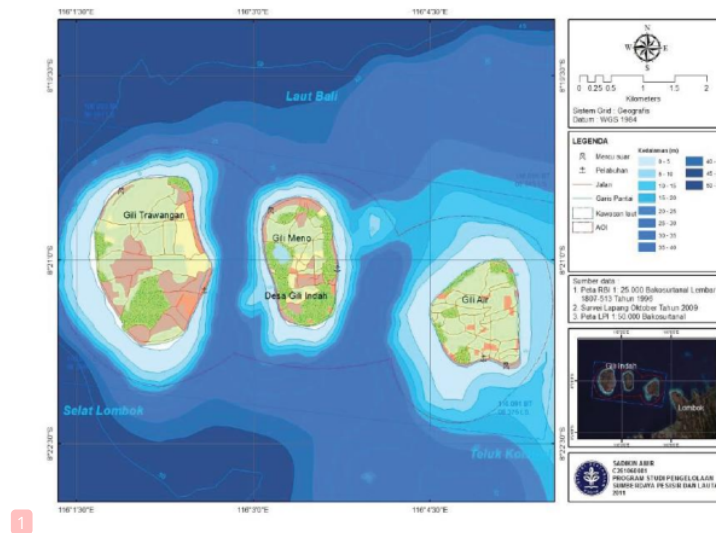


Figure 1. Map of Aquatic Recreation Park Gili Matra, in the District of Lombok Utara. (Source: Amir, 2012).

Management status of ARP Gili Matra is classified into the yellow level of effective management. It is expected to grow into the next green level of effective management. The yellow management level has a management unit, zoning and management plans, and supporting facilities and budget. The green management level should have an approved zoning and management plans, have required standard of procedure (SOP) documents, a decree of establishment of the MPA, and show implementation zoning and management plans (Dermawan et al., 2014). Transforming into the green management level, ARP Gili Matra has to struggle with the implementation of zoning and management plans, although it has already fulfilled the other three requirements.

Management of ARP Gili Matra has to cope with rapidly increasing terrestrial- and marine- based environmental pressures, since it is the best icon of small islands tourist destination. Number of staying tourist increased seven times in the period of 2009-2014. Number of tourism vessels also increased 150% in 2014-2015. These rapidly tourism development is coincidence with weakening of ARP management. It is therefore very big challenge to save marine resources in the ARP Gili Matra.

This paper examined issues and problems related to transformation from yellow to green management level. Many lessons learnt to improve transformation processes of an aquatic recreation park which is also being important tourist destination are discussed.

2. Historical Background

Management authority of ARP Gili Matra has been through a long evolutionary process in the past 23 years. ARP Gili Matra was established on Ministry of Forestry (MoF, former name of MoFE) Decree No. 85/Kpts./1993, 16 February 1993. When it was under MoF, the management authority was on BKSDA (Natural Resources Conservation Agency, Badan Konservasi Sumberdaya Alam), a provincial office. After about 16 years under administration of MoF, the ARP Gili Matra was handed-over to Ministry of Fisheries and Marine Affairs (MoFMA) on 4 March 2009, with a MoFMA Decree No. 67/MEN/2009. At MoFMA administration, the management authority is under BKKPN. There is no provincial office of BKKPN, but two regional offices nationwide, i.e. BKKPN Pekanbaru for western Indonesia and BKKPN Kupang for eastern Indonesia. ARP Gili Matra is officially managed by BKKPN Kupang. BKKPN Kupang has a technical implementing unit office (satuan kerja) at Pemenang, District of Lombok Utara, 15-35 minutes by boat from Gili Matra, to carry out day-to-day management.

