Blue Horizon: Ocean Relief through Seaweed Aquaculture

Part I: Project Information

GEF ID
10573

Project Type
FSP

Type of Trust Fund
GET

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Blue Horizon: Ocean Relief through Seaweed Aquaculture

Countries
Regional

Agency(ies)
WWF-US

Other Executing Partner(s)
SEAFDEC, BFAR (Philippines), MARD/D-fish (VN)

Executing Partner Type
Government

GEF Focal Area
International Waters

Taxonomy
Focal Areas, International Waters, Large Marine Ecosystems, Coastal, Marine Protected Area, Pollution, Nutrient pollution from all sectors except wastewater, Plastics, Acquaculture, Biomes, Coral Reefs,

Seagrasses, Climate Change, Climate Change Mitigation, Agriculture, Forestry, and Other Land Use, Climate Change Adaptation, Climate resilience, Influencing models, Transform policy and regulatory environments, Convene multi-stakeholder alliances, Strengthen institutional capacity and decision-making, Demonstrate innovative approache, Stakeholders, Indigenous Peoples, Private Sector, Large corporations, SMEs, Individuals/Entrepreneurs, Civil Society, Community Based Organization, Non-Governmental Organization, Academia, Type of Engagement, Consultation, Participation, Partnership, Information Dissemination, Beneficiaries, Local Communities, Communications, Education, Awareness Raising, Behavior change, Gender Equality, Gender Mainstreaming, Sex-disaggregated indicators, Women groups, Gender-sensitive indicators, Gender results areas, Knowledge Generation and Exchange, Access to benefits and services, Access and control over natural resources, Participation and leadership, Capacity Development, Capacity, Knowledge and Research, Knowledge Generation, Knowledge Exchange, Innovation, Learning, Indicators to measure change, Theory of change, Adaptive management

Sector
Mixed & Others

Rio Markers
Climate Change Mitigation
Climate Change Mitigation 1

Climate Change Adaptation
Climate Change Adaptation 0

Submission Date
5/26/2022

Expected Implementation Start
1/1/2023

Expected Completion Date
12/31/2026

Duration
48In Months

Agency Fee($)
540,000.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
IW-1-1	Strengthen blue economy opportunities through sustainable healthy coastal and marine ecosystems	GET	3,000,000.00	4,762,815.00
IW-1-3	Strengthen blue economy opportunities by addressing pollution reduction in marine environments	GET	3,000,000.00	4,762,814.00
		Total Project Cost($)	**6,000,000.00**	**9,525,629.00**

B. Project description summary

Project Objective

To create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing ($)

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing ($)
Component 1: Regional approach and capacity for seaweed value chains in SE Asia	Technical Assistance	1.1 Regionally adopted plans and principles to harmonize seaweed aquaculture in SE Asia	1.1.1. Regional Seaweed Technical Working Group, constituted and formally mandated by SEAFDEC Governing Council	GET	763,329.00	1,167,164.00
			1.1.2. Guide to Promoting a Sustainable Seaweed Industry in the SEA Region, endorsed by the SEAFDEC Governing Council			
			1.1.3 SEA Regional Principles for Responsible and Safe Seaweed Aquaculture, including toolkit for applying principles, aligned to the Safe Seaweed Coalition			
			1.1.4 Training modules and information packages to support a sustainable seaweed industry in South East Asia			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing ($)
Component 2: Enabling Environment for Seaweed Aquaculture in Philippines and Viet Nam	Investment	2.1 Improved planning for seaweed aquaculture and capture of nutrients from the ocean	2.1.1 Marine spatial planning that integrates more sustainable seaweed farming	GET	1,411,992.00	2,380,388.00
			2.1.2 National Seaweed Plan presented for adoption (VN) and National Seaweed Industry Roadmap (PH) adapted to local levels			
		2.2 Robust institutional and regulatory frameworks ensure that expansion of seaweed farming is sustainable, responsible, and equitable	2.2.1 Policy and Regulatory gap analysis and associated frameworks (e.g. Circulars; technical guidelines) to facilitate seaweed aquaculture planning, development and management			
			2.2.2 An open-source Information Management System to facilitate national and provincial-level planning and management of			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing ($)
Component 3: Seaweed Value Chains (production + processing + marketing)	Investment	3.1 Improved technologies and testing for seaweed value chains in PH and VN	3.1.1: Six demonstration farms to provide proof of concept of different seaweed farming options: •Four demonstration farms (of Eucheumatoid species) to provide proof of concept of off-the-coast or off-shore scalable seaweed businesses (based on zones identified in 2.1.2). •Two demonstration farms (Caulerpa sp), one in degraded former shrimp ponds and another in adjacent shallow nearshore area	GET	2,910,780.00	4,540,271.00
		3.2 Generating benefits from seaweed aquaculture for target communities (PH and VN)	3.1.2: Implementation of at least 2 seaweed value chain initiatives (adding value to raw seaweed in seaweed farming communities; improved propagules; transparency)			

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing ($)	Confirmed Co-Financing ($)
Component 4: Knowledge Management, M&E, and IW Learn (regional)	Technical Assistance	4.1 Full participation in IW:LEARN and knowledge management/communication	4.1.1: Participation in two IW:LEARN regional meetings and one GEF International Waters Conference, delivering IW:LEARN experience notes	GET	628,185.00	994,651.00
		4.2. Monitoring and evaluation system in place	4.1.2: Knowledge management and communication platform and products			
			4.2.1: Monitoring and Evaluation reports (including project progress reports, midterm evaluation, terminal evaluation)			
				Sub Total ($)	**5,714,286.00**	**9,082,474.00**

Project Management Cost (PMC)

Project Management Cost (PMC)		
GET	285,714.00	443,155.00
Sub Total($)	**285,714.00**	**443,155.00**
Total Project Cost($)	**6,000,000.00**	**9,525,629.00**

Please provide justification

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
GEF Agency	WWF US	In-kind	Recurrent expenditures	720,000.00
GEF Agency	WWF US	Grant	Investment mobilized	3,584,825.00
Civil Society Organization	Safe Seaweed Coalition	In-kind	Recurrent expenditures	300,000.00
Civil Society Organization	Safe Seaweed Coalition	Grant	Investment mobilized	200,000.00
Civil Society Organization	Coast 4C	In-kind	Recurrent expenditures	300,000.00
Civil Society Organization	Marine Environment and Resources Foundation, Inc. (MERF)	In-kind	Recurrent expenditures	50,000.00
Civil Society Organization	Marine Science Institute	In-kind	Recurrent expenditures	20,000.00
Private Sector	Brabender GmbH & Co.KG	In-kind	Recurrent expenditures	300,000.00
Private Sector	Tri Tin Company	In-kind	Recurrent expenditures	10,000.00
Private Sector	Tri Tin Company	Grant	Investment mobilized	562,608.00
Recipient Country Government	Directorate of Fisheries, Viet Nam	In-kind	Recurrent expenditures	1,000,000.00
Recipient Country Government	Bureau of Fisheries and Aquatic Resources Office IX (BFAR)	In-kind	Recurrent expenditures	1,658,836.00

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
Other	Southeast Asian Fisheries Development Center (SEAFDEC)	In-kind	Recurrent expenditures	600,000.00
Recipient Country Government	Bureau of Fisheries and Aquatic Resources Office	In-kind	Recurrent expenditures	219,360.00
			Total Co-Financing($)	**9,525,629.00**

Describe how any "Investment Mobilized" was identified

Investment mobilized has been identified in co-financing committed by WWF US, Safe Seaweed Coalition, and Tri Tin Company. For WWF-US, the investment mobilized covers seaweed value chain activities under the Bezos Earth Fund grant to WWF US. For Safe Seaweed Coalition, the investment mobilized covers grants that support the safety and sustainability of the seaweed industry, especially around the Coalition's three safety focus areas: consumer, environmental, and operational. Finally, the investment mobilized from Tri Tin is related to new investments in piloting seaweed sea-grape models and purchasing of seaweed products in the project site. Additional co-financing is expected to be generated during project implementation through the outputs related to private sector and investor engagement (at least $15 million). The term Investment Mobilized has been used to reflect co-financing that excludes recurrent expenditure, and financing that will be leveraged alongside the GEF grant.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
WWF-US	GET	Regional	International Waters	International Waters	6,000,000	540,000	6,540,000.00
				Total Grant Resources($)	**6,000,000.00**	**540,000.00**	**6,540,000.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

150,000

PPG Agency Fee ($)

13,500

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
WWF-US	GET	Regional	International Waters	International Waters	150,000	13,500	**163,500.00**
				Total Project Costs($)	**150,000.00**	**13,500.00**	**163,500.00**

