International Journal of Sustainable Development and Planning
Vol. 21, No. 1, January, 2026, pp. 443-451
Journal homepage: http://iieta.org/journals/ijsdp

Designation of Reclaimed Land as Mangrove Conservation Area in Sustainable Coastal Zone Management

Bambang Eko Turisno*, Gangga Santi Dewi, Moh. Asadullah Hasan Al Asy'arie

Faculty of Law, Universitas Diponegoro, Semarang 50275, Indonesia

Corresponding Author Email: turisnobambange@gmail.com

https://doi.org/10.18280/ijsdp.210138

Received: 22 September 2025
Revised: 17 January 2026
Accepted: 22 January 2026
Available online: 31 January 2026

Keywords:
reclaimed land, conservation, mangroves, coastal, sustainable

ABSTRACT

A study identifying and analyzing the utilization and designation of reclaimed land from a legal perspective can assist communities in utilizing reclaimed land and provide a framework for policymakers, particularly district/city governments, to consider when utilizing reclaimed land as mangrove conservation areas. The research object includes regulations and policies on the acquisition, designation, and utilization of reclaimed land, mangrove conservation, and coastal management, as well as other secondary data in the form of information related to reclaimed land and mangroves. Mangroves could expand their area towards the sea through sedimentation from river water, forming reclaimed land. Emerged land is coastal land that causes the shoreline to extend further into the sea, expanding the land area and forming new land utilized by the community. Village residents have individual or collective rights to reclaimed land, whose ownership is acquired through management or distribution methods. Local governments at the district/city level, in accordance with their authority, regulate the allocation of reclaimed land as state land in a balanced manner between use for village residents, economic and social activities, and the designation of reclaimed land as mangrove conservation zones in accordance with coastal zone planning.

1. INTRODUCTION

Coastal areas are transitional zones between land and sea, serving as a bridge between terrestrial and aquatic (marine) regions. They play a crucial role in the economy and development of communities [1]. In the industrialization era, coastal areas are a top priority and serve as centers for industrial activities, tourism, agribusiness, agroindustry, transportation settlements, and ports. From the perspective of the coastline, a coastal area has two types of boundaries: those parallel to the coastline and those perpendicular to the coastline [2]. Coastal areas encompass terrestrial regions connected to water bodies or marine regions that influence terrestrial areas. Terrestrial and marine regions are closely intertwined, forming coastal zones and water bodies through their spatial functions [1].

Coastal areas are rich in natural resources and biodiversity. Various coastal ecosystems play a very important role, both ecologically and economically. Coastal areas and habitats (mangrove forests, estuaries, ponds, coral reefs, deltas) are biologically productive areas. The potential of coastal natural resources that can be utilized for human needs is limited. While some regions, such as the Solomon Islands, are rich in natural resources, these resources are under threat from growing populations and improper resource extraction [3].

Natural resources in coastal areas are strategic assets. The wealth of coastal ecosystems includes mangrove forests, seagrass beds, and coral reefs. The functions of mangrove ecosystems in tropical regions play a crucial role in the productivity of coastal ecosystems. Mangrove ecosystems can store large amounts of carbon and prevent coastal erosion caused by sea erosion. Mangrove ecosystems also act as buffers by capturing carbon-rich organic sediments that arrive with rising sea levels [4]. Various activities have led to a decline in mangrove forest area, which has also resulted in a decline in the functions and benefits of mangroves for local communities and the surrounding environment. Several factors contribute to the degradation of mangrove forest ecosystems, including uncontrolled conservation of mangrove forest areas [2]. The tropical location of Africa bridges the Atlantic and Indian Ocean mangrove forests; microtidal conditions support extensive estuaries and lagoonal wetlands in low-lying coastal areas. Population growth in the tropical regions of Africa drives wetland degradation and increases mangrove loss due to global warming and rising sea levels [5]. Rising sea levels due to climate change can have severe consequences for coastal populations and ecosystems worldwide [6]. To restore the functions and benefits of damaged mangroves, management efforts through mangrove rehabilitation and conservation are necessary. Many African countries are conserving and restoring mangrove forests [5].

Mangroves act as a barrier against coastal erosion and expand land areas. Mangroves can expand areas toward the sea through sedimentation from river water, forming new land. Soil erosion upstream causes significant sedimentation along the coast. Over time, this sediment forms new land along the

coast, causing the coastline to recede into the sea. The new land formed by mud in some areas is called reclaimed land. Reclaimed land has been utilized for the benefit of local residents, which can lead to conflicts among community members [7, 8].

The community allows the emergence of land to increase the area of mangrove forests as a form of natural conservation. Conservation through the emergence of land is very good for coastal ecosystems. In setting priorities and guiding conservation actions on a global scale, it is important that countries with jurisdiction over coastal areas begin to collect, evaluate, and disseminate data on the ecological status of their coastal zones [9]. Effective legal frameworks and their enforcement promote the sustainability of integrated coastal management [10]. Therefore, the management of emerging land as part of coastal areas must be carried out in an integrated manner.

A study identifying and analyzing the utilization and designation of emerging land as mangrove conservation areas in coastal zone management from a legal perspective suggests that the utilization of emerging land in mangrove forest management can assist communities in utilizing emerging land and provide a framework for policymakers, particularly district/city governments, to consider in utilizing emerging land, especially as mangrove conservation areas in coastal zone management.