Management of ARP Gili Matra was a show case of effective management when it was under BKSDA of NTB (Nusa Tenggara Barat). The effective management was a community based management (Hidayat, 2007). Local community represented on local institutions at sub-village level, e.g. Gili Eco Trust of Gili Trawangan, FPG (Forum Pengusaha Gili Air) of Gili Air, FPGM (Forum Pengusaha Gili Meno) of Gili Meno, they made and implemented their own management plans. The management plans were declared as awig-awigs, a customary law in traditional Sasak and Bali. The implemented awig-awig was practically adoption of a revised version of coral reef zoning and management plans introduced by COREMAP (Coral Reef Rehabilitation and Management Program) (Bachtiar, 2000). The local institutions were composed mainly of people running business or tourism operators on the three islands. Their missions are therefore to have a sustainable business on the ARP that they need to have spaces for diving business, protect coral reefs and clear out dive spots from fishing activities.

Government, represented by BKSDA, had practically quite small role in the management practices. In the first 5 years, 1993-1998, there was not any management plan on MNRP Gili Indah (former name of ARP Gili Matra). Following adoption of COREMAP zoning and management plan by community, BKSDA support the community with a patrol boat and rangers. BKSDA showed a very important role in fighting against blast fishing. The last blast fisherman was caught by BKSDA in 2003.

Under BKSDA management era, 1993-2009, nearly all management of the MNRP Gili Indah was carried out by local community. BKSDA willingness to share its authority with local community was the key success of the MNRP management (Hidayat, 2007). Many national and local events shaped community responses and local institution roles in management. National chaotic political situation following the fall of the New Order Regime encouraged blast fishers to operate freely in the ARP Gili Matra. As many complain from diving tourists endanger future of the islands, local community and tourism operators established local institutions to send away blast fishers (Figure 2). These institutions then joint a bigger fishermen group, LMNLU (Association of Northern Lombok Fishermen, Lembaga Musyawarah Nelayan Lombok Utara), to fight against blast- and poisonous- fishers. In short, local community was pro-actively collaborated with businessmen and government to protect coral reefs as tourism assets of Gili Matra. This community-based management was among the best natural resources management in Indonesia (Satria and Matsuda, 2004; Hidayat, 2007).