Core Indicators

Indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
20,000.00	1,882.00		

Indicator 5.1 Number of fisheries that meet national or international third party certification that incorporates biodiversity considerations

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)

Type/name of the third-party certification

Indicator 5.2 Number of Large Marine Ecosystems (LMEs) with reduced pollutions and hypoxia

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (achieved at MTR)	Number (achieved at TE)
0	2	0	0

LME at PIF	LME at CEO Endorsement	LME at MTR	LME at TE
	Sulu-Celebes Sea		
	South China Sea		

Indicator 5.3 Amount of Marine Litter Avoided

Metric Tons (expected at PIF)	Metric Tons (expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)
0.00			

Indicator 6 Greenhouse Gas Emissions Mitigated

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	66000	290	0	0
Expected metric tons of CO?e (indirect)	0	0	0	0

Indicator 6.1 Carbon Sequestered or Emissions Avoided in the AFOLU (Agriculture, Forestry and Other Land Use) sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	66,000	290		
Expected metric tons of CO?e (indirect)	0			
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.2 Emissions Avoided Outside AFOLU (Agriculture, Forestry and Other Land Use) Sector

Total Target Benefit	(At PIF)	(At CEO Endorsement)	(Achieved at MTR)	(Achieved at TE)
Expected metric tons of CO?e (direct)	0			
Expected metric tons of CO?e (indirect)	0			
Anticipated start year of accounting				
Duration of accounting				

Indicator 6.3 Energy Saved (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Total Target Benefit	Energy (MJ) (At PIF)	Energy (MJ) (At CEO Endorsement)	Energy (MJ) (Achieved at MTR)	Energy (MJ) (Achieved at TE)
Target Energy Saved (MJ)	0			

Indicator 6.4 Increase in Installed Renewable Energy Capacity per Technology (Use this sub-indicator in addition to the sub-indicator 6.2 if applicable)

Technology	Capacity (MW) (Expected at PIF)	Capacity (MW) (Expected at CEO Endorsement)	Capacity (MW) (Achieved at MTR)	Capacity (MW) (Achieved at TE)

Indicator 7 Number of shared water ecosystems (fresh or marine) under new or improved cooperative management

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Shared water Ecosystem	South China Sea	South China Sea, Sulu-Celebes Sea		
Count	**1**	**2**	**0**	**0**

Indicator 7.1 Level of Transboundary Diagonostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
South China Sea		4		
Sulu-Celebes Sea		4		

Indicator 7.2 Level of Regional Legal Agreements and Regional management institution(s) (RMI) to support its implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)

Indicator 7.3 Level of National/Local reforms and active participation of Inter-Ministeral Committees (IMC; scale 1 to 4; See Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
South China Sea	4	1		

Select SWE

Indicator 7.4 Level of engagement in IWLEARN throgh participation and delivery of key products(scale 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Sulu-Celebes Sea		1		

Select SWE

South China Sea	1	1		

Select SWE

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	11,000	11,000		
Male	4,000	4,000		
Total	15000	15000	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

Part II. Project Justification

1a. Project Description

1) The global environmental and/or adaptation problems, root causes and barriers that need to be addressed;

The ocean?s foundation is literally eroding. Threats, drivers, and impacts are summarized in the table below.

Threat	Causes / drivers	Impact
Coral bleaching	Climate change, leading to more extreme water temperatures Pollution (e.g. nitrogen[1])	Extreme increases in water temperature puts coral reefs under huge stress, making corals susceptible to disease and, if the temperature stays high, death. The destruction of coral reefs impacts the numerous marine life that depends on these ecosystems, as well as the associated ecosystem services.
Ocean acidification	Rising levels of carbon dioxid e, which reduces the pH levels in the ocean	Ocean acidification impacts hard corals, making it difficult for these marine organisms to build their shells and endoskeletons. In some cases, severe acidification dissolves their calcium carbonate structures.
Nutrient pollution	Nitrogen and ph osphorus run-off from agriculture, aquaculture and domestic activities	Eutrophication and Hypoxia. Harmful algal blooms (HABs) consume all the available oxygen to create dead zones, leading to major losses in biodiversity. HABs also cause health problems by contaminating seafood particularly mollusks.

Climate change (due to carbon emissions) and nutrient pollution (nitrogen and phosphorus) are accelerating/driving these threats. The combined impact of these threats is the degradation of the nearshore marine environment and related ecosystem services. At a global scale, this impacts the 3 billion people that depend on fisheries and marine/coastal biodiversity for their livelihoods. It is also impacting the nearshore environment of the Philippines and Viet Nam, both of which have long coastlines (36,219 km and 3, 260 km, respectively) with coastal communities highly dependent on marine resources.

Viet Nam, for example, has been experiencing more frequent episodes of algal blooms (red tide) in coastal waters due to discharges of nutrients from two major rivers, the Red River and Mekong River, that drain into the South China Sea. Traditional farming areas in the shallow nearshore coastal environment are becoming less suitable for seaweed culture due to pollution brought by run-offs from land-based sources like agriculture and domestic activities; this applies to the Philippines as well. Viet Nam?s coastline has experienced unprecedented development in the last two decades, with tourism, port infrastructure and other forms of commercial development competing for space and access to resources. Meanwhile, climate change is raising sea temperature, which has especially pronounced effects in shallow nearshore waters, the adverse impacts on cultured seaweed being lower yield and greater vulnerability to disease.

The challenge is to find ways of capturing the carbon as CO2 to reduce ocean acidity and allow for greater capacity of the ocean to slow the rate of climate change. Moreover, the extraction of nitrogen and phosphorus, which are the key nutrients that cause eutrophication in marine environments, is necessary to limit pollution and mitigate rising ocean temperatures. This is a global challenge and the solutions need to be tested and then scaled.

Barriers addressed by the project

There are significant problems that impair the industry from reaching its potential. The structure of the current industry is characterised by high disease outbreaks (e.g. ice-ice disease) due to rising sea temperatures, pollution and low genetic variability of seedstocks; use (and loss) of Styrofoam, plastic ties, and other materials (such as empty plastic water bottles used for buoyancy); and lack of standards and protocols that adhere to an ecosystem approach to reduce the environmental footprint of production. Barriers to scaling seaweed aquaculture, and achieving corresponding environmental benefits, include the following:

1. Limited coordination, knowledge sharing, and standards for seaweed value chains and seaweed value chain actors

Seaweed farming is a growing sector and is gaining increased attention from a range of actors. While new seaweed initiatives are emerging, the seaweed value chain remains largely fragmented. In order to promote growth of the seaweed value chain, coordination and collaboration among value chain actors is needed. The lack of direction across the current industry implies lost opportunities towards developing blue economy solutions that deliver against today?s compounding environmental challenges.

An additional barrier is the lack of regionally harmonized standards and metrics guiding seaweed farming. (Not all seaweed growing countries in Southeast Asia adhere to a standard, much less any formal certification scheme). In order to increase scales of production, the quality of seaweed biomass needs to be standardized (in terms of product safety, environmental safety, and operational safety) and agreed to by actors along the value chain. This requires linking good practices for seaweed farming and processing, and harmonizing global seaweed demands and market requirements for standards with the national seaweed farming industries of the region.

2. Barriers related to Marine Spatial Plans and development plans to promote expansion of seaweed farms in zones farther than nearshore, i.e. off-the-coast and offshore.

The sustainable growth of seaweed farming is constrained by a lack of proper marine spatial plans and operationalization of these plans, particularly in zoning for the various uses and the development of aquaculture management areas. The current industry in the tropics is mostly based on inshore and intertidal areas where multiple users compete for space and resources (i.e. tourism, aquatic animal culture, fishing, navigation, energy production, etc.). In addition, current seaweed farming is operating in small-scale systems. Moving production beyond these traditional and increasingly crowded and possibly polluted areas offers reduced competition for coastal resources and less disease and climate change impacts (for instance, the water temperature is lower). As cultivation in this area is less intensively spaced, disease and parasites spread less readily, allowing greater space for seaweed farming growth potential. On the other hand, seaweed farms in areas farther from the coast and deeper than the traditional sites face a more dynamic growing environment that includes faster currents, larger waves and stronger winds. It would thus be useful for planners involved in seaweed expansion to be familiar with the conditions and attributes of two expansion areas beyond the nearshore.

To ensure a national enabling environment for seaweed farming, coordination is needed among various actors including government agencies, seaweed associations, seaweed clubs, and private sector where applicable ? for the development of seaweed development plans and Marine Spatial Plans that are further translated into zones and area management plans. For seaweed development plans, the links to

regional and global value chain market forces must be considered. Such plans rely on buy-in from multiple government agencies and seaweed associations and farmers for success.

3. Limited biorefinery solutions for new seaweed products, which constrains market uptake

Key barriers to overcoming constraints on biorefinery solutions largely relate to:

- Limited analysis of potential seaweed products, including links to demand markets and price points. There is a paucity of new ?bridge? markets for seaweed to absorb the increased amounts of biomass and promote increased growth of seaweed farming
- Potential biorefinery solutions are emerging but still have much untapped potential. In particular, new methods for downstream biorefinery processing are needed for pre-treatment, fractionation, extraction, and purification.

In some cases, seaweed products are known, but support and promotion for commercialization is lacking. There is as yet limited private investment in biorefinery solutions for new, market viable seaweed products.

4. Operational barriers related to seaweed farming

There are numerous challenges related to seaweed farming. Small-scale coastal seaweed farming has been taking place for a long time; however, technologies for seaweed farming have remained fairly rudimentary, and production systems often utilize plastics and polluting equipment (nylon, polystyrene and polypropylene wastes). New technologies and types of anchors, buoyancy systems, ropes, harvesting vessels and transportation are not always commercially available and affordable to farmers and cooperatives, which is needed to grow the sector in a more sustainable and safe way.

Offshore seaweed farming brings additional challenges, including higher levels of investments relative to traditional aquaculture infrastructure, increased insurance costs due to operations in exposed conditions, low nutrient availability, lack of knowledge about the farmed species and their behavior, and ensuring workers? well-being in demanding environments. Protecting the safety of food, employees and infrastructure will be a challenge in difficult conditions and remote areas that are hard to reach and monitor from land (Seaweed Manifesto 2020)[2].

Biological constraints persist, including ?ice-ice? disease, epiphyte infestation, bleaching of seaweed affecting the quality and price of Raw Dried Seaweed (RDS), stunted growth and deformities because of decline in genetic vigor of seed. Overall, seaweed farming needs to be linked to new and ongoing technology development in species and strain selection, population genetics, and disease management to ensure resilience and better productivity.

5. Barriers related to the seaweed value chain and socioeconomic benefits for seaweed farming communities

In the Philippines, farmers often receive limited income from their crop. Traders/middlemen control the price that seaweed farmers receive as well as access to financing (such as loans). The real profit in seaweed goes to middlemen further up the seaweed value chain. This presents a barrier to improving seaweed production, upgrading in the value chain as well as improving the lives of the seaweed farmers. There remains, generally, very little value addition by seaweed farming communities to the farm harvest through the production of consumer products.

In Viet Nam, engagement among small-scale seaweed farmers in the value chain is relatively low. Challenges include outdated harvesting, preservation, and processing technologies that would ensure good product quality. While there is a growing local demand for seaweed for use in various food preparations, much of the harvest is exported as raw dried seaweed with very little value added. However, *Caulerpa sp.* is consumed directly as food and has an attractive price in domestic markets. Some processed product forms are also being exported.

There has been no major change since the PIF stage.

2) the baseline scenario and any associated baseline programs

The project will build on a number of planned and ongoing seaweed interventions at the global, regional, and national level, each of which is pivotal in advancing the overall objective and the components, outcomes and outputs of this project: There is a range of initiatives of various entities on which the project can build on, contribute to, or draw support from. Collectively they cover the entire value chain of seaweed. Some focus on the governance requirements ? mandatory, market-based and voluntary -- for an industry that is expected to expand rapidly, some on innovations and good practices in seaweed farming, others on the development of new and higher value product forms, the new technologies to produce them and investments into these new technologies. A number of specific initiatives include marine spatial planning, genetic improvement for quality planting materials, biosecurity, better farm practices, standards for environmental, food and operational safety, certification for responsible farming as well as management of wild seaweed resources.

GLOBAL AND REGIONAL BASELINE

At a regional and transboundary level, the project will build on the South China Sea Large Marine Ecosystem Strategic Action Program and the Sulu Celebes Large Marine Ecosystem Action Program. The South China Sea SAP includes strategic priority actions and targets for seagrasses, mangroves, and coral reefs, and identifies nutrient loads as a threat to both coral reefs and seagrass beds. The Sulu Celebes Large Marine Ecosystem Action Program?s objective is to build the Sulu-Sulawesi into a marine ecoregion that is ecologically healthy and delivers ecosystem services that provide equitable socio-economic and cultural benefits by 2025. Specific actions that the project will build on or contribute to include integrated coastal management plans, and actions to address transboundary problems, including climate change and marine pollution.

The project will also build on the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA) Implementation Plan 2018-2022, which includes both large marine ecosystems. Specifically, the project will build on the following priority management programs included in the Implementation Plan:
- Biodiversity Conservation and Management: Management plans/zoning schemes developed, adopted, and implemented; pilot sites for blue carbon projects
- Climate Change and Disaster Risk Reduction and Management: Mainstreaming climate change adaptation and disaster risk reduction and management into programs at the national and local levels
- Pollution Reduction and Waste Management: Reduce marine pollution loadings, including plastics and nutrient pollution

The project will also build on the Implementation Plan?s governance program, which includes an emphasis on regional knowledge management and capacity building, as well as investments in blue economy projects through the Ocean Investment Platform.

Standards and Platforms for Seaweed Production
There are several standards/principles that are available for seaweed production. The Aquaculture Stewardship Council (ASC) and Marine Stewardship Council (MSC) have created 5 guiding principles for sustainable seaweed production. The Safe Seaweed Coalition has developed standards to guide consumer safety, environmental safety, and operational safety. The Safe Seaweed Coalition has more than 600 members across the seaweed value chain. Their Seaweed Manifesto, launched in June 2020, outlines a vision for scaling seaweed that also delivers on the sustainable development goals.

Finally, SEAFDEC?s mandate covers seaweed aquaculture, and provides an intergovernmental platform for guiding seaweed aquaculture in the region. At a regional level, SEAFDEC supports communication across its members. Seaweed is among the commodities in which research on seed production, refinement of culture techniques, socio-economics, and climate change adaptation is being conducted at SEAFDEC?s Aquaculture Department (AQD) under various Thematic Programs (5-year term and renewed thereafter). There is a Seaweed Biotechnology Unit at AQD?s Laboratory for Advanced Aquaculture Technologies.

National standards for seaweed also exist (see Philippines? baseline).

Global Investments in production, processing, and biorefinery solutions for seaweed

There are many global investments in seaweed production, processing, and biorefinery solutions. World Wildlife Fund (WWF) has made several investments in seaweed. With the support of the Jeremy and Hannelore Grantham Environmental Trust, WWF-US made a $850,000 impact investment in Ocean Rainforest, a seaweed farming operation in the Faroe Islands, to ?accelerate and scale growth of global offshore seaweed production....? The investment also aims to improve yields and advance the market potential for seaweed as livestock feed. WWF made a second impact investment in Oceanium, a company looking to operate globally that is developing novel technology to refine seaweed for packaging and other high-value extracts. In addition, WWF has received a grant from the Bezos Earth Fund for advancing seaweed value chains (2020-2023). While the investments are largely for North America and Europe, the technologies and products developed can provide important baseline (technological and social application) for this Project.

Companies are exploring biorefinery technologies for seaweed. Brabender GMBH & Co. KG. is developing technology to make pellets out of seaweed biomass for manufacture into biofilms for, among other uses, bioplastic packaging, in collaboration with the University of the Philippines Marine Science Institute, and a private enterprise. The technology will be ready for pilot testing in a years? time or sooner. Brabender will undertake a pilot test, a study of the product?s global value chain and development of seaweed-based bioplastic downcycling as fertilizer to increase the raw material valorization.

FAO and World Bank have been developing business planning models for seaweed aquaculture in Sri Lanka and the Caribbean that could be adapted to a wide range of systems. In addition, the World Bank and PROBLUE have been developing market and case studies for seaweed expansion and novel products that would increase seaweed demand.

The US Department of Energy?s ?Advanced Research Projects Agency - Energy? (ARPA-E) has invested $40 million into seaweed aquaculture research as potential biofuels. It has also developed site selection software that supports proper investment locations for optimizing seaweed growth. ARPA-E has also devised seaweed cultivation and harvest equipment methods. Several demo projects are ongoing in collaboration with private sector entities.

Carbon Credits

Oceans 2050 is currently undertaking an analysis of the carbon capture potential for various seaweed strains. The global effort (although not including Viet Nam and Philippines) seeks to quantify seaweed carbon sequestration and provide evidence and methodology to validate and monetize the carbon sequestration impact of ocean farming. The Task Force on Scaling Voluntary Carbon Markets (TFSVCM) is a private sector initiative that aims to develop a carbon market. The task force could link carbon credit ?sellers? to buyers.

VIET NAM BASELINE PLANS AND ACTIVITIES

Policies and Planning

Viet Nam has a growing seaweed industry.

In 2021, the Government approved the ?Strategy for Development of Viet Nam?s Fisheries by 2030 with Vision Towards 2045? (Decision No. 1664/QD-TTg dated 04/10/2021). Under MARD, the general objective is to develop marine aquaculture into a large-scale, industrial, synchronous, safe, efficient, sustainable commodity industry, and protect the environment; create branded products for domestic and export markets; create jobs, improve socio-economic conditions and raise incomes of coastal communities. Seaweed has been prioritized as a key commodity under the Strategy. The strategy includes the following targets: for nearshore seaweed aquaculture, 170,000 tons by 2025 and 400,000 tons by 2030; for offshore seaweed aquaculture, 10,000 tons by 2025 and 100,000 tons by 2030. The government will assess seaweed growing areas nationwide to support these targets. This strategy is a key government priority that the project will support.

The Directorate of Fisheries is undertaking three projects to achieve this Strategy: (1) development of seaweed production for export up to 2030; (2) developing technologies for seedling production and cultivation of a number of economic-valued seaweeds; and (3) environmental monitoring, fishery extension, and trade promotion. The government is also setting up projects on seed production infrastructure (2021-2030), including for seaweed in Khanh Hoa, Ninh Thuan, and Binh Thuan provinces.

The Ministry of Natural Resources and Environment ? through the Viet Nam Administration of Seas and Islands (VASI) - and the Ministry of Planning and Investment (MPI) are leading a Marine Spatial Planning (MSP) process, originally planned to be implemented in 2021-2022, based on a new Planning Law instituted in 2019. Whilst experiencing Covid-related delays, the MSP is expected to provide for more detailed and integrated multisector planning, and includes the coastal waters up to six nautical miles from the coast. A national marine plan for the sustainable exploitation and use of coastal resources, developed by MONRE will be streamlined with the national MSP process in accordance with relevant provisions in the Planning Law. Accordingly, provincial-level coastal planning ? developed and approved by the relevant Provincial Peoples Committee in consultation with sectors - is expected to be guided by the national MSP.

The Integrated Coastal Zone Management Strategy has been implemented with the Program on Environmental Management for the Seas of East Asia (PEMSEA). It was started in 2000 and supports over 10 provincial programs on integrated coastal marine resource management.[3] However, on-the-ground results of ICZM planning have been limited at best, and coastal decision-making remains largely sector-based. There is an urgent need for provincial-level coastal planning to be more robust, integrated, and focused on aligning growth in coastal areas with climate change risk mitigation strategies. Accordingly, it is expected that the new MSP/National Marine Planning under VASI/MPI will supersede previous ICZM strategic planning.

Provincial level

Ninh Thuan province pioneered the commercial cultivation of seaweed in Viet Nam, introducing *Kappaphycus alvarezii* in the 1990s. During the period 2011-2015, *Kappaphycus* expanded rapidly, exceeding 200 ha of off-the-coast farming and producing approximately 3,500 tons per year, providing a significant source of livelihood for poor communities. Ninh Thuan has drafted a provincial plan. Two off-the-coast zones have been earmarked for mariculture, including zones for seaweed. This provincial plan is expected to be approved in 2022. In Phuoc Dinh commune ? the main ward engaged in seaweed farming in Zone D ? there are 107 households farming seaweed during peak season, with a total production of around 30 tonnes of fresh seaweed.

Adjacent to Ninh Thuan, Khanh Hoa has favorable conditions for seaweed farming, including *Kappaphycus* and *Caulerpa*. In 2020, there were 47.4 ha of seaweed farming area with a production of around 414 tons. Caulerpa farming is concentrated in Ninh Hai commune, Ninh Hoa town. According to provincial planning for the 2020-2025 period, 80 ha are planned for seaweed farming. Provincial authorities support the expansion of seaweed supply chains in the province, especially for *Caulerpa* due to that species? relatively high yield (20 tons/ha/year), higher market value and current domestic and global market trends.

Private Sector
There are several private seaweed companies that the project could engage for activities along the value chain. Hoa Trinh company, located in Ninh Thuan province, buys fresh and dried *Kappaphycus* from farmers for pre-processing. The company provides microfinance to local farmers who then sell their harvest to the company. Son Hai Carrageenan JSC, located in Ninh Thuan province, is a small processing company that extracts carrageenan from *Kappaphycus*. The company buys dried *Kappaphycus* from Hoa Trinh and other agents. Long Hai Co., Ltd, located in Hai Duong province (an industrialized province in the Hanoi Capital Region) is the nation?s biggest seaweed processing company, specializing in processing and trading of carrageenan and value-added products such as jellies and juices. VINABS, located at V?n L??ng commune, V?n Ninh district, Kh?nh Ho? province, works on *Kappaphycus* seedling production and distribution in a number of provinces. Super Truong Phat Plastic Joint Stock Company, located in Ha Noi, is an input supplier company. It has projects in open sea aquaculture including seaweed farming in Ninh Thuan and Khanh Hoa, Vung Tau provinces.

There are around 20 SMEs working on fresh and processed seagrape product in the project area. Tri Tin (Khanh Hoa) and Hai Nam Okinawa (Binh Thuan) export products to Japan, USA and EU. They process raw materials produced in their own farm and sourced from surrounding farms. Sabudo Sea Grapes (Khanh Hoa) produces seagrapes under their ?King Umibudo? brand, using seed sourced from Japan. GCAP Viet Nam Ltd (Khanh Hoa) specializes in farming, processing and trading in fresh and powdered seagrapes.

Tri Tin has started to establish a supply link with farmers but the scale is still limited. They will implement three pilot models of seagrape culture in collaboration with the Project:

1. A model of seagrape cultivation in earth ponds
2. A model of seagrape cultivation in earth ponds integrated with sea cucumber
3. A model of seagrape cultivation in the open sea, in nearshore leases near earth pond operations

Research and development
There are several research and academic institutions in Viet Nam that provide the scientific and technology support to the industry?s development.

The Nha Trang Institute of Technology Research and Application (NITRA), under the Viet Nam Academy of Science and Technology (VAST), is focused on a range of research areas, from investigation of bioactive ingredients and pilot-scale fucoidan production, to modelling floating cage seaweed cultivation and studying the potential for new macroalgae products (e.g. probiotic fermented beverages). The Research Institutes of Aquaculture (there are three) are state research facilities assigned by the MARD to conduct research on national aquaculture development. RIA?s has been investigating seaweed disease and treatment methods, with a focus on Ice-Ice, epiphytes diseases on Kappaphycus alvarezii, and parasitic disease on Sea grapes (Caulepa lentillifera). RIA3 has also been researching integrated farming of seaweed with fish and other species, as well as other basic research on *Kappaphycus alvarezii* production in marine cage culture and the use of seaweeds as bio-filter in shrimp culture.

The Research Institute of Marine Fisheries (RIMF) is a leading research organization under MARD, carrying out scientific research, technology transfer and advisory services in marine conservation, fishing technology and marine products processing. Nha Trang Fisheries University (NTFU) is engaged in varied research on seaweed cultivation and development, often closely affiliated with NITRA and other organizations.

PHILIPPINES BASELINE PLANS AND ACTIVITIES

The Philippines has a well-developed and active seaweed industry, providing a strong baseline for the Project to build on.

Policies and Planning
The Philippines has several plans that guide the seaweed industry:

1. BFAR?s Seaweed Industry Roadmap (2016-2022; updated for 2022-2026) has guided seaweed production in the Philippines over the past five years, and is structured around three key components: (1) improved production; (2) organized seaweed farmers; and (3) promotion/commercialization of seaweed products. It has been updated for the period 2022-2026 and is awaiting approval by the Department of Agriculture. Strategies and interventions include, among others, the expansion of seaweed farming in traditional areas, introduction of seaweed farming in non-traditional areas, adoption of technologies to increase productivity, improvement of post-harvest technologies, and research and development to address the identified problems in production technology, processing and value adding and marketing.
2. The Carrageenan Industry Roadmap. Developed by Department of Trade and Industry and the private industry sector, the roadmap for this subsector sets a production and marketing strategy to be realized through action programs. The programs have an implementation guideline and a monitoring mechanism.
3. In addition to national-level plans, BFAR has updated the Philippine National Standards (PNS) on good aquaculture practices and raw dried seaweed; there is now a final revised draft (PNS/BAFS 85 2021). It covers practices that aim to prevent or minimize the risk associated with aquaculture production in any culture environment. It covers food safety and quality, environmental integrity and socio-economic welfare.

Seaweed production and processing
There are numerous initiatives taking place in Philippines to advance seaweed production and processing.

A number of institutions provide training, manuals, and extension services to support seaweed farmers and seaweed cooperatives/associations in the Philippines:

1. A National Seaweed Program, led by BFAR, supports implementation of the Seaweed Industry Roadmap. Activities under this program include developing a nationwide network of seaweed farmer/fisherfolk cooperatives. Through this network, BFAR is providing trainings on cooperative management and seaweed production and marketing to seaweed farmers. To date, more than 40 seaweed cooperatives have been officially established and now operational.
2. Training for seaweed farmers is also promoted as part of the Technical Education and Skills Development Act (TESDA) of 1994, in which seaweed training regulations are provided. ESDA Seaweed Production NC II provides competency standards and training for seaweed farmers ?to operate and maintain seaweed nursery, grow-out seaweed, produce raw dried seaweed and market seaweed.
3. The University of San Carlos has developed seaweed manuals translated into 10 dialects. These are available to BFAR, SIAP and NGOs working with farmers.
4. The Bureau of Agriculture and Fisheries Standards (BAFS) will continue to host seminars and trainings on the seaweed standards mentioned above. BAFS also collects data on industry practices that include use of fertilizers and chemicals, plastic materials, as well as workplace conditions.

The Philippine Rural Development Project ($1,102.17 million; 2014-2025) was recently extended (with additional financing) and represents another important baseline initiative; it is led by the Department of Agriculture and is jointly funded by the World Bank, National Government and Local Government Units. The project ?aims to increase rural incomes and enhance farm and fishery productivity in targeted areas by supporting smallholders and fishers to increase their marketable surpluses and their access to markets.?[4] The project includes several sub-components focused on

seaweed. 47 mostly small scale enterprise projects on seaweed were approved for a total funding of almost PHP 190 million (USD 4 million), with 17 still underway.

Coast4C is a social enterprise launched by the Zoological Society of London (ZSL) in 2020 to drive ocean and climate restoration through inclusive value chains for regenerative seaweed and end-of-life fishing nets. Coast4C supports several ongoing projects with seaweed communities in the Philippines. These projects include: community-based activities aimed at building social infrastructure, financial inclusion, spatial planning and integrating into marine protected areas; building community-level infrastructure (e.g. guardhouses, solar drying facilities, enforcement facilities); and facilitating and supporting marine protected areas. They conduct capacity building activities such as training, provide financial support or facilitate access to financial services (e.g., credit, insurance, etc.) to farmers, and promote product development. Their program seeks to eliminate negative environmental and social impacts of seaweed farming and ensure that it is regenerative and supports community development.

Finally, SEAFDEC Aquaculture Department (AQD) conducts ongoing studies on the development of superior and disease resistant planting materials as well as training of extension workers and seaweed entrepreneurs.

Provincial level

Palawan is one of the top seaweed producing provinces of the Philippines, contributing 24% of the county?s production. Its coastline is 2000 km long. Of its 23 municipalities, 20 are seaweed producers. One of these is Roxas which has administrative authority over one of the two project sites: Green Island. Seaweed farming was introduced to this island in 1978 by a private company, Marine Colloids. Green Island has a zoning map developed by the Palawan Council for Sustainable Development, which guides marine resources use in the seascape. Areas off Green Island have been mapped and designated for seaweed farms. A fishers cooperative is active in the area. The Northern Palawan Fishers Cooperative has a membership of more than 130, almost all of them seaweed farmers. The Palawan State University has an ongoing two-year (2021 ? 2022) project on seed improvement (as well as capacity building of the local farmers? association they are working with) on Green Island; the University?s experimental seed farm, which shall be turned over to the association and continue producing planting materials, can be the source of seedlings for the project demonstration farm. Also on Green Island, the municipal government will continue to provide farmers with materials for improving their livelihoods and has acknowledged the importance of improving seaweed farming and value adding.

Zamboanga Peninsula is the third top seaweed producing region in the country, contributing 13.8% (or 202,606.31 MT) of fresh seaweed in 2020. Total area planted was 11,728 hectares with an additional 17,120 hectares for expansion. The Peninsula has 26,850 seaweed farmers, 126 seaweed farmer associations and cooperatives, 147 traders and 3 seaweed processing plants. Zamboanga provides important baseline for the project, especially for offshore seaweed farming. Currently, 20 units of climate-resilient deep-sea seaweed farms are being piloted in the Zamboanga Peninsula by DA-BFAR Regional Office IX. The seaweed lines are made of polyethylene (PE) ropes with a dimension of 100m x 25m for a total area of 2,500 sq.m. (1/4 hectare).

Research and Development

The Department of Science and Technology (DOST) has various projects on seaweed to support research and development initiatives for seaweed value chains, including a partnership with the Agriculture department to promote carrageenan fertilizer additive, and establishment of a Seaweed R&D Center in Tawi-Tawi. The Seaweed R&D Center supports farmers, traders and processors with the opportunity to use high-quality seaweed stocks, guaranteeing a 35-percent increase in monthly income.

Processing technology, for example for noodle production, is being developed or improved at the National Seaweeds Technology Development Center (NSTDC).

A full description of the baseline can be found in Section 1.5 of the Project Document. There have been changes in the status of some baseline projects since PIF stage:

i. The Global SeaweedStar Project has terminated, but its products such as the Policy Briefs have been referred to during project preparation and will provide useful lessons to project implementation.

ii. The Global Safe Seaweed Coalition has emerged as a major institution ? now with more than 600 members -- driving the development and adoption of safety standards. It has agreed to collaborate with the Project and provide co-financing.

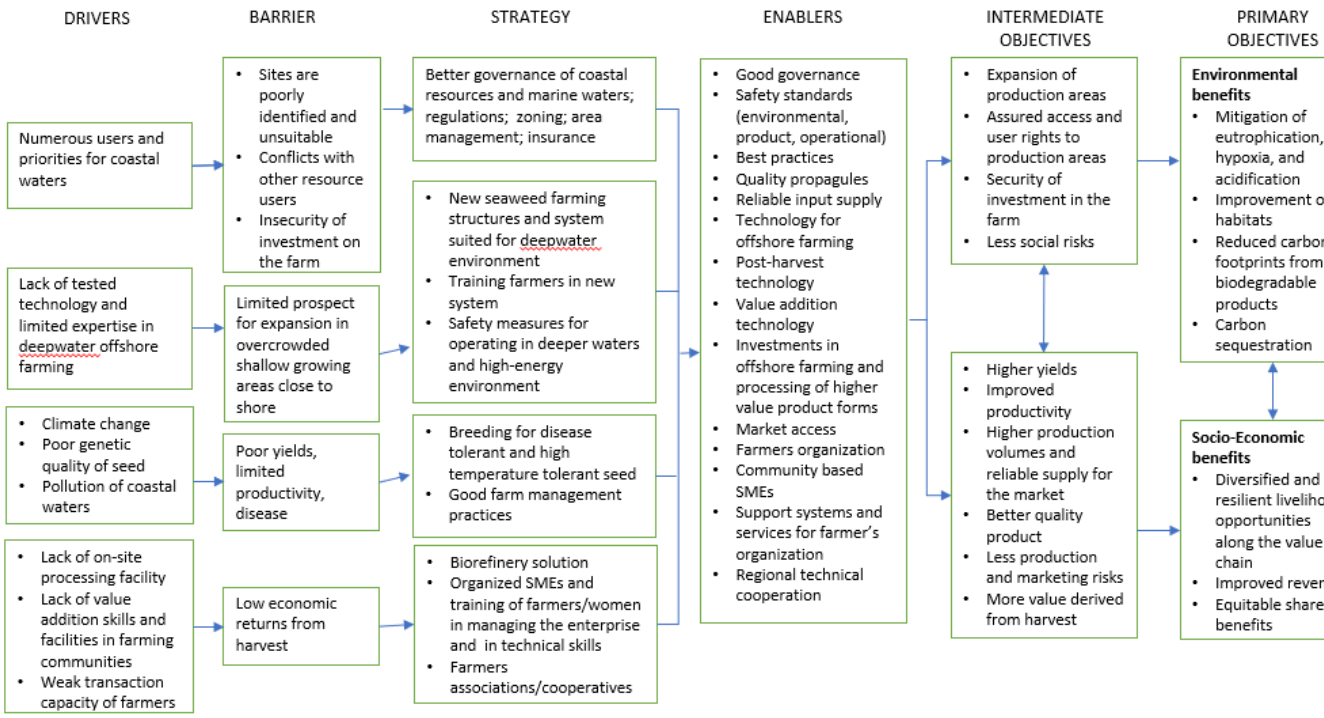
iii. Formulation of the Seaweed Development Plan in Viet Nam did not progress; there is no Plan. In this regard, the Project has included the development and adoption by Government of a National Seaweed Plan among its activities.

A more detailed baseline has been provided, including baseline initiatives in the target provinces.

3)The proposed alternative scenario with a brief description of expected outcomes and components of the project;

The objective of the project is ?to create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits.? The Diagram below provides a succinct representation of the linkages and components of three major elements ? enablers, intermediate objectives and basic objectives.

The result of the Project is enhanced well-being from the environmental, economic, and social benefits generated by the Project. Environmental benefits come from the enhanced ecosystems services provided by the seaweed farms, that include mitigation of acidification of the sea, oxygenation of coastal waters, mitigation of eutrophication of marine waters, mitigation of harmful algal blooms and improvement in the conditions for aquatic biodiversity.



Economic co-benefits accrue from enhanced and diversified livelihood opportunities, which will improve incomes through the production of more and better-quality biomass, production and sale of traditional product forms, participation in the production and sale of higher value products, and should it prove feasible, the prospect of additional income from carbon credits. Some higher value products based on seaweed would also impart environmental benefits. Bioplastics, for instance.

Social co-benefits are in the form of a secure livelihood, more employment generated by the production of and trade in traditional and new consumer products, improved food security. There are also the multiplier effects of higher income from a seaweed enterprise: farmers can use the increased revenues to invest in micro- or other small-scale enterprises (such as a small convenience store). A higher and stable family income enables better access to health care and support to children?s education. An intrinsic social benefit is the enhanced self- and collective esteem from being a participant in the development of a progressive, self-reliant community.

The result for the seaweed farming communities and actors in the value chain is secure and sustainable livelihoods and enhanced livelihood assets. And a sustained as well as expanded seaweed farming enhances the ecosystems services of seaweed aquaculture.

To achieve this status are a mix of interrelated policy, science and technology, market support as well as self-management (voluntary) mechanisms are needed that will create or facilitate the conditions and provide the means for:

Large scale sustainable production - availability and access to suitable areas for large scale nearshore and offshore farming, better farming technology and practices, availability of high yielding and robust and healthy propagules, biosecurity measures to maintain health of plants and mitigate grazing.

Post-harvest processing ? drying facilities that improve quality of raw dried seaweed, technology for on-site extraction of colloids from fresh harvest, and technology for utilization of biomass after colloid is extracted.

Community-based production of consumer products -- technology is available for production of consumer products, trained personnel for production, establishment of community-based enterprise for production and trading of the consumer products, organization of cooperative or association to manage and operate the enterprise, product quality standards, and market access for the products.

Commercial scale production of higher value products -- a pilot production plant is established and product quality and processing standards designed.

The supportive actions to create the conditions and provide the means are:

- ? For production: marine spatial planning, zoning and designation farming areas and development of area management plans. Training in better farming practices and risk management; seed improvement, multiplication, and distribution program.

- ? For postharvest processing, durable and efficient drying structures, community-based small to medium scale production of consumer products, an on-site or at least community-based biorefinery (e.g. multi-stream zero emission) technology to extract colloids from fresh harvest and use almost 100 percent of the plant, and high-value products manufacture; technology, enterprise development and management, policy support, business models for financing, and incentives for investments in bio-refinery and processing enterprises, value chain development.

But these strategic actions and support mechanisms are constrained by numerous barriers:

- ? Sites are poorly identified, unsuitable because risks to farms are not clearly assessed, not clearly designated and potentially subject to future resource use conflicts, and therefore security of farmers? investments in the farm is not assured. Factors contributing to these barriers include lack of institutional capacity for marine spatial planning, zoning and area management, overlaps or gaps or unclear responsibilities over coastal areas by various government agencies as well as by communities, ill-defined or unclear access or rights to mariculture areas, and lack of clear licensing requirements or, on the other hand, complicated and excessively stringent requirements.

- ? Limited or no on-site post- harvest processing (i.e., zero-waste) technology, biorefinery solutions, and higher value product processing facilities.

- ? Lack of tested technology and limited expertise in large-scale deep-water offshore farming.

- ? Unreliable supply of viable, high yielding and disease tolerant planting materials.

- ? Power asymmetry in the value chain of raw dried seaweed; weak transaction capacity of primary producers; lack of value addition skills and facilities in seaweed farming communities.

To overcome these barriers, the Project will adopt these strategic actions:

- ? Participation in the global Safe Seaweed Coalition
- ? Provision of technical inputs in the updating of the National Seaweed Development Strategy and Action Plan (of the Philippines and Viet Nam).
- ? Development of a regional guide to outscale project results and promote the expansion of a sustainable seaweed aquaculture industry.
- ? Technical support to marine spatial planning and zoning, and the development of area management plan for zoned seaweed aquaculture sites.
- ? Technical inputs to national policy and decentralized regulations that aim to clarify farmers? access and user rights to seaweed farming areas and grant considerable control of seashore utilisation into the hands of the coastal communities.
- ? Facilitating the formation of Inter-ministerial coordination groups, and linkages with global, regional, and national seaweed organizations and industry associations.
- ? Sharing of technology and best practices in culture and post-harvest; sharing in the technology of producing and maintaining superior planting materials and training in culture technology and processing
- ? Providing technical assistance in better farming practices and risk management to existing shallow water seaweed farms, if any, in the project area.
- ? Establishing and operating pilot demonstration farms for off-the-coast or offshore seaweed culture.
- ? Assessing the feasibility of an identified bio-refinery technology, developing an investment model for a pilot plant based on the technology, and working with government, agricultural development banks, and private sector to encourage investments into a commercial scale bio-refinery facility or a higher-value product processing plant.
- ? Developing a Carbon credit model
- ? Promoting and providing technical inputs to the organization of cooperatives/associations of farmers and small-scale processors, and developing a support system for these farmer organizations that include better access to material, technical and financial inputs, and access to market.

In summary:

- *If* there is a guide to a regional seaweed development that SEAFDEC member states commit to, and
- *If* a regional code of good practice is established that all SEAFDEC member states commit to,

? *Then,* the development of the seaweed industry of the region receives a strong impetus from a closer technical cooperation among the member countries; the Guide will be the framework for a cost-effective pooling of national R and D resources and sharing of results, lessons, and expertise. Under this technical cooperation framework, the members with an emerging seaweed sector and aspire to expand it will benefit from the experiences and expertise of the ones with a more advanced industry. The result of this technical cooperation, guided by an industry code of good practice, is a well-governed, orderly expansion of the developing national industries and a collective strengthening of the region?s capacity to further expand, modernize and establish a strong influence in global seaweed value chains.

- *If* ecosystem and user assessments are done at a national and site level, then suitable areas for seaweed expansion can be identified, and;
- I*f* policies, regulations, and plans are in place to guide seaweed expansion and develop seaweed value chains in a sustainable way,

? ***Then*** **the enabling environment (regulatory, planning) will be in place** to support expanded areas for nearshore, off-the-coast, and offshore sustainable seaweed production (Component 2).

- *If* a reliable supply of quality propagules from technically equipped seaweed nurseries are available, *then* this would allow seaweed biomass quality to increase, and decrease vulnerability to disease and climate change, and;
- *If* offshore seaweed farming technologies are successfully tested and piloted in different scenarios, *then* there would be proof of concept, which would expand the areas suitable for seaweed farming, and;
- *If* seaweed farmers are trained in offshore seaweed farming, in culture technology and processing, and in biosecurity risk management, and are provided with superior planting materials, and *then* capacities are in place to facilitate better seaweed production, and;
- *If* standards are in place for seaweed production and adhered to by farmers, then biomass quality can be ensured,

? **T*hen* seaweed farming and production will be strengthened**, with robust and healthy propagules, increased yields, better quality biomass, and seaweeds less vulnerable to disease and climate change impacts.

- *If* post-harvest processing technology is assessed for on-site extraction of colloids, and technology for utilization of biomass after colloid is extracted, and
- *If* community members are trained in this technology, and community-based enterprises are established or strengthened to trade these products (with a focus on empowering women), and;
- *If* these products are linked to markets, and;
- *If* business models are in place and facilitate investments in these bio-refinery and processing enterprises,

? ***Then*** **seaweed processing will yield higher-value products**, which increases seaweed farmer incomes and provides an incentive to expand seaweed production (which would lead to expanded environmental and socio-economic benefits).

- *If* technical feasibility and economic viability of value addition processing technologies (such as bio-refinery) are assessed, and
- *If* investment models in new value adding technology (i.e. biorefinery) and manufacture of seaweed-based products are developed and shared with prospective investors via investment seminars and 1:1 engagement,

? ***Then*** **this would promote public and private investments** in the development of the seaweed industry.

Overall **-** ***If*** the above strategies take place, ***then*** barriers to scaling the seaweed value chain will be removed and seaweed farming will be scaled up. The result for the local coastal ecosystem is enhanced productivity from mitigation of acidification, eutrophication, and oxygen depletion. The result for the planet is the mitigation of hazards from climate change through CO_2 sequestration and carbon assimilation by seaweed and ocean waters. In addition, seaweed has the potential to yield environmental benefits in other sectors: biodegradable seaweed-based products (such as biofilms) could replace plastics and therefore reduce plastic pollution. In addition, seaweed can be used in aquaculture feed and livestock feed (swine, cattle and poultry), and therefore provide a low-input and low-emission alternative to land-based plant production. There would be less carbon emission from the processing of more food and other consumer products and use of seaweed-based feed and fertilizer, and reduced plastic pollution from biodegradable seaweed-based products (such as bio-plastic packaging). In addition, improved business and marketing skills, and value-adding technologies for seaweed farming communities will increase income and contribute to diversified and secure community livelihoods in seaweed farming communities

Component 1: Regional approach and capacity for seaweed value chains in SE Asia

Build a supportive regional enabling environment for seaweed aquaculture, through a regional approach expected to support the region?s capacity to expand and modernize its seaweed industry and establish a strong influence on global seaweed value chains.

Outcome 1.1 Regionally adopted plans and principles to harmonize seaweed aquaculture in SE Asia

The project will support regional plans, principles of responsible and safe seaweed aquaculture, and trainings to strengthen seaweed aquaculture in Southeast Asia. Component 1 will be implemented by SEAFDEC, an intergovernmental organization whose members include all ASEAN countries and Japan. SEAFDEC will develop the plans and principles (and the toolkit to guide the application of the principles in developing standards of product, environmental and operational safety applicable to SEAsia aligned with those of the Safe Seaweed Coalition) to support a sustainable seaweed industry in the region; these will be endorsed by all member countries to ensure a harmonized approach to seaweed development in the region. Trainings will strengthen the capacity of SEAFDEC member states in implementing those plans and standards.

Output 1.1.1. Regional Seaweed Technical Working Group, constituted and formally mandated by SEAFDEC Governing Council

To support development and implementation of the outputs under this component, a regional Seaweed Technical Working Group (S-TWG) will be constituted and formally mandated by the SEAFDEC Council. The outputs/deliverables the S-TWG will support are: (i) a ?Guide to Promoting a Sustainable Seaweed Industry in the SEA Region? (Output 1.1.2) and (ii) ?Regional Principles of Responsible and Safe Seaweed Aquaculture? and complementary Toolkit (Output 1.1.3).

The S-TWG will have several key functions during project implementation. First, it will provide expertise and integrate the current state of knowledge on seaweed into the regional plans and standards. Second, it will be responsible for coordinating, developing, validating, and supporting the regional adoption of the Guide and Principles. Third, it will represent a platform for awareness, networking, coordination, and knowledge-exchange among key authorities and organizations focused on seaweed development. Fourth, it will facilitate regional technical cooperation to address specific and shared concerns.

Output 1.1.2. Guide to Promoting a Sustainable Seaweed Industry in the SEA Region, endorsed by the SEAFDEC Governing Council

SEAFDEC will develop a ?Guide to Promoting a Sustainable Seaweed Industry in the SEA Region.? This Guide will essentially be a blueprint for accelerating and expanding the seaweed industry in SEA, and managing its development in a manner that is orderly, inclusive, and equitable. The Guide?s strategic direction will consist of social, economic and environmental considerations. The social considerations will include, broadly, equitable access to and management of resources, participation in community development plans and decision-making, and equitable sharing of benefits. Specific considerations will be on gender equity and empowerment along the seaweed value chain. Key result areas will be established and management and technical measures ? guided by a set of agreed principles ? prescribed to achieve them. The Guide will incorporate the relevant parts of Output 1.1.3 (Principles for environmental, food, and occupational safety) and shall be supported by trainings under Output 1.1.4. Enabling policy measures, as needed, will be recommended to the Council of Directors along with the submission of the Guide for adoption by the Council at their annual meeting.

Output 1.1.3. SEA Regional Principles for Responsible and Safe Seaweed Aquaculture, including toolkit for applying principles, aligned to the Safe Seaweed Coalition

The project will develop regionally applicable principles for responsible and safe seaweed aquaculture. These principles will be aligned to the Safe Seaweed Coalition principles around food safety, environmental safety and operational safety. An accompanying toolkit will be developed with best practices and supporting guidelines for the application of the principles.

The application of the principles will contribute to the sustainability of the industry and the reputation of SEA seaweed industry as a responsible industry. This will enhance domestic and global market access. The principles can be applied by the SEAFDEC member states by integrating them into the development or upgrading of their own national standards, codes of practice, and best management practices.

Output 1.1.4. Training modules and information packages to support a sustainable seaweed industry in South East Asia

To raise capacities to support sustainable seaweed development in the SEAsia region, and support implementation of the ?Guide to Promoting a Sustainable Seaweed Industry in the Region? (Output 1.1.2) and Principles and Toolkit (Output 1.1.3), the project will deliver a number of training modules and information packages. This will include the critical need for inclusive policy and plans that address social inequities and disempowerment, and lessons based on studies and industry experiences in promoting gender equity and empowerment;

5 trainings/webinars will be conducted, including: 1 webinar on the Guide, 1 webinar on the Principles, and 3 trainings on topics shortlisted by SEAFDEC members to support a sustainable seaweed industry.

Component 2: Enabling Environment for Seaweed Aquaculture in Philippines and Viet Nam

Create an enabling environment for seaweed aquaculture at the national and local levels with a governance framework comprising policy, regulatory and technical guidelines.

Outcome 2.1. Improved planning for seaweed aquaculture and capture of nutrients from the ocean

The project will fund plans and assessments to identify areas suitable for seaweed farming, taking into account ecosystem carrying capacity, climate change scenarios, and existing uses to minimize user conflict. These assessments will inform coastal and marine spatial maps for seaweed aquaculture expansion. For suitable areas, the project will support site specific development plans to ensure the enabling conditions are in place for seaweed farms. In addition, the project will support National Seaweed Plans and industry roadmaps. In Viet Nam, the project will support D-fish and MARD to develop a 10-year Seaweed Development Plan. In the Philippines, the project will support BFAR in

adapting and translating the provisions of the Seaweed Industry Roadmap into local regulations (i.e. municipal ordinances) and good practice guidelines

Output 2.1.1. Marine spatial planning that integrates more sustainable seaweed farming

In Philippines, this Output will deliver a marine spatial plan for Roxas that identifies zones with specific uses attached to them (including proper siting of sustainable seaweed farms and support facilities). The MSP will be developed in a participatory way, incorporating the views of men and women. The purpose is to ensure that the seaweed farm established under the project is sited in a socially and ecologically sustainable way. An MPA borders Roxas, which will also be considered in the MSP process. This aspect of the project will also monitor and assess the positive and negative impacts of seaweed farming on the environment, marine life, and corals so that good practices and safeguards can be developed to enhance the positive and mitigate the negative. In the second site, Buenavista, Zamboanga City, the offshore farming will take place in an area that is within the mariculture zone approved in the Comprehensive Land Use Plan (CLUP) of Zamboanga City. BFAR Region IX has submitted a request for a gratuitous permit for the exclusive utilization of the area by BFAR; it is under process. In brief, the MSP preconditions have already been met for Zamboanga.

In Viet Nam, the project will deliver:

1. Seaweed zones mapped in 10 provinces to contribute to national level MSP process and provincial-level coastal planning (VN)

To support integration of seaweed considerations into the national-level MSP process (taking place through baseline) and related provincial-level coastal planning, the project will identify and confirm areas for seaweed culture in 10 coastal provinces with potential for seaweed.[5] The project will also support D-Fish participation in MSP national planning processes.

2. Two (2) provincial seaweed development plans to guide pilot seaweed farms, with guidelines and trainings to upscale planning process to other provinces.

To deliver this output, the project will define a process for developing seaweed development plans. The provincial development plans will be informed, among others, by the process and results of the pilot demonstration farms (under Output 3.1.1). To promote uptake in other provinces, the project will offer training courses and webinars to raise capacity on these guidelines. It will also incorporate lessons and practices in promoting gender equity and empowerment along the seaweed value chain. Based on the process defined for developing seaweed development plans, an expansion area for seaweed farming will be identified in another offshore environment (outside of the 2 pilot provinces) where Kappaphycus or Caulerpa is farmed.

Output 2.1.2. National Seaweed Plan presented for adoption (VN) and National Seaweed Industry Roadmap (PH) adapted to local levels

•The output of the project in the Philippines is the adaptation and translation into local regulations of the provisions of the Seaweed Industry Roadmap. The revised Philippine Seaweed Industry Roadmap (2022-2026) has been finalized and is pending approval by the Department of Agriculture. (DA). The roadmap presents detailed strategic plans for the Philippine seaweeds industry to guide its progress towards the goal of regaining its position in the international seaweeds industry. The national policies and program support of DA will be communicated to different seaweed farming communities where coastal waters are under the jurisdiction of the municipality.

In Viet Nam, the proejct will deliver:

1. Multi-sector Expert Working Group led by D-Fish is established, given the mandate and functional

Supported by capacity building and technical outputs from Output 2.1.1, a multi-sectoral Expert Working Group (EWG) will be established under D-Fish ? with defined terms of reference and work program - to review Viet Nam?s National Seaweed Plan (NSP) and to support stakeholder consultation and input from a diversity of public and private actors.

2. National Seaweed Plan is finalized for endorsement by MARD

Based on the strengthened information base (Output 2.1.1) and consultations with major stakeholders, including review and comments on drafts, a National Seaweed Plan (NSP) will be developed. The NSP will provide consolidated guidance on seaweed farm targets, priority areas, timelines, capacity requirements and implementation roadmap, and will be informed by - and consistent with - the national Strategy for Development of Viet Nam?s Fisheries by 2030 with Vision Towards 2045. The NSP will be finalized by D-Fish with direct support from the N-PMU - including full stakeholder workshops and national consultations as required ? and submitted to MARD for endorsement by the Minister.

Outcome 2.2. Robust institutional and regulatory frameworks ensure that expansion of seaweed farming is sustainable, responsible, and equitable

The National Seaweed Plan developed through the project, and plans for seaweed expansion into offshore areas, may require new policies, regulations or guidelines to ensure a supportive enabling environment for the sustainable expansion of seaweed farming. The policy and regulatory gap analysis, already carried out and reported by the Project Preparation Team of Viet Nam, will inform a more detailed analysis by the Project. Based on this gap analysis and with government support, the project will support the development of specific guidelines or frameworks to address identified barriers to seaweed farming. A critical regulatory issue is access and user rights. Considered a strength in marine aquaculture is the decentralized control of coastal area and resources utilization by local authorities and the local people. This will be an important consideration in policy formulation or revision and translating national policy into local regulations and good sector management guidelines.

The project preparation Team of the Philippines made the determination that the existing governance frameworks of the country to manage the seaweed industry (that includes the Seaweed Industry Roadmap, Philippine National Standards? Code of Good Seaweed Aquaculture Practices) as well as those that govern the broader aquaculture sector, are adequate for the tasks of planning and accounting for impacts of seaweed aquaculture. Hence, the Philippines will not undertake activities under Outcome 2.2. However, relevant results of the Project will be used by BFAR to inform the updating of existing policy and implementing rules and regulations and updating of national standards.

Output 2.2.1. Policy and Regulatory gap analysis and associated frameworks (e.g. Circulars; technical guidelines) to facilitate seaweed aquaculture planning, development and management (VN)

The project will undertake an assessment of what implementation guidelines, sub-laws (e.g. circulars) etc. may be needed to suitably implement the National Seaweed Plan and optimize its impact. Priority policy gaps and needs will be identified and described, including barriers to market expansion, capabilities for and constraints to enforcement, and gaps in human and financial resources. Specific recommendations for guidelines and additional measures to address the gaps and barriers will be developed. Based on these, new policy and/or legal instruments will be drafted. In addition, voluntary measures and best practices for the seaweed industry will be identified, recommended and endorsed through a participatory process (stakeholder consultations and workshops).

In addition, based on the NSP and associated regulations and guidelines, a monitoring and evaluation system will be developed and tested in the two pilot provinces. With the NSP anticipated to provide a solid foundation for M&E, and further supported by detailed guidelines, this work package is intended to provide practical field-level insight into how to optimally implement M&E for enforcement and compliance, documenting lessons learned and providing a scalable model that may be subsequently applied in other provinces.

Output 2.2.2. An open source Information Management System (IMS) to facilitate national and provincial-level planning and management of the seaweed aquaculture sector (VN)

Through project development activities and consultations with D-Fish and industry, the need for an open-source Information Management System (IMS) was universally identified and agreed upon. An IMS is needed for a variety of reasons. It would ensure accurate and routinely updated data for monitoring and evaluation that can also be applied at the national and provincial government levels to support planning (including zoning/MSP). It may be utilized as a market-access tool, providing real-time market information as well as enhanced transparency in the supply chain, thus lowering risks to investors. It may also be linked to enhanced farm security (e.g. mitigate poaching), providing additional value and reducing risks. Moreover, the IMS can be used for more precise monitoring not only of the environmental benefits of farm systems (e.g. nutrient absorption, habitat enhancement, increase in fish stocks), but also the impacts of environmental hazards, extreme weather events, fish predation, and any impacts on corals and red-listed species (e.g. sea turtles), allowing for such data and information to be widely communicated and for mitigation strategies to be developed and applied in a timely way.

Component 3: Seaweed Value Chains (production + processing + marketing).

Operate, with organized producers - pilot farms in areas farther than current sites (i.e. off-the-coast or offshore) that will serve as proof of concept for seaweed production ? thus expansion -- in these environments. Introduce value adding technology and organize and train community based small to medium scale enterprises (SMEs) in the production and marketing of the products. Then seek prospective financing of upscaled offshore farming models and value adding enterprises as well as for development support. (i.e. grants and loans) to national programs to expand and modernize the seaweed industry.

3.1 Improved technologies and testing for seaweed value chains in PH and VN

A no conversion (mangroves etc.) and sustainable intensification approach will be at the core of growing the seaweed aquaculture sustainably. It will address near coastal barriers (including disease outbreaks and pollution) via a gradual move of seaweed production away from the shoreline and into the open ocean. Demonstration farms will be established within national marine spatial plan (MSP) frameworks, and with the specific goal of advancing uniformly accepted risk assessment, rapid alert systems and data collection in order to develop safe modes of production, focusing on food safety, occupational safety and environmental safety. This would help overcome barriers of insufficient information that directly limit off-take agreements amongst global supply chain actors, contribute to the low level of regulations, and represent a barrier for insurability.

The project will support seaweed value chain initiatives to address barriers to production and processing. This may include new production or processing technologies that add value to seaweed closer to the farming communities and provide opportunities to increase the earning capacity of households, reduce work burdens of women, enhance women empowerment and promote gender equity along the value chain; improving propagules to ensure they are resistant to disease and tolerant to higher water temperature; and supply chain transparency initiatives to better monitor against the Safe Seaweed Coalition?s food safety protocols, provide quality assurance, and thereby connect to global markets and supply chain actors. Potential initiatives have been identified during project preparation. A few (likely 4) will be selected during execution based on supply chain assessments and consultations.

Output 3.1.1. Six demonstration farms to provide proof of concept of different seaweed farming options:

? Four demonstration farms (of Eucheumatoid species) to provide proof of concept of off-the-coast or offshore scalable seaweed businesses (based on zones identified in 2.1.2).

? Two demonstration farms (Caulerpa sp), one in degraded former shrimp ponds and another in adjacent shallow nearshore area

	Location	Seaweed Species	Description
1	Aplaya Buenavista, Zamboanga City, Philippines	*Kappaphycus* spp.	Offshore Circular marine fish cage modified for seaweed culture
2	Green Island, Roxas, Palawan, Philippines	*Eucheuma denticulatum, Kappaphycus* spp.	Off-the-coast (Using traditional longline method with robust and fortified anchorage; tubular net for consideration)
3	Phuoc Dinh Commune, Thu?n Nam District, Ninh Thuan Province, Viet Nam	*Kappaphycus (1)*	Off-the-coast (approx. 2 km from shoreline; 5+m depth) Zone D (5m); Floating net
4	Van Ninh district, Khanh Hoa, Viet Nam (Van Phong Bay)	*Kappaphycus (1)*	Off-the coast Floating net
5	Ninh Hoa town, Khanh Hoa, Viet Nam (*Caulerpa lentillifera*)	*Caulerpa (2 farms considered as 1 site)*	Earth pond and Nearshore coastal plot

The seaweed farms will be monitored for nutrient and carbon absorption (including the Caulerpa farms), status of marine life habitat, increase in fish catch in the seaweed farming areas, and any impacts on corals and on red-listed species of seaweed farms.

Output 3.1.2. Implementation of at least 2 seaweed value chain initiatives (adding value to raw seaweed in seaweