ADAPTATION FUND

REQUEST FOR PROJECT/PROGRAMME
FUNDING FROM THE ADAPTATION FUND

The annexed form should be completed and transmitted to the Adaptation Fund Board Secretariat by email or fax.

Please type in the responses using the template provided. The instructions attached to the form provide guidance to filling out the template.

Please note that a project/programme must be fully prepared (i.e., fully appraised for feasibility) when the request is submitted. The final project/programme document resulting from the appraisal process should be attached to this request for funding.

Complete documentation should be sent to:

The Adaptation Fund Board Secretariat
1818 H Street NW
MSN P4-400
Washington, D.C., 20433
U.S.A
Fax: +1 (202) 522-3240/5
Email: afbsec@adaptation-fund.org

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I : PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY	: SMALL-SIZED PROJECT/PROGRAMME
COUNTRY/IES	: INDONESIA
TITLE OF PROJECT/PROGRAMME	: **ENHANCING THE ADAPTATION CAPABILITY OF COASTAL COMMUNITY IN FACING THE IMPACTS OF CLIMATE CHANGE IN *NEGERI* (VILLAGE) ASILULU, URENG AND LIMA OF LEIHITU DISTRICT MALUKU TENGAH REGENCY MALUKU PROVINCE**
TYPE OF IMPLEMENTING ENTITY	: NATIONAL IMPLEMENTING ENTITY
IMPLEMENTING ENTITY	: KEMITRAAN (PARTNERSHIP GOVERNANCE REFORM)
EXECUTING ENTITY/IES	: HARMONY ALAM INDONESIA FOUNDATION
AMOUNT OF FINANCING REQUESTED	: **USD 963.455,31**

PROGRAMME BACKGROUND AND CONTEXT

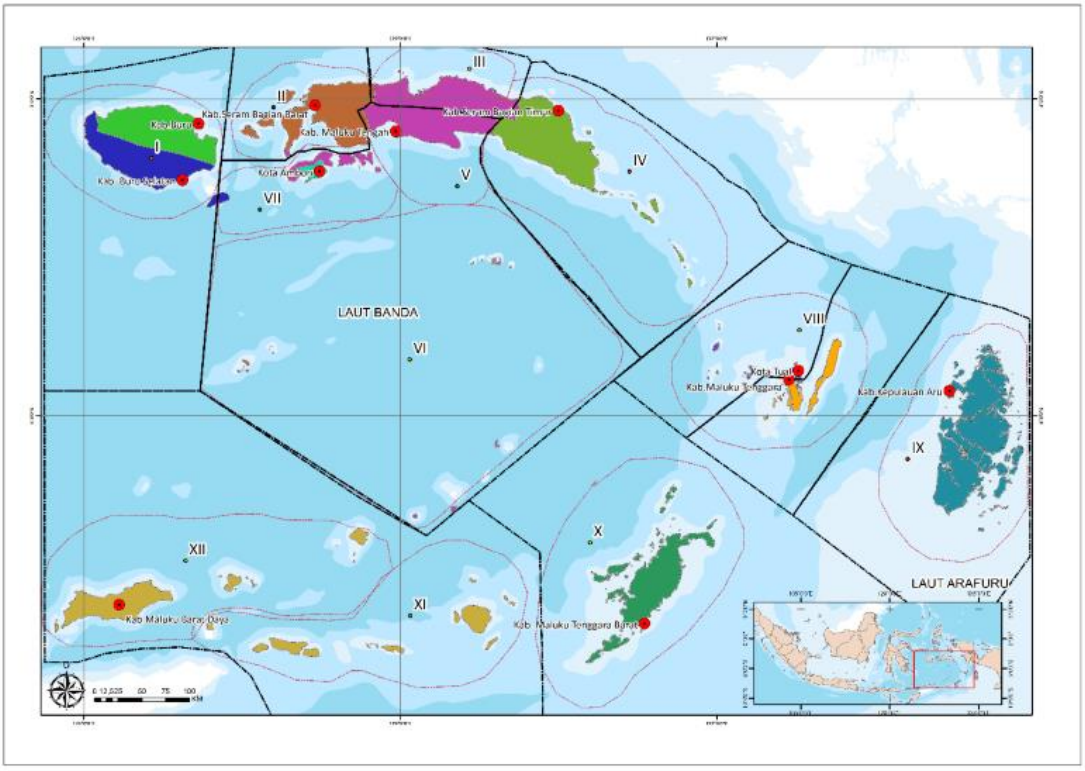
1. In the technical summary, *Intergovernmental Panel on Climate Change*- IPCC (2007) states that, due to global warming, there are two factors that affect the prone coastal ecology social system. First, global warming causes climate change that escalates the likelihood of storms in coastal regions. In 1905 – 1930, there was approximately six tropical storms on Atlantic bay, yearly. The yearly average nearly doubled (10 times of tropical storm in a year) in 1931-1994 and tripled (15 times of tropical storm) between the period of 1995 and 2005. In 2006, however, there had been 10 cases of tropical storm, despite of the year being known as “the calm year". This intensifying pattern of tropical storms will continue for as long as the global warming occurs. Two, it is predicted that global warming would raise sea water temperature between 1 – 3 ^{o}C. From biological standpoint, this occurrence instigates a surge of coral reef death and coral bleaching in the tropical waters. Indonesia, as a nation with more than 17.000 islands and 80.000 kilometers of shoreline, is under the threat of ever-rising of sea surface level. An increase of as small as 1 meter in sea level would submerge 405.000 hectare coastal region and 2.000 islands, as well as coral reefs surrounding the sea level (UNDP, 2007).
2. Global warming disrupts global climate system and is the main factor contributing to the frequency and intensity of extreme climate. It triggers a series of disaster in Indonesia. In accordance to the report of Indonesian National Board for Disaster Management (BNPB), 98% of 2.341 disasters taking place in 2017 are hydrometeorology disasters, such as: flood, tornadoes, tidal waves, avalanches, droughts, forest fires and land fires. Economic loss from these disasters is approximated up to IDR 30 trillion per year.
3. Climate change severely limits the choice of livelihoods, making life unpredictable due to the instability resulted from climate change (Rozenweig & Parry, 1994; Yohe & Tol, 2002). Coastal communities has to face challenges from climate change and the multidimensional impacts the climate change could cause will only aggravate their situation. Environmental and political-economic changes are making more and more coastal communities vulnerable (Howden et al. 2007; IPCC, 2007). Collectively speaking,

thousands of household in coastal region could become impoverished due to damages occuring on infrastructure, settlement, and daily facilities, poverty, and marginalization experienced by the coastal communities throughout the history, which is expected to be more intense every year from the impact of climate change[1].

Effects of Climate Change in Maluku Province

4. Maluku Province is an archipelagic province comprising 1,412 islands with a total coast line of 11 thousand kilometers, and total area of 712,480 km^2, where 92.4% of it is seas and only 7.6% is land. The total population of Maluku Province in 2016 reached 1,715,548 people with gender ratio of 101.77 which means that for every 100 females, there are 102 males. The majority of Maluku communities (80%) live in coastal areas and for generations they are depending on the fishery and marine sector, especially capture fishery. One of the prime commodities in the capture fishery sector in Maluku is tuna. In the Long-term Development Plan (RPJP) of Maluku Province of 2005 – 2025, the Government of Maluku Province focuses the sustainability-based regional development on the functions of archipelagic ecosystem[2].
5. One of approaches for implementing development in Maluku Province is a regional approach based on Gugus Pulau concept of a total 12 Gugus Pulau (Picture 1) with growth centers acting as public service center, trading center, distribution center, and services center.

Picture 1. Maluku Province Map According to City/District and Gugus Pulau Distribution



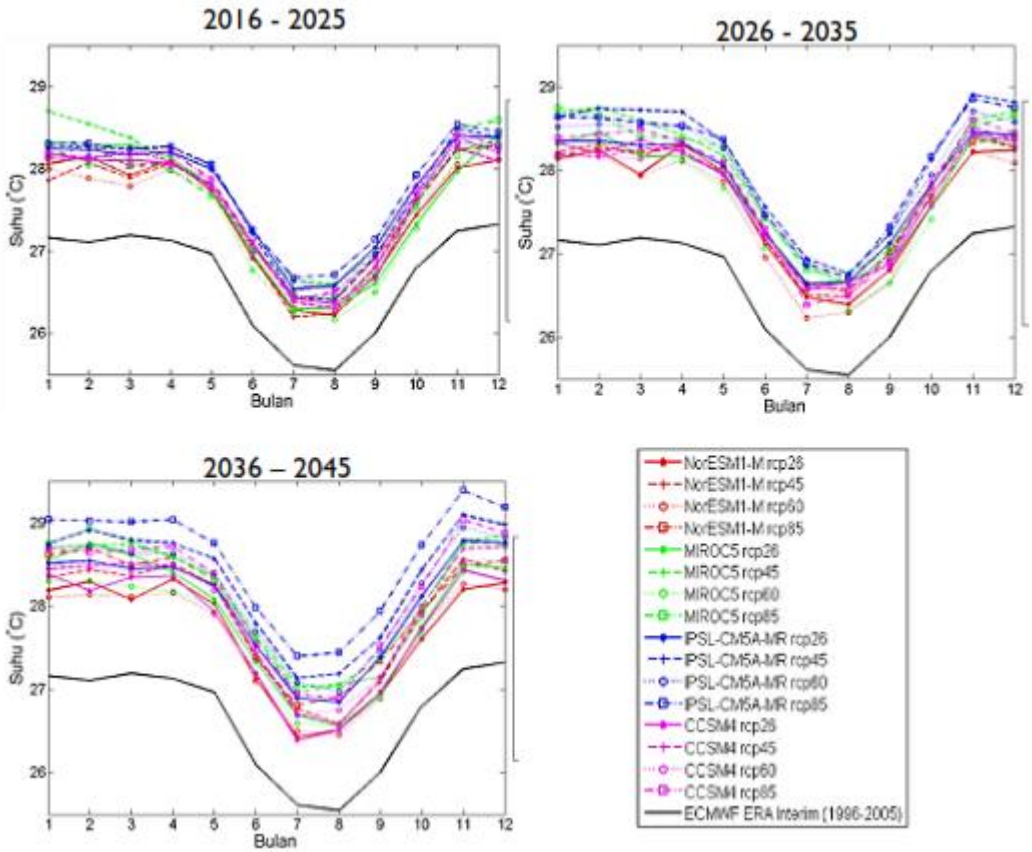
Source: Spatial Planning (RTRW) of Maluku Province 2013-2033

[1] Subair., Lala M. Kolopaking., Soeryo Adibiwobo., & Bambang Pranowo., 2014. In Community Journal Entitled *Adaptasi perubahan Iklim Komunitas Desa: Studi Kasus di Kawasan Pesisir Utara Pulau Ambon*; Hal 58.

[2] Road Map of Climate Change Mitigation and Adaptation and Sustainable Development in Maluku Province (road map MAPI), Directorate General of Climate Change Control Ministry of Environment and Forestry and Government of Maluku Province, 2017, p. 26.

6. Future projection of average temperature changes in Maluku, indicated in the downscaling statistics from IPCC Global Climate Model as carried out by Gede Junnaedhi and Joko Trilaksono in 2017, shows an increase of temperature from 0,5 ^{o}C to 1,5^{o}C. This projection is calculated using green house moderate gas emission scenario, which is RCP 4.5. This screnario is also used by BMKG because it is considered moderate and suitable with emission level in Indonesia. Average yearly projection graphic in 2025 shows an increase in minimum temperature, which is a sign that Maluku has undergone climate change. This trend rises in 2026-2035 which shows that there is an even higher chance of drought in dry season and rain in rainy season. Furthermore, climate change in Maluku region can be observed from the predicted rising temperature in the period of 2036-2045. This influences the potential of high-risk natural disasters, such as flood in several regions of Maluku [3]

Picture 2. Projection of Average Temperate Value in Maluku Province.



Source: USAID APIK Research Report on Maluku Province Vulnerability, 2018.

7. The Regional Development Planning Agency of Maluku has identified several factors in these aspects as challenges to the adaptation efforts, among others: (1) Varied perceptions on climate change and competing priorities of the government and individuals; (2) relatively weak institutional framework of the government; (3) weak social and economic condition of the communities; (4) availability of capacity and good government in the region.

[3] USAID Projection of Average Temperate Value in Maluku Province (APIK). 2018. Research Report on Maluku Province Vulnerability, Page 15.

8. Fishery is one of the sectors contributing the most income for Maluku's economy. It is, however, one that is most impacted by climate change. According to the data from fishery statistical report of Maluku Province, most fishing cacth in Maluku Province comes from aquacultur and offshore fishing yield, which result in 586,106 tons and 551,812 tons respectively, in 2013 (Maluku Province Office of Fisheries, 2016)
9. One of the most important commodities of Maluku in the capture fishery sector is tuna. In economic terms, the sale of tuna ranks the second (Rp2.6 billion) after scad (Rp3.8 billion). At the provincialb level, tuna is the most exported fish throughout 2016 amounting to 1,115.21 tons. most exported fish throughout 2016 amounting to 1,115.21 tons. Meanwhile, frozen grouper ranks the third with the number of catches amounting to 8.86 tons in the last 2016. Behind such enormous potential, the results of vulnerability review workshop in 2017 indicate that Maluku Tengah, Maluku Tenggara, and Maluku Barat Daya Regencies as well as Tual City have an extremely high vulnerability in the capture fishery sector. This situation is understandable because the region has an extremely vast sea area and greatly depends on products in the capture fishery sector, while most fishermen in this region still fish traditionally and conventionally.
10. Vulnerability in maritime and fishery sectors related to the cause of climate change can be observed from the rising temperature and sea surface caused by coastal circulation pattern change, thus affecting nutrient supply, coastal erosion, sea acidity, and coral bleaching. This condition impacts ecology processes that is directly related to coral reef growth and spawning cycle of coral fish and other invertebrates. Fisheries are dependent on coastal region ecosystem. Unpredictable weather and high frequency of cyclone directly affect fishermen's productivity and their operational system. This condition means less fish in markets and loss of income experienced by traditional fishermen.

Table 1. The Effects of Climate Change in Maritime and Fishery Sectors

***Stressor* Climates**	**Direct Effects**	**Effects**
The Rise of Temperature and Sea Level	1. Coral bleaching and lack of growth (changes in waters composition and depth) 2. Disturbed re-spawn cycle 3. Immigrating fish	1. Declining agricultural yields 2. Declining marine yields 3. Less income for fishermen 4. Negatively-affected coastal communities and aggravated ecosystem
The Rising of Sea Level Surface	1. Less pond area 2. Damaged coral reefs 3. Less marine yields 4. Coastal flooding occurrence	1. Low pond productivity 2. Poor economy for fishermen 3. Damaged infrastructure
Typhoon	1. Less fishing activities 2. Less agricultural activities	Marine product in decline
Seawater acidity	1. Less marine yields 2. Damaged coral reefs 3. Less microbial shift 4. Eutrophication	1. Less income for fishermen 2. Disrupted economy for fishermen 3. More fertile waters for seaweed

Source: The Results of APIK Vulnerability Report Workshop, 2017

11. Vulnerability aspects of the availability of drinking water consist of 5 types namely; (1) rainwater, (2) groundwater, (3) surface water, (4) desalination water, and (5) imported (bottled) drinking water. In the Maluku islands, not all sources of drinking water can be easily accessed and available on most islands. As a result, most people are very vulnerable to natural variability in rainfall patterns or changes in tropical cyclone patterns.
12. Vulnerability of socio-economic aspects of culture and governance. Bappeda Maluku identified several factors in this aspect as a challenge factor for adaptation efforts, including: (1) Different perceptions of climate change and priority competition between government and individuals; (2) Government institutional framework which is still relatively weak; (3) Weak social and economic conditions; (4) the availability of capacity and good governance in the regions.

Site Project/Programme

13. Central Maluku consists of small islands vulnerable to even the smallest of ecological changes. As an archipelago, this area greatly depends on the ocean; both as source of living and connecting route between areas. Coastal area and the sea holds a significant function and role on the situation and condition of the surrounding areas, which greatly influences the lives and economy of the community. Weather and seasons are among the factors influencing tidal range, ocean current strength, and wind speed—which in turns influence people's ability in earning money and their mobility.
14. Change in fish season also impacts on fishermen's catch and also on material losses because of the relatively high cost for going to sea due to the requirement to move continuously for catching up with time and fishing ground, while catch sometimes does not meet the target. The occurrence of El Nino and La Nina phenomenon results in the change in sea level temperature thus changing fish life pattern and fish migration[4]. Change in temperature will affect the decrease in fish upwelling zone (place for foraging), shift of fish population to colder or hotter sea and increase in sea wave. Coastal and sea climate change and diversity impact on the uncertainty of time and fishing ground for fishermen[5].
15. Inflation measurement by BPS was made in 2 Cities, namely Ambon City and Tual City. Inflation in Maluku for 2014 – 2017 is increasingly controlled and decreases until 2017 which constitutes the lowest inflation in Indonesia, namely 0.78%. Inflation is controlled because of intensive coordination by the Regional Inflation Control Team (TPID) and support from Maluku representative office of Bank Indonesia. Some factors which make a great contribution to inflation originate from the foodstuff group such as fresh vegetables and fish as well as transportation. One of the causes for disrupted food distribution and production which cause inflation is the factor of climate and weather along 2017[6]
16. This project is aimed at assisting coastal communities in Maluku Tengah Regency to improve their resilience and reduce their vulnerability in the social, economic and ecological aspects from the threats of climate change impacts. Specifically, this project would assist several *Negeri* (villages) in Maluku Tengah, namely Asilulu, Ureng, and Lima, which are administratively located in Leihitu Sub-District. The three negeri more or less have similar characteristics in terms of livelihood and geographical as well as ecological conditions in coastal areas. They even tend to have the same topography namely plains

[4] Fish migration constitutes a link of life cycle for fish to determine their habitat with a condition appropriate for the continuity of fish life stages.
[5] Dirjen PPI of KLHK and Pemprov of Maluku, Working Paper Road Map Mitigasi dan Adaptasi Perubahan Iklim dan Pembangunan Berkelanjutan Provinsi Maluku, 2017, p. 41-42
[6] Dirjen PPI of KLHK and Pemprov of Maluku, Working Paper Road Map Mitigasi dan Adaptasi.., p.16

and hills from 0 – 700 M above sea level. Below is the table of social, environmental, and developmental conditions in the 3 Negeri.

Picture 3. Leihitu Sub-District Map, Maluku Tengah Regency

Source: BPS of Maluku Tengah Regency, Kecamatan Leihitu Dalam Angka 2018.

Table 2. Demographic Data of *Negeri* Asilulu, *Negeri* Ureng, and *Negeri* Lima[7]

Monograph Data	Asilulu	Ureng	Lima
Number of Population	**5,857 people**	**4,723 people**	**5,198 people**
- **Number of Family Heads**	**1,187 Family Heads**	**1,094 Family Heads**	**927 Family Heads**
- **Males**	**2,941**	**2,389**	**2,675**
- **Females**	**2,916**	**2,334**	**2,523**
Main Livelihood	**Fishermen & Fishery Labor**	**Farmers & Fishermen**	**Farmers & Fishermen**
- **Number of Fisherman Fleets**	**128 Units**	**119 Units**	**30 Units**
- Agricultural Commodities	Tubers, corn, and vegetables		
- Forestry Commodities	Sago, durian, *lansat*		
- Plantation Commodities	Coffee, Walnuts, cloves, nutmeg, and coconuts		

[7] BPS of Maluku Tengah Regency, *Kecamatan Leihitu Dalam Angka 2018*.

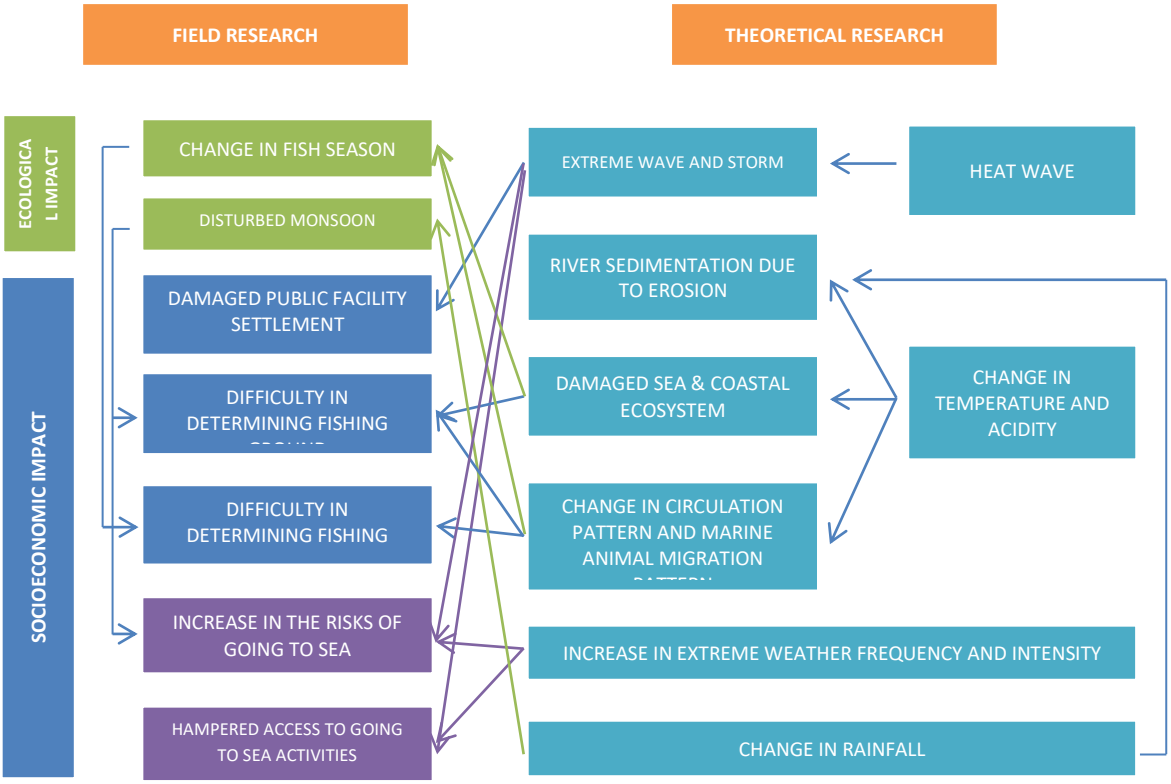
Social Facilities			
- Medical Facilities	2 Units	3 Units	2 Units
- Educational Facilities	7 Units	7 Units	5 Units
- Religious Facilities	6 Units	5 Units	6 Units
Geography			
- Regional Area of *Negeri*	± 19 KM^2	± 16 KM^2	± 19 KM^2
- Length of Coastline	± 20.49 KM	± 19.33 KM	± 6.97 KM

The selection of those three villages as the project location is supported by the results of a research on vulnerability made by Subair (2013) stating that climate change has significant impacts on villages on the north coast of Ambon island, specifically impacts in the social, economic and ecological context[8]. This region generally has two seasons in a year namely east and west seasons. In the rainy season from May to October, the East wind blows, while in the dry season from November to April, the west wind blows, and it generally occurs in Ambon island. Climate and environment in the three Negeri are roughly the same, because they are still located in a single coastline. Like other negeri in Ambon Island, the three Negeri has a temperate climate with temperature ranging between 24° - 37°.

17. Several socio-economic impacts of climate change on fishermen according to the results of the research by Subair (2013) include the increase of sea water level reaching settlement areas, the intensity of storm and high waves posing dangers to navigation, unpredictable changes in fish harvesting seasons, unpredictable shifts of fish seasons, confusion due to the fact that west monsoon and east monsoon are no longer in accordance with the monsoon calendar used as reference. Socio-economic impacts caused by the aforementioned condition include, among others: (1) vulnerability of settlements to damage caused by being hit by waves and strong storm wind; (2) decreasing fish catch due to the changes in fishing seasons and relocation of fishing ground.
18. Ecological impact in the form of damage to road infrastructure and Embankment walls frequently occurred along the coastal areas from Ambon city to Asilulu village. Asphalt paving had disappeared from the road surface and puddles of sea occurred on several spots on the road, while many parts of Embankment walls had gone and some parts were frequently inundated by sea water. Another impact affecting the communities, which was deemed as a disaster, was frequent occurrence of strong wind along with high waves, as frequently occurred in 2010. Another ecological impact recorded is the loss of coastal plants, including large trees that had been washed out by the sea. In addition, Fishermen who are affected by the increase of sea water level also realize that currently sea water has reached the backyards of some of their houses and is inundating the beach that is used to be used as the pace for mooring (drying) their boats.

[8] Subair, dissertation titled Adaptation to Climate Change and the Resilience of Fishing Village Communities: a Case Study in the North Coast Areas of Ambon Island, Maluku, Postgraduate School, Bogor Institute of Agriculture, 2013, pp. 144 - 146.

Diagram 1. **Interrelationships between changes in socio-economic and ecological contexts**



Remarks :

→ : Influential

Figure 5. The impact of tidal waves and abrasion in the form of damage to road infrastructure and Embankment walls due to tidal waves

Figure 6. Fishermen built stilt structure for docking their boats due to the increase of sea water level

PROJECT/PROGRAMME OBJECTIVE

19. The main objective of this project is to support climate change adaptation action and its implementing stages in Maluku Province as established in Climate Change Mitigation and Adaptation Road Map and Sustainable Development of Maluku Province. In particular, this project aims to improve the level of adaptability and resilience, as well as to eliminate vulnerability in the social, economic and ecological standpoint from the threat of climate

change experienced by coastal communities in three Negeri/Villages, utilizing sustainability principles in managing and leveraging coastal ecosystem region, which are:

1. Increasing the fisherman knowledge and ability to deal with changes in circulation patterns and fish migration patterns
2. Improving the coastal ecosystems for the resilience of coastal communities and alternative sources of fishing for local fishing groups.
3. Strengthening the economic resilience of the community through the development of alternative economies in coastal areas that are resistant to climate by utilizing the economic potential of the coast.
4. Strengthening community resilience in the face of disasters through the construction of supporting facilities to minimize the impact of tides and waves.

20. The traditional season calendar that has been used by fishermen is no longer relevant to conditions in the middle of the sea. With the use of Satellite Remote Sensing (SRS) to retrieve sea level data the results are processed with a Geographic Information System (GIS) to detect upwelling areas. The technology is used for remote sensing and mapping for the development and management of marine culture. With this technology fishermen can observe fishing locations on an ongoing basis with accurate and real time data. By overlaying (patching) a map of tuna distribution and upwelling locations resulting from remote sensing, a map of potential fishing ground prediction locations will be obtained based on variations in the month and type of climate event period. To improve the efficiency and effectiveness of fishing operations, the manufacture of FADs that function as a decoy and become a shelter, foraging, spawning and gathering of fish in the fishing ground area should be developed.Rehabilitating coral reef to not only recover the ecological function of the reef, but also to reduce undercurrent pressure that will help negate wave energy toward the land/coastal area. Thus, this will help improve the resilience of the community living in the surrounding coastal area. Recovered coral reefs can serve as a habitat for large pelagic fish, of which the fishermen can catch for commercial or consumption purpose.
21. The development of alternative economy by leveraging the potentials of coastal waters as measures of economy adaptation and resilience to be conducted by coastal community who most commonly works as fish catchers. Unpredictable weather and seasons further impact seafaring activities commonly conducted by men. Thus, the role women hold in coastal economy development is indeed crucial in order to eliminate dependency on the result of fishing yield or to introduce alternative source of economy/income.
22. Extreme tide and abrasion are two threats that can potentially lead to disaster. Abrasion commonly occur bit by bit. The damages caused by abrasion requires time to materialize. As the damages require time to materialize, the threat of abrasion usually goes on unchecked until the impact is directly visible, such as in the form of damages on infrastructure, like roads. The impact of climate change intensifies on coastal area and islands, such as Central Maluku. Rising sea surface and weather anomaly will aggravate the condition, causing abrasion triggers, such as strong waves/tidal energy. Repairing several Embankment points along the ± 500 M Embankment/wave-breaking structure in 3 Negeri is expected to help reduce the risk of disastrous high tides in 3 Negeri, which will help protect ± 800 inhabitants of 3 Negeri who are vulnerable to the threat of high tide. Additionally, this helps protect ± 1.6 KM village road along the coast.

PROJECT/PROGRAMME COMPONENTS AND FINANCING

23. Project implementation will be carried out within three years by implementing the four integrated project components as outlined in **Table 3**.

Tabel 3. Project/Programme Components

PROJECT/ PROGRAMME COMPONENTS	EXPECTED OUTCOME	EXPECTED CONCRETE OUTPUT	AMOUNT
1. Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change	A. Increasing the yield and quality of fish catches of fishermen as well as helping improving the traditional fish catching rules (Sasi Laut)	1.1. There is a map for the new *fishing ground* distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar 1.2. Rumpon Procurement[9] / Fish Aggregating Device (FAD) 1.3. The provision of Cold Storage in each village	
	B. Enhancement of the capacity and knowledge of fishermen' groups by adopting the climate change adaptation strategies.	1.4. Approximately 450 fishermen (150 fishermen in each village) have new knowledge which is more relevant to the climate change 1.5. The establishment of fishermen' groups which are able to cooperate with government offices, private parties, and non-governmental organizations in order to be able to access technology, group guidance and capitalization	
Sub-total Component 1 :			**231,544.78**
2. Coastal ecosystems repair for the resilience of communities and alternate location for source fishing	A. Restoration of the function of coral reef ecosystems and expanding fishing ground zones for fishermen in nearshore waters	2.1. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach	

[9] Rumpon is a fish aggregator tool utilizing solid-based attractors of various forms and types, whereby functioning to attract fish to gather. This tool will be leveraged to improve the efficiency and effectiveness of fish catching operation.

	B. Increased awareness and active role of coastal communities to rehabilitate, maintain and protect coral reefs	2.2. Approximately 90 people (30 people in each village) have the knowledge on how to do rhabilitation, transplantation, maintenance, care, dan monitoring on coral reefs	
Sub-total Component 2:			**134,123.13**
3. Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas	A. Reducing dependence on livelihoods as catch fishermen	3.1. Aquaculture farming by constructing 9 floating fish ponds for shallow water fish cultivation (3 ponds for each village) each of which is to be managed by the groups (1 group = 20 people's)	
	B. Increasing the role of women in the family economy	3.2. Nine floating fish net ponds for the cultivation of sea weed (3 floating fish ponds for each village) each of which will be managed by the groups (1 group = 20 people's) 3.3. 100 women in the 3 villages have the skills for processing the products of the fish and sea weed cultivation	
Sub-total Component 3 :			**296,712.69**

4. Development of supporting facilities to anticipate the impacts of coastal flooding and tidal waves	Disaster risk reduction such as damage to seaside village roads and saving of community houses on the coast, caused by tidal waves	4. Restoring Embankment structure that stretches (*talud*) ± 500 M long across Negeri Asilulu, Negeri Ureng, and Negeri Lima	

Sub-total Component 4:	**141,238.81**
Project/Programme Execution Cost	84,357.84
Total Project/Programme Cost	803,619.40
Project/programme Cycle Management Fee charged by the Implementing Entity	75,478.07

PROJECTED CALENDER

MILESTONES	EXPECTED DATES
Start of Project/Programme Implementation	15 July 2020
Mid-term Review (if planned)	15 Desember 2021
Project/Programme Closing	30 April 2023
Terminal Evaluation	30 Juni 2023

PART II : PROJECT/PROGRAMME JUSTIFICATION

A. *Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.*

Component 1- Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change

23. Tuna is one of the fish commonly caught by the traditional fishermen in the project location. Tuna belongs the group of large pelagic fish, in Thuninni tribe (*Genus : Thunnus*). Tuna price in the project location depends on the freshness of the fish. Fishermen sells tuna to tuna processing company in the form of fish *loin*[10] fish. Tuna fish to be *loin* have to weigh between 10-15 Kg. Price range of loin tuna in the wholesalers/tuna processing company depends on the freshness of the *loin* fish. Meanwhile, caught tuna fish weighing under 10 Kg are sold in the traditional market in Ambon by *palele*[11] with sale price ranging between IDR35,000 to IDR60,000 per fish (depends on the weight and size of the fish).

Table 4. Sale Value of Tuna/Kg According to the Freshness Level in the Project Location

Fish Freshness Level (Fish Classification)	Wholesaler Selling Price/Kg (IDR)
A	**45.000 - 60.000**
B	**30.000 - 40.000**
C	**12.000 - 20.000**

Source: Interview with Fishermen in Negeri Asilulu, Ureng, and Lima (2019)

In one fishing trip, traditional fishermen in the project location usually can catch between 150-200kg of tuna fish loin. This is only achievable during East Wind Season in the East Monsoon Season in Banda Sea and Seram Sea (July-September) and during transition from East Monsoon Season to West Monsoon Season (October-November). Meanwhile, on West Monsoon Season (January-April), fisherman fishing yield will drop drastically due to less frequent sailing as they have to face extreme waves and heavy storm. The impact is skyrocketing production cost for fisherman in order to keep sailing. Also, only highly-skilled fishermen and adequately equipped fleet that can afford to keep sailing and fishing in the sea[12].

24. In extreme weather scenario, such as high intensity of storms, fish migration pattern[13] becomes far more difficult to predict and tends to get much farther from the land. By utilizing *fishing ground* area map that combines both fisherman traditional insight and modern knowledge technology, it is expected that this map can serve as a reference for fishermen in three Negeri to understand the pattern of fish circulation and migration

[10] Fish are cleaned by cutting the heads and removing the gills and innards

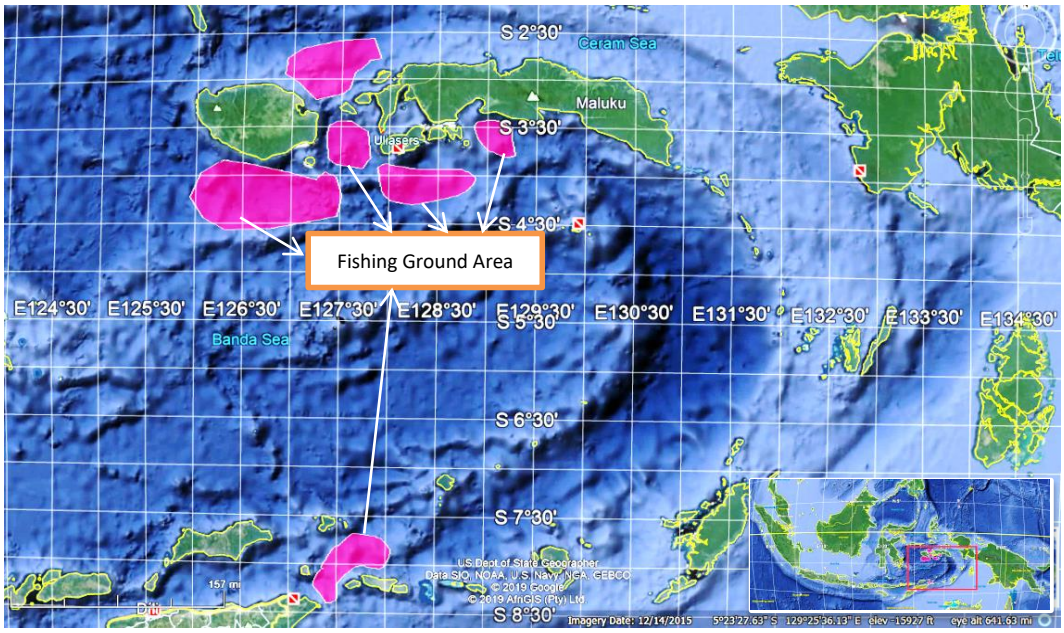
[11] Local term for female merchants who are trading in the traditional markets or by peddling the goods

[12] The majority of fish catching vessels owned by fishermen in 3 Negeri is viber type fish catching vessels with the capacity of < 5 – 7 *Gross Ton*nage (GT), which have limited exploring ability in deep ocean waters

[13] Migration is a part of fish life cycle during which they find the habitat with suitable conditions for their survival.

and help update the fish catching season calendar. Rumpon created and placed in the *fishing ground* acquired from the mapping will serve as fish temporary stopover point during migration and the spawning and feeding ground.

Picture 7. Current Fisherman Fishing Ground Area in 3 Negeri



Outcome A: Increasing the yield and quality of fish catches of fishermen as well as helping improving the traditional fish catching rules (*Sasi Laut*). The proposed activities include:

1.1. There is a map for the new *fishing ground* distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar

The changing season patterns make it difficult for fishermen to determine the right fishing season. During this time to determine the time to go to sea and the location of fishing ground, fishermen are guided by the "calendar of seasons" made by "the elders", namely old fishermen who are considered very experienced and have extensive knowledge of the sea. There is a belief that is believed for generations by fishermen is that fishing in the sea is very dependent on the right time or called *tanoar*. *Tanoar* is the local language which means to do everything based on the calculation of the celestial moon. however, the season calendar is no longer relevant to curent condiition. Although some fishermen have begun to no longer depend or trust for *tanoar*, some people are still consistent and apply *tanoar.*

Table 5. Traditional calendar of the season

No	Fishing Ground Area	Season/Month											
		West Season		Transition Time East			East Season			Transition Time West			West Season
		1	2	3	4	5	6	7	8	9	10	11	12
1	Asilulu Waters			•	•	•				•	•	•	
2	Seram Waters			•	•	•				•	•	•	

3	Buru Waters									•	•	•	
4	Banda Waters												
5	Nusaniwe Waters	•	•										
6	Salahutu Waters	•	•										
7	Nusalaut Waters	•	•										
8	Obi Waters	•	•										
9	Kelang Waters	•	•										

Through a technology and modern knowledge approach on migration patterns and fish seasons integrated with traditional knowledge, this output will result in a map of *fishing ground* distribution points and an updated fish season calendar that will greatly help fishermen. Technology used in this output is Satellite Remote Sensing *(SRS*) to obtain data on sea surface of which result will `be processed using *Geographic Information System* (GIS) to detect *upwelling* areas. The technology is used to enable remote sensing and mapping in attempt to develop and manage marine aquaculture. With this technology, fishers can continuously observe fishing grounds using accurate and *real time* data. With overlaying tuna fish distribution map and the *upwelling* location generated from the remote sensing, a location map of predicted potential tuna *fishing ground* can be obtained based on the variation of the moon and the types of climate event period. In addition to this technology, in its implementation it requires direct field observation to confirm the SRS data with fishing seasons pattern analysis using the *Average Percentage Methods* based on *Times Series Analysis*[14]. The result of the analysis is then being integrated with the knowledge and experience of fishers in 3 Negari to draw data conclusion which shows fishing season and non-fishing season, fishing ground and no-fishing ground.

In technological aspect, the fishing ground mapping carried out in this project has taken into account practices developed in Indonesia and international. *Such as the use of SRS technology which was popularized by Professor Sei-Ichi Saitoh*[15] *which reveals that the utilization of Satellite Remote Sensing* (SRS) may help maintain the sustainability of fishery and aquaculture. The integration of such modern technology, together with the integration of field research with traditional knowledge will render the produced output capable of responding to the fisher community's problems in 3 Negeri. The traditional Calender of the season (Table 5), will be the method used to the beginning study when formulating a new fishing ground areas and season calender.

The most important results of the analysis of the two methods above are how to integrate them with the knowledge and experience of the fishermen in 3 Negari including the habits of the fishermen groups and the tuna fishing company that had taken place before the project started. So this project will invite all stakeholders to sit together in the FGD to collaborate all research results and practices in the field to be made into a joint agreement that will be determined to be an inter-country regulation (*Sasi Laut*) related to the use of FADs in the new capture zone, including regulations related to fishing cacth, zoning, and schedule of each group.

[14] Spiegel, MR 1961.*Theory and Problems of Statistics*.Schaum Publ.Co., New York.Page359

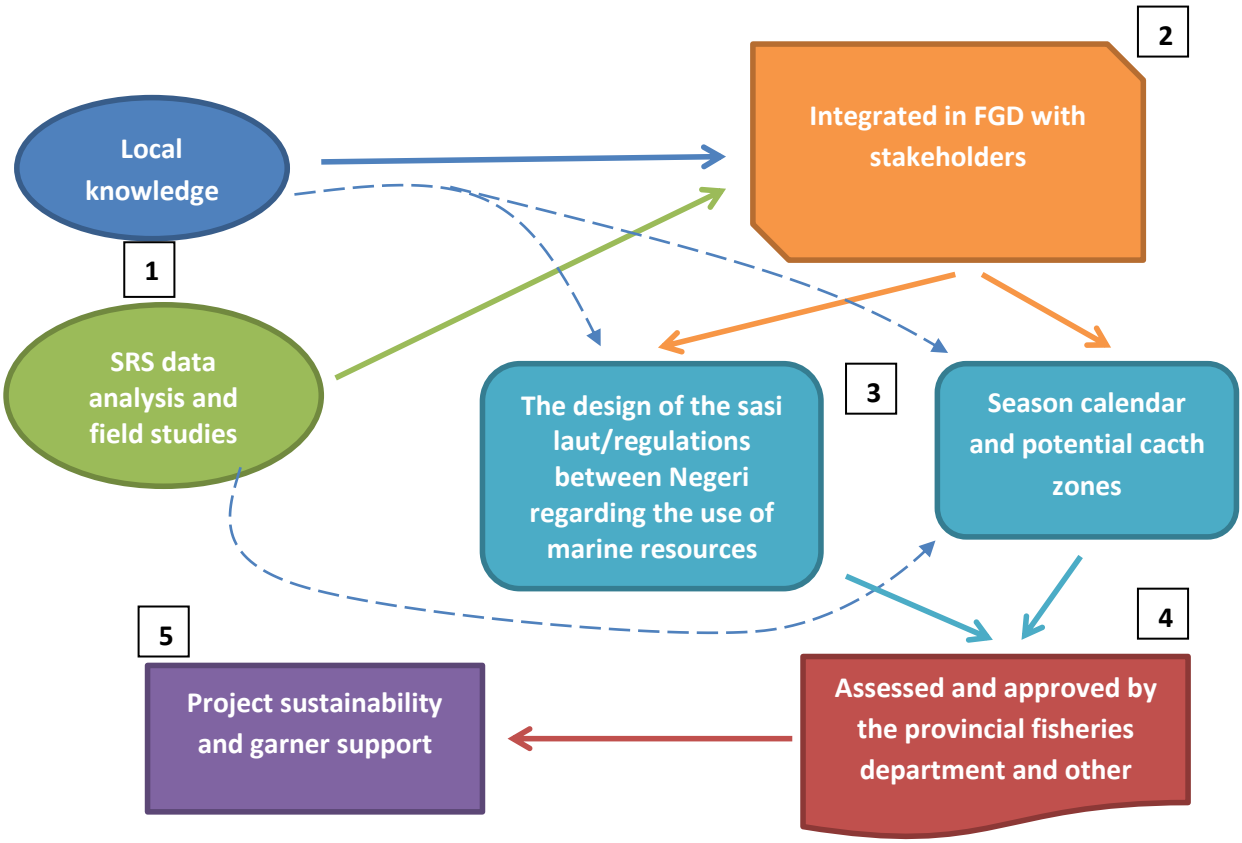
[15] A researcher and professor from Hokkaido University, Japan. Prof. Saitoh is one of the experts in determining the position of fishing grounds using SRS technology. Prof. Saitoh has already published many international publications, and frequently collaborated with numerous institutions in a number of countries, including America and Europe.

Sasi Laut is a very effective method to socialize regulations and provisions regarding calendars and capture zones, because basically the 3 Negeri community already has a variety of local wisdom in the form of customary laws which they highly value as norms governing the preservation of natural resources. So the components of this project will strengthen local wisdom.

