

The Policy of Land Reclamation Use of Coastal Dike Development in Jakarta Bay: A Social Problem-Solving

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ABSTRACT

This paper discusses the social problems of the use of land (old and new) in tidal flood disaster management that often occur in Jakarta Bay and its alternative solution policy. One of the mitigation efforts is to build a coastal dike that serves to hold off the runoff of the sea to the mainland. However, the construction of coastal dike is not easy because the residents have used the land along the coastline for various purposes that are not following its designation. By using the qualitative-descriptive method, the results of this study show that the land around the coast has been used by the community not following the rules to make settlements and make marine processing business. Whereas for a new land reclamation it has been used to make temporary docks and potentially be used improperly. The policy alternative offered is on new land have been planned to build flats, marine products processing facilities, fish markets, docks, and green open space.

Keywords: *policy land use, social problems, coastal dike, reclamation, Jakarta Bay.*

1. INTRODUCTION

The phenomenon of rising sea levels, tidal floods, and land subsidence in several coastal areas have caused various impacts. Currently, one of the coastal areas experiencing crucial conditions is the Jakarta Bay area. This is because the rate of land subsidence is 0,5-17 cm/year [1]. Therefore, to deal with the problem, then carried out the construction of the coastal embankment. This development aims (a) to hold seawater from tidal or tidal waves, (b) reduce socio-economic losses due to tidal flooding, and (c) as a clear boundary of land development in coastal areas [2]. If the efforts are not made, such as the construction of coastal embankments, it is estimated by the ITB Team, in 2035 it is predicted that some areas in Jakarta will sink [3].

However, the development of beach embankment is not easy because the coastline has been used by the community for various purposes, some of which are not well ordered. Therefore, in the context of structuring coastal areas, developing land, and avoiding conflicts with the community, the construction of coastal embankments is not carried out on the current coastline, but rather far from the coastline towards the sea (sea

area). This condition has implications for a new land (reclaimed land).

The existence of land use in old land and the new land (reclamation) in the construction of coastal embankments is an interesting phenomenon because most of the people who use the land around the coastline are not following its designation. Conversely, the existence of newly reclaimed land also has the potential to be used again for various purposes which are also not following its purpose. This condition is certainly not expected because if it is not anticipated as soon as possible, it is not impossible that the development and development objectives of the area will not be achieved as expected.

The development of coastal embankments and the existence of reclaimed land, in general, cannot be separated from the emergence of some problems. Pawitro, U., for example, who examined three reclamation sites namely on Loli beach in Palu, Makassar beach in Makassar, and Palu Bay beach in Palu found problems at various levels, starting from local, regional, to policy and strategy levels achievements in the area development activities as well

as implementation procedures in the area development [4]. Mustaqim, I., who examined the impact of Jakarta's north coast reclamation activities on the socio-economic changes of communities around the port of Muara Angke found that the reclamation had an impact on various aspects, especially on the pattern of social, economic, cultural, and habitat activities in the community's water spaces [5]. Qodriyatun, SN. also examines the impact of Jakarta Bay reclamation which concludes that the reclamation has a negative impact, both on the environment, economic conditions, and social conditions of the community [6]. Likewise, what was done by Park, SY. who examined the construction of the embankment and reclamation of the South Korean Saemangeum coastal area concluded that the reclamation resulted in social conflict. The social conflict was triggered by environmental problems such as the destruction of tidal ecosystems, marine ecosystems, and pollution in lakes [7].

The results of the above studies show that in the construction of coastal embankments and the emergence of new land reclamation results are have many problems. Likewise, there are efforts in repairing and utilizing reclaimed land following existing regulations. However, what is interesting in the Jakarta Bay location is the existence of social problems in the use of existing land and the use of reclaimed land as well as potential problems in the future. For this reason, this study discusses (a) how are the social problems in using old land and reclaimed new land at the beach embankment construction site? and (b) how is the reclamation land use policy in the construction of a coastal dike a solution to solving these social problems? Thus, it is expected that social problems and land use policies in coastal embankment development sites can be well known so that they can become the basis for making other supporting policies.