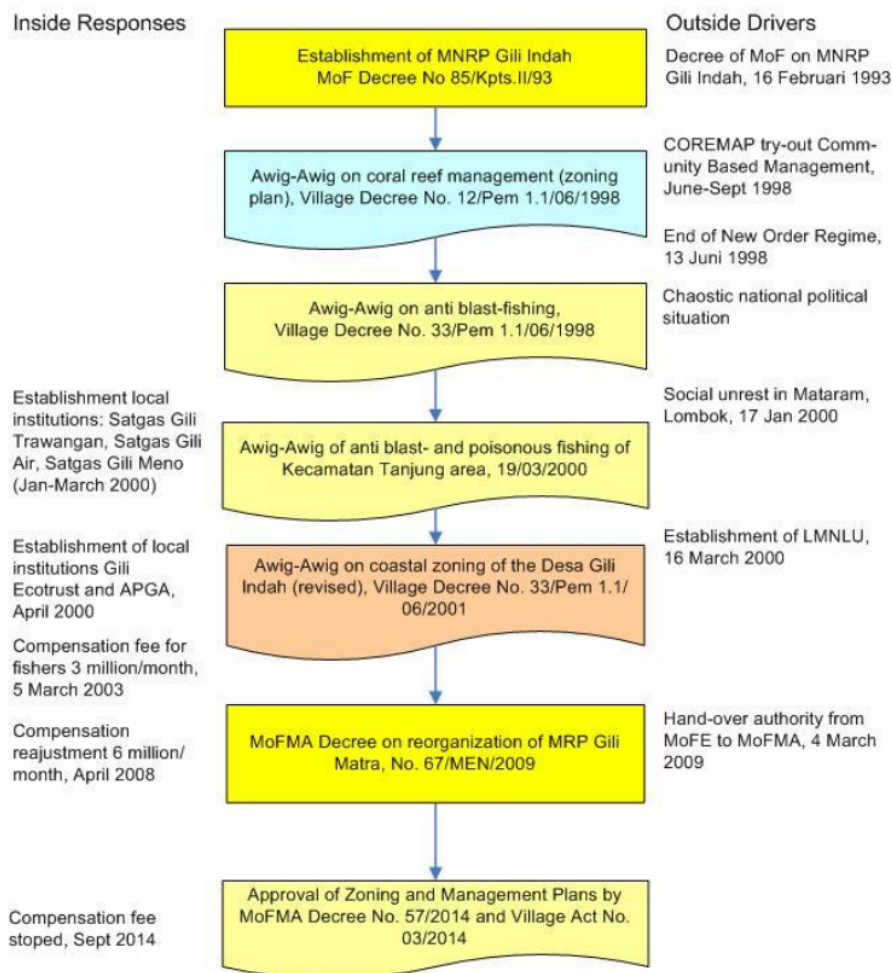


Figure 2. Time-line management history of ARP Gili Matra and its relation to outside drives and inside responses

The effective management was faded away very rapidly following the hand-over management authority from MoFE to MoFMA, in 4 March 2009. The MoFMA was not ready to keep existing management run continuously. There was nearly even no management authority in a period of 2009-2011. During this period, conflicts between fishermen and

dive operators reoccurred and new management authority hardly showed off its existence. BKKPN had only two un-experienced newly recruited staffs that have no idea how to cope with management issues.

When BKKPN office is ready and more staffs are recruited, in 2012, BKKPN worked with WCS (World Conservation Society) to make new zoning and management plans, from 2012 to 2013. While discussion about the new zoning and management plan was in progress, practically no management was in place at ARP Gili Matra. This period, 2009-2014, was therefore still a frustrating period for many dive operators as they have to competing space against muro-ami fishermen. Compensation fee from dive operators to fishermen was stopped in 2014, after 11 years of implementation.

3. Issues and Problems Related to ICM Practices

a. Zoning Plan

The zoning plan was consisted of four zones following government, Government Act (Peraturan Pemerintah) No. 60/2007. The four zones are Core Zone (Zona Inti), Sustainable Fisheries Zone (Zona Perikanan Berkelanjutan), Utilization Zone (Zona Pemanfaatan) and Other Zones (Zona Lainnya). The core zone is area set aside only for research and education purposes. It is perceived therefore as a No-Entry Zone (NEZ). The core zone also serves as No-Take Zone (NTZ). The second and third zone is area for limited exploitation activities. At ARP Gili Matra, the third zones is divided into two sub-zones and the fourth zone consisted of three sub-zones (Figure 3). All the zoning plan is fine, but the presence of three NEZ is obviously a very big challenge.

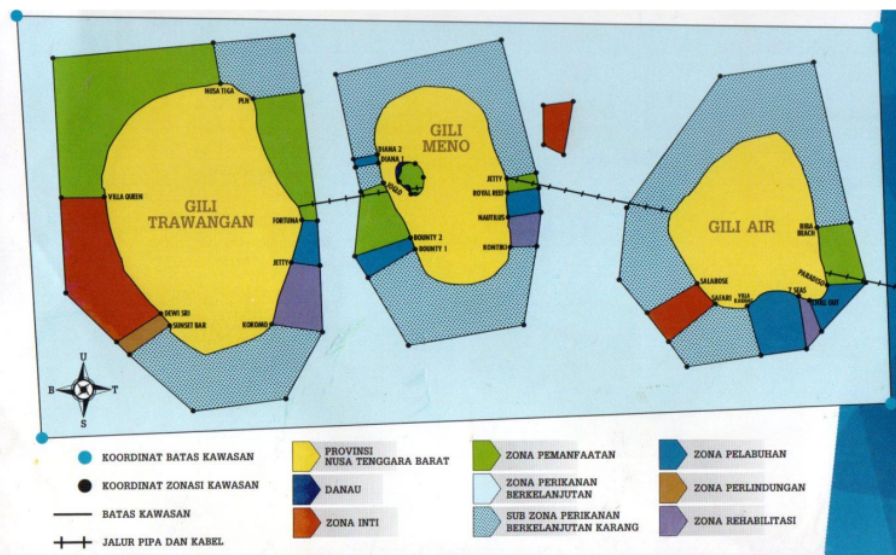


Figure 3. Three core zones (red colour) in Zoning plan of the ARP Gili Matra. Source: BKKPN flyer

Neither vessels nor divers are allowed to pass through NEZ. The presence of NEZ therefore needs more intensive monitoring and surveillance. As there are three NEZs, it needs a lot of efforts to do monitoring and surveillance. Although the planning processes involving local community, its implementation is remain doubtful.

