



ADAPTATION FUND

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Small-sized Project

Country/Region: **Indonesia**

Project Title: **Development of Sustainable Seaweed and Fishery Management for Enhance Community Prosperity & Climate Change Adaptation of Coastal and Small Island at West Nusa Tenggara Province**

AF Project ID: **IDN/NIE/Multi/2017/2**

IE Project ID:

Requested Financing from Adaptation Fund (US Dollars): **\$984,000**

Reviewer and contact person: **Saliha Dobardzic**

Co-reviewer(s): **Martina Dorigo**

IE Contact Person: **Monica Tanuhandaru, Kemitraan – The Partnership for Governance Reform**

Review Criteria	Questions	Comments
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes, Indonesia is a developing country with a strong dependence on its coastal and marine ecosystems that are particularly vulnerable to climate change.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes.

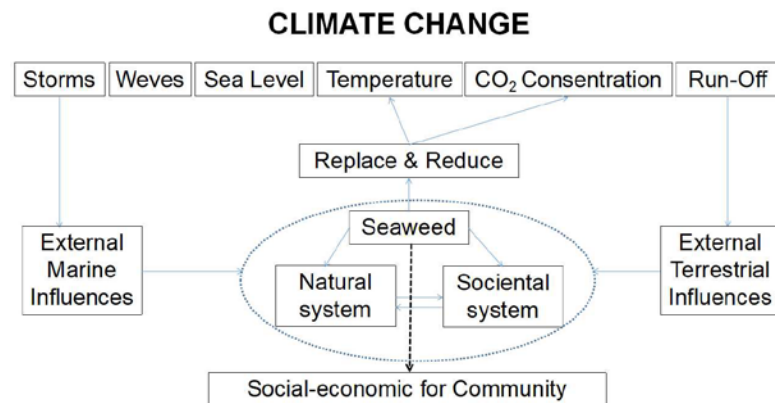
2. Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?

Possibly.

The application of seagrass for coastal adaptation and improving food security is indeed an appropriate measure to adapt to climate change. However, the proposal should provide a stronger climate change adaptation rationale to demonstrate directly how the proposed interventions will lead to higher resilience to the impacts of climate change. Further, the narrative of section A does not coincide with the project components.

CR1: Please include clear articulation of the climate change impacts that this project has been designed to address, the assessments and evidence of vulnerability that support the rationale of the project, and how the chosen activities address those impacts and the resilience of the chosen communities. In particular, Table 1 and Figure 1 are vague and do not explain the methodology used or which climate change impacts are included.

Seaweed cultivation can be expected to shift their distribution landward in response of sea level rise provided that the newly submerged shore areas are suitable for the primary settlement of spores or seeding. Seaweed in particular are frequently exposed at the red tide and have become adapted to ambient air temperature and rainfall. Such improvements, greatly affects the community structure changes and the spread of organisms in the sea. These problems can be slowed by increasing the oxygen content in the atmosphere produced by seaweeds.



3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?

Requires further clarification. The proposal includes out a number of project sub-objectives that seem to be focusing on improving the socio-economic opportunities in local communities rather than addressing the impacts of climate change.

CR3: Please provide further clarification on the rationale for the project and how the proposed investments will enhance resilience to the impacts of climate change in the particular geographical context and local environmental conditions (in specifically selected project sites).

Since Lombok area belongs to the newly hit area by the earth quake, the proposed project (seaweed plantation) will not only improve the geographical area and coastal area (especially north and east Lombok), but also the people who live there, because they can have the new way to lead their life.

CR4: Please clarify how women and vulnerable populations will be engaged in the project (the proposal speaks to a potential role for women but does not clarify the project approach).

As it is mentioned in other parts of the proposal, the project will involve more women in the implementation. This is because, based on cultural tradition in these areas, women are traditionally passive, and stay homes. Therefore, the role of women in this project will be more important in that they can help their husband's income. Specifically, there will be more women who participate in the training, this is because most of the men will usually become fisherman, the position which will traditionally be held by men, and directly indicates masculinity.

On the other hand, the position of women at home, which is usually passive will benefit this training program, since they will be involved in process plantation of the seaweed, harvesting, and further process the seaweed to become more valuable products.

There will also be women who are involved in post-production business, such as establishment of cooperative to support post-harvest program, selling and buying corps, etc.

	<p>4. Is the project / programme cost effective?</p>	<p>Not clear. The concept does not provide sufficient information to review the project's cost-effectiveness.</p> <p>CR6: Please provide an analysis of why the chosen solution is cost-effective relative to viable alternatives to achieve the intended adaptation outcomes. The term effective usually refers to (reaching the stated needs/objective/goal).</p> <p><i>We have tried so far to specifically distribute the proposed fund for several important projects, such training (cultivation and post harvest processing) projects, module-writing, and other projects, etc.</i></p>
	<p>5. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?</p>	<p>Mostly addressed.</p> <p>CR7: Please provide additional information on relevant adaptation policies and plans (NDC of Indonesia to the Paris Agreement, National Adaptation Plan, etc.).</p> <p><i>Basically, Indonesian government through ministry of fishery has already adapted the policy which support the program of prevention of climate change, one of the policies is by preserving the area. In this case the proposed fund to cultivate coastal area with seaweed will be very relevant since it can definitely help improve the quality of the surrounding area for coastal ecosystem rehabilitation through improving the quality of sea water, prevent (mitigate) the warming of the sea water, improve the nursery ground and number of fish, etc.</i></p>

	<p>6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?</p>	<p>Partially addressed. The proposal lists a few relevant laws but does not address how the project will maintain or meet the required standards.</p> <p>CR8: Please provide information on how the project will meet the required standards that are listed, as well as additional regulations on environmental impact assessments</p> <p>In sum, this project will satisfy the government regulation stipulating all the stakeholders in environmental project to prevent the destruction of the environment. The project will undoubtedly prevent the damage of environment by planting the seaweed which is certainly very useful for improving the quality of sea and coastal area, increase the number of fish in the area, prevent the worsening climate, and lastly improve the possibility of economic productivity of those living in coastal area. Again we have to ensure that this project will definitely promote the process of preservation of the ecosystem as well as better environment.</p> <p>.</p>
	<p>7. Is there duplication of project / programme with other funding sources?</p>	<p>Explanation is not sufficient.</p> <p>CR9: Please provide an explanation and analysis of other related projects or programs in the area from other funding sources.</p> <p><i>There is no duplication with other funding sources So far, this proposed project is only offered to Kemitraan and WB, and not to other parties.</i></p>

8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?

Requires clarification.

CR10: Please further elaborate how the project will support learning and knowledge management. Please consider including activities such as online presence/repository of lessons learned, production of outreach material, both in printed format, as well as using available electronic platforms, including Facebook, text messages and a simple project website. Please also elaborate on what the strategy is to include school children and the private sector actively in the outreach campaign.

Basically, the project of planting the coastal area with seaweed is relatively new, despite the fact, that most people have known that seaweed is important for their lives. In short, the project will be conducted in both learning and post –learning activities. In learning activities, there will be some practical activities to support theoretical concept given during the class. The theory is given in order to know the importance of seaweed plantation for human, and their coastal environment. Secondly, the practical aspect is conducted in order to see the understanding of the participants. Further, in the post learning there will be more application program, in which the participants will be required to attend the trial for approximately two months in order to find out the result of their learning program. After the trial period is conducted successfully, the participants will be requested to form a group (which consists of 20 members) in order to start applying the business, namely seaweed plantation. The area has been provided by the local government (The district government), which means that for those who have completed the training and their trial, might be able to get the grant for approximately \$ 1000. During the training the learning process will be supported by multi- media program, which means that the participants will not only learn from the book, but they will also learn from audio-visual material which can be accessed by the participant any time, thus resulting in more effective learning and more efficient, since they can learn at their own time and space. We also plan to have our website which is specifically designed for promoting our communication with those involved as soon our proposed project is approved since creating our own website will be quite costly. Other social media can also be used to communicate our learning process, and other relevant purposes.

	<p>9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?</p>	<p>Not addressed. It is unclear which groups have been consulted to inform the design of the project. CR11: Please clarify which groups have already been consulted in the design of the project, and how the project will continue to ensure a consultative process over the course of project implementation.</p> <p><i>Prior to proposing this project to adaptation fund, we have already gained some approvals and permits from local government, such as governor of West Nusa Tenggara, Dr. TGB, Zainul Majdi. Other relevant groups which have involved in our consultation is Mrs. Mimin Sumarlina, MSc. Who is currently the chairwoman of the seaweed business association. Mrs. Monica Tanduharu who is currently chairing Kemitraaan, Mrs. Dewi Rizki who becomes the program director of Kemitraan.</i></p> <p><i>The experts that we have consulted regarding the seaweed project is Dr. Ike Nasyalana who has been considered as an expert in seaweed, and is currently teaching at Gajah Mada University, faculty of biology. Lastly, we have also involved PKK (The association of women organization) of local area which is currently led by Mrs. Erika Mazdi.</i></p> <p><i>In sum, this project has been consulted with lots of people either on the top level of decision makers or those involved in the practical aspects such as the experts from Gajah Mada University.</i></p> <p><i>Prior to proposing this projects, we, the proposer, are the lecturers who have been involved in lots of community activities to support the government solve the community problem.</i></p> <p><i>Further contact can be provided when necessary to consult directly with anyone proposing this project.</i></p>
	<p>10. Is the requested financing justified on the basis of full cost of adaptation reasoning?</p>	<p>Not addressed, the project must refine the adaptation rationale of the project and compare to the baseline and business and usual condition. CR12: Please reformulate this section to compare the project components with the baseline (no funds from the Adaptation Fund).</p>

	11. Is the project / program aligned with AF's results framework?	<p>We have not read the framework result of Adaptation Fund, but we can ensure that our mission/project in Lombok will be very relevant to the AF's framework/policies, this is because our effort to help rebuild Lombok will never harm the environment, in fact, our effort will be able to improve the quality of the environment in Lombok (i.e. the quality of sea water). Secondly, we also believe that what we will do in Lombok will possibly help those hit by quite horrible natural disaster to start their life by providing them with a means to make money from sea weed project.</p>
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	<p>CR13: Please provide more information on the seed fund and how it will sustain itself.</p> <p>The project of planting seaweed, despite relatively new, has been long known by people, and experts, The proof of the feasibility of this project has been confirmed by the support of the local government who will provide some hectares of area for the sake of this project.</p> <p>Despite the possibility of failure, just like in any project, the attempt to encourage the people to plant sea weed will be very important for the people and the coastal area, since it can help reduce the possible worsening condition of the area as well as provide a new means making money.</p>
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?	<p>CR14: Please provide justification for why the project proponent deems that no further assessment is required for compliance with the Environmental and Social Policy and Gender Policy of the Fund.</p> <p>This project is not an experiment or a manufacturing industry, this is in fact, the process of re-greening of the coastal or sea water with seaweed, which is certainly very useful and very important to prevent climate change, and the worsening quality of sea water, thus this project should not be assessed in other terms or ways since this project is merely a rehabilitation process of coastal or sea water which might, at the same time, improve the</p>

		livelihood of those living in there by being able to harvest the result, which is a sea weed and can be further processed into other consumptive product such as jelly, sweet, or cosmetic product.
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	No, it is 8.7% CR15: Please correct the fee so that it is at or below 8.5 per cent of the total project/programme budget before the fee. We already reformulated the budget and has changed into 7, 9 per cent of the total project/programme.
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?	The budget is unclear on what the execution cost is. CR16: Please clarify if there is any execution cost for this project. <i>Ideally, the project will be able to cover all of the available area provided by the local government which belongs to the fertile or potential area to become the project for seaweed plantation program. However, at least, with the granted fund we can possibly cover 1, 5 to 5 % area of the total 5000 hectares and this is a good start to further develop into larger and more prospective venture.</i>
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes, Kemitraan is an accredited NIE.