2. RESEARCH METHOD

A study on emerging land and mangrove conservation by identifying the primary objective of this research is to identify and analyze a regulatory framework and policy specifications for the use of emerging land for mangrove conservation in coastal area development from a legal perspective [11]. The research approach used is a normative approach, and the type of research specification used is descriptive analytical research as a research procedure that produces descriptive data in the form of written words [12]. The data used in this study are secondary data. The research objects are regulations on emerging land, research results on emerging land in several regions, mangrove conservation and coastal zone management, as well as other secondary data in the form of information related to mangrove conservation and the utilization of emerging land. Secondary data was obtained to support analysis related to reclaimed land and coastal zone management. Secondary data collection was carried out by reviewing national and regional legislation and literature related to reclaimed land, mangrove conservation, and coastal zone management. Data sources were obtained from books and the latest studies from journals as well as other relevant information sources, including legal materials in the form of primary and secondary legal materials, as well as non-legal materials and other supporting data.

Data analysis is the process of organizing and sorting data into patterns, categories, and basic descriptive units [12]. Secondary data, whether in the form of legal and non-legal materials or other supporting information obtained, is processed and analyzed through the steps of description, evaluation, argumentation, and systematization. Analysis using qualitative methods analyzes the state of the research object through description, interpretation, or explanation. Analysis of conditions that should follow a certain ideal condition, which may be a standard set by a particular agency or legal basis or taken from literature studies. This analysis is used to assess how conditions should be in the study area, which in this case is related to reclaimed land that has been utilized by the community and mangrove forests as well as coastal zone management.

3. LITERATURE REVIEW

According to Reni's research, the patterns of community interaction with land can be divided into three categories: exploitation, conservation and utilization, and protection without utilization [13]. Lie Liem's December study on emerging land found that it is under the authority of and owned by the local indigenous community. The form of dispute resolution over emerging land is an agreement with the government and the indigenous council to issue a decree by the local government. If the indigenous land is indeed owned by the indigenous community, then the indigenous community must apply for a land certificate at the National Land Agency to obtain a customary land rights certificate [14]. Asihing Kustanti's research in East Lampung Regency, Lampung Province, on the Evolution of Land Ownership Rights in the Mangrove Forest Area [15] from 1998 to 2004, found that the emerged land had the status of state ownership. The granting of ownership rights to 700 hectares of mangrove-covered emerged land by East Lampung Regency to the University of Lampung has altered the subsequent ownership rights into three types: 1) the right to enter and utilize; 2) the right to manage; and 3) the right to expel unauthorized parties. The University of Lampung is *a trusted institution* and *is accepted* by the community. For *the sustainability* of mangrove forest management, the University of Lampung is the manager at the site level by making efforts to increase the role of various parties (local government, national and international institutions); maintaining the existence of mangrove forests; and not restricting community access. The concept of a tripartite partnership (community, University of Lampung, East Lampung Regency) exists, where the University of Lampung acts as coordinator and *liaison* in program development, the community as users or beneficiaries, and the local government of East Lampung Regency as a facilitator of development [15].

4. ANALYSIS AND DISCUSSION

4.1 Methods of acquisition, status of emerged land, and ownership of emerged land

In general, the control and ownership of emerged land in parts of Indonesia are still based on customary law applicable in the local community. The governance of emerged land in Central and East Java reflects a balance between individual rights and communal interests. In Demak and Pati Regencies, reclaimed land is initially managed by individuals who establish ponds, while portions are allocated as communal property that cannot be sold. Distribution often involves village authorities and may include reporting obligations or lottery systems. The land is utilized for both individual and collective purposes, covering religious, social, educational, and economic needs, as well as housing for residents affected by coastal erosion. In Sidoarjo Regency and surrounding villages, reclaimed land is designated for mosques, schools,

orphanages, youth organizations, women's empowerment programs, and the village treasury. Overall, reclaimed land serves as a vital resource to promote welfare, justice, and sustainable community development.

The pattern of control and ownership of emerged land by the community is based on the local community's culture, which has local regulatory mechanisms within the community (inner order mechanism/self-regulation) that are actually in force and function as a means of regulating the acquisition of control over reclaimed land along the coast [16].

Communities occupying emerging land often do not yet form visible expanses on the surface but remain approximately one meter below sea level. Generally, they mark their boundaries by driving stakes into the ground [8]. The mechanism for acquiring emerging land in the village of Tambakbulusan, Demak Regency, Central Java, begins with residents driving stakes into the sea, which they believe will eventually become emerging land. Once the land emerges and is ready to be developed into a pond, the owner reports to the village head. The pond owner is permitted to use the land for four years, after which the pond is divided into two parts: one portion belongs to the pond owner, and the other is transferred to the village as communal property (shared by the local community), which cannot be transferred or sold to anyone [17].

The research [17] on community ownership of reclaimed land was obtained through division. The division of reclaimed land is typically carried out once the reclaimed land has taken the form of a mangrove forest filled with mud extending toward the sea, approximately 100 to 150 meters from the shore to the lowest tide line. The division of emerged land was carried out in the villages of Banjarkemuning, Tambakcemandi, and Kalanganyar, Sedati District, Sidoarjo Regency, East Java, Indonesia. The division was led by the Village Head and his staff in a village meeting attended by community leaders and registered community members who had applied to receive emerged land. The distribution was done by lottery [18].

After the establishment of the Marine and Fisheries Department (DKP), if there is potential land for land reclamation, the shrimp farm groups must first plant mangroves. If more reclaimed land appears in front of the mangroves, it is planted again, thereby expanding the area. After approximately 10 years, if a group requires the land, they are permitted to use it under the silvofishery system. Groups or residents directly adjacent to the reclaimed land are given priority. On average, each individual receives one plot of land, with an average area of 1 hectare per plot. In practice, some shrimp farmers control up to 3 hectares [8].