The presence of NEZ is obligatory on each conservation area, including an aquatic recreation park. Every aquatic conservation area must have at least 2% of core zone (NEZ) (MoFMA Act. 30/MEN/2010). In the ARP Gili Matra, NEZ was set up in 94.81 ha or 3.21% of the aquatic area. The NEZ was established on each island, that consisted of three NEZs, i.e. 67.94 ha in Gili Trawangan, 10.78 ha in Gili Meno, and 16.09 ha in Gili Air (Figure 3). Setting up the three core zones were also needs several revisions.

It has been argued in the district task force discussion that the NEZ should be only one area. Firstly, the three NEZs is not fit with the island biogeography principle. One big island has higher biodiversity and less extinction rate than many small ones (Simberloff and Abele, 1976; Whittaker et al., 2008; McArthur and Wilson, 2015). One NEZ is better than three NEZs with the same size area. Furthermore, monitoring and surveillance for one big NEZ is very much easier than three smaller NEZs. This principle was accepted and integrated in the zoning plan at the district task force discussion. Directorate of Area and Fish Species Conservation at Jakarta office, however, rejected it and insisted to make three NEZs at the ARP Gili Matra.

The three NEZs impose BKKPN to difficulties in implementing management plan. Three NEZs are too much too handle for BKKPN with small number of staffs and budget. Conservation efforts on MPA is usually enlarging size area of NTZ not NEZ (Williamson et al. 2004; Hughes et al., 2006; Day, 2008). In the Great Barrier Reefs Australia, for example,

proportion of NTZ is 33.3% but proportion of NEZ is 0.2% (Day, 2002; Day, 2008). It is surprising that at ARP Gili Matra proportion of NEZ is equal to NTZ, only 3.2%. It is very likely to have 25% NTZ (area for diving and snorkelling only) on ARP Gili Matra. The zoning plan did not accommodate NTZ since it is not explicitly regulated on MoFMA Act. (Permen KP) 30/MEN/2010.

b. Surveillance and Enforcement

The zoning plan was a long process involving both communities and central government (MoFMA). After this long breath-taking discussions, the zoning plan was issued as a MoFMA Decree No. 57/Kepmen-KP/2014. Community involvement was very intensive that about 35 meetings were held to have a majority approval of the zoning plan. The processes involved three level of discussion groups: a) local community discussions on each three islands (sub-villages) and village level, b) discussions on a district task force and c) discussions on national ministerial level. Local community discussions were attended by staffs from village government, tourism operators (hotel, restaurants, trips), and fishermen. The district task force was composed of staff of relevant district agencies, staff of BKKPN, village community leaders and lecturer of a local university (University of Mataram). The new zoning plan was facilitated by Marine Program of the the World Conservation Society (WCS). The WCS employed a staff working full-time for 24 months at the islands. Prior to zoning planning, they carried out surveys both on ecology and social-cultural. Zoning plan was designed based on finding from the ecological survey and community willingness to the zoning plan.

Zoning plan needs monitoring and surveillance, not only on NEZ but also on other zones, but BKKPN only have mandate in monitoring, no authority in doing surveillance. Institutionally, BKKPN is under the General Directorate of Marine Spatial Management. Surveillance and enforcement mandate is under the General Directorate of Fisheries and Marine Resources Surveillance. Such institutional organization inhibits implementation of the zoning and management plan. Any violations on zoning and management plans can be neither arrested nor sanctioned. BKKPN staff obligatory is reporting marine spatial uses in ARP Gili Matra every time they carried out monitoring. Without surveillance capacity, implementing zoning plan will never been an easy job.

This inhibiting factor in management implementation has been anticipated by BKKPN and WCS. The approved management plan is expected to be adopted by village government as the village awig-awig. When the zoning and management plans belonged to the Village of Gili Indah, as an awig-awig or a Village Act, the village have responsibilities and authorities to implement the zoning and management plans. The Village have authority to seize and apply penalty on violators. This scenario, however, does not run smoothly.

The village government formally adopted the zoning plan as a Village Act No. 03/2014, but not enthusiastically supporting its implementation. The village asked BKKPN for facilitating establishment of task-forces on each island which will be given authority to implement the Village Act. This indicates that the village government does not show strong motivation and passion to manage coral reefs of the islands and want merely to rely on BKKPN to do the job. With all authority it holds, the village government has capacity to coordinate tourist operators in collaboration with BKKPN to make zoning and management plans in place.

BKKPN also has opportunity to work with other government institution to carry out surveillance and enforcement. There are several staffs of the Provincial Fisheries Office (PFO) who have authorities to do surveillance on fisheries, after they had several surveillance trainings. They have authorities by law to seized violators, confiscated their properties and send them to the Police Office. Coordination between BKKPN and PFO on surveillance, however, is not practical, although distance between the two offices is about 35 km or an hour drive. The surveillance staffs cannot be ready anytime they are needed by BKKPN.

Another opportunity in implementation of the zoning plan is that BKKPN staffs inviting a Police officer every time they are conducting monitoring. This effort may be potentially effective as they have surveillance officer on board, but in practice it is inefficient. It costs time and money, as the Police Station also must be ready on their daily main duties on terrestrial security affairs.

Resolution on this problem is upgrading BKKPN staff on training that several of them will be granted to be a fisheries-surveillance officer. This should be a national program, as this situation would occur on other MPAs under MoFMA. Alternatively, the Directorate General of Fisheries Surveillance distributes its surveillance staffs to all MPA management offices.

c. Community Support

Support of the Village Government on the implementation of ARP Gili Matra management is less than it was expected. This needs to be studied more intensively to figure out what was going wrong with them. This paper describes only observable events that took place on ARP Gili Matra. On its beginning BKKPN showed less impressive introduction. In the period of 2009-2011, BKKPN was urgently needed by local community to provide resolution on spatial conflicts between dive operators and muro-ami fishermen, but BKKPN was not ready to cope with this issue and did not do anything to solve the conflict. There were no management existed within the period of 2009-2013.

Following management authority hand-over of the ARP Gili Matra, the new management authority should have clearly stated that existing management plan was still in place. In fact, there was no formal statement concerning the

management measures that was in place during the period. Therefore, violators were freely conducting their activities without facing sanctions from any authorities. Complains were frequently spoken out from dive operators organization, Gili-Eco Trust, but the newly established BKKPN did not respond it conveniently. BKKPN “ignorance” on its new establishment to violations of existed awig-awig weakened respect and expectation from dive operators and other tourism operators and village government.

After long abstinence from management, starting a new management is a very big challenge, even it is bigger than starting a new management in a new location. People are already adjusted to condition of no management. When they survived, they will think that they business will survive well without any management from government, as it has been proven on the last seven years. Thus local community, village government and tourism operators might have lost their motivation to take part on the present co-management framework initiated by BKKPN. They let BKKPN to do its job and they will do their own business. Community of the Village Gili Indah, inhabitants of ARP Gili Matra, has shown its persistence against government regulation when they lost motivation to take part on government program (Bachtiar and Mayes, 2014).

With lack of community support implementing zoning plan with three NEZs might be very difficult. In case of authority management hand-over, as happened at ARP Gili Matra, a new management authority should have been running any existing management plan before introducing its new one. Abstinence of management authority and management plan weakens community participation and lessens their motivation in future co-management framework.

d. Institutional Issues

On daily basis, management of ARP Gili Matra is carried out by an implementing unit (satuan kerja) of BKKPN. All administrative and budget planning are dependent on BKKPN Office at Kupang. The implementing unit has no authority to make any decision on management issues. As BKKPN Kupang also handles 12 implementing units of MPAs distributed on 12 archipelagic provinces on eastern Indonesia, this organization structure does not run very well. Many issues that require immediate decision need to wait for several days in seeking approval from BKKPN Kupang's office.

Ideal management office of ARP Gili Matra, which has intense daily load from tourist operators, should have independent administration and budgeting. It should also have capacity in surveillance and enforcement. Upgrading the management authority from implementing unit office to bigger authority is required to empower this management office implementing effective management. In the 2016, for example, there was a budget for conducting 18 monitoring trips, but only 9 monitoring trips were done due to its lack authority in administration and budgeting.

Ideal management office should also be capable of synchronizing its marine programs with adjacent terrestrial program. Within ARP Gili Matra, management of the water is under BKKPN while management of the islands is under District of Lombok Utara. Synchronization of management programs with terrestrial programs is difficult at its present office level. With these difficulties in coordination and synchronization, the implementing unit of BKKPN have very big challenges to have an effective management implementation.

4. Current Situation

Transforming management status of ARP Gili Matra from yellow to green level has to cope with big challenges, i.e. implementation of zoning and management plans. This works require more than just plans, SOPs and a decree of establishment. It also needs dissemination of the plans, border marking between zones and formation of effective implementing units. Following approval of zoning and management plan on early 2014, all the supporting agendas should have been done immediately to get the best momentum in implementation. Among the three follow-up activities needed, however, only dissemination that run well till the end of 2016.

Dissemination of zoning plan is being done through billboard posting on four tourism boat harbours, i.e. Bangsal, Gili Trawangan, Gili Meno and Gili Air. Dissemination is also carried out by posting stickers on pulic boat ticketing offices. So far, the dissemination of zoning plans is very good that all inhabitants and tourists have high probability to spot one of the dissemination media. Border marking between zones, however, is not yet installed.

At present, there is not any marking on borders between zones. Without border marking zoning plan will end up just as a paper work. BKKPN should immediately provide and install buoys as border marking between zones. The core zone or NEZ must have red colour to distinguish them from other zones. The border marking is supposed to be done immediately upon approval of the zoning plan by MoFMA. The late border marking may lower community participation on implementation of zoning plan.

Management unit to implement the zoning plan is also not yet ready. Within the framework of community-based management using Village Act No. 03/2014, there will be a sub-village task force to carry out monitoring and surveillance. This policy is aimed to compensate BKKPN's incapacity in surveillance. The sub-village task force at each island should therefore also be established in near future. Delay of following up zoning plan discourage implementation of the zoning and management plans, as people already forgot the mission of the management plan.

All this delays (2014-2016) was due to low capacity of the BKKPN implementing unit at Pemenang, District of Lombok Utara. Upgrading the implementing unit is therefore very important to strengthen management of ARP Gili Matra. The present implementing unit of BKKPN lack of capacity to cope with big challenges in management of ARP Gili

Matra. Bachtiar (2000) reported that failure of zoning plan implementation on MNRP Gili Indah (former name of ARP Gili Matra) was in part due to delay in following up zoning plan approval.

5. Lessons Learned

1. No-Entry-Zone (Core Zone, Zona Inti) is not compatible with Aquatic Recreation Park of Gili Matra. MPA-type Recreation Park should have more area for Recreation Zone or Tourism Zone, which is similar with No-Take-Zone. NEZ should be compatible only for Aquatic National Park (Taman Nasional Perairan) and Aquatic Nature Reserve (Suaka Alam Perairan). In the ARP Gili Matra, nearly all beaches are occupied by resorts and hotels. The existence of NEZ in front of hotels and resorts impose big problems to implementation of zoning plan.
2. Incompatibility of ARP Gili Matra to NEZ (Core Zone) at least due to two factors. Firstly, this type of MPA host tens of thousands divers per year that NEZ violation has high probability and is very difficult to monitor. Secondly, all NEZs set up in front of accommodation (hotels and resorts) that nearly impossible to prohibit tourist walking or swimming within NEZ.
3. Three NEZs on Gili Matra inflict more troubles on management. One NEZ is very difficult to implement, and three NEZ is nearly an impossible mission. On crowded ARP Gili Matra, hundreds of divers go to limited dive spots twice a day. If they are not expected entering NEZ, it would be very difficult and very expensive to monitor.
4. Transforming three NEZs into NTZs may ease the manager to implement the zoning plan. This means to revise MoFMA Act No. 30/2010, chapter 3, article 9(3). On this article, all conservation area must have 2% of core zone. As it is incompatible with ARP Gili Matra and probably neither to other ARPs, it is suggested to revise that 2% of core zone must be present only in aquatic national parks and aquatic nature reserves. In other two types of conservation area, core zone is optional not an obligatory. In compensation, there should be set up 25% of NTZ that people may swim and dive but not taking anything on this area. Setting up 25% NTZ is much more reasonable to do and potentially have much better impact than having 2% of NEZ.
5. BKKPN needs to be equipped with authority in surveillance and enforcement. This can be done by upgrading BKKPN staffs to get surveillance certificate or supplying a surveillance staff from the Directorate General of Fisheries Surveillance. Without capacity in surveillance and enforcement, management of ARP would be on paper only.
6. MPA hand-over may be a simple process when it is done properly. Without proper preparation, however, MPA hand-over could weaken existing effective management and in turn lessen community participation on future collaborative management. ARP Gili Matra is a good example of improper preparation of MPA hand-over.
7. Good introduction is very important to have community participation in co-management. During the first 3 years of preparation of new management plans, management authority must acknowledge continuity of existing management plan and put effort in maintaining efficacy of the management.

References

- Bachtiar I. 2000. Community based coral reef management: Lessons learned from the Marine Tourism Park Gili Indah, Lombok Barat. *Komunitas (Journal of Rural Studies)* 3(1):67-77
- Bachtiar I and Mayes, G. 2014. Tourist satisfaction in the Marine Recreation Park of Gili Matra, Kabupaten Lombok Barat, Indonesia. *Proc. Int. Res. Symp. Sustainable Tourism Development, Mataram*, 30th August 2014, 56-65.
- Day J. 2008. The need and practice of monitoring, evaluating and adapting marine planning and management - lessons from the Great Barrier Reef. *Marine Policy* 32: 823-831
- Day JC. 2002. Zoning—lessons from the Great Barrier Reef Marine Park. *Jon C. Day. Ocean & Coastal Management* 45: 139-156
- Dermawan A, Lubis SB, Suraji. 2014. Status Pengelolaan Efektif Kawasan Konservasi Perairan, Pesisir dan Pulau-pulau Kecil di Indonesia. Jakarta: Direktorat KKJI, Kementerian Kelautan dan Perikanan.
- Hidayat A. 2007. How distributional conflicts theory explain factors affecting institutional changes in coral reef governance? Lessons learned from Gili Indah Village, West Lombok Indonesia. *Journal of Coastal Development* 10(2): 73-88.
- Hughes TP, Bellwood DR, Folke CS, McCook LJ, Pandolfi JM. 2006. No-take areas, herbivory and coral reef resilience. *TRENDS in Ecology and Evolution* 22(1): 1-3
- MacArthur RH and Wilson EO. 2015. *Theory of Island Biogeography*. (MPB-1). Vol. 1. Princeton University Press.
- Satria A and Matsuda Y. 2004. Decentralization of fisheries management in Indonesia. *Marine Policy* 28: 427-450
- Simberloff DS and Abele LG. 1976. Island biogeography theory and conservation practice. *Science* 191(4224):285-286
- Whittaker RJ, Triantis KA and Ladle RD. 2008. A general dynamic theory of oceanic island biogeography. *Journal of Biogeography* 35:977-994
- Williamson DH, Russ GR, Ayling AM. 2004. No-take marine reserves increase abundance and biomass of reef fish on inshore fringing reefs of the Great Barrier Reef. *Environmental Conservation* 31 (2): 149-159

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