2. CONCEPTUAL FRAMEWORK AND RESEARCH METHODS

Theoretically in social science, there are two problems: societal problems and social problems. Societal problems involve analysis of the various symptoms of community life, while social problems involve abnormal symptoms in the community. Social problems involve social and moral values, which are related to immoral behavior and contrary to law. In other words, social problems occur because of discrepancies based on considerations of community measures of what is considered good [8] or a threat to the quality of the community life and their most cherished values, they also agree that something should be done to remedy that condition [9]. Meanwhile, in the context of the implementation of the reclamation, there are rules, including various references in the legislation such as Regulation of President Republic of Indonesia No.122 of 2012 concerning Reclamation in Coastal

Areas and Small Islands [10], and Ministerial Regulation of The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No.17 of 2016 concerning Land Management in Coastal Areas and Small Islands [11]. Likewise, in the use plan, there is already a regulation in the form of DKI Jakarta Regional Regulation No. 1 of 2012 concerning the 2030 Regional Spatial Plan [12] which serves as a reference in spatial use planning. To overcome these social problems, action is needed in the form of preventive and repressive measures. Preventive efforts are needed before something happens, while repressive efforts are applied when social problems occur and can no longer be done with persuasive efforts. In this context, it takes policy as a foundation for taking various actions [13] and for solving problems [14].

The research method used in this study is a qualitative descriptive method [15]. Data collection techniques are carried out using literature review, in-depth interviews, and field observations. The three methods of data collection are carried out combinative in completing the required data. Data was collected through the DKI Jakarta Regional Government, officers of Ciliwung Cisadane River Region Central Office, officers of Neighborhood Association and Citizens Associations, fishermen, businessmen, Fish Auction officers, and community leaders. The literature review is used at an early stage to collect secondary data related to the location and development of coastal embankment development. In-depth interviews are used to gather information from both relevant agencies and the public. While field observations are used to directly observe the condition of the location and the dynamics of community life directly at the two coastal dike development sites.



Figure 1. Location of Dike Coastal Development in Jakarta Bay

The location of this research is in the Jakarta Bay zone of the North Jakarta administration area, DKI Jakarta Province with a focus on two coastal embankment development locations, namely the Muara

Baru beach embankment (Penjaringan Village) in Penjaringan District and the Kalibaru beach embankment (Kalibaru Village and Cilincing Village) in the District Cilincing.

3. DATA AND DISCUSSION

3.1 Social Problems in Utilizing Existing Land and Reclaimed Land

Land in the coastal dike construction site has been used by the community for various purposes. This condition occurred at two embankment construction sites namely at the Kalibaru and Muara Baru embankments. Meanwhile, on reclaimed land (still in the process of being developed and partly completed) activities have also begun [14]. The patterns of existing land use and land reclamation results, namely:

3.1.1 Dock/Pier Fishing

As a coastal area, the people around it have used the location as a dock or boat berth to carry out sea-related activities, both at Kalibaru and at Muara Baru. In general, there are two types of dock/pier fishing typology, namely (a) fishing boat dock/backrest and (b) trading pier.

- 1) Fisherman Boat Dock / Backrest: used by fishermen to land their ships carrying various types of catches and aquaculture from the sea. In terms of physical form or form, the fishing boat's jetty/back can be divided into four categories, namely (a) bamboo, (b) wooden board, (c) plastic/floating, and (d) directly leaning on land. The dominant one is the pier made of bamboo and the backrest that goes straight to the land, while the one made of wooden boards is relatively small, and the floating one is only one unit. Jetties made of bamboo, wooden boards or plastic pontoons are jutting into the sea because the surrounding beach is no longer flat or because of the embankment. While those who still have gently sloping beaches, fishermen lean their boats directly to the beach. While from the user side it can be divided into two, namely general nature where ships from outside even though not local communities may use and communal where only groups or communities are allowed to use the pier.
- 2) Commercial / Goods Wharf: there are also backs for merchant / commercial vessels. This pier is used by companies for loading and unloading goods. The types of goods normally transported through this pier are sand, cement, precast materials, and other building materials. Generally, the goods are transported to the Pulau Seribu region and its surroundings. Loading and unloading activities at the commercial pier located in the area of the reclamation site of the beach embankment. This pier is used as access to supply needs, especially

building materials for residents in the Pulau Seribu and the supply of infrastructure development needs in the region. The sand transportation pier is access to supply and on land and in the Pulau Seribu. Generally, the sand is taken from the sand storage in the Marunda area and then transported to Kalibaru. Furthermore, stored around the beach while waiting for buyers. There are two sources of buyers, namely, if the buyer is from the Pulau Seribu, it will be transported again to the ship to be delivered to the destination island. However, if the buyer is from land (Jakarta and its surroundings), it will be transported by truck.

The social problem that arises at this time is that some of the docks/berths of the ship can no longer be accessed by users because of the construction of the coastal dike. Although there are still many points where there is still a gap for boat accessibility in and out, along with the implementation of coastal embankment development, the gap is increasingly limited. The problem that arose later was that ships began to lean on the side of the newly built beach embankment. This creates another problem because the newly built embankment is not designated as a dock/berth. It is feared that if the ship continues to lean on the side of the embankment, it will affect construction. On the other hand, because it was not intended, the ships that were leaning on were feared to be broken due to the swift.

Based on observations at the site, there was a broken boat that was propped on the side of the embankment because it was hit by a big wave. A new social problem is that residents have started to build bamboo piers on the outer side of the newly built beach embankment. If this is not handled, then it is not impossible that in the future the condition of the Jakarta Bay coast will again be filled with rows of bamboo docks along the newly built beach embankment and in the end, it will show its less well-ordered face.

3.1.2 Fish/Green Shell Processing Sites and Green Shell Mussels Disposal

As a location on the coast, labor is relatively available, and near the marketing area, the Jakarta Bay coastal area is one of the very strategic locations as a location for processing seafood products. At the beach embankment construction site, there are two prominent types of seafood processing business, namely fish and green shells. First, fish processing. Fish processing is widely spread in the Kalibaru Village location. However, not all utilize land above the reclamation of coastal embankments. One type of fish that is processed at the reclamation site is anchovy. This anchovy is a catch that is produced by many fishermen. Anchovy that is transported from fishing vessels is then transported to the processing site. After cleaning, anchovy is then cooked on a stove in several parts with fire until it boils until cooked. Then, boiling is done, then drained and

then dried. This drying location requires a fairly large area because the drying method used still uses direct sun drying, which is drying by relying on sunlight. Second, processing green mussels. The processing of green mussels is also widely spread in the Kalibaru location. It's just because the processing of green mussels is more and more complicated, so besides requiring a lot of workers, it also requires a fairly large land area. There are several stages of the processing of green shells, all of which use land in the reclamation site of the coastal embankment.

- 1) **Cleaning of Green Shells from Mud / Dirt.** Green mussels that have been transported from fishing boats are then sorted from mud or dirt. Two ways are usually done to separate green shells from mud or dirt that is attached, namely cleaning in large quantities (using feet / stepped on) or sorted one by one.
- 2) **Boiling.** Green mussels that have been cleaned from dirt are then cleaned and then boiled. The boiling place uses used drums with firewood. This boiling takes some time so that the green shells that are still closed become open shells.
- 3) **Separation from the Shells.** Separation of the shells is a process that also requires a relatively long time and requires extensive land. This is due to the need for the land/space of the shells that have been cooked with the waste shell.

The problem that arises at this time is the location of reclamation into a green shell disposal place. Green clamshell waste is discharged to the beach reclamation site. Before the construction of the coastal embankment, green shell waste was used as a backfill to add the land area that could be used for various activities. This happens a lot in Kalibaru, the location of processing green mussels.

The concern is that if it is not facilitated, it is very potential that after the beach embankment has been built, the shells of green shells are not only disposed of at the current reclamation site but also on the outside side of the new embankment. For now, the disposal of green mussel shells at the reclamation site is a relatively long time. Facts on the ground show that there is a tendency that the processing of green mussels continues and this means that the volume of green shell mussels disposal will also continue to grow. If this condition continues, then there may be a long-standing pattern (repeating) where they will discard the shell of the green shell and a "land" will form on the outer side of the embankment.

3.1.3 Ship Scrap Metal Business

The ship's scrap metal activity also basically uses the coastal embankment reclamation land. Before the construction of the coastal embankment, the activity of

scrap metal was very active and used the land to the coast. The existence of land along the coast is something that can not be separated because the cutting of ships (iron) is carried out on the beach and then the results of the pieces are lifted ashore and then transported to the iron smelter. This company also uses its land in the reclamation of coastal embankments in conducting its business.

Problems arise when embankment construction has begun and some have already been built, some old ships are already on the outside of the embankment. However, the activity of cutting scrap metal is still being carried out. This also has the potential to occur in the future, even though the beach embankment has been completed, it is also possible that scrap metal cutting activities on the outer side of the beach embankment will continue.

The picture above shows the ship's scrap metal cutting activities while field observations were still taking place. In fact, along with the ongoing construction of the coastal dike, part of the location of iron cutting has been covered by the dike so that the cutting activity has to be carried out on the outside of the dike. This condition is of course potential to continue if no treatment is taken.

3.1.4 Residential Settlements

The residential settlements which are in the location of the reclamation plan are slowly forming and building. In the Kalibaru location, even though there is a dike barrier built by the DKI Regional Government, the need for shelter has made residents occupy the outer edge of the embankment towards the sea. The method used is by slowly curing so that it becomes a new land and there is also a direct a build on the water (sea). Generally, the method of extracting is applied in Kalibaru and Cilincing, which is different from Muara Baru. At the Kalibaru location, this sorting process is only done by a few residents, but in Cilincing especially in RW 04, there is a grouping of settlement patterns, either by crushing or building on water. Unlike the case in Kalibaru and Cilincing, in Muara Baru, some settlements are all located on the water, namely in RT 20 RW 17 Penjaringan Village. In general, residents at this location erected wooden poles or wooden houses on the water.

Social problems arise because long before the construction of a new beach embankment, the existence of these settlements is already on the outside of the old embankment. Thus, it is not impossible that settlement can reappear on the outside of the new beach embankment. This is not difficult for the locals because they already can tap the beach to build houses.

3.2 Land Use Policy of Reclaimed Coastal Embankment Development

With the reclamation land due to the construction of the coastal dike leading to the sea (sea area), the land area of the Jakarta Bay coast will automatically expand. The reclaimed land of the coastal dike is an effort to increase the benefits of land resources as part of the creation of the coastal dike to protect the coastal area from the threat of floods and tides. As a land area formed due to backfilling efforts with a sufficient area, the reclaimed land has the potential and economic value to be utilized on the one hand and has legal and socio-economic values on the other. For this reason, it is necessary to optimize the use of land resulting from the reclamation of coastal embankments [16].

The reclaimed land area in Muara Baru, Penjaringan Village ± 12 hectares and in Kalibaru ± 4 hectares. Thus, overall, with the construction of the embankment at that location, the land area increased by ± 16 hectares. The emergence of new land resulting from the reclamation of the beach embankment requires a policy from the government on how to use it to overcome various problems that exist in the Jakarta Bay coastal area. Based on data on land use plans resulting from the reclamation of coastal embankments, from the DKI Jakarta Regional Government [17] and the Regional Infrastructure Development Agency, Ministry of Public Work and Housing [18], at the reclamation sites, a fishing pier will be built, green open spaces, soccer fields, houses bunk, mosque, shop stalls, and other supporting buildings. The following is the reclamation land use plan.



KONSEP PERENCANAAN Kawasan Kalibaru



- KONSEP PERENCANAAN**
- Untuk mengatasi kepadatan Pelabuhan Kalibaru, revitalisasi dermaga ikan dan barang (B&B)
 - Dermaga ikan beserta TPI dibersihkan di sebelah timur yang memiliki fasilitas rumah dan RTH
 - Dermaga barang (B&B) dibersihkan di sebelah barat
- KONSEP ZONA A**
- REVITALISASI PERGUDANGAN
 - PEMBANGUNAN RUSUN
 - PEMBANGUNAN TPI
 - PENGEMBANGAN RUANG USAHA (IKAN ASIN DAN KERANG)
- KONSEP ZONA B**
- PEMBEBASAN RUANG LAUT DARI BANGUNAN DAN MEMPERLEBAR RUANG LAUT UNTUK AKSES KAPAL
- KONSEP ZONA C**
- MEMBILUN RUANG ANTARA TANGGUL LAUT DAN DARATAN UNTUK MENDAPATKAN LAHAN BARU

Pembagian Ruang



- Segmen A :**
Pergudangan, Dermaga Kalibaru
- Segmen B :**
Rumah susun
- Segmen C :**
RTH
- Segmen D :**
Rumah Susun, Dermaga Nelayan, TPI