The utilization of reclaimed land in Mojo Village and Pesantren Village, Ulujami Sub-district, Pemalang District, is used for the construction of a fish auction building and a Cooperative Union Office (KUD), and is also provided to residents whose homes have been affected by coastal erosion. The community of, agreed that the reclaimed land would be utilized by residents individually and also provided for communal purposes to achieve welfare and justice for community members. Communal land is used for religious, social, educational, youth, and village administration purposes. In Bulumanis Kidul Village, Pati Regency, the reclaimed land controlled by the religious foundation Yayasan Al Muttaqin covers an area of 26,670 square meters. The village land in Langgenharjo Village, Margoyoso Sub-district, Pati Regency, was obtained through land reclamation.

The distribution of emerged land, in addition to individual rights, is used for social purposes and village funds in Kalanganyar Village, Jabon District, Sidoarjo Regency. In Kupang and Kedungpandan villages, the community's joint rights over emerged land are used for village funds, mosque construction, and madrasah development. In Bandarkemuning Village, Sedati Sub-district, 12 hectares of reclaimed land are reserved for community joint rights, with proceeds to be used for the village treasury, mosque maintenance, and madrasah construction [18].

The communal rights to land in Kalanganyar Village, Jabon Subdistrict, Sidoarjo Regency are used for the following purposes: a mosque covering an area of 10 hectares, an orphanage covering an area of 3 hectares, a school (kindergarten and Islamic elementary school) covering an area of 8 hectares, a youth organization covering an area of 3 hectares, the village treasury covering an area of 14 hectares, and the village women's empowerment program covering an area of 3 hectares. In the villages of Kupang and Kedungpandan, the community's joint rights over land are used for village funds, mosque construction, and madrasah construction. In the village of Bandarkemuning, Sedati District, 12 hectares of land are reserved for the community's joint rights, with the proceeds to be used for village funds, mosque maintenance, and madrasah construction [18].

Muhibbin's research findings [15] indicate that control and ownership of emerged land in Gresik and Pasuruan districts are highly dependent on the intensity of de facto human use or cultivation of the land. The more intensive the cultivation, the stronger the relationship between humans and the land, thereby reinforcing control over the land. It began with the opening of unclaimed land (vacant land) with permission from the Village Head, documented in a cultivation permit (Segel letter in Gresik District) and a Land Management Permit for Oloran Land (in Pasuruan District), which was then intensively cultivated and managed in good faith, leading to land control by the community with cultivation rights. Residents who have cultivated the land for 30 years may apply for proof of ownership based on the cultivation permit and the Village Certificate (SKD) issued by the local village head, provided they meet certain requirements.

The mechanism of land ownership in Tambakbulusan Village, Demak Regency, Central Java, began with residents marking points in the sea that they believed would eventually become emerged land. Typically, they marked these points by driving stakes into the ground. Once the land emerges and is ready to be developed as a pond, the developer reports to the village head. The developer of the emerged land may use it for four years, after which the pond is divided into two parts: one part remains the developer's property, and the other part is transferred to the village as communal property (shared by the local community), which cannot be transferred or sold to anyone.

Land ownership arises, with most newly formed land being claimed by several residents and then converted into fish ponds a few months later [19]. This type of factual control and ownership is confronted with formal legal provisions, so that anyone who wishes to control the land must first obtain permission. Generally, applications for reclaimed land are submitted individually [8].

Emerged land located along the coast is governed by Article 16 of Law No. 1 of 2014 amending Law No. 27 of 2007 on the Management of Coastal Areas and Small Islands, which states that any person utilizing coastal waters on a permanent basis

must obtain a location permit. The location permit serves as the basis for granting a management permit. The Government and Local Governments are obligated to facilitate the issuance of location permits and management permits to local communities and traditional communities.

Law No. 51 of 1960 on the Prohibition of Using Land Without Permission from the Rightful Owner or Authorized Party regulates the prohibition on using land or the surface of the earth by any person who does not have a valid permit from the rightful owner or authorized party. The State may grant State land to an individual or legal entity with certain rights in accordance with its intended purpose and needs. The authority to implement these provisions lies with the Head of the National Land Agency. Citizens who wish to apply for rights to land may refer to Regulation of the Minister of Agrarian Affairs/Head of the National Land Agency No. 9 of 1999 on Procedures for Granting and Revoking Rights to State Land and Management Rights ( ). Ownership rights, as stated in Articles 8 and 9 of PMNA 9/1999, may be granted to Indonesian citizens and legal entities designated by the government in accordance with applicable laws and regulations, namely: Government Banks, Religious Institutions, and Social Institutions designated by the government. The grant of ownership rights may only be granted for specific lands that are directly related to the primary duties and functions of the recipient. The Minister of Agrarian Affairs/BPN Circular Letter No. 410-1293 dated May 9, 1996, point 5 on the Regulation of the Status of Emerged Land and Reclamation Land states that applications for rights to such emerged land may be processed immediately in accordance with applicable laws and regulations.

Ministerial Regulation on Agrarian Affairs/Head of the National Land Agency No. 17 of 2016 on Land Management in Coastal Areas and Small Islands, Article 15(4), states that land emerging with an area exceeding 100 square meters may be granted land rights. The granting of land rights in coastal areas is regulated in Article 5 of Minister of Agrarian Affairs/Head of the National Land Agency Regulation No. 17 of 2016 on Land Management in Coastal Areas and Small Islands Small Islands, which specifies that land rights on the coast may only be granted for structures that must be located in coastal areas, namely the traditional communities or members of the community who have resided there for generations. The Circular Letter of the Minister of Agrarian Affairs/Head of the National Land Agency dated July 14, 1997, Number: 500-1698, determines that priority in granting rights to land shall be given to parties who have physically occupied the land. If the state does not require the land for public purposes, the community is even obligated to utilize the land [20].

In addition to individual rights over land, there are also communal rights of the village community over land. For communities with strong communal rights, rights over land should become communal (shared) rights of the local village community, which cannot be transferred. Individual rights over land are rights granted to villagers or outsiders over a piece of land. Individual rights over land are not absolute but always have limits, namely the interests of others, the community, or the state. There is individual responsibility to the community through the fulfillment of common/public interests [21]. Land use regulation systems have great potential to incorporate ecosystem service concepts and considerations into land use actions and decisions [22]. The management of the potential use of emerged land can be directed to support the development of conservation areas [23]. Joint rights to land originating from emerged land, which are communal rights of the community, can be utilized for mangrove conservation areas.

4.2 Utilization of reclaimed land as mangrove conservation areas to support the recovery of coastal ecosystems

4.2.1 Reclaimed land as a site for mangrove reforestation

Full Land along the coast formed by the accumulation or sedimentation of mud from rivers and mud from other places is called land reclamation. The formation of land reclamation is the result of erosion in the upper reaches of rivers, which can cause sediment deposition at river mouths or coastal areas. Over time, these deposits form new land/new areas. Mangrove forests function as a barrier against coastal erosion and expand land into the sea [7]. The ecological function of mangrove forests is to protect and stabilize the coastline and form new land [24]. The ability of mangroves to expand their territory toward the sea through sedimentation from river water, forming land formation, is also demonstrated in Imam Fauzi Syamsu's research [24] in the Pamurbaya area of Surabaya, East Java, Indonesia [25].

Mangrove forest rehabilitation efforts have been successful, with rehabilitated plants spreading toward the sea and the emergence of new land as a result of land uplift [15]. Research by Meriana [18] shows an increase in mangrove forest area due to the presence of uplifted land covered by mangrove forests. Mud and organic soil are good media for mangrove growth, so that whenever new land emerges, it is quickly colonized by mangrove plants. Ecologically, the formation of new land is beneficial because the newly formed land is naturally colonized by mangroves, meaning that reforestation occurs continuously [19].

4.2.2 Utilization of emerged land as a mangrove conservation area

The legal framework governing emerged land in Indonesia establishes its status primarily as state land, with allocation and utilization regulated by various levels of government (Table 1). According to Government Regulation No. 16 of 2004 on Land Management, land formed from reclamation in coastal waters, tidal areas, swamps, lakes, and former rivers falls under the direct control of the State. Complementary provisions in the West Java Regional Regulation No. 6 of 2011 on the Management of Mangrove and Coastal Forests, and its implementing guidelines under Governor Regulation No. 28 of 2013, further stipulate that naturally formed land—including deltas, coastal areas, and emerging islands—is under state authority, supervised by the Governor. The Regent or Mayor holds responsibility for the designation and allocation of such land in accordance with both provincial and district/municipal spatial planning master plans.

These regulations provide that reclaimed land may be designated for social, environmental, or protection purposes, including integration into forest areas where applicable. The Circular of the Head of the National Land Agency (No. 410-1293, 1996) reinforces that naturally formed land such as deltas, coastal areas, and riverbank deposits is directly controlled by the State, with management and ownership regulated by the Ministry of Agrarian Affairs/National Land Agency. Applications for land rights over emerging areas may be processed promptly, provided they comply with applicable laws and regulations.

Table 1. Land reclamation

No.	Legislation	Land Reclamation Utilization
1	Article 16 Paragraph (1): West Java Provincial Regulation Number 9 of 2012 concerning Coastal Zone and Small Islands Management Article 30(1) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests	Land emerging in coastal areas must be utilized and managed to support the restoration of coastal ecosystems. Emerged land is a protected area functioning as a local protection zone.
2	Article 31(1) (2) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests.	Coastal conservation land (*greenbelt*) within the determination of land use and allocation for reclaimed land is set between 100-400 meters measured from the lowest low tide line in accordance with the conditions and characteristics of the coast. The designation of coastal conservation land (greenbelt) is carried out by the local government.
3	Article 32 of Regional Regulation of West Java Province No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests ( )	The use of reclaimed land outside the coastal conservation zone (greenbelt) is determined based on the following priority order of activities: a) forestry; b) fisheries; c) agriculture; d) livestock farming; and e) tourism.
4	Article Regional Regulation of West Java Province No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests	(1) Land that has emerged and is directly adjacent to forest areas shall be prioritized as forest areas in accordance with applicable laws and regulations. (2) Land that has emerged and is directly adjacent to land outside forest areas shall be controlled by the state under the supervision of the Governor.
5	Article 46(5) of West Java Provincial Regulation No. 6 of 2011 on the Management of *Mangrove* Forests and Coastal Forests	prohibits altering and/or reducing its primary function; altering the natural landscape of reclaimed land; issuing permits to cultivate; and cultivating reclaimed land without permission.
6	Article 30(4) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests	The Regent/Mayor shall determine the allocation and use of emerged land as referred to in paragraph (1), in accordance with the Provincial Spatial Plan and the District/Municipal Spatial Plan
7	Article 16 Paragraph (2) of West Java Provincial Regulation No. 9 of 2012 on the Management of Coastal Areas and Small Islands:	The utilization and management of reclaimed land shall be carried out in accordance with applicable laws and regulations.
8	Article 34 of Provincial Regulation of West Java Province No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests	Further regulations regarding reclaimed land shall be established by the Regency/Municipal Regional Regulation.

Table 2. Mangrove conservation areas

No.	Regulatory Framework	Mangrove Conservation Area
	Article 1 (2) of Presidential Regulation of the Republic of Indonesia No. 73 of 2012 Regarding the National Strategy for Mangrove Ecosystem Management	Mangrove Ecosystem is a unity between mangrove vegetation communities associated with fauna and microorganisms that can grow and develop in areas along the coast
2	Article 10 of the Law of the Republic of Indonesia Number 27 of 2007 On the Management of Coastal Areas and Small Islands	The Zoning Plan for Coastal Areas and Small Islands of the Province consists of the allocation of space within the General Utilization Zone, Conservation Zone, Specific National Strategic Zone, and sea lanes.
3	Article 28 of the Law of the Republic of Indonesia Number 27 of 2007 Regarding the Management of Coastal Areas and Small Islands	-Coastal and Small Islands Conservation is carried out to maintain the sustainability of Coastal and Small Islands Ecosystems. -For conservation purposes, certain coastal areas and small islands may be designated as Conservation Areas.
4	Article 35 Law of the Republic of Indonesia Number 27 of 2007 Regarding the Management of Coastal Areas and Small Islands	In the utilization of Coastal Areas, no person, directly or indirectly, shall be permitted to convert mangrove ecosystems in cultivation areas or zones without considering the sustainability of the ecological functions of the coastal area.
5	Appendix Regulation of the President of the Republic of Indonesia Number: 73 of 2012 Guidelines for the National Strategy for Mangrove Ecosystem Management	The policy directions of the National Strategy for Mangrove Ecosystem Management are as follows: - Enhancing the ecological functions of mangrove ecosystems in coastal protection - Management of mangrove ecosystems as an integral part of integrated coastal zone management and integrated watershed management
6	Appendix to Presidential Regulation of the Republic of Indonesia Number: 73 of 2012 National Strategy Guidelines for Mangrove Ecosystem Management	Mission: To conserve and rehabilitate mangrove ecosystems in protected areas and cultivation areas.

7	Article 17 of the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia Number 24/Permen-Kp/2016 Regarding Procedures for the Rehabilitation of Coastal Areas and Small Islands	Mangrove habitat restoration is carried out through prevention. Prevention and/or cessation of activities that may damage the habitat are carried out by controlling land use conversion
8	Article 72 of the Regional Regulation of Central Java Province No. 4 of 2014 Regarding Coastal Zone Planning for Small Islands in Central Java Province for the Years 2014-2034	(1) A portion of the coastal area is designated as a Conservation Area for protection purposes. (2) Conservation areas have distinctive characteristics as a single ecosystem established to protect the sustainability of unique and/or vulnerable coastal ecosystems.
9	Article 74 of the Regional Regulation of Central Java Province No. 4 of 2014 on the Coastal Zone and Small Islands Zoning Plan for Central Java Province for the Years 2014-2034	The management strategy for Coastal and Small Island Conservation Areas is implemented by designating coastal conservation areas in coastal regions according to their importance.
10	Article 98 of Regional Regulation No. 4 of 2014 of Central Java Province on the Coastal Zone and Small Islands Zoning Plan for Central Java Province for the Years 2014-2034	Every person is obligated - comply with the Coastal Zone Plan - not to engage in activities prohibited in the utilization of coastal areas
11	Article 102 (1) of Regional Regulation of Central Java Province No. 4 of 2014 on the Coastal Zone Zoning Plan for Small Islands in Central Java Province for the Years 2014-2034	No one is permitted to convert mangrove ecosystems in Public Utilization Areas without considering the sustainability of coastal ecological functions

Emerged land as state land (Table 2), in accordance with Article 33 of the 1945 Constitution, the state controls the earth or land and uses it for the prosperity of the people. The provisions of this article are further elaborated in the Basic Agrarian Law (UUPA) No. 5 of 1960, Article 2, paragraph (1), where the meaning of control is defined in paragraph (2) as follows:

a. The obligation of the state to regulate and administer the allocation, use, supply, and maintenance of the earth, water, and airspace;
b. Determining and regulating legal relationships between individuals and the earth, water, and outer space;
c. Determining and regulating legal relationships between persons and legal acts concerning land, water, and airspace.

UUPA No. 5 of 1960, as reaffirmed by Article 2(3), which states that the authority derived from the State's sovereign right as referred to in paragraph (2) of this Article shall be exercised to achieve the greatest possible prosperity for the people in the sense of happiness, well-being, and freedom within an independent, sovereign, just, and prosperous Indonesian state governed by the rule of law.

Land arises as land directly controlled by the state as determined in Article 12 of Government Regulation No. 16 of 2004 on Land Management, based on the Circular Letter of the Head of the National Land Agency No. 401-1293. In 1996, point 3 stipulated that emerged land is declared as land directly controlled by the state. Similarly, Article 30 (2) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests states that emerged land is controlled by the state.

The meaning of state control rights implies a claim to collective or joint rights in the utilization of land for individuals, communities, or the state to achieve the greatest possible prosperity for the people. The state's right of control, as stipulated in Article 2(4) of UUPA No. 5 of 1960, may be delegated to autonomous regions and customary law communities, provided that it is necessary and does not conflict with national interests in accordance with government regulations. The Regional Regulation of West Java Province No. 9 of 2012 on the Management of Coastal Areas and Small Islands, Article 16(2), stipulates that the utilization and management of land as referred to in paragraph (1) shall be carried out in accordance with the provisions of laws and regulations. The explanation states that the utilization and management of reclaimed land are regulated in West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests. Article 34 of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests provides that further regulations regarding reclaimed land shall be established by district/city regulations. The Regent/Mayor determines the allocation and use of reclaimed land as stated in Article 30(4) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests. Coastal resource management is carried out by local institutional structures in many countries [26]. The federal government has a primary role in regulating coastal activities, but this is limited primarily to activities affecting navigable water bodies. Along the seashore, regulations outside jurisdictional boundaries such as the low-tide line are generally delegated to the states [27].

4.2.3 Utilization of reclaimed land to support the recovery of coastal ecosystems

To West Java Provincial Regulation No. 9 of 2012 on Coastal Area and Small Islands Management, Article 16 Paragraph (1) stipulates that reclaimed land in coastal areas must be utilized and managed to support the recovery of coastal ecosystems. Coastal area management regulated by the regent/mayor as determined in Article 3 of Law No. 27 of 2007 on Coastal and Small Island Management is based on integration and sustainability.

In efforts to utilize coastal resources sustainably, mangrove ecosystems play a crucial role [2] in providing vital ecosystem services for climate change mitigation and adaptation [28], as well as economic and ecological significance [29] for coastal ecosystem productivity and recreation [7] for the continuity of ecological processes and as a life-support system, protecting and stabilizing coastlines, forming new land, and supporting coastal fisheries [24].

Data from southwest Florida shows that mangrove coastlines will benefit the recovery of endangered elasmobranchs [30]. Mangrove ecosystems are recognized for

their ability to store large amounts of carbon and prevent coastal erosion caused by sea scouring. In addition, mangrove ecosystems also act as buffers by capturing organic carbon-rich sediments that come with sea level rise [31]. In a case study from Panay Island, the Philippines, it was shown that carbon reserves and coastal protection potential from rehabilitated low-intertidal mangrove edges and elevated (leased) mid-to-upper tidal flats serve as natural references for mangroves [32]. Mangrove forests, as highlighted by Bennett and Reynolds [33], have significant socio-economic and ecological value [24, 34]. Mangrove forest exploitation leading to ecosystem degradation [29] threatens coastal habitats and resources [35], necessitating large-scale rehabilitation programs. To support the development of conservation areas, the use of reclaimed land can be directed toward mangrove ecosystem conservation [23].

Emerged land is state land, and the designation of its area is the authority of the regent/mayor. The regent/mayor, pursuant to Article 30 (4) of Regional Regulation of West Java Province No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests, determines the designation and use of emerged land (Table 2). Coastal land management includes planning and regulation roles for local governments as well as regional and state institutions. The designation and use of reclaimed land under West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests state that the Regent/Mayor shall determine such matters in accordance with the Provincial Spatial Plan and the District/Municipal Spatial Plan. Similarly, Ministerial Regulation on Agrarian Affairs/Head of the National Land Agency No. 17 of 2016 on Land Management in Coastal Areas and Small Islands. Article 15 (4.b) states that the use and utilization of land must be in accordance with the provisions of the Regional Spatial Plan ( ) and the zoning plan for coastal areas and small islands.

The Coastal Zone Plan for the Province consists of the allocation of space within the General Utilization Zone, Conservation Zone, Specific National Strategic Zone, and maritime corridors. Coastal zone restrictions are one of the first steps before developing strategic planning and management. It is necessary to distinguish conventional administrative boundaries from socio-economic boundaries in order to establish a basis for integrated and ecosystem-oriented management [36].

Based on the provisions set forth in several regional regulations of West Java Province, the utilization of accreted land in coastal areas must be carried out in an orderly manner and with due regard for the protection of coastal ecosystems. Accreted land is classified as a local protected area, while coastal conservation zones in the form of greenbelts are designated with a specified width measured seaward from the highest tide line. The determination of accreted land is made by the regional government, and its utilization is primarily intended for forestry, fisheries, agriculture, livestock, and tourism activities.

Furthermore, accreted land directly adjacent to forest areas is prioritized for designation as forest area, whereas land located outside such areas is controlled by the state under the supervision of the governor. Its utilization must not damage the natural landscape, must not be undertaken without a permit, and must conform to the provincial as well as regency/municipal spatial plans. More detailed provisions regarding its implementation are subsequently stipulated through regency or municipal regional regulations.

Coastal Area Conservation is carried out to maintain the sustainability of Coastal Ecosystems. Conservation can also be viewed from an economic and ecological perspective, where conservation from an economic perspective means trying to allocate natural resources for the present, while from an ecological perspective, conservation is the allocation of natural resources for the present and the future. The scope of mangrove forest conservation includes protection efforts and nature conservation in the form of setting aside areas as nature reserves for marine waters, coastal areas, and mangrove forests [36].

For conservation purposes, part of the coastal area has been designated as a Conservation Area. The management strategy for the Coastal Conservation Area is carried out by designating coastal conservation areas in coastal areas according to their importance. Local regulations of regencies/cities, in accordance with their authority under Article 34 of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests, provide protection for mangrove forests by stipulating that not all reclaimed land is allocated for public use. In determining the allocation and use of reclaimed land, it must also be allocated for mangrove forest areas as mangrove conservation zones. Reclaimed land under Article 30 (1) of West Java Provincial Regulation No. 6 of 2011 on the Management of Mangrove Forests and Coastal Forests is a protected area functioning as a local protection zone. Approximately 70% of Brazilian mangrove forests are located within protected areas [37]. In the management of reclaimed land, the potential for land use can be directed to meet urban spatial needs. Reclaimed land can also be optimized to support marine tourism potential. Additionally, reclaimed land can be utilized for social facilities or public facilities and can support the development of conservation areas, particularly mangrove ecosystems [23].

Coastal zones in ecologically unique areas require institutional arrangements involving all levels of government. Ownership of existing mangrove resources directly influences the effectiveness of mangrove conservation and utilization. Mangrove forest ecosystems in protected areas are natural resources that cannot be excluded from unauthorized use (non-excludable) and are goods that require competition (rivalry) or natural resources that produce pure goods and services that are collectively owned (public goods and services) [15]. Efforts to improve the conservation and sustainable use of mangroves have largely failed because the main problems related to land ownership and control regimes are often ignored. In determining the allocation and use of land for mangrove forest areas as mangrove conservation zones, these areas are managed by the City/Regency Government or transferred to village-owned enterprises as stipulated in Article 87 of Law No. 6 of 2014 on Villages. In the management of natural resources in villages, as further stipulated in Article 90, priority is given to village-owned enterprises.

5. CONCLUSIONS

The acquisition and ownership of emerging land in some parts of Indonesia are still based on customary laws that are in effect within local communities and that clearly function as a means of regulating the acquisition of emerging land along coastal areas. The acquisition of emergent land begins with residents erecting markers in the sea that are believed to eventually become emergent land, often still not yet visible as

a distinct surface area. In other areas, community ownership of emergent land is obtained through division.

Emerged land in coastal areas is state-owned land that must be utilized and managed to support the recovery of coastal ecosystems. The zoning of such areas is part of the coastal zone management plan ( ), which falls under the authority of the regent or mayor, who may regulate the utilization, control, and allocation of emerged land, as well as grant rights to emerged land in a manner that balances economic and social activities with mangrove conservation efforts. The utilization of emerged land is not entirely allocated for the community; part of it is allocated for mangrove forest areas as mangrove conservation zones in accordance with the coastal zone planning. The determination of the allocation and use of emerged land for mangrove forest areas as mangrove conservation zones that can be optimized to support marine tourism potential is managed by the City/Regency Government or granted to village-owned enterprises.

ACKNOWLEDGMENT

This research was funded by the Research Grant from the Lembaga Penelitian dan Pengabdian Masyarakat (LPPM) of Universitas Diponegoro. We would like to express our sincere gratitude to LPPM for their financial support and for enabling the successful completion of this study. Our appreciation also goes to all the individuals and institutions who have contributed to the research process, whether through guidance, advice, or technical assistance.

REFERENCES

[1] Adisasmita, R. (2006). Pembangunan Kelautan dan Kewilayahan. Yogyakarta: Graha Ilmu.

[2] Dahuri, R. (2003). Keanekaragaman Hayati Laut: Aset Pembangunan Berkelanjuatan Indonesia. Jakarta: Gramedia Pustaka Utama. https://catalogue.nla.gov.au/catalog/3076632.

[3] McDonald, J. (2006). Provincial strengthening and environmental governance in the Solomon Islands. Asia Pacific Journal of Environmental Law, 9(4): 293-330. https://www5.austlii.edu.au/au/journals/AsPacJlEnvLaw/2005/10.pdf.

[4] Mollins, J. (2018). Data & Fakta: Kontribusi mangrove pada mitigasi perubahan iklim di Indonesia. Kabar Hutan. https://forestsnews.cifor.org/56920/data-fakta-kontribusi-mangrove-pada-mitigasi-perubahan-iklim-di-indonesia?fnl=id.

[5] Scott, D.B., Frail-Gauthier, J., Mudie, P.J. (2014). Africa: Selected marsh and mangrove areas. In Coastal Wetlands of the World: Geology, Ecology, Distribution and Applications, pp. 153-185. https://doi.org/10.1017/CBO9781107296916.010

[6] Vermeersen, B.L.A., Slangen, A.B.A., Gerkema, T., Baart, F., et al. (2018). Sea-level change in the Dutch Wadden Sea. Netherlands Journal of Geosciences, 97(3): 79-127. https://doi.org/10.1017/njg.2018.7

[7] Wibowo, L.R., Runggadini, C.W.M. (2012). The system of land tenure and land politics in mangrove ecosystem. Masyarakat, Kebudayaan dan Politik, 25(3): 202-213.

[8] Björklund, M.I. (1974). Achievements in marine conservation, I. Marine parks. Environmental Conservation, 1(3): 205-217. http://www.jstor.org/stable/44516293.

[9] Eisma, R.L.V., Christie, P., Hershman, M. (2005). Legal issues affecting sustainability of integrated coastal management in the Philippines. Ocean & Coastal Management, 48(3-6): 336-359. https://doi.org/10.1016/j.ocecoaman.2005.04.009

[10] Nasution, S. (2003). Metode Penelitian Naturalistik Kualitatif. Bandung: Tarsito. https://inlislite.ipdn.ac.id/opac/detail-opac?id=3464.

[11] Moleong, L.J., Surjaman, T. (2000). Metodologi Penelitian Kualitatif. Bandung: Remaja Rosdakarya.

[12] Supriyani, R. (2013). Landslide: Interaction between community and environment (case study: Residents of Jayamukti Village, Blanakan sub-district, Subang Regency). https://lib.unpad.ac.id/index.php?p=show_detail&id=47234.

[13] Desember, L.L. (2018). Management of emerging land (aanslibbing) in improving the welfare of indigenous communities. Jurnal Hukum Jatiswara, 33(2): 1-15. https://doi.org/10.29303/jtsw.v33i2.166

[14] Kustanti, A., Nugroho, B., Nurrochmat, D.R., Okimoto, Y. (2015). Evolusi hak kepemilikan dalam Pangelinan ekosistem hutan mangrove di Lampung mangrove center. Risalah Kebijakan Pertanian dan Lingkungan Rumusan Kajian Strategis Bidang Pertanian Dan Lingkungan, 1(3): 143-158. https://journal.ipb.ac.id/jkebijakan/article/view/10291.

[15] Muhibbin, M. (2015). The authority and ownership of muddy land (Aanslibbing) at North coastal area of Java Sea. International Journal of Social and Local Economic Governance, 1(1): 42-51. https://doi.org/10.21776/ub.ijleg.2015.001.01.6

[16] Turisno, B.E., Sudaryatmi, S., Sukirno, S. (2012). Model for determining rights to emerging land. https://eprints.undip.ac.id/20575/.

[17] Susilo, F.P., Sumardjono, M.S.W. (2002). Pengaturan tanah oloran dalam hukum agraria nasional dan menurut hukum adat di KabupatenSidoarjo Provinsi Jawa Timur. Yogyakarta: Universitas Gajah Mada. https://etd.repository.ugm.ac.id/penelitian/detail/19047.

[18] Meriana, G. (2016). Monitoring perkembangan tanah timbul dan pemanfaatannya di Pesisir Blanakan Kabupaten Subang. Bandung: Universitas Pendidikan Indonesia. https://repository.upi.edu/25174/.

[19] Erwiningsih, W. (2009). Hak Menguasai Negara Atas Tanah. Yogyakarta: Universitas Islam Indonesia.

[20] Sumardjono, M.S. (2006). Kebijakan Pertanahan: Antara Regulasi dan Implementasi. Jakarta: Kompas Media Nusantara.

[21] Arnold, C.A. (2007). The structure of the land use regulatory system in the United States. Journal of Land Use & Environmental Law, 22(2): 441-523. http://www.jstor.org/stable/42842890.

[22] Proses pengembangan lahan secara informal di Tanah Timbul kecamatan Lemahwungkuk cirebon. https://webpac.lib.itb.ac.id/index.php/marc/view/77360/TABLE.

[23] Kathiresan, K., Bingham, B.L. (2001). Biology of mangroves and mangrove Ecosystems. Advances in Marine Biology, 40: 81-251. https://doi.org/10.1016/S0065-2881(01)40003-4

[24] Syamsu, I.F., Nugraha, A.Z., Nugraheni, C.T.,

Wahwakhi, S. (2018). Study of land cover change in the mangrove ecosystem of the East coast of Surabaya. Media Konservasi, 23(2): 122-131. https://doi.org/10.29244/medkon.23.2.122-131

[25] Ramesh, R., Lakshmi, A., Ramachandran, P. (2011). Integrated coastal and estuarine management in South and Southeast Asia. In Treatise on Estuarine and Coastal Science, pp. 227-263. https://doi.org/10.1016/B978-0-12-374711-2.01114-1

[26] Finnell, G.L. (1978). Coastal land management: An introduction. American Bar Foundation Research Journal, 3(2): 153-167. https://www.jstor.org/stable/828032.

[27] Romañach, S.S., DeAngelis, D.L., Koh, H.L., Li, Y.H., The, S.Y., Raja Barizan, R.S., Zhai, L. (2018). Conservation and restoration of mangroves: Global status, perspectives, and prognosis. Ocean & Coastal Management, 154: 72-82. https://doi.org/10.1016/j.ocecoaman.2018.01.009

[28] Asante, W.A., Acheampong, E., Boateng, K., Adda, J. (2017). The implications of land tenure and ownership regimes on sustainable mangrove management and conservation in two Ramsar sites in Ghana. Forest Policy and Economics, 85: 65-75. https://doi.org/10.1016/j.forpol.2017.08.018

[29] Collins, H. (2002). Regulating Contracts. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199258017.001.0001

[30] Rusdianti K., Sunito, S. (2012). The conversion of mangrove forest land and the local residents' effort to rehabilitate mangrove ecosystems (Case Desa Karangsong, Kecamatan Indramayu, Kabupaten Indramayu, Jawa Barat). http://repository.ipb.ac.id/handle/123456789/54415.

[31] Senevirathna, E.M.T.K., Edirisooriya, K.V.D., Uluwaduge, S.P., Wijerathna, K.B.C.A. (2018). Analysis of causes and effects of coastal erosion and environmental degradation in Southern coastal belt of Sri Lanka: Special reference to Unawatuna coastal area. Procedia Engineering, 212: 1010-1017. https://doi.org/10.1016/j.proeng.2018.01.130

[32] Rönnbäck, P., Crona, B., Ingwall, L. (2007). The return of ecosystem goods and services in replanted mangrove forests: Perspectives from local communities in Kenya. Environmental Conservation, 34(4): 313-324. https://doi.org/10.1017/S0376892907004225

[33] Bennett, E.L., Reynolds, C.J. (1993). The value of a mangrove area in Sarawak. Biodiversity and Conservation, 2: 359-375. https://doi.org/10.1007/BF00114040

[34] Rubio-Cisneros, N.T., Moreno-Báez, M., Glover, J., Rissolo, D., et al. (2019). Poor fisheries data, many fishers, and increasing tourism development: Interdisciplinary views on past and current small-scale fisheries exploitation on Holbox Island. Marine Policy, 100: 8-20. https://doi.org/10.1016/j.marpol.2018.10.003

[35] Pallero, C., Scherer, M., Barragán, J.M. (2017). Methodology of delimitation and zoning of transitional systems: Application to the Mampituba river estuary (Brazil). Ocean & Coastal Management, 145: 62-71. https://doi.org/10.1016/j.ocecoaman.2017.05.010

[36] Zulkifli. (2014). Kerjasama ekonomi internasional sebagai solusi pengelolaan kawasan perbatasan negara (Studi Kasus Indonesia). Jurnal Ilmiah Cano Ekonomos, 3(2): 139-158. https://media.neliti.com/media/publications/58555-ID-kerjasama-ekonomi-internasional-sebagai.pdf.

[37] Ferreira, A.C., Lacerda, L.D. (2016). Degradation and conservation of Brazilian mangroves, status and perspectives. Ocean & Coastal Management, 125: 38-46. https://doi.org/10.1016/j.ocecoaman.2016.03.011