Implementation Arrangements	1. Is there adequate arrangement for project / programme management, in compliance with the Gender Policy of the Fund?	<p>N/A (not assessed at the concept stage).</p> <p><i>Since this project will mainly target women as the ones who conduct the plantation project, we do not assess them based on gender. But, we will later on assess their performance based on the productivity of their harvest.</i></p> <p><i>Again, we will have to ensure, that culturally most men will become the fishermen, and the project of planting seaweed will be mostly provided for female members.</i></p> <p><i>In case, there are some male members who might be interested in the project, we will provide only 30 % for male members, and the rest will be provided for female members.</i></p> <p><i>This is because, most of the males will usually be more interested in becoming the fisherman instead of becoming the farmer of seaweed.</i></p>
	2. Are there measures for financial and project/programme risk management?	<p>N/A (not assessed at the concept stage)</p> <p><i>The risk management has been conducted, and this project has been considered feasible, please find on our separate sheet.</i></p>
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy and Gender Policy of the Fund?	<p>N/A (not assessed at the concept stage)</p> <p><i>The environmental and social risk has been conducted please find on our separate sheet.</i></p>
	4. Is a budget on the Implementing Entity Management Fee use included?	<p>N/A (not assessed at the concept stage)</p> <p><i>Yes, it is included</i></p>

	5. Is an explanation and a breakdown of the execution costs included?	<p>N/A (not assessed at the concept stage)</p> <p>We have not calculated in detail yet, but we can ensure that all of the costs/execution costs have been included. The most important phases that need the funding are: web-making (if considered necessary, otherwise we will use other free of charge media, e.g., facebook, or other free of charge on-line media to replace the use of web), module making, audio-visual materials (when necessary), seed planting, and post-harvest financial support.</p>
	6. Is a detailed budget including budget notes included?	<p>N/A (not assessed at the concept stage)</p> <p>We are preparing for that, since we are not economists we try to make the report transparent, and open to be checked or audited by those concerned.</p>
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators, in compliance with the Gender Policy of the Fund?	<p>N/A (not assessed at the concept stage)</p> <p>Basically, we have already mentioned that there will be more women who are involved as the participants, so by involving women in this project we have fulfilled the policy which prioritizes and empowers women as the group which are usually marginalized. Further, data, indicators will be reported if necessary.</p> <p>However, the most important target for this project is actually empowering the locals to have another means of livelihood after the earth quake which has hit the areas as well as providing a means for supporting the process of reservation of the area.</p>

	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	<p>N/A (not assessed at the concept stage)</p> <p>Before starting the project, the project implementer has made a monitoring and evaluation plan based on the bar chart schedule and cost chart. Both schemes are made to achieve the effectiveness of time and costs that have been carried out based on the target of achieving project stages. Monitoring and evaluation focuses on job control towards the goal Effective use of available resources Improvements to problem correction for achieving goals. If possible, the project will also provide rewards or rewards for target groups who achieve the best target and product quality. The data on M E is in the form of internal documents such as: quarterly monthly reports, records of work and travel training notes of work and travel meeting minutes, training notes, minutes of meetings and so on.</p> <p>We have not calculated in detail, but we can feel sure that most of the activities including the supervision of the program. Further discussion or consult can be done through our communication officer.</p>
	9.	
	10. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	<p>N/A (not assessed at the concept stage)</p> <p>We have not read the details of the framework of the fund, however, with the re-greening process in the coastal area through a seaweed plantation, we believe that this concept will be relevant to the concept of adaptation fund which is mainly to dampen the climate change.</p>

	<p>11. Is a disbursement schedule with time-bound milestones included?</p>	<p>N/A (not assessed at the concept stage)</p> <p>We will surely report our activities based on our project steps starting from : 1) Pre-training which deals with preparation of the books/modules which will be used for training.2) Training stage which involves the training activities to those interested in the project, 3) Post training which involves application program such as overseeing the result of the practice, assisting those practicing their training (i.e. the trainees), etc. This will be reported since we believe that this project is basically aimed at helping Lombok people to get to start their life by, at the same time, providing a means to help re-green their environment (coastal area). We will surely provide a contact number with whom adaptation fund can communicate directly about this project.</p>
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<p>Technical Summary</p>	<p><i>The proposed project seeks to improve the livelihoods of low income coastal communities and fishermen by increasing the cultivation of seaweed and seagrass. While the social and economic benefits of these activities may certainly be justified, the adaptation rationale of the project should be stronger and the project objectives and deliverables should be refined in line with a greater degree of focus on adaptation outcomes.</i></p> <p>The following clarification requests are made: CR1: Please include clear articulation of the climate change impacts that this project has been designed to address, the assessments and evidence of vulnerability that support the rationale of the project, and how the chosen activities address those impacts and the resilience of the chosen communities. In particular, Table 1 and Figure 1 are vague and do not explain the methodology used or which climate change impacts are included.</p> <p><i>Based on Kasim’s (2014) seaweed (natural or cultivated) has a very important role in reducing global warming. Specifically, seaweed as biotic components can stabilize atmospheric degradation. Besides, it can also increase production of oxygen, thus reducing global warming. In addition to producing oxygen, seaweed also can stabilize seawater warming, as well as reducing the potential acidification of seawater, thus improving the amount oxygen to the atmosphere.</i></p> <p><i>Lastly, seaweed can also reduce the impact of the increase of the essence of carbon dioxide in the atmosphere, by reducing the increase of seawater temperature.</i></p>
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Based on the above argument, we can conclude that seaweed plantation/cultivation can finally improve the ecosystem as well as socioeconomic quality of those living in the coastal area.

CR2: Please provide a most complete description of the project components in section A.

This project is conducted by CIDES Indonesia along with the support from the experts of Biology Department of Gajah Mada University Indonesia and also involving the local university such as University Mataram and other local stakeholder such as Ministry of Marine and Fishery local office etc.

The component of projects can be classified into several parts:1) Training project, 2) Modules making/writings, 3) Seed fund, 4) Practical Cultivation 5) Post harvest Training (e.g., making value added product from seaweed,etc.).

CR3: Please provide further clarification on the rationale for the project and how the proposed investments will enhance resilience to the impacts of climate change in the particular geographical context and local environmental conditions (in specifically selected project sites).

At present the conditions of North and East Lombok (also West Sumbawa) in emergency conditions after being rocked by a series of major earthquakes since the end of June 2018. From NASA Aria's image, analysis shows that the north and east coast of Lombok experienced a 5 to 30--centimetre lift. This project will automatically help the socio-economic recovery of the local community and will help rehabilitate and improve the quality of aquatic ecosystems in north and east Lombok as well as west Sumbawa.

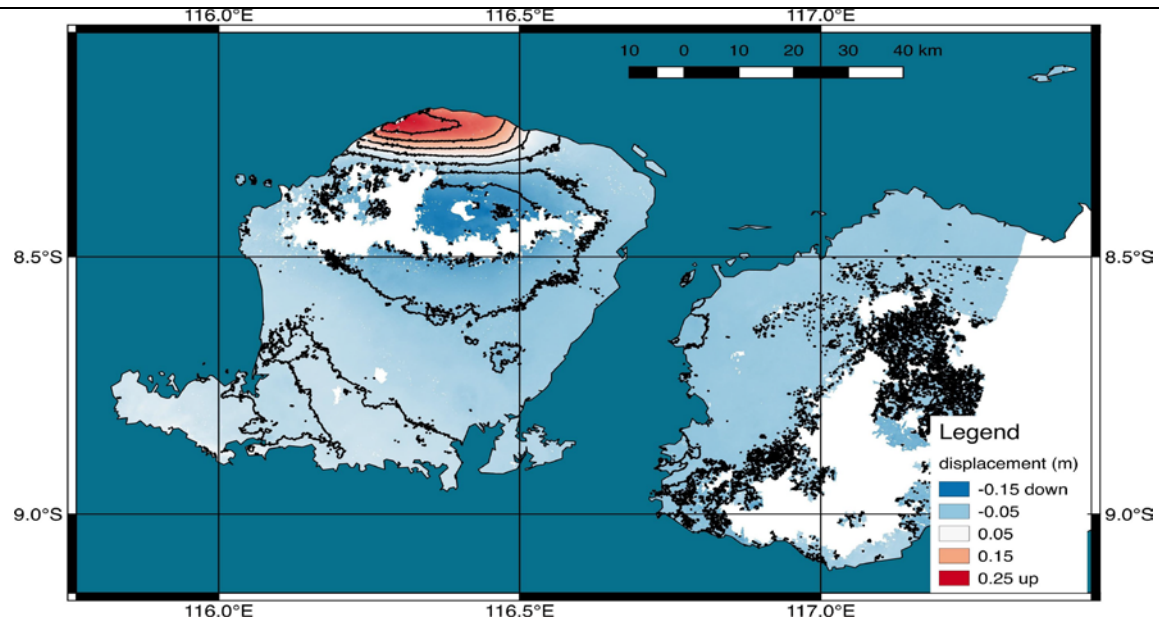


Figure 1. The latest Lombok quake map impact (NASA Aria, 08082018)

CR4: Please clarify how women and vulnerable populations will be engaged in the project (the proposal speaks to a potential role for women but does not clarify the project approach).

This project will definitely be useful due to several reasons:

- 1) Lombok and the other surrounding area (especially north and east Lombok) has become the hardest hit area caused by the earth quake this program can help the society to improve their livelihood, or at least provide them with some useful programs to re-start the new life while at the same time preserve or improve their coastal environment.*
- 2) The project will also involve women. This is because most of the men will usually become fisherman; Therefore, this project will significantly involve and empower women to support their family's prosperity. Culturally, most Lombok men prefer to become the fisherman so the program might attract more women instead of men. However, if some men are interested in the program we will also provide 30 % of the training program for them.*

CR5: Please provide additional information on how the project will mitigate any potential negative impacts to the coastal environment.

Basically; this project is environmentally friendly, thus it can help reduce the impact of global warming. Besides, the positive impact of seaweed plantation is it can help the locals to start having the relatively useful economic activities, and later on it can also help the locals to have a relatively sustainable activities since their harvest can be further processed into more valuable product such as jelly, sweets, and so forth. Thus helping the locals to recover their economic activities and reducing the aftermath of the earth quake which has hit these areas.

CR6: Please provide an analysis of why the chosen solution is cost-effective relative to viable alternatives to achieve the intended adaptation outcomes.

Seaweed cultivation/plantation is generally considered as the viable solution to reduce the impact of global warming, to improve the quality of sea water, and so forth. Further, sea weed plantation will not only help impact environmentally but also economically. Specifically, seaweed plantation will not only help improve the quality of coastal area, but it can also help the people living in the coastal area to have a relatively profitable business activity which can be more economically rewarding if this project is continuously supported and supervised.

CR7: Please provide additional information on relevant adaptation policies and plans (NDC of Indonesia to the Paris Agreement, National Adaptation Plan, etc.)

The proposed project is very relevant to the national policy of mitigation of greenhouse impact in which some of the proposed solutions decreed by the ministry of marine and fishery is to manage the conservation area, rehabilitation of seawater conversation, and lastly rehabilitation of coastal ecosystem by seaweed cultivation. In this case, the proposed project, which focuses on the seaweed cultivation, will be relevant to the government policy, especially in the third act: the rehabilitation of coastal ecosystem. The proposed plan belongs to the proposed government policy that is to improve the quality of coastal ecosystem.

CR8: Please provide information on how the project will meet the required standards that are listed, as well as additional regulations on environmental impact assessments.

To achieve national production standards, for example Indonesian National Standards for the cultivation and processing of seaweed, we will conduct cultivation quality training and processing. But this training should be devoted to those who are skilled and have sufficient knowledge so that the existing target

group will be selected again for SNI standard training and processing (clean production). The next time this training participant can also become a trainer for his partner. National and international SNI certified trainers will fill training. This trainer also acts as a cultivation quality controller and production so that it meets environmental standards and production.

CR9: Please provide an explanation and analysis of other related projects or programs in the area from other funding sources.