RENCANA KONSEP RUANG DI LOKASI KALIBARU



Figure 2. Plans for Reclamation Land Utilization in Kalibaru DKI Jakarta and BPIW Ministry of Public Works and Housing

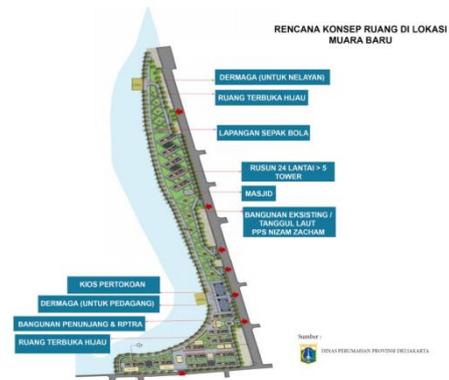




Figure 3. The Plan for the Utilization of Reclamation Results in Muara Baru by the Regional Government of DKI Jakarta

Meanwhile, from the concept offered by the Regional Infrastructure Development Agency (BPIW), it is also planned that various infrastructures and facilities will be built, namely fishing piers, TPI, flats, green open spaces, and warehousing. However, if we look at the two concepts drawn up by the DKI Jakarta Regional Government and BPIW PUPR, it can be said that there is a pattern of similarities between the two. It appears that both of them are trying to compile the concept of structuring the area at the reclamation location as well as accommodating social problems related to land use so that land occupation does not occur. The reclaimed land use plan is as follows [19].

Table 1. Land Use Reclamation Plan

No.	Description	BPIW			DKI Jakarta	
		Kalibaru/ Cilincing	Kalibaru/ Cilincing	Muara Baru	Kalibaru/ Cilincing	Muara Baru
1.	Flats	√	√	√	√	
2.	Fisherman / Business Docks	√	-	√	√	
3.	Green Open Space	√	-	√	√	
4.	Football Feld	-	-	√	√	
5.	The Mosque	-	√	√	√	
6.	Shop Kios	-	-	√	√	
7.	Supporting Buildings & Child-Friendly Integrated Space	-	√	-	-	
8.	Integrated Transportation Stop	-	√	-	-	
9.	Public Facilities/School	-	√	-	-	
10.	Fish Auction	√	√	-	-	
11.	Warehousing	√	-	-	-	
12.	Salted Fish and Green Mussels Business Space	√	-	-	-	

(Source: Puslitbang KPT, 2017a)

Based on the land use plan resulting from the reclamation of the coastal embankment above, it can be concluded that (although for locations in Muara Baru the concept of the plan from BPIW does not yet exist), flats are of concern. From the three concepts in the two locations, it is clear that all of them compiled the concept of building a Flats. However, when compared between field data and the results of observations at the site, it seems that it still does not provide or facilitate:

- (a) Green cockle shell disposal sites (although they can be processed into valuable goods). This is very important, especially in the Kalibaru / Cilincing location until when fishermen/shellfish businesses still dump their green shell waste into the sea or at best how to handle the scallops of green shell scum; or an attempt to make the shell economically valuable, such as souvenirs.

- (b) The place for drying salted fish has not been provided with adequate land using the existing land. For example, a multi-storey building is made where the bottom is a fish processing area, while the upper part is a place for drying fish. If not facilitated like this, then there is a possibility that green open spaces will be "converted" as locations for the salted fish drying.
- (c) Even though there are plans to build a pier, it seems that the pattern is centred at one point. The distance between the fisherman's house and the pier is quite far. Especially before, fishermen already have communal docks close to their houses, will require effort and time to change these habits. If it is seen in the field that it is the construction of a floating dock by the Research Center for Water Resources, the actual concept of land use also needs to include

the construction of a floating dock (ongoing) in their plans.

Based on the data above, and if related to the theoretic concept it can be said that the emergence of various social problems in the form of land use that is not following its designation can be assessed as problems related to non-compliance of citizens in carrying out established rules [8]. Code of conduct such as building houses on the outside of the old embankment can be understood as a code of conduct that does not heed rules such as the coastline and building rules by first asking for permission to build a building. The construction of settlements on the outer side of the old embankment is not the only individual in the sense that only one or two houses, but have formed a residential area that is administratively included in the neighbourhood and neighbourhood. The phenomenon of this social problem occurs also because the social standards set are not following social realities that occur were not through legal and legal means. This means that the established social standards such as not being allowed to occupy land turn out to be violated a lot and in reality, many citizens do land occupation so a policy is needed to overcome them. In the view of Kornblum and Joseph [9] social problems like this need to be sought immediately to fix it because it has disturbed the values held by the community in general.

