Revitalization of traditional fisheries rights of indigenous people in sustainable fisheries management in Indonesia

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Abstract. Climate change that increases the ocean surface temperature has affected life in the ocean ecosystems. Fish migrate from their natural habitat and seawater intrusion will affect the coastal ecosystem, so that fishermen need to adjust their fishing methods. Indonesia's oceans hold enormous fisheries potential wealth and enormous potential economic value that needs to manage properly. For decades, the traditional and local wisdom in coastal communities has become the prime movers of marine and fisheries development. Unwritten customary rules in fisheries resource management are presumed to be a factor in the loss of local communities' wisdom in the modernization era. The customary institution's effectiveness in the implementation of compliance and supervision of customary rules is prone to degradation and this is partly due to the current generation's lack of local knowledge and the rapid development of fisheries management technology, which in some cases is a threat to the preservation of marine ecosystems. This research was a normative study based on primary and secondary legal materials. This research aimed to revitalize traditional fisheries rights in the management of Indonesia's marine resources. The result showed that some hereditary traditional knowledge made indigenous peoples more able to adapt to climate change so the involvement of indigenous peoples and the fulfillment of their traditional rights must be considered in fisheries management policies.

1. Introduction
Indonesia has sovereignty and jurisdiction over the territorial waters and the authority to stipulate provisions on marine and fishery resources. The fisheries sector has an important and strategic role in national development. Optimal management is directed at utilizing fishery resources by focusing on the carrying capacity and preservation of the marine environment to improve the community's welfare. Thus the management of fishery resources must lead to sovereignty manifestation efforts, maintain sustainable resources and improve the community's welfare, including indigenous coastal communities and small islands. The fishery resource utilization has not been optimal, providing an increase in the sustainable and equal living standard.

Fishery resources management must be carried out through a legal framework to provide benefits to all Indonesian people, including indigenous peoples and traditional communities who are living as fishermen and inhabit the coastal areas and small islands of Indonesia. Cultural systems, technological institutions and local wisdom of indigenous peoples can become national cultural identities and prime movers of marine and fisheries development in Indonesia. Indigenous peoples have received recognition in the 1945 Constitution as stipulated in Article 18 B paragraph (2), the State should recognize and
respect indigenous peoples and their traditional rights as long as they are still alive and corresponding with community development and the principles of the State of the Republic of Indonesia [1].

However, indigenous peoples who live in coastal areas and small islands are also faced with poverty and welfare problems. Some are living as fishermen who live on the poverty line. Data from the Central Statistics Agency (BPS) shows that the number of fishers in Indonesia is 2,265,859 people [2] and 7.9 million coastal residents live below the poverty line [3]. On the other hand, indigenous coastal communities are often marginalized in decision-making structures, such as in the authority division over certain areas in the sea and coast that are detrimental to traditional fishers, lobster seed export policies, and fishing gear allowance that damages the environment.

Indigenous peoples must face another problem is the threat of climate change against their living for survival. Indigenous peoples in coastal areas and small islands are among the most vulnerable groups to climate change. Sea level rise, erosion and stronger sea wave are some of the climate change impacts that threaten indigenous peoples existence in coastal areas and small islands. The role of indigenous peoples in the sustainable management of fishery resources is very important because they are very dependent on these resources. Unfortunately, traditional fishing practices are currently decreasing and less involved in national fisheries policies concerned with modern fishing practices and oriented towards economic benefits. This study aimed to identify some traditional practices in coastal indigenous peoples and implemented national fisheries management policies and proposed a sustainable fisheries management model that involves indigenous peoples traditional rights.

2. Materials and methods
This research was legal research by using a statute approach to relevant legal materials. The analysis was conducted non-positivistically-qualitatively using interpretation method. Interpretation used was hermeneutic interpretation regarding text synchronization and legal context vertically and horizontally to the relevant legislation. The scope of this research included review of national and international regulations related to the recognition of traditional fisheries rights of indigenous people in Indonesia.

