

ISBN : 978-602-98439-7-2

PROCEEDINGS

International Seminar

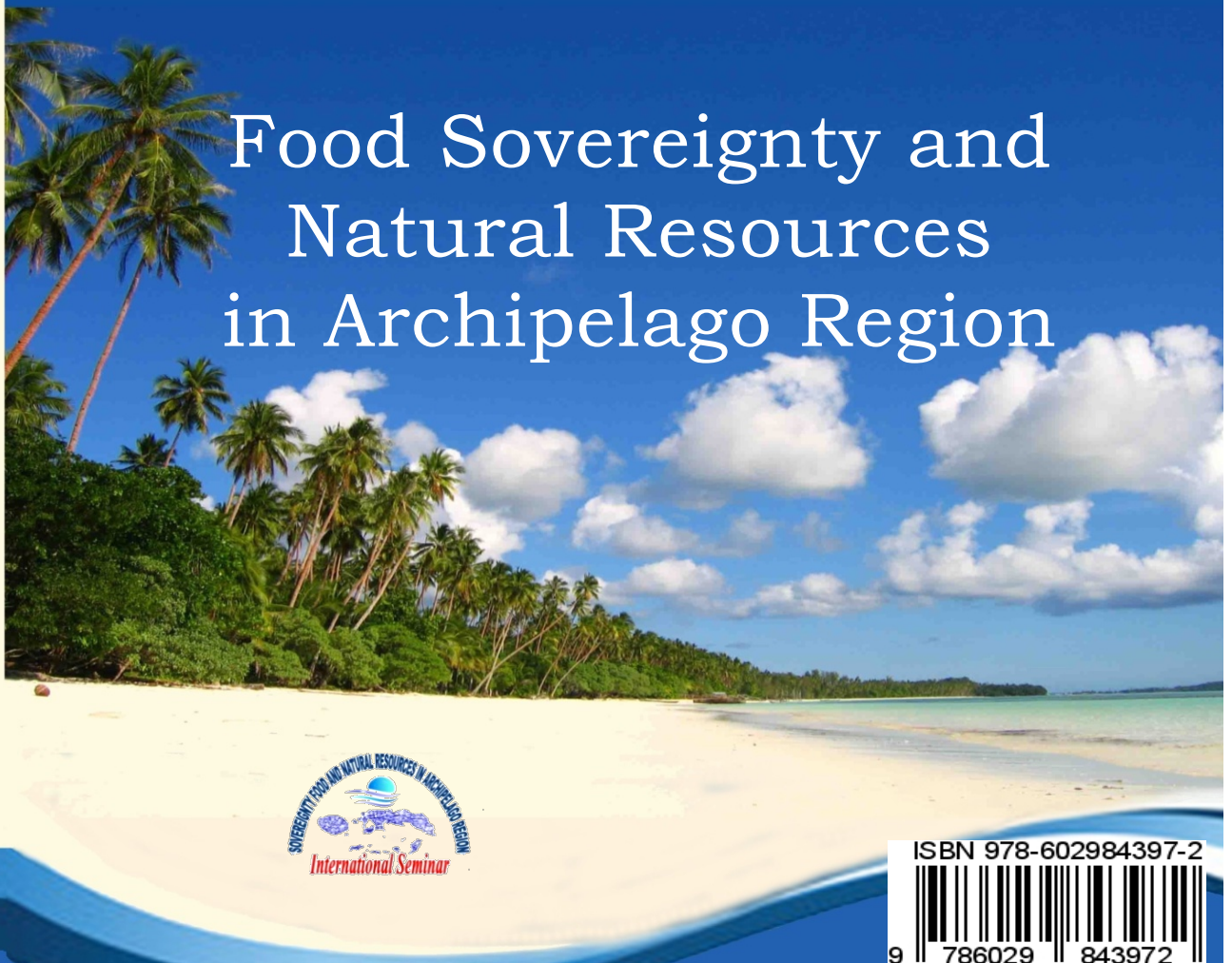


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Food Sovereignty and Natural Resources in Archipelago Region



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International Seminar

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ISBN 978-602984397-2



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ICC-IPB Botani Square
23th -24nd Oct-2012

MARINE PROTECTED AREAS DEVELOPMENT THROUGH THE USE OF LOCAL WISDOMSASI

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Abstract

Most of the marine protected areas in Indonesia is minimal implementation. the management of conservation in Indonesia is the dominance of the central government. The conventional centralized management approach will lead to the exploitation and waste of resources. Sasi is a natural resource management conducted by spatial and temporal closure of an area of natural resources. Sasi is found in the South Pacific region and several areas in Indonesia such as Maluku and Papua. Sasi can be distinguished on the following aspects: location, type of commodity, implementers of ceremony, and customary tenure. Several factors that may result in compliance with sasi are: (1) changes in perceptions about spirituality sasi values, (2) the weaker the indigenous leadership, (3) non-performance sasi values, (4) increase the number of local residents and entrants, and (5) failure to understand the carrying capacity of natural resources. There is adoption of modern conservation approaches into sasi management in Raja Ampat such as closing time sasi longer, and open sasi time shorter. Marine conservation management of Raja Ampat is also adopted sasi area as one of zone in zoning plan of its regional MPA.

BACKGROUND

Based on the marine biodiversities of Indonesia which composed over 500 species of 70 genera of coral, 2,500 species of fish, 2500 species of mollusks, 1,500 species of crustaceans, and many other types of marine life; make Indonesian waters as the center of the world's coral triangle (Coral Triangle) that is an area that the residence of the world's richest marine biodiversity (Huffard et al 2012). Potential for sustainable fisheries resources Indonesia is estimated at 6.4 million tons per year, the total allowed catches (TAC) of approximately 5.12 million tons per year and the current utilization rate has reached 90% of the TAC (Nikijuluw 2005).

Indonesia's waters has decreased function as a provider of food fish. Indonesian fisheries experts have obtained information that a decline in fish populations in the Arafura Sea and the sharp decline in the fish catch in Java. In addition, many have reported which intensive damage of coral reef since eastern Indonesia caused by fishing with poisons, explosives and destructive fishing gear to catch shrimp, and damage due to deforestation (Heazle and Butcher 2007).

One approach to prevent further loss of marine resources in Indonesia is through the establishment of marine protected areas in areas that still have relatively good water conditions. Approach to conservation management in accordance with the Durban Congress (Borrini-Feyerabend et al. 2004) include: (1) conservation area managed by the government, (2) collaborative management of protected areas (co-management), (3) private protected areas and (4) community conservation areas.

So far the problem faced in the management of conservation and management of fishery resources in Indonesia is the dominance of the central government. The issues concerning: (1) the process of establishing marine protected areas by this system is more dominant government compared with community, (2) in field found sector large and overlapping roles between the Ministry of Forestry with Ministry of Marine and fisheries, (3) the understanding that the sea is owned and fully managed by the central government with ignore the customary rights of local communities, (4) centralization often in line with the dominance of Western science is used as a conservation area without regard to knowledge and technology local communities (Damanik *et al.* 2006).

As a result, many protected areas are not effective and fail to achieve the objectives. Most of the marine protected areas in Indonesia is still a government decision letter that minimal implementation known as Paper Park. A study conducted by Burke *et al.* 2012, showed that of the 175 marine protected areas in Indonesia are managed defectively only 3 full, 24 is quite effective, ineffective 59 and 89 there is no information. The low performance of the management of protected areas due to human and financial resources are very limited (Susanto 2011; Haryani *et al.*, 2008). The conventional centralized management approach will lead to the exploitation and waste of resources called "tragedy of the commons", so this management model to be part of the problem and not a solution to over-exploitation (use more) of resources (Berkes *et al.* 2003).

Centralized management tends to adopt the conventional theory of conservation management is a summary of research in developed countries such as North America, Australia, Europe and the Mediterranean and vice versa is still few done in third countries that have a wealth of reef resources. Hardly be expected that this lessons learned will be effective when applied in the management of coral conservation in the region that has different conditions of social and ecological systems (Ban *et al.* 2011).

There is no single solution which applies universally to exist because the right approach always depends on the local context (Ferse *et al.* 2010). The management of marine conservation in Indonesia should be wiser to explore all potential of native Indonesian conservation management which can be used as a model of conservation management. The local people who live in the inland and coastal villages, have been practicing the typical Indonesian natural resource management in every day life such as *sasi* in Maluku and Papua.

This paper examines the types of local knowledge *sasi* which practiced in eastern Indonesia that are relevant in the management of marine conservation. In addition, describe *sasi* that still practiced until now. This paper also describes the factors that may affect the sustainability of the practice of *sasi*. Finally analyze the possibility of *sasi* to be used for marine conservation in Indonesia.

Sasi as the Fisheries Resource Management Model in Indonesia

Sasi is a natural resource management conducted by spatial and temporal closure of an area of natural resources in the form : field (garden), forests, coral reef and fishing ground (Thorburn 2000). Implementation of *sasi* divided into closed *sasi* and open *sasi*. *Sasi* ceremony is conducted by traditional rituals, religious ceremonies or a combination of both. Closed *sasi* is prohibit catch fish or marine biota of an area for a specific period. Other wise open *sasi* is a chance to catch fish or other marine biota in an area that previously prohibited (Mustaghfirin *et al.* 2012). Villages that still maintain the practice of *sasi* in a water areas showed better resource than villages that have been left *sasi* (McLeod *et al.* 2009).

Natural resource management practices that are based on customary tenure to natural resources such as *sasi* found in the South Pacific region (Lam 1998). *Sasi* management in Indonesia is found in Maluku and Papua (Wahyono *et al.* 2000), but actually there is also in other location of Indonesia. As reported by Anakotta *et al.* 2009 that the practice of temporary closure in Kupang waters also found with local name *lilifuk*. In the Pacific region where communal ownership is retained, *sasi* management also found with various names : *taboo* in Fiji (Lam 1998), *tabus* in Vanuatu (Caillaud *et al.* 2004), and *tambu* in Solomon Island and Papua New Guinea (Foale and Manele 2004).

Table 1 sasi synonym names in various regions and countries

Synonym of sasi	Location	Sources
Taboo	Fiji	Lam (1998)
Tabus	Vanuatu	Caillaud <i>et al.</i> 2004
Tambu	Solomon, PNG	<i>Foale and Manele (2004)</i>
Sasisen	Biak (Indonesia)	Mansoben (2010)
Tiatiki	Jayapura	Mansoben (2010)
Gam	Kaimana	Feneturima (2001)
Lilifuk	Kupang	Anakotta <i>et al.</i> (2009)
Samson, Kabus	Raja Ampat	Mustaghfirin <i>et al.</i> (2012)
Fusu	Ternate	LKMD 1994 <i>dalam</i> Nikijuluw 1994

In general, sasi types can be distinguished on the following aspects: location, type of commodity, implementers of ceremony, and customary tenure. Based on the location, sasi divided in to land sasi and marine sasi; based on a protected commodity divided in to coconut, sasi trochus sasi, and sea-cucumbers sasi; based on implementers ceremony is customary sasi and church sasi; based on customary tenure the family sasi and village sasi. In addition, there is also sasi determined based on natural conditions such as sasi in Misool Island (Raja Ampat), occurs because the waters can not be exploited due to high winds seas on about three months so that there are no residents or local fishermen can catch marine biota during that time (Mc Leod *et al.* 2009). There is also sasi assigned to an area related to the events mourning on the death of a local leader in the New Ireland Province, Papua New Guinea (PNG), natural resources (land and sea) are closed for a certain time and reopened as the implementation of the party to end the mourning period (Wright 1985).

Sasi is still very simple institution adapted to social structures of a community. According to Wahyudi (2003), the management system on very simple social structure (homogeneous and limited population) can easily run management system. This is because each individual has the interest and equal responsibility in implementing and over seeing legal agreement. Each management process from planning, organizing, implementing and monitoring carried out together. As seen in Raja Ampat where sasi management process proposed and facilitated by three institutional elements in each village are: village heads, traditional leaders and church leaders. Sasi in Raja Ampat do not have a management body to oversee sasi, determine the execution time, and setting the size of the harvest and sale of the crop.

All of these activities carried out collectively all members of the village community. In Maluku according to Tuhulele (2013), the implementation of sasi is supervised by an indigenous organization called Kewang. Kewang is customary institutions that have direct access to the territory of indigenous communities both on land and at sea.

Members of the community who are caught breaking the rules sasi will obtain social and supernatural sanctions. Social sanctions for violators of sasi in Maluku are: (1) pay the penalty for taking life, (2) obtain physical punishment (whip 5 to 50 times), and (3) the moral punishment humiliated in public. Supernatural sanctions believed to be received by the violator rule sasi are in the form of illness and even death for those who do not admit mistakes or do not pay the fine (Wahyono *et al.* 2000). Social sanctions for abuse of sasi in Raja Ampat are: to fix roads in the village, to build village hall, to repair dockboat fishermen. In addition, all organisms will be confiscated stolen, then sold and the proceeds used to fund activities in the village (Mustaghfirin *et al.* 2012).

Sasi legality of the indigenous people is part of customary rules both written and oral form. In the national context there are no laws that specifically regulate local wisdom of indigenous peoples in Indonesia. Juridical acknowledgment of the existence of indigenous people and local wisdom is still in the form of a general rule. Law No.32 of 2009 in Article 1, paragraph 30 states that local wisdom is the noble values that apply in order to live among other people to protect and manage the environment sustainably. At the Law No.41 Year 1999 on Forestry Article 67 paragraph (1b) states that the existence of indigenous people the right to be recognized forest management activities based on customary law and not contrary to law. Similarly, the Law No.27 in 2007 regarding Management of Coastal Areas and Small Islands chapter 61 paragraph (1 and 2), the Government recognizes, respects and protects the rights of indigenous peoples, traditional communities and local wisdom on coastal areas and islands small islands that have been used for generations as a reference in sustainable management of coastal areas and small islands. Determination of formally traditional management as sasi is very urgent to do because the future its presence will be eroded by population growth and in creating investment in the coastal region. According to Nendissa (2010) that the sasi in the Dutch colonial period had been supported by formal rules such as: (1) Series R.44 a Boutvan Sasi in De Molukken in 1921, and (2) Netherlands Indies Government Regelement in 1915-1922 series R.no.45 of Sasi Regelement Te Paperoe.

Threats In Sasi Management

Although there is a lot of information that describes the success story of sasi in maintaining marine resources, but some areas of sasi did not achieve management objectives even in some local communities have

left this practice. Several factors that may result in compliance with sasi are: (1) changes in perceptions about spirituality sasi values, (2) the weaker the indigenous leadership, (3) non-performance sasi values, (4) increase the number of local residents and entrants, and (5) failure to understand the carrying capacity of natural resources. According Anakotta *et al.* (2009), there are three causes of sasi in Kupang ineffective: 1) not afraid of customary prohibition because of new understanding (Christian religion), (2) harvest is done 2 to 3 times a year, and (3) the theft from outside the village.

Acceptance of new values such as religion and Western science in to the lives of the people who previously ancestral religion (animism) has changed the understanding of the implementation of SASI. Sasi previously is done through traditional ceremony that essentially giving homage and request to natural guardian spirits by giving of offerings (Fenetiruma 2001). This approach to religious leaders where SASI implemented is considered contrary to religious practices that cause disagreement and confusion about the management of marine (Caillaud *et al.* 2004).

Weak leadership in indigenous communities is one reason why the implementation of SASI tends to be ineffective. Weak leadership is greatly influenced by the change in perception of the values of a leader. Before the colonial era in Indonesia, the local leadership more based on matrilineal or matrilineal system, which a local leader is determined by heredity. The arrival of European colonizers who brought leadership system based on the ability of individuals, so that not infrequently cause conflict with in local community. In addition, the traditional power unacceptable by religious leaders because of the traditional leader of power associated with the supernatural (Muehlig-Hofmann 2007).

Sasi cultural degradation occurs because shift in power structure from closed to open, leading to the pros and cons in community. Conditions are not conducive to the sustainability of social process. Implications from the alteration, there are suspicion between communities, community against local leader and community against village staff, so that the implementation of sasi can not last long. The current sasi implementation is likely to no longer reflect social norms, but leads to more economic (Sangaji 2010)

Basic values in traditional resource management include: livelihood, justice, responsibility and cooperation. The values are rooted in the existence of the four main pillars: security of tenure of land, inheritance and tenure, and the decision-making process (Caillaud *et al.* 2004). Non-compliance with the values of the traditional management causes conflict in the management of sasi, both conducted by the community and local leaders. Wahyono *et al.* (2000) noted that the types of conflicts related to the implementation of sasi in Maluku as follow: (1) the conflict area

management, (2) conflicts over the distribution of results, (3) conflict of jurisdiction and (4) conflict over the transfer of sources uses.

Population growth either by birth or immigration is one of the sasi sustainability threats. It is based as a traditional society generally sustains their lives relying on natural resources that are around them. Population growth also means increased need for food to be fulfilled from the sea. Especially if carrying capacity of marine resources is not able to support the food needs of all residents, then to other locations including the SASI region will be exploited. According Cinner (2005), that high endogenous population growth (not from immigration) in smaller communities may not affect the ability to employ viable marine tenure.

Mean while Cinner (2009) expressed that socioeconomic transformations within communities, including migration, have been shown to alter customary governance institutions such as marine tenure and customary fisheries closures. Fishers near parks are more aware of the effects of fishing effort and perhaps increased control of area results in greater sensitivity about effort. Similarly, urbanization near the parks appears to improve knowl- edge about markets and pollution (Cinner *et al.* 2010.). Results suggested that customary management institutions were not resilient to factors such as population growth and economic modernization. If customary management is to be used as a basis for modern conservation initiatives, cross-scale institutional arrangements such as networks and bridging organizations may be required to help filter the impacts of socioeconomic transformations (Cinner *et al.* 2007).

The researchers get the fact that a decline in stock target biota in sasi locations. Case studies of periodic closures are reviewed restaurants to high light the variations in the target species, harvesting and fishing pressure periodicity that fisheries management will influence the effectiveness of this toolin the Indo-Pacific. Fisheries management benefits are observed for short-lived, fast-growing taxa or for a range of taxa in low fishing pressure situations. Stocks declines are observed for long-lived taxa or for a range of taxa if harvesting is intense. It is argued that community-based and co-management policy and action must better account for these factors when promoting and implementing periodic closures for medium to long-term fisheries management or conservation goals. Spatial marine closures are widely employed and advocated for marine resource management and conservation. Temporal, non-permanent, rotational or periodically harvested area closures have been employed across the Indo-Pacific for centuries and are a common measure within contemporary community-based and co-management frameworks. Although prior evidence suggests that periodic closures may confer fisheries benefits for some taxa or in certain conditions, there is little evidence that they are equally effective for the sustainable management of the many types of small-scale fisheries important (Cohen & Foale 2012).

Potential of Sasi in Marine Conservation Approach

Management of natural resources by indigenous has received significant attention as one potential in conservation management in the Indo-Pacific (Cinner *et al.* 2007). Traditional management of resources as was usually done through the customary tenure system. The main customary conservation practices were: 1) sacred sites; movement into and within these sites was usually restricted to certain people or customary priests only. These sites then automatically served as unofficial protected sites; 2) Social prohibitions; prohibitions or restrictions on the consumption of certain species by some social groups (these could be continuous or limited to certain times of the year), and 3) Serial or sequential prohibitions; which rotated areas and limited access to some groups for harvesting resources (Caillaud *et al.* 2004). The success of traditional marine resource management adopted into modern conservation has improved the condition of coral reefs in the Oceanic countries (Aswani *et al.* 2007).

There is areal effort of the local government, NGOs and universities to integrate modern conservation management with traditional management as one of the models in the management of marine protected areas in Indonesia, especially in Raja Ampat. The steps taken were with the revitalization of the sasi this in the management of marine resources in Raja Ampat. Many customary region that used to doing sasi has left this management. The initiator, Raja Ampat government, NGOs and universities, encourage traditional leaders in Raja Ampat to be willing to give their traditional territory to set a marine conservation area as well SASI. In the process of the revitalization was an attempt to adopt modern conservation science into the implementation of sasi in Raja Ampat.

Some of the changes which have occurred in the management of conventional sasi in Raja Ampat are the closing time sasi be longer, and open sasi becomes shorter. In addition, the existence of customary tenure of waters designated as permanently closed areas (permanent sasi) and adopted the sasi region in to the regional MPA by local regulation of Raja Ampat District No. 27 of 2008. Prior to the establishment of regional MPA closing time sasi during 6-12 months, and open sasi for 3 months. After establishment of the conservation area closing time sasi become more than 24 months and open sasi timeless than 15 days. Some customary waters of Raja Ampat which have a high diversity of coral species, and spawning and nursery ground for fish have been declared as a permanent sasi region. In the regional MPA management plan in Raja Ampat particular zoning plan has been established two zones associated with sasi, respectively: (1) the zone of sasi and traditional utilization and (2) food security and tourism zone (sasi permanent). At the sasi and traditional use zones, local people can fish and other biota and implement management sasi and their traditional fishing practices. At the food security and tourism

zones are no longer allowed to do activities taking or harvesting of any biota except for non-extractive activities such as tourism. This zone is expected to be the area of savings ("bank") of fish which can provide spill-over effects to the adjacent areas such as recruitment of fish from the protected areas.

CONCLUSION

Sasi management practice is a natural resource management culture that rooted in customary tenure of population in the South Pacific region. In general, the types of sasi based on the following aspects: location, type of commodity, implementers of the ceremony, and customary ownership. Sasi determination may also be due to the effect of natural wind season, and the events linked with mourning on the death of a local leader. Several factors that may result in compliance with sasi are: 1) changes in perceptions about the values spirituality of sasi, 2) weaker indigenous leadership, 3) lack of respect for values of sasi, 4) increasing in the number of local residents and migrants, and 5) failure to understand the carrying capacity of natural resources.

Some of the changes that have occurred in the management of conventional sasi in Raja Ampat are: 1) the time of closing sasi longer, and the time of open sasi shorter, (2) the establishment of customary area as permanently closed areas or permanent sasi, and (3) the adoption of the sasi areas into the regional MPA formally through local legislation.

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