In the process of building coastal embankments and land use as found by Park, SY. [7] in South Korea, it also happens on the location, however, the level of conflict is not too large due to the existence of effective mechanisms that work in reducing conflict. This is somewhat different from the reclamation of the island which is on the outside side of the construction of the coastal embankment as stated by Mustaqim, I. [5] that which has caused various impacts including dynamics with the community in Muara Angke and as said by Qodriyatun [6] regarding the impact negative impacts due to the reclamation of the Jakarta Bay but not much occurred in the process of the construction of the coastal dike. However, with the construction of the coastal dike, the community was helped primarily from the threat of tidal waves although it was not denied that temporary impacts also remained, but could be sought through mitigation both structural and nonstructural.

Meanwhile, as a preventive measure to prevent social problems from occurring as well as a solution to various social problems in the coastal dike development site, the reclamation land use plan seems to be the right policy such as the construction of various facilities such as settlements and other social facilities. In the implementation process, it also seems to have accommodated Regulation of President Republic of Indonesian No.122 of 2012 concerning Reclamation in Coastal Areas and Small Islands [10] and derived regulations in the form of Ministerial Regulation of The

Ministry of Agrarian Affairs and Spatial Planning/National Land Agency No.17 of 2016 concerning Land Arrangement in Coastal Areas and Islands Small [11] by paying attention to the condition of the local community affected due to the construction of coastal embankments and reclamation. Likewise planning for reclamation land use seems also to be adaptive to DKI Jakarta Regional Regulation No. 1 of 2012 concerning the 2030 Regional Spatial Plan [12] which states the use of land including reclaimed land. In addition, strengthening the legal status of land reclamation has also become a concern at this time while waiting for the construction of the beach to be completed later will be submitted Management Rights on reclamation land. Considering the emergence of various social problems in the field, especially at the point where the construction of the coastal dike (which has already been built) requires persuasive steps before implementing the repressive social problem-solving steps. With these social problem-solving policies, it is precisely what Dunn [13] and Situmorang [14] say that the policy is problem-centred and seeks to formulate and solve problems, including reclamation land-use policies.

4. CONCLUSION

Based on the data, results of the analysis, and the discussions that have been carried out above, some conclusions can be formulated as follows:

- a) There are four variations in land use patterns that have existed at the beach embankment reclamation sites, namely dock/pier fishing, fish/green shell processing sites and green shell mussels disposal, ship scrap metal business, and residential settlements. The four variations in land use patterns, the most dominant is the dock/pier fishing boats and residential areas. This shows that in addition to the location is an activity of access to the sea, also in the vicinity has become the location of residential areas. Social problems arise because all four variations in land use patterns are currently affected by coastal embankment development. The problem is crucial again because at this time new docks (made of bamboo) have begun to appear on the outside of the new beach embankment. The same thing happened to the ship's scrap metal business activities and the removal of green shells had begun to be carried out on the outer edge of the beach embankment.
- b) As an alternative solution to the social problems of the old land use at present is to compile and implement a reclamation policy for the use of new land that is intended for: flats, docks, shop stalls, green open spaces, sports facilities, supporting buildings and child-friendly integrated space, transportation shelters integrated, fish auction place, warehousing and fish processing facilities.

However, there are still some facilities that are not yet in the planning, namely the disposal of green shells, salted fish, and small piers.

Observing and following up on the conclusions in this study can be recommended as follows: (a) so that land occupation does not occur by residents, it is necessary to immediately make a sign or pegging the boundaries of the reclaimed land; (b) it is necessary to synchronize the Regional Spatial Plan (RTRW) with the DKI Jakarta Regional Government so that in applying for land use permits for the construction of various types of infrastructure and facilities, it will not violate the RTRW; (c) building various facilities as an effort to arrange and mitigate the impact at the reclamation site (the needs of dock/pier fishing, policies for resettled residents, land use policies for processing sea products, facilitation of waste management of green mussels).

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