3. Result and discussion
3.1. Indigenous people, climate change and fisheries management
The United Nations does not provide a formal definition of anyone as Indigenous people and local communities. However, the United Nations recognizes and respects indigenous peoples and local communities to own, occupy and use their lands, territories and resources on communal ownership and the traditional rights of indigenous peoples [4]. Indigenous peoples have cultural, spiritual, cultural, social and economic systems based on customs and customary laws that apply in society [5]. In Indonesia, the State has also provided recognition of indigenous peoples and local communities through the 1945 Constitution (UU 1945) Article 18B paragraph (2) and strengthened through Article 28I paragraph (3) of the 1945 Constitution that cultural identity and traditional communities are respected following the development of times and civilization [6].

The success of recognition and respect for indigenous peoples and local communities focuses at least on four categories of capacity building, namely: 1) respecting rights, 2) supporting care and mutually, 3) strengthening indigenous peoples and local communities and their knowledge system, 4) supporting knowledge exchanges [7].

The relationship between Indigenous people and local communities with natural resource availability has a cross-connectivity relationship [8]. Indigenous people and local communities protected marine biodiversity from generation to generation through their knowledge, innovation, and best practices. Because their life, food and livelihoods depended on marine resources, indigenous peoples have developed a socio-ecological system that relied on local traditions and wisdom. On the other hand, climate change affected the availability of fishery resources. The rise of the ocean surface temperature has affected ocean ecosystems such as fish migrating from their natural habitat and seawater intrusion affected the coastal ecosystem.
Climate change also reduced natural resource availability due to extreme weather and rising ocean temperature affected seasonal patterns. Hereditary knowledge, traditions, and local communities are mitigation and adaptation of indigenous peoples and local communities to climate change resilience. The ability to transform and adapt reflected indigenous peoples resilient capacities and local communities to face climate change. The resilience factor of indigenous peoples holistically affects the capacity of individuals, communities and systems to survive, adapting when conditions change in the environment [9]. Although indigenous peoples and local communities are very vulnerable to climate change, they are also a group with strong resilience to adapt to environmental changes. Traditional practices like weather forecasting, traditional fishing methods, prohibition to catch certain kinds of fish, open and close period for fishing are some practices performed by indigenous peoples to adapt to climate change.

The knowledge possessed by indigenous peoples helps preserve the ecosystem and restores ecological functions damaged by human actions in the past [10]. For example, the Sasi tradition in Maluku regulates the prohibition of harvesting certain natural resources for a certain time. Through restoration from the indigenous peoples local wisdom, ecosystems and socio-ecological functions can be maintained. Thus, indigenous peoples traditional knowledge has succeeded in conserving and maintaining biodiversity for present and future generations.

3.2. *Traditional rights revitalization of indigenous peoples in Indonesian fisheries management*

The indigenous peoples local wisdom in managing fishery resources is a cultural wealth and heritage that we must protect and preserve. The Indonesian people local wisdom in managing fishery resources include cultural systems (systems of knowledge, ideas, beliefs, values and norms), institutions (organizations, control rights over areas and natural resources) and technology (facilities and infrastructure). Customary law and local wisdom will guarantee natural resources availability and protect natural resources against the possibility of degradation or excessive environmental exploitation.

The indigenous peoples role in the sustainable management of natural resources is very important because they are very dependent on nature. In some coastal areas and small islands, this tradition is still maintained by indigenous peoples, including in the use of marine space and management of fishery resources. In general, the marine and fishery resource potential utilization is carried out by determining the marine area that must be protected or managed at a specified time. Table 1 shows identification and inventory of some of the traditions and local wisdom that are still valid in coastal and small island indigenous peoples[11].

Based on Table 1, the existence of indigenous peoples in maintaining customs and practices derived from local wisdom in protecting and preserving the marine environment is very important to manifest sustainable fisheries management. The Government should give recognition and protection to the existence of the community and traditional fishers through the revitalization of traditional fisheries rights, because in utilizing fishery resources, the community and traditional fishers do not only make the fisheries sector a source of livelihood, but they are also become the front guard which preserves and conserves the marine environment. Figure 1 shows the formulation model of the revitalization of the traditional rights of indigenous peoples.
| Number | Customary Traditions and Local Wisdom | Culture System | Customary Institutions | Local Wisdom-Based Technology |
|--------|---------------------------------------|----------------|------------------------|-------------------------------|
| 1.     | Panglima Laot                          | Panglima Laot is in charge of regulating the exploitation and protection of the environment and marine biological resources in their territory. | The Laot Customary Institution is an alliance in the marine environment management, led by Panglima Laot. In perform marine management, Panglima Laot is assisted by Pawang Pukat and Aneuk Pukat. | There is no customary prohibition for fishermen to catch fish, but customary law regulates the timing of fishing, fishing procedures and the use of fishing gear. |
| 2.     | Awig-Awig, Lombok                      | Awig-awig is a rule based on the agreement of the customary community to regulate certain problems. Awig-awig regulates what is permitted and prohibited, as well as sanctions for those who violate customary rules. | There is a customary deliberation institution that has the authority to enforce customary law and impose sanctions for violations | 1. Prohibition of capturing marine organisms using dynamite, poison, and trawl 2. Prohibition of sand mining for sand, rock and coral 3. Prohibition of catching ornamental fish |
| 3.     | Sasi Laut on Selaru Island, West Southeast Maluku, and Um Island, Papua | Sasi Laut is defined as prohibition to catch marine products before the specified time (time open and close of catching marine products). Sasi Laut is intended for marine commodities with high economic value, such as lola, sea cucumber, pearl clams, shrimp and lobster. Sasi Laut regulates customary rituals, usage rules, and sanctions imposed on violators. | The authority of sasi laut is carried out by three parties that organize and provide public services, namely: the church, traditional institutions (represented by sos) and the village government. | Generally, the closing period of sasi lasts 1-2 years or once in 3-5 years. It considers during that period the marine products are abundant and it is time to be harvested. When the sasi opening period for 2-3 weeks, the community is allowed to collect marine products in the specified sea area. |
| 4.     | Mane’e on Kakorotan Island, Talaud Regency, North Sulawesi | Mutual agreement by everyone, especially in catching fish together in locations previously forbidden to be used, called Eha. | It is regulated in the custom of the Kakoratan village under the authority of Ratumbanua and Village Officials | 1. Using a traditional type of net from twisted coconut leaves 2. Knowledge of winds and seasons, including the savana wind, which is the wind that blows from the north between January-May), the timmoi wind, which is the wind that blows from the south between June-December) and the warra wind that blows from west for ± 1 week every month 3. Knowledge of boats, such as the londe boat, which is a small boat that has multiple outriggers to find fish in waters close to the village. |
Figure 1. Revitalization of the traditional fisheries rights model

3.2.1. Government policies and regulations. Indigenous peoples have full sovereignty over their territory which is communally managed called ‘hak ulayat’ and has the authority to administer the law and its citizens’ relations. Thus, the State is obliged to give recognition, respect and protection to indigenous peoples and their traditional rights. Juridically, several laws and regulations have regulated the involvement of indigenous peoples in the fisheries resource management system, including:

   a. Law Number 31 of 2004 concerning Fisheries, Article 6 paragraph 2 states that fisheries management for the benefit of fishing and fish cultivation must consider customary law and/or local wisdom and pay attention to community participation.

   b. Law Number 1 of 2014 concerning Amendments to Law Number 27 of 2007 concerning Management of Coastal Areas and Small Islands;

      (1) Article 1 point 3 recognizes that a customary law community is a group of people who have been living in certain geographical areas of the Unitary State of the Republic of Indonesia for generations because of their ancestral ties, strong correlation to land, territory, natural resources, and customary governmental institutions, and customary law structures in their customary territories corresponding with the provisions of statutory regulations.

      (2) Article 21 paragraph 1 states that the utilization of space and resources of small islands' coastal waters and waters in the territory of a customary law community by the customary law community is the authority of the local customary law.

   Article 60 paragraph 1 point d states that the management of coastal resources and small islands is based on the applicable customary law and does not conflict with statutory regulations' provisions.

   c. Law Number 23 of 2014 concerning Regional Government, Article 29 paragraph 5 states the strategies for accelerating regional development as referred to in paragraph 4 include development priorities and management of natural resources in the sea, accelerating economic development, socio-cultural development, human resource development, legal development customs related to marine management, and community participation in the development of provincial areas characterized by islands.

   d. Law Number 32 of 2014 concerning Maritime Affairs, Article 70 paragraph 4 point a states that community participation other than as referred to in paragraph (3) can be carried out through participation in preserving cultural values and maritime insights as well as revitalizing traditional law and local wisdom in the marine sector.

3.2.2. Strengthening customary institutions. Unwritten customary rules in fisheries resource management are presumed to be a factor in the loss of local communities' local wisdom in the modernization era. The customary institutions' effectiveness in the implementation of compliance and supervision of customary rules is prone to degradation, due to the current generation's lack of local
knowledge and the rapid development of fisheries management technology, which is a threat to the preservation of marine ecosystems. Therefore, it is necessary to strengthen customary institutions by making written customary rules and government assistance for monitoring facilities to customary rules and local wisdom enforcement in fishery resources management.

3.2.2.1. Empowerment of indigenous communities in the fishery resources management. The empowerment of indigenous peoples must consider the conditions and socio-economic aspects of the indigenous peoples culture. Strategies that can be implemented include community involvement in every policy-making activity, increasing human resource capacity, providing marine product processing facilities, and bringing opportunities for marketing access to marine products.

3.2.2.2. Strengthening local knowledge and wisdom in the fishery resources management by indigenous peoples. Traditional knowledge of indigenous peoples and local wisdom in managing fishery resources, is gradually diminished due to social and economic transformations in society. This happens because of conflicts of interest in fisheries management practice, such as the struggle for management areas between big fishers and traditional fishers and modern fishing gear and traditional fishing gear. Therefore, it is necessary to strengthen traditional institutions to maintain indigenous peoples traditions and local wisdom.

3.2.2.3. Sustainable environmental management. The marine and fisheries sector has an important role in development because this sector relies on the management of renewable resources using the principle of sustainability. Thus, the role of indigenous peoples has a significant role in maintaining resources' sustainability because of the values and norms that are deep-rooted in society to manage their resources wisely. Thus the balance in community-based conservation is closely related to the integration of local knowledge of indigenous peoples.

3.2.2.4. National cultural identity and local wisdom rooted in indigenous peoples. History has recorded the Archipelago Kingdoms' greatness, including the Majapahit Empire, Sriwijaya Kingdom, and Bugis who have great maritime power, providing lessons for us to restore maritime power by optimizing its maritime potential. The cultural systems, institutions and technology of maritime tribes and strong local wisdom in coastal communities have the potential to become a national cultural identity and the driving force for marine and fisheries development.

3.2.2.5. Fair welfare for indigenous peoples. Poverty rate is one of the classic problems experienced by traditional fishermen. Traditional fishers are very vulnerable to competition in the use of fishery resources with large fishers, as well as low access to capital, technology and markets. Strategies that can be carried out by the Government are [12]:
   a. Developing a dual livelihood strategy (diversification of livelihoods) for traditional fishermen, such as developing alternative for fish farming, fish processing and other alternative livelihoods;
   b. Capital strategy, the government needs to develop access to capital, such as fishermen's SMEs that are easily accessible;
   c. Macro strategy, put the fisheries and marine sectors as a priority in national strategic policies.

3.2.2.6. Sustainable marine ecosystem preservation. The continuity of supporting factors to revitalize the existence of traditional rights aims to accelerate economic development and the welfare of indigenous peoples through increasing roles, potentials and opportunities in the fisheries and marine sectors. However, development must pay attention to the carrying capacity of the environment, including the carrying capacity of marine ecosystems, so that development in the fisheries and marine sectors must be corresponding with the sustainable development principles that benefits present generations and the sustainability of future generations.
4. Conclusion

Indigenous peoples with their local wisdom have traditional practices as their adaptation to climate change. Hereditary traditional knowledge such as weather forecasts, timing for fishing, and traditional fishing methods make indigenous peoples more able to adapt to climate change. However, apart from climate change, indigenous peoples are also threatened with marginalization by modern fishing practices that ignore the environment and the sustainability of their catching ecosystem. For this reason, the government as a policy maker needs to consider to the existence of traditional rights of indigenous peoples in national fisheries management. The role of indigenous peoples in sustainable natural resource management is very important because their high dependence on nature, so that the involvement of indigenous peoples and the fulfillment of their traditional rights must be considered in fisheries management policies. Fishery policies that involve the rights of indigenous peoples are expected to improve the fishermen's economy, maintain the sustainability of marine ecosystems, and maintain cultural values and local wisdom.

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