Table 6. The Integration of Traditional Knowledge and Modern Knowledge Methode

Traditional Knowledge	Modern Knowledge	Integration
Knowledge of season and fish location		
- Nature sign - Wind direction of west and east - Asterisks - Cloud marks - Type of tree	- Echo Sounder - Satellite Navigation System - Satellite Remote Sensing (SRS) - Fishing Sonar	- Traditional knowledge about location and fish season will bethe main information in determining location when conducting surveys and compiling a renewed season calendar. - The use of technology and field studie to assess effectiveness of fishing methods currently used.
Fishing gear		
- Fishing rods - *Pana-pana* (arrows/spears) - Fish traps - Nets - Sero (wooden fish and net fishing traps) - Boat chart - *Purse seine* - *Huhate* (Mini pole and line)	- Beam Trawl - Modern FADs - Fish Finder - Net recorder	- The traditional tools will still be used for fishing ground locations. - Capacity building of fishermen in the use of fishing gear. - The provisions on fishing gear will be mutually agreed which guarantees environmentally friendly an in accordance with regulation of the Minister of Maritime Affairs and Fisheries Number 26/PERMEN-KP/2014 concerning FADs.

Diagram 2. Flow Chart Integration of Traditional Knowledge and Technology / Modern Knowledge



The integration of traditional knowledge and modern knowledge will result in the following points:

- Agreement on fishing gear
- Shared knowledge about the season calendar and fishing ground zone
- FAD utilization zone
- Regulations on the use of marine resources or Sasi Laut

The project implementation is broken down in the following phases:

1.1.1. *Study on the circulation pattern and fish migration and fish season calendar in the project site*

The implementation of this activity will start with a *Focus Group Discussion* (FGD). with a number of *stakeholders* (Academic experts, Marine and Fisheries Ministry , Marine and Fisheries agency-, Central Maluku Regency and Maluku Province, local NGOs) and community components (Fisherman, Negeri Government, Customary Eldes/The head of Customary, Youth Groups and Women Groups) to obtain preliminary data concerning the initial constraints and potentials related to changes in circulation patterns and fish migration on the seasonal calendar which has been used by fishing communities as a reference, information on possible changes in circulation patterns and migration of tuna in the sea, and information on locations of existing *fishing grounds*. The activity involved community figures who take

hold of *Tanoar* (the guideline for determining the season and location of fish by monthThe implementation of this activity will involve marine mapping expert who will map with the SRS methode, field researchers who will conduct direct field observations to confirm SRS data, fisheris expert and oceanographer from the Pattimura University (Maritime Study Center) will provide input on project effectiveness.

fishery and marine experts.

1.1.2. *Reviewing the location and mapping the fishing ground*

Reviewing the currently effective *fishing ground* locations is carried out by experts along with fishermen and fishermen figures, and analyzing the existing potentials. At least 6 locations are sampled, and the relationship between upwelling location and potential fishing ground for tuna is then investigated. This study employs descriptive analysis method by comparing characteristics of upwelling location, bioecology and tuna fisheries. To review fish season, the percentage of captures is calculated using *The Average Percentage Methods* which is based on *Times Series Analysis* and the result will be the basis of the new fish season calendar.

With this method at least 6 sample locations were taken and continued to study the relationship between the *upwelling* location and potential tuna *fishing ground*. This research method uses descriptive analysis by comparing data on the characteristics of *upwelling*, bioecological and tuna fisheries, the results of which will be the basis of a new fish season calendar.

1.1.3. *Workshop for establishing the season calendar and map of the new fishing ground area*

The data resulted from the study are clarified with the *stakeholders* which include fishermen, fishermen groups, community figures from each Negeri, academics, and regional governments. The workshop will produce a new fishing season calendar and a map of the *fishing ground* area.

The results of the finalization of the mapping will be pushed to improve *sasi* (sea customary regulations) that will be applied in the future, and will also be consulted for approval in regional regulations or regulations at the country level. The workshop will also agree on and arrange a fishing season calendar and fishing catchment areas / areas in each country. Workshop will also be agreed on and establish fishing season calendar as well as region/area for fishermen to fish in each Negeri.

1.2. Rumpon Procurement[16] / Fish Aggregating Device (FAD)

Once *fishing ground* area is mapped, in order to improve the efficiency and effectiveness of fish catching operation, rumpon will be created that will serve as an attractor and aggregating spot, where fish can protect themselves, feed, breed, and gather in the *fishing ground area.* Tuna and other large pelagic fish prefer shaded spot with abundance of foods. Under rumpon, there can be found many planktons and various smaller pelagic fish, such as mackerels, cobs, skipjacks, and sardines that gather and serve as food source for larger pelagic fish. Rumpon procurement shall be

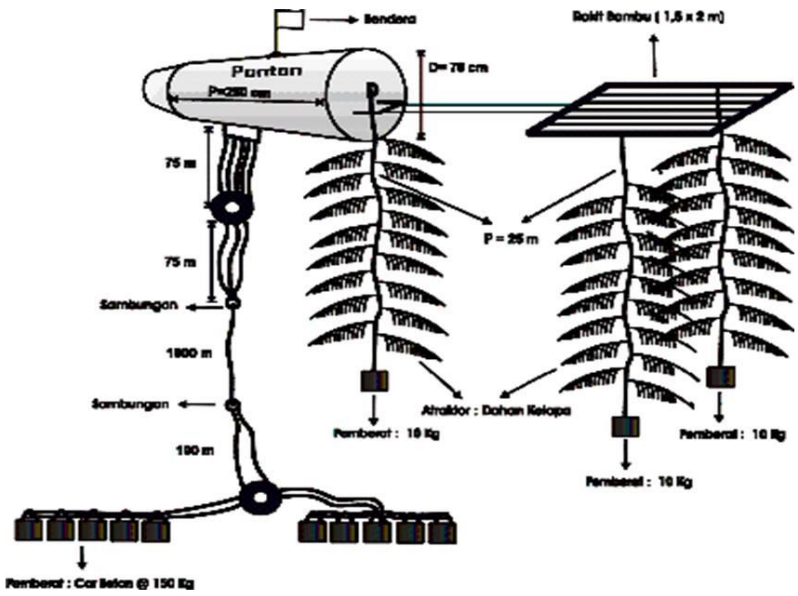
[16] Rumpon is a fish aggregator tool utilizing solid-based attractors of various forms and types, whereby functioning to attract fish to gather. This tool will be leveraged to improve the efficiency and effectiveness of fish catching operation.

an alternative for generating productive artificial fishing ground and offer peace of minds for fishermen in dire times. From the interview with fishermen in the project location, manufacturing cost to spend for a single fishing trip is IDR800,000 and the ideal result is 150-250 kg tuna fish. By utilizing rumpon in the *fishing ground* area, fisherman's operational cost will reduce by 40-60% compared to when rumpon is not utilized as they have to search for and catch school of fish in the broader, deeper area of the ocean.

Rumpon will be installed in certain points according to consultation with the Provincial Office of Marineand Fisheries agency pursuant to the Regulation of the Ministry of Maritime Affairs and Fisheries No. 26/PERMEN-KP/2014 on Rumpon. Installed Rumpon shall meet the mechanism for fishing permit, SIPI (Fishing Permit), SIUP (Fishing Business Permit), and SIPR (Rumpon Installation Permit). The installation process will receive training and be supervised directly by the Marine and Fisiheries Ministry or Marine and Fisheries agency Maluku Province. Licensing will regulate the type of FADs, placement provisions, installation techniques, fishing gear, operating permits, boat permits, restrictions on the number and types of catches so that it can guarantee that it will not endanger other marine animal populations such as sea turtles and others. Marine biota. The fishermen group will also make operational reports every 6 months to the KKP director general including the installation and utilization report.

Rumpon to be utilized is anchored rumpon (*anchored FAD*). This tool consists of floater, attractor (*fish aggregator*) and anchor (ballast). For *attractor*, fishermen will use coconut leaf (or nipah) that will submerged under the ocean at 10-30 of depth. Ballast will utilize a set of 4-6 used oil drums of 200 liters, which will be filled with concrete. Anchored rumpon can be installed in the ocean with depth of 2,000-4,000 meters.

Picture 9. Illustration of Rumpon Types with fiber floater and raft



The arrangement and scheduling for rumpon utilization and *fishing ground* location selection shall be regulated through Negeri/Village Regulation and/or agreement between Negeri. This will also be socialized to fisherman groups in three Negeri.

Table 7. Several Provisions Regarding the Installation of FAD Based on the Regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia No. 26/Permen-KP/2014 concerning of FAD

Regulation	Content of Regulation	In Project Implementation
Licensing	a. Installation of FAD in the territory of the Republic of Indonesia fisheries (WPP-NRI) must have a SIPR. b. Every fishing vessel operating a FAD must carry the original SIPR. c. The SIPR is issued by the Governor zone II fishing areas and the Regent for the zone I fishing areas.	A the initial stage, the project was consulted with the Maritime Affairs and Fisheries Agency for the intallation ofFAD and licensing process and fulfillment of the requirements to be carried out at the beginning of the project under the supervision of the Provincial and Regency DKP.
Specification Requirements	a. Buoys are installed floating on the surface of teh sea. b. The attractor (decoy) must use natural materials that can be biodegradable. c. Mooring ropes are required to use materials that are not easily damaged and are strong against currents. d. The ballast is required to have sufficient sinking power, so that it is able to withstand the load of the entire series of FADs to remain in position. e. Specs of FADs that do not meet the above criteria will be subject to SIPR revocation sanctions.	The type of FADs that will be used are anchored FADs. This tool consists of a buoy, a fish collector (attractor), and an anchor (ballast). For attractors, use coconut leaves or palm leaves embedded in depths of 10-30 meters. While ballast can be in the form of a series of used 200liter capacity oil drums totaling 4-6 pieces filled with cement. Anchor FADs can be installed in sea areas that have a depth of 2.000-4.000 meters.
Fishing gear that may be used	a. Trawl a small pelagic ring with one ship; b. Large pelagic trawl with one ship; c. Large trawl pelagic group ring; d. Fishing line; and e. Fishing rod.	The fishing gear to be used is in the form of a large pelagic ring trawler with a single boat and a large pelagic group trawl or an environmentally friendly traditional fishing gear.
Administrative requirements for SIPR	a. Date and time of FAD installation; b. Number of FADs; c. Coordinate (latitude and longitude) location of each FAD installation; d. Estimated time usage frequency; e. Estimated species and number of fish cought (kg) at each fishing operation. f. Photocopy of fishing permit. g. Photocopy of person in charge ID card	Requirments will be prepared by the group before project implementation

	h. FAD layout design	
Installation Requirements	a. In accordance with the fishing area as stated in the SIPI installation provisions; b. Not disrupt shipping lines; c. Not installed in Indonesia archipelagic sea lanes; d. The distance between one and the FAD is not less than 10 (ten) nautical miles; e. Not installed by mounting the fence effect (*zig zag*). f. Installation of FADs must avoid the capture of unwanted bycatch.	The government, in this case the Provincial and District DKP, will be involved from planning until to project implementation. The FAD will be installed waters 2 nautical miles up to 4 nautical miles, measured from coastline at the lowest tide point. To avoid the capture of unwanted bycatches, the structure of FADs on the surface and under water is prohibitted from being closed using net sheet.

The implementation of FAD management model in addition to forming fishing groups, training and capacity building, also carried out an understanding of the development of fishing businesses around the FAD. Also increasing the capacity of fishing groups including the financial system, reporting, marketing and catches management.

To ensure good management the fishermen group will make operational reports to the DKP (Fisheries And Marine Agency) from 14 working days after installation and every 6 months, which includes:

a. Coordinate (latitude and longitude) the location of the FADs are utilized;
b. FAD identification;
c. The name of the vessel and the type of fishing gear that uses FADs;
d. Frequecy of utilization; and
e. The amount and type of fish caught.

Arrangement and control of FAD in Indonesia are interrelated between aspects of fishing operations with the five other aspects of the Code of Conduct fro Responsible Fisheries, which is fish collection technology, management systems, permits, fishing methods, collection equipments and collection system. Sustainable utilization of marine fisheries resources must be carried out by way of responsible fisheries management with environmental insight.

Implementation of conservative and cautinary management: 1.) Management in groups among fellow fishermen who own FADs (community based management). 2) Control over the number of fishing efforts, specifically the number of fishing fleets, regulation of the number and distance of FADs that have been damaged. 3.) The use of fishing gear with a larger mesh size so that it is selective about the size of the catch. 4.) The installation is prioritized oin deeper waters.

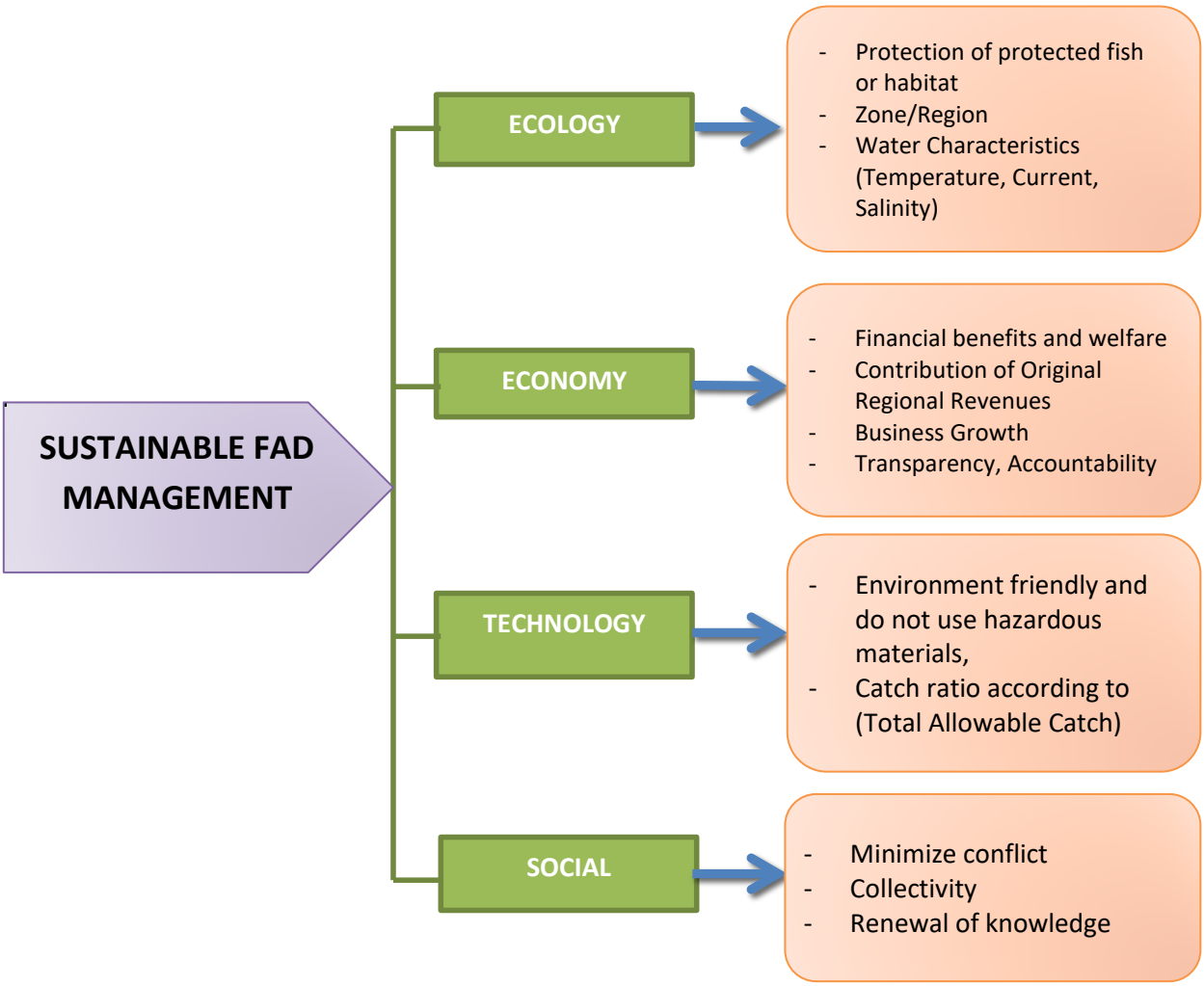
To ensure that the FAD's management is in acoordance with applicable national standards, the Marine and Fisheries Agency will be involved in project activities starting from the initial stage of site review (Table 8).

Table 8. Activity Stages

Stages	Implementer	Activity
Initial Location Review	Marine and Fisheries Agency (DKP), Expert Team Tim, PMU, Fishermen group	Location review to ascertain points, FADs do not abstruct shipping lines, no more than 12 nautical miles, and are not close together. The documents resulting from the review are attached in terms of the permit.
Location Determination	Marine and Fisheries Agency (DKP), Researcher, PMU, Fishermen Group	The meeting on the determination of the FAD point is at the same time an agreement between fishermen group in their use.
FADs Installation	Marine and Fisheries Agency (DKP), PMU, Fishermen Group	PMU and fishermen group will assemble FADs according to specifications that have been allowed under DKP supervision.
FAD Operation	Marine and Fisheries Agency (DKP), PMU, Fishermen Group	After SIPR is issued, FADs will be placed according to the coordinates allowed under DKP supervision.
Report	PMU, Fishermen Group	14 days after the FADs are attached, the report of the fishermen group together with PMU has begun to be sent to DKP that FADs have operated and so on every 6 months the fishermen will send the utilization report
Evaluation and Supervision	Marine and Fisheries Agency (DKP), PMU, Fishermen Group	The evaluation of DKP will be carried out every certain period to review the use of FADs if it has proceeded according to procedure, and there will be sanctions if there are actions that violate the rules.

The FADs will be managed based on the principle of sustainable FADs management with compliance with applicable laws and regulations (Diagram 3.)

Diagram 3. Sustainable FADs Management



To keep the FADs having a high technical life, maintenance and care of FADs will always be carried out. Maintenance and care of FADs include:

a. Bamboo replacement and repair every three months
b. Replacement of cococnut leaf fronds every month
c. Routine checking of anchor straps on FADs
d. Monitoring the FADs position on shipping traffic

To ensure FADs continued maintenance, the fishermen group will set aside net income from fish catches located in FADs locations to be allocated as maintenance costs for FADs.

1.3. Provision of Cold Storage in each village

Referring to the quality standard of fresh fish based on SNI 2729: 2013, the characteristics of good quality fish can be seen from: eyes (convex eyeballs, clear corneas and pupils, specific shiny species of fish), gills (dark red or brown gills) reddish, ripping, with a little transparent mucus), mucus (clear, transparent, shiny, bright mucus layer), meat (very bright flesh incisions, specific types, very strong flesh tissue), odor (very fresh, specific strong type), texture (solid, compact, elastic). The principle used in handling wet fish is to

maintain the freshness of fish as long as possible by treating fish carefully, carefully, clean, healthy, hygienic and immediately and quickly reduce the temperature or cool the fish to reach temperatures around 0^0 C – 5^0 C.

The obstacle faced by fishermen due to climate change is the difficulty of determining fishing areas in deep waters, so that it makes fishermen need more time at sea and will increase the risk of fish becoming not fresh. *Cold Storage* or fish refrigeration facilities are needed to maintain the freshness of fish longer to the buyer, so the role of Cold Storage can also keep the selling price of fishermen's catches do not decrease when the catch is declining. So far, fishermen have been forced to sell the catch tuna to the closest collectors, both small-scale collectors and companies, because they cannot keep the catch longer. Because, the longer the fish is stored in the Cold Box will temporarily cause the freshness of the fish to decrease with a sign that the fish's meat is pale and oily / runny. Under these conditions, fishermen are better off lowering the selling price to the nearest collectors who do have Cold Storage facilities rather than having to bear losses. In marketing tuna fish are categorized in several grades to determine the selling price, namely grade A is the best quality of tuna meat that has been loined (cleaned of stomach, head, and bone issues) and meat is still fresh as if it was just caught with watermelon red meat characteristics and chewy texture, collectors appreciate Rp. 45,000 up to Rp. 60,000. As for grade B, the color of the fish meat has been a little pale and a bit slimy, the merchant traders appreciate Rp. 30,000 up to Rp. 40,000. While the lowest grade is grade C with the condition of the meat has turned pale and only valued Rp. 12,000 up to Rp. 20,000, - even under certain conditions traders do not buy tuna with grade C. From this condition, why the role of adequate Cold Storage for fishing groups is very important, namely to maintain the quality of fish, at least until fishermen get the best prices on the market.

The challenge is not market access because tuna is the major commodity in Maluku Province. The main problem is to maintain the freshness of fish in order to continue to have high economic value, however to further strengthen the potential of a profitable market for local fishing groups, this project will ensure that each fishing group can find a market that provides high profits. This effort can be achieved by building commitment between fishing groups and local companies such as PT Ureng Nusa Telu in the Ureng Negeri and several home-based businesses. The commitment will be stated in the form of a Memorandum of agreement between Fisherman Groups and Company.

With the *Cold Storage*, fishermen are increasingly free to determine the market and can increase the difference in selling value of approximately up to Rp. 12,000 / kg. To achieve this target the project will provide 3 Cold Storage (one Cold Storage for each Negeri) with Cold Storage building specifications required by fishermen groups in the form of a 5x6 square meter semi-permanent building with cement floor and board walls, equipped with several Cold Boxes from a styrofoam material that can accommodate 1 Ton of tuna per day. The Cold Storage building specifications will refer to the provisions of Law Number 28 of 2002 regarding the Buildings to meet the Construction Standards and Administrative Requirements consisting of Land Rights Certificates, Documents showing ownership of buildings and Building Construction Permits. The use and utilization of Cold Storage will be managed and regulated in groups.

To ensure the continued use of cold storage, fishermen groups will form a cold storage management unit that will regulate the mechanism for storing fish caught by fishermen stored in cold storage (amount and time of storage). The Fishermen will be charged a storage fee, the amount of which is determined by the number of fish caught (in kg)

stored in the Cold Storage. The amount of storage costs will be determined later. The sustainability of cold storage determined by good management. Therefore, from the beginning a mechanism will be made regarding the management of cold storage **(See Table 9. Cold Storage Management Mechanism, Diagram 5 and 6).** The storage costs paid by the fishermen will be used for cold storage maintenance costs and additional cold storage in the future.

Estimated maintenance costs				
NO.	**Item**	**Cost (IDR)**	**Total Cost/Year**	**Cost Types**
1	Replacement of damaged cold box	300.000 x 20 box	6.000.000	Variabel Cost
2	Cold box cleaning	100.000/ month	1.200.000	Fixed Cost
3	Cleaning cold storage rooms and sanitation	150.000/ month	1.800.000	Fixed Cost
4	Water	100.000/ month	1.200.000	Variabel Cost
5	Ice	480.000/month	5.760.000	Variabel Cost
6	Cold Storage Manager	1.000.000/ month x 2 person	24.000.000	Fixed Cost
7	Building maintenance	Rp. 1.500.000/ year	1.500.000	Fixed Cost
Total Cost			37.460.000	

Table 9. Cold Storage Management Mechanism

No	Component	Explanation
1	**Cold Storage Unit**	1. Cold Storage Unit is a unit formed by the Fishermen Group Organization to serve members who will use the Cold Storage as a storage area for fish cought by members of the Fishermen Group; 2. Cold Storage Manager is a member of the Fishermen Group that chosen and appointed by the organization members; 3. Cold Storage Manager has to manage and maintain Cold Storage facilities and get salary (every month) the amount of which will determined later; 4. Cold Storage Manager is responsible for making written report on the use of Cold Storage (Financial report that include revenues and operational costs that have been incurred); 5. Written reports on the use of Cold Storage are made periodically (per 3 months) and submitted to members through the organization's management; 6. If the Cold Storage manager is deemed to have committed fraud or is considered to have violated the rule of the use of Cold Storage, the fishermen may submit a complaint to the Management of the Fishermen Group through Internal Control System (ICS) established by the Organization's Management; 7. Complaints can be submitted directly to ICS both verbally and in written. Complaints submitted must be accompanied by evidence of violayions by the manager of Cold Storage; 8. ICS will follow up on members complaints and verify the alleged violations committed by the Cold Storage manager and report the results of verification to the Organization Management to be followed up; 9. If there is a proven violation committed by the Cold Storage manager, the Organization Management will apply sanctions accordance with the organization regulations; 10. ICS will report the results of monitoring and supervision periodically (per 3 months) to the Organization Management. **Note: See Diagram 5.**
2	**Rules of Use The Cold Storage**	1. Cold storage only can be used by the members who have been registered as organization member. 2. Fishermen who will go to sea and planning to leave their catch in cold storage can report to the cold storage manager. The cold storage manager will lend cold boxes to members and a cold storage will be prepared for storage 3. Fishermen returning from sea can directly deposit their catches to cold storage;

		4. The cold storage manager and fishermen will weigh the catches together and record them in the cold storage management book. The Fishermen will be charged a storage fee, the amount of which is determined by the number of fish caught (in kg) stored in the Cold Storage. The amount of storage costs will be determined later; 5. Fishermen get the catch form from the manager as a valid proof if the fishermen leaves their catch in the cold storage; 6. Fishermen who want to take their catch in the cold storage can show the form to the cold storage manager 7. Cold Storage Manager will record the payment in the Cold Storage financial ledger and the fishermen will receive proof of payment receipt from the cold storage manager. **Note : See Diagram 6.**
3	**Cold Storage Financing**	1. Cold Storage fund comes from: a. The initial membership of fishermen group members is IDR 100.000 (Planning),-. The initial contributions provide benefits to the fishermen who can use cold storage forever (cold storage members). The organization will record the initial contribution and manage it as initial capital for cold storage operations. b. The amount of storage costs is determined by the number of fish caught (in Kg) that stored in Cold Storage. The amount of storage will be determined later. c. Grant Fund (From Government and Other Stakeholders such as Company, etc) 2. Income derived from the cold storage will be used to : a. Operational costs of Cold Storage b. Additonal unit of cold storage
4	**Operational Cost**	Operational costs of Cold Storage consist of: a. Electricity costs b. Salaries/honoraria for the cold storage manager c. Stationery d. Maintenance e. Depreciation Equipment (Cold Box, Weighing equipment, Buildings) f. Ice, Water

		g. Sanitation

Diagram 5. organizational structure of fisherman groups

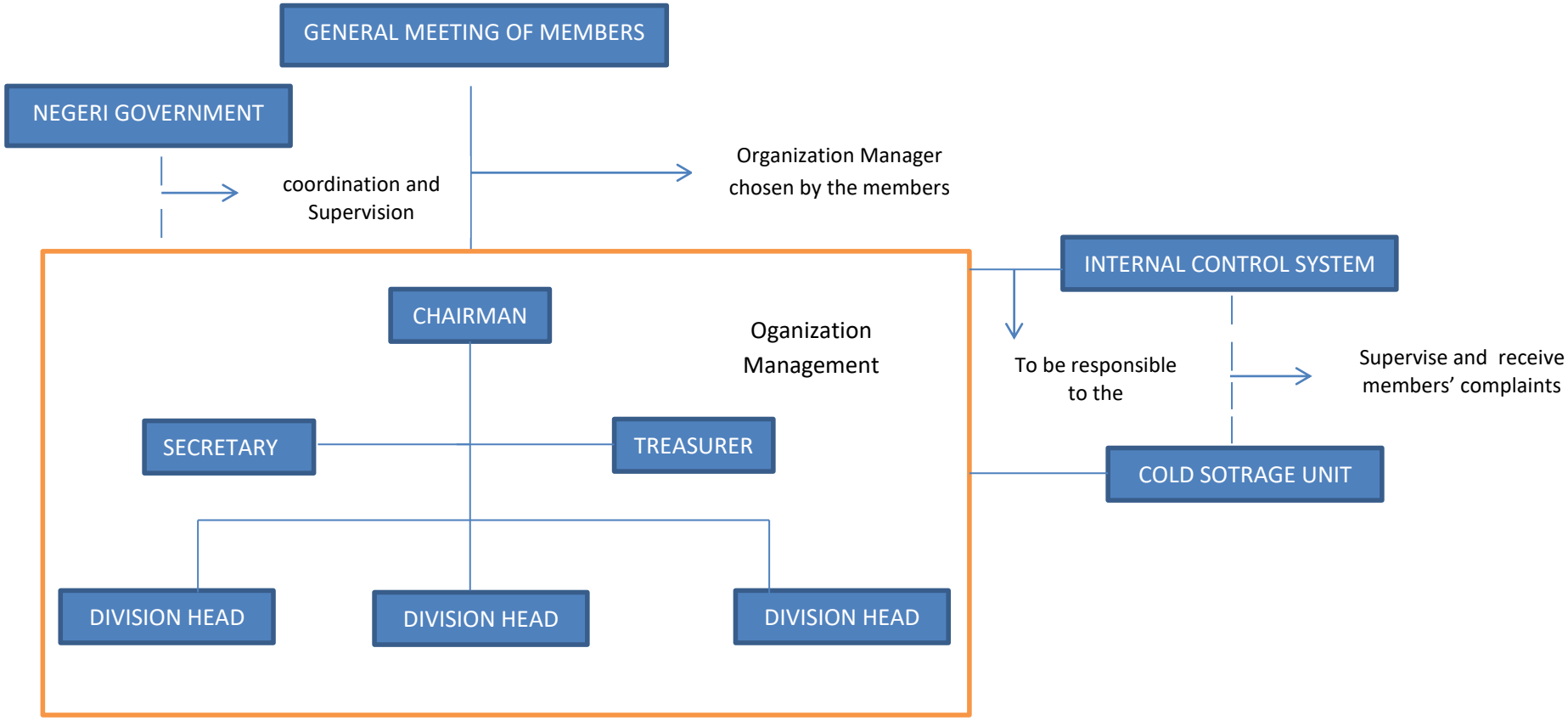
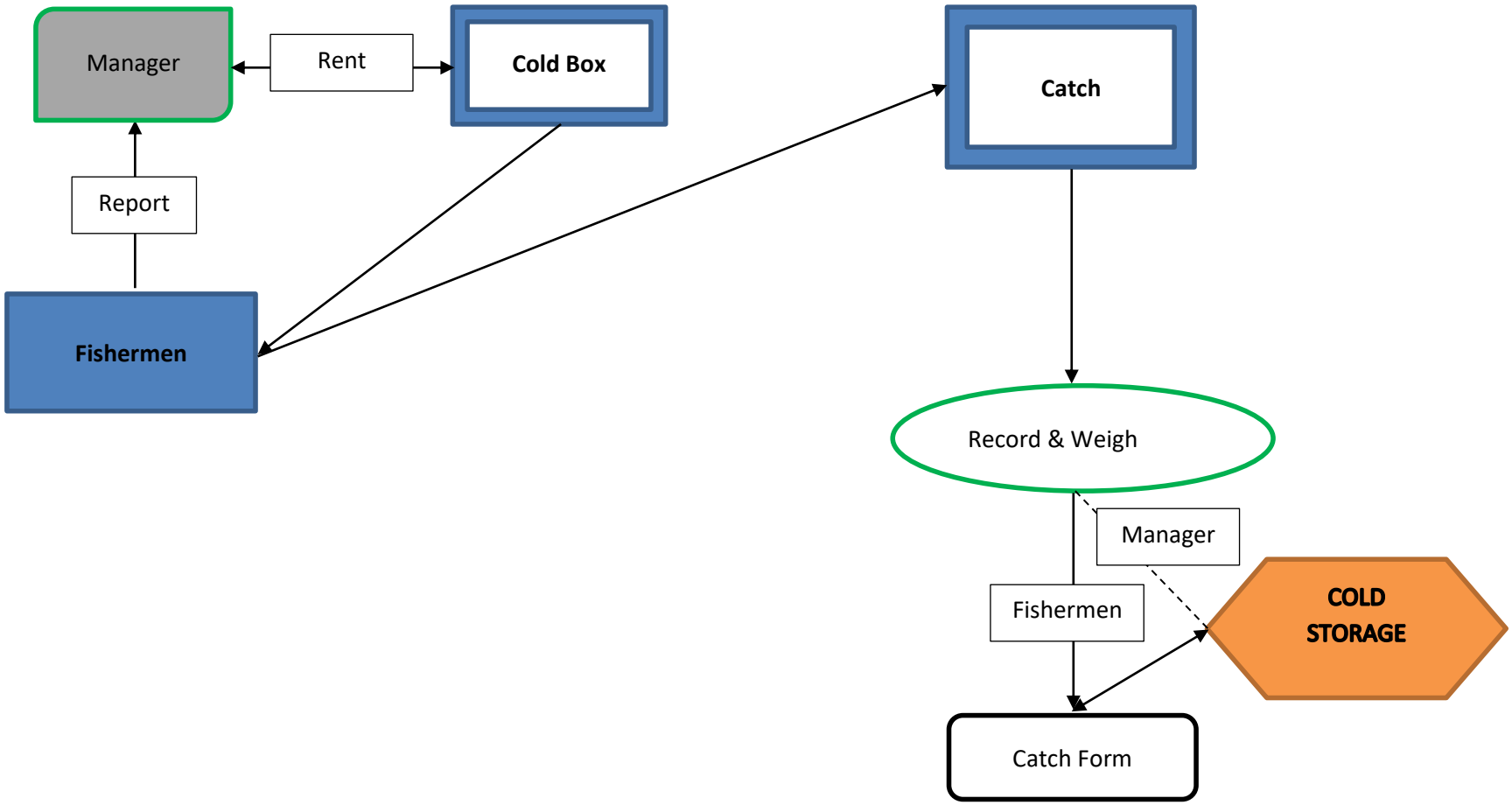


Diagram 6. Use of The Cold Storage Procedure



Outcome B: Enhancement of the capacity and knowledge of fishermen' groups by adopting the climate change adaptation strategies.

1.4. About 450 fishermen (150 fishermen in each village) have new knowledge which is more relevant to the climate change

The mapped circulation pattern and fish migration in the *fishing ground* zone and the updated the fishing season calendar raise the need to update the rules for traditional fishing (Sasi Laut) which the fishing community at the project site has used as a guideline. In addition, there is a potential for adjustment of fishing gear and fishing time in the new *fishing ground* area. Therefore, it is necessary that the fishermen in the project site have the capability to adapt in order to answer these challenges through the following activities:

1.4.1. Strengthening institutional groups of fishermen in three Negeri

It can be done by either strengthening the existing institutions in these three Negeri or by establishing new institutions. Strengthening institutions begins with a meeting to establish a mutual understanding regarding the updates made on the traditional fishing rules (sasi laut), and arranging the adaptation strategies to address potential emergence of challenges and obstacles in the application of fishing rules to be carried out in the new *fishing ground* area, formulating DAD allocations to support fisherman adaptation activities, as well as mapping stakeholders who can support the activities of fishermen groups in the project site. This activity will involve 150 people from the traditional fishing groups (50 fishermen from each Negeri) and the government of the Negeri.

1.4.2. Mentoring fishermen groups in the three Negeri

Mentoring aims to help fishermen groups improve their capacity and solidity in understanding and implementing climate change adaptation strategies, help to access fisheries technology, group consultation, access to capital, and to build a network with *stakeholders* - including government - for the institution sustainability post-project.

1.5. The establishment of fishermen' groups which are able to cooperate with government offices, private parties, and non-governmental organizations in order to be able to access technology, group guidance and capitalization

To ensure the establishment of fishermen groups, some of the strategies that will be carried out are:

a. The fishermen group will be officially registered with the Central Maluku Regency's maritime and Fisheries Agency, because to be able to access the empowerment / guidance program, access to technology and capital, the fishermen group must be registered with the Marine and Fisheries Agency
b. Participate in various meetings and trainings conducted by the Office of Marine and Fisheries Agency at Central Maluku Regency or relevant institutions (including NGOs, universities, and companies) with the need to increase the capacity of fishermen groups.
c. Promoting activities and best practices carried out by fishermen groups (Video Project, Stories Project, etc)

d. Establish cooperation (MoU With a fish storage company) as a supplier of fish with agreed fish quality standards and selling prices

Some institutions that will be targeted for collaboration and or that can support fishermen groups are:

1. Government
   a. Marine and Fisheries Ministry ; 1) Directorate General of Fisheries Catch, 2) Directorate General of Marine Space Management, 3) Marine and Fisheries Research and Human Resources Agency
   b. Environment and Forest ministry : Directorate general of climate change control
   c. Marine and Fisheries Agency of Maluku Province and Central Maluku District;
   d. Cooperatives and small and medium businesses Agency of Maluku Province and Central Maluku District
   e. Regional Development Planning Board Maluku Province
   f. Environment and Forest Agency of Maluku Province
2. Pattimura University (Maritime Study Center)
3. NGO (Kiara, WWF, Tifa Damai, USAID, MDPI)
4. Company
   a. PT Ureng Nusa Telu
   b. PT Bersama Mitra Nusantara
   c. PT Harta Samudera
   d. PT Perikanan Nusantara
5. Bank

   Bank BRI through the People's Business Credit program or the Fishermen's Capital Outlet Program (Gemonel).

Komponen 2- Coastal ecosystems repair for the resilience of communities and alternative location for source fishing

25. This project will focus on restoring a number of *coral reefs* that have already begun to get damaged due to rising sea water temperatures and flash floods caused by the Wai Ela dam break in 2013. Climate conditions cause coral reefs to break down and, as a result, the population of pelagic fish living in the shallow water decline drastically, while at the same time, the increasing risks of fishing due to strong winds and high waves discourage fishermen to go fishing. In some villages, fishermen who have economic alternatives such as trading, farming and gardening can still make a living in these conditions, but the people with no alternative livelihoods face difficult challenges to support their family.

Table 10. Extent and Condition of Coral Reef in Central Maluku Regency

Sub-District	Kondisi Terumbu Karang (Ha)		
	Extent	Good	Damaged
Banda	824,50	775,00	49,50
Tehoru	461,60	421,90	39,80

Teluti	477,60	431,90	45,80
Amahai	839,30	783,10	56,20
Kota Masohi	48,40	30,80	17,60
Teluk Elpaputih	9,60	5,80	3,80
Teon Nila Serua	-	-	-
Saparua	223,40	195,90	27,50
Saparua Timur	-	-	-
Nusalaut	96.,20	91,00	5,20
Pulau Haruku	327,20	295,70	31,50
Salahutu	233,70	224,50	9,20
Leihitu	678,20	621,90	56,30
Leihitu Barat	54,00	37,00	17,00
Seram Utara	1 010,40	887,50	122,90
Seram Utara Barat	450,90	406,80	44,10
Seram Utara Timur Kobi	499,20	440,70	58,50
Seram Utara Timur Seti	511,20	446,70	64,50
Total	**6 754,40**	**6 096,20**	**649,20**

Source: Central Maluku Regency Maritime Affairs and Fisheries Office, 2017

Outcome A: Restoration/Rehabilitation of the function coral reef ecosystems and expanding fishing ground zones for fishermen in nearshore waters

2.1. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach

Coral reefs play a main role as habitat (home), *nursery ground*, *spawning ground*, and also as *feeding ground* for numerous types of marine biota that make coral reefs its habitat. Coral reef restoration is a basic intervention that will restore shallow water conditions in the hope that it will become a home for pelagic fish, so that fishermen can fish them for commercial purpose or consumption. The results generated from the components of this project will lead to improving people's livelihoods and resilience to climate change, economic improvement, food security, and the recovery of coastal ecosystems.

Besides implementing the project to rehabilitate, this project is also interpreted as an effort to conserve, maintain and expand coral reef areas. The implementation of this project will apply the latest technology adaptation, namely the rehabilitation of wave-resistant coral reefs, by increasing the effectiveness of the cultivation system and grafting/transplantation techniques with a success rate of 90-100%. Water territory near project location has unpredicted seawaves which tend to be big and high, in which case it may pose the coral reef seeds to damage risk when there are strong waves and underwater currents. If the target of ± 12 ha in Asilulu and Lima villages is achieved, the use of this grafting technique will at least reduce up to 97% of the wave energy and break the waves up to 86%[17].Therefore, it can solve the problem concerning minimum *fishing ground* location, especially in areas near the coast and it can also reduce waves that hit wave barriers and the impacts of abrasion. Local government authorities with

[17] DANIEL D. PELASULA Pusat Penelitian Laut Dalam – LIPI , *REHABILITASI TERUMBU KARANG TELUK AMBON SEBAGAI UPAYA UNTUK MEREDUKSI EMISI CARBON CO2,* http://ditjenppi.menlhk.go.id/reddplus/images/resources/workshop_kapasitas/paparan_Daniel_D_Pelasula

expertise in various fields will be involved in this project as an intervention to lead and contribute and integrate existing innovations into regional government development strategies.

Consultation with the village governments indicates that some programs can be conducted collaboratively, including Village Community empowerment activities that allow them to be aligned with coral reefs cultivation and ecotourism. Village allocation funds can be budgeted for the needs of developing coral reef ecotourism facilities and infrastructure in the form of grants. Revenue derived from the management of ecotourism is expected to contribute to the expansion of coral reef rehabilitation

This activity will involve the active role of youth groups in each Negeri starting from the planning, implementation, maintenance and monitoring of coral reef restoration. To achieve this output, the activities that will be carried out are:

2.1.1. Consultation with Regional Government and the relevant Office of Marine Affairs and Fisheries Regarding Coral Reef Restoration Techniques in 3 Negeri.

To establish the program foundation and to nurture government involvement in determining restoration areas, the Regional Development Planning Board (BAPPEDA) will collaborate with the Office of Marine Affairs and Fisheries in Province and Municipality level, Government of 3 Negeri, as well as the communities. Consultation with Regional Development Planning Board (BAPPEDA) will involve brainstorming on the Regional Spatial Planning (RTRW) in the project location. On a side note, the consultation with the Office of Marine Affairs and Fisheries will aim to obtain direction regarding the ministerial decree no. KEP.38/MEN/2004 on General Guidelines on the Management of Coral Reef and regarding the Guidelines for Coral Reef Rehabilitation issued by the Directorate of Maritime Conservation and Biodiversity and the Directorate General for Marine Space Management. There is also Village Allocated Fund (Dana Alokasi Desa or DAD) to be utilized by the village government in supporting the expansion of restoration areas, as well as its preservation measures. In this case, the program will also involve Customs Council in planning the marine rules (marine customary law), which will be developed into regional regulations, in the hope that the restored coral reef will be preserved and protected, as well as to impose risks and penalties on those who violate the regulations. There will also be consultations with various communities and groups in the communities, among which, fisherman groups, customs practitioners, youth groups, as well as woman groups, especially those who are involved in the restoration of coral reef.

2.1.2 *Survey and selection of locations for artificial reef*

The selection of locations is determined by the results of field surveys in shallow sea waters with a large amount of damage. The survey will monitor the extent of damage and also control the recruitment of coral reefs in the area. And then, determine the optimal location of reef rehabilitation as well as its environmental impact . The determination and review of locations will take into account physical, chemical and biological factors. Algae and coral diseases are factors that will be considered. Locations that contain at least macro algae will be prioritized for restoration/rehabilitation. Aside from the rehabilitation, locations selected for coral reef seedbed will also consider the embankment positions, which is

prone to damages due to the high tide and abrasion, as the coral reef will effectively help alleviate the impact from wave's kinetic energy toward the land[18].

Artificial reefs are placed in habitats that have decreased and areas that have low productivity (Yahmantoro and Budiyanto 1991). Some criteria for laying artificial reefs:

1. The location is close to the fishing settlement.
2. Separate from natural reefs.
3. The waters are quite clear.
4. Depth based on distance from coastal waters and the ability of divers make observations into concerned.
5. The condition of the waters meets the living requirements of coral reefs (Circulation, saliity, brightness, sedimentation and depth).
6. The state of the substrate is quite hard and flat(even) to prevent artificial reefs embedded into the base.
7. Orientation (location) in relation to fish migration patterns and
8. Does not harm navigation.

The type of data collected in this plan are primary data and secondary data. Primary data obtained from the results of field measurements, consisting of : Bathymetry topographic survey(elevation and distance), Sea water quality data (salinity, sea current speed, pH, temperature, turbidity). Secondary data namely hydrological data, climatology data(data on wind direction, tides at Pemangkat station, and current direction), bathymetry maps, maps administration of current and wind direction maps. Analyzing the form of construction or dimensions of artificial reefs, materials and methods that are appropriate to the location the planning. Plan and determine the size of artificial coral reefs and detailed design drawings. Detailed design drawings will be used as technical guidelines in the making artificial reef.

This activity will be carried out in a participatory manner with local residents, volunteers, local NGOs, and experts in the field of coral reef restoration and rehabilitation. The activities include mapping the potentials, capture points, and weather with a target area of ± 12 ha mapped in the area of Negeri Lima and Negeri Asilulu.

[18]This is explained in various literatures, among which, https://ilmugeografi.com/ilmu-bumi/laut/manfaat-terumbu-karang, accessed 31 December 2019.

Picture 8. The planned location of coral reef rehabilitation on Hatala Island and Lain islands in Asilulu

Picture 9. Planned location for rehabilitation of coral reefs in Negeri Lima

The planned location for coral reef rehabilitation / rehabilitation as shown in Figure 8 and Figure 9 will be examined and confirmed further after the survey will be conducted with oceanographers and coral reef experts.

2.1.3. *Making Artificial Reef Concrete and Transplant Seeds*

Making concrete seeds is done by youth groups and women's groups that have been given training. Rehabilitation of coral reefs will be carried out by combining methods between artificial reef and transplantation. Seedlings will be obtained from locations that are in accordance with the KKP Office's permit to be transplanted, transplants that have been cut into small pieces of 7 cm / seedlings as coral saplings that will trigger the acceleration of artificial coral growth. Construction of artificial reefs Artificial reefs will be made of concrete

using Portland cement Type V, this type of cement is suitable for the manufacture of concrete in areas where soil and water have high sulfate salts such as sea water. The design and form of the artificial reef that will be used refers to the results of the initial study that has been carried out at the previous activity stage. Several forms or models of artificial reefs are known. From the shape of the ball (Reef Ball), cube, or pyramid shape (pyramid). This model is usually composed of various basic shapes, such as concrete blocks (cement) to form a cube or pyramid. The minimum target for laying is 300 units of artificial reef with details of size 1x1 M3 covering ± 12 ha in the territory of Negeri Asiliulu and Negeri Lima.

2.1.4. *Monitoring, Maintenance and preservation of coral reefs*

These activities aim to ensure that the transplanted coral reefs grow well and none of them are carried away. To ensure that coral reefs are growing well, monitoring and intensive care through cleaning up diseases and algae attached to coral reefs will be carried out periodically. This activity will fully involve the formed youth coral reef groups.

Monitoring activities aims to determine the conditions of the transplanted coral, to determine the survival rate of the transplanted corals and to determine the rate of coral growth.[19]

Table 11. Monitoring Methode

Monitoring Object	Monitoring Methods	Objective
Coral survival and growth	Field observations using the Line Transect and squared methods. [20]	Monitoring to see percent change in width of live coral cover.
Height and diameter of coral pragmen	Observation and coral growth recording from the top and sides, conducted from the first week and every 2 months.	To find out the growth of the vertical length and horizontal length.
Monitoring changes in biodiversity	Done by snorkeling and diving every few weeks and during an interval of 3,6, or 12 months.	In addition to knowing coral growth will also know the fish growth and other biota that play an ecological and economic role.
Disturbance that cause mass death such as storms, big wave season, predators and algae growth.	Quick and simple monitoring every 2-4 weeks to mark every event.	Knowing the things that cause coral death and taking preventive actions.

[19] Source of General Director of Marine Space Management, KKP. *Coral Reef Rehabilitation Guidelines*, Jakarta, 2015. and Alasdair Edwards and Edgardo Gomez , *Coral Reef Restoration Concepts and Guidleines; make wise choices among uncertainties,* Coral Reef Targeted Research & Capacity Building for Management Program, 2007.

[20] One method of vegetation analysis is a way to study the vegetation composition in form (structure) of vegetation from plants.

Water qualty measurement	Conducted at the beginning and end of the month for 3 months *in situ* by observation at the reef rehabilitation site, the parameters measured are brightness, temperature, pH, dissolved oxygen, current velocity, and salinity.	To determine changes in sea water conditions after and before the coral reefs were rehabilitated.
Implementation and management by the community	The Regency and Provincial Government together with the community will conduct periodic reviews of the implementation and management in accordance with the applicable laws and regulations.	To find out the implementation, deect any problems and irregularities that can affect the implementation and success of activities and function as a control system.

Outcome B: Increased awareness and active role of coastal communities to rehabilitate, maintain and maintain coral reefs

The success of the activities to restore shallow marine ecosystems will be largely determined by the active role of the local people in the project site. An enabling condition that must be created is to understand the impacts of coral reef damage and the benefits that can be obtained if the restoration/rehabilitation of coral reefs is successful. In addition, it requires knowledge and capacity to perform coral reef transplantation techniques, coral reef maintenance and preservation, and regular monitoring. To create the enabling conditions, following are the stages of activities to be carried out:

2.2. About 90 young people (30 people from each Negeri) knows how to do transplantation, maintenance, care and monitoring of coral reefs

In addition to fishermen groups, the existence of young age groups (men and women) found in three Negeri is a social capital that can be utilized as the main actor in efforts to rehabilitate coral reef ecosystems in the project site. The involvement of all parties, both men and women is needed to ensure that all modalities can be utilized to achieve project objectives.

2.2.1. *Training for youth groups on making articial reefs and cultivation/transplantation, maintenance and preservation of coral reefs*

This activity will target youth groups in Negeri Lima, Negeri Asilulu, and Ureng, targeting 30 young people from each Negeri. This activity does not only puts emphasis on improving the knowledge and technical capacity regarding coral transplantation methods, but also raising the awareness of youth groups about the benefits of coral reefs in terms of social, economic and ecological aspects. Therefore, this activity will also be a momentum to establish youth groups to save coral reefs in each Negeri. At least, there should be one group in each Negeri that will be actively involved in coral reef restoration from transplantation to monitoring.

2.2.2. *Training on sustainable coral reef monitoring and organizational strengthening of the three youth groups to save coral reefs in the three Negeri*

The training aims to prepare a community that will sustainably maintain the cultivated coral reefs with a target of at least 90% of coral reefs growing well. Mentoring aims to ensure the proper monitoring of transplanted coral reefs, as well as to improve the ability of youth groups to synergize with the government and build networks with related *stakeholders* to map other improvable potentials such as coral reef ecotourism concept and so on.

These groups are expected to synergize with fishermen groups within the project site to be able to enforce DAD to support the maintenance and development of coral reefs which are potential source of income for the people as well as the development of coral reef nursery points and areas in other post-project sites. Proposing mechanism for DAD allocation for this tourism development is started with program proposal of developing tourism and coral reefs restoration by the youth and fisher communities to get the proposal listed in the Negeri's Government Working Plan (RKP) which is drafted annually through the Village/Negeri Development Planning Forum. Once the program proposal is approved and listed in the Negeri's government working plan, the next step is for Negeri government to draft Negeri's Local Budget and to propose them to Regency Government for evaluation. The budget will be approved then by Negeri Government once the Regency Government accepts the proposal. DAD of Negeri Government will be then used to finance the development of marine tourism, such as the development of its supporting means and facilities. In the future, income generated as the result of developing this marine tourism can be jointly managed by the groups and Negeri Government by establishing Negeri Government Owned Enterprise to handle the tourism management.

To ensure the sustainability of funding support sourced from DAD, the success of coral reef restoration and the development of coral reef ecotourism are indicators that must be achieved because it will bring income to the Negeri government so that the income can be reused to expand the area of coral reef restoration post-project

The mobilization strategy will be carried out with engagement with each target stakeholder, especially the main and secondary stakeholders by introducing the project's vision and mission and synchronizing project achievements in line with their interests and objectives. In order to be able to mobilize government support and other related parties – especially after the project ends, the strategy to carry out coral reef restoration at the project site will use the comanagement concept by involving the government, private sector, and civil society groups (NGO's). The strategies in this concept are:

1. Involvement of government, private, and NGO's (including Research Institutions and Universities) in the initial stages of the coral reef restoration project plan through FGD and consultation process, as well as the implementation and monitoring stages.
2. Make a mutual understanding of the roles that will be carried out by each stakeholders involved.
3. Make a joint strategic plan to support the monitoring process and the planned expansion of damaged coral reef restoration at the project site and its surroundings.

Another strategy to expand support mobilization is to document coral reef restoration activities in various forms of campaign media (such as leaflets, vieo, brochures, etc), for the promotion

purpose, mobilization of support and dissemination of coral reef management programs to the public and at the same time a form of knowledge management.

Diagram 7. Co-Management Concept (Integrated Coral Reef Restoration)

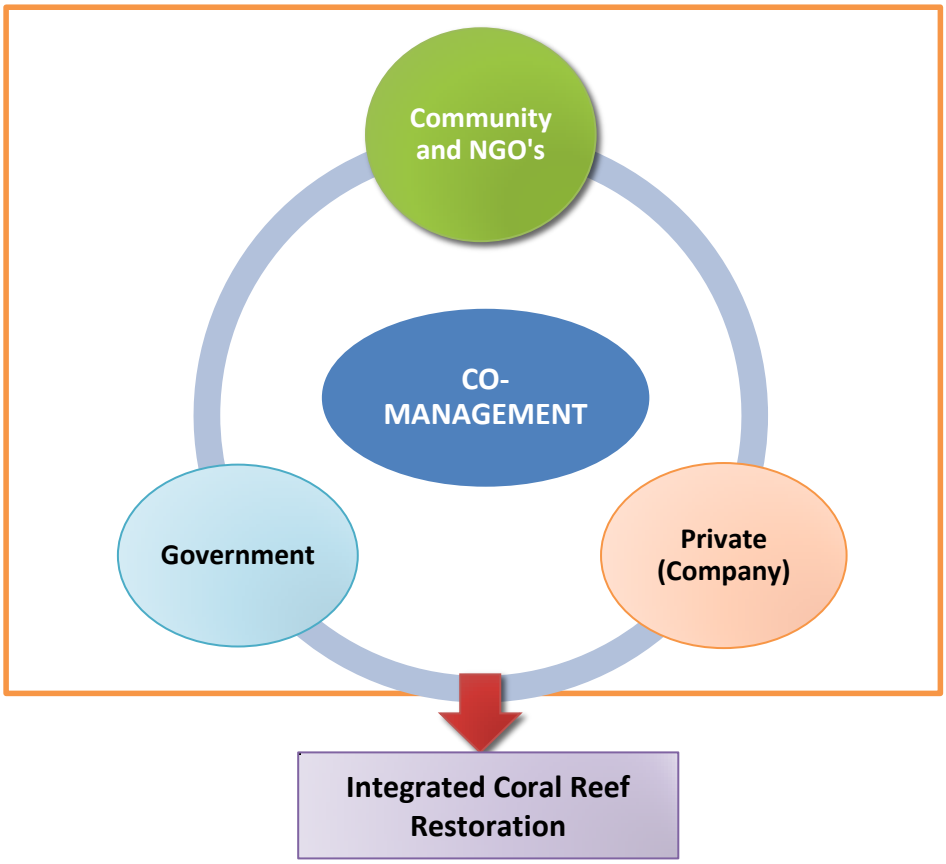


Table. 12 Analysis Stakeholder and Potential Supporting

Stakholders	Name of Institutions	Potential Support
Government	Environment Office	- Institutional Strengthening - Provision of a budget for expanding coral reef ecosystem restoration areas or supporting facilities and infrastructure for the Coral Reef Care Community at the project site. - Socialization and counseling to the community about the importance of protecting coral reef ecosystems.
	Tourism Office	- Institutional strengthening for ecotourism development. - Promotion of coral reef ecotourism

	Marine Affairs and Fisheries Office	- Institutional strengthening and potential alternative economic development. - Budget provision for expanding coral reef ecosystem restoration areas or supporting facilities and infrastructure for the Coral Reef Care Community at the project site. - Socialization and counseling to the community about the importance of protecting coral reef ecosystems.
	Negeri Government	- Formulate state-level regulation regarding the protection of coral reef areas, including the type of fishing gear that is allowed. - Collaboration with youth groups that care for coral reef to develop cooperation and support with fish storage companies for monitoring, care and or expand the coral reef rehabilitation area through CSR programs that found in the company.
	Ambon Fisheries Training and Counseling Center Research & Human Resources Agency Ministry of Maritime Affairs & Fisheries.	- Institutional strengthening and potential for developing alternative coastal economies. - Institutional strengthening in form of trainings that relevant to the purpose of coral reef restoration. - Socialization and counseling.
Company	PT. Harta Samudera PT. Ureng Nusa Telu	- CSR program in form of coral reef restoration (both for maintenance and for the expansion of restoration area). - CSR program in form of providing facilities and infrastructure for the Coral Reef Care Community at the project site and ekowisata programme
Universities and Reseaerch Institutions	Maritime and Aquatic Studies Center of Pattimura University	- Institutional strengthening in form of transfer knowledge and technology of coral reef restoration

		- Research and study
	Coral Reef Information And Training Centers	- Institutional strengthening in form of transfer knowledge and technology of coral reef restoration - Institutional strengthening in form of management training of coral reef ecosystems. - Socialization and counseling to the community about the importance of protecting coral reef ecosystems. - Research and study
NGO's	- The Indonesian Community and Fisheries Foundation (MDPI) - USAID-APIK - Pattimura Diving Society Universitas Pattimura	- Institutional strengthening in form of trainings relevant to the purpose of coral reef restoration.
		- Promotion and protection of coral reef campaigns.

Some indicators that determine the success of this program, such as:

1. The formation of youth groups concerned with coral reefs in each Negeri, which worked together to participate in maintaining and monitoring the development of coral reefs that have been planted
2. Groups that have formed try to expand the planting area of coral reefs in new locations, which require rehabilitation or new ecotourism locations.
3. No more bombing activities to find fish carried out by fishermen, which can damage coral reef habitats.
4. The creation of reef fish habitat, which can be used as an alternative fishing ground.
5. Created community awareness to maintain coral reefs properly and can function to restore the coastal ecosystem.
6. The recovery of + 12 Ha of coral reef ecosystems along the coast 3 Negeri.
7. The existence of potential new and alternative livelihoods with the development of ecotourism programs.

The potential of tourism that will be developed consist of:

a. coral reefs education tourism,
b. beachside culinary tours,
c. diving ,
d. coral reef nursery education tours,
e. and coral transplant education.

Tour packages by the public will be campaigned and promoted as a tourist attraction. Youth groups concerned with coral reefs will initiate this activity. And from retribution / income that will be spent 20% for the needs of coral reef restoration in other potential locations.

Coral reef care groups will integrate all work programs related to the development of coral reef locations with ecotourism managers who have become BUMNEG and will set aside a portion of the revenue for expanding the potential of coral reefs in other locations. The

establishment of BUMNEG will be established with deliberative steps involving all elements in the village, such as the village head, community leaders, NGOs, and so on. In this deliberation, the establishment of BUMNEG will be agreed upon, followed by a discussion on business units, management, sources of capital, and other matters to support the program to be run. Organizational Arrangements, these activities include the duties and functions of each BUMNEG leader. In addition, at this stage, a business plan that will be developed complete with steps that must be immediately discussed. Development, At this stage, the organizational structure has been created and each division understands their respective duties. So, at this stage, the implementation of activities has been carried out. More discussion on technical matters such as determining the third party to be invited to cooperation, the business unit development program that has been agreed upon, as well as formulating the remuneration for BUMNEG members. More details about the establishment of BUMDes or BUMNEG are regulated in the Regulation of the Minister of Villages, Development of Disadvantaged Areas, and Transmigration of the Republic of Indonesia Number 4 of 2015 concerning the Establishment, Management and Management, and Dissolution of Village-Owned Enterprises. To support the infrastructure of ecotourism support the Maluku Province PUPR Office in its strategic plan has allocated funds for the construction of road access and the creation of a transit market that can become a tourist spot for seafood and seafood.

Komponen 3- Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas

26. The majority of the people in the project site has been living in coastal areas for generations and around 80% of their communities work as fishermen and depends on the fisheries and marine sectors especially capture fisheries. Meanwhile, the potential of other coastal resources has not been widely explored. Some of the contributing factors are the lack of knowledge regarding the potential for coastal resource development, the lack of technology and capital to support these activities. As a result, there is not much that the community can do against changes in seasonal and wind patterns that cause a shift in the fish season and *fishing ground* due to changes in circulation patterns and animal migration patterns in the sea as a result of climate change. Meanwhile, the potential for fish availability in shallow water area is not maximized because of damage to coral reef ecosystems. Community direct dependence on marine ecosystems affects their social resilience and ability to deal with shocks, especially in terms of food security and economic vulnerability.
27. The components of this project will address the economic vulnerability issues of the three Negeri against climate change. Alternative livelihood models that will be developed are based on fisheries and non-fisheries. The success of this project is expected to encourage the government of the Negeri and local governments to adopt and develop alternative livelihood models that will be developed in this project. Alternative economic development will target groups of women in the project site who are not employed and economically dependent on the fish captures obtained by their husbands as household heads.

Outcome A: Reducing dependence on livelihoods as catch fishermen.

3.1. Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each negeri) which for every floating net cage, it is managed by a group (1 group = 20 households)

Aquaculture farming or what is commonly known as Water Culture is a form of raising and breeding water animals or plants that uses water as its primary component. There are some types of water cultivation; one of them is fish culture. This project will develop shallow water fish culture using floating net cages in the attempts of developing an alternative economy for 3 negeri community. Every Negeri will install 3 floating net cages, so there will be 9 floating net cages in 3 Negeri. This project is designed to be implemented in Negeri Asilulu, Negeri Ureng, Negeri Lima. Every Negeri has a minimum of 3 floating net cages which will directly managed by the community group. This group will have an active role in developing the fish culture in each of these Negeri..

The feasibility study will be carried out at the beginning of the project with oceanographers and consultants to analyze the location for cultivation. In general, observations of water quality parameters refer to Minister of Environment Decree No. 51 of 2004 concerning Water Quality Standards, seven key parameters have been determined which are considered to be the main parameters that have a significant role in the success of the FNC aquaculture development effort. In addition to referring to these 7 aspects, the project will also analyze the state of the season (west wind and east wind season). The feasibility study will also involve an AMDAL that is part of the licensing requirements.

To achieve these outputs, activities planned to be carried out are:

3.1.1. *Conducting fish culture training for groups in 3 Negeri*

This activity aims to prepare the groups that have been formed in each Negeri for handling a fish culture. Every group consists of 20 households; hence one Negeri will have a minimum 60 households ready to manage the floating net cages. The objective of this training is for every group to have proper knowledge on how to cultivate fish in floating net cages, such as selecting and designating locations for this cages, making the floating net cages design and construction, deciding the layout, knowing what facilities are required for fish culturing, selecting types of fish to culture, and managing as well as marketing them.

3.1.2. *Surveying location for floating net cage*

The groups for this fish culture which have received trainings will conduct a survey to select and designate the locations for the floating net cages together with experts. In this activity, factors to take into account are natural disturbances (storms and water surges), whether predators inhabit the area, contamination, convenience, hydrographical conditions, the potencies of fish that will be culture, and potential conflicts among users. The survey result can help with the development of the area into floating net cages location for the groups to help improve the economy of people in 3 negeri.

3.1.3. *Design making of floating net cages construction and facilities provision for the fish culture*

This activity may serve as a follow-up activity of the survey conducted together. The groups will decide the design of the floating net cage they will be using for the fish culturing as required and based on the survey result. It is possible that every group may choose different design depending on the location of the survey and types of the fish they wish to culture. However, facilities that they are required to have are basically the same, such as the nets, they are going to need the smallest net size of 2 x 2 x 2 m to 9 x 9 x 9 m which are easily available in the market. Most important also is raft culture that is used to hook the nets, these rafts are commonly made from bamboo, timber, iron, and fiber which have been

growingly made and used these days in modern fish culture. The next step is the fish seeds used that are going to be cultivated, usually the seeds can be acquired by purchasing ones or developing their own seeds which is possible with enough knowledge. The types of fish purposedly for this cultivation shall have enough economic value to culture. The supply of fish feeds will accommodate as well the types of fish being cultivated. Supporting facilities that need to be prepared are a guard-house and other assistive equipments.

3.1.4. *Managing the floating net cages*

Every group is required to divide job to each of their members to collectively manage these floating cages. And it is very likely that every group will have their own unique job division following the needs arise within the group. The purpose of this job division is to give members of the group some responsibility to help improve the economy of the people in 3 Negeri. Maintaining floating net cages involves activities from cultivating the fish, harvesting, to marketing the results of these floating net cages.

Wastes in waters can be in the form of deposited, colloidal, suspended and dissolved solids. Sedimented solids will directly settle to the seabed. while other forms will remain in the body of water, the organic material from the FNC waste will become a food source for heterotropic microbes and also species of fish or organic eating shells such as koan fish and shellfish for life and breeding. The biggest source of waste from cage farming is from the feed used, so in this project will consult with the Center for Aquaculture Fisheries Research and Development to get input on best practices of environmentally friendly cage fish farming techniques. At least in this project fish farming will use feed with a minimum phosphorus (P) content (0.6% -0.9%), a feed that produces a low Food Convertion Ratio (FCR) value, including will also avoid drugs and chemicals which is forbidden by the government based on the feed standards set out in the regulation of Government Regulations no. RI PerMen No. 28 of 2017 concerning Fish Farmers. Technically feeding with the calculation of 3% -5% of body weight biomass of fish per day, and also reduces the frequency of feeding when the appetite of fish is reduced. As for waste that must be handled, it is necessary to make a separate reservoir on land and a management system such as a waste disposal will be made.

The requirements for a FNC fish cultivation permit are contained in Chapter IV Procedures and Conditions for Licensing Issuance / Recommendation of the first part Procedures and Conditions for Issuance of SIUP Article 14 To obtain a SIUP as referred to in Article 10 letter a, everyone must submit an application to the Director General by attaching:

a. Business plan;
b. Taxpayer identification number (NPWP);
c. Photocopy of certificate of incorporation of a legal entity / cooperative that states the business field in the field of fish cultivation that has been approved by the agency responsible for the legal entity / cooperative;
d. Certificate of domicile of the company / cooperative;
e. Photocopy of ID card of the person in charge of the company / cooperative;
f. 4 (four) pieces (4×6 cm size) photo colour of PIC of the company / cooperative;
g. Recommended fish breeding locations from Provincial or Regency / City Regional Governments; and
h. Analysis of environmental impacts (AMDAL), in accordance with the provisions of the legislation that applicable.

Outcome B : Improvement the Role of Women in the Family Economy

Andriati (2010)sugest that the number and outpourong of time for women of the coastal community in household activities generally higher than that of the males. This is because of social view of women who in charge of domestic work, which taAndriatikes more time. Housework is done by women, which is before and after doing the job of earning a living to help the husband. This indicates dual role of coastal women(as housewive and as breadwinners), thus causing the women labor mobilties limited. Because women are expected to pay attention in domestic duties, even when it comes to helping their husband to earn a living.

At the project location, fishing was routinhe for men, while activity on the mainland inbolved both domestic and family economic support activities. The participation of women to assit the husbands in meeting the family's economic needs places women at the expense of their daily activities and downtime. The role of women in fisherman's household is important to understand as contributing helps to alleviate the demand of daily necessities of the household. Therfore, gender mainstreaming is an important aspect of project implementation. In this case, both men and women are equal partners to receive fair treatment to access resources, organize, participate, and benefit from all activities.

3.2. Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri which for every raft, it is managed by a group (1 group = 20 households).

In Indonesia, there are 3 methods used for seaweed cultivation, they are *Bottom Method*, *Off-bottom Method*, and *Floating Method*. To achieve the above output, method selected is the floating method. Floating method is an engineered form of the off-bottom method. The advantage of using this method is its workability to be applied in deeper water condition but still safe from big water surges, and seaweeds will receive better intensity of sunlight with constant water movement that helps the renewal of nutrition contained in sea water, this will ultimately facilitate better nutrition absorption in seaweeds that contribute to faster growth. Floating rafts are made of fibers, while their anchors are of iron, to ensure long term use. Floating raft from fibers is selected since they are of the best quality, compared to bamboo or timber, which usually last only 3 to 5 uses. Since these rafts will be submerged in the seawater during the period of cultivation

Seaweed cultivation will managed in group with 20 members per group. The plan is for every negeri to have 3 floating rafts for seaweed cultivation where every raft is to be managed by 1 group. With this, every group will be responsible for this floating raft for seaweed cultivation until the time this project completes. Expectation is put that this seaweed could help improve the economy of the people in 3 negeri by actively involving women community. To achieve these outputs, activities planned to be carried out are:

3.2.1. <u>*Seaweed cultivation training*</u>

This activity aims to prepare the groups that have been formed in each Negeri for handling seaweed cultivation. Every group consists of 20 members. This training is to be given to each group, so they will have enough knowledge about cultivating seaweeds. Since there are factors to take into account when cultivating seaweeds, such as accurate location selection, seeds picking or selection, seeds provision, appropriate seedling method, maintaining seaweed cultivation and harvesting method, and also proper post-harvest handling to be able to increase the economic value of the seaweed.

3.2.2. Surveying *location for seaweed cultivation*

Surveying the location is conducted together by the groups and the experts where appropriate location for cultivating the seaweeds is determined. The basis for selecting this location shall be done in regard to water condition, depth of the water, bottom water, natural supply of seaweeds, and water quality.In the initial stage, this process is necessary to ensure that selected location points are indeed suitable for seaweed farming. For prospective seaweed aquaculture and farm locations, the following matters need to be reviewed: seabed texture, water clarity and brightness, salinity (NaC1 salt in water) analyzed through GIS (*Geographical Information System*) tools, undersea current, nutrients, ocean depth and water pH, as well as the threat of pest and disease. Utilizing the method of analysis, it can directly be known the potential locations available for conducting seaweed farming in 3 Negeri.

3.3.3. *Cultivating seaweeds*

Method used for cultivating seaweeds in this activity is the floating raft. This method is divided into *floating-monocline method* and *floating net method*. In principle, these 2 methods use raft that could be made from bamboo, timber, iron, or fiber as a floating device where ropes or nets used can be hooked. The raft is rectangle in sizes that accommodate the condition reflected in the survey result. The ropes used to tie seaweeds to the raft are nylon type.

After floating raft, the next preparation is the seaweed seeds. Selecting seaweed seeds is key because good seaweed seeds will produce good results. The seaweed seeds then is cut up to small pieces, after that they are tied to the floating raft with 14 cm gap from one to another. Afterwards, raft is being pulled to designated location. What needs to pay attention too is the maintaining of the seaweeds by monitoring them once every 2-3 days. Harvesting seaweeds can be done if seaweeds reach certain weight, of which case, it may take around 1.5 - 4 months.

3.3. 100 women in 3 Negeri have the skill required to process the result of fish culture and seaweed cultivation

To increase economic value of the seaweed harvest result, seaweed processing then is necessary to do. The processing of the entire seaweed harvesting will be done by the women group. Every Negeri will have at least one group that does the processing of seaweed result with better sale value. Processed seaweeds could become the new economic icon for 3 Negeri, in addition to its sea fish. To achieve these outputs, activities planned to be carried out are:

3.3.1. *Initial seaweed processing training*

The women groups that have been formed will receive seaweed processing training, so they will be able to increase the economic value of the seaweed harvest result. It is expected that every women group can produce different processed seaweed products depending on the group's ability, respectively. In this training, access will also be opened that will connect the women groups with their processed seaweed products to the market.

3.3.2. *Purchasing and advance training on supporting tools used in seaweed processing*

To support smooth seaweed processing, these women groups will receive supporting tools they can use in processing the seaweeds. The purpose of

these supporting tools is to maintain the quality of the processed seaweed products where from this higher economic value can be obtained. To increase income gain from the seaweed harvest, further processing is required to transform it into ready-to-use raw produce. Raw produce resulted from processed seaweed may take the forms of agar, carrageenan, and alginate. Agar can be processed into food finished product, pharmacy, cosmetics, and tissue paper. Carrageenan is usually used to make sauces, cattle food, and also pharmacy. While alginate may be processed into textiles and cosmetics, in addition to foodstuff and pharmacy. To facilitate streamline process in seaweed processing, it requires a seaweed processing machine that corresponds to the types of the raw produce it tries to make and which the women group seeks to develop in each Negeri. It is to be hoped that, every Negeri will have different seaweed processing machine so that there will be products of processed seaweed in each Negeri that could become their icon product.

According to the consultation results conducted with women group in 3 Negeri, there are several products to be developed from processed seaweed. Aside from dried *raw materials*, other products from processed seaweed include seaweed flours and various derivative products consisting of final products with higher economic value, such as dodol (traditional candy), jelly candy, packaged sweets, and jelly drinks. There are at least two types of machines to be used in processing seaweed and this will be determined by the group based on the production needs, which are chopping machines and milling machines. Chopping Machines is a machine that will further process the dried seaweed by cutting the seaweed into smaller pieces (chips). Milling Machine is a tool that will change dried seaweed into seaweed flour to be used as raw materials for seaweed-based derivative products. Direct machine providers will provide training related with the operation and maintenance for the two tools utilized by the group members.

The following is the specification of the two machines to be allotted to the groups:

Table 13. The Specifications of seaweed processing machine

The Specifications of Stainless Steel FCC 15 Milling Machine:		**The Specification of Seaweed Chopping Machine:**	
Capacity	: 30 Kg – 50 Kg/Hour.	Process Capacity	: 500 Kg / Hour.
Dimension	: 600 mm x 300 mm x 800 mm.	Power	: 8 PK.
Motor	: Fuel / Electricity Motor.	Type	: Seaweed Chopping Machine with Rotary Blade.
Energy Used	: Fuel / Electricity.	Machine Dimension	: 1200 mm x 800 mm x 1000 mm.
Power	: 5.5 HP (Fuel-based Motor) / 2 HP (Electricity-based Motor).	Material	: Steel.
Voltage	: 220 V (Electricity-Based Motor).	Product Contact Materials	: Food Grade Rated Anticorrosion Stainless Steel
Electrical Frequency	: 50 Hz / 60 Hz.	Motor	: Diesel.
		Energy Used	: Solar.
Product Contact	: Stainless Steel 304.	Function	: To Chop Seaweed

Materials		into Smaller Pieces (Chips).
Filter Size	: 0,8mm,1mm,1,5mm, & 2mm.	
Frame Materials	: Angle Bar 40/40.	
Function	: To grind the seaweed into medicine and food ingredients, which will adhere to the Food Grade material standard.	

The women groups will be given training on how to use these supporting tools and their method of maintenance. The machine will be managed by women group and its maintenance will be the responsibility of each group. The deliverables from Project Component 3 will be synchronized with village strategic programs to ensure the post-project sustainability. Business groups will be in contact with the regional government to obtain institutional training and reinforcement and the business unit should work better as a part of BUMDES. Aside from this, the business group can also connect with investors both from banking or private sectors

Component 4- The development of supporting facilities to anticipate coastal flooding and tidal wave

28. Extreme waves and abrasion are one of the potential disasters. Abrasion is generally a type of low on site. Damage caused by abrasion through the process of time. Rising sea levels and weather anomalies will increase triggers for abrasion, such as strong wave energy. Repairing several locations of talud (wave walls) which are located along ± 500 M talud / wave walls 3 Countries are expected to reduce the risk of tidal disasters in 3 Negeri, the impact will be ± 800 lives in 3 Negeri that are potentially threatened by tidal waves . Besides protecting ± 1.6 KM of village roads along the sea coast.

Outcome : Disaster risk reduction such as damage to seaside village roads and saving of community houses on the coast, caused by tidal waves.

This project focuses on restoring the function and physical condition of ± 500 M embankment/Embankment structure in 3 Negeri, with targeted outcome of reducing potential risks from the occurrence of tidal waves in 3 Negeri, and impact of saving ± 800 lives in 3 Negeri who are potentially facing threats from the occurrence of tidal waves. In addition, it helps as well protect the ± 1.6 KM village road that lies along the seafront. Public Works Service will be involved in this project, from the consultation phase, survey implementation, and recommendation in relation to physical specification of the embankment which will be constructed, and the implementing contractor for the project. As for long-term maintenance after the project is completed, it will be the collective task of the community component and the local government component through its Public Works Service that holds the job, function, and responsibility in the construction and maintenance of the public infrastructure.

4.1. <u>Surveying damaged areas around the embankment</u>

Field survey to identify spots where damage in the embankment are located and to measure the total damage will be conducted together with the community involving the Public Works Service. The result of the survey generates the data for the length of embankment to be repaired. It is expected that the Public Works Services will help with

the preparation process of the development or at least willing to have a share in the area development. **The survey will be conducted in semester 2 (*Year 1*) of the project cycle.** The survey will be carried out together with the implementing Contractor, the Public Works Agency, and the public of the 3 Negeri. PMU will be responsible for conducting survey activities. Whereas technical implementers are carried out by Contractors. **Environmental impact surveys and studies (including consultations) are targeted to be completed by the end of semester 2 (*Year 1*)** of the project cycle.

4.2. Embankment (Talud) restoration

Restoring of embankment in 3 Negeri involves the community of the never itself in order to improve the wellbeing of its people. If the result of this survey shows a total of more than 500 M embankment area that requires restoration, it is expected that the Public Works Office could help restore the remaining embankment area that could not be covered by this project. Since the total length of the embankment that this project will restore is only around 500 M.

If the survey results show that the damage to the talud that needs to be repaired is more than 500 M, then it is expected that other stakholders can continue the restoration of the talud that has not been repaired. From the results of the identification of the actors, several stakholders who can be involved to continue the restoration of the talud are the Maluku Provincial Public Works Office, and the Maluku River Basin Office (Directorate General of Water Resources, Ministry of Public Works and Public Housing). **Talud restoration will take place in semesters 1 and 2 (*year 2*) of the project cycle**.

In implementing environmental preservation and management as the prerequisite for obtaining Business and/or Activity permit. will consider the applicable provisions related with the guidelines for constructing coastal protection structures in accordance with the Circular of the Minister of Public Works No. 07/SE/M/2010, in order to ensure that the construction of coastal protection structures adheres the applicable structural requirements and methods.

Every contractor and subcontractor, as well as any suppliers designated to perform the work must obtain any permits related with the work, such as heavy equipment transportation permit and operational permit for heavy equipment with axle load on public roads, according to Regulation No. 14/1992 on Roads and Government Regulation No. 41/1993 on Road Transportation. In project implementation will comply with the regulation about Workplace Safety and Health (Keselamatan dan kesehatan kerja or K3). Application of K3 management according to the Regulation of Minister of Labor No. 05/Men/1996 on Workplace Safety and Health Management System and Regulation No. 13/2003 on Employment, The Regulation of Minister of Public Works No. 09/PRT/M/2008 on the Guidelines for Construction K3 Management System for Public Works.

Because Talud is a public facility, the steps used to sustain the long-term care of talud are ensuring that the restored talud become part of the Public Works Department program and is included in the Maluku revenue and expenditure budget structure of the Maluku Province and the Maluku River Region Hall (Directorate General of Water Resources, Ministry of Public Works and Public Housing). To ensure post-project talud maintenance can be included in the regional budget, the government in 3 Negeri will propose this in the Provincial and Regency Regional Development Plan Deliberations. Because the budget mechanism for the development and or maintenance of public infrastructure must be proposed by the State Government to the Regional Government (Regency and Province). The involvement of the Public Works Agency from the early stages of the process of

repairing the talud will strengthen the Government's proposal to ensure that the post-project talud maintenance budget can be accommodated.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

29. As outline earlier in paragraph, the Central Maluku district is consists of small islands that are highly sensitive to the slightest ecological changes. As an archipelago, the ocean' s role is crucial; for both livelihoods and interlink. The high functions and roles of coastal and sea put the situations and conditions of the region profoundly affect living system. Weather and seasons are amo g the things that affect the wave height, strong current and wind speed - which eventually will affect the livelihood and the people mobility. Temprature rising of air and sea have caused coral bleaching and diminished growth. This project will contribute to efforts to strengthen the resilince and adaptation of the community in 3 negeri, both economic, social and environment.
30. The high level dependent on marine resources and capture fisheries is not followed by the ability to adapt to climate change such as extreme weather, tidal waves, and changes in migration patterns and fish circulation at the sea. This condition has an impact on the level on the fishermen’s income. The per capita income level of the fishermen in Leihitu District in 2017 is Rp. 18.180.805/year or equivalent to Rp. 1.515.067/month. The fishermen’s income value is lower that the Maluku Province Minimum Wage standard in the same year, which is Rp. 1.925.000/month. The vulnerability dimensions faced includelimited employment because tuna fishing is the main occupation of fishermen on the project site. Generally side activities carried out if not to sea are motorcyle taxis, farming, and trading. On one hand, marine aquaculture has not been maximally managed by the fishermen. Based on data from Central Maluku District Fisheries Office, the potential area of marine aquaculture reaches 2.612,3 Ha but only 78,7 Ha have been utilized.

31. Fisheries supporting facilities are very important, meanig that in the capture fishery system is maintaining tuna quality so that it meets the quality to be marked out of the region (regionally) and can be exported abroad. The limited supporting facilities are therefore also become a factor of fishermen’s vulnerability. In existing livelihood practices, the limitations are covered by the cold storage owned by collectors, which causes the tuna fish sales market to be monopolized by collectors. Tuna fishermen at the project site have been organized in fishermen groups under the leadership of collecting traders who are also capital credit providers. Institutions like this are suspected to hamper fishing business development, given that the control over the fishermen’s livelihood system is in the collectors traders and limits the freedom of the fishermen. The absence of financial instutions facilities also adds to the context of fishermen’s vulnerability because fishermen do not have savings so that business capital is continuously obtained by way of debt to the collectors.

32. The community realizes that capture fisheries work is work that requires physical excellence, it is not enough just knowledge and skills. Therefore, the use of capture fisheries workers only for men and aged under 50 years. As a result, many family members are unemployed and only become burden on the household. Apart from parents and children, the potential that is not exploited is women. By reason of tuna fishing business activities require great physical strength and endurance, women are

not involved in this business at all. Previously, women in the fisheries sector at the project site acted as intermediary traders, which in local language were called *jibu-jibu*. Since tuna become an export commodity, automatically the role of *jibu-jibu* gradually disappears because tuna is not sold for local consumption. This is of course a vulnerability factor because it ignores potential human resources such as women. Eventhough the population of women is more than men.

33. The involvement of women in every "project objective" is a priority so the gap between genders can be minimized or even no longer exists. The project will also strengthen the role of women's groups in the family household economy. Development of seaweed cultivation and processing of its derivative products and processing of fishery products are specifically intended for women's groups in the project site.The potential development of youth groups in the porject site receives special attention through coral reef rehabilitation activities and the development of the concept of ecotourism at the project site

34. The project also strengthens the community resilience in facing potential disasters due to the impact of tidal waves and abrasion through improvements in the infrastructure of the retaining wall (talut). Rehabilitation of coral reef not only aims to restore the ecological function of coral reefs but also reduces the pressure of underwater current to minimize the wave energy that goes to land / coastal areas. Thus, it will strengthen the resilience of the resident who live along the coast. The rehabilitated coral reefs will become a home for pelagic fish, so that the fishermen can still catch for consumption or commercial.

Table 14. Number of Beneficiaries (Direct and Indirect)

Output	Direct Beneficiaries	Indirect Beneficaris
COMPONENT 1		
1.1. There is a map for the new *fishing ground* distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar	1.800 Fisherman of Three Negeri	3.400 Fisherman of Leihitu Sub DIstrict
1.2. Rumpon Procurement/ Fish Aggregating Device (FAD)	150 Fisherman of Three Negeri	1800 Fisherman of Three Negeri
1.3. The Provision of Cold Storage in each Village/Negeri	150 Fisherman of Three Negeri	
1.4. Approximately 450 fishermen (150 fishermen in each village) have new knowledge which is more relevant to the climate change	150 Fisherman of Three Negeri	1800 Fisherman of Three Negeri Government : Marine and Fisheries Agency of Maluku Province and Central Maluku District program (Empowerment of Fisherman)
1.5. The establishment of fishermen'	225 Fisherman of Three Negeri (2 Groups of Fisherman in each	1800 Fisherman of Three Negeri Government : Marine and

groups which are able to cooperate with government offices, private parties, and non-governmental organizations in order to be able to access technology, group guidance and capitalization	Negeri)	Fisheries Agency of Maluku Province and Central Maluku District program (Empowerment of Fisherman)
COMPONENT 2		
2.1. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach	90 youth people (Man and Women) as project implementing	1800 Fisherman of Three Negeri (Potensial Fishing Ground Area) 3.208 Family of Three Negeri (Potential ecotourism) Government (Noted : The coral reef rehabilitation project will contribute to improving the ecosystem of coral reef in Leihitu district with 10 Ha or ± 18% of the damaged areas targeted)
2.2. Approximately 90 people (30 people in each village) have the knowledge on how to do rhabilitation, transplantation, maintenance, care, dan monitoring on coral reefs	90 youth people (Man and Women) as project implementing	
COMPONENT 3		
3.1. Aquaculture farming by constructing 9 floating fish ponds for shallow water fish cultivation (3 ponds for each village) each of which is to be managed by the groups (1 group = 20 people's)	180 aquaculture fishermen of Three Negeri	Government : Marine and Fisheries Agency of Maluku Province and Central Maluku District program (Empowerment of Fisherman)
3.2. Nine floating fish net ponds for the cultivation of sea weed (3 floating fish ponds for each village) each of which will be managed by the groups (1 group = 20 people's)	180 people (women Groups) of Three Negeri	180 house hould of Three Negeri Government : Marine and Fisheries Agency of Maluku Province and Central Maluku District program (Empowerment of Fisherman) and women's empowerment and child protection Agency
3.3	100 people (Women	Government : Marine and

100 women in the 3 villages/Negeri have the skills for processing the products of the fish and sea weed cultivation	Groups) of Three Negeri	Fisheries Agency of Maluku Province and Central Maluku District program (Empowerment of Fisherman) and women's empowerment and child protection Agency
COMPONENT 4		
Restoring Embankment structure that stretches (*talud*) ± 500 M long across Negeri Asilulu, Negeri Ureng, and Negeri Lima	± 600 families live along the coastline in Three Negeri	Government : Public Works Agency

Table 15. Projected income from project components (Family)/Month

Livelihood activities	Project Component	Project Time Frame			
		Baseline (IDR)	2020/2021 (IDR)	2021/2022 (IDR)	2022/2023 (IDR)
New Fishing Ground and Rumpon (FAD)	1 and 2	Rp. 460.000[21]	Rp. 644.000	Rp. 782.000	Rp. 874.000
Floating Net Cage	3	0	Rp. 750.000	Rp. 850.000	Rp. 1.200.000
Seaweed Cultivation	3	0	Rp. 702.000	Rp. 875.000	Rp. 1.300.000
Smoked Fish Production	3	Rp. 550.000	Rp. 735.000	Rp. 831.000	Rp. 940.000
Salted Fish Product	3	Rp. 435.000	Rp. 650.000	Rp. 745.000	Rp. 875.000
Other Sea Product	2&3	0	Rp. 635.000	Rp. 870.000	Rp. 1.150.000

35. All project activities have also been analyzed for the significance of potential impacts that may occur due to project interventions. The results of the analysis are then developed into a strategy for managing the project intervention known as the Environmental Social Management Plan (ESMP), which is a management preventive step in the process of incorporating the program into a region. The details of ESMP and Gender analysis are presented at table…… in this proposal. Programs under this project have followed the national and international law which is a prerequisite for the assessment of "Environmental and Social Impact Risk Principles"

[21] https://malukutengahkab.bps.go.id/statictable/2017/06/22/154/pendapatan-perkapita-nelayan-menurut-kecamatan-di-kabupaten-maluku-tengah-2014.html

Table 16. Expected Benefits Programme

Component	Output	Expected Benefits		
		Social	Economy	Environment
COMPONENT 1. Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change	1.1. There is a map for the new *fishing ground* distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar	The traditional season calendar (*Tanoar*)that has been used by the fishermen is no longer relevant to conditions at sea. Collector traders are actor that appear to be the main providers of knowledge in such conditions. As a consequence, the fishermen dependence on collecting traders becomes very strong, even the fishermen will only go to distant areas only if they get permission from the collectors. With this output, the fishermen will have season calendar guidelines and a new *fishing ground* area, thereby reducing dependence on collecting traders. Socially, the integration of traditional knowledge and modern technology, will renew the fishermen's knowledge of the traditional season calendar that has been used and renew the traditional fishing rules (Sasi Laut) which has been a reference for the fishing community at the project site.	This project will provide economic benefit to 1.800 fishermen in 3 Negeri. With the new catch season calendar and new *fishing ground* area, fish circulation and fish migration patterns can be identified to reduce the risks of inflating operational costs when going to sea up to Rp.300.000/month from fuel.	Maps of the distribution of new fishing grounds based on circulation and fish migration and renewable patterns, which utilize and update the fish calendar that facilitate utilization and affordability, will ensure sustainable management of marine resources (especially fishing), and avoid there is over fishing on the reef areas.
	1.2. Rumpon Procurement / Fish Aggregating Device (FAD)		Financially, this output will provide direct benefit for 1,800 fishermen in 3 Negeri. Rumpon procurement shall be an alternative for generating productive artificial fishing ground and offer peace of minds for fishermen in dire times.	

			From the baseline interview with fishermen in the project location, manufacturing cost to spend for a single fishing trip is IDR 800,000 and the ideal result is 150-250 kg tuna fish. By utilizing rumpon in the *fishing ground* area, fisherman's operational cost will reduce by 40-60% compared to when rumpon is not utilized as they have to search for and catch school of fish in the broader, deeper area of the ocean.	
	1.3. The provision of Cold Storage in each village	If the freshness of fish is maintained, it will strengthen the fishing groups position in negotiating the sale price of tuna.	So far, fishermen have been forced to sell the catch tuna to the closest collectors, both small-scale collectors and companies, because they cannot keep the catch longer. Under these conditions, fishermen are better off lowering the selling price to the nearest collectors who do have Cold Storage facilities rather than having to bear losses. The procurement of Cold Storage which serves to maintain the freshness of fish is expected to contribute to an increase in the selling value of fish catches of fishermen (especially tuna) up to IDR 12,000- up to IDR 20,000 / kg.	
	1.4. Approximately 450 fishermen (150 fishermen in each village) have new knowledge which is more	Mentoring aims to help fishermen groups improve their capacity and solidity in understanding and implementing climate change adaptation strategies, help to access fisheries technology, group consultation, access to capital, and to build a network with *stakeholders* -		

	relevant to the climate change	including government - for the institution sustainability post-project.		
	1.5. The establishment of fishermen' groups which are able to cooperate with government offices, private parties, and non-governmental organizations in order to be able to access technology, group guidance and capitalization	Strengthen the resilience and independence of fishing groups in solvinf problems faced as a result of climate change. Strengthen solidity and reduce dependence on collecting traders.	One indicator of the success of an institutional strengthening program is the ability of community groups to be able to access government, capital and market programs, if fishermen have a strong organization and networking, the indirect economic impact is easy access to financial assistance through cooperation with the private sector and banks (loan fund)	
COMPONENT 2. Coastal ecosystems repair for the resilience of communities and alternate location for source fishing	2.1. Rehabilitation of ± 10 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach		According to Constanza (2014), the value of coral reefs is 352 U.S. dollars per hectare per year. Meanwhile, Indonesia's coral reefs equal to Rp 45 trillion in value. Cesar (1996) estimates that a pristine coral reef with its Marine sanctuary can make $24,000 /km2/ year if sustainable fishing is made. Areas of damaged coral will earn only $6,000 /km/year, and areas with 75% of damaged yield only about $2,000/km2/year. If coral reefs had experienced more overfishing by quite a few fishermen, economic profits would plunge tremendously. With a 10 Ha of rehabilitation of coral reefs and sustainable fishing, thus contributing to the economic recovery of coral reefs that in rehabilitated areas would be	The total area of coral reefs in Central Maluku district was 6.754 Ha with an area of damaged coral reef ls of 649 Ha and around 56, 30 Ha those damaged area in Leihitu district which is as the project location. The coral reef rehabilitation project will contribute to improving the ecosystem of coral reef in Leihitu district with 10 Ha or ± 18% of the damaged areas targeted

			$3,520 per year. In addition, direct economic benefits in the implementation of this project are in the form of incentives in the form of wages which are calculated based on the number of transplanted coral seedlings planted and the creation of *artificial reefs* that will be carried out by the community (Youth Group) at the project site.	
	2.2. Approximately 90 people (30 people in each village Negeri) have the knowledge on how to do rehabilitation, transplantation, maintenance, care, and monitoring on coral reefs	Providing direct benefits for 90 young people in the form of knowledge about benefits of coral reefs in terms of the environment and economy, as well as knowledge to carry out the coral reefs rehabilitation.		
COMPONENT 3 Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas	3.1. Aquaculture farming by constructing 9 floating fish ponds for shallow water fish cultivation (3 ponds for each village) each of which is to be managed by the groups (1 group = 20 people's)		Direct impact on 180 fishermen in 3 Negeri.	
	3.2. Nine floating fish net	Alternative economic development	Seaweed needs have been growing year	

	ponds for the cultivation of sea weed (3 floating fish ponds for each village) each of which will be managed by the groups (1 group = 20 people's)	will create a new source of livelihood and income for the community, especially the group of women who so far have no room for participation in improving the level of the family's economy.	by year. This increase is due to demand for foreign and domestic markets. Indonesia's net profit between 2010 - 2014 rose from 3.92 million tons in 2010 to 1008 million tons in 2014 or increased by 27.29 percent per year. Although Indonesia's growth in seaweed production continues to increase, there are problems with crop management systems and the capacity of human resources. Therefore, the provision of manufacturing tools of seaweed coupled with increased capacity for cultivation and for the cultivation of seaweed, should increase the selling value of seaweed The potential income derived from seaweed harvest is IDR 42,500,000 / Harvest. In one year can reach 6 times the harvest (wet seaweed). if sold as dried seaweed if sold as dried seaweed is IDR 117.500,00. The calculation method uses Benefit Cost Ratio (BCR) = Total Income ÷ Total Cost x 100% And Operating Profit = Total Income – Total Cost	
	3.3. 100 women in the 3 villages have the skills for processing the products of the fish and sea weed cultivation			
COMPONENT 4. Development of supporting facilities to anticipate the impacts of coastal flooding and tidal	4. Restoring Embankment structure that stretches (*talud*) ± 500 M long across Negeri Asilulu,	The impact of this project is saving ± 600 lives in 3 Negeri that have the potential to face the threat of a tidal wave. In addition, this also helps protect the ± 1.6 KM village road located along the waterfront.		Talud which functions as a Embankment will reduce the risk of abrasion, sedimentation and landslides in the coastal area. The rehabilitation

waves	Negeri Ureng, and Negeri Lima			talud will reduces the impact intrusion into land, that resulting in street erosion and public facilities.

C. Describe or provide an analysis on cost effectiveness of the proposed project/program.

36. Based on the results of the study on the National Action Plan for Adaptation to Climate Change, overall Maluku Province is considered the most vulnerable region against the risk of coastal flooding, high waves and extreme weather.[22] The only way to address the impact of climate change is preparing anticipatory measures and increasing readiness to deal with the situations and impacts of climate change. Moreover, coastal areas are most vulnerable against such impacts and, therefore, the surrounding communities must be involved in climate change adaptation activities as they will be directly affected.
37. This project will prioritize programs that are urgently needed by the community in the project sites aimed at economic development, social capital, and environmental resilience, as well as address overall vulnerability against the impacts of climate change. The project activities address capture fisheries sector, maritime affairs, alternative economic development, and social resilience as interventions in dealing with climate change. Funding from this project will be effectively used with a budgeted structure of 20% to 30% for the development of soft skills and 70% to 80% for the physical development across the three Negeri. To increase the direct benefits of the program budget for the community, we strive to implement a labor-intensive development system with local communities in the three Negeri. Developmental materials obtained from local potentials will be prioritized for empowerment and the workers from the local communities will be prioritized for recruitment. In this project, government participation and support will prioritize the promotion of program sustainability, by integrating the project with village development programs.
38. Coral reef restoration in this project is deemed the top priority for rehabilitating underwater ecosystems, especially shallow marine waters, and will contribute to the capture fisheries sector and improve the economy of the community. There are considerations from costs of recovery and rediscovery of coral reef, which also offer economic benefits. The average cost for making Embankment is higher than the recovery of coral reefs, meaning that the coral reef restoration will better prevent the impacts of loss caused by waves.

Component 1

39. Will provide be beneficial for the community of the three Negeri, particularly fishermen groups. With the availability of the catching season calendar and the new *fishing ground*, the pattern of circulation and migration of fish can be identified, thus reducing the risks of swelling operational fishing costs. Increasing the capacity and readiness of fishermen to adapt to climate change and reinforcing the fishermen institutions will also better guarantee the continuity of sustainable capture fisheries.
40. Satellite Remote Sensing (SRS) technology combined with fish circulation analysis is an effective method and technology that can reach a wider area compared to other methods and technologies. Using this method, program outputs will be more optimal and cost-effective. For a more economical alternative, it can be conducted through Landsat ETM+ remote imaging method without clarifying the field condition. By only combining data utilizing existing traditional knowledge, the process can reduce project

[22] National Action Plan, Ministry of National Development Planning/National Development Planning Agency (BAPPENAS), 2014, p. 25

expenses by 30% from the proposed budget, but the prediction may be inaccurate as there is no recent data comparison available.

41. As for the FAD which will be built, there are two estimate options as an alternative to intervention which is to use fiber materials or with traditional FAD made of wood/bamboo and and tied drums. They both have the same function. Only for plastering resistant wood/bamboo materials, it will not last long for high seas 1 to 3 meters around high-water fishing grounds of 3 negeri, although at the cost, traditional sources will probably cost less than 25% of the budget. In addition, in terms of government standards, environmentally friendly FAD will be applied.

Picture 10. FAD Type

Modern FADS with fiber material

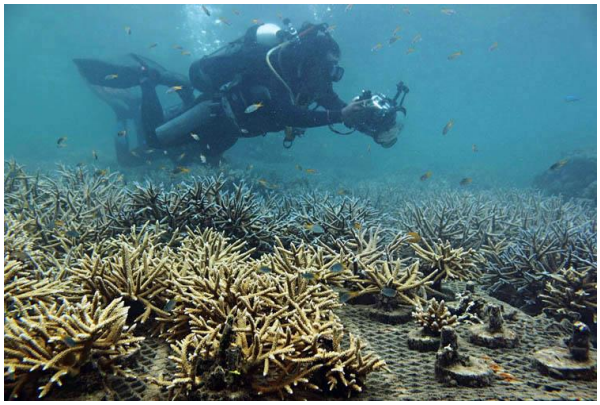
Traditional FADs with wood / bamboo and used drums material

Komponen 2

Project component 2 offers economic benefits to the community with new fishing grounds, as a form of adaptation to ecosystems in shallow marine waters. The problem regarding food vulnerability will be addressed with the availability of food sources originating from the sea that are resilient against the impacts of climate change. As for the long-term benefits, already-productive coral reefs can be further utilized as ecotourism that can add economic value to the community.

42. Coral reef restoration method through transplantation technique may be deemed effective and economical, as well as may require shorter period of time. In using this method, it must be ensured that the substrate used is resilient enough to withstand the undercurrent. To anticipate the condition, this program will duplicate the technique used by communities in other Negeri who have done the same. There are other methods that may work better, such as *Artificial Reef* or manmade coral reef, performed by submerging the artificial concrete for coral reefs to naturally grow on. This method has significantly more advantages, but requires 40% more cost.

Picture 11. Coral Reef Restoration Method



Sumber Gambar: Songulara.com

Coral reef restoration using substrate net transplantation method

Sumber Gambar: bussinessmirror.com

Coral reef restoration using artificial coral reef method (artificial reef)

Komponen 3

will lead to the development of new innovations in terms of creating alternative livelihoods that are climate resilient by implementing a number of strategies to increase income and skills in managing marine products.

43. The development of grouper pisciculture through kellong pool made from woods and bamboos, as well as drum as floater. These materials are considered economical in nature, though sometimes requiring extra maintenance. Woods and bamboos are, at the most, only able to last 2-3 years. There are several choices of modern materials available in the market, for example, fiber or High Density Polyethylene (HDPE) materials. The installation is also relatively easy and such materials are strong as well as limber, making it wave-resistant (2 meter high). HDPE materials can last until 20 to 50 years under regular maintenance. However, the cost for materials, installation and maintenance is at least 20% higher than the proposed budget.

Gambar 12. Type of Floating Cage

Picture Source : infoikan.com

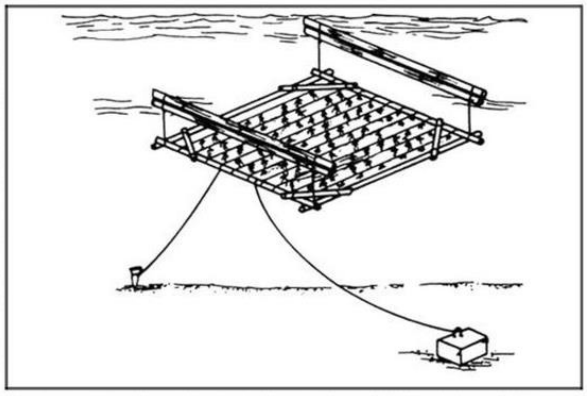
Examples of traditional floating net cage with bamboos and drums

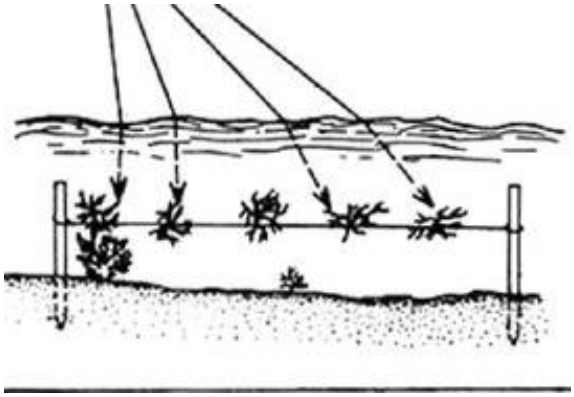
Picture Source : coolboxindonesia.com

Example of modern floating cube cage "*interlocking system*" made of HDPE materials

44. There is seaweed farming using floating raft technique. This technique is preferred as it is easy to apply for seaweed farming in waters with sufficient depth, such as in three Negeri, aside from its cost-efficient quality. There are other viable methods, such as off-bottom monoline or long line method, which is more location-dependent and can cost 25% more from the proposed budget. Such cost is more commonly used for installing anchor to knot the polyethylene rope where seaweed seed will be sown. Aside from problem with the cost, this technique is only considered suitable for waters at under 1.5 meter of depth.

Picture 13. Seaweed Cultivation Techniques





Seaweed cultivation using floating raft techniques *Budidaya rumput laut dengan teknik lepas dasar*

Component 4

Component 4 will be beneficial for the community, particularly those who live on the coastal area and the seafront. Construction of Embankment or wave-breaking walls is the fastest alternative to reduce the impact of climate change.

45. this program is repairing ± 500 M of damaged Embankment along the shoreline of 3 Negeri, which will only prioritize the most vulnerable points in order to support the community activities. The proposed budget will be adjusted according to the needs, as well as to educate the communities on how to protect Embankment and the coastal areas from waves by culturing coral reefs in front of Embankments with high risk of damages and by planting mangroves to prevent abrasion. As a comparison, there are several techniques commonly utilized to prevent high tides from damaging Embankments. For instance, it can done by installing tetrapod[23] in front of Embankment, which cost 50% more than the proposed budget.

The challenges encountered in the field are (1) the lack of public awareness to safeguard the sea as a sustainable resource, (2) the lack of knowledge on the management and utilization of existing resources, (3) limitations on equipment and technology used by fishermen that affect the expected yield, (4) the community's ignorance on the impacts of climate change which will make it difficult in identifying problems occurring in the field.

[23] Tetrapod is a type of structure utilized in coastal engineering in order to prevent erosion caused by weather or shoreline changes, especially for erecting coastal structures, such as seawall and breakwater.

Table 17. Summary of Project Costs and Benefits

Component	Interventions	Activities	Effectiveness	Socio-economic benefits during and after the project	Budget
Component 1	**Proposed Intervention**	- Generate a map of distribution points for new fishing areas based on circulation patterns and fish migration patterns and fish season calendars, with Satellite Remote Sensing (SRS) technology and fish circulation analysis methods.	Very effective because the results of SRS satelite data extraction will be validated with the results of field research and catches, so that a good level of accuracy can be identified as a consideration for laying down the FADs.	The social benefits of having a group of fishermen formed by training and institutional strengthening will form the fishermen group more ready to face the challenges of climate change, compared to individual fishermen. FADs will provide direct economic impact by reducing operational fishermen by 50% and catches up to 75%. Likewise with the presence of the cold storage will give fishermen the opportunity to get the best price when marketed.	**$231,545.00**
		- Procurement of FADs - *cold storage*	FADs and cold storage are very significant components supporting the process of post-fishing to the market.		
	Alternatif Intervention	- Remote sensing Landsat ETM+ By combining existing traditional knowledge.	Remote sensing Landsat ETM+ is less effective because it is less accurate and highly dependent on the sensor signal obtained. And comparative data is traditional knowledge.		**$204,358.20**

		Utilize the detected fishing ground and equip fishermen with sendor fish finder	Sea conditions in the Seram and Banda sea are short stopover for pelagic and demersal fish, so fish will remain very limited in the detected fishing ground zones.		
		Blue Machine Technology (BMT) equipment by UB's Fisheries and Maritime Sciences Faculty (FPIK-UB).	This tool is very effective for freezing fish in a short time, can kill the bacteria of a fish by 97.125 percent, preserving fish for a long time, saving the use of ice blocks. It's just that it requires quite large electric power in its operation		
Component 2	**Proposed Intervention**	- Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach	Rehabilitation of coral reefs using artificial reef and transplant methods will strengthen the success rate of coral reef growth. And the first time artifical concrete is installed directly can be used by fish as shelter and spawning.	With this project the rehabilitation process will be fast and can be seen directly its effect on the improvement coastal ecosystems. Increasing reef fish habitat will have an economic impact on fishermen families at least 30% if the project is successful and has the support of the government and stakeholders especially when developed after project. Public awarenessof the economic potential if the coastal ecosystem is maintained will trigger awareness of maintaining and caring for coral reefs.	**$134,123.00**

		- About 90 young people (30 people from each Negeri) knows how to do transplantation, maintenance, care and monitoring of coral reefs	Training on coral reef conservation will increase awareness and care for the environment.		
	Alternative Intervention	- Coral Reefs Transplantation	The recovery method of coral reefs by transplantation simplifies the process but very little growth development and takes a long time and strict maintenance. Although this method is cheaper, it will require a lot of transplanted seedlings which make it unfriendly to coral reefs that are still good.		**$191,682.83**
		- Mangrove Rehabilitation	The current condition of mangroves and seagrass beds in 3 Negeri has been lost		
		- Seagrass Beds Rehabilitation			

			due to abrasion and sand sediment covered by the Way Ela flood disaster. It takes a lot funds to restore both of them.		
Component 3	**Proposed Intervention**	- Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each Negeri) which for every floating net cage, it is managed by a group (1 group = 20 households)	Many potentials of high economic value fish that can be cultivated with floating net cages will increase the role of aquaculture fish farmers where the role of women will be dominant. This is a solution to social inequality where the role of men is more to become fishermen. With the existence of KJA cultivation, the jibu-jibu group will increasingly get a role in supporting the citizens economy.		**$296,714.00**
		- Nine floating rafts	Seaweed cultivation		

		used to cultivate seaweeds (3 rafts for each Negeri) which for every raft, it is managed by a group (1 group = 20 households)	will be very effective in coastal locations that are not affected by the west and east winds as well as in the islands across Asilulu and Ureng due to the calm sea conditions, so that the harvest period will not be disturbed.		
		- 100 women in 3 Negeri have the skill required to process the result of fish culture and seaweed cultivation (seaweed processing machine) -			
	Alternative Interventions	Training on processing fishery products	During this time there are several processed products that have been marketed by jibu jibu such as salted fish, smoked fish, shredded fish and fish meatballs, but equipment constraints and limited knoledge to increase the		**$142,343.28**

			economic value of the product are still lacking.		
		- Empowerment of jibu jibu			
Component 4	**Proposed Intervention**	- Embankment (*Talud*) Restoration	Enough to hold tidal water entering the settlement and the road. Very strong to break high waves, but does not prevent tidal water from entering when sea level rises. According to project needs, although high levels of supervision and maintenance are needed. As an alternative to anchoring waves and abrasion.		**$ 141,238.00**
	Alternative Interventions	Greening coastal areas with endemic plants to reduce abrasion, such as bintangor, mangrove, ketapang trees	Very strong to break high waves and reduce abrasion, but does not prevent tidal water from entering when sea level rises.		**$233,652.99**

	Alternative Interventions	Tetrapod Embankment	Will be very effective withstand high waves. however, the cost is very expensive		

D. Project consistency with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

46. This project will always be synergized with the National Action Plan for Climate Change Adaptation (RAN-API) which has been designated by the National Development Planning Board (Bappenas) as a part of Indonesian national development framework applicable to the *climate proof/resilient development* concept. Project to be implemented in the project site will be integrated with the climate change and sustainable development adaptation *roadmap* that the Government of Maluku Province has owned, and during program implementation collaboration with the Local Government will always be done, particularly with the Regional Development Planning Board, and the Maritime Affairs and Fisheries Office of Maluku Province and Central Maluku Regency. Coordination and support for this program plan can be found in letter of support of the Maritime Affairs and Fisheries Office of Maluku Province and Central Maluku Regency (enclosed).
47. As for the directions of this action plan are 1) Adaptation of the strategy, policy, management, technology, and behavior to reduce (negative) impacts of climate change to its minimum level, and when possible utilize and maximize its positive impacts. 2) Efforts to reduce impacts (consequences) of climate change, both directly and indirectly, continuously or discontinuously or permanently, as well as its impacts by degree24. To achieve this objective, this program will always be synergized with the climate change and sustainable development adaptation roadmap that the Government of Maluku Province has owned, and RAN-API which has been designated by the National Development Planning Board (Bappenas). In its implementation, the program will always collaborate with the Local Government, particularly with the Regional Development Planning Board, and the Maritime Affairs and Fisheries Office of Maluku Province and Central Maluku Regency. Coordination and support for this program plan can be found in letter of support of the Maritime Affairs and Fisheries Office of Maluku Province and Central Maluku Regency (enclosed), and support from three Negeri Government Administration in the project site (enclosed).
48. **Ecological Resilience:** In ecological resilience sector within the national action plan, Bappenas sets forth its targets, which are, 1) Reducing the size of damaged natural ecosystem in land and sea caused by extreme climate and climate change, 2) Increasing the quality and quantity of coral reefs, 3) Reducing degree of endangerment faced by key species as the result of climate change, 4) Enhancing the ecosystem resilience system. The Ministry of Maritime Affairs and Fisheries has a strategic plan for rehabilitation of coastal areas All of these targets are outlined as outputs in this project activities, there will be 12 ha coral reefs to be restored and, further, this project will form 3 care-for-coral reefs communities equipped with organizational knowledge and building. With the recovery of the coastal ecosystem, there is a high possibility for sustainability for the key species, in which case, also supports the livelihood of the fishers as well.
49. **Economic Security and Food Security:** the targets of the government in food security sector is to reduce food production loss due to extreme climate and climate change, to develop areas where new sources of food production are found in particular areas with low climate risks and minimum environmental impacts (low

[24] Bappenas, *the National Action Plan for Climate Change Adaptation (RAN-API) the Ministry of National Development Planning/National Development Planning Board (BAPPENAS)*, 2014. p. 12

emission), and to develop food security system for farmers/fishers and community (micro) by promoting healthy and nutrition-balanced dietary pattern, and to achieve food diversification at the optimal level. Along with this project, various systems and technologies in capture fisheries, cultivation, and aquaculture management, seaweeds, and its derivative products are to be developed, which, aside from giving beneficial values, also provides economic values to foods. Better product diversification from the fishermen catch will strengthen their food security in any climate condition, and it also serves a true realization on adaptation to environment.

50. **Infrastructure Resilience:** For infrastructure resilience, the targets the government set in this national action plan are 1) to develop an infrastructure resilience concept which is adaptive to climate change, 2) to build facilities with adaptability to climate change, 3) to provide and adapt infrastructure that has direct impact to the health of the community with high accessibility level, particularly for the community group who are both vulnerable and invulnerable to climate change, 4) to manage the integration of infrastructure layout with spatial planning within the concept of sustainable development. In this project, the output also covers some objectives, some of them are the Embankment construction and additional supporting facility for the fishermen, such as the cold storage. Ministry of Public Works and the Ministry of Maritime Affairs and Fisheries has strategic plan from is the development of facilities and infrastructure disaster mitigation and climate change in coastal areas The Embankment construction planned in this project is not relatively big. Nevertheless, this project prioritizes on areas that will be directly affected by bad climate in some villages, such as Batu Lubang. This project will certainly require the support of the government in various manners to ensure maximum achievement.
51. **Fishery Sector:** In fishery sector, the government mission is to have fishery resources that are resilient to risks of climate change and have the capability of continually adapt to and shall become the alternative livelihood for the community, the productivity and diversity of the water ecosystem, and the fishery sector in general. This project intervention is consistent with the government objective of introducing fish culture technology using aquaculture system, and increasing *sustainable* productivity of ecosystem diversity.

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E. Project's relevance to meet national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund

National Standards

52. This project will follow the technical standards based on the direction and policy in the National Action Plan for Climate Change which has been designated by the National Development Planning Board (Bappenas), the climate change and sustainable development adaptation *roadmap* owned by the Government of Maluku Province, and the local and national policies, both existing and future policies. The implementation of this project will involve individuals who are knowledgeable and have expertise in their fields (*Experts*) to ensure the success of the activities being proposed. These experts will attend all activities from the beginning until the completion of the project which will be run by the contractor and the community

Table 18. National Standard Guidline/Relevant National Laws

Program	National Technical Standard
Project Component 1:	- As per Constitution of Republic of Indonesia No. 32/2009, the utilization of natural resources must be in balance with environmental function. - UU No. 31/2004 about Fisheries. UU No. 45/2009 about Fisheries. Fisheries Act, article 7 and 9 dictates the Ministry of Marine Affairs and Fisheries to regulate the following: - type, amount, fishing tool size (Article 7, item f); type, amount, size, and fishing equipment placement (Article 7, item g); - area, lane, and time or fishing season (Article 7, item h); - terms or standard operation procedures for fishing (Article 7, item i); - weight or minimum weight of certain type of catchable fish (Article 7, item q); - condition of fishing equipment and/or fishing aid that is able to disrupt and damage the continuity of fish cultivation (Article 9, paragraph (2). - Ministerial Decree KP No. 06/MEN/2010 about Fishing Equipment in Indonesian Fishing Waters. - Law of Ministry of Marine Affairs and Fisheries No. 47/Permen-Kp/2016 Regarding the Utilization of Water Conservation Area - Law of Ministry of Marine Affairs and Fisheries No 26/PERMEN-KP/2014 of FADs
Project Component 2	- The Law of Ministry of Marine Affairs and Fisheries No. 6/Permen-Kp/2017 Regarding the Organization and Working Procedure of Marine Affairs and Fisheries - As per Constitution of Republic of Indonesia No. 32/2009, the utilization of natural resources must be in balance with environmental function. - Ministerial Decree No. KEP.38/MEN/2004 Regarding General Guide on Coral Reef Management. - Coral Reef Rehabilitation Guidelines: the Directorate Conservation and Marine Ecosystem. Directorate General of Nautical Management. Ministry of Marine Affairs and Fishery, 2015. - UU No. 31/ 2004 on Fisheries. UU No. 45/ 2009 on Fisheries, article 7, item N, P, and R.
Project Component 3	- The Law of Ministry of Marine Affairs and Fisheries No. 6/Permen-Kp/2017 Regarding Organization and Working Procedure of Marine Affairs and Fisheries - UU No. 45/2009 on Fisheries, point 22 article 46 Paragraph (1) - Components to complete prior to production process (fishing/cultivating). Several steps to follow in pre-production are as follows: No Step Pre-production Fishing Step Pre-production Fish Cultivation 1 Fishing Business Permit (SIUP) (article 26 UU Fishery) Fishery Business Permit (SIUP) (article 26 UU Fishery) 2 Fishing Allocation Investment (APIPM), etc. (article 5 paragraph 2 PP Fishing Business) environment permit through AMDAL Document/UKL-UPL (article 22-41 UU Environment Safety and Management) 3 Fishing Permit (SIPI) (article 27 UU Fishery) conducting risk-free environmental analysis (article 47 UU Environment Safety and Management) 4 Fishing Vessel Permit (SIKPI) (article 28 UU Fishery) establishing open-area fish

	cultivation on conservation area (article 32 PP Fish Source Conservation) 5 environmental permit through AMDAL Document/UKL-UPL (article 22-41 UU Environmental Safety and Management) 6 conducting risk-free environmental analysis (article 47 UU Environment Safety and Management) 7 establishing open-area fish cultivation on conservation area (article 7, 30, 31, 32 PP Fish Source Conservation). - 12 article 2-3 UU No. 45 year 2009 states that it is forbidden to perform fish cultivation, be it genetically engineered or not, which is potentially harmful on fish resources, fishing grounds and/or human health. Also, the government strictly forbids the use of drugs in fish cultivation which may endanger fish resources, environment and health.
	- The Law of Ministry of Marine Affairs and Fishery No. PER.01/MEN/2007 on Quality Control and Safety of Fishing Yields. - Decree of Ministry of Marine Affairs and Fisheries No. KEP. 07/MEN/2004 on Fish Seeds Acquisition and Distribution. - Decree of Ministry of Marine Affairs and Fisheries No. KEP.02/MEN/2007 on Suitable Fish Breeding Method. - Decree of Ministry of Agriculture No. 26/1999 on National Seeds Development. - Indonesian National Standard SNI 7672-2011 (seaweed seed colony) SNI 7673.1-2011 (LK-off-bottom monoline method) SNI 7673.3-2011 (seaweed seed production) SNI 7673.2-2011-produksi LK-met.longline
Project Component 4	This project follows national standard which is stipulated in the Circular Letter of the Ministry of Public Works No. 07/SE/M/2010 Regarding Lifeguard Construction Guidelines.

53. For activities related to FADs, FNCs, coral reef restoration and restoration of the sea walls (Talud), The project will be ensure compliance with national technical standards.

FADs

Technical standards for FADs installation comply to regulation Minister of Marine and Fisheries of the Republic of Indonesia No. 26/Permen-KP/2014 concerning of FADs

Table 19. Technical Standars for FADs Installation

Stages	Content of Regulation	Implementation
Perizinan	a. Installation of FAD in the territory of the Republic of Indonesia fisheries (WPP-NRI) must have a FAD installation permit (SIPR). b. Every fishing vessel operating a FADs must carry the original SIPR. c. The SIPR is issued by the Governor zone II fishing areas and the Regent	The project was consulted with the Marine and Fisheries Agency for the intallation of FADs and licensing process and fulfillment of the requirements to be carried out at the beginning of the project under the supervision of the Fisheries and Marine Agency

	for the zone I fishing areas.	Provincial and Regency . The Fishermen Group will prepare the administrative requirements needed to obtain a FADs Installation License (SIPR) consisting of: 1. Photocopy Fisheries Business Permit (SIUP) and Photocopy of Fishing Permit (SIPI) according to regulations Minister of Maritime Affairs and Fisheries of the Republic of Indonesia No.11/Permen-KP/2016 concerning Minimum Service Standards for Fishing Boat License 2. Photocopy of person in charge ID card 3. Photocopy Tax ID Number 4. FADs layout design 5. Date and time of FADs installation; 6. Number of FADs; 7. Coordinate (latitude and longitude) location of each FAD installation; 8. Estimated time usage frequency; 9. Estimated species and number of fish cought (kg) at each fishing operation
Specification Requirements	a. Buoys are installed floating on the surface of teh sea b. The attractor (decoy) must use natural materials that can be biodegradable c. Mooring ropes are required to use materials that are not easily damaged and are strong against currents. d. The ballast is required to have sufficient sinking power, so that it is able to withstand the load of the entire series of FADs to remain in position. e. Specs of FADs that do not meet the above criteria will be subject to SIPR revocation sanctions.	The type of FADs that will be used are anchored FADs. This tool consists of a buoy, a fish collector (attractor), and an anchor (ballast). For attractors, use coconut leaves or palm leaves embedded in depths of 10-30 meters. While ballast can be in the form of a series of used 200liter capacity oil drums totaling 4-6 pieces filled with cement. Anchor FADs can be installed in sea areas that have a depth of 2.000-4.000 meters.
Fishing gear that	a. Trawl a small pelagic ring with one	The fishing gear to be used is in the

may be used	ship; b. Large pelagic trawl with one ship; c. Large trawl pelagic group ring; d. Fishing line; and e. Fishing rod.	form of a large pelagic ring trawler with a single boat and a large pelagic group trawl or an environmentally friendly traditional fishing gear.
Installation Requirements	a. In accordance with the fishing area as stated in the SIPI installation provisions; b. Not disrupt shipping lines; c. Not installed in Indonesia archipelagic sea lanes; d. The distance between one and the FAD is not less than 10 (ten) nautical miles; e. Not installed by mounting the fence effect (*zig zag*). f. Installation of FADs must avoid the capture of unwanted bycatch.	The government, in this case the Provincial and District DKP (Fisheries and Marine Agency), will be involved from planning until to project implementation. The FAD will be installed waters 2 nautical miles up to 4 nautical miles, measured from coastline at the lowest tide point. To avoid the capture of unwanted bycatches, the structure of FADs on the surface and under water is prohibitted from being closed using net sheet.

FNC Standart

Technical standards for FNC comply to regulation Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 12/Permen-KP/2007 concerning licensing in fish cultivation in the territory of the Republic of Indonesia fisheries management,

Table 20 . Technical Standars Fish Cultivation with FNC

Regulation	Content of Regulation	Implementation
Licensing	Ministerial Regulation No.12/2007 regulates business licensing in fish cultivation in the territory of the Republic of Indonesia fisheries management. Provisions regarding procedure for issuing SIUP and SIKPI in the fish cultivation as referred to are regulated by the Governor or Regent/Mayor in accordance with their authority by reffering to the procedure for issuing permits in the Ministerial Regulation.	Fishery Business Permit (SIUP) that will be required in this project includes the hndling of yield, processing, storage, cooling, and/or preservation of fish cultivated. And this cultivation business will be carried out in an integrated manner starting from preproduction to marketing.
National Standard in Fisheries Sector	Referring to the Republic of Indonesia's National Standarization Agency Regulation No.14 / 2019.	This regulation will be project reference related to good ways of fish cultivation ranging from hatcheries, enlargement to meeting market needs.
Technical Standard	In PP No.28 year 2017 concerning fish	Article 10, Every person who conducts

	cultivation	fish cultivation in utilizing water and land is required. As for following the technical standards of water and land. Water and land technical standards as referred to in clause (1) include: a) water volume and/or discharge; b) criteria for technical needs and food safety; and c) water surface area used.
Environmental Control	Referring to Government Regulation of the Republic of Indonesia No.28 year 2017 concerning fish cultivation	The project will make regulation as a guideline related to the preservation of Fish Resources and the Environment, governing the provisions of fish feed, controlling drugs and fertilizers, as well as controlling residues and risk of disease.
Guidance and Monitoring	Government Regulation of the Republic of Indonesia No.28 year 2017 concerning fish cultivation. Guidance and monitoring as reffered to in clause (1) shall be carried out on: a. the procedures for utilization of water an fish cultivation land; b. utilization and preservation of germ plasm related to fish resources; c. facilities and infrastructure for fish cultivation; d. quality control of fish cultivation; e. management of fish healt and environment; and f. fish cultivation business.	In this case the project will involve DKP in terms of guidance and monitoring and ensuring that aquaculture group that have been formed, sign the cooperation in coaching and monitoring.

EMBANKMENT (TALUD) Restoration

Some provisions regarding talud construction based on the Circular of the Ministry of Public Works of the Republic of Indonesia Number 07/SE/M/2010 concerning the Enactment of Guidelines for the Implementation of Construction of Coastal Safeguards.

Table 21. Technical Standars Embankment (Talud) Restoration)

Regulation	Content of Regulation	In Project Implementation
Licensing	1) Permit for the use and utilization of natural resource, which is extraction of minig materials and quarry mining; 2) Permit for transportation with heavy equipment and operating permit for heavy equipment with axle pressure above the public road class, in accordance with the Law (UU) number 14 year 1992 concerning Roads and PP number 41 year 1993 concerning Road Transportation, 3) Permit for sea transportation; 4) Permit to procure, utilize, store and destroy explosive materials; and 5) Permit for installation and supervision of electrical installations at work site.	Permission to use and utilize natural resources, in this case is rocks, sand and coral beaches for construction materials is needed at the initial stage of the project. Likewise with the heavy equipment transportation permit and operating permit.
Implementation Process	The process of implementing the construction of coastal safeguards includes pre-preparatory, preparation for implementation, implementation, submission I, maintenance period, and submission II, in accordance with Decree of the Minister of Settlement and Infrastructure Region, Number 349/KPTS/M/2004 concerning Guidelines for the implementation of construction service contract (chartering).	In this case the project implementer is the contractor under the supervision of the District Public Works Department.
Occupational Safety and Health	Occupational safety and health (K3) in the field is the responsibilty of the provider in accordance with the provisions stipulated in the contract document and must apply K3 management in accordance with the Minister of Manpower Regulation No.5/Men/1996 concerning the Occupational Safety and Health Management System and Law (UU) No.13 year 2003 concerning Manpower, Permen PU No.09/PRT/M/2008 concerning Guidelines for K3 Management Systems for Construction in the Field of Public Works, which cover methods and security arrangements.	At the time of the project method of protection to prevent or reduce work accidents was applied to work, people and the tools and materials used, such as the availability of extinguishers, helmet safety clothing, gloves and boots, and buoys if needed. As for the security in the project site, signs and boundaries will be installed, as well as identification for workers and are not permitted to enter the work area except the project officer.
Insurance	Insurance/loss insurance from the time commencement of work is carried out until the end of maintenance period must be provided by the service provider, on	In this project insurance will be provided by the contractor covering all items that are at high risk of accodental work implementation, damages, loss

	behalf of the service user and the service provider which includes project equipment, labor, and building protection.	and other risks that can not be suspected as well as personnel and workers involved in carrying out the work; third parties as a result of an accident at work; protection against building failures in accordance with the provisions of Law No.18 year 1999 concerning Construction Services.
Joint Examination	The joint examination is carried out as follows: a) initial joint examination (initial *mutual check*) b) joint monthly examination (monthly *mutual check*) c) joint final examination (final *mutual check)* d) results of joint final inspection	a) initial examination to ensure the workmanship is in accordance with agreed technical plans. b) monthly checks to monitor progress. c) final examination to find out the work volume that has been carried out to also ensure deficiencies or additional work. d) the examination results carried out to make a post-discharge picture.
Maintenance Period	Service providers remain responsible for maintenance and repairs that must be carried out for a minimum of 6 (six) months at the directors orders, after the first submission in accordance with the provisions in the employment contract.	a) service providers must always monitor damages that occur during the maintenance period; b) the damages that occur due to imperfect implementation of work or the use of building materials whose quality is not in accordance with the requirements must be repaired and is the responsibility of the service provider; c) damages that occur outside of the things mentioned above such as design errors, natural disasters and extraordinary events are the responsibility of the service user; and d) parts of work that have been approved and submitted to the service user for immediate use before the entire work is completed and submitted, the maintenance period is calculated from the time the sections have been received by the service user and set forth in the minutes agreed by both parties.
Final Submission of Work	The final submission of work is received by the service user after the service provider carries out the obligation during maintenance period in accordance with contract documents and comes with an official report.	The final submission will be reviewed together and handover minutes will be made.

Project 4 components aim to repair the existing seawall, which is damaged due to the impacts of heavy tides and abrasion, as this has been the focus of the previous Environmental Impact Assessments (AMDAL). However, if it is deemed necessary to conduct reassessment, project organizer will apply for AMDAL Business and/or Activity Permit or Environmental Management Plan and Environmental Observation Plan (UKL-UPL). The Scope of Government Regulation for Maritime Buildings and Structures are:

a. the types and criteria for Maritime Buildings and Structures;
b. the requirements and mechanism for erecting and/or constructing Maritime Buildings and Structures;
c. the procedures for dismantling and/or Maritime Buildings and Structures;
d. monitoring and evaluation procedures.

In implementing environmental preservation and management as the prerequisite for obtaining Business and/or Activity permit. will consider the applicable provisions related with the guidelines for constructing coastal protection structures in accordance with the Circular of the Minister of Public Works No. 07/SE/M/2010, in order to ensure that the construction of coastal protection structures adheres the applicable structural requirements and methods.

Every contractor and subcontractor, as well as any suppliers designated to perform the work must obtain any permits related with the work, such as heavy equipment transportation permit and operational permit for heavy equipment with axle load on public roads, according to Regulation No. 14/1992 on Roads and Government Regulation No. 41/1993 on Road Transportation. In project implementation will comply with the regulation about Workplace Safety and Health (Keselamatan dan kesehatan kerja or K3). Application of K3 management according to the Regulation of Minister of Labor No. 05/Men/1996 on Workplace Safety and Health Management System and Regulation No. 13/2003 on Employment, The Regulation of Minister of Public Works No. 09/PRT/M/2008 on the Guidelines for Construction K3 Management System for Public Works

Environmental and Social Policy of the Adaptation Fund

54. This project implementation is committed to all environmental and social policy and regulation of the Adaptation Fund. Before implementing the project's activities, a process of identifying environmental risks and social risks will be carried out. Every risk will be identified in the beginning to prevent and/or minimize potential issues that may arise during project implementation. In addition to it, throughout project implementation a plan will be mapped out to prevent and/or minimize potential issues that may arise. There will be a mechanism to manage the occurring risks. Project implementation will comply with the national and international laws.
55. This project will be implemented by involving all communities in three Negeri. Particularly for the fishermen community, as they will actively involve in improving their sailing knowledge. Additionally, full participation of the youth community is also promoted to ensure the success of restoring the marine ecosystem, in which case, it will ultimately support other activities. For women community, the activity is aimed to develop an alternative economy program, which will be executed in three Negeri. Women community is most catered to in this project since they have the

highest vulnerability level. All results achieved from this activity can later be experienced by all communities in three Negeri and they can finally adapt to any risks emerging from climate change.

F. Describe if there is duplication of project / programme with other funding sources, if any

56. At present, no similar program / project in the project location will be developed in this proposal. However, the HAI partner (Tifa Institute Tifa Damai Maluku) as the main partner in the implementation of this program has done a lot of work to empower coastal communities in Central Maluku Regency in the form of policies on management of marine and coastal resources based on adat and local wisdom (marine SASI), including how to improve the economy of coastal communities in fishery and non-fishery sectors.. several similar projects that have been carried out in other locations and will be duplicated in this AF project and take lessons from the best practices are as follows:

Fishing Ground

Project	Mapping of Fishing Ground Location and Fishing Utility Status in Selat Madura
Project Location	Selat Madura
Project Date	2008 – 2009
Committee	Teaching Staff of Marine Study Program, Trunojoyo University and
Lesson	The goal of this project is to find fishing ground quality mapping to predict fishing ground, determine fishing ground mapping from water quality parameter, test fishing ground model requirements, and analyze catch per unit effort (CpUE) as well the status of fisheries utility in Selat Madura. This project used interpolation analysis method on combinations of satellite imaging, field, and secondary data in order to obtain new data in the form of fish population, potential maps, and fishing grounds location.
To be Adopted	The comparing data method between satelite data and field data will be adopted in this project, to obtain concrete data related to the sea and coastal potential of the 3 Negeri.

Coral Reef

Project	**Coral Reef Rehabilitation in Pulau Sangiang**
Project Location	Pulau Sangiang, Desa Cikoneng, Kecamatan Anyer, Kabupaten Serang, Provinsi Banten, Indonesia
Project Date	2017 – 2018
Committee	Ltd. Asahimas Chemicals, KEHATI Foundation, TERANGI Foundation
Lesson	In the project location, coral reef has undergone *bleaching* due to environmental change, according to *baseline* survey. KEHATI and Asahina Ltd. have found several cases of sedimentation, trash deposit in the deeper base of the Island, which are suspected to have happened from sedimentation, waste disposal, and anchors disposal. Dead and hardened coral reef, as well as stressed coral reef, are also found in many locations. Coral reef transplantation is one of methods for recovering the coral reef ecosystem in Pulau Sangiang, which involves local population in monitoring and

	preserving coral reef and island ecosystem. This project invites various business parties to help preserve ecosystem.
To be Adopted	Community-based coral reef rehabilitation is to protect and preserve ecosystem area or coral reefs habitats so that the biodiversity of the ecosystem or habitat can be protected and preserved from taking or destroying activities.The strategy for community involvement since the beginning of the nursery, planting and maintenance of coral reefs is very good to be adopted because in addition to having postive impact on the environment it will also shape the community's awareness to protect it because of a sense of ownership. As for the coral reef rehabilitation method itself, this project will integrate transplantation and *artificial reef* methods.Coral reefs management at the project site will use comanagement concept, which is to develop cooperative relations, communications, to partnership relations with the Government, NGOs and private parties

Floating Raft

Project	**Mitigation and Climate Changes Adaptation**
Project Location	Desa Tarantang , Kabupaten Kotawaringin Barat, Provinsi Kalimantan Tengah
Project Date	2017 – 2018
Committee	*Indonesia Climate Change Trust Fund(ICCTF) and Indonesian Orangutan Foundation (Yayorin)*
Lesson	The program holds the missions to respond to climate change by helping impoverished fishermen who live in surrounding floodplain adapt to the climate change. Keramba, which is made from nets and floating bamboos, are filled with fish seeds to be used in this project.
To be Adopted	The adaptation strategy from capture fisheries to aquaculture with Floating Raft will be adopted in this project, but the KJA technology used is adapted to the existing water conditions at the project site.

Seaweed

Project	**CSR Pupuk Kalimantan Timur (PKT)**
Project Location	Kampung Malahing, RT 30 Kelurahan Tanjung Laut Indah, Kecamatan Bontang Selatan, Kota Bontang
Project Date	2017 – 2018
Committee	Pupuk Kalimantan Timur (PKT) and Malahing Villagers
Lesson	Around 50 to 60 heads of households were allotted financial and skill aids from CSR PKT in order to foster seaweed cultivation business in Malahing community. Now, seaweed has turned into villager's main income. Fishermen used to catch fish and sea cucumbers in this area. Seaweed species suitable for Bontang's waterlogged area is Tonii *(Eucheuma Cotonii)*. It is whitish in color, transparent, and has chewy texture. Malahing seaweed can be processed into seven types of seaweed derivative products, such as seaweed stick, amplang, kembang goyang, ceker *snack*paper, cheese pilus and syrup.

	These are done by PKT development partner, Joint Business Group (Kube) Sukses Mandiri.
To Be Adopted	In this project, the Tonii (*Eucheuma Cotonii*) seaweed type will be adopted because it can be made into many preparations so that it will correlate with the project target to create many product variants that can be produced by women's business group. Besides that the cultivation and maintenance methods are quite simple and easy to apply.

Embankment

Project	**Village Innovation Program**
Project Location	Desa Telaga Biru di Kecamatan Tanjung Bumi, Kabupaten Bangkalan, Madura, Jawa Timur
Project Date	2017 – 2018
Committee	Dirjen PPMD and Kemendes
Lesson	Embankment rehabilitation project using cast concrete is made necessary due to repeated abrasions on the Embankment. Several parts of Embankment are weather-beaten, thus unable to achieve maximum efficiency. Villagers have reached the conclusion to replace materials construction with unused tires. Telaga Biru is the only village with a harbor in Madura, which is called Sarimuna Harbor. Because of that, there are many used tires in Telaga Biru. Total number of used tires is on hundreds. To prevent the unused tires from becoming pathogenic breeding ground, each village chief ordered the people to collect discarded tires and construct Embankment using them.
To be Adopted	The method of making talud in the above project can be adopte d as alternative intervention in this project, because in some project sites it really needs a Embankment to slow down the waves that hit the retaining wall (talud), but this project will focus on rehabilitation of damaged talud

G. *Learning and knowledge management components to capture and disseminate lessons learned.*

57. The new experiences and lessons learned from this project will be promoted based on the achievements of project that are implemented in Negeri Asilulu, Negeri Ureng and Negeri Lima. The experience and lessons learned will be disseminated in concert with Institute Tifa Damai Maluku, through a collaboration with the Regional Government and the Climate Change Adaptation Forum and Maluku's Disaster Risk Reduction (APIK-PRB). The Learning process and Knowledge will be promoted as a model feasible to develop for other Negeri, particularly those across the coast of Central Maluku and Maluku in general. The learning and knowledge generated from this program will be presented in printed materials, visual and audio visual documentations. Promotion through printed documentation can summarize what activities to carry out for the success of the project so that the public can collectively learn from them. The dissemination can be done through social media and printed media. It is expected that the general public will learn through social media and printed media. Additionally, a documentary is to be made to accommodate the

surrounding communities in the process of understanding and implementing what they learn. However, it does not rule out the possibility that the output of this project is applicable in other Negeri when supported by the government and other donors, if they wish to develop the project. Workshop activities will provide a room to share experiences with other communities in other Negeri. In addition, the workshops can also provide information for the government if they wish to support the community by issuing the appropriate policies.

58. other than that, The results of various activities, reports, research and studies will be summarized in a handbook module which can be used as a standard for climate change adaptation. Here are the forms of knowledge management:
    a. A technical handbook on climate change adaptation efforts in Negeri Lima, Ureng and Asilulu (Best Practice and success story)
    b. Capture season information board and fishing ground location at the State office
    c. An environmentally friendly fishing practice board and fishing gear
    d. Provision of program information boards at State offices
    e. Educational posters to the community about climate change information and forms of adaptation that can be done
    f. Information boards at the location of ongoing projects
    g. Information boards for types of seaweed cultivated
    h. Rehabilitated coral reef information and education boardsSign up for catching calendar and fishing ground location information at the State office

H. Describe the consultation process, including a list of consulted stakeholders, what happens during project preparation, with specific reference to prone/vulnerable groups, including gender considerations, in accordance with the Environmental and Social Policy of the Adaptation Fund.

59. Consultation processes at the regional level will be carried out with key stakeholders, beginning with the preparation of program proposal in collaboration with the Institute Tifa Damai Maluku, Fisheries and Marine Service of Maluku Province, Fisheries and Marine Service of Central Maluku District, Government of Negeri Asilulu, Negeri Ureng and Negeri Lima, including establishing initial communication with the Climate Adaptation and Disaster Risk Reduction (APIK-PRB) Forum where the Institute Tifa Damai Maluku serves as Deputy Chairperson. During the implementation phase, gender consideration will become an important issue that is mainstreamed in every activity in the field.
60. Initial consultation with the Maritime Affairs and Fisheries Office of Central Maluku Regency was conducted in November 2018. The discussion and consultation was done with the Head of the Maritime Affairs and Fisheries Office of Central Maluku Regency regarding development initiative on *Climate Change Adaptation Program for Coastal Areas and Small Islands Sector in Negeri Asilulu, Negeri Ureng, and Negeri Lima.* From the result of the discussion and the consultation, the Maritime Affairs and Fisheries Office of Central Maluku Regency provided a letter of support for this project.
61. In this project we have identified minority groups and communities that will be the object of the project by collaborating with local community organizations who are more familiar with the characteristics of these communities, including mastering their culture and customs. Consultation and communication as well as suggestions and input have been received through various representatives of the community,

from fishermen groups, youth, and representatives of women's groups using the questionnaire method.

62. In implementing the project, the consultation activities involve a number of stakeholders, in order to support the RAN-API's vision and mission as a national target. **Local communities** are involved in key projects, problem identification, participatory mapping of potential vulnerabilities, and determining locations for implementing AF project. **The Regional Government and the Government of the Three Negeri** will be involved in providing data regarding community vulnerability, the potential for development, and possibilities for synergies in certain projects, providing training materials and reinforcing community capacity related to projects, mobilizing and planning follow-up programs post AF project. **Academics, research and development institutions** will provide technical support during project implementation, starting from mapping potential *fishing ground* areas, studying seasonal patterns, fish circulation and migration, advocating priority points for coral reef restoration, fish farming with aquaculture methods, and seaweed farming. **Local non-governmental organizations** will provide support to the activities, such as the development of coral reef lover groups, seaweed farmers, and women's empowerment, as the technical implementer and community mentor.

Table 22. The Results of Focus Group Discussion (FGD) for each Negeri are as follows

Negeri Asilulu	
The villager and fishery polytechnic work collaboratively to ensure the fishermen's growth. Traditional fishermen remain using bubuh (traditional fishing tool) and other traditional equipment. Unpredictable climate directly affects fishing yield. Fishing grounds are located in the middle of the sea and, due to bad weather, fishing has become very dangerous.	
Proposed Programs	- There is a dire need for coral reef rehabilitation to encourage fish spawning in the coral reef. - Rehabilitation of Embankment has become top priority due to the fact that it has not been repaired for 10 years. - There should be alternative livelihood in case of unproductive fishing seasons. - Rumpung/Rumpon is a useful fishing method that uses small fish to bait for larger pelagic fish.
Negeri Ureng	
Proposed Programs	- Reliable seasonal calendar is required because the local wisdom alone cannot reliably interpret the climate condition. - Fishermen are very dependent on traditional fishing equipment, such as nets. The people is enthusiast for working groups if there was a business model that is more profitable. All this time business has been held by individual person. - There is Keramba project for fish farming. However, Keramba was carried by the water current due to improper placement. The project was put on hold due to financial issues and lack of fish

	seeds. - Not many people own Rumpung/Rumpon, which serves as the place for feeding and breeding small fish. - The disadvantage of fishing in this place revolved around tuna fishing ground. It is far in the middle of ocean, thus it is very dangerous to fish in certain months. - Seaweed farming is promising in the coastal area. However, there should be training for cultivation and processing so that people know how to process fish into ready-to-sell products. - Up to this day, the wives sell daily catch to Ambon and neighboring Negeri and there is yet to be any attempt to process the fish into a new products to bolster the selling price. Women's group wishes to attend training so that they could produce shredded fish or other fish-based products in order for the women's group to improve Negeri Ureng economy. - Up to now, caught fish is placed into boxes of ice to be transported to Ambon first thing in the morning. Fish can easily be damaged and lose value. - Seaweed farming location can be implemented in Nusaelat Village by adjusting to seasonal calendar. - Approximately 150m of Embankment in several elder villages, such as Diwaipula and Nusaelat, as well as in Chinese villages, is in dire needs of repair. - ADD 2020 has not yet been confirmed by Musrenbag so that no program can be synchronized. ADD 2019 has only reached step 2 and step 3 only focuses on small scale industry/individual business based on grant.
Negeri Lima	
Proposed Programs	- Business groups needs to be formed and reinforcement programs are required to establish a capable institution in order to safeguard and ensure business sustainability. - Coastal beach rehabilitation by planting sea almond as a way to prevent abrasion. - Market development for selling tuna and skipjack to prevent price markdown which occurs when only selling them to Ambon. - At this day, fishermen used to follow local wisdom in deciding where to fish as well as choosing the fishing ground. Thus, it is imperative to adopt modern knowledge so as to obtain the new fishing grounds. - There are two coral reef spots that have the potential to be tourist attraction. - New location research for seaweed cultivation should be developed. Farming group should be given cultivation technique training. - Fishermen's capacity needs to be improved so that fishing yield could be marketed well with high economic value. - There was supervisory by Kodam for 2 weeks, but without any training. People were given Keramba without fish seeds and the project came to a halt. - There is approximately 1km of Embankment in need of repairing.

	- As for now, the community is probing for the possibility of fishing vessels port location. When port is available, fish market would soon be developed.

63. The sustainability of the post-project results has been designed since the initial consultation with various parties, especially the community and the Village Government, some projects that can generate incentives or have economic value and can be developed will be encouraged to become Village-Owned Enterprises (BUMDes) where the Government through the Ministry of Village PDTT indeed sets four priorities use of village funds for 2018 namely the development of superior products in rural areas, development of BUMDes or BUMDes Bersama, embung, and other programs such as the development of superior products of the village including the tourism industry and the fish management industry that will be developed in this project. If it goes according to plan, this project will strongly support the National target where the government through Permendesa No. 19/2017 concerning Priority in Using Village Funds 2018 allocates a large enough budget for the development of BUMDes. And of course projects that were started in this AF program will very likely be sustainable post-projects.

I. Justify the requested funding, focusing on the full cost of Adaptation considerations.

Harmony Foundation and Institute Tifa Damai Maluku expect full funding from the Adaptation Fund project, because other funding sources for this program are not yet available.

64. Maluku Province consists of small islands which are extremely vulnerable to the issue of isolation arising from the increasingly worsening climatic conditions. Maluku people are dependent on sources of food/provisions originating from Sulawesi or Java. So, as the climate condition worsens, the vulnerability level of the community will also rise. With 90% of population working as fishermen, the community in the three Negeri is extremely vulnerable to climate change, unpredictable pattern of fish circulation and migration, extreme weather, rising sea levels, and damages to coastal ecosystems, all of which affecting the fishermen's livelihoods. Economic and social costs rise due to declining catches and increasing difficulty in finding fishing locations. The majority of population do not have alternative livelihoods due to lack of knowledge required for developing diversification of economic value products. Experiencing such impacts, the degradation of coastal ecosystem quality and declining fish commodities are the root cause to fishermen vulnerability. Therefore, this project is proposed for the following reasons.

Component 1. Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change (without funding)

The absence of fishing ground map and updated seasonal calendar and also FDS (Rumpon), will cause the decline of fishermen’s main fishing catch, which is tuna. The government will spend a large amount of money to increase the productivity of fishermen or new fishing technology or ships with greater capacity will be required. In

addition, it also contribute to the decline of the regional income, even though according to *Destructive Fishing Watch* (DFW) Maluku is the largest contributor to tuna exports.

With funding for component 1, this project will help create a standard fishing ground map and a new fishing season calendar with the help of experts in the field of marine and climatology. This will be massively beneficial for fishermen and the government in achieving the target of developing capture fisheries in coastal areas. For the purpose of sustainability, this project can be developed in other regions. The existence of this project also helps ± 15,000 fishermen regain their confidence in their field of work, as well as their only livelihood. The allocated funding for the procurement of *cold storage* also helps fishermen or groups of fishermen in need. Increasing fishermen's income by maintaining the quality of catches delivered to buyers/traders will reinforce fishermen as fish producers and will increase sustainable regional income.

Component 2 Coastal ecosystems repair for the resilience of communities and alternate location for source fishing (Without funding)

Climate conditions cause coral reefs to break down and, as a result, the population of pelagic fish living in the shallow water decline drastically, while at the same time, the increasing risks of fishing due to strong winds and high waves discourage fishermen to go fishing. In some villages, fishermen who have economic alternatives such as trading, farming and gardening can still make a living in these conditions, but the people with no alternative livelihoods face difficult challenges to support their family.

With funding for component 2. Coral reef restoration is a basic intervention that will restore shallow water conditions in the hope that it will become a home for pelagic fish, so that fishermen can fish them for commercial purpose or consumption. The results generated from the components of this project will lead to improving people's livelihoods and resilience to climate change, economic improvement, food security, and the recovery of coastal ecosystems. New sources of livelihood will emerge along with a good ecosystem, which can support the community's economy. The target of achieving national and local government action plans is also accomplished by way of protecting and improving the structure, function and integrity of the ecosystem and its resources, as well as reducing the rate of coral reef degradation. In terms of social aspect, this project develops, maintains and improves the community support in an effort to manage coral reefs.[25]

Component 3 Alternative economic development in coastal areas that are climate-resilient by improving technology in the fishery and marine fields (Without funding).

Without funding on this project, the government has to work harder and allocate an enormous budget for capacity building and employment, which becomes the only solution for improving the welfare of coastal communities. With diverse resource potentials ranging from the land and sea potentials, the government must map the potentials of each village according to community capabilities.

With the funding for component 3, this AF project will serve as a massive assistance to resolve socio-economic issues of the community across the 3 Negeri, because at least there would be 3 groups of aquaculture farmers, 3 groups of seaweed farmers whose members have been provided with skills in nursery, management, harvesting and

[25] Research Center for Deep Sea (LIPI), *Ambon Bay Coral Reef Degradation and Rehabilitation Efforts in*, www.deepsea.lipi.go.id accessed

monitoring sustainable program under the guidance of experts and supervised by the regional government.

Component 4 Development of supporting facilities to anticipate the impacts of coastal flooding and tidal waves (Without Funding)

In 2014, almost all villages in Leihitu Sub-district were affected by tidal flood caused by rising sea levels, further aggravated by high waves causing water to flood into settlements. The government has restored Embankment in several villages, but the repairs were partial in nature and other causing factors, such as coral reefs and etc., were not addressed. The repaired Embankment only lasted temporarily and became damaged again in the long run. Despite requiring a large budget, the Embankment was ultimately repaired, considering that leaving the condition as it was would endanger coastal communities, especially those living at the seafront.

With funding for component 4, AF project will greatly help the government and local communities in reinforcing endurance and resilience against the impacts of extreme environmental changes. The funds will be used to complement the shortcomings of the government's endeavor, such as the most impactful damages on several villages, such as Batu Lubang, Negeri Asilulu Hitu, or Hila which are extremely vulnerable to coastal flooding. By aiming to reduce settlement vulnerability.

J. Describe how the sustainability of project/program outcomes has been taken into account when designing the project/program.

65. To ensure the sustainability of this program, we will promote the learning and knowledge model generated from this program to be adopted in the regional climate change adaptation action plan, including promoting the necessary local and regional policies, so that similar programs receive financial support from the region. The Negeri/Village Government will play an active role in the implementation of the project, such as:
    a. Helps consolidate fishermen, custome/traditional figure, women (mothers) groups, and youth / young women groups to be actively involved in each stage of activities that have been designed in this project;
    b. Make a polycies of Negeri / Village level that are relevant and can support the success of the project (For example: policies on ecotourism, protection of coral reefs, regulation of utilization of fishing ground areas;
    c. Allocate funding to support adaptation programs in the Negeri Government Budget (For example: Provision of fishing gear for fishermen, ecotourism infrastructure development)

Table 10. The role of the Negeri/village government and its involvement in the implementation of proposed activities

Component	Pre Project	Project Activity	Post Project
1. Strengthening the adaptation of traditional fishermen in dealing with changes in fish migration and circulation patterns due to climate change.	- To assist consolidate the groups of fishermen, traditional leaders, women (mothers) and youth to actively involved in each activity that have been designed in this project. - Involved in dialogue and consultation with the Department of Maritime Affairs and Fisheries of Maluku Province and Central Maluku Regency for preparation of fishing ground mapping, construction of rumpon, and formation of fishing groups.	- Involved in study and implementation of fishing ground mapping - Involved in the formation of institutional groups of fishermen and the registration of fishing groups to the Department of Maritime Affairs and Fisheries of Central Maluku Regency. - Budget allocation for fishing gear in the DAD allocation. - Together with the fishermen group, build the cooperation and support with the government to access the capacity building program for fishermen and or fishermen assistance program that have been budgeted by the Government in the APBD and APBN (for example: program for providing environment friendly fishing gear, cold storage procurement). - Facilitate cooperation between fishermen group with company. - Involved in determining the cold storage location.	- Fostering the fishermen institutional. - Budget allocation of fishing gear provision in APBN. - Formulate state-level regulation regarding the use of sustainable fishing ground zones (Collaborate with Tetua Adat) - Together with the fishermen groups build the cooperation and support with the government to access the capacity building program for fishermen and or fishermen assistance program that have been budgeted by the Government in the APBD and APBN (for example: program for providing environment friendly fishing gear, cold storage procurement).
2. Improvement of coastal ecosystems	- Involved in identification and consolidation of youth group that	- Involved in dialogue and consultation of coral reef	- Formulate state-level regulation regarding the

for the resilience of coastal communities and alternative location of fishing source	will actively involve in coral reef rehabilitation	rehabilitation with the Department of Maritime Affairs and Fisheries of Maluku Province and Central Maluku Regency. - Involved in surveying the location of coral reef areas to be rehabilitated. - Involved in formation and fostering the youth groups that care for coral reef.	protection of coral reef areas, including the type of fishing gear that is allowed. - Formulate a policy on ecotourism and budget allocation to support the development of ecotourism infrastructure in the APBN. - Fostering and monitoring - Youth group that care for coral reef. - Collaboration with youth groups that care for coral reef to develop cooperation and support with fish storage companies for monitoring, care and or expand the coral reef rehabilitation area through CSR programs that found in the company.
3. Development of alternative economic in coastal area that resistant to climate by utilizing technology in fisheries and maritime field.	- Involved in identification and consolidation of floating cage fishermen group that will involve in floating cage cultivation. - Involved in identification and consolidation of women groups that will involve in seaweed cultivation and processing of fishery and seaweed products.	- Involved in surveying the location of floating cage and seaweed cultivation. - Involved in the formation of institutional groups of floating cage fishermen, seaweed cultivation and the registration of fishing groups to the Department of Maritime Affairs and Fisheries of Central Maluku Regency.	- Together with the floating cage fishermen group and seaweed cultivation group, build cooperation and support with government to access the capacity building program and or assistance program that have been budgeted by the Government in the APBD and APBN (for example: program for provision of fish seeds for floating cages,

			access to capital, provision of facilities and infrastructures for seaweed cultivation and post-harvest. - Budget allocation for the development of microeconomic businesses for processing fishery and seaweed products in APBN
4. Construction of supporting facilities to anticipate the effects of tides and tidal waves.	- Involved in dialogue and preliminary consultation with the Department of Public Worker of Maluku Province, The National Agency for Disaster Countermeasure of Maluku region. - Involved in identification and selection of contractor implementing talud development. - Involved in the discussion and implementation of Environmental Impact Assessment	- Involved in surveying talud damage point. - Organizing local workforce for project activity. - Monitoring of the implementation of talud construction together with the Department of Public Worker of Maluku Province	- Talud maintenance

66. We will also encourage that climate change adaptation project is included in the Negeri or Village development plan that can be funded through the Village Allocation Fund (DAD) which is budgeted annually by the Central Government. In this project, DAD serves as a supporting element for realizing the program. Consultation with the village governments indicates that some programs can be conducted collaboratively, including Village Community empowerment activities that allow them to be aligned with coral reefs cultivation and marine products management training, which will be involving women and youth roles during the process. The maintenance and expansion of Embankment (Component 4) structures shall be monitored by all communities, State Government and Public Work Office.
67. For Sustainability of livelihood diversification activities (Component 3), The development of a various businesses will be strengthened through organizational briefing and the establishment of Village-Owned Enterprises (BUMDes), so that it is highly possible to maintain the development through village funding. Any fisherman organizations formed and provided with capacity improvement training shall manage several properties generated over the course of project. Further, the development of these properties will be conducted in collaboration with the office of fishery service and the relevant village institutions.
68. In relation to youth (Men and Women) community development, in post-project phase, the care-for-coral reefs (Component 2) youth community is expected to develop an eco-tourism concept, as other village models which have successfully applied this concept, by forming a youth group who had been trained in organizational issues, coupled with organizational strengthening, the group will focus on developing tourism potentials, both the existing ones and will-be developed ones. Certainly, to develop these new tourism potentials, ventures to mobilize supports from the government and investors are to be taken. Supports may be in the forms of capacity building, fund support, and tourism promotion. We will also promote to other potential donors for further development of climate change adaptation models in other places or if further program support is needed at the same locations.
69. Social Sustainability: This project was designed to consistent with the social framework of the Adaptation Fund. Communities in three Negeri will be actively involved in the project. Starting from project preparation, project implementation, and up to the completion of the project, the whole process will involve the existing communities. Active participation of the community in implementing this project ensures the sustainability of the project that, upon the completion of Adaptation Fund funding, it can improve community resilience against climate change.
70. Institutional Sustainability: The project also establishes institutions at the community level according to support the continuity of the project. The formation of these institutions aims to gain new insights, facilitates communication between communities, and more importantly juxtaposes the accesses needed by the communities in developing their institutions. Accesses in question are to establish cooperation with government institutions, from village government to the central government, private parties, and non-governmental organizations. It is expected that the cooperation between institutions and related stakeholders will enable accesses to technology, group guidance, capital, and others. As the institution cooperates with the regional government, they can formulate a joint DAD for the

welfare of the community. In addition to facilitating institutions to obtain the necessary access, the establishment of these institutions also aims to prepare the institutions to manage, maintain and preserve the facilities built during the project.

71. Financial Sustainability: One of the project components is the development of alternative economy through technology development in fisheries and marine sectors. Alternative economic development aims to respond to the issue society sustainability so that they do not depend solely on fishing catch or sea products. The full engagement of the communities across 3 Negeri in carrying out the project, especially in this output, will involve more women groups. This aims to facilitate women to not depend solely on their husbands' income, as it is highly dependent on fishing catch. In addition to increasing financial income, fishermen groups can use the new *fishing ground* map. That way, after the project is completed, they have better economic resilience in facing climate change.
72. Environmental sustainability: Through this project, the sustainability of the underwater ecosystem will be addressed with coral reef restoration activities as they are carried out by coral reefs youth communities. The restoration of underwater ecosystems will also affect other activities. For example, the presence of coral reefs close to the coast will expand the new *fishing grounds* in coastal water. Further, coral reef restoration will contribute to the success in making net floating cages, because coral reefs will provide new sources of food. Coral reefs can also reduce strong undercurrent due to increasingly high tides.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

Category Project "B"

Projects/program with potential adverse impacts that are less adverse than Category A projects/program, because they are fewer in number, smaller in scale, less widespread, reversible or easily mitigated.

The Project Complaints Handling Mechanism forms a mechanism for receiving and facilitating problem solving, and complaints of affected local communities. The complaint handling mechanism must have a scale comparable to the impact of the project and be able to answer problems and complaints quickly by using a process that is understandable and transparent that is in harmony with culture, gender sensitive, and can be directly reached by local communities affected without spending costs. The mechanism must not prevent access to legal or administrative settlement in an area. Affected local communities will be informed about the mechanism accordingly. Projects can also be filed with the secretariat at the following address:

Adaptation Fund Board secretariat
Mail stop: MSN P-4-400
1818 H Street NW
Washington DC
20433 USA
Tel: 001-202-478-7347
afbsec@adaptation-fund.org

The following explains the potential impacts and risks to the various outputs of program activities:

List of Environmental and Social Principles	No further assessment requirements for compliance	Potential Impacts and Risks – further assessment and management needed for compliance
Compliance with the law	√	
Access and Equaty	√	
Marginalized and Vulnerable groups	√	
Human Rights	√	
Gender Equality and Empowerment of Women	√	
Core Labour Rights	√	
Indigenous People	√	
Involuntary resettlement	√	
Protection of Natural Habitat		√
Conservation of Biological Diversity	√	
Climate change	√	
Pollution Prevention and Efficiency of Resources		√
Public Health		√
Physical and Cultural Heritage	√	
Land and Soil Conservation	√	

Principle 1. *Compliance with Law*".

The programs followed the principles of sustainable development in the effort of strengthening ***Sustainable Development Goals (SDG's)***.) and following the draft of the Government of Indonesia's international agreement through the Republic of Indonesia's "Nationally Determined Condition (NDC)". This project will always be synergized with the ***National Action Plan for Climate Change Adaptation (RAN-API***) which has been designated by the National Development Planning Board (Bappenas) as a part of Indonesian national development framework applicable to the *climate proof/resilient development* concept. Project to be implemented in the project site will be integrated with the ***climate change and sustainable development adaptation roadmap that the Government of Maluku Province*** has owned. The project comply to ***Law No. 32/2009*** concerning Protection and

management of the environment, ***Law No. 31/2004*** concerning Fisheries revised ***Law No. 45/2019*** concerning Fisheries, ***Law No. 32/2009*** concerning Protection and the Environmental Management ***Law No. 32/2014*** concerning The Sea, ***Law No. 1/ 2014*** concerning The Management of Coastal Area, ***Government Regulation No. 32/2019*** concerning The Sea Spatial Plan, ***Presidential Regulation No. 121/2012*** concerning Rehabilitation of Coastal Areas and Small Islands**, *Regulation of the Minister of Marine Affairs and Fisheries No. 24/2016* concerning** Rehabilitation of Coastal Areas and Small Islands Procedures***, Regulation of the Minister of Marine Affairs and Fisheries No. 24/2019* concerning The** Procedure for Granting Water Location Permit and Water Management Permit in the Coastal Areas and Small Islands, ***Local Regulation of the Governor Maluku Province No. 1/2018*** concerning Plan Zone Coastal Areas and Small Islands Maluku Province in 2018 – 2038. The implementation of the project component will comply with technical standards set by the government (Technical Standard, see page...).

Principle 2. *Access and Equity*

does not require follow up because the macro process of program allocation has involved all areas that are part of the project location. In micro terms, the program area has also been discussed in a participatory manner involving key figures for each stakeholder. The stakeholder mapping is done in fair and equitable manner regardless of gender, race and religion (without favoritism and discrimination). Through key figures, marginalized parties can also participate in the project's programs. Infrastructure development projects will not impede access to community economic activities or mobility.

Principle 3. *Marginalized and Vulnerable Groups*

The project will provide low potential impacts and risks in the future as their projects will be accommodated since the planning, implementation, and monitoring of activities. Generally the project approach uses a "*group*" approach and is based on "*dependent on marine and aquatic resources*", which aims to be active involvement and ensure protection for marginalized and vulnerable groups. The project will involve the majority of beneficiaries who are from marginalized and vulnerable groups.

Principle 4. *Human Rights*

Has no potential negative impact in this project. The existing programs have strengthened civil society's rights in managing (not taking) state land for their welfare.

Principle 5. Gender Equality and Women's Empowerment

Low potential negative impact. Through the project, the involvement of women is further encouraged in the management of seaweed cultivation and skill required to process the result of fish culture and seaweed cultivation. In addition, the programs offered provide women (youth groups) with special opportunities to develop their skill and capacity to do transplantation, maintenance, care and monitoring of coral reefs. The principle of gender equality and women's empowerment in project activities is designed using an integrated gender engagement system plan (integrated gender plan) as a safeguards that sees as much as possible the proportion of involvement between men and women in all project activities.

Principle 6. *Core Labor Rights*

Low potential negative impact. The Indonesian govenment has ratafied the eight main ILO convention policies in national labor policies and regulations (UU No.13/2003 on labor, UU No.21/2000 on Trade Unions, UU No. 2/2004 on Industrial Relations Disputes). The

contruction of a *Talud* or retaining wall requires labor with the priority being that the workforce comes from the community at the project site. The project will ensure the implementation of the talud construction carried out by the constractor complies with national policies and principles that contained in ILO conventions. To ensure this, the contractor must sign a statement of compliance with the Adaptation Fund policy and national policies on employment such as but not limited to:

1. Fulfillment of the Minimum Wage set by the Government of Central Maluku Regency.
2. Compliance with occupational health and safety facilities (Employment Insurance/BPJS employment).
3. Do not employ minors
4. Provision of complaints mechanism for workers

Principle 7. *Indigenous People*

Is not a problem for all project sites. This is because there is no "Indigenous People" found in the project intervention area.

Principle 8. *Involuntary Resettlement*

Is not a problem because the project does not concern any taking or using of assets derived from the project site.

Principle 9. *Protection of Natural Habitats*

Category Project is "B". The project will ensure the protection of natural habitats that exist at the project site. The *artificial reef* activitity is a form of conservation. In accordance with the standards set in the **Coral Reef Rehabilitation Guidlines: Directorate of Marine Biodiversity Conservation and Diversity. General Director of Marine Space Management. Ministry of Maritime Affairs and Fisheries in 2015.** To ensure protection of natural habitats at the project site, artifical reef buildings are formed to resemble the habitat of coral ecosystem biota and also followed by coral transplantation activities so that it can become spawning grounds and new shelter for coral ecosystem biota.The choice of hollow cube concrete was deliberately chosen, so it is expected to become home for small fish and to facilitate the installation of *hard coral* seedings. Furthermore, in the process of installation at the bottom of the sea, chosen an empty place between the coral cover. Diver's who install *artificial reef* are also selected who have been licensed and have experience in carryong out these activities, so that can reduce errors that have potential to impact on coral reef habitats.

Principle 10. *Conservation of Biological Diversity*

Project component 2 (FAD Procurement) will ensure protection of biodiversity in the project site. The FAD installation will comply with the standard of the Minister of Maritime Affairs and Fisheries of the Repubic of Indonesia **Number *26/permen-kp/2014*** concerning FADs. The type of FADs that will be used are anchored FADs. This tool consists of a buoy, a fish collector (attractor), and an anchor (ballast). For attractors, use coconut leaves or palm leaves embedded in depths of 10-30 meters. While ballast can be in the form of a series of used 200 liter capacity oil drums totaling 4-6 pieces filled with cement. Anchor FADs can be installed in sea areas that have a depth of 2.000-4.000 meters. The FAD will be installed waters 2 nautical miles up to 4 nautical miles, measured from coastline at the lowest tide point. The fishing gear to be used is in the form of a large pelagic ring trawler with a single boat and a large pelagic group trawl or an environmentally friendly traditional fishing gear.

To avoid the capture of unwanted bycatches, the structure of FADs on the surface and under water is prohibitted from being closed using net sheet.

Principle 11. *Climate Change*

The project does not produce greenhouse gas emissions or other climate change drivers in program activities

Principle 12. *Pollution Prevention and Resource Efficiency* and Principle 13. *Public Health*

Category Project is "B". Project components 4 aim to repair the existing seawall, which is damaged due to the impacts of heavy tides and abrasion, as this has been the focus of the previous Environmental Impact Assessments (AMDAL). However, if it is deemed necessary to conduct reassessment, project organizer will apply for AMDAL Business and/or Activity Permit or Environmental Management Plan and Environmental Observation Plan (UKL-UPL). The Scope of Government Regulation for Maritime Buildings and Structures are:

a. the types and criteria for Maritime Buildings and Structures;
b. the requirements and mechanism for erecting and/or constructing Maritime Buildings and Structures;
c. the procedures for dismantling and/or Maritime Buildings and Structures;
d. Monitoring and evaluation procedures.

In implementing environmental preservation and management as the prerequisite for obtaining Business and/or Activity permit. Will consider the applicable provisions related with the guidelines for constructing coastal protection structures in accordance with the Circular of the Minister of Public Works No. 07/SE/M/2010, in order to ensure that the construction of coastal protection structures adheres the applicable structural requirements and methods.

Principle 14. *Physical and Cultural Heritage*

The project team's identification results found no physical and cultural heritage within the project intervention area so it does not require special attention and handling.

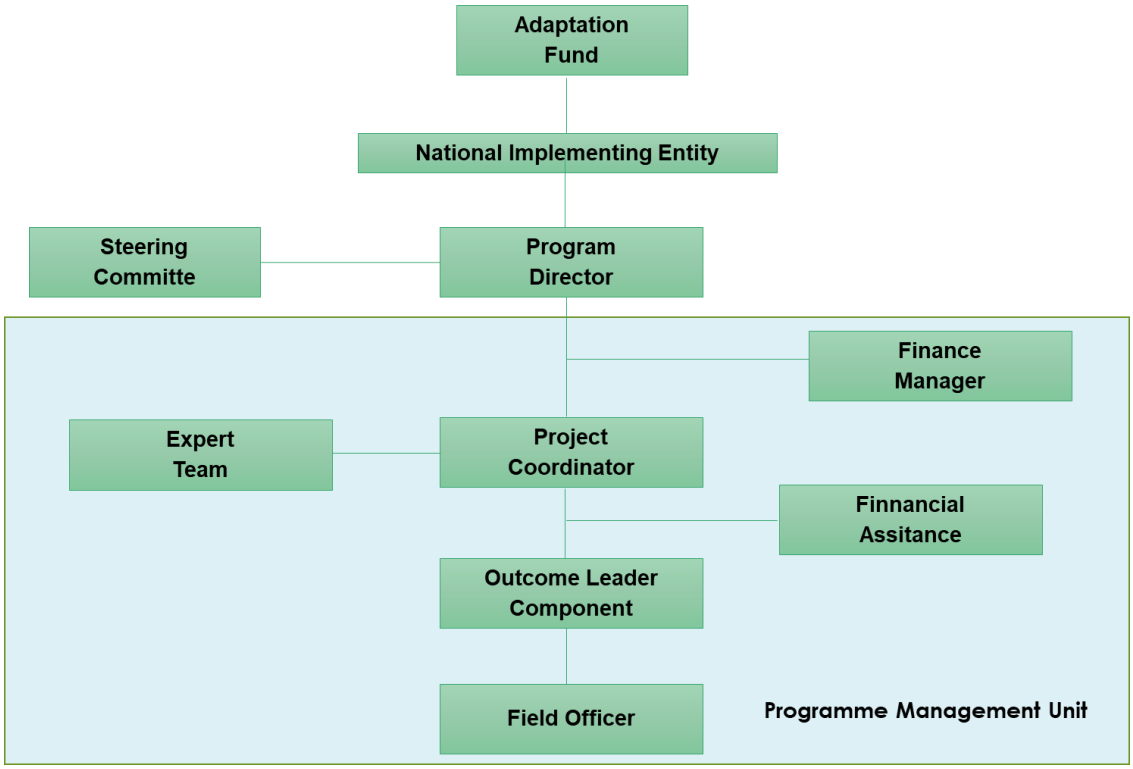
Principle 15. *Lands and Soil Conservation*

Infrastructure development will not damage the land and soil at the project site because building materials such as sand and stone that will be used, come from other locations outside the project. To ensure the building materials used by contractors are in accordance with applicable national standards, the PMU together with the PUPR Office will ensure that the contractor has obtained a permit for the use and utilization of natural resources (stone, coral and sand)

PART III : IMPLEMENTATION ARRANGEMENTS

A. *Describe the procedures for project/program implementation*

Project Structur



73. **The Executing Entity (EE)** for this project is the HAI Foundation which has a local partner in Ambon (Maluku Tifa Damai Institute) and formed a **Project Management Unit (PMU)** structure. The PMU is responsible for implementing the project and ensures the outcomes to be achieved are in accordance with project planning.
74. The project component will ensure that gender mainstreaming is implemented effectively from the planning stage to the implementation stage, and ensures gender responsive sustainability even after the project is completed. in this project, it highly respects the gender competencies of PMU. In the staff selection process, the program will include adequate gender understanding as criteria for selecting team members. The team will be assessed for gender related competencies. Furthermore, to improve their understanding of gender issues and understand the content of the proeject component, workshops and training sessions will be conducted for each facilitator that supports PMU's performance during the program planning phase. From the workshop, it is expected that staff will be equipped with adequate knowledge about the consideration of gender mainstreaming in the program and adequate capacity to support the implementation of gender responsive programs.
75. The **Steering Committee (SC)** will oversee the entire program implementation to ensure that the facilities and mechanisms have run the program effectively so as to achieve the desired results, while also representing the voices of stakeholders who are not directly responsible for the project.
76. **PMU is led by the Program Director responsible to the Kemitraan as National Implementing Entity (NIE).** In delivering work progress, the Program Director will be assisted by a Outcome Leader Componet (4 person- Outcome Leader Component) led by Project Coordinator. The Project Coordinator is responsible for ensuring that the project activities in the targeted villages are running. Outcome Leaders, Coord.

Officers, Field Officers are responsible for the implementation of activities in each targeted area, and they will report to the Project Coordinator and will be assisted by the Financial Assistant who will handle the administrative and financial issues at the local level, while the Finance Manager is responsible for the financial issues in the overall project activity. The pattern of coordination, reporting, monev will of course be conducted regularly with the National Implementing Entity. To facilitate communication flow and mutual strengthening, the implementation team will specially make a mailing list and a WA group

77. Programme Management Unit In conducting its work, the PMU will receive technical assistance from a group of experts from different backgrounds and expertise including: Oceanography, GIS, Participatory Mapping Expert , monitoring & Evaluation Specialist, Social gender Specialist, coral reef ecosystem expert, and Fish Cultivation and seaweed expert. These experts will provide inputs for technical inputs in other relevant programs at both the provincial and district levels.
78. The project component will ensure that gender mainstreaming is implemented effectively from the planning stage to the implementation stage, and ensures gender responsive sustainability even after the project is completed. in this project, it highly respects the gender competencies of PMU. In the staff selection process, the program will include adequate gender understanding as criteria for selecting team members. The team will be assessed for gender related competencies. Furthermore, to improve their understanding of gender issues and understand the content of the proeject component, workshops and training sessions will be conducted for each facilitator that supports PMU's performance during the program planning phase. From the workshop, it is expected that staff will be equipped with adequate knowledge about the consideration of gender mainstreaming in the program and adequate capacity to support the implementation of gender responsive programs.
79. The role of each institution involved can be seen in the table below

Structure	Duties and responsibilities	Explanation
Steering Committee	The Steering Committee (SC) will oversee the entire program implementation to ensure that the facilities and mechanisms have run the program effectively so as to achieve the desired results, while also representing the voices of stakeholders who are not directly responsible for the project. In the process of running the project, SC will provide technical guidance and advice to implementation programme	Steering Committees that will be involved include: National Governments, Provincial Governments, Local Governments, Village Governments, Academics, and civil society. National governments, they are: 1. Ministry of Environment and Forestry (KLHK) 2. Ministry of Marine and Fisheries (KKP) 3. Ministry of Public Works (PUPR) Provincial Governments: 1. Regional Planning and Development Agency (BAPPEDA) 2. Marine and Fisheries Agency 3. Environmental Agency 4. Public Works Agency 5. Women's empowerment and

		Child protection Agency 6. Regional disaster management Agency (BPBD) District Governments: 1. Regional Planning and Development Agency (BAPPEDA) 2. Marine and Fisheries Agency 3. Public Works Agency 4. Women's empowerment and Child protection Agency 5. Regional disaster management Agency (BPBD
Exceuting Enity	HAI (With Institute Tifa Damai Maluku) will be responsible for supervising, supporting and providing technical guidelines for the following activities: 1. Program preparation, including selecting PMU and linking the Steering Committee to the project 2. Program implementation, including communication and coordination with the Steering Committee 3. Program monitoring and evaluation of PMU 4. Financial monitoring and assessment of project implementation	As the executing entity, HAI will ensure the running of the program is in accordance with the Partnership policy and the AF Policy
Program Director	The Program Director will direct PMU in implementing the Program 1. Together with the Executing Entity in selecting PMU 2. Together with PMU, the Program Implementation Plan will be prepared as a guide for implementing the program 3. Ensure that the program is carried out in accordance with the objectives 4. Together with the Partnership in monitoring progress and results of	The Program Director is the Program leader who will be responsible for the National Implementing Entity through reporting results

	achievement 5. Coordination Program progress and program problems to the Steering Committee	
Team Expert	Will be responsible for studies: 1. Mapping the fishing ground area, 2. Monitoring & Evaluation Specialist, 3. Social gender Specialist, 4. Coral Reef Restoration 5. Fish Cultivation and seaweed	Is a team of experts in their respective fields that are tailored to the Program Plan
Finance Manager	The Finance Manager will be responsible for financial and administrative management for the overall implementation of the program	
Project Coordinator	Will lead the PMU in implementing the program as a whole in day-to-day basis. Among the specific responsibilities are: 1. Coordination with Outcome Leader Component in implementing the program 2. Coordination with provincial and district governments 3. Ensuring the course of the program is in accordance with the goals and results to be achieved 4. Report the program results in the Program Director	
Financial Assistance	Financial Assistance will be responsible for financial and administrative management for program implementation in accordance with the direction of the Program Coordinator	
Outcome Leader Component	Will be responsible for implementing the program in the upstream section. 1. Together with the Coordinator Officer, the program implementation plan is planned as a guideline for implementation 2. ensure that the program is carried out in accordance with the objectives 3. coordination of program progress and program problems with the Program Coordinator 4. Coordination with the District Government	
Field Officer	Will come in direct contact with the	The intended beneficiaries include:

	beneficiaries 1. communication with the community 2. provide a report to the Coordinator Officer	Fisherman Groups, Women and Vulnerable

B. *Describe the measures for financial and project / programme risk management.*

76. The following table summarises the risks and issues of the proposed Project:

Risk Category	Risk Rating	Risk Description	Proposes mitigatian Measures
1. Project Stakholder Risk			
1.1. Local (Negeri/Village) Stakholders	Low	Stakholders (Local Fishermen, Women Group, Costume/Traditional Figure, Youth, NGOs) do not support the proposed scheme	An intensive awareness raising campaign, communication would be carried out to increase the understanding and following buy-in of the local communities. The Operational Manual of the Project will mandate that it will support only activities that comply with sound environmental and social safeguard policies. A program of alternative livelihoods is envisioned under the proposed Climate adaptation measures.
1.2. Government	Low	Political will of the government at the regional and District levels, and local government do not support the proposed scheme	The National Government has a National Action Plan for Climate Change Adaptation (RAN-API) as part of Indonesia's national development framework that applies to climate-resilient / resilient development concepts. The Provincial Government has a road map for climate change and adaptation to sustainable development
2. Operating Environment, Social and Financial Risk			
2.1. Dispute over fishing grounds in a new fishing ground area	Low-Moderate		Discussing the renewal of traditional fishing rules in a participatory manner with all stakeholders
2.2. Pollution prevention and resource efficiency	Moderate	Talud construction uses sand, stone and cement material which has the potential to produce dust	Compliance with policies/regulations in the environmental sector
2.3. Access and equity	Low	access of women and vulnerable groups to get involved and benefit from project implementation	- Participatory resource management - The operational project will mandate gender mainstreaming in every activity implementation
2.4. Price changes on materials used for project	Moderate-Low		Budget Review

implementation			
3. Excecuting Entity Risk			
3.1. Capacity	Moderat-Low		- Assistance and capacity building by Partnership for Governance Reform in Indonesia (Kemitraan) - involvement of consultants / experts in project implementation
3.2. Fraud and Corruption	Low		Asistance, Monitoring and Audit

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Table. Environmental and Social Management Plan

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
1	Rumpon Procurement / Fish Aggregating Device (FAD)	-Hasil tangkapan sampingan yang tidak diinginkan (*unwanted bycatch*)	M	- The structure of FADs on the surface and under water is prohibitted from being closed using net sheet. - The fishing gear to be used is in the form of a large pelagic ring trawler with a single boat and a large pelagic group trawl or an environmentall y friendly traditional fishing gear. - Monitoring by involving the marine and	Fishing Ground Area	in the initial stages of FADs installation	Documentation, Point of installation of FADs	FADs installation location	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
				fisheries Agency - Dissemination and assistance to Fisherman Group about National standard FADs (Regulation of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia No. 26/Permen-KP/2014 concerning of FADs)						
				-						

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
		Disrupt shipping lines	L	- The FAD will be installed waters 2 nautical miles up to 4 nautical miles, measured from coastline at the lowest tide point. - Installation of FADs involves Marine and Fisheries Agency	Fishing Ground Area	February 2020 – April 2020	Documentation, absence of meetings, reports on meeting results	FADs installation location	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist
2	Coral Reef Restoration	Damage to coral reefs' natural habitat	M	- Artifical reef buildings are formed to resemble the habitat of coral ecosystem biota The choice of hollow cube concrete was deliberately chosen, so it is expected to	3 Negeri	in the initial stages of artificial reef installation	Documentation, absence of meetings, reports on meeting results	3 Negeri	Once every 6 months in the project cycle	

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
				become home for small fish and to facilitate the installation of *hard coral* seedings - Diver's who install *artificial reef* are also selected who have been licensed and have experience in carryong out these activities, so that can reduce errors that have potential to impact on coral reef habitats						
3	Utilization of cold storage	There is potential jealousy for fishermen who are not members	L	Awareness to non-member fishermen to become members of the	3 Negeri	2 Month After Cold Storage Procurement	Documents for evaluating the involvement of beneficiaries	3 Negeri	Once every 6 months in the	Implementer : Grantee Monitoring; ESMP

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
		of the organization		fishermen group organization					project cycle	Specialist
		Potential fraud by cold storage managers	L	Make SOP for Cold Storage management and Grievance Mechanisme	3 Negeri	2 Month before Cold Storage Procurement	Financial Report, Documents for eavaluating Cold Storage Management	3 Negeri	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist
4	Aquaculture farming by constructing 9 floating fish net for shallow water fish cultivation	There is potential jealousy for fishermen who are not members of the organization	L	Awareness to non-member fishermen to become members of the fishermen group organization	3 Negeri	Before Constructing Flaoting Fish Net in The Project Cycle	Documents for evaluating the involvement of beneficiaries	3 Negeri	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
5	Sea weed Cultivation	There is potential jealousy for women's who are not members of the organization	L	Awareness to non-member to become members of the sea weed cultivation group	3 Negeri	Before Constructing Sea Weed Cultivation in the Project Cycle	Documents for evaluating the involvement of beneficiaries	3 Negeri	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist
6	The establishment of fishermen' groups	Pressure from fish Wholesalers to fishermen who have debts to Wholesalers	L	Dialogue with Wholesalers about the existence of fishermen groups (their purpose and benefits)	3 Negeri	since the beginning of the project implementation	**Documentation**	**3 Negeri**	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist
7	Seaweed and Fish processing machine .	Liquid or solid waste resulting from machine	M	Temporary collection place for liquid and solid waste	3 negeri		Documentation, the existence of a waste collection place	3 Negeri	Once every 6 months in the project cycle	Implementer : Grantee Monitoring; ESMP Specialist
8	Embankment restoration	Pollution from sand and stone transport	M	Ensure the contractor has an environmental	3 negeri	Semester 2 (Year 1) of	Documentation (photo), the location	3 Negeri	Semester 1 and 2 (Year 2) of	Implementer: Grantee Monitoring;

No	Impact and Risk of Activites			Risk Mitigation Plan			Risk Monitoring Plan			Implementing Management and Monitoring
	Activites/Output	Description of Risk	Risk Category (H/M/L)	Mitigation Plan	Location	Period	Monitoring Plan	Location	Period	
		vehicles Air pollution when restoration talud Liquid or solid waste resulting		permit document and an environmental impact management plan (Before Project Implementation)		Cycle Project	embankment restoration		Cycle Project	ESMP Specialist
9	Exit Strategy and Asset transfer	Conflicts between stakeholders regarding ownership of assets	L	Formulation of mechanisms to build mutual understanding and contracts related to assets and ongoing assistance	3 negeri	3 Month Before end Project	Documentation (photo), the location of the planting is not found poly bag waste	3 enegri	3 Month Before end Project	Implementer : Grantee Monitoring; ESMP Specialist

GRIEVANCE MECHANISM

Complaints arising from stakeholders and the general public involved in the Executing Entity (EE) to be submitted to the Implementing Activities to be discussed together to find a way out. If consensus is not reached, a complaint can be submitted to the National Implementing Entity (NiE) using the form. Complaints that will be processed with the Grievance Mechanism are only related to all project activities. Complaints and complaints information must be submitted in writing via email or letter sent or delivered directly during the visit. Other channels such as text messages / SMS, or oral / telephone complaints can be rejected as official complaints or asked to be distributed in writing. EE and NiE must ensure the confidentiality of the complaint. In registering a complaint, the complainant must fill out and attach the Complaint Form. Registered complaints that deserve to be followed up through the Complaint Settlement Plan. The following is an example of a complaint form:

Grievance Form

Environmental and Climate Change Adaptation Consortium (KAPABEL)

Filled by KAPABEL

Grievance No.		
Name of registerer		Date:
Source	sms / email / letter / fax / phone / visit / others:…… *)	

*) *Circle the appropriate*

Filled by Complainant

Complainant Data	
Name	
Address	
Phone No.	
Fax	
E-mail	
Grievance Information	
Location	
Program	
Parties was reported	

Date of occurence		
Detail grievance: (*Completed with related evidence or documents*) (*if this part is insufficient, then allowed to use additional paper*)		
Complainant Name and Signature		Date:
Receiver name and signature		Date:

Notes:

The form must be made 2 copy: 1 copy for complainant, and 1 copy for archives.

Complaints regarding projects/programmes can also be filed with the secretariat" at the address provided below :

Adaptation Fund Board secretariat
Mail stop: MSN P-4-400
1818 H Street NW
Washington DC
20433 USA
Tel: 001-202-478-7347
afbsec@adaptation-fund.org

The strategy to ensure all beneficiaries or communities can have access to the grievance mechanism is by providing socialization regarding the complaints mechanism at the beginning of the project, on the other hand project management will also provide complaint box facilities installed at the location of each intervention village (installed at the village office or facility others) to ensure this mechanism is affordable for all beneficiaries of project activities. Every month at the end of the week, the complaint box will be checked regularly to ensure that complaints can be received and evaluated regularly.

INSTITUTIONAL ARRANGEMENTS

The institutional arrangement includes the distribution of roles and responsibilities in the implementation of ESMP. The key players and their responsibilities will be as follows:

Designation	***Responsibility***
Program Management Unit (PMU)	- Identification of Environmental and Social Problems at the Project Site - Coordinate with expert in social forestry for the screening of project impact to vulnarable groups

	- Public disclosure - Creation of grievance mechanism at EE level - Reporting and disposal of griavances
Kemitraan (Partnership)	- Monitor and review the process ESMP implementation - Set up the grievance mechanism at IE level - Disposal of grievances - Sample check and verify ESMP in the project village

Gender Assessment

The gender assessment is carried out based on the Social Assessment and Gender Integration Plan ANNEX 4 TO OPG: GENDER POLICY AND ACTION PLAN OF THE ADAPTATION FUNDS (Adaptation Fund Board), which contains results explanation in ***Appendix*** . Gender Assesment Tools document.

Gender Assesment Categories	Description relevant with Project
Gender Roles	
Gender Activities	In community activities at the project location, the activities of vulnerable groups and women's groups have also begun to appear. However, the proportion of involvement of vulnerable groups and women's groups is still lame. Vulnerable groups and groups of women who have the ability as leaders are still very limited.
Gender Needs	The ability of the community to adapt to climate change that occurs at the project site is still very difficult. Vulnerable groups and groups of women has without knowledge in alternatif economy selain "Jibu Jibu" or "Papalele" as a form of adaptation to climate change. In addition, the ability to create creative endeavors as jobs for themselves and those around them is still very lacking.
Opportunities and Challanges/Risks	The level of curiosity is very high as an opportunity, so the project phase becomes easy when socialized. Women in the porject location are more sensitive to the impacts of climate change which affect the family economy. The challenge is that vulnerable groups and women's groups still think that the inclusion of programs in their villages will provide benefits in the form of an immediate increase in their household economy.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.Describe MONEV protocols and provide budgeted M & E plans

Monitoring and evaluation will be carried out periodically every three months by Program Advisors and Financial Advisors. The evaluation results will be used to provide guidance for improving the implementation of activities. Monitoring and Evaluation will be done by independent parties every year end or annually, unless decided otherwise by Partnership and Adaptation Fund. The result of evaluation will be used as a recommendation for improvement and formulation of annual work plan

and, when required, adaptation will be made following direction of the newest local/central government policies (if applicable).

Activities	Targets	Cost ($)	Time
Baseline Survey	Outcome, output indicator targets	$ 3,310	Start of Project
Mid Survey	Outcome, output indicator targets	$ 3,955	Mid of Project
Final Project Survey	Target indicator outcome, output	$ 7,265	End of Project
Report reviews, interviews, PMU FGD	Process, milestones, efficiency, effectiveness, results	$ 4,565	1 time in a month
Monev workshop	Process, milestones, efficiency, effectiveness, results	$ 4,378	Six months
Internal Audit	Management	$ 2,597	Annual

E. Result framework for project proposal, including achievement, target and indicator.

See Table

Table. Result framework for project proposal, including achievement, target and indicator.

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
Component 1. Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change								
Outcome **A**. Increasing the yield and quality of fish catches of fishermen as well as helping improving the traditional fish catching rules (Sasi Laut)	Fishermen operational cost while fishing decreased by 20%	Marine and Fisheries Agency Discussion Interview and Subair Desertation (2013)	5 %	15%	20%	Economic Survey, Project Report		
	IIncrease catches of tuna fishing groups up to 30%	Interview and Subair Desertation (2013)	5 %	15 %	30%	Economic Survey, Project Report		
B Enhancement of the capacity and knowledge of fishermen' groups by adopting the climate change adaptation strategies.	Fishermen use the updated season calendar and New Fishing Ground Area Fisherman Group in 3 Negeri Mou with PT Harta Samudera related to the sustainable sale of tuna							
Output 1.1. There is a map for the new *fishing ground* distribution points	One *fishing ground* map and one fishing season calendar		1			Copy of *fishing ground* map and one mew	External things that cannot be controlled/force majour such as	

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar						fishing season calendar	seasons, disasters, etc.	
Output 1.2. Rumpon Procurement / Fish Aggregating Device (FAD)	One FADs each Negeri			3		Activity Report Documentation. Photocopy SIUP (license) FADs	External things that cannot be controlled/force majour such as seasons, disasters, etc.	
Output 1.3. Provision of Cold Storage in each village	One Cold Storage each Negeri		3			Activity Report, Documentation	External things that cannot be controlled/force majour such as seasons, disasters, etc.	
Output 1.4 About 450 fishermen (150 fishermen in each village) have new knowledge which is more relevant to the climate change	fishermen use the updated season calendar and New Fishing Ground Area			450		Activity Report, Documentation	External things that cannot be controlled/force majour such as seasons, disasters, etc.	
Output 1.5. The establishment of fishermen' groups which are able to cooperate	Mou with PT Harta Samudera related to the sustainable sale of tuna			1		Activity Report, Documentation, MoU Document		
	Access to micro credit at			1		Activity Report,	Changes in	

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
with government offices, private parties, and non-governmental organizations in order to be able to access technology, group guidance and capitalization	the Bank					Documentation, MoU Document	banking regulations for micro business loans	
Component 2. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach								
C. Restoration of the function of coral reef ecosystems and expanding fishing ground zones for fishermen in nearshore waters	Increases up to 35% of potential fish catches in coastal areas	Survey and interview	-	25%	35%	Economic Survey, Project Report		
D. Increased awareness and active role of coastal communities to rehabilitate, maintain and protect coral reefs	300 people in community (Minimum) coastal have the awareness and active role of to rehabilitate, maintain and protect coral reefs		90	180	300	Economic Survey, Project Report		
Output 2.1. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to	12 ha of coral reefs are recovered		8 Ha	4 Ha		Activity Report, Documentation Monitoring coral reff report	External things that cannot be controlled/force majour such as seasons,	

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
expand new fishing grounds near the beach							disasters, etc.	
Output 2.2. About 90 young people (30 people from each Negeri) knows how to do transplantation, maintenance, care and monitoring of coral reefs	3 coral reefs youth communities are formed		3			Activity Report, Documentation		Capacity that meant here is the people knowledge from not knowing to knowing
	3 restored location have the potentials for ecotourism development			2	1	Activity Report, Documentation	External things that cannot be controlled/force majour such as seasons, disasters, etc.	
Component 3. Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas								
C. Reducing dependence on livelihoods as catch fishermen	increase in community income derived from aquaculture and seaweed up to 30%	Gender assesment Survey and Interview		15%	30%	Activity Report, Documentation Economic Survey		
D. Increasing the role of women in the family economy	Minimum 250 women (house mothers) can reduce Dependence on husband's income	Gender assesment		180	250	Activity Report, Documentation Economic Survey		
Output 3.1. Aquaculture farming	Installation of 9 floating net cages for Cultivating Shallow			9		Activity Report, Documentation		

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
	Water Fish in 3 Negeri					Photocopy SIUP (License) Cultivation fish		
	Minimum 180 households in 3 Negeri have knowledge on how to cultivate fish in floating net cages		180					Capacity that meant here is the people knowledge from not knowing to knowing
Output 3.2 Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri)	Nine floating rafts used to cultivate seaweeds			9		Activity Report, Documentation		
	Minimum 180 women's in 3 Negeri have knowledge on how to cultivate seaweeds		180			Activity Report, Documentation		
Component 4. Development of supporting facilities to anticipate the impacts of coastal flooding and tidal waves								
Disaster risk reduction such as damage to seaside village roads and saving of community houses on the coast, caused by tidal waves	± 600 lives in 3 negeri will be averted from the potential threats of tidal waves	Survey and Interview Government Negeri Data, Public Works Agency		450 Person	150 Person	Activity Report, Documentation AMDAL Document		
	At least, it helps protecting the ± 1,2 KM village road that lies along the seafront			800 M	400 M			
Output 4. Embankment Water (Talud) Restoration	There will be at least ± 500 M of Embankment/wave-			400 M	100 M	Activity Report, Documentation AMDAL		

Outcome/ Output	Indicator	Baseline	Target			Source of Verification	Risk & Assumption	Operational Definitions
			2020	2021	2022			
	breaking walls in the improved 3 Negeri					Document		
KNOWLEDGE MANAGEMENT								
Disseminated program to strengthen and encourage policies and alignments	1 film 1 lesson learned/best practice book 3 Information boards at the location of ongoing projects 1 journal 1 poster 3 Information board about fish season and fishing ground location		6	2	2	Documentation		

Operational Definitions

Component	Outputs	Activities	Operational Definitions
1. Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change	1.1. There is a map for the new fishing ground distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season	1.1.1. Study on the circulation pattern and fish migration and fish season calendar in the project site	Scope : Fishing ground in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowing traditional knowledge and the

Component	Outputs	Activities	Operational Definitions
	calendar		latest technology about Fishing Ground
		1.1.2. Reviewing the location and mapping the fishing ground	Scope : Fishing ground in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Local NGOs Objectives : Determining the location of a new fishing ground for fishing
		1.1.3. Workshop for establishing the season calendar and map of the new fishing ground area	Scope : Fishing ground area Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Skill of the latest fishing ground knowledge that is a reference for fishermen going to sea
	1.2. Rumpon Procurement / Fish Aggregating Device (FAD)	1.2.1. Rumpon Procurement / Fish Aggregating Device (FAD)	Scope : FAD area in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Skill of using FAD, Determination of FAD location, FAD Licensing, FAD Maintenance
	1.3. Provision of Cold Storage in each village	1.3.1. Survey and site selection for Cold Storage in 3 Negeri	Scope : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Fisherman in 3 Negeri, Negeri Government, Local NGOs Objectives : Determining the location of cold storage
		1.3.2. Construction/ intallation of cold storage in 3 Negeri	Scope : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Fisherman in 3 Negeri, Negeri Community, Local NGOs Objectives : Cold Storage building

Component	Outputs	Activities	Operational Definitions
		1.3.3. Maintenance Cold Storage	Scope : Cold storage in 3 Negeri Parties : Cold storage organizer, Fisherman in 3 Negeri, Negeri Government Objectives : Maintenances cold storage
	1.4. About 150 fishermen (50 fishermen in each village) have new knowledge which is more relevant to the climate change	1.4.1. Strengthening institutional groups of fishermen in three Negeri	Scopes : Fisherman in Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Negeri Government, Fisherman in 3 Negeri, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Establishment of fisherman organization
		1.4.2. Mentoring fishermen groups in the three Negeri	Scopes : Fisherman organization in Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Negeri Government, Fisherman Organization, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : The sustainability of the fisherman organization
2. Coastal ecosystems repair for the resilience of communities and alternate location for source fishing	2.1. Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach	2.1.1. Consultation with Regional Government and the relevant Office of Marine Affairs and Fisheries Regarding Coral Reef Restoration Techniques in 3 Negeri.	Scopes : Banda sea in 3 Negeri Parties : Youth groups, Negeri Government, Fisherman organization, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Determination of coral reef restoration techniques to be developed in 3 Negeri
		2.1.2. Survey and selection of locations for coral transplantation	Scopes : Banda sea in 3 Negeri Parties : Youth groups, Negeri Government, Fisherman organization, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Determining the location of coral reef restoration to be developed in the banda sea for alternative location for source fishing

Component	Outputs	Activities	Operational Definitions
		2.1.3. Making Artificial Reef Concrete and Transplant Seeds	Scopes : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Youth groups, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Make artificial reef for restoration in the banda sea
		2.1.4. Monitoring, Maintenance and preservation of coral reefs	Scopes : Location of coral reef restoration in Banda sea Parties : Youth group, Fisherman organization, Maritime Study Center, Local NGOs Objectives : Succes sustainability of coral reef restoration and to develop coral reef restoration sites
	2.2. About 90 young people (30 people from each Negeri) knows how to do transplantation, maintenance, care and monitoring of coral reefs	2.2.1. Training for youth groups on making articial reefs and cultivation/transplantation, maintenance and preservation of coral reefs	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth group, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge of coral reef restoration using artificial reef techniques
		2.2.2. Training on sustainable coral reef monitoring and organizational strengthening of the three youth groups to save coral reefs in the three Negeri	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth group, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge of how to care for and monitor the development of coral reef restoration and how to develop coral reef restoration in the Banda sea
3. Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas	3.1. Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each Negeri) which for every floating net cage, it is managed by a group (1 group	3.1.1. Conducting fish culture training for groups in every Negeri	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge about the development of aquaculture that can be developed in the Banda Sea for

Component	Outputs	Activities	Operational Definitions
	= 20 households)		the community
		3.1.2. Surveying location for floating net cage	Scopes : Banda sea Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Local NGOs Objectives : Determination of the location of the development of fish culture for the community
		3.1.3. Design making of floating net cages construction and facilities provision for the fish culture	Scopes : Banda sea Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Local NGOs Objectives : Making floating net construction and facilities for fish culture activities that will be developed by the community
		3.1.4. Managing the floating net cages	Scopes : Floating net Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Local NGOs, Vendor Objectives : Creating a fish culture community, knowledge about floating cage management, from planning to marketing
	3.2. Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri) which for every raft, it is managed by a group (1 group = 20 households)	3.2.1. Seaweed cultivation training	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge about the development of seaweed cultivation to be developed by communities in coastal areas that can be utilized
		3.2.2. Surveying location for seaweed cultivation	Scopes : Coast 3 Negeri which will be developed seaweed cultivation

Component	Outputs	Activities	Operational Definitions
			Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Obejctives : Determination of location for developing seaweed for the community
		3.2.3. Cultivating seaweeds	Scopes : Coast 3 Negeri which will be developed seaweed cultivation Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Development of seaweed cultivation
	3.3. 100 women in 3 Negeri have the skill required to process the result of fish culture and seaweed cultivation	3.3.1. Initial seaweed processing training	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Community in 3 Negeri, Vendor, Maritime Study Center, Local NGOs Objectives : Knowledge of processing seaweed cultivation to increase economic value for the community
		3.3.2. Purchasing and advance training on supporting tools used in seaweed processing	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Community in 3 Negeri, Vendor, Maritime Study Center, Local NGOs Objectives : Determination of seaweed processing supporting equipment to increase economic value and knowledge of how to use the tool
4. The development of supporting facilities to anticipate coastal flooding and tidal wave	4.1. The development of supporting facilities to anticipate coastal flooding and tidal wave	4.1.1. Consultation and planning	Scopes : Seaside Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Public Works Service Local NGOs Objectives : Consultation with the Public Works Agency

Component	Outputs	Activities	Operational Definitions
			and Regency Government for renovations embankment
		4.1.2. Surveying damaged areas around the embankment	Scopes : Seaside Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Public Works Service Local NGOs Objectives : Determination of location for renovation of embankment in 3 Negeri together with the public works department
		4.1.3. Embankmen restoration	Scopes : Embankmen restoration location Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Public Works Service Local NGOs Objectives : Development of embankment restoration
		Activities	Operational Definitions
		5.1.1. **Study on the circulation pattern and fish migration and fish season calendar in the project site**	Scope : Fishing ground in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowing traditional knowledge and the latest technology about Fishing Ground
		1.3.4. Reviewing the location and mapping the fishing ground	Scope : Fishing ground in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Local NGOs Objectives : Determining the location of a new fishing ground for fishing

Component	Outputs	Activities	Operational Definitions
		1.3.5. **Workshop for establishing the season calendar and map of the new fishing ground area**	Scope : Fishing ground area Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Skill of the latest fishing ground knowledge that is a reference for fishermen going to sea
		1.2.2. **Rumpon Procurement / Fish Aggregating Device (FAD)**	Scope : FAD area in the Banda sea Parties : Fisherman in 3 Negeri, Negeri Government, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Skill of using FAD, Determination of FAD location, FAD Licensing, FAD Maintenance
		1.4.3. **Survey and site selection for Cold Storage in 3 Negeri**	Scope : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Fisherman in 3 Negeri, Negeri Government, Local NGOs Objectives : Determining the location of cold storage
		1.5.2. **Construction/ intallation of cold storage in 3 Negeri**	Scope : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Fisherman in 3 Negeri, Negeri Community, Local NGOs Objectives : Cold Storage building
		1.5.3. **Maintenance Cold Storage**	Scope : Cold storage in 3 Negeri Parties : Cold storage organizer, Fisherman in 3 Negeri, Negeri Government Objectives : Maintenances cold storage
		1.5.1. **Strengthening institutional groups of fishermen in three Negeri**	Scopes : Fisherman in Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Negeri Government, Fisherman in 3 Negeri, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Establishment of fisherman organization

Component	Outputs	Activities	Operational Definitions
		1.5.2. **Mentoring fishermen groups in the three Negeri**	Scopes : Fisherman organization in Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Negeri Government, Fisherman Organization, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : The sustainability of the fisherman organization
		6.1.1. **Consultation with Regional Government and the relevant Office of Marine Affairs and Fisheries Regarding Coral Reef Restoration Techniques in 3 Negeri.**	Scopes : Banda sea in 3 Negeri Parties : Youth groups, Negeri Government, Fisherman organization, Maritime Study Center, Marine and Fisheries Ministry, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Determination of coral reef restoration techniques to be developed in 3 Negeri
		6.1.2. **Survey and selection of locations for coral transplantation**	Scopes : Banda sea in 3 Negeri Parties : Youth groups, Negeri Government, Fisherman organization, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Determining the location of coral reef restoration to be developed in the banda sea for alternative location for source fishing
		6.1.3. **Making Artificial Reef Concrete and Transplant Seeds**	Scopes : Coast of Negeri Asilulu, Negeri Lima, Negeri Ureng Parties : Youth groups, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Make artificial reef for restoration in the banda sea
		6.1.4. **Monitoring, Maintenance and preservation of coral**	Scopes : Location of coral reef restoration in Banda sea Parties : Youth group, Fisherman organization, Maritime

Component	Outputs	Activities	Operational Definitions
		reefs	Study Center, Local NGOs Objectives : Succes sustainability of coral reef restoration and to develop coral reef restoration sites
		6.2.1. **Training for youth groups on making articial reefs and cultivation/transplantation, maintenance and preservation of coral reefs**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth group, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge of coral reef restoration using artificial reef techniques
		6.2.2. **Training on sustainable coral reef monitoring and organizational strengthening of the three youth groups to save coral reefs in the three Negeri**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth group, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge of how to care for and monitor the development of coral reef restoration and how to develop coral reef restoration in the Banda sea
		7.1.1. **Conducting fish culture training for groups in every Negeri**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge about the development of aquaculture that can be developed in the Banda Sea for the community
		7.1.2. **Surveying location for floating net cage**	Scopes : Banda sea Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Local NGOs Objectives : Determination of the location of the development of fish culture for the community
		7.1.3. **Design making of floating net cages construction and**	Scopes : Banda sea Parties : Youth groups, Fisherman organization,

Component	Outputs	Activities	Operational Definitions
		facilities provision for the fish culture	Community in 3 Negeri, Maritime Study Center, Local NGOs Objectives : Making floating net construction and facilities for fish culture activities that will be developed by the community
		7.1.4. **Managing the floating net cages**	Scopes : Floating net Parties : Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Local NGOs, Vendor Objectives : Creating a fish culture community, knowledge about floating cage management, from planning to marketing
		7.2.1. **Seaweed cultivation training**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Knowledge about the development of seaweed cultivation to be developed by communities in coastal areas that can be utilized
		7.2.2. **Surveying location for seaweed cultivation**	Scopes : Coast 3 Negeri which will be developed seaweed cultivation Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Obejctives : Determination of location for developing seaweed for the community
		7.2.3. **Cultivating seaweeds**	Scopes : Coast 3 Negeri which will be developed seaweed cultivation Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Maritime

Component	Outputs	Activities	Operational Definitions
			Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Local NGOs Objectives : Development of seaweed cultivation
		7.3.1. **Initial seaweed processing training**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Community in 3 Negeri, Vendor, Maritime Study Center, Local NGOs Objectives : Knowledge of processing seaweed cultivation to increase economic value for the community
		7.3.2. **Purchasing and advance training on supporting tools used in seaweed processing**	Scopes : Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Community in 3 Negeri, Vendor, Maritime Study Center, Local NGOs Objectives : Determination of seaweed processing supporting equipment to increase economic value and knowledge of how to use the tool
		8.1.1. **Consultation and planning**	Scopes : Seaside Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Public Works Service Local NGOs Objectives : Consultation with the Public Works Agency and Regency Government for renovations embankment
		8.1.2. **Surveying damaged areas around the embankment**	Scopes : Seaside Negeri Asilulu, Negeri Lima, Negeri Lima Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Maritime Study Center, Maritime Affairs and Fisheries Agency Central Maluku and Maluku Province, Public Works Service Local NGOs Objectives : Determination of location for renovation of embankment in 3 Negeri together with the public works department

Component	Outputs	Activities	Operational Definitions
		8.1.3. **Embankmen restoration**	Scopes : Embankmen restoration location Parties : Women groups, Youth groups, Fisherman organization, Community in 3 Negeri, Government Negeri, Public Works Service Local NGOs Objectives : Development of embankment restoration

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s)	*Project Objective Indicator(s)*	*Fund Outcome*	*Fund Outcome Indicator*	*Grant Amount (USD)*
Increase the knowledge and ability of fishermen to deal with changes in circulation patterns and fish migration patterns	• One fishing ground map and fishing season calendar • 60 communities of 3 Negeri improve their understanding on the collaboration between traditional and modern knowledge • Fishermen operational cost while fishing decreased by 15% • Fishing catch increased by 20% • There will be at least 1 *Cold Storage* of 1000 kg capacity in every Negeri)	• Enhancement of the capacity and knowledge of fishermen' groups by adopting the climate change adaptation strategies. • Increasing the yield and quality of fish catches of fishermen as well as helping improving the traditional fish catching rules (Sasi Laut) • The improvement of fishermen's knowledge on accurate fishing ground and fishing season • Some fishermen work	• There is an increase in fishermen fishing catch through the implementation of the collaboration between fishermen's traditional technology and recently-acquired technology. • These fishermen groups acquire certain technology access, technical support or capital support from related stakeholder	**$ 231,545**

		with relevant stakeholders		
Improve coastal ecosystems for the resilience of coastal communities and alternative fishing sources for local fishing groups.	• 12 ha of coral reefs are recovered • 3 youth groups are formed to save coral reefs • Fishing catch increased by 20% • 1 restored Location can be further developed into ecotourism •	• An increase in the quantity of marine biota habitat • Coral reefs youth communities obtain specific knowledge on how to restore coral reefs	• *New fishing grounds* around the coastal areas are increasing	**$ 134,123**
There is a diversification in the form of new sources of livelihoods, which are climate-resilient	• There will be at least 2 types of new livelihood, such as floating net cage fish cultivation and seaweed harvest • There will be at least 9 groups of net cages fish cultivation • There are at least 20 communities who possess seaweeds cultivation knowledge • Community's income increased by 20% from the result of aquaculture fish cultivation • Community's income increased by 20% from the result of seaweeds cultivation	• Alternative economy development groups encompass the knowledge about the alternative economy development of each negeri • There are some women groups who process the result of alternative economy to increase the economy sale value	• An increase in the economy income of the community • To develop alternative economy in each negeri • Each negeri has an authentic product • Women dependence on husbands' income significantly decreases	**$ 296,714**
Decreasing risk of climate change impact leading to the vulnerability	• There will be at least ± 500 M of Embankment/wave-	• There are several restoration points of the	• Embankment restoration in 3 negeri is ± 500 M long	**$ 141,238**

of the settlement	breaking walls in the improved 3 Negeri • At least ± 800 lives in 3 negeri will be averted from the potential threats of tidal waves • At least, it helps protecting the ± 1,6 KM village road that lies along the seafront. •	Embankment in every negeri	• Cold storage in the coastal areas in every negeri	

***g. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and anexplanation and a breakdown of the execution cost*s.**

80. The project budget and timeline is outlined in Table 12.

Table 12. Project Budget and Timeline

Invesment Category	Activities	Year 1	Year 2	Year 3	Total
Component 1 : Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change	**There is a map for the new fishing ground distribution points based on the circulation pattern and fish migration pattern, as well as updated fishing season calendar**				
	Study on the circulation pattern and fish migration and fish season calendar in the project site	$ 12,392.00	$ -	$ -	**$ 12,392.00**
	Reviewing the location and mapping the fishing ground	$ 47,855.00	$ -	$ -	**$ 47,855.00**
	Workshop for establishing the season calendar and map of the new fishing ground area	$ 24,399.00	$ -	$ -	**$ 24,399.00**

	Rumpon Procurement / Fish Aggregating Device (FAD)				
	Rumpon Procurement / Fish Aggregating Device (FAD)	$ 9,701.00	$ -	$ -	$ 9,701.00
	Provision of Cold Storage in each village				
	Survey and site selection for Cold Storage in 3 Negeri	$ -	$ 2,553.00	$ -	**$ 2,553.00**
	Construction/ intallation of cold storage in 3 Negeri	$ -	$ 11,306.00	$ -	**$ 11,306.00**
	Maintenance Cold Storage	$ -	$ 1,015.00	$ 2,612.00	**$ 3,627.00**
	About 450 fishermen (150 fishermen in each village) have new knowledge which is more relevant to the climate change				
	Strengthening institutional groups of fishermen in three Negeri	$ 19,566.00	$ 21,740.00	$ 2,175.00	**$ 43,481.00**
	Mentoring fishermen groups in the three Negeri	$ 25,156.00	$ 28,205.00	$ 22,870.00	**$ 76,231.00**
Total Component 1		**$139,407.45**	**$139,069.00**	**$ 64,819.00**	**$ 27,657.00**
Component 2 : Coastal ecosystems repair for the resilience of communities and alternate location for source fishing	**Rehabilitation of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach**				
	Consultation with Regional Government and the relevant Office of Marine Affairs and Fisheries Regarding Coral Reef Restoration Techniques in 3 Negeri.	$ 7,985.00	$ -	$ -	**$ 7,985.00**
	Survey and selection of locations for coral transplantation	$ 5,101.00	$ -	$ -	**$ 5,101.00**
	Making Artificial Reef Concrete and Transplant Seeds	$ 52,880.00	$ 19,560.00	$ -	**$ 72,440.00**
	Monitoring, Maintenance and preservation of coral reefs	$ 11,623.00	$ 5,977.00	$ 15,609.00	**$ 33,209.00**

	About 90 young people (30 people from each Negeri) knows how to do transplantation, maintenance, care and monitoring of coral reefs				
	Training for youth groups on making articial reefs and cultivation/transplantation, maintenance and preservation of coral reefs	$ 7,414.00	$ -	$ -	**$ 7,414.00**
	Training on sustainable coral reef monitoring and organizational strengthening of the three youth groups to save coral reefs in the three Negeri	$ 7,974.00	$ -	$ -	**$ 7,974.00**
Total Component 2		**$ 92,722.84**	**$ 92,977.00**	**$ 25,537.00**	**$ 15,609.00**
Component 3 : Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas	**Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each Negeri) which for every floating net cage, it is managed by a group (1 group = 20 households)**				
	Conducting fish culture training for groups in every Negeri	$ -	$ 13,485.00	$ -	**$ 13,485.00**
	Surveying location for floating net cage	$ -	$ 7,791.00	$ -	**$ 7,791.00**
	Design making of floating net cages construction and facilities provision for the fish culture	$ -	$107,138.00	$ -	**$107,138.00**
	Managing the floating net cages	$ -	$ 13,930.00	$ -	**$ 13,930.00**
	Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri) which for every raft, it is managed by a group (1 group = 20 households)				
	Seaweed cultivation training	$ 13,485.00	$ -	$ -	**$ 13,485.00**
	Surveying *location for seaweed cultivation*	$ 5,463.00	$ -	$ -	**$ 5,463.00**
	Cultivating seaweeds	$ 7,549.00	$ 76,328.00	$ -	**$ 83,877.00**
	100 women in 3 Negeri have the skill required to process the result of fish culture and seaweed cultivation				
	Initial seaweed processing training	$ -	$ 23,056.00	$ -	**$ 23,056.00**

	Purchasing and advance training on supporting tools used in seaweed processing	$ -	$ 855.00	$ 27,634.00	**$ 28,489.00**
Total Component 3		**$ 26,497.00**	**$242,583.00**	**$27,634.00**	**$296,712.69**
Component 4 : The development of supporting facilities to anticipate coastal flooding and tidal wave	**The development of supporting facilities to anticipate coastal flooding and tidal wave**				
	Consultation and planning	$ 4,795.00	$ -	$ -	**$ 4,795.00**
	Surveying damaged areas around the embankment	$ -	$ 4,858.00	$ -	**$ 4,858.00**
	Embankmen restoration	$ 1,974.00	$118,426.00	$ 11,185.00	**$131,585.00**
Total Component 4		**$ 6,769.00**	**$123,284.00**	$ 11,185.00	**$141,238.00**
Total Components 1,2,3 &4					**$ 803,620.00**
Project Execution Cost					**$ 84,358.00**
MIE Management Fee					**$ 75,478.00**
Total Budget					**$ 963,456.00**

81. A detailed budget with budget notes is shown in Tables 13-16

Komponen 1- Increasing fishermen knowledge and ability to deal with changes in circulation patterns and fish migration patterns

	Year 1	Year 2	Year 3	Total
Consultants	$ 20,298.00	$ 14,209.00	$ 6,089.00	**$ 40,596.00**
Local Transportation	$ 13,029.00	$ 4,343.00	$ 4,343.00	**$ 21,715.00**
Vehicle	$ 4,198.00	$ 839.00	$ 560.00	**$ 5,597.00**
Workshop	$ 44,289.00	$ 12,654.00	$ 6,327.00	**$ 63,270.00**
Service, Supllies & Equipment	$ 47,616.00	$ 21,824.00	$ 9,920.00	**$ 79,360.00**
Training Courses	$ -	$ -	$ -	**$ -**
Infrastructures	$ 9,978.00	$ 11,029.00	$ -	**$ 21,007.00**
Total	**$ 139,408.00**	**$ 64,898.00**	**$ 27,239.00**	**$ 231,545.00**

- Consultants : biaya konsultan

Komponen 2- Coastal ecosystems repair for the resilience of communities and alternate location for source fishing

	Year 1	Year 2	Year 3	Total
Consultants	$ 11,701.00	$ 11,701.00	$ 5,851.00	**$ 29,253.00**
Local Transportation	$ 4,157.00	$ 1,905.00	$ 866.00	**$ 6,928.00**
Vehicle	$ 2,425.00	$ 746.00	$ 560.00	**$ 3,731.00**
Workshop	$ 12,370.00	$ 4,123.00	$ 4,123.00	**$ 20,616.00**
Service, Supllies & Equipment	$ 22,541.00	$ 6,630.00	$ 3,978.00	**$ 33,149.00**
Training Courses	$ 3,730.00	$ -	$ -	**$ 3,730.00**
Infrastructures	$ 35,798.00	$ 918.00	$ -	**$ 36,716.00**
Total	**$ 92,722.00**	**$ 26,023.00**	**$ 15,378.00**	**$ 134,123.00**

Komponen 3- Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas

	Year 1	Year 2	Year 3	Total
Consultants	$ 8,358.00	$ 29,253.00	$ 4,179.00	**$ 41,790.00**
Local Transportation	$ 2,177.00	$ 7,618.00	$ 1,088.00	**$ 10,883.00**
Vehicle	$ 672.00	$ 5,373.00	$ 672.00	**$ 6,717.00**
Workshop	$ 4,489.00	$ 13,467.00	$ 4,489.00	**$ 22,445.00**
Service, Supllies & Equipment	$ 9,166.00	$ 48,888.00	$ 3,055.00	**$ 61,109.00**
Training Courses	$ 1,328.00	$ 11,949.00	$ -	**$ 13,277.00**
Infrastructures	$ -	$ 126,444.00	$ 14,049.00	**$ 140,493.00**
Total	**$ 26,190.00**	**$ 242,992.00**	**$ 27,532.00**	**$ 296,714.00**

Komponen 4- The development of supporting facilities to anticipate coastal flooding and tidal wave

	Year 1	Year 2	Year 3	Total
Consultants	$ 657.00	$ 11,164.00	$ 1,313.00	**$ 13,134.00**
Local Transportation	$ 3,081.00	$ 9,243.00	$ 3,081.00	**$ 15,405.00**
Workshop	$ -	$ -	$ -	**$ -**
Vehicle	$ 1,003.00	$ 6,019.00	$ 1,003.00	**$ 8,025.00**
Service, Supllies & Equipment	$ 1,424.00	$ 8,542.00	$ 1,424.00	**$ 11,390.00**
Training Courses	$ -	$ -	$ -	**$ -**
Infrastructures	$ -	$ 88,620.00	$ 4,664.00	**$ 93,284.00**
Total	**$ 6,165.00**	**$ 123,588.00**	**$ 11,485.00**	**$ 141,238.00**

Disbursement schedule

Scheduled date	Year 1	Year 2	Year 3	Total
Project Funds	$ 264,485.00	$ 457,501.00	$ 81,634.00	**$ 803,620.00**
Execution costs	$ 29,524.00	$ 29,524.00	$ 25,310.00	**$ 84,358.00**
Implementing entity fee	$ 26,417.00	$ 26,417.00	$ 22,644.00	**$ 75,478.00**
Total	**$ 320,426.00**	**$ 513,442.00**	**$ 129,588.00**	**$ 963,456.00**

Execution Cost

Expenditure	Year 1	Year 2	Year 3	Total
Coordination and Management				
Director	$ 7,522.00	$ 7,522.00	$ 6,449.00	$ 21,493.00
Program Manager	$ 6,582.00	$ 6,582.00	$ 5,642.00	$ 18,806.00
Financial Manager	$ 5,642.00	$ 5,642.00	$ 4,836.00	$ 16,120.00
Financial staff	$ 3,291.00	$ 3,291.00	$ 2,821.00	$ 9,403.00
Sub-Total	**$ 23,037.00**	**$ 23,037.00**	**$ 19,748.00**	**$ 65,822.00**
Oveheads and administration				
Administrative support (including : office equipment, materials and services	**$ 3,761.00**	**$ 3,761.00**	**$ 3,224.00**	**$ 10,746.00**
Fiduciary management				
Fiduciary management fee	**$ 2,726.00**	**$ 2,726.00**	**$ 2,338.00**	**$ 7,790.00**
Total	**$ 29,524.00**	**$ 29,524.00**	**$ 25,310.00**	**$ 84,358.00**

PART IV : ENDORSEMENT BY THE GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[26]

This program has been coordinated with the Government of Maluku Tengah Regency, the Government of Maluku Province, and the Government at Three Negeri

Name and Position	Time	Note
Samsul Maarib, S.Pi, MAP Head of the Fisheries Service Office of Maluku Tengah Regency	15 December 2018	Letter of support attached
Imaran Soumena, SP Secretary of Negeri Lima	10 Juni 2019	Letter of support attached
Saleh Tuharea Secretary of Negeri Ureng	10 Juni 2019	Letter of support attached
Ali Mahulette Secretary of Negeri Asilulu	10 Juni 2019	Letter of support attached
Djalaludin Salampessy , Acting Head of Regional Planning and Development Agency (BAPPEDA) Maluku Province	17 Desember 2019	Letter of support attached

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (President Decree No. 16/2015; P.13/MENLHK/Setjen/OTL.0/1/2016; P.33/MENLHK/Setjen/Kum.1/3/2016; Indonesia Intended Nationally Determined Contribution/INDC; COP 21; Paris Agreement signed by Government of Indonesia; Book and Map of Information System of Vulnerability Index Data (SIDIK); Permen-KP No. 2 year 2013; Climate Change Adaptation National Action Plan)and subject to the approval by the Adaptation Fund Board commit to implementing the Project in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this Project..

6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

Inda Presanti Loekman **Executive Director a.i. of Kemitraan** **Implementing Entity Coordinator**	
Date: 5 August 2019	Tel. and email: +62-21-7279 9566; Monica.Tanuhandaru@kemitraan.or.id
Project Contact Person: **Dewi Rizki**	
Tel. and Email: +62-21-7279 9566; Dewi.Rizki@kemitraan.or.id	

Annex 1. Endorsement Letter from Mr. Djalaludin Salampessy , Acting Head of Regional Planning and Development Agency (BAPPEDA) Maluku Province

PEMERINTAH PROVINSI MALUKU
BADAN PERENCANAAN PEMBANGUNAN DAERAH
Jl. Raya Pattimura Nomor 1 Ambon
Telp. (0911) 352043, 354099. Fax. (0911) 355933
e-mail : bappeda_maluku@yahoo.com

Ambon, 17 Desember 2019

Nomor : 050.309 /BAPP-XII/2019
Lampiran : 1 (satu) lembar
Perihal : ***Surat Dukungan***

Kepada
Yth : **Direktur Yayasan Harmoni Alam Indonesia**
di
Bogor

Menindaklanjuti surat Direktur Eksekutif Yayasan Harmoni Alam Indonesia (HAI) nomor 11/HAI-Eks/XII/2019, tanggal 08 Desember 2019 perihal Permohonan Surat Dukungan dalam rangka pengembangan Program Adaptasi Perubahan Iklim Bidang Pesisir Laut dan Pulau-Pulau Kecil di Kabupaten Maluku Tengah Provinsi Maluku, maka bersama ini kami menyatakan memberi dukungan kepada Yayasan HAI untuk mengembangkan program dimaksud sesuai dengan perundang-undangan yang berlaku.

Mengingat pentingnya program tersebut dalam memperkuat kemampuan adaptasi perubahan iklim pada masyarakat di wilayah pesisir laut dan pulau-pulau kecil, maka HAI diharapkan untuk senantiasa berkoordinasi dan bersinergi dengan lembaga/Instansi terkait mulai dari tingkat Desa/Negeri, Kecamatan, Kabupaten sampai tingkat Provinsi. Dengan demikian, dukungan ini kami berikan dengan harapan agar program tersebut dapat terlaksana dengan baik serta dapat membawa dampak positif bagi kelestarian lingkungan.

Demikian Surat Dukungan ini dibuat, atas perhatian dan kerjasamanya diucapkan terima kasih.

Plt. Kepala Bappeda Provinsi Maluku

DR. Djalaludin Salampessy, S.Pi, M.Si
Pembina Tk.I
NIP 19710212 199803 1 012

Annex 2. Endorsement Letter from Mr. Samsul Maarib, S.Pi, MAP, Head of the Fisheries Service Office of Maluku Tengah Regency

PEMERINTAH KABUPATEN MALUKU TENGAH
DINAS PERIKANAN
Jl. Buru Telp (0914) 21247 Fax (0914) 21247 – Masohi 97511

Masohi, 15 Desember 2018

Nomor : 523/990/2018
Lampiran : 1 (Satu) Lembar
Perihal : Surat Dukungan

Kepada
Yth. Direktur Yayasan Harmoni Alam Indonesia (HAI)
Di -
Bogor

Menindaklanjuti Surat Yayasan Harmoni Alam Indonesia (HAI) Nomor : 06/HAI-Eks/XII/2018 tanggal 10 Desember 2018 perihal Permohonan Surat Dukungan, maka bersama ini kami sampaikan beberapa hal sebagai berikut :

1. Kami selalu mendukung setiap program yang dilaksanakan dengan memperhatikan aspek kelestarian lingkungan yang berdampak positif terhadap kelestarian sumberdaya hayati.
2. Dalam pelaksanaan program dan kegiatan tersebut yang bertujuan untuk peningkatan Sumber Daya Manusia dalam mengelola lingkungan pada wilayah pesisir dan pulau-pulau kecil, senantiasa berkoordinasi dan bersinergi dengan lembaga/instansi terkait dari tingkat Desa/Negeri, Kecamatan, Kabupaten sampai tingkat Provinsi.
3. Program adaptasi perubahan iklim bidang pesisir, laut dan pulau-pulau kecil yang akan dilaksanakan perlu melibatkan masyarakat sekaligus melatih kemampuan sumber daya manusia terhadap aspek sosial, ekonomi dan pengelolaan lingkungan hidup.
4. Dengan memperhatikan dan melaksanakan poin 1 – 3, maka pada prinsipnya kami selalu mendukung setiap kegiatan pengelolaan wilayah pesisir dan pulau-pulau kecil yang ramah lingkungan.
5. Memperhatikan uraian tersebut diatas maka dimintakan kepada Saudara untuk dapat melaksanakannya sesuai aturan dan perundang-undangan yang berlaku.

Demikian dukungan ini disampaikan atas perhatian dan kerjasamanya diucapkan terima kasih.

PIL. KEPALA DINAS PERIKANAN
KABUPATEN MALUKU TENGAH

SAMSUL MAARIB, S.Pi, MAP
NIP. 19680413 199803 1 006

Tembusan Kepada Yth.
1. Bupati Maluku Tengah di Masohi
2. Pertinggal

Annex 3. Endorsement Letter from Mr. Imaran Soumena, SP., Secretary of Negeri Lima

PEMERINTAH KABUPATEN MALUKU TENGAH
KECAMATAN LEIHITU
NEGERI NEGERI LIMA
Jln. Masjid Raya At-Taqwa Negeri Lima, KP. 97581

Negeri Lima, 10 Juni 2019

Nomor : 277/S.Duk/NL/VI/2019
Lampiran : -
Perihal : Surat Dukungan

Kepada Yth :
Direktur Yayasan Harmoni Alam
Indonesia (HAI)
Di-
Bogor

Menindaklanjuti Surat Yayasan Harmoni Alam Indonesia (HAI) Nomor : 08/HAI-Eks/VI/2019 Tanggal 08 Juni 2019 perihal Permohonan Surat Dukungan, maka bersama ini kami sampaikan beberapa hal sebagai berikut :

1. Pada prinsifnya Pemerintah Negeri Negeri Lima senantiasa mendukung setiap kegiatan yang dilaksanakan oleh siapapun dan atau oleh lembaga manapun yang bersifat memberikan manfaat dan maslahat bagi masyarakat dan lingkungan.
2. Program Adaptasi Perubahan Iklim Bidang Pesisir Laut dan Paulau-Pulau Kecil yang akan dilaksanakan perlu melibatkan masyarakat sekaligus melatih kemampuan SDM terhadap aspek social, ekonomi dan pengelolaan lingkungan hidup, serta senantiasa memperhatikan nilai kearifan-kearifan local yang hidup ditengah masyarakat
3. Dengan memperhatikan dan melaksanakan poin 2 di atas, maka pada prinsifnya kami slalu mendukung dan menyokong penuh setiap kegiatan yang telah direncanakan dan akan dilaksanakan di Negeri Negeri Lima Kecamatan Leihitu Kabupaten Maluku Tengah.

Demikian dukungan ini sampaikan atas perhatian dan kerjasamnya kami ucapkan terimakasih.

a.n. Kepala Pemerintah Negeri
SEKRETARIS NEGERI

PEMERINTAH NEGERI NEGERI LIMA

IMARAN SOUMENA, SP

Annex 4. Endorsement Letter from Mr. Saleh Tuharea, Secretary of Negeri Ureng

PEMERINTAH KABUPATEN MALUKU TENGAH
KECAMATAN LEIHITU
NEGERI URENG
Jalan Air Putri KP. 97581

Ureng, 10 Juni 2019.

Nomor : 523/01/NU/VI/2019.
Lampiran : ---------
Perihal : **Surat Dukungan**

Kepada Yth,
Direktur Yayasan Harmoni Alam Indonesia (HAI)
Di
Bogor .-

Menindaklanjuti Surat Yayasan Harmoni Alam Indonesia (HAI) Nomor : 10/HAI-Eks/VI/2019 tertanggal, 08 Juni 2019, Perihal Permohonan Surat Dukungan , maka bersama ini kami sampaikan beberapa hal sebagai berikut :

1. Kami Pemerintah Negeri Ureng selalu mendukung setiap program yang dilaksanakan dengan memperhatikan aspek kelestarian lingkungan yang berdampak langsung secara positif terhadap kelestarian sumberdaya hayati secara berkelanjutan.

2. Sedapat mungkin penyelenggaraan program dan kegiatan ini bertujuan untuk peningkatan sumberdaya manusia terutama dalam pengelolaan lingkungan di wilayah pesisir dan laut, dengan senantiasa berkoordinasi dan bersinergi dengan kami selaku Pemerintah Negeri Ureng.

3. Program Adaptasi dan Perubahan Iklim yang akan dilaksanakan ini sedapat mungkin melibatkan masyarakat Negeri Ureng, sekaligus penguatan kapasitas masyarakat Negeri Ureng meliputi apsek social, ekonomi dan pengelolaan lingkungan hidup.

Dengan mempertimbangkan ke-tiga hal tersebut di atas (point 1-3) , maka pada prinsipnya kami, *Pemerintah Negeri Ureng selalu memberi dukungan pada setiap implementasi program dan kegiatan pengelolaan wilayah pesisir dan laut*, yang dilaksanakan oleh **Yayasan Harmoni Alam Indonesia (YAI) di Bogor** kerjasama dengan **Institut Tifa Damai Maluku** berbasis issu Adaptasi Perubahan Iklim di **Negeri Ureng, Kecamatan Leihitu, Kabupaten Maluku Tengah.**

Demikian surat ini disampaikan sebagai dukungan implementasi program tersebut dan atas perhatian serta kerjasamanya diucapkan terima kasih.

a.n. Kepala Pemerintah Negeri Ureng

URENG

SALEH TUHAREA
Sekretaris Negeri

Annex 4. Endorsement Letter from Mr. Ali Mahulette, Secretary of Negeri Asilulu

PEMERINTAH KABUPATEN MALUKU TENGAH
KECAMATAN LEIHITU
NEGERI ASSILULU
Jln Raya Assilulu KP. 97581

Nomort : 660.1/11/NA/VI/2019.-
Lampiran : -
Perihal : Surat Dukungan

Kepada Yth,
Direktur Yayasan Harmoni Alam Indonesia (HAI)
Di
Bogor

Dengan hormat,

Menndak lanjuti Surat **Yayasan Harmoni Alam Indonesia (HAI)** Nomor 09/HAI-Eks/VI/2019 tanggal 08 Juni 2019tentang permohonan Dukungan maka bersama ini kami sampaikan bahwa :

1. Setelah membaca dan meneliti Surat tersebut kami mendukung sepenuhnya Program Adapatasi Perubahan Iklim Bidang Pesisir Laut dan Pulau pulau Kecil d Kabupaten Maluku Tengah yang direncanakan oleh Yayasan Harmoni Alam Indonesia untuk di laksanakan d Negeri Assilulu, Kecamatan Leihitu Kabupaten Maluku Tengah.
2. Kegiatan Adaptasi Perubahan Iklim Bidang Pesisir dan Pulau Pulau Kecil dalam pelaksanaannya dapat berkoordinasi dengan Pemerintah Negeri serta melibatkan masyarakat sehingga hasil dari program tersebut dapat benar – benar berhasil dan dirasakan manfaatnya oleh masyarakat.

Demikian surat dukungan ini disampaikan dan atas kerjasamanya kami capkan terima kasih.-

Assilulu 10 Juni 2019

a.n. Pj. Kepala Pemerintah Negeri Assilulu

Sekretaris Negeri

ALI MAHULETTE

Annex 5. Local Consultations List of Participants

Consultations between Desember 12nd and 13th, 2019

Asilulu villages community :

1. Ali Mabulawo (Head of Soa Tamaela)
2. Johan Laya (Head of Soa)
3. Asmawi Kibas (Saniri)
4. Ali Mahusette (Secretary of Negeri)
5. Yusuf Iksan Mahulauw, S.Pi. (Negeri Staff)
6. Wahyudi Abd. Ely (Negeri Staff)
7. Johan Layn (Fishermen)
8. Abutra Ely (Fisherman)
9. Hasan Madero (Fisherman)
10. Lila Kalauw (Women Group)
11. Ali Mamang (Fisherman)
12. Ismail Ely (Fisherman)
13. Muhammad Sayni
14. Majid Mahusette
15. Halima Layn (Women Group)
16. Sabila Mahulauw (Women Group)
17. Abuha Elu
18. M. Layn
19. Ismail Ely (Fisherman)
20. Hasan Madero (Nelayan)
21. Ali Mamang (Nelayan)

Ureng villagers community

22. Daena Laitupa (Women Group)
23. Isdayanti Kalauw (Women Group)
24. Umar (Fisherman)
25. Ake Hunath (Fisherman)
26. Djapar T. (Staff Negeri)
27. Abdula Heluth (Fisherman)
28. Muhammad Laetuysa (Negeri Staff)
29. Abdul Rahim Huath (Negeri Staff)
30. Sy Saimima
31. Abd. Latif Ely
32. Hasanudin Nayete
33. Hawa Laitupa (Women Group)
34. Halima Kotala (Women Group)

Lima villagers community

35. Midra Suneta (Head of Soa Henahelu)
36. Saripudin Soulisa (Fisherman)
37. Alwau Soumiwa N (Negeri Staff)

38. Ridwan Suneth
39. Ismail Mahulauw
40. Mohobar Soumena
41. Ridwan Tunny
42. Azis Mahulauw (Negeri Staff)
43. Sitti Nahda Maasily (Women Group)
44. Rapik Soulesa (Negeri Staff)
45. Mochtar Laturise (Kepala Dusun)
46. Padjri Soumena (Fisherman)
47. Imran Soumena (Secretary of Negeri)

Consultation between 4th – 7th January, 2020

Asilulu villages community :

1. Ali Mabulawo (Head of Soa Tamaela)
2. Ali Mahusette (Secretary of Negeri)
3. Yusuf Iksan Mahulauw, S.Pi. (Staff Negeri)
4. Halima Layn (Women Group)
5. Sabila Mahulauw (Women Group)
6. Hasan Madero (Fisherman))
7. M. Layn
8. Ismail Ely (Fisherman)

Ureng villagers community

9. Muhammad Laetuysa (Negeri Staff)
10. Isdayanti Kalauw (Women Group)
11. Djapar T. (Negeri Staff)
12. Abdula Heluth (Fisherman)
13. Hasanudin Nayete

Lima villagers community

14. Mochtar Laturise (Head of Dusun)
15. Padjri Soumena (Fisherman)
16. Imran Soumena (Secretary of Neger)
17. Midra Suneta (Head of Soa Henahelu)
18. Sitti Nahda Maasily (Women Group)
19. Rapik Soulesa (Negeri Staff)
20. Saripudin Soulisa (Fisherman)

21. DR. Gino V. Limmon, M.Sc. (Director of Maritime and Marine Science Center of Excellence, Pattimura University)
22. Abdul Haris (Acting Head of the Fisheries Service Office of Maluku Province)
23. Ilham (BAPPEDA Staff)
24. Dr. Djalaludin Salampessy, S.Pi., M.Si. (Acting Head of Regional Planning and Development Agency (BAPPEDA) Maluku Province)

25. Dr. Ir. Simon Tubalawony, M.Si. (Lecturer in the Faculty of Fisheries & Marine Sciences, Univ. Pattimura, Ambon / Oceanography Expert).
26. DR. Jacob Waas, S.Pi., M.Si. (Lecturer of the Faculty. Fisheries & Marine Sciences, Univ.Pattimura-Ambon Expert Oceanography, GIS, Participatory Mapping).
27. Rachmat Elly , S.Pi.

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

Prepared for submission of proposals

Enhancing The Adaptation Capability Of Coastal Community In Facing The Impacts Of Climate Change In *Negeri* (Village) Asilulu, Ureng And Lima Of Leihitu District Maluku Tengah Regency Maluku Province

Prepared By

HARMONY ALAM INDONESIA

kemitraan partnership

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CHAPTER I
PRELIMINARY

1.1. Project Background

Central Maluku consists of small islands vulnerable to even the smallest of ecological changes. As an archipelago, this area greatly depends on the ocean; both as source of living and connecting route between areas. Coastal area and the sea holds a significant function and role on the situation and condition of the surrounding areas, which greatly influences the lives and economy of the community. Weather and seasons are among the factors influencing tidal range, ocean current strength, and wind speed—which in turns influence people's ability in earning money and their mobility.

Change in fish season also impacts on fishermen's catch and also on material losses because of the relatively high cost for going to sea due to the requirement to move continuously for catching up with time and fishing ground, while catch sometimes does not meet the target. The occurrence of El Nino and La Nina phenomenon results in the change in sea level temperature thus changing fish life pattern and fish migration[1]. Change in temperature will affect the decrease in fish upwelling zone (place for foraging), shift of fish population to colder or hotter sea and increase in sea wave. Coastal and sea climate change and diversity impact on the uncertainty of time and fishing ground for fishermen[2].

This project is aimed at assisting coastal communities in Maluku Tengah Regency to improve their resilience and reduce their vulnerability in the social, economic and ecological aspects from the threats of climate change impacts. Specifically, this project would assist several *Negeri* (villages) in Maluku Tengah, namely Asilulu, Ureng, and Lima, which are administratively located in Leihitu Sub-District. The three negeri more or less have similar characteristics in terms of livelihood and geographical as well as ecological conditions in coastal areas. They even tend to have the same topography namely plains and hills from 0 – 700 M above sea level. Below is the table of social, environmental, and developmental conditions in the 3 Negeri.

Several socio-economic impacts of climate change on fishermen according to the results of the research by Subair (2013) include the increase of sea water level reaching settlement areas, the intensity of storm and high waves posing dangers to navigation, unpredictable changes in fish harvesting seasons, unpredictable shifts of fish seasons, confusion due to the fact that west

[1] Fish migration constitutes a link of life cycle for fish to determine their habitat with a condition appropriate for the continuity of fish life stages.

[2] Dirjen PPI of KLHK and Pemprov of Maluku, Working Paper Road Map Mitigasi dan Adaptasi Perubahan Iklim dan Pembangunan Berkelanjutan Provinsi Maluku, 2017, p. 41-42

monsoon and east monsoon are no longer in accordance with the monsoon calendar used as reference. Socio-economic impacts caused by the aforementioned condition include, among others: (1) vulnerability of settlements to damage caused by being hit by waves and strong storm wind; (2) decreasing fish catch due to the changes in fishing seasons and relocation of fishing ground.

Ecological impact in the form of damage to road infrastructure and breakwater walls frequently occurred along the coastal areas from Ambon city to Asilulu village. Asphalt paving had disappeared from the road surface and puddles of sea occurred on several spots on the road, while many parts of breakwater walls had gone and some parts were frequently inundated by sea water. Another impact affecting the communities, which was deemed as a disaster, was frequent occurrence of strong wind along with high waves, as frequently occurred in 2010. Another ecological impact recorded is the loss of coastal plants, including large trees that had been washed out by the sea. In addition, Fishermen who are affected by the increase of sea water level also realize that currently sea water has reached the backyards of some of their houses and is inundating the beach that is used to be used as the pace for mooring (drying) their boats.

The main objective of this project is to support climate change adaptation action and its implementing stages in Maluku Province as established in Climate Change Mitigation and Adaptation Road Map and Sustainable Development of Maluku Province. In particular, this project aims to improve the level of adaptability and resilience, as well as to eliminate vulnerability in the social, economic and ecological standpoint from the threat of climate change experienced by coastal communities in three **Negeri/Villages (Negeri Lima, Negeri Ureng, Negeri Asilulu)**, utilizing sustainability principles in managing and leveraging coastal ecosystem region, which are:

1. Increasing the fisherman knowledge and ability to deal with changes in circulation patterns and fish migration patterns
2. Improving the coastal ecosystems for the resilience of coastal communities and alternative sources of fishing for local fishing groups.
3. Strengthening the economic resilience of the community through the development of alternative economies in coastal areas that are resistant to climate by utilizing the economic potential of the coast.
4. Strengthening community resilience in the face of disasters through the construction of supporting facilities to minimize the impact of tides and waves.

The project is designed in accordance with 15 principles set out in the *Environmental and Social Policy Adaptation Fund* (ESP) policy:

1. *Principle 1: Compliance with the Law*

2. *Principle 2: Access and Equity*
3. *Principle 3: Marginalized and Vulnerable Groups.*
4. *Principle 4: Human Rights.*
5. *Principle 5: Gender Equality and Women's Empowerment.*
6. *Principle 6: Core Labour Rights*
7. *Principle 7: Indigenous Peoples*
8. *Principle 8: Involuntary Resettlement.*
9. *Principle 9: Protection of Natural Habitats*
10. *Principle 10: Conservation of Biological Diversity*
11. *Principle 11: Climate Change*
12. *Principle 12: Pollution Prevention and Resource Efficiency*
13. *Principle 13: Public Health.*
14. *Principle 14: Physical and Cultural Heritage*
15. *Principle 15: Lands and Soil Conservation.*

To ensure that project implementation complies with these 15 principles, an Environmental Social Management Plan (ESMP) study is required in the preparation of project proposals to be funded by the Adaptation Fund.

1.2. Project Component Description

1.2.1. Component 1 : Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change

This component aims to support and strengthen the capacity of small / traditional fishermen at the project site in order to deal with climate change which impacts on changes in fish circulation and migration (especially tuna). This component also supports and strengthens the knowledge and ability of fishermen groups to adopt various strategies for adapting to climate change, improve the quality and sale value of fish caught and collaborate with various other stakeholders.

This activity will be carried out under 5 sub-components consisting of:

1. **Mapping of new fishing ground areas based on fish circulation and migration patterns, as well as updating the traditional season calendars that have been used by fishermen**
   This activity aims to determine the fishing ground area and the fishing season calendar that will make it easier for fishermen to determine their catching area at sea, especially tuna. Activities in this sub-component include: (i) Baseline studies of fish circulation and migration patterns and traditional seasonal calendars at the project site; (ii) Mapping the fishing ground area; (iii) Workshop on preparing seasonal calendars and maps of renewable fishing ground areas.

2. **Procurement of FADs**

   This activity is to support the productivity of fishermen's catch at the project site. This sub-component includes: (i) Baseline study of the location of FAD placement; (ii) Licensing for the installation of FADs to the relevant agencies / offices (Ministry of Marine Affairs and Fisheries through the Provincial / Regency Marine and Fisheries Service); (iii) Making and installing FADs; (iv) FAD operation; (v) Monitoring and reporting.

3. **Procurement of Cold Storage**

   This sub-component will support fishermen groups to maintain the quality of their fish catch. These sub-components include: (i) the construction of a semi-permanent building for cold storage; (ii) Provision of cold storage facilities and infrastructure such as cold boxes, ice; (iii) operational costs to operate Cold Storage.

4. **Fishermen Group Assistance**

   This sub-component will support fishermen groups to strengthen and increase the capacity and knowledge of fishermen to adopt various climate change adaptation strategies and also develop cooperation with various stakeholders such as government, companies, universities/research institutions, Finance/bank, and NGOs.

1.2.2. Component 2 : Coastal ecosystems repair for the resilience of communities and alternative location for source fishing

This project will focus on restoring a number of *coral reefs* that have already begun to get damaged due to rising sea water temperatures and flash floods caused by the Wai Ela dam break in 2013. Climate conditions cause coral reefs to break down and, as a result, the population of pelagic fish living in the shallow water decline drastically, while at the same time, the increasing risks of fishing due to strong winds and high waves discourage fishermen to go fishing. In some villages, fishermen who have economic alternatives such as trading, farming and gardening can still make a living in these conditions, but the people with no alternative livelihoods face difficult challenges to support their family.

This activity will be carried out under 2 sub-components which consist of:

1. **Rehabilitation/Restoration of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach**

   The method for rehabilitation / restoration of coral reefs in this activity is to make artificial reefs. Activities under this sub-component include: (i) Consultation with government and other stakeholders regarding coral reef restoration plans and restoration techniques to be used; (ii) Baseline study for determining the location of coral reef rehabilitation; (iii) Making artificial reefs using concrete materials and laying

artificial reefs in predetermined locations; (iv) artificial reef monitoring and maintenance.

2. **Increased awareness and active role of coastal communities to rehabilitate, maintain and maintain coral reefs**

   The success of the activities to restore shallow marine ecosystems will be largely determined by the active role of the local people in the project site. An enabling condition that must be created is to understand the impacts of coral reef damage and the benefits that can be obtained if the restoration/rehabilitation of coral reefs is successful. In addition, it requires knowledge and capacity to perform coral reef transplantation techniques, coral reef maintenance and preservation, and regular monitoring. To create the enabling conditions, following are the stages of activities to be carried out : (i) Training for youth groups on making articial reefs and cultivation/transplantation, maintenance and preservation of coral reefs; (ii) Training on sustainable coral reef monitoring and organizational strengthening of the three youth groups to save coral reefs in the three Negeri; (iii) Developed Co-Management Concept (Government, swasta/company, Community and NGO'S) in coral reef management ; (iv) Developed potential for coral reef and coastal ecotourism

1.2.3. Component 3 : Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas

The components of this project will address the economic vulnerability issues of the three Negeri against climate change. Alternative livelihood models that will be developed are based on fisheries and non-fisheries. The success of this project is expected to encourage the government of the Negeri and local governments to adopt and develop alternative livelihood models that will be developed in this project. Alternative economic development will target groups of women in the project site who are not employed and economically dependent on the fish captures obtained by their husbands as household heads.

This activity will be carried out under 3 sub-components which consist of:

1. **Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each Negeri) which for every floating net cage, it is managed by a group**

   This project will develop shallow water fish culture using floating net cages in the attempts of developing an alternative economy for 3 negeri community. Every Negeri will install 3 floating net cages, so there will be 9 floating net cages in 3 Negeri. This project is designed to be implemented in Negeri Asilulu, Negeri Ureng, Negeri Lima. Every has a minimum of 3 floating net cages which will directly managed by the

community group. This group will have an active role in developing the fish culture in each of these Negeri.

Kegiatan dalam sub komponen ini meliputi : (i) Conducting fish culture training for groups in every 3 Negeri; (ii) Surveying location for floating net cage; (iii) Design making of floating net cages construction and facilities provision for the fish culture; (iv) Managing the floating net cages.

2. **Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri) which for every raft, it is managed by a group**

   At the project location, fishing was routinhe for men, while activity on the mainland inbolved both domestic and family economic support activities. The participation of women to assit the husbands in meeting the family's economic needs places women at the expense of their daily activities and downtime. This sub-component aims to develop alternative economies outside the fishery sector specifically for women's groups in the project location. The activities of this sub-component include: (i) Seaweed cultivation training; (ii) Surveying location for seaweed cultivation; (iii) Floating rafts installation; (iv) Cultivating seaweeds; (v) Pemasaran hasil olahan rumput laut.

3. **Procurement of seaweed post-harvest processing machines**

   This sub-component aims to increase the selling value of seaweed cultivation. The activities of this sub-component include: (i) Initial seaweed processing training; (ii) Procurement of seaweed processing machines consisting of drying machines, press machines and processing machines.

1.2.4. Component 4 : The Development of Supporting Facilities to Anticapate Coastal Flooding and Tidal Wave

This component aims to strengthen coastal community resilience and protect community settlements along the coast. This project focuses on restoring the function and physical condition of ± 500 M embankment/breakwater (Talud) structure in 3 Negeri, with targeted outcome of reducing potential risks from the occurrence of tidal waves in 3 Negeri, and impact of saving ± 800 lives in 3 Negeri who are potentially facing threats from the occurrence of tidal waves. In addition, it helps as well protect the ± 1.6 KM village road that lies along the seafront. Public Works Service will be involved in this project, from the consultation phase, survey implementation, and recommendation in relation to physical specification of the embankment which will be constructed, and the implementing contractor for the project.

The components of this activity include: (i) Consultation of detailed plans for Talud restoration activities to relevant stakeholders, especially affected communities and the government, particularly the Public Works Office; (ii) Baseline survey of the damaged Talud location which is important for immediate repair; (iv) Implementation and preparation of Environmental Impact Analysis (AMDAL), Environmental Management Plan and Environmental Management Efforts

by contractors; (v) Implementation of Talud repair construction; (vi) Monitoring and maintenance

1.3. Objective of Environmental Sustainable Management Plan (ESMP)

The objective of this Environmental and Social Management Plan (ESMP) is to ensure that all project components will be implemented in a sustainable manner by managing environmental and social aspects in accordance with the principles set out in ESP AF. The ESMP will clarify the principles, rules, guidelines and procedures, and organizational arrangements to be applied in the environmental and social management plans for each component of the project. The ESMP will guide:

1. Develop a plan for mitigating social and environmental impacts that may arise in project implementation
2. The ESMP is also a reference for ESMP methods, tools and reporting when the program is running.

1.4. Legal/Policy Framework

Government/National regulations and the ESP Adaptation Fund Policy will be used as the basis for preparing the ESMP

1.4.1. National Regulations.

The following policies serve as the basis for implementing the ESMP

Table 1. National Regulations for Each Project Component

No	Regulation	Component			
		1	2	3	4
1	Law No. 32/2009 concerning Protection and the Environmental Management	V	V	V	V
2	Law No. 31/2004 concerning Fisheries revised Law No. 45/2019 concerning Fisheries	V			
3	Law No. 32/2014 concerning The Sea	V	V		
4	Law No. 1/ 2014 concerning The Management of Coastal Area		V		
5	Law Number 5 of 1990 concerning Conservation of Natural Resources Biodiversity and the Ecosystem	V	V		
6	Law Number 13 concerning Labour				V
7	Law No.21/2000 concerning Trade Unions, Law No. 2/2004 concerning Industrial Relations Disputes				V
8	Government Regulation No. 32/2019 concerning The Sea Spatial Plan	V			

9	Presidential Regulation No. 121/2012 concerning Rehabilitation of Coastal Areas and Small Islands		V		
10	Regulation of the Minister of Marine Affairs and Fisheries No. 24/2016 concerning Rehabilitation of Coastal Areas and Small Islands Procedures		V		
11	Regulation of the Minister of Marine Affairs and Fisheries No. 24/2019 concerning The Procedure for Granting Water Location Permit and Water Management Permit in the Coastal Areas and Small Islands	V		V	
12	Regulation of the Minister of Marine Affairs and Fisheries Number 26/permen-kp/2014 concerning FADs	V			
13	Regulation Of The Minister Of Environment And Forestry Number: P.38 / Menlhk / Setjen / Kum.1 / 7/2019 Concerning Types Of Business Plans And / Or Activities That Must Have Analysis On Environmental Impacts				V
14	Circular Letter of the Minister of Public Works No. 07/SE/M/2010				V
15	Local Regulation of the Governor Maluku Province No. 1/2018 concerning Plan Zone Coastal Areas and Small Islands Maluku Province in 2018 – 2038	V	V	V	V

1.4.2. Environmental and Social Policy (ESP) Adaptation Fund

The Environmental and Social Policy (ESP) Adaptation Fund serves as the basis for the overall ESMP approach

Table 2. 15 ESP Principle Adaptation Fund

Principle	Objective
Principle 1: Compliance with the Law	To ensure project implementation complies with applicable national laws and regulations as well as international regulations relevant to project implementation.
Principle 2: Access and Equity	Ensure the project / program provide fair and equitable access to benefits in an inclusive and non-inclusive manner hampering access to basic health services, clean water and sanitation, energy, education,housing, safe and decent working conditions, and land rights (especially those

	relating to the marginalized or vulnerable groups)
Principle 3: Marginalized and Vulnerable Groups.	To ensure that project implementation involves / takes into account marginalized groups and vulnerable groups as beneficiaries.
Principle 4: Human Rights.	To promote and ensure that project implementation respects human rights as affirmed in the Universal Declaration of Rights.
Principle 5: Gender Equality and Women's Empowerment.	To ensure equal opportunities and rights for both men and women to be involved in the planning, project implementation and monitoring stages. Promote gender equality in project activities.
Principle 6: Core Labour Rights	To ensure that the implementation of the project fulfills the basic labor rights stipulated in the ILO Covenant as well as the national regulations on labor
Principle 7: Indigenous Peoples	To ensure that project implementers respect the rights of indigenous peoples, their cultural uniqueness and therefore they: (1) receive culturally appropriate social and economic benefits; and (2) not experiencing adverse impacts during the construction process.
Principle 8: Involuntary Resettlement.	To ensure that there are no actions of eviction and or forced resettlement of community settlements / dwellings in the project implementation location.
Principle 9: Protection of Natural Habitats	Ensure the project / program does not unjustified damage, conversion or degradation critical natural habitats, including those (a) legally protected; (b) officially proposed for protection; (c) recognized by authoritative sources for its height conservation value, including as critical habitat; or (d) recognized as protected by indigenous or traditional communities.
Principle 10: Conservation of Biological Diversity	To ensure that the implemented project supports efforts to conserve biodiversity in the project location.

Principle 11: Climate Change	To Ensure that the project is implemented using various methods that are environmentally friendly and avoid the use of materials and tools that will cause emissions
Principle 12: Pollution Prevention and Resource Efficiency	To ensure that the implemented projects (especially infrastructure) have plans to prevent or minimize the impact of pollution.
Principle 13: Public Health.	To ensure that the implemented project does not have a negative impact or have a small impact on the health conditions of the community at the project site and ensure that the project has a mitigation plan.
Principle 14: Physical and Cultural Heritage	Help conserve physical cultural resources and avoid their damage or loss. The PCR covers resources of archaeological, paleontological, historical, architectural, religious (including graves and burial sites) aesthetic or cultural interests other
Principle 15: Lands and Soil Conservation.	To ensure that the implemented project does not cause land damage and degradation. Ensure the use of building materials does not cause damage and land degradation.

1.5. Environmental and Social Screening Tools

To determine the level of impact on environmental and social aspects, screening is carried out using a risk assessment matrix. The use of risk assessment is carried out because it is quite simple and can be done quickly. The categories are based on a matrix of risk assessment of the likelihood and severity of impacts. This matrix will show the environmental and social classifications as extreme risk, high risk, medium risk, and low risk based on the assessment of each activity contained in the project sub-components. Each likelihood and consequence will be assessed based on conditions in the field. The assessment information is described in the table below.

Table 3. Explanations for the Possibility and Consequence Assessment

Nilai	Possibility	Consequence
1	**Rare** : impossible during the project	**Small** : There is no impact or there is an impact but the scale is very small

2	**Posible** : Possible to occur during project implementation but with small and limited frequency	**Medium** : There is a negative / bad impact on the environment or the surrounding community.
3	**Certainly** : It must have happened during project implementation	**High** : major damage to the environment or surrounding community and significant negative impact on the ecosystem

The degree of impact can be determined by a scoring system. Scores 1 to 3 fall into the low risk category. A score of 4-6 falls into the medium category. A score of 7-9 falls into the high-risk category. The low risk category indicates no impact or impact that is very low or self-limiting and the high risk category indicates a very high and widespread impact. It can even have a disastrous impact on fauna / flora or even humans. Evaluation of the level of impact of project implementation will use this assessment.

Table 4. Risk Assessment Matrik

Possible Impact	**Impact Level**		
	Tinggi (3)	**Sedang (2)**	**Kecil (1)**
Pasti (3)	9	6	3
Mungkin (2)	6	4	2
Langka (1)	3	2	1

CHAPTER II
ENVIRONMENTAL AND SOCIAL SCREENING REQUIREMENTS

2.1. Scope of Activity

The project to be implemented has been limited in scope so that it does not include any work that has a large environmental or social impact. Based on the initial screening of each component, the potentially adverse environmental impacts associated with these works and activities will be largely construction-related and will be local, small and / or medium-sized and can be reversible through the use of accessible and simple mitigation measures implemented for Component 4 (Rehabilitation / Restoration of damaged Talud). Taking these aspects into account, all activities to be carried out under Component 4 are considered as Category B Projects, where the impact is specific to the site; little irreversible impact; and in most cases, management actions can be easily designed. If, in detail, the preparation and screening of the Talud rehabilitation / restoration location unexpectedly identifies negative or potentially irreversible impacts related to environmental or social protection, then the implementation of these activities will be subject to further study and discussion for approval of the Adaptation Fund.

Table 5. Detailed Sub Activity for Each Project Component

Project Component	Activity	Location
Component 1 : *Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change*	**a. Making a fishing ground area map and a Renewable Season calendar.** ***Pre stage*** - Baseline survey to carry out mapping of fishing ground areas (traditional seasonal calendars, climatological data for oceanographic parameters of the waters, certain oceanographic phenomena such as divergent and convergent currents, thermal fronts, chlorophyll fronts, upwelling areas and certain eddies or certain values of parameters the oceanography) - FGDs with stakeholders such as government, traditional elders, government and fishermen groups at the project location regarding the implementation of activities to determine the method and timing of the implementation of activities - Determination of the parties that will be involved in mapping (especially fishing groups) - Coordination and licensing with related agencies (Local Government, Fisheries Service, Indonesian Navy, Meteorology and Climatology Agency-BMKG, Regional SAR Agency) ***Implementation Stage*** - Equipment preparation for fishing ground mapping such as	Negeri Ureng, Negeri Asilulu, Negeri Lima, Banda Sea

	Fish Finder etc. - Standard specifications for ships to be used, such as speed boats / long boats made of polyethylene or fiber - Check the condition and spare parts of the ship motor - Preparation of safety equipment such as ring life buoys, life jackets, first aid kit, Phyrotechnis (smoke signal) - Food material ***Post Stage*** - Socialize the results of the mapping to relevant stakeholders. - Disseminate this information through mass media such as local TVRI, newspapers, online social media and national webinars on participatory mapping methods of fishing ground tuna in the waters (Knowledge Management). - Conduct to agreements between Negeri regarding the use of fishery resources in the fishing ground area.	
	b. Procurement of FADs ***Pre stage*** - Making a joint agreement between Negeri and between fishermen in 3 Negeri regarding the criteria for groups that will operate FADs. - Agreement on SOP for the use of FADs within fishermen groups. - Baseline survey of the location of FAD placement in accordance with applicable national regulations and standards - Permit arrangement. - To increase fishermen's competence and understanding of the use of FADs in accordance with applicable national regulations and standards. ***Implementation and Operation of FADs*** - Construction of FADs that are suitable for water conditions and are environmentally friendly (FAD frames are made from dried sago fronds and the cover or roof is made of dried sago leaves. - The attractors for the presence of fish are made from coconut leaves, nipah leaves or sago leaves which grow a lot in the coastal village areas of the project. - FAD construction waste treatment - To ensure that the natural habitat is not disturbed at the FAD installation site - Determination of the fishing gear used. ***Monitoring Stage*** - Periodic monitoring of the condition of FADs that have been installed and the operating of FADs. - Prepare periodic reports to the Government (Marine and Fisheries Service).	Negeri Ureng, Negeri Asilulu, Negeri Lima, Banda Sea (Around Seram Island)
	C. Cold Storage ***Pre stage*** - Determine the location of Cold Storage development in each Negeri. - Design of construction building of Cold Storage	Negeri Ureng, Negeri Asilulu, Negeri Lima

	- Formulation of agreements and SOP for Cold Storage management (Mechanisms and rules of the game). ***Cold Storage construction and operation phase*** - Ensuring construction waste is handled properly. - Handling of waste from cold storage operations (fishy smell, fish bones, etc.) - Transparency in Cold Storage management. - Provision of a complaint mechanism. ***Monitoring Stage*** - Regular monitoring (every 6 months) - Regular and periodic reporting to members of the fishery group	
	d. Mentoring and Strengthening the Capacity of Fishermen Groups - Register the project beneficiary fishermen group officially with the government (Dinas Perikanan and Marine). - Build cooperation with related stakeholders such as government, companies, universities, research institutes, NGOs, banks, to get access to assistance, technology, capacity building (Soft Skills).	Negeri Ureng, Negeri Asilulu, Negeri Lima,
Component 2 *Coastal ecosystems repair for the resilience of communities and alternative location for source fishing*	**a. Rehabilitation/Restoration of ± 12 hectares of coral reefs in Asilulu and Lima villages in order to expand new fishing grounds near the beach** ***Pre stage*** - Baseline survey of coral reef rehabilitation locations - Consultation with relevant stakeholders regarding coral reef rehabilitation plans - Analysis of applicable policies, including licensing - Artificial reef construction design - Building an understanding of coral reef restoration and management through the concept of co-management between the community, government and the private sector - Increase the capacity of youth / girl groups to rehabilitate coral reefs (making artificial reefs, nurseries, transplanting, monitoring) ***Construction Stage*** - Handling construction waste - Recruitment of local workers for the manufacture of artificial reef concrete - Ensure that coral reef seeds are taken from locations that have received approval / permission from the relevant government (Marine and Fisheries Service) ***Planting and care of coral reefs Stage*** - The method for placing the artificial reef is appropriate so that it does not damage the coral reef habitat in the location where the artificial reef is placed - Periodic monitoring of coral reef growth	Negeri Lima, Negeri Asilulu (Hatala Island and Lain Island), Banda Sea
	b. Increased awareness and active role of coastal communities to rehabilitate, maintain and maintain coral reefs - Dissemination of information on the importance of protecting coral reef habitats	Negeri Lima, Negeri Asilulu, Negeri Ureng

	- Formulation of Negeri regulations for coral reef protection - Development of coral reef ecotourism - Documenting coral reef rehabilitation activities in the form of videos, photos, leaflets (Knowledge management) - Cooperation to expand the area for coral reef rehabilitation involving the government, private sector, research institutes / universities, NGOs	
Component 3 *Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas*	**a. Aquaculture farming with the installation of 9 floating net cages for Cultivating Shallow Water Fish (3 cages for each negeri) which for every floating net cage, it is managed by a group (1 group = 20 households)** ***Pre stage*** - Baseline survey location (water conditions, currents) - Analysis of applicable policies, including if a permit from the government is required - Determination of criteria for beneficiary groups (specifically for small pelagic-non-tuna fishermen) - Agreement on harvest management and sharing mechanisms - Identification of markets and opportunities for cooperation with related stkaholders such as the Marine and Fisheries Service. - Determination of the methods and materials that will be used to make floating net cages. - Cage fish cultivation training - The type of fish to be cultivated - Origin of seeds - Selection of feed ***Construction and placement of floating net cages.*** - Making floating net cages - Handling construction waste - Establishment of work houses / supervisors ***Cultivation stage, care, harvest and monitoring*** - Time of feeding - The volume and amount of feed given - Handling of the resulting feed waste - Sales of crops (market) - - Regular monitoring reports	Negeri Lima, Negeri Asilulu, Negeri Ureng
	b. Nine floating rafts used to cultivate seaweeds (3 rafts for each Negeri which for every raft, it is managed by a group (1 group = 20 households). ***Pre stage*** - Baseline survey location (water conditions, currents) - Analysis of applicable policies, including if a permit from the government is required - Determination of criteria for beneficiary groups (specifically for women's groups) - Agreement on harvest management and sharing mechanisms - Identification of markets and opportunities for cooperation with related stakeholders such as the Marine and Fisheries Service	Negeri Lima, Negeri Asilulu, Negeri Ureng

	- Determination of methods and materials to be used for seaweed cultivation - Seaweed cultivation and post harvest training - Types of seeds ***Cultivation stage, care, harvest and monitoring*** - Cleaning the cultivation location from weeds that are in the waters - Shelters of seeds - the method used; The basic method (bottom method), the off-bottom method, the floating method - Harvesting technique - Processing and sale of crops (market) - Regular monitoring reports.	
	c. 100 women in 3 Negeri have the skill required to process the result of fish culture and seaweed cultivation ***Pre stage*** - Determination of specifications and types of processing machines to be provided - Machine placement location - Machine operation training ***Operational Stage*** - Handling noise pollution (noise) - Machine uptime - Machine maintenance	Negeri Lima, Negeri Asilulu, Negeri Ureng
Component 4 *The development of supporting facilities to anticipate coastal flooding and tidal wave*	***Pre Construction Stage*** - Selection of project contractors through bidding - Compilation of an agreement between NIE and EE with contractors regarding compliance with the 15 ESP Principles and applicable regulations. - Consultation of detailed plans for Talud restoration activities to relevant stakeholders, especially affected communities and the government, particularly the Public Works Office - Baseline survey of the damaged Talud location which is important for immediate repair - Implementation and preparation of Environmental Impact Analysis (AMDAL), Environmental Management Plan and Environmental Management Efforts by contractors ***Construction Stage*** - Source of material (sand, coral rock) for project work - Labor recruitment, wage standards - Handling construction waste - Handling air and noise pollution - Sedimentation treatment - Handling transportation disruptions - Mobilization and demobilization of Equipment, Materials and People during construction activities - Provision of Occupational Health and Safety (K3) devices ***Monitoring and Maintenance Stage*** - Monitoring and post-construction maintenance periodically during the project - Regular reporting on the progress of Talud restoration to the	Negeri Lima, Negeri Asilulu, Negeri Ureng

	Public Works Agency - - Post project care agreement ends with Government	

2.2. Compliance Screening Procedure / Requirements

Project components are screened to ensure that each project site has been properly screened for potential environmental and / or social impact levels. Based on this screening process, the implementation of activities that may show significant impacts will be identified and continued in the next screening or further detailed study. Screening for each project component will comply with the 15 principles of the ESP Adaptation Fund (See Table 5) and government regulations for environmental and social aspects.

Table 6. Compliance The 15 Principles ESP Adaptation Fund

Principle	Kegiatan yang dibutuhkan
Principle 1: Compliance with the Law	The project implementer conducts studies and checks national and international regulations that must be complied with in the implementation of activities in each project component, including technical standards that must be adhered to in the activity implementation stage including the required permits. Monitoring is needed to ensure this compliance is carried out properly.
Principle 2: Access and Equity	In general, there are no restrictions on access to local / affected communities as a result of the implementation of the activities.
Principle 3: Marginalized and Vulnerable Groups.	The project implementer has ensured the involvement of marginalized groups and vulnerable groups in the planning and consultation phases of the project proposed in the proposal. At the implementation stage, project implementers must ensure the involvement of this group as the main beneficiaries
Principle 4: Human Rights.	Indonesia has ratified the Universal Declaration of Human Rights in state policy, it is Law No. 39 of 1999 on Human Rights.
Principle 5: Gender Equality and Women's Empowerment.	ensuring equal opportunities and rights for both men and women to be involved in the planning, project implementation and monitoring stages. Promote gender equality in project activities. In particular, there are project components whose beneficiaries are women's groups (Component 3)
Principle 6: Core Labour Rights	Ensuring that the project implementation has fulfilled the basic labor rights stipulated in the ILO Covenants as well as national regulations on labor. Monitoring of the implementation of activities by contractors is required, especially in component 4 which covers wages, work safety and other normative rights.
Principle 7: Indigenous Peoples	There are no indigenous groups at the project site

Principle 8: Involuntary Resettlement.	No Resettlement
Principle 9: Protection of Natural Habitats	Ensure the project / program does not unjustified damage, conversion or degradation critical natural habitats, including those (a) legally protected; (b) officially proposed for protection; (c) recognized by authoritative sources for its height conservation value, including as critical habitat; or (d) recognized as protected by indigenous or traditional communities.
Principle 10: Conservation of Biological Diversity	To ensure that the implemented project supports efforts to conserve biodiversity in the project location.
Principle 11: Climate Change	To Ensure that the project is implemented using various methods that are environmentally friendly and avoid the use of materials and tools that will cause emissions
Principle 12: Pollution Prevention and Resource Efficiency	To ensure that the implemented projects (especially infrastructure) have plans to prevent or minimize the impact of pollution.
Principle 13: Public Health.	To ensure that the implemented project does not have a negative impact or have a small impact on the health conditions of the community at the project site and ensure that the project has a mitigation plan.
Principle 14: Physical and Cultural Heritage	Np Physical and Cultural Heritage at the project location
Principle 15: Lands and Soil Conservation.	To ensure that the implemented project does not cause land damage and degradation. Ensure the use of building materials does not cause damage and land degradation.

The process of screening, assessing, and identifying potential impacts and developing management measures and safeguard instruments should be part of the project cycle, project planning and implementation documents. There are two steps in the screening process, that is:

1. Screening against the negative list
2. Screening against checklists

2.2.1. Screening against negative lists

The negative list is the first selection tool for all planned activities. The Adaptation Fund (AF) will not facilitate and finance activities that have the potential to cause adverse environmental and social impacts, such as:

- Any activity that does not comply with national regulations / laws in force in the project implementing country, including compliance with national technical standards in planned activities as well as neglect of compliance with relevant international policies.
- Any activity that hinders and limits local people's access to economic resources, health, clean water, sanitation, safe and decent working conditions.

- All activities that ignore the rights and participation of vulnerable and marginalized groups and beneficiaries for these groups
- Activities that do not respect and violate human rights, including gender discrimination and child labor
- Activities that ignore workers' rights such as wages below the minimum standard, occupational health and safety conditions that are not guaranteed by the activity organizer
- Any activity that is likely to have a major or significant adverse impact on ethnic groups or indigenous groups in the village and / or in neighboring villages, or is not acceptable to ethnic groups living in a village with a diverse ethnic composition.
- Activities that do not respect the traditional values and cultural values of indigenous and local communities with reference to international legal obligations, including the United Nations Declaration on the Rights of Indigenous Peoples.
- Activities that require a large area of land and lead to a process of forcibly relocating residents' settlements. However, if it is needed for small-scale infrastructure development, a part of the community's contribution is required by providing written confirmation that the affected individuals do not feel disadvantaged. Purchase of land on a small scale is possible.
- Activities that result in significant conversion or degradation of natural habitats including terrestrial, coastal and marine ecosystems, or activities that incur losses greater than benefits to conservation or the environment and even require displacement / relocation.
- Taking coral reef seedlings even for the purposes of coral reef rehabilitation without permission and not in accordance with applicable legal procedures.
- The use of hazardous materials such as pesticides, insecticides and / or which can endanger public health.

2.2.2. Environmental Screening of Project Components

There are three types of national environmental assessment and environmental management measures, in terms of the decision-making process for approval in implementing a business plan and / or activity:

- Environmental Impact Analysis (AMDAL);
- Environmental Management and Monitoring Efforts - UKL-UPL; and
- Statement of Guarantee Implementation of Environmental Management and Monitoring (SPPL).

An illustration of the environmental screening process based on national standards is shown in **Figure 1**. This shows that if the sub-project type is included in the list of types that require AMDAL. All environmental requirements must be in place before project implementation.

Project implementers must allocate sufficient time to process environmental documents and permits.

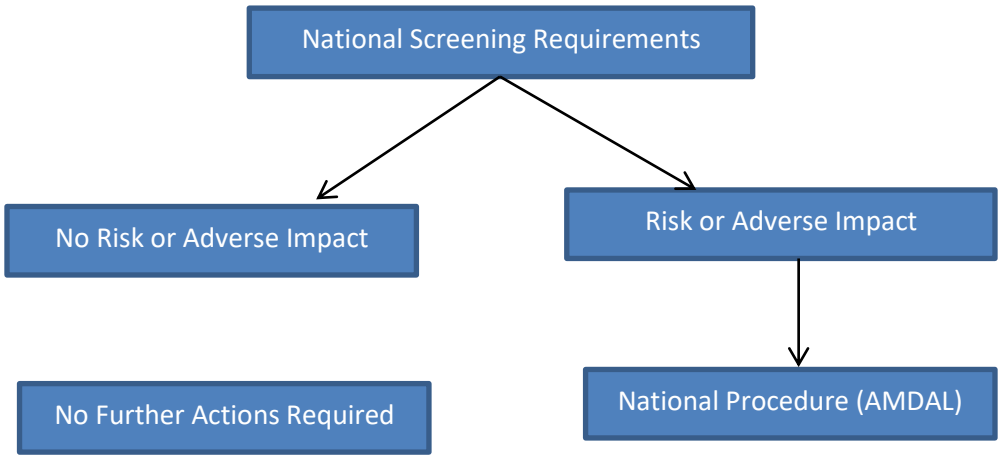

Figure 1. Screening Process for Each Project Component

2.2.3. Social Screening in Project Components

Implementation of this project does not require land acquisition or involuntary resettlement. Administratively, the project location is an administrative area called Negeri and has customary regulations that are still in force. Negeri is led by the head of negeri government, who is commonly known as the "King" who is assisted by other government officials. Therefore, project implementation must also refer to the customs and or customary regulations that apply at the project site. In resolving conflicts that arise in the community during the project, the community approach is carried out by using a case-by-case and / or group-based approach to solving social problems by taking into account the customary rules that apply in the project location. Social screening activities were carried out to determine the approach to be used. In solving problems you can involve the Negeri Government or directly to individuals.

2.3. Result of Environmental and Social Risk Assessment

Initial screening assessment for each component referring to the 15 Principles contained in the ESP AF has been carried out. Detailed activities as listed in Table 4 will have risks and levels of impact as shown in the following table.

Table 7. Result of Environmental and Social Risk Assessment to Project Component 1 (*Strengthening the adaptation of traditional fishermen in facing changes fish migration and circulation patterns due to climate change*

Sub component	Aspect	Environmental and Social Problems	Impact Level
Location : Negeri Ureng, Negeri Lima, Negeri Asilulu			
Mapping of fishing	Work Safety	Extreme weather	Moderate

ground areas.		Ship Specifications unsuitable for mapping requirments	Low
		Availability of preparation of safety equipment such as ring life buoys, life jackets, first aid kit, phyrotechnic (smoke signal)	Low
Utilization of fichery resources in the fishing ground area that is mapped.	Social conflicts	Seizure for fishing areas	Moderate
Utilization of FADs within fishermen groups	Social conflicts	There are differences in the use	Low
Construction of FADs	Construction work	Construction waste	Low
	Environment	The use of unfriendly environment materials	Low
Location of placement	Transportation	Disrupts trafic of sea transportation	Low
FADs operations	Environment	Over fishing occured in FAD placement location	Moderate
	Natural habitat	Unwanted bycatch	Moderate
Cold Storage operations	Community perception	Non-transparent cold storage management	Low
	Environment	The waste from the cold storage operation (fishy smell, fish bones, etc).	Low
	Social Conflict	Resistance from the collecting traders (Middle Man) who own Cold Storage	Low
Assistance and strengthening of fishermen groups	Community perception	Resistance from collecting traders who do not want small fishermen to be independent	Low

Table 8. Result of Environmental and Social Risk Assessment to Project Component 2 (*Coastal ecosystems repair for the resilience of communities and alternative location for source fishing*)

Sub Component	Aspect	Environmental and Social Issues	Impact Level
Location: Negeri Ureng, Negeri Lima, Negeri Asilulu			
Making artificial reef constructions (mobilizing tools, materials and labor)	Construction work	Construction waste	Low
	Labor	Social jealousy between workers and other local communities	Low
	Transportation	Air pollution – Dust impacts the human respiratory system from losing material during transportation	Low
		Noise pollution – impact of vehicle movement	Low
		Traffic impact – temporary traffic disruption	Low
Provision of coral reef seedlings for	Environmnet	Damage to the natura habitat of coral reefs which are taken for	Low

transplantation		transplanting seedlings	
Artificial Reef installation	Natural Habitat	The placement of the artificial reef is not correct and it causes coral reef fracture to occur in the placement of the artificial reef	Low
Artificial reef care	Environment	Fishing practice that are not environmentally friendly	Moderate
	Community perspective	The level of public concern for protecting coral reefs	Moderate

Table 9. Result of Environmental and Social Risk Assessment for Project Component 3 (*Alternative economic development in coastal areas that are climate-resilient by utilizing technology in fisheries and Marine areas*)

Sub Component	Aspect	Environmental and Social Issues	Impact Level
Location : Negeri Ureng, Negeri Lima, Negeri Asilulu			
The making floating net cages	Construction work	Construction waste	Low
	Location	Laying floating net cages that are not in accordance with water conditions (currents and waves)	Low
	Transportation	Disrupt traffic of sea transportation	Low
Floating net cages management	Social Conflict	Social jealousy between the beneficiary community groups and other community groups	Moderate
	Biodiversity	Water pollution due to use of inappropriate/excessive feed	Low
	Economy	Unequal disribution of crop yields among group members	Low
Seaweed cultivation management	Social Conflict	Social jealousy between the beneficiary community groups and other non-beneficiary community groups	Moderate
	Community Perspective	Business continuity dut to the absence of a market for the sale of the seaweed harvest	Low
The operation of the seaweed processing machine	Environment	Noise pollution – noise that arises due to operating the machine	Low

Table 10. Environmental adn Social Risk Assessment Results for Project Component 4 (*The development of supporting facilities to anticipate coastal flooding and tidal wave*)

Sub Component	Aspect	Environmental and Social Issues	Impact Level
Location : Negeri Ureng, Negeri Lima, Negeri Asilulu			
Disseminating information about talud restoration project activities.	Community Perception	The occurance of negative pubic perceptions.	Low
Mobilization and demobilization of equipment, materials and people during construction activities	Labor	Social jealousy between workers	Moderate
	Transportation	Air pollution – Dust impact the humanrespiratory system from losing material dduring transportation.	Moderate
		Noise Pollution – the impact of vehicle movement.	Moderate
		Traffic impact – temporarytrafic disruption.	Moderate
Implementation of talud restoration work.	Work Safety	The occurance of work accidents during construction activities.	Low
	Environment	Air Pollution – increased dust concentration (TSP) in the air.	Low
		Noise pollution – noise generated by project work activities	Low
		Construction waste – Concrete debris from demolition work.	Low
		Water Pollution – Potential dor sedimnet due to demolition	Low
		Domestic waste due to operating the temporary campconstruction workers.	Moderate

2.4. Public Consultation and disclosure of information

Public consultations on the draft ESMP have been carried out with affected community groups in 3 project locations (Table 10). Due to the conditions of the Covid 19 Pandemic, public consultations were carried out with health protocols and limiting the number of participants. However, participants who attended public consultation activities were representatives of the program's beneficiary / impact beneficiary groups.The discussion during the public consultation was about the draft ESMP document especially related to the potential impacts of project implementation. The discussion focuses on:

1. How to deal with potential environmental and social impacts?
2. Determination of criteria for project beneficiaries
3. Participation and involvement of women and vulnerable groups in project implementation

4. Sustainability of alternative economic development efforts
5. Potential social impacts associated with the regulation of the utilization of fishery resources at the fishing ground location as a result of the mapping
6. Involving local workers in talud rehabilitation activities.
7. Readiness of youth groups in coral reef restoration and ecotourism development.
8. Capacity building for program beneficiary groups, especially those related to alternative economic development.
9. Utilization of Cold Storage and FADs.
10. The need for joint inter-state regulations regarding the use of fishery resources at fishing ground locations.
11. Involvement of other stakeholders such as local government, private sector / companies, NGOs in project implementation.

Table 11. Public Consultation of the ESMP Draft

No	Location	Date	Jumlah Peserta
1	Negeri Lima	Negeri Lima Government Office, 7 Agustus 2020	23 person
2	Negeri Ureng	Negeri Ureng Government Office, 8 Agustus 2020	26 person
3	Negeri Asilulu	Negeri Asilulu Government Office, 8 Agustus 2020	17 person

2.5. Project Management

The Executing Entity (EE) for this project is the HAI Foundation which has a local partner in Ambon (Maluku Tifa Damai Institute) and formed a **Project Management Unit (PMU)** structure. The PMU is responsible for implementing the project and ensures the outcomes to be achieved are in accordance with project planning. **PMU is led by the Program Director responsible to the Kemitraan as National Implementing Entity (NIE).** In delivering work progress, the Program Director will be assisted by a Outcome Leader Componet (4 person- Outcome Leader Component) led by Project Coordinator. The Project Coordinator is responsible for ensuring that the project activities in the targeted villages are running.

The **Steering Committee (SC)** will oversee the entire program implementation to ensure that the facilities and mechanisms have run the program effectively so as to achieve the desired results, while also representing the voices of stakeholders who are not directly responsible for the project.

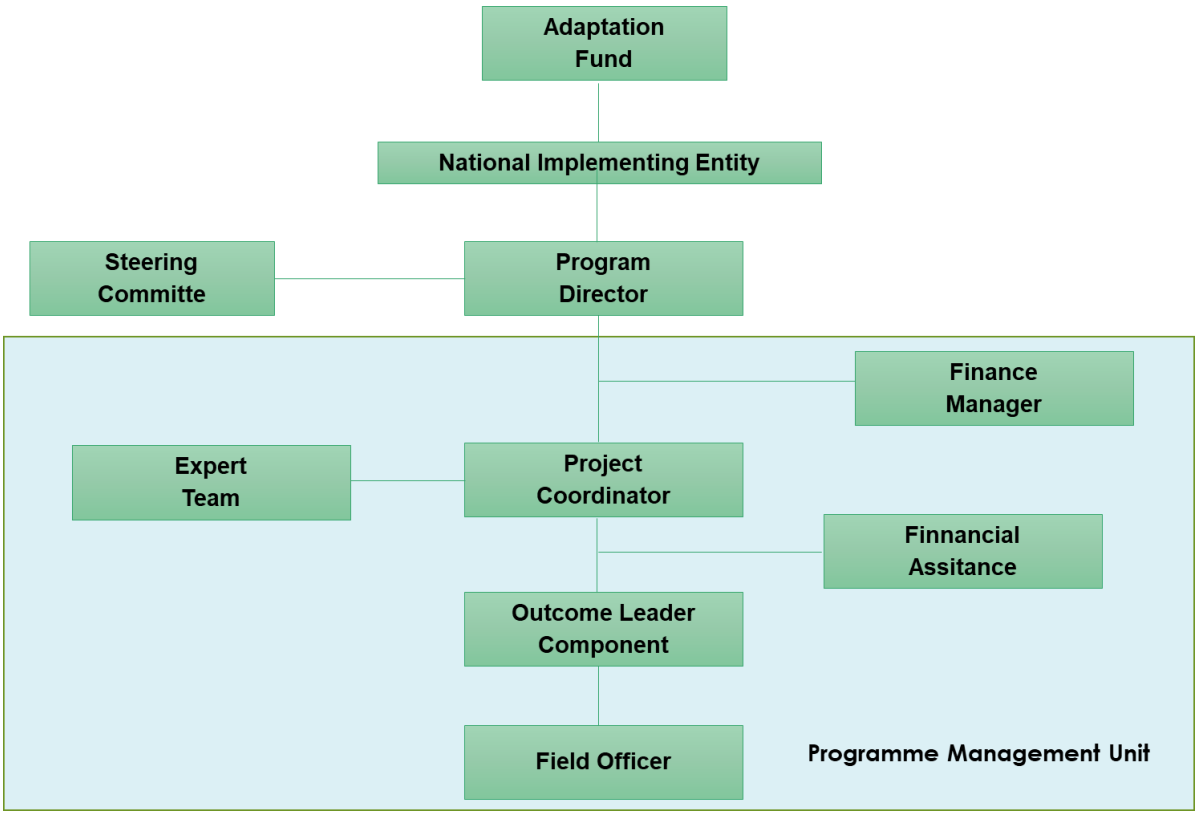

Figure 2. Project Management Structure

The role of each institution involved can be seen in the table below

Table 12. Summary of project structure responsibilities

Structure	Duties and responsibilities	Explanation
Steering Committee	The Steering Committee (SC) will oversee the entire program implementation to ensure that the facilities and mechanisms have run the program effectively so as to achieve the desired results, while also representing the voices of stakeholders who are not directly responsible for the project. In the process of running the project, SC will provide technical guidance and advice to implementation programme	Steering Committees that will be involved include: National Governments, Provincial Governments, Local Governments, Village Governments, Academics, and civil society. National governments, they are: 1. Ministry of Environment and Forestry (KLHK) 2. Ministry of Marine and Fisheries (KKP) 3. Ministry of Public Works (PUPR) Provincial Governments: 1. Regional Planning and Development Agency (BAPPEDA) 2. Marine and Fisheries Agency 3. Environmental Agency 4. Public Works Agency

		5. Women's empowerment and Child protection Agency 6. Regional disaster management Agency (BPBD) District Governments: 1. Regional Planning and Development Agency (BAPPEDA) 2. Marine and Fisheries Agency 3. Public Works Agency 4. Women's empowerment and Child protection Agency 5. Regional disaster management Agency (BPBD
Exceuting Enity	HAI (With Institute Tifa Damai Maluku) will be responsible for supervising, supporting and providing technical guidelines for the following activities: 1. Program preparation, including selecting PMU and linking the Steering Committee to the project 2. Program implementation, including communication and coordination with the Steering Committee 3. Program monitoring and evaluation of PMU 4. Financial monitoring and assessment of project implementation	As the executing entity, HAI will ensure the running of the program is in accordance with the Partnership policy and the AF Policy
Program Director	The Program Director will direct PMU in implementing the Program 1. Together with the Executing Entity in selecting PMU 2. Together with PMU, the Program Implementation Plan will be prepared as a guide for implementing the program 3. Ensure that the program is carried out in accordance with the objectives 4. Together with the Partnership in monitoring progress and results of achievement 5. Coordination Program progress and program problems to the Steering Committee	The Program Director is the Program leader who will be responsible for the National Implementing Entity through reporting results
Team Expert	Will be responsible for studies: 1. Mapping the fishing ground area, 2. Monitoring & Evaluation Specialist, 3. Social gender Specialist, 4. Coral Reef Restoration	Is a team of experts in their respective fields that are tailored to the Program Plan

	5. Fish Cultivation and seaweed	
Finance Manager	The Finance Manager will be responsible for financial and administrative management for the overall implementation of the program	
Project Coordinator	Will lead the PMU in implementing the program as a whole in day-to-day basis. Among the specific responsibilities are: 1. Coordination with Outcome Leader Component in implementing the program 2. Coordination with provincial and district governments 3. Ensuring the course of the program is in accordance with the goals and results to be achieved 4. Report the program results in the Program Director	
Financial Assistance	Financial Assistance will be responsible for financial and administrative management for program implementation in accordance with the direction of the Program Coordinator	
Outcome Leader Component	Will be responsible for implementing the program in the upstream section. 1. Together with the Coordinator Officer, the program implementation plan is planned as a guideline for implementation 2. ensure that the program is carried out in accordance with the objectives 3. coordination of program progress and program problems with the Program Coordinator 4. Coordination with the District Government	
Field Officer	Will come in direct contact with the beneficiaries 1. communication with the community 2. provide a report to the Coordinator Officer	The intended beneficiaries include: Fisherman Groups, Women and Vulnerable

Capacity Building

The NIE will conduct a capacity assessment and make arrangements to provide training on ESP requirements, Gender Policy in implementation, management and monitoring for each implementing unit involved. Capacity building for safeguard implementation must include: (i) organizational frameworks and institutional development strategies; (ii) workshops and

training programs to build the capacity of staff, communities and other institutions involved. Adaptation Fund monitors and provides assistance in program implementation.

2.6. Grievance Mechanism

Grievance procedures will include reasonable standards of performance, for example, the time required to respond to complaints, and will be provided at no cost to affected persons or communities. The complaint handling mechanism will use all the mechanisms available in the NIE. However, when needed the mechanism can be done in two ways. The first way, namely the first party that can be contacted is the Field Officer who will document and report it to the PMU. PMU must be able to resolve the problem before processing it to EE and NIE.

The second way is to provide a "hotline" telephone number where a person can call and submit a complaint using the "hotline" number. This method will involve EE and NIE directly in every complaint. PMU will recheck the complaint according to actual and logical facts before taking action to respond to complaints and create solutions.

This mechanism implies that there will be a unit in the PMU that can handle complaints and act accordingly and in a timely manner. This complaint unit is responsible for problem solving, documentation, and recording of all complaint processes starting from receiving, forwarding, responding, and closing complaints. This allows the NIE to identify and track all complaints and create effective solutions. In every social conflict and grievance caused by the project, PMU will, as much as possible, solve the problem through local / customary handling, in accordance with prevailing local wisdom.

CHAPTER III
MONITORING AND EVALUATION

Monitoring of project implementation will be carried out every 6 months and an internal audit every 1 year. Supervision, monitoring and evaluation will be carried out by various levels of the project implementation organization, namely:

- Project Implementing Unit (EE-PMU)
- Project Management Office (NIE)
- adaptation fund

The EE-PMU is responsible for supervising and monitoring the implementation of project components being implemented

The NIE must conduct regular supervision and monitoring of efforts to implement performance and report findings regularly as part of the project progress report to the Adaptation Fund. NIE will also conduct a post-implementation evaluation of project implementation to ensure whether the objectives of implementing the ESP Adaptation Fund compliance principle have been achieved.

The Adaptation Fund will carry out regular supervision to review the implementation of compliance with the Adaptation Fund policy and to recommend to the NIE the follow-up, if deemed necessary.

Annex 1. Environmental and Social Impacts and Mitigation Measures for Mapping of Fishing Ground Area

Influencing Actions	Potential Impacts	Aspects	Mitigation Plan
Pre-Survey Stage			
Coordination with the relevant institutions	No impact	N/A	N/A
Dissemination of information regarding Mapping Fishing Ground Area	Emergence of Community Negative Perception	Community Perception	Dissemination of correct information and consultation for the impacted community. Establishing Complaints Handling Protocol in the PMU level
Implementation Stage			
Mapping of fishing ground areas.	Work Accident	Work Safety	Provision of safety equipment preparation such as life ring buoys, life jackets, first aid kit, phyrotechnic (smoke signal)
		Extreme weather	Ship specifications suitable for mapping requirements
		Extreme weather	The mapping is done when the good weather
Utilization of fichery resources in the fishing ground area that is mapped.	Seizure for fishing areas	Social Conflict	Making collaborative arrangement regarding the usage of fishing ground area

Annex 2. Environmental and Social Impacts and Mitigation Measures for FADs

Influencing Actions	Potential Impacts	Aspects	Mitigation Plan
Pre-Stage			
Utilization of FADs within fishermen groups	There are differences in the use of FADs	Social Conflict	- Making a joint agreement between Negeri and between fishermen in 3 Negeri regarding the criteria for groups that will operate FADs. - Agreement on SOP for the use of FADs within fishermen groups - To increase fishermen's competence and understanding of the use of FADs in accordance with applicable national regulations and standards. -
Implementation and Operation of FADs			
Construction of FADs	Construction work	Construction Waste	Handling the disposal of the remaining materials for making FADs
	The use of unfriendly environment materials	Environment	- Construction of FADs that are suitable for water conditions and are environmentally friendly (FAD frames are made from dried sago fronds and the cover or roof is made of dried sago leaves. - The attractors for the presence of fish are made from coconut leaves, nipah leaves or sago leaves which grow a lot in the coastal village areas of the project.
Location of placement	Disrupts trafic of sea	Transportation	- FADs are installed in deep water (> 200

	transportation		m) in the fishing route - The distance between FADs is 10 miles and is located parallel or not installed by means of a fence effect (zig zag)
FADs operations	Over fishing occured in FAD placement location	Environment	- Limitation on the number of catches - Capture time setting - Capture time measurement setting (length or weight measurement). - Selective use of fishing gear.
	Unwanted bycatch	Biodiversity	Avoid catching unwanted bycatch by means of the FAD structure above the water surface is prohibited from being covered with a sheet of netting, and the FAD structure below the water surface is prohibited from being made of net sheets.

Annex 3. Environmental and Social Impacts and Mitigation Measures for Cold Storage

Influencing Actions	Potential Impacts	Aspects	Mitigation Plan
Cold Storage operations			
Cold Storage operations	Non-transparent cold storage management	Community perception	- Formulation of agreements and SOP for Cold Storage management (Mechanisms and rules of the game). - Provision of a complaint mechanism.
	The waste from the cold storage operation (fishy smell, fish bones, etc).	Environment	Handling of waste from cold storage operations (fishy smell, fish bones, etc.)
	Resistance from the collecting traders (Middle Man) who own Cold Storage	Social Conflict	- Building Communiaction - Provision of a complaint mechanism.

Annex 4. Environmental and Social Impacts and Mitigation Measures for Artificial Reef

Influencing Actions	Potential Impacts	Aspects	Mitigation Plan
Pre-Construction Stage			
Location survey, design	N/A	N/A	N/A
Coordination with the relevant institutions	N/A	N/A	N/A
Construction Stage			
Making artificial reef constructions (mobilizing tools, materials and labor)	Social jealousy between workers and other local communities	Social Jealousy	Including the requirements for involving the local community as workforce in the contract Contractor. Establishing Complaints Handling Protocol
	Dust impacts the human respiratory system from losing material during transportation	Public Health	Developing and implementing transportation management plan that involves the usage of covering materials during materials loading process.
	Traffic impact – temporary traffic disruption	Transportation	Developing and conducting traffic management plan to maintain traffic disruption at a minimum level
Construction of Artificial Reef	Construction work	Construction waste	Handling the disposal of the remaining materials for making Artificial Reef
Artificial Reef Installation			
Provision of coral reef seedlings for transplantation	Damage to the natural habitat of coral reefs	Natural Habitat	Ensure that coral reef seeds are taken from locations that have received approval /

	which are taken for transplanting seedlings		permission from the relevant government (Marine and Fisheries Agencies)
Artificial Reef installation	The placement of the artificial reef is not correct and it causes coral reef fracture to occur in the placement of the artificial reef	Natural Habitat	The method for placing the artificial reef is appropriate so that it does not damage the coral reef habitat in the location where the artificial reef is placed
Artificial reef care	Fishing practice that are not environmentally friendly	Environment	- Dissemination of information on the importance of protecting coral reef habitats - Formulation of State regulations for coral reef protection - Monitoring

Annex 5. Environmental and Social Impacts and Mitigation Measures for floating net cages

Influencing Actions	Potential Impacts	Aspects	Proposed Mitigation Measures
Pre Activity			
Location survey, design	N/A	N/A	N/A
Coordination with the relevant institutions	N/A	N/A	N/A
Beneficiary groups	Social jealousy between the beneficiary community groups and other community groups	Social Jealousy	Determination of criteria for Beneficiary groups (specifically for small pelagic-non-tuna fishermen)
Floating Net Cages Installation			
The making floating net cages	Construction work	Construction waste	Handling the disposal of the remaining materials for making Floating Net Cages
	Laying floating net cages that are not in accordance with water conditions (currents and waves)	Location	Use of HDPE type floating net cages
Floating net cages management	Water pollution due to use of inappropriate/excessive feed	Biodiversity	Calculate the amount of feed needed, time and method of feeding

Annex 6. Environmental and Social Impacts and Mitigation Measures for Talud Restoration

Influencing Actions	Potential Impacts	Aspects	Mitigation Plan
Pre-Construction Stage			
Location survey, design, and the breakwater analysis for restoration	No Impact		
Source of materials (sands, coral rocks) used for project work	Materials are procured from location that is unsatisfactory of the local government regulations or has negative environmental impacts	Environment	Ensuring the materials used for project work have obtained permit from the relevant government/bodies (especially for sand and coral rocks)
Dissemination of information regarding breakwater restoration project activities	Emergence of Community Negative Perception	Community Perception	Dissemination of correct information and consultation for the impacted community. Establishing Complaints Handling Protocol in the PMU level
Coordination with the relevant institutions	No impact	N/A	N/A
Potential restrictions on land clearance activities	No impact	N/A	N/A
Construction Phase			
Mobilization and demobilization of Equipment, Materials, and Workers during construction activities	Increased dust concentration (TSP) in the air	Air quality	Developing and implementing transportation management plan that involves the usage of covering materials during materials transportation and/

			conducting dust control by spraying water on the road during mobilization process twice a day (noon and evening) in certain days (during dry season)
	The impacts of dust on human respiration system and the loss of particulate materials during transportation	Public health	Developing and implementing transportation management plan that involves the usage of covering materials during materials loading process.
	Temporary traffic disruption due to transportation activities	Transportation	Developing and conducting traffic management plan to ensure minimum traffic disruption
Workforce recruitment activities	Increased Community income (from being workforce in the project work activities)	Economic impacts	Ensuring that workers' pay is equivalent to or the same as Local Minimum Wage
	social jealousy between migrant workers and local workers	Social Jealousy	Including the requirements for involving the local community as workforce in the contract Contractor. Establishing Complaints Handling Protocol
Establishment of temporary settlement (base camp) for workers	Increased domestic waste from work activities	Domestic waste	Providing temporary septic tanks and garbage collection facility, forbid garbage burning, and implement 3R methodology (reduce, reuse, recycle)
Breakwater restoration	increased dust	Air pollution	Barriers installation around civil work area

construction work	concentration (TSP) in the air		to prevent dust from spreading to the local community
	Construction noise caused by project work activities	Air pollution	Barriers installation around civil work area to minimize noise and halting any construction work at night
	The impacts of construction material residual waste	Water pollution	Developing and implementing work plans for controlling and minimizing shortage of construction materials
	Traffic disruption due to project work	Transportation	Developing and conducting traffic management plan to maintain traffic disruption at a minimum level
	Community negative perception	Social impacts	Establishing Complaints Handling Protocol in the PMU level
Demolition *work*	Concrete rubbles due to dismantling work	Construction waste	Concrete rubbles disposal handling
	Increased dust concentration (TSP) in the air	Air pollution	Barriers installation surrounding the dismantling work area to prevent dust from spreading to the community around the project location
	Construction noise generated by project work activities	Sound pollution	Barriers installation surrounding the dismantling work area to minimize noise and halting any construction work at night
	Potential sedimentation due to dismantling works	Water pollution	Developing and implementing work plans for controlling and minimizing unused material runoff

Annex 7. Consultation Public in Negeri Lima

Date : 7 August 2020
Time : 11.00 AM WIT- Selesai
Lcation : Negeri Lima Government Office
Participant : 24 Person
Institution : Fisherman Group, Womens Group, Youth Group, Negeri Lima Government, Consultant, Executing Entity (Harmony Alam Indonesia)

Summary Meeting

- Description of the 4 Project Components to be implemented
- Explanation of the Purpose and Purpose of Implementing the ESMPPenjelasan 4
- Discussin (input and feedback from partisipants)
  Discussion Point:
  - The determination of criteria for project beneficiaries must be agreed upon from the start between the community, project implementers and the state government to avoid jealousy at the community level. Beneficiaries are prioritized to the poor and vulnerable groups based on existing data in the Negeri Government.
  - It is necessary to regulate the use of fishery resources at the fishing ground location as a result of the mapping to prevent over fishing and the utilization of the fishing ground area by the fishing industry or capture fisheries entrepreneurs.
  - Mapping of fishing ground areas is not only carried out in water areas that have potential for tuna and skipjack fisheries, but also in areas near the coast that have small plagic fish potential.
  - Increasing the capacity of the beneficiary groups of the program, especially those related to alternative economic development for floating net cages and seaweed
  - The implementation of Talud rehabilitation activities must prioritize local workers so that local people can feel the economic impact of these activities.
  - Community involvement in the preparation of the Environmental Impact Assessment (AMDAL) that will be carried out by the contractor.
  - Ensuring the involvement of other stakeholders such as local government, private sector / companies, NGOs in project implementation.
  - Installation of FADs must be in accordance with government regulations and a SOP for FAD management is necessary to avoid negative impacts on the environment and social impacts such as unfair distribution of results.

Annex 8. Attendance List of Public Consultation in Negeri Lima

HAI
HARMONY ALAM INDONESIA

INSTITUT MALUKU

DAFTAR HADIR

Nama Kegiatan : JUMAT, 07 AGUSTUS 2020
Hari/Tanggal : Konsultasi Dampak Program di Negeri Lima

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	MIG. SOULISA		Hp : 082197872863 E-mail :	

Annex 9. Consultation Public in Negeri Ureng

Date : 8 August 2020
Time : 09.03 AM WIT- Selesai
Location : Negeri Ureng Government Office
Participant : 27 Person
Institution : Fisherman Group, Womens Group, Youth Group, Negeri Lima Government, Consultant, Executing Entity (Harmony Alam Indonesia)

Summary Meeting

- Description of the 4 Project Components to be implemented
- Explanation of the Purpose and Purpose of Implementing the ESMP
- Discussin (input and feedback from partisipants Discussin)
  Discussion Point:
  - The determination of criteria for project beneficiaries must be agreed upon from the start between the community, project implementers and the state government to avoid jealousy at the community level. Beneficiaries are prioritized to the poor and vulnerable groups based on existing data in the Negeri Government.
  - It is hoped that the map generated from the mapping of the fishing ground area will belong to the public at large even though the individual is not a fisherman from Negeri Ureng.
  - Other fishermen can catch fish in the fishing ground area that has been mapped, but there must be regulations regarding fishing in the fishing ground area that are included in the customary **petuanan** (customary area) of Negeri Ureng.
  - Mapping of the fishing ground area must still comply with the prevailing customary / traditional provisions.
  - Mapping of fishing ground areas is not only carried out in water areas that have potential for tuna and skipjack fisheries, but also in areas near the coast that have small plagic fish potential.
  - The implementation of Talud rehabilitation activities must prioritize local workers so that local people can feel the economic impact of these activities.
  - Community involvement in the preparation of the Environmental Impact Assessment (AMDAL) that will be carried out by the contractor.
  - Ensuring the involvement of other stakeholders such as local government, private sector / companies, NGOs in project implementation.
  - Installation of FADs must be in accordance with government regulations and a SOP for FAD management is necessary to avoid negative impacts on the environment and social impacts such as unfair distribution of results.

Annex 10. Attendance List of Public Consultation in Negeri Ureng

HAI
HARMONY ALAM INDONESIA

INSTITUT WALOMBO

DAFTAR HADIR

Nama Kegiatan : KONSULTASI DAMPAK PROGRAM DI NEGERI UPENG

Hari/Tanggal : SABTU, 8 AGUSTUS 2020

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HAI
HARMONY ALAM INDONESIA

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M. NASIR NIAPELE

Annex 11. Consultation Public in Negeri Asilulu

Date : 8 August 2020
Time : 13.00 PM WIT- Selesai
Location : Negeri Asilulu Government Office
Participant : 17 Person
Institution : Fisherman Group, Womens Group, Youth Group, Negeri Lima Government, Consultant, Executing Entity (Harmony Alam Indonesia)

Summary Meeting

- Description of the 4 Project Components to be implemented
- Explanation of the Purpose and Purpose of Implementing the ESMP
- Discussin (input and feedback from partisipants Discussin)
  Discussion Point:
  - The determination of criteria for project beneficiaries must be agreed upon from the start between the community, project implementers and the state government to avoid jealousy at the community level. Beneficiaries are prioritized to the poor and vulnerable groups based on existing data in the Negeri Government.
  - Training and assistance to women's groups who will cultivate seaweed and operate seaweed post-harvest processing machines, market certainty for the sale of seaweed harvests.
  - It is necessary to regulate the use of fishery resources at the fishing ground location as a result of the mapping to prevent over fishing and the utilization of the fishing ground area by the fishing industry or capture fisheries entrepreneurs.
  - Mapping of fishing ground areas is not only carried out in water areas that have potential for tuna and skipjack fisheries, but also in areas near the coast that have small plagic fish potential. Mapping of the fishing ground area must still comply with the prevailing customary / traditional provisions.
  - The implementation of Talud rehabilitation activities must prioritize local workers so that local people can feel the economic impact of these activities.
  - Community involvement in the preparation of the Environmental Impact Assessment (AMDAL) that will be carried out by the contractor.
  - Training and assistance to women's groups who will cultivate seaweed and operate seaweed post-harvest processing machines, market certainty for the sale of seaweed harvests.
  - Ensuring the involvement of other stakeholders such as local government, private sector / companies, NGOs in project implementation.
  - Installation of FADs must be in accordance with government regulations and a SOP for FAD management is necessary to avoid negative impacts on the environment and social impacts such as unfair distribution of results.
  - Concrete dismantling waste originating from talud rehabilitation has no significant impact in Negeri Asilulu. Concrete waste can be used to compact the dirt roads that are still in Negeri Asilulu.

- Beneficiary criteria for cultivation and seaweed must be residents who live near the location of the seaweed cultivation so that they can control and care for seaweed plants properly.

Annex 12. Attendance List of Public Consultation in Negeri Asilulu

HAI
HARMONY ALAM INDONESIA

INSTITUT WALLACEA

DAFTAR HADIR

Nama Kegiatan : KONSULTASI POTENSI DAMPAK PROGRAM DI NEGERI ASILULU

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