Based on the information either from government or other private sources, there are some projects or programs underway in Lombok, and are organized by some parties for the sake of helping the people to rebuild their life. In this case other projects do not focus on seaweed plantation or planned to be profitable, feasible, and sustainable venture.

CR10: Please further elaborate how the project will support learning and knowledge management. Please consider including activities such as online presence/repository of lessons learned, production of outreach material, both in printed format, as well as using available electronic platforms, including Facebook, text messages and a simple project website. Please also elaborate on what the strategy is to include school children and the private sector actively in the outreach campaign.

Basically, the project of planting the coastal area with seaweed is relatively new, despite the fact, that most people have known that seaweed is important for their lives. In short, the project will be conducted in both learning and post-learning activities. In learning activities, there will be some practical activities to support theoretical concept given during the class. The theory is given in order to know the importance of seaweed plantation for human, and their coastal environment. Secondly, the practical aspect is conducted in order to see the understanding of the participants.

Further, in the post learning there will be more application program, in which the participants will be required to attend the trial for approximately two months in order to find out the result of their learning program.

After the trial period is conducted successfully, the participants will be requested to form a group (which consists of 20 members) in order to start applying the business, namely seaweed plantation.

The area has been provided by the local government (The district government), which means that for those who have completed the training and their trial, might be able to get the grant for approximately \$ 1000.

During the training the learning process will be supported by multi-media program, which means that the participants will not only learn from the book, but they will also learn from audio-visual material which can be accessed by the participant any time, thus resulting in more effective learning and more efficient, since they can learn at their own time and space.

We also plan to have our website which is specifically designed for helping the trainees, and other community members to communicate with us soon after our proposed project is approved, this is because creating our own website will be quite costly. Further, we will also use face book, and other social media which can be used to communicate our learning process, and other relevant purposes.

CR11: Please clarify which groups have already been consulted in the design of the project, and how the project will continue to ensure a consultative process over the course of project implementation.

Before the project was carried out we had consulted with several influential groups in the implementation of this project including governors, sub-district heads, village heads, a group of wives of local government officials, local community leaders.

CR12: Please reformulate this section to compare the project components with the baseline (no funds from the Adaptation Fund)

When there is no fund given to each project, we will have to reduce the component which might burden the project, and we might find other sources to finance our project.

CR13: Please provide more information on the seed fund and how it will sustain itself.

Indonesia still has a very high cultivation potential area (marine agriculture). Seaweed cultivation is grouped into two categories: first, training fund which will be used for some purposes such as training programs, providing transport allowance for those coming to attend the training as well as providing some fund to start the project. In this case, the training program fund will not only cover the process of training but also to cover the participants' allowance as well as their start up fund, so that they could start their business. Secondly, the reserve fund which will be kept in the form of cooperative or micro finance program will be very useful in case that the farmers face some problem related to their cultivation project such as harvest failure, or other problems which might happen to them,

Seaweed cultivation in this project will be conducted in approximately 75 hectares (in the first cycle, in the next cycle it can be extended if successful) and as long as 6 months (the general cultivation period). The method which will be used in this project is floating, long line. Generally, this method has been proven successful and can possibly incur relatively good harvest. By

doing this simple but quite successful method the farmers can easily conduct this method and further continue this cycle.

Based on the training, the farmers are equipped with some technical skill in order to process seaweed into more expensive valuable consumption products so that they earn more income rather than just selling in the form of dried seaweed.

Base on Central Bank analysis the BC ratios of seaweed cultivation is 1.82 its means the investment around USD 9,000 per hectare will gain USD 14,380 in 3 periods of cultivation (harvest) or one year for dry of seaweed. The income will be more if we proceed the seaweed in to become value added product such as jelly, gum, gelatin, chips, syrup, sticky rice sweet, and so forth.

In short, the process of distributing the fund into two parts is very important so that the farmer will not be able to perform their cultivation process but also able to maintain their business so that it can be a sustainable and feasible business. Further, the process of making other ready-to consume products will also improve not only the value of the seaweed but also the quality and the prosperity of the farmers.

CR14: Please provide justification for why the project proponent deems that no further assessment is required for compliance with the Environmental and Social Policy and Gender Policy of the Fund.

The project of cultivating seaweed will never harm the sea or coastal environment. In fact, this project, if realized, can significantly contribute to the improvement of the quality of the surrounding environment such as improving the quality of seawater, improving the production of sea fish, and helping the locals to recover or improve their economy after the earth-quake hit Lombok since end of July 2018.

CR15: Please correct the fee so that it is at or below 8.5 per cent of the total project/programme budget before the fee.

We have updated this project budget. For management fees it only reaches a maximum of 7.9%

CR16: Please clarify if there is any execution cost for this project.

There is no significant cost in this project. There is no significant difference in financing this project. The project executor has made cost adjustments before the project is run.

Date:

20 August 2018

Amended in November 2013



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



ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category: **Small Sized Project Concept**

Country/ies: **Indonesia, East Indonesia**

Title of Project/Programme: **'Development of Sustainable Seaweed and Fishery Management for Enhance Community Prosperity & Climate Change Adaptation of Coastal and Small Island at West Nusa Tenggara Province'**

Type of Implementing Entity: **NGO's and University**

Implementing Entity: **Kemitraan (The Partnerships for Governance Reform)**

Executing Entity/ies: **CIDES Indonesia Foundation.**

Amount of Financing Requested: **984,000,-** (in U.S Dollars Equivalent)

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Project / Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

The most decisive stabilization of the effect of increasing the earth's temperature and ocean acidification is by optimizing the role of seaweed as one of the plants that can produce oxygen. Seaweed also make the process of photosynthesis to absorb carbon dioxide which leads to the increased production of oxygen (Kasim, 2014). Macro-algae can be expected to shift their distribution landward in response of sea level rise provided that the newly submerged shore areas are suitable for the primary settlement of spores or seeding. Such improvements, greatly affects the community structure changes and the spread of organisms in the sea. These problems can be slowed by increasing the oxygen content in the atmosphere produced by seaweeds.

Base on IPCC study (2014) benefits of seaweed aquaculture for climate change adaptation. The IPCC defines climate change adaptation as the process of adjustment to actual or expected climate and its effects. We address the use of seaweed aquaculture for climate change adaptation in terms of its capacity to avoid harms to human systems (e.g. coastal protection, ensure food security) and vulnerable ecosystems (e.g. provide refugee from ocean acidification and ocean deoxygenation).

By creating coastal habitats, seaweed aquaculture can potentially contribute some of the ecosystem functions that natural kelp forests and macro-algae beds support (Smale et al. 2013). Some of these functions contribute, as mentioned above, to mitigate climate change while another set of functions have climate change adaptation benefits (Duarte et al., 2013). The canopies of farmed seaweeds, like those of wild seaweeds, dampen wave energy and, hence, serve as live coastal protection structures buffering against coastal erosion (Løvås and Tørum, 2001).

Rising atmospheric concentrations of carbon dioxide (CO₂) caused the oceans to absorb more of the gas and become more acidic. This rising acidity gives significant impacts on coastal and marine ecosystems, such as limit the growth of carbonate-dependent organisms, including corals and shellfish. When CO₂ is dissolved in water, it becomes carbonate acid, which increases acidity. Since the beginning of the industrial revolution, ocean acidity has increased by 30% due to this process. Recently, scientists in China found that seaweed can remove CO₂ from the ocean and keep its acidity level down. Fast-growing seaweed takes in CO₂ through photosynthesis as it grows and is removed from the ocean at harvest. Therefore, it removes the acidifying CO₂ from the water. Indeed, the seaweed farms are not only reversing the local acidification threat, but also providing a safe and nurturing environment for shelled organisms.

Seaweed can absorb the carbon dioxide (CO₂). The total carbon dioxide uptake by seaweeds is about 173 mill tons per year. The coastal habitats seem to be more efficient in carbon uptake than the rain forests (Krause-Jensen & Duarte, 2016). Seaweed growth rate is around 30 to 60 times faster than land-based plants. This rapid turnover rate makes it ideal for mass scale production. Seaweed generally produce a lot of biomass and are potential as blue carbon stocks. Researchers have estimated that if 9% of the world's ocean surface are used for seaweed farming, we would be removing 53 billion tonnes of CO₂ from the atmosphere. Seaweed farming can also produce safe sites for breeding fish as well as reversing ocean acidification. Seaweed can be used as food, medicine and fuels. It will also offer refuges for marine species under threat from increasing acidification.

It is reported that seaweed farming could produce 12 gigatonnes per year of bio-methane, while storing 19 gigatonnes of CO₂ per year directly from bio-gas production, plus up to 34 gigatonnes per year from carbon capture of the bio-methane combustion exhaust gas. All of this could come from seaweed farming which has an area equal around 9 per cent of the world's ocean surface. Moreover it will increase in sustainable fish production and provide 200 kilograms per capita per year of fish for a population of 10 billion.

Marine aquaculture is a one such alternative income generating that is increasingly popular following a number of successful introductions in certain region such as Nusa pennida a small island east of Bali. One example is the development of seaweed farming, which has been promoted over the last 10-years but other types of marine aquaculture also have potential as alternative livelihoods. These include the culture of prawns, fish, bivalves, crabs and sea cucumbers.

It has been recognized that the coastal communities are general among the poorest in Indonesia also in West Nusa Tenggara province. That is because the price of their product (fish, seaweed and others) are very low in price especially during the harvest season and as the consequences there is considerable poverty and indebtedness. In addition, due their location and their low level of skills and educations, coastal community do not have enough alternative livelihoods, others than traditional marine and coastal activities which destroy the environment such as coral mining, dynamite fishing, poisoning and mangrove cutting.

West Nusa Tenggara province is located in the geographical position (8°LS-10°LS and 115°-120°BT). Broad area of 20153.15 square kilometers with a population until the year 2010 as many as 4,500,212 people. Some of the natural resources is the main plantation commodities such as coffee. West Nusa Tenggara is a tourism city. Based on calculations using the vulnerability FINGERPRINT then at West Nusa Tenggara including areas that are not prone category. The following figure is the percentage of vulnerabilities West Nusa Tenggara.



Figure 1. Map of West Nusa Tenggara Province

Current Situation

A significant earthquake of Mw 6.9 hit the Lombok Island on August 5th, following the foreshock of Mw 6.4 earthquake on July 29th. Preliminary results of Sentinel-1 DInSAR analysis show the displacement patterns of the surface caused by these earthquakes. The displacement is projected on the Line of Sight (LOS) direction of the radar (viewing from S12E with the elevation of about 54 deg.), and its amount is relative to that at the Mataram city. One fringe (color cycle) corresponds to the LOS displacement of 2.8 cm.

Northeastern part of the Island was mainly affected by the foreshock with a maximum LOS shortening (suggesting the uplift) of 12 cm along the NE coastline. The northern half of the island was significantly deformed by the mainshock, causing a maximum LOS shortening of 30 cm at the northwestern edge of the island, whilst E-W trending zone of LOS extension (suggesting the subsidence) traversing the Island was confirmed with a maximum extension of 12 cm at Mt. Rinjani.

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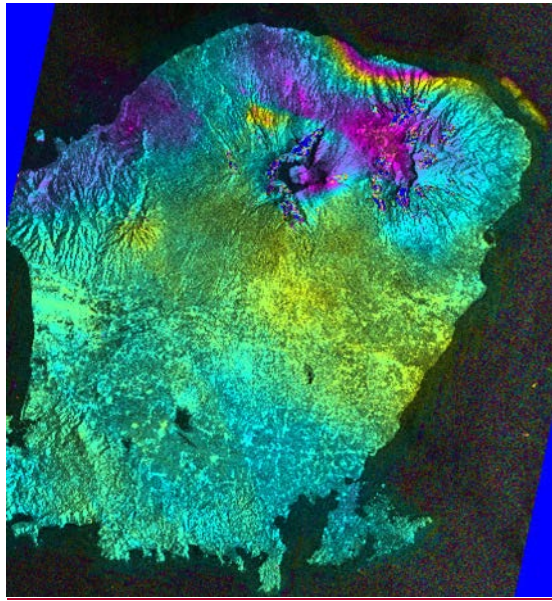


Figure 2. Lombok quake aftermath by ALOS Palsar Jaxa

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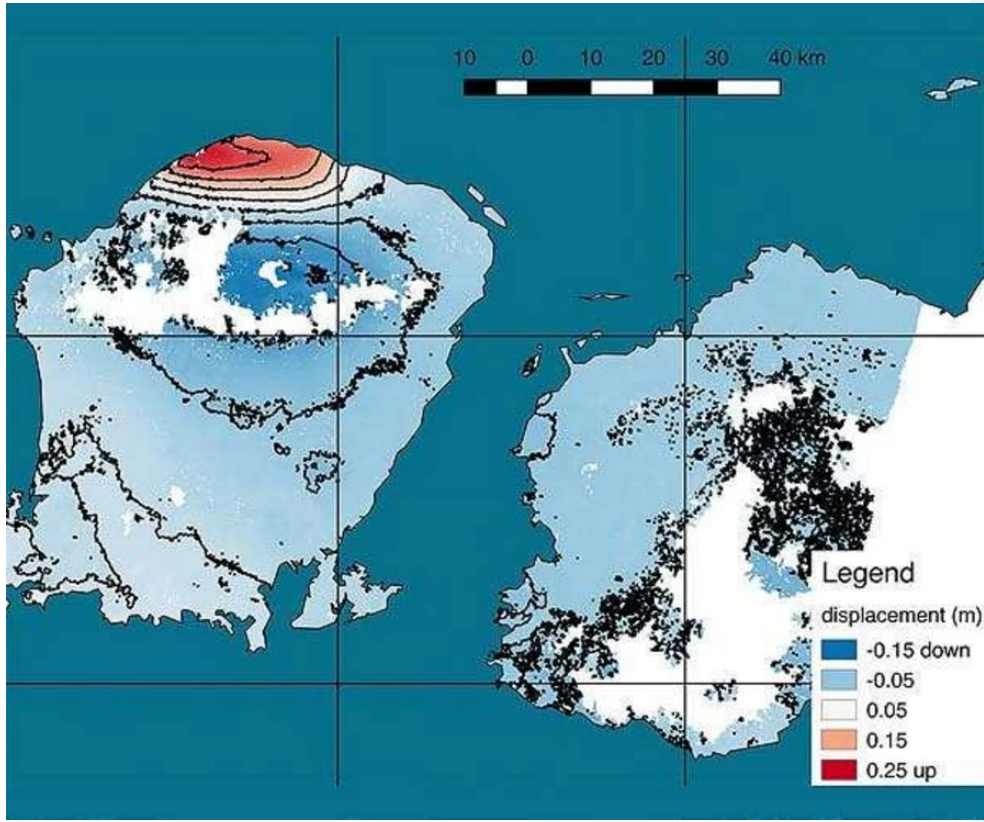


Figure 3. Analysis of Lombok deformation by NASA ARIA

Significant deformation of the northern half of the Lombok Island caused by the Mw 6.9 mainshock on August 5th was revealed by the Sentinel-1 DInSAR analysis. Maximum uplift of about 42 cm at the northwestern edge of the Island was detected from 2.5 dimensional analysis of Sentinel-1 DInSAR results (Figures 2,), whilst E-W trending subsidence zone traversing the Island was confirmed to the south of the uplift zone. Note that the displacement amount is relative to that at the reference point.

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The Sentinel Eyeview of Lombok

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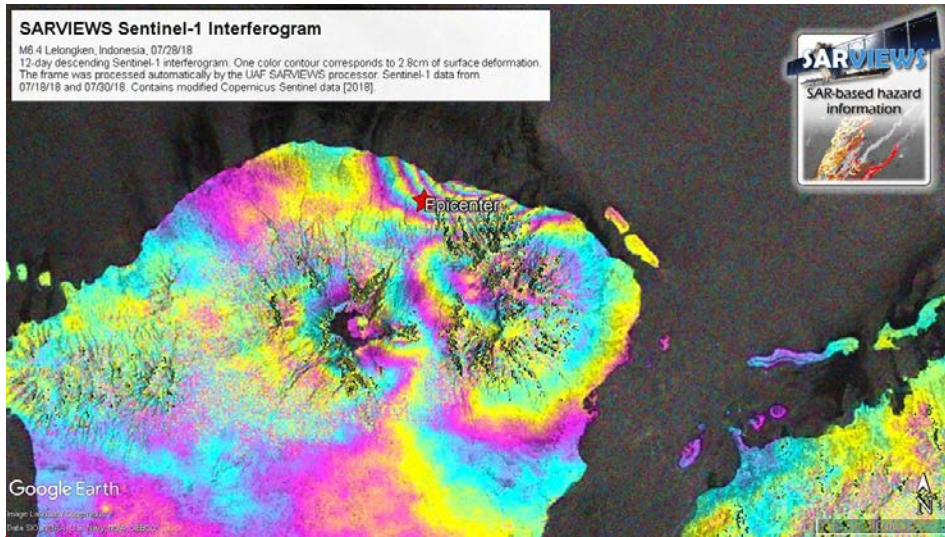


Figure 4. Analysis of Lombok deformation by ESA Sentinel-1.

The August 5th Mw=6.9 earthquake caused widespread landslides at the northern part of Lombok island. Although field reports are limited at this time, Sentinel-2 satellite imagery from Copernicus, acquired few hours after the earthquake (2018-08-06 UTC 02:39; Fig. 4), reveals numerous landslides. Although the August 6th acquisition has cloud patches that mask parts of Mt Rinjani, thousands of estimated landslides are visible on the volcanic slopes of Mt Rinjani, mostly on western, northern and eastern slopes. Landslides on the low relief coastal areas are limited and are found mainly on the steep banks of rivers.

The Sentinel-2 pixel resolution limits the analysis on landslides to those with dimensions larger than 10 m. Smaller landslides are probably widespread and numerous, and could be verified by field mapping reports, commercial very high resolution satellite imagery and UAVs (Valkaniotis et al. 2017).

The intensity of the shaking of the 2nd event possibly reached 0.4 g according to the USGS shake map5 while the region seems heavily susceptible to landslides because of relatively incoherent volcanic deposits and reduced strength of materials due to past, strong earthquakes. Accelerations up to 0.1 g may have occurred at distances up to 50 km from the epicentre.

A Sentinel-2 acquisition of August 1st 2018, permits a limited separation of landslides from the two main events. A larger percent of cloud cover on the August 1st image limits

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the analysis, but from a preliminary examination we conclude that landslides from the July 28th Mw=6.4 event are significantly fewer in number and are mostly limited on the eastern slopes and near the summit area of Mt Rinjani volcano. Thus, comparing Sentinel-2 images from July 12, August 1 and August 6, the majority of landslides occurred from the Mw=6.9 earthquake.

Due to the close timing of the August 6th satellite acquisition (14+ hours after) with the main Mw=6.9 event, Sentinel-2 has captured the magnitude of landslide and rockfall occurrence around the crater lake Segara Anak, at the summit of Mt Rinjani: high resolution imagery shows the dust cloud still present around the steep cliffs from the main shock and the first aftershocks, along with recent landslide debris on the slopes and on the lake.

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Earthquake Loss Data

Until Wednesday (08/15/2018) recorded 460 people died, namely in North Lombok Regency 396 people, West Lombok 39 people, East Lombok 12 people, City of Mataram 9 people, Central Lombok 2 people and City of Denpasar 2 people. The number of casualties can still increase considering the joint SAR team is still searching for victims buried in landslides in Dompus, Kayangan Subdistrict, North Lombok, which allegedly buried 4 people landslides, evacuation in East Bow Village, Rempek Village, Gangga Subdistrict, North Lombok, which is thought to still have one people are buried in rubble, and some reports from the public.

The number of injured was recorded at 7,733 people, of which 959 were seriously injured and hospitalized and 6,774 were slightly injured. A total of 417,529 people were displaced in thousands of evacuation points. Of the 417,529 people displaced, there were 187,889 men and 229,640 women. The distribution of refugees is in North Lombok Regency 178,122 people (80,155 males, 97,967 females), East Lombok 104,060 people (46,827 males, 57,233 females), West Lombok 116,453 people (52,404 males, 64,049 females), and Mataram City 18,894 people (8,503 men, 10,391 women). Refugees still need help because not all aid distributions in fairly. In addition, it is estimated that they will still be in refugee for a while while waiting for home improvement.

Meanwhile, the temporary data collection on the damage to the house to date has 71,962 damaged housing units in which 32,016 were heavily damaged, 3,173 moderately damaged, and 36,773 slightly damaged. Other physical damage included 671 damaged education facilities in which 124 kindergartens, 341 elementary schools, 95 junior high schools, 55 high schools, 50 Vocational schools, and 6 disabilities school. There were also damage to 52 health facilities (1 hospital, 11 health centers, 35 clinics, 4 village clinics (polindes), 1 pharmacy building), 128 religious facilities (115 mosques, 10 temples, 3 vihara), 20 office units, 6 bridge units and roads - the road was damaged and collapsed due to the earthquake

Damages and losses caused by earthquakes are very large. The team from the Deputy for BNPB's Rehabilitation and Reconstruction still made a quick count on the impact of the earthquake. By using a database as of 08/13/2018, damage and losses due to the earthquake in NTB reached IDR 7.45 trillion. These damages and losses include the residential sector 6.02 trillion rupiah, the infrastructure sector 9.1 billion rupiah, the productive economic sector 570.55 billion rupiah, the social sector 779.82 billion rupiah, and cross-sector 72.7 billion rupiah. The housing sector is the biggest contributor to the damage and losses due to disasters which reached 81 percent.

This figure will continue to grow along with the increase in data on the impact of damage entering the Command Post. National Disaster Agency-BNPB will also calculate the amount of needs needed for recovery in post-disaster rehabilitation and reconstruction. Redevelopment will be carried out in 5 sectors, namely the housing sector, infrastructure, productive economy, social and cross-sector. Of course it requires trillions of rupiah. It is impossible for all to be charged to the local government. Most of the funding comes from the central government. Assistance from the business community and society is very much needed for this recovery. The rehabilitation and reconstruction process will be carried out for minimums on 2 years.

The community, the NTB regional government and the affected district / city government must immediately rise. Need time to recover. The central government will always assist and provide assistance until later rehabilitation and reconstruction.

The devastation of economic life and development in Lombok gives us the opportunity to organize better. The layout needs to be reorganized to adjust the earthquake hazard map. Buildings that are built must also follow earthquake resistant construction standards. Tourism as a mainstay of foreign exchange for NTB must also be reorganized. Tourists need to be equipped with an understanding of the knowledge of disasters and tourism facilities are also associated with disaster mitigation so that tourists get knowledge of disasters. Hotels on the beach can all be used as evacuation shelters when there are tsunami warnings and their construction is earthquake resistant. The Lombok community must be educated and continuously socialized with the threat of disaster. Make disaster education an added subject lesson or local content that must be followed by all students

Table 1. The distribution of vulnerability level Impact of Climate Change in West Nusa Tenggara Province (Bappenas (2016)).

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No	Districts	Level of Vulnerability					Total
		1	2	3	4	5	
1	Bima	19	106	50	-	2	177
2	Dompu	11	49	19	-	-	79
3	Kota Bima	2	17	19	-	-	38
4	Kota Mataram	22	-	27	1	-	50
5	Lombok Barat	6	40	75	-	2	123
6	Lombok Tengah	21	89	29	-	-	139
7	Lombok Timur	6	104	92	1	12	215

8	Lombok Utara	-	22	11	-	-	33
9	Sumbawa	8	120	36	-	2	166
10	Sumbawa Barat	7	53	3	-	1	64
	Total	102	600	361	2	19	1084

Project / Programme Objectives:

List the main objectives of the project/programme.

Aim of the program

- To give the coastal community to develop their potential income generating by natural resource base through participating business activity in seaweed & fishery processing which also can best effort for mitigate and adaptation for climate change in coastal area.
- To give the coastal community a chance to secure the alternative income without ignoring their household cores while they improve the environment quality for fishery and seaweed cultivation.
- To create the conducive situation in which entrepreneurial spirit, skills and knowledge so that society as the whole can get benefit from it.
- To develop the sustainable management of seaweed and fishery cultivation and introducing of value added and clean technology of production to reduce the environment degradation cause the exploration in their conservative nature.
- To monitor and evaluate the CO₂ absorption and acidification coastal area
- To contributed on recovery and rehabilitation of West Nusa Tenggara after earthquake.

Project/Programme Components and Financing:

Table 2. Project or program component and finance

Criteria	Amount	Percentage
Honorarium management/Admin/Report etc.	78,000	7.9
Grouping/Coordination/Field/Manual book etc	78,000	7.9
Training of Trainer, Groups Training	73,000	7.5
Seed fund for farmer/fishery/polyculture	685,000	69.5
Post harvest handling	70,000	7,1
Total	984,000	100

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Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific subsets of stakeholders, regions and/or sectors that can be addressed through a set of well defined interventions / projects.

Table 3. project components, activities, expected concrete outputs, and the corresponding budgets.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US\$)
1. Field Coordination/ 2. Grouping	Trained, skilled participant or groups of farmer/fishermen for seaweed & fishery cultivation	1,000 participants farmer/fishermen divided into 100 groups each group consist 4 to 15 members	78,000
2. Training Phase (Training of Trainer, Group Training etc)	Manual book/ Training module, Participant Trainer	40 Trainer of seaweed and fishery management	12,000
	Manual book/ Training module, Training Participant	Manual book/ Training module on Sustainable seaweed & fishery cultivation and post harvest processing, 200 persons trained/skilled.	61,000
Sub total			151,000
3. Production/ Cultivation	75 hectare <i>Gracillaria</i> sp., <i>Eucheuma</i> sp.	75 hectare per-periods or 1,200 hectare in 2 years	
a. Long line system	60 ha x US \$ 9,000		540,000
b. Floating line system	10 ha x US \$ 9,000		90,000
c. Polyculture system	5 ha x US \$ 11,000		55,000
Sub total			685,000
4. Harvesting Handling	Minimum 1-1,5 tons per-hectare/periods	Minimum 1,600 tons of dry seaweed for 2 years	50,000
5. Post harvest training	Value Added Product		20,000
6. Project/Programme Execution cost			781,000
7. Total Project/Programme Cost			906,000
8. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			78,000
Amount of Financing Requested			984,000

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Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Table 4. Milestones for the proposed project

Milestones	Expected Dates
Start of Project/Programme Implementation	October, 1 2018
Mid-term Review (if planned)	April, 1 2019, April, 1 2020
Project/Programme Closing	November, 30 2020
Terminal Evaluation	May, 30 2020

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.

Base of Kasim (2014) Seaweed (natural or cultivated) has a very important role in reducing global warming. Seaweed as biotic components can stabilize atmospheric degradation, and increased production of oxygen to reduce global warming. In addition to producing oxygen, seaweed also can stabilize global warming sea water, as well as reduce the potential for acidification as well as to supply oxygen to the atmosphere. When an earth that is triggered by an increase in carbon dioxide content in the atmosphere, it will affect the increase in sea water temperature. Such improvements, greatly affects the community structure changes and the spread of organisms in the sea.

These problems can be slowed by increasing the oxygen content in the atmosphere produced by seaweeds. The most decisive stabilization of the effect of increasing the earth's temperature and ocean acidification is by optimizing the role of seaweed as one of the plants that can produce oxygen. Seaweed also make the process of photosynthesis to absorb carbon dioxide which leads to the increased production of oxygen and reduction of the coastal water acidification.

Benefits of seaweed aquaculture for climate change adaptation The IPCC defines climate change adaptation as the process of adjustment to actual or expected climate and its effects (IPCC 2014). In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities whereas in natural systems it refers to human intervention to facilitate its adjustment to expected climate and its effects (IPCC 2014). In this context, we address the use of seaweed aquaculture for climate change adaptation in terms of its capacity to avoid harms to human systems (e.g. coastal protection, ensure food security) and vulnerable ecosystems (e.g. provide refugia from ocean acidification and ocean deoxygenation).

By creating coastal habitats, seaweed aquaculture can potentially contribute some of the ecosystem functions that natural kelp forests and macro-algae beds support (Smale et al., Provisional 2013). Some of these functions contribute, as mentioned above, to mitigate climate change while another set of functions have climate change adaptation benefits (Duarte et al., 2013). For example, the canopies of farmed seaweeds, like those of wild seaweeds, dampen wave energy and, hence, serve as live coastal protection structures buffering against coastal erosion (Løvås and Tørum, 2001; Mork, 1996).

The islands in the eastern part of the Indonesian archipelago are some areas with The highest poverty and food insecurity in the State Indonesia. community livelihoods mostly located in rural areas and depend on ecosystem services provided by terrestrial and marine habitats, and are very sensitive to the climate change. Currently there are no approaches are available to assess the vulnerability of livelihoods on islands to climate change or other factors driving change as growth resident, or to design adaptation strategies 'no regrets' that brings benefits on a variety of future scenarios.

The government has established the principle of sustainable development used in the 2015-2019 RPJMN that is economically feasible, socially acceptable, environmentally sustainable. To implement these principles require the prerequisites are improved governance. One of very important to improve governance is in the field of nature and natural resources Living environment. Sustainable development is constructed based on the basis of synergy ecological, economic base, and the social bases of development in all sectors.

Indonesia is an archipelago lying areas Low spacious, Indonesia is vulnerable to the negative impacts of changes climate. Indonesia has experienced extreme climate events such as floods and drought, and are likely to experience long-term effects of the increase in sea levels. With the population of Indonesia, the natural disasters caused climate change will affect more humans and daily living, so it would be difficult to rise to reduce poverty. Most of the poor tend to live in areas at high risk of prone to rising sea levels.

The Indonesian government considered the concept of integrated between mitigation and adaptation to climate change as an attempt to build resilience and safeguards against flooding, availability of water and energy resources, and has undertake significant efforts in developing and implementing the Action Plan National Adaptation to Climate Change (RAN-API), which consists of a framework for adaptation initiatives that have been mainstreamed into the Development Plan National.

With the understanding that build resilience requires a process long, the cost of adaptation to climate change Indonesia will continue to grow. Therefore, the goal is to maintain the adaptation Indonesia a strong local economy, to ensure food security, as well as to protect the livelihood and welfare of the people by building durability for the affected communities as well as the resilience of the sector such as ecosystem resilience, economic and livelihood systems. Action adaptation will be directed to community development in order increase the capacity of resilience in addressing the impact of climate change.

The degree of vulnerability to climate change is determined by the indicators that affect the exposure, sensitivity and adaptive capacity system. These three factors are changed according to time in line with implementation of development activities and adaptation efforts. Level exposure and sensitivity levels can be reflected by biophysical and environmental and social-economic conditions. To support efforts to reduce the risks and impacts of climate change The Directorate General of Climate Change through the Directorate Develop climate change adaptation and Data Information System Index Vulnerability to Climate Change that present data and information vulnerability climate change unit in villages across Indonesia. Currently FINGERPRINT utilize social-economic data, demographics, geography, and the environment PODES infrastructure. The goal is to present the information the vulnerability to climate change to support policy development by central and local governments in adaptation planning efforts and reduce risks and impacts of climate change.



Figure 52. The administration area of West Nusa Tenggara Province

- B. Describe how the project/programme provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable 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 of the Adaptation Fund.

This project will directly provide economic benefits to the community, especially the poor who did not/do not own a business on seaweed farming is done directly by them. Executor of the project will act as a mentor in production, product quality and post-harvest seaweed also helps on networking market. Similarly, in the cultivation environment seaweed area will improve the quality of the local environment since it will increase the oxygen content and prevent acidification of the waters and become a source of nutrients to the local ecosystem. In terms of gender This project will empower many women because about 60% seaweed farmers are women. Marine aquaculture is a one such alternative income generating that is increasingly popular following a number of successful introductions in certain region such as Nusa pennida a small island east of Bali. One example is the development of seaweed farming, which has been promoted over the last 10-years but other types of marine aquaculture also have potential as alternative livelihoods. These include the culture of prawns, fish, bivalves, crabs and sea cucumbers.

The cultivation of seaweed is widely perceived as one of the most environmentally benign types of aquaculture activity, as it does not require additional feed or fertilizers. Consequently, it has been actively promoted by government initiatives, particularly in many developing countries where communities have reduced access to alternative livelihoods or are involved in more destructive fishing methods (e.g., dynamite fishing). The cultivated seaweed and the associated infrastructure provide multiple direct and indirect environmental benefits on both a range of spatial and temporal scales.

It has been recognized that the coastal communities are general among the poorest in Indonesia. That is because the price of their product (fish, seaweed and others) are very low in price especially during the harvest season and as the consequences there is considerable poverty and indebtedness. In addition, due their location and their low level of skills and educations, coastal community do not have enough alternative livelihoods, others than

traditional marine and coastal activities which destroy the environment such as coral mining, dynamite fishing, poisoning and mangrove cutting. In the 'low income groups' this coastal and marine sector of main income. This sector is the labor based –instead of technology or capital based economic activity. The development of this non formal sector can have positive impact especially increasing social welfare of coastal and marine community.

In “low income groups” non-formal sector is the source of main income. This sector is labor-based -instead of technology or capital based economical activity. The development of non-formal sector can have positive impact especially in increasing social welfare. One particular characteristic of non-formal sector potential roles of women both as labor and as entrepreneur. For women who has family, this sector can be her choice for she can have roles both on her household chores and in this non-formal economic activity can have positive impact in sense that it can generate additional income.

The development of non-formal sector is very slow. This can related to many constraints among others to low quality of human resource education, scarcity of capital, technology and marketing. All these constraints can make the benefit of non-formal sector lower than is cost or all efforts done for it. The low benefit can be seen from how low are its output, product, income and quality.

In efforts to increase the benefit of non-formal sector which can improve social welfare, it is necessary that the constraints to its developments are handled or (re) solved. One way on how to do the latter is by improving human resource through encouraging and increasing women capability in high quality enterprising, improving their productivity and technological processing as well as improving their marketing capability.

In determining which sector to be develop it is necessary to refer to several criteria like: home based industry, simple technology, easy to produce, potential for developing further, labor force and raw materials available in abundance and has interrelation with other sectors so that capable of creating a network of enterprising community. In accordance with criteria set up, the processing of sea grass food is informal sector worth and potential to be developed. Several further reasons why this field of economic activity is chosen are as follow:

- 1) Improving this sector can have wide interrelation in both upstream and downstream of economic activity. In upstream economic activity, this sector can induce to increase the productivity of raw material i.e. seaweed and fishery. While in downstream economic activity, this sector can create food processing industry both in supplying local market and export market.*
- 2) This sector has good potential to supply local and export market. Moreover, not many*
- 3) Seaweed food and fish product is food which contain of high nutrients as protein sources.*
- 4) Raw material in the form of seaweed is abundantly available due the increasing activity in growing and cultivation of seaweed.*
- 5) Seaweed food and fish processing is appropriate for community activity in their spare time while they are tending their house hold.*
- 6) The economic activity has no or minimum impact in polluting on its environment.*

Other side, unexpected weather and more and more extreme climate events exacerbate income generation from the primary economic sector. The project will cover around 1,200 people who directly involve on seaweed cultivation in West Nusa Tenggara Province. The

multiflier effect of the project could more than double such as trading, post harvest production etc.

Since Lombok area belongs to the newly hit area by the earth quake, the proposed project (seaweed plantation) will not only improve the geographical area and coastal area (especially north and east Lombok), but also the people who live there (especially community of north and east coastal area of Lombok as well as west Sumbawa, because they can have the new way to lead their life.

- C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

The project financial cost effective analysis is an approach to determine whether a project is feasible or not implemented. The approach used in this analysis consists of Project Cash Flow, Projects Loss/profit, Net Present Value, Internal Rate of Return (IRR) and Payback Period. Base on study by Indonesia Central Bank for seaweed small business projects with financing commercial bank can return of capital within one year of production.

Based on the projected profit / loss is calculated from the difference between sales revenue and total costs (production costs, depreciation, interest and taxes). The project is able to generate profits annually. Profit margin in year 1 at 33.13% and subsequent years 32.52% per year. Breakeven point can be achieved in the first year of production of 33.186 kg and subsequent years 31 566 kg. Net Present Value (NPV) is calculated based on the difference between the present value of receipts to be received from the sale of seaweed production is reduced by the present value on the cost to be incurred over the life of the project including the payment of taxes.

- D. Describe how the project/programme is consistent 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.

Base on Indonesian National Action Planning RAN-GRK i.e. Regulation of The President Republic of Indonesia Number 61 of 2011 on National Action Plan for Reduction of Green House Gas Emissions. The rehabilitation of the action plan of the coastal ecosystem (Mangroves, coastal vegetation, seagrass, coral reefs) in the coastal region Integrating adaptation and mitigation of climate change into planning regulatory, institutional capacity and management of fishing Development of seaweed cultivation in eastern Indonesia 2010-2020. This program coordinated by Ministry of Marine and Fishery Affairs cq. Directorate General of Coastal and Small Island.

Projections based on the assessment of the impact of the driving factors of the products and ecosystem services (PPE), which supports rural livelihoods and well-being community. Because of the diversity of products and ecosystem services as a dependency of society on Lombok and Sumbawa, the typology is needed to simplify the analysis. In 2010 there were 105 rural sub-districts in the province. Overall, a total of 84 products and ecosystem services have been identified from 9 habitat (Figure below). Manufacture of PPE (eg relative volume produced or used) is estimated from BPS-National Statistics Agency and PODES secondary

data and survey to the community if the data not available (Suadnya, 2010). Statistical analysis of the blend of PPE and level production, revealed seven types of typologies. The whole typology except typology 7 contained Lombok and Sumbawa.

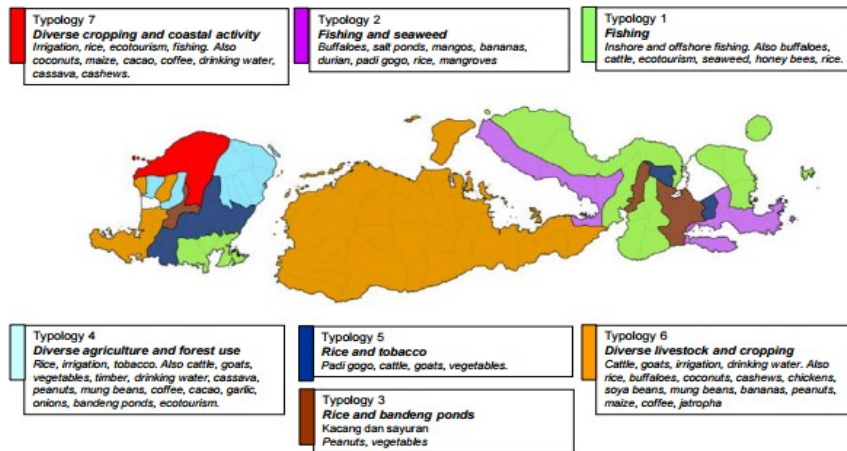


Figure 63. The distribution of habitat in West Nusa Tenggara Province (CSIRO, 2014)

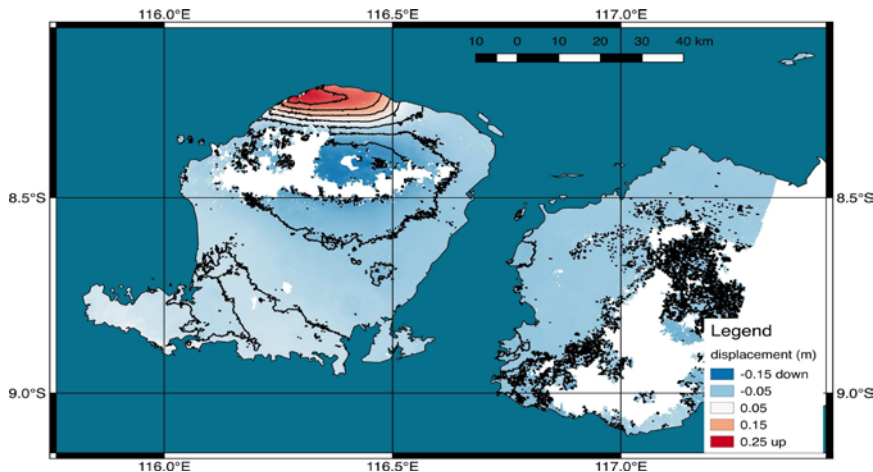


Figure 7. The latest Lombok quake map impact (NASA Aria, 08082018)

E. Describe how the project/programme meet relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and comply with the Environmental and Social Policy of the Adaptation Fund.

To achieve national production standards, for example Indonesian National Standards for the cultivation and processing of seaweed, we will conduct cultivation quality training and processing. But this training should be devoted to those who are skilled and have sufficient knowledge so that the existing target group will be selected again for SNI standard training and processing (clean production). The next time this training participant can also become a trainer for his partner. National and international SNI certified trainers will fill training. This trainer also acts as a cultivation quality controller and production so that it meets environmental standards and production.

There is several National Standard related to Seaweed Cultivation and Fishery Management launch by Indonesian National Standard Agency. Such as :

- ✓ SNI 7579.2.2010.The Cultivation of Seaweed *Euclima cottoni* by the Long Line system.
- ✓ SNI 7902 2013 Cultivation of Seaweed *Gracillaria verucosa* by pond system.
- ✓ SNI 7902-2013 and SNI 7903.2013 The Seedling of Seaweed *Gracillaria Verucosa* and Seaweed nursery of *Gracillaria verucosa* by long line system in pond.
- ✓ SNI 7904 2013 The Seedling of seaweed *Gracillaria verucosa* pond system by spreading method.
- ✓ SNI 7917 Management of Fishery Infrastructure by PET Floating Net system and Fish rearing in open sea pond method.
- ✓ SNI for seaweed cultivation and product processing and SNI for Milkfish cultivation.

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

No

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

Basically, the project of planting the coastal area with seaweed is relatively new, despite the fact, that most people have known that seaweed is important for their lives. In short, the project will be conducted in both learning and post-learning activities. In learning activities, there will be some practical activities to support theoretical concept given during the class. The theory is given in order to know the importance of seaweed planation for human, and their coastal environment. Secondly, the practical aspect is conducted in order to see the understanding of the participants. Further, in the post learning there will be more application program, in which the participants will be required to attend the trial for approximately two months in order to find out the result of their learning program.

After the trial period is conducted successfully, the participants will be requested to form a group (which consists of 20 members) in order to start applying the business, namely seaweed plantation.

The area has been provided by the local government (The district government), which means that for those who have completed the training and their trial, might be able to get the grant for approximately \$ 1000.

During the training the learning process will be supported by multi- media program, which means that the participants will not only learn from the book, but they will also

learn from audio-visual material which can be accessed by the participant any time, thus resulting in more effective learning and more efficient, since they can learn at their own time and space.

We also plan to have our website which is specifically designed for helping the trainees, and other community members to communicate with us soon after our proposed project is approved, this is because creating our own website will be quite costly. Further, we will also use face book, and other social media which can be used to communicate our learning process, and other relevant purposes.

The project will publish a book report, book training module, a module for seaweed cultivation system with long-line gear, cages and poly-culture and post-harvest technology seaweed as activities report and dissemination of lessons from seaweed cultivation in the province of Nusa Tenggara.

In the 2-year project the executor will organized Workshop: The Development of 'Bio-Based Economy' Sustainable Management of Biodiversity as Economic Future Solution Indonesia as a maritime continent and development of strategy to reduce CO₂ and acidification of the coastal area in collaboration with the Faculty of Biology, University of Gadjah Mada, University of Mataram and relevant stakeholders from within and outside the country. It is expected that this forum will be born in the formulation and improvement of cooperation in the field of management of sea grass and fishery as the welfare of the Indonesian people in the future and will formulate development of strategy to increase CO₂ absorption and to reduce the coastal water acidification.

- H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

Prior to proposing this project to adaptation fund, we have already gained some approvals and permits from local government, such as governor of West Nusa Tenggara, Dr. TGB, Zainul Majdi. Other relevant groups which have involved in our consultation is Mrs. Mimin Sumarlina, MSc. Who is currently the chairwoman of the seaweed business association. Mrs. Monica Tanduharu who is currently chairing Kemitraaan, Mrs. Dewi Rizki who becomes the program director of Kemitraan.

The experts that we have consulted regarding the seaweed project is Dr. Ike Nasyalana who has been considered as an expert in seaweed, and is currently teaching at Gajah Mada University, faculty of biology. Lastly, we have also involved PKK (The association of women organization) of local area which is currently led by Mrs. Erika Mazdi.

In sum, this project has been consulted with lots of people either on the top level of decision makers or those involved in the practical aspects such as the experts from Gajah Mada University.

Prior to proposing this projects, we, the proposer, are the lecturers who have been involved in lots of community activities to support the government solve the community problem.

A. Further contact can be provided when necessary to consult directly with anyone proposing this project.

CIDES has initiated coastal community empowerment with seaweed commodities in cooperation with the research group Seaweeds BPP Teknologi while the initiative of Formation Seaweed Development Study Center in Nusa Tenggara that time, but this plan constrained on funding limitations.

During the project implementation the project executor (later call executor) has consultative stakeholder i.e., Ministry of Marine and Fishery Affairs (MMAF) local Office and Ministry of Cooperative and Small Scale Enter-prize local office for sustainability of the project, Ministry of Industry local office and Agency for Application and Assessment of technology especially for post harvest technology, the Ministry of Environment and Forestry (central and local office) for Aspects of Adaptation Study and Ministry of Industry and Trading for Marketing network and support the project.

Seeking the scheme for the vulnerable groups as the target of project the executor will consultative with the local government (Governor, Bupati/Head of District/Major, Sub district head and head of community or head of indigenous people). For the gender aspects we will consultative or coordinate with groups of official wife (PKK) especially cause the participants target of the project is more female gender than male and also the leader of the community (Indigenous people if any).

Table 5. The list of consultative stakeholder

Stakeholder	Status
Governor West Nusa Tenggara Administration	Support
Merine and fishery office of West Nusa Tenggara	Support
Office of Cooperative and UKM West Nusa Tenggara	Support
Office of Industry and Agriculture in West Nusa Tenggara	Support
Head of District (Bupati/Walikota)	Support
Head of PKK regency, sub-district, village	Support

- I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning. *Base on call for proposal by Kemitraan Adaptation Fund for Propose the project for climate change adaptation to Kemitraan – Adaptation Fund and our previous discussion with the local government of West Nusa Tenggara Province for creating the project which combine on climate mitigation and adaptation also the coastal community development in West Nusa Tenggara. Also, there very difficult procedure for farmer and fishermen on credit request from commercial bank. They face some of fundamental constraints i.e. no and or limit asset for bank's guarantee and or non bankable criteria of entrepreneur by commercial bank. Under the Marine and Fisheries Agency reports Lombok is known that it is the fishermen and farmers did trouble NTB capital without collateral.*

The Index of Vulnerability, NTB province is located in the geographical position (8°LS-10°LS and 115°-120°BT). Broad area of 20153.15 square kilometers with a population until the year 2010 as many as 4,500,212 people. Some of the natural resources is the main plantation commodities such as coffee. West Nusa Tenggara is a tourism city. Based on calculations using the vulnerability FINGERPRINT then at West Nusa Tenggara including areas that are not prone category. The following figure is the percentage of vulnerabilities West Nusa Tenggara. (see table above).



Figure 8 4. The detail of land elevation of Lombok island

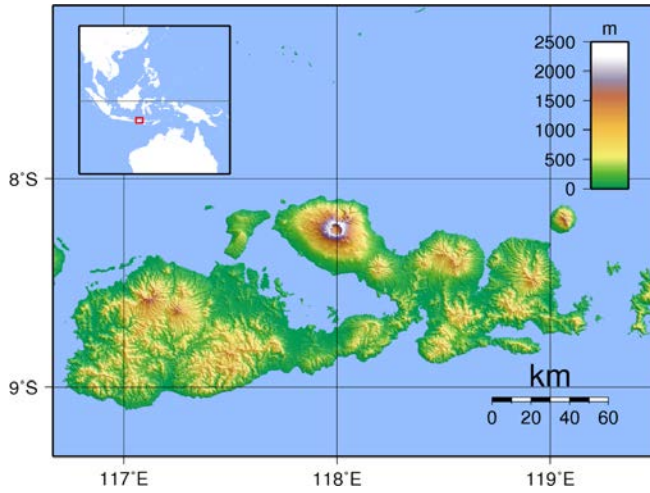


Figure 9 5. The detail of Land elevation of Sumbawa island

Table 6. The Potential Area for Seaweed/Polyculture Cultivation.

	Kecamatan/Sub-district	Potential (hectare)	Cultivated (hectare)
West Lombok	Pangantap	944	644
Central Lombok	Garupuk/Awang	475	214
East Lombok	Sarewe	2,460	2,000
	Brewe	800	600
West Sumbawa	Labuan Mapin	3,200	2,000
West Sumbawa	Kertasari	900	700
West Sumbawa	Terano	2,000	200
Dompu	Kuangko	800	200
Bima	Wawaroda	3,207	800

Projections based on the assessment of the impact of the driving factors of the products and ecosystem services (PPE), which supports rural livelihoods and well-being community. Because of the diversity of products and ecosystem services as a dependency of society on Lombok and Sumbawa, the typology is needed to simplify the analysis. In 2010 there were 105 rural sub-districts in the province. Overall, a total of 84 products and ecosystem services have been identified from 9 habitat (Figure below). Manufacture of PPE (eg. relative volume produced or used) is estimated from BPS-National Statistics Agency and PODES secondary data and survey to the community if the data not available (Suadnya, 2010). Statistical analysis of the blend of PPE and level production, revealed seven types of typologies. The whole typology except typology 7 contained Lombok and Sumbawa.

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

The cultivation phase can be renewed every maximum 4 months depend on the cycle of cultivation. Theoretically, in one year one group hopefully already get the Break Even Point (BEP) of their seaweed and fishery business and have own capital and revolving the seed fund to executor. So, the executor will start nurturing the new groups. Also, the post harvest processing of seaweed and fishery could become more value added product so directly will impact on rising of groups income. In this scheme the break even could be achieved faster. So the project could grow in groups numbers or participants. All of the farmer/fishermen groups will coordinate by cooperative system which will develop by the project executor in cooperation with the local government. The 'seed fund' of the groups will apply by revolving system for running of new groups in other area. All the activities of this project will be reported regularly every 6 months during 2 year project complete which will cover the progress report, documentation and last but not least evaluation and improvement effort to achieve the goal of project.

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

The project will impact on accelerated the local economy which have been chosen for project. Economic activity in the agribusiness seaweed cultivation is done profitably. Income communities who cultivated seaweed more high when compared to people who do not do cultivation seaweed. Significantly this effect on increasing welfare owned by coastal communities. Previous study proved that analysis of indicators describe the level welfare families who have seaweed cultivation better than families which have not seaweed farming. Change livelihood pattern also occurred that society shifted from being just fishing extraction from nature become cultivated society farmers. For environment aspects, the project also will enrich the nutrient content of surrounding waters close to the project. The benefit of the high content of nutrient will enrich the ecosystem and fishery sector in the area.

Macro-algae cultivation can be expected to shift their distribution landward in response of sea level rise provided that the newly submerged shore areas are suitable for the primary settlement of spores or seeding. Seaweed in particular are frequently exposed at the red tide and have become adapted to ambient air temperature and rainfall. Such improvements, greatly affects the community structure changes and the spread of organisms in the sea. These problems can be slowed by increasing the oxygen content in the atmosphere produced by seaweeds.

Seaweed aquaculture can potentially contribute some of the ecosystem functions that natural kelp forests and macro-algae beds support (Smale et al., 2013). Some of these functions contribute, as mentioned above, to mitigate climate change while another set of functions have climate change adaptation benefits (Duarte et al., 2013). For example, the canopies of farmed seaweeds, like those of wild seaweeds, dampen wave energy and, hence, serve as live coastal protection structures buffering against coastal erosion (Løvås and Tørum, 2001). Base on the Governor advise the project will spread in Lombok and Sumbawa island as the mainland of West Nusa Tenggara Province.

Table 7. The table of potential area for sea weed cultivation in West Nusa Tenggara Province.

No	Disctrict	Kecamatan (Teluk)	Allocation area (hectare)
1	West Lombok	Pengantap	300
2	Central Lombok	Teluk Gerupuk	200
3	East Lombok	Teluk Sarewe	400
4	West Sumbawa	Kertasari	200
5	West Sumbawa	Terano	1.500
6	Dompu	Kuangko	500
7	Bima	Waworada	1.800

Table 8. Environmental and social principles

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks - further assessment and management required for compliance
Compliance with the Law	√	
Access and Equity	√	
Marginalized and Vulnerable Groups	√	
Human Rights	√	
Gender Equity and Women's Empowerment	√	
Core Labor Rights	√	
Indigenous Peoples	√	
Involuntary Resettlement	√	
Protection of Natural Habitats	√	
Conservation of Biological Diversity	√	
Climate Change	√	
Pollution Prevention and Resource Efficiency	√	
Public Health	√	
Physical and Cultural Heritage	√	
Lands and Soil Conservation	√	

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project/programme implementation.

The project is directly execute by executor coordinated by CIDES Indonesia in cooperation with Faculty of Biology, Universitas Gadjah Mada (UGM) also supporting by the local government administration, University of Mataram and local administration (indigenous people). The first step project is Training of the Technicians & Trainer Assume that 40 technician (the best person in every group) is required to support 1,200 farmers of seaweed and fishery during at least two years.

The technicians are the keys to success, and they need to be well trained. CIDES Indonesia in cooperation with BPPT, Faculty of Biology UGM and Center for Coastal and Marine

Studies University Mataram will offer a training package course on theory and practice for prospective seaweed and fishery farming technicians. Train the best people available. Start the farms slowly, step-by-step, and with small groups of well-motivated and well-trained farmers. Establish clear 'rules of the game' from the start and don't persist with unmotivated farmers. Faculty of Biology UGM will also do activity to monitor and value the CO2 absorption and acidification of the coastal area.

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

Table 9. The measures for financial and project/program risk management

	Risk		Response Measure
Economy	Fluctuation in exchange rate (USD : IDR)	medium	The project manager will closely monitor the fluctuation in exchange rate and make decision accordingly
	Delays in the disbursement of funds, procurement and institutional inefficiencies (e.g. lengthy approval processes) result in delayed recruitment of project staff and hence project implementation.	low	Communication between project manager and everyone involved in this project for minimalizing misunderstanding between party
Project	Delays for infrastructure stabilization	low	Project manager will be manage the executor for tightly follow the time schedule
	Farmer Acceptance	low	Project team will introduce the project comprehensively and involve related key players

The executor will base on the minimum target achievement vs time and fund disbursement. The complete and details is show on disbursement of fund below.

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

The measure of environment and social risk is handled by doing research before and after the project. Some of indicator which can use i.e. environment quality before and after the project (e.g.turbidity of water, dissolve oxygen etc, abundance of species etc).

Table 10. measure of environmental and social risk

	Risk		Response Measure
Economy	<i>Social jealousy between people who get cultivation training and who do not</i>	<i>Medium</i>	<i>The project was conducted in a sample area that invited community representatives from other regions. So that people in other areas can learn through these representatives</i>
	<i>Distribution of cultivation and its sales</i>	<i>Medium</i>	<i>Distribution and sales channels of cultivation shall be made through local government and project implementers</i>
	<i>The abundance of cultivation products</i>	<i>Low</i>	<i>Diversification and processing of raw products into semi-finished or finished products</i>

Environment	Environmental impact for local areas	Medium	The environmental factor measured periodically. The environmental factor consists of pH, salinity, water turbidity, temperature, dissolved oxygen and species abundance
	The existence of endemic disease in the cultivation process	Low	Periodic monitoring of cultivation commodities against exposure to diseases
	The presence of pests that cause production to decline	Low	Periodic monitoring of pests that interfere with cultivation commodities

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E Plan.

The monitoring and evaluation will be based on the activity and amount of budget disbursement. The executor will report periodically every 6 months.

For monitoring and evaluation activities will be described below :

Start up

For starting up will be held in the first month of the project started. The aim for this evaluation is to make sure every preparation was done accordingly.

Six-Month evaluation

Project will be evaluated every six-month including financial reports and working progress

End of Project

Evaluation for the end of project will take place three months prior to project termination

E. Include a results framework for the project proposal, including milestones, targets and indicators.

Table 11. Framework for the project proposal

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Criteria	Milestone	Target	Indicator
Grouping	Number of groups	100 groups farmer/fishermen	The existing/sustainable group after the project
Training of Trainers	Number of Trainer	40 Trainers	Manual book, The certificated Trainer
Training groups	Number of participant	100 participants	Sustain /skilled participants
Cultivation phase	The wide area of cultivation	80 hectares of seaweed cultivation	The sustain of cultivated area seaweed/fishey
Post harvest handling	Kind and amount product	Value added product of seaweed/fish	The vary of seaweed /fish product
Monitoring and evaluation of CO ₂ capture and water acidification	Level of CO ₂ in Water and atmosphere and acidification of coastal water.	Along the targeted coastal area	Reduction of CO ₂ and acidification level

Through this project created at least could be created for seaweed cultivation in polyculture and longline systems (long line) 80 hectares of distribution throughout the West Nusa Tenggara province involving at least 1,200 direct labor. After operating for a year the cultivation and processing of seaweed and fishing can take place with further sustainable farmers, fishermen and seaweed, fish and dairy products producers will be contained in the

form of cooperatives under the coordination of the University of Mataram which will be formed later.

100 groups from the villages learned how to process seaweed into chips and syrup, milkfish product etc. CIDES Indonesia, Faculty of Biology, UGM and related partners (University of Mataram Nusa Tenggara Barat Province) will provided teaching material regarding bleaching methods, syrup processing, chips, milkfish processing and business analysis of the seaweed product market. Additionally, CIDES Indonesia and partner provides processing equipment for each district.

Once ToT participants return to their villages they can transfer the knowledge to neighbours, so that they are able to produce seaweed chips themselves. Some of them already apply continuous production, although still on a small scale, and are even getting orders from outside the area.

Although the women are now knowledgeable on processing techniques, difficulties in business permit application, a lack of capital to invest in raw products and equipment and unstable electric power supply hamper the production of seaweed products. To overcome these obstacles, CIDES Indonesia has coordinated with the respective local government offices and followed up on raised issues. As an example, the health department will issue the Certificate of Domestic Industry Processing (S-PIRT) as the requirement for home industry chips production and the Cooperative and Industrial Trading office will provide assistance on the seaweed chips packaging for the active groups. The local government also promises to support the seaweed processing activity by providing market strategy such as exhibition to establish West Lombok as centrum of seaweed processing in West Nusa Tenggara.

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

Table 12. Result framework of the Adaptation Fund

Project Objective(s) ¹	Project Objective Indicator	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Resilience/ adaptation In coastal area	Manage minimum 1,200 hectare of seaweed/fishery cultivation	Seaweed product business	Coastal and environment service	78,000
Income generating for vulnerable community	Multifier effect on local economy minimum 3,600 people	Local economy growth	Family expennses	73,000
Monitoring and evaluation of CO ₂ and acidification level	Increase of CO ₂ capture and decrease of acidification			
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)

¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

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Group enterprise Skilledfarmer/ fishermen	Minimum 1,000 new seaweed/ fishery cultivator	Enhance of skill personel	Increasing of Daily income	685,000
Value added product	Diversification of seaweed/fishery product i.e.syrop, seaweed jelly, starch etc	Enhance of product price/quality	Increasing of product price/ quality	70,000
Awareness of community in CO ₂ and acidification mitigation	Active community of CO ₂ and acidification monitoring			

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Firstly, the project will be started by coordination and grouping the community members. Most of those who are grouped are women (approximately 80 %). The consideration to pick up women as the majority in the groups is because women have more time to support this project compared than their male spouses. There will be 100 groups each will consist of 10 -15 members.

The groups will be trained prior to the implementation of the program. The training will be specifically adjusted with their educational background/interest/skill/ability. Further training will be conducted by those who are considered capable for becoming the trainers. Some criteria will be adopted to recruit the trainers from the selected groups. Approximately, there will be 40 members who will be further trained to be the trainers in their own community to support the project.

The training sites will be conducted in Mataram and on site location. The predicted expenses for the above activities are \$ 73,000 (the expenses include training modules, allowance for each participant, allowance for trainers, accommodation, etc.).

After the training program is completed, the production phase will be directly applied in the field. All the materials of the training programs are expected to be effectively applied by all the members of trainees/trainers under the supervision the Faculty of Biology Universitas Gadjah Mada (UGM). In this case, the methods which will be applied are: long line, floating, and polyculture methods in 75 hectares of production area . The total amount for the above project is going to be \$ 685,000 (includes seed fund).

The other predicted expenses are management fee (\$ ~~78,000,-~~) which will be allocated to the project officers, local partners (e.g., local communities), and post-harvest handling, as well as product exhibition (e.g., marketing, certification, etc.). The total expenses predicted for this project is about \$ ~~984,000,-~~

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H. Include a disbursement schedule with time-bound milestones.

Schedule of Budget Disbursement Year I

Activity/Month	1	2	3	4	5	6	7	8	9	10	11	12
Preparation	√											
Site activity	√											

Grouping	√	√											
Training of Trainer		√	√	√									
Training for Group				√	√	√							
Practising					√	√	√						
Nursery						√	√	√	√	√	√	√	√
Cultivation Phase													
a.Long line							√				√		
b.Floating							√				√		
c.Polyculture							√				√		
Post harvest									√				√
Midterm Review						√							√

Schedule of Budget Disbursement Year II

Activity	13	14	15	16	17	18	19	20	21	22	23	24
Postharvest	√	√	√	√	√	√	√	√	√	√	√	√
Exhibition				√				√				
Cultivation Phase												
a.Long Line	√			√			√			√		
b.Floating	√			√			√			√		
c.Polyculture	√			√			√			√		
Post harvest			√			√			√			√
Mid Term Review						√						√
Reporting												√

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

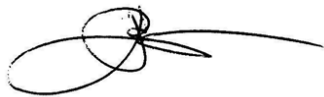
A. Record of endorsement on behalf of the government²

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

TGH.DR.M.Zainul Majdi,MA Governor of West Nusa Tenggara	Date: April, 4 2017
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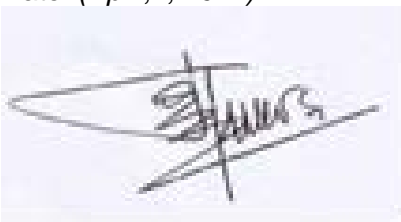
B. Implementing Entity certification Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

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 in West Nusa Tenggara Province and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme 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/programme.



M.Rudi Wahyono,Drs.,Dipl.Env.MMA
Implementing Entity Coordinator
CIDES Indonesia Foundation
Gedung ICMI Center Lt.4. Tel. and email:
+62-21-75672801/62-21-7994466
/ +6281316374564
cidesdoc@gmail.com
rudikongsberg@gmail.com

Date: (April,4, 2017)



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.

Project Contact Person: DR.Eko Agus Suyono, M.App.Sc.
 Tel. And Email: 0274-4395517/081328765344 eko_suyono@ugm.ac.id

Appendix 1. Details of Budgeting.

	Criteria	Price per-unit US \$	Unit	#unit	Amount
1	Management				
a	Project staff 1	1,200	24 months	1 person	28,800
b	Staff 2	1,000	12 months	1 person	12,000
c	Staff 3	1,000	12 months	1 person	12,000
d	Staff	500	12 months	1 person	6,000
e	Local Staff	400	12 months	2 person	19,200
	Sub-total				78,000
2	Field Coordination/Grouping				
a	Grouping	3	10 location	100 persons	30,000
b	Transportation	1,000	12 months	2 package	24,000
c	Site secretariat	1,000	24 months	1 package	24,000
	Sub-total				78,000
3	Training Phase				
a	Module/Manual Book	10	750	4 package	30,000
b	Training of Trainer	300	20 pers	2 package	12,000
c	Group Training	2,000	10 location	1 package	20,000
d	Demoplot-practising	1,100	10	1 package	11,000
	Subtotal				73,000
4	Implementation Phase				
a	Long line system cultivation				
	a.Eucheuma cottoni	60 hectare	9,000		540,000
	b.Gracillaria sp				
b	Floating system cultivation				
	a.Gracillaria sp	10 hectare	9,000		90,000
	b.Eucheuma cottoni				
c	Polyculture system (IMTA,Integrated Multitropic Agriculture)				
	-Seaweed(Gracillaria sp)	5 hectare	11,000		55,000
	-Shrimp (Penaeus monodon)				
	-Milkfish (Chanos chanos)				
	Sub total				685,000
d	Post harvest handling				
a	Starch processing	1,000	1 package	7 location	7,000
b	Seaweed chips processing	1,000	1 package	7 location	7,000
c	Seaweed syrop processing	1,000	1 package	7 location	7,000
d	Seaweed (dodol) processing	1,000	1 package	7 location	7,000
e	Milkfish processing	1,000	1 package	7 location	7,000
f	Shrimp processing	1,000	1 package	7 location	7,000
g	Product packaging	1,000	1 package	7 location	7,000
h	Gum processing	1,000	1 package	7 Location	7,000
i	Jelly processing	1,000	1 Package	7 Location	7,000

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<i>j.Nori Processing</i>	1,000	1 package	7 Location	7,000
<i>Subtotal</i>				70,000
Total				984,000

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Seaweed Adaptation of Climate Change

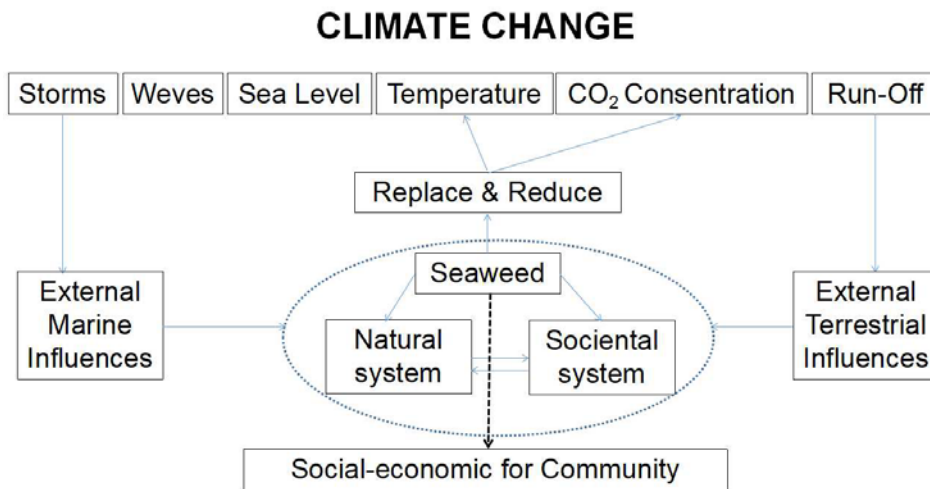


Figure 6. Seaweed adaptation of climate change

Appendix 2. Sustainability of Project.

Indonesia still has a very high cultivation potential area (marine agriculture). Seaweed cultivation is grouped into 3 categories are: investment in the infrastructure of the cultivation, the operational cost of the cultivation which includes labor costs, seeds and leases of land, as well as reserves contingency. The proposed loan is working capital credit. Cultivators are deemed to have their own capital that is equal to the value of

tools and equipment that they used to use in business cultivation before. The cultivation effort of the state (marine agriculture) is seaweed to become an important area of investment, does not encourage the development of the world that continues to increase in every year with an average of 5-10% per year.

Seaweed cultivation in this project will be conducted in approximately 75 hectares and harvest period (6 months). The method to be used is floating, long line and polyculture methods. Financing is done through funding of capital invested in the form of tools and knowledge. Cultivation infrastructure tools, payments with labor payments through crop turnover obtained. The required seedling is about 10 kg in one ha of area with 6 months maintenance, and 640 kg or 100 kg wet harvest after drying with the price of 45,000 IDR. However, in the calculation of economic value on the target of this study will produce heavy harvest products weighing 64,000 kg wet weight or 10,000 kg dry weight at a price of 45.000.000 IDR. When cultivation is done during the dry season, this is done to maintain the balance of air to remain stable.

Seaweed Growth Rate (SGR) calculates seaweed cultivation production. Good seaweed has an average growth of 1:5 or more (harvest weight of seaweed 5 times the initial weight). The formula for calculating SGR is as follows, (Anggadireja et al., 2006): Seaweed Growth Rate (SGR) = $\{(Harvest\ Weight/Start\ Weight)^{1/t} - 1\} \times 100\%$. Seaweed Growth Rate (SGR) 5% per day, then at harvest weight will reach weight = $(1 + 5\%)^{45\ days} = 5,841 \times$ weight of the original (seed weight). However, SGR in various regions in Indonesia varies between 2.6% and 13.9% per day (Murdjani M, 2006). The quality of the seaweed product depends on the quality of seeds, methods or cultivation techniques according to location, harvest time (minimum 45 days), harvesting, drying and storage (Marchell Taher, 2006). Moisture quality standard 35%, KCL 28% maximum 2%, harvest age of at least 45 days after seeded (Neish, 2006). Seaweed in the production center is usually sold in dry form. From 5 kg of wet seaweed, after drying 2-3 days will shrink to 1 kg (marinade rate = 20%).

Table 13. Technical assumption and financial parameters of seaweed cultivation business per-period

	Unit	Unit of value
Amount of investment	Years	2
Period of cultivation (6 months)	Days	180
Harvest time	Days	45
Cultivation cycle (180/45)	Per-harvest	4
Amount of harvest	After weight	6
Wet weight until dry	Percentage	12.5%

Need of seeds (75 ha)	Kg	750
The price of dried seaweed in farmer (75 ha)	IDR/Kg	4500

In this project, the fisherman will also be equipped with technical capability to process seaweed into more expensive valuable consumption products so that they earn more income than just selling in the form of dried seaweed.

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Base on Central Bank analysis the BC ratios of seaweed cultivation is 1.82 its means the investment around USD 9,000 per hectare will gain USD 14,380 in 3 periods of cultivation or one year for dry of seaweed. The income will more if we proceed the seaweed in to value added product such as jelly, gum, gelatin, chips, syrop, dodol, nori etc. The target groups which will have beneficieries of this project is approximately 600 family which mean will effect into minimums of 1,800 persons if one family consist of three members. We projected after 2 years the project achieve the sustainable business and become self sustains community with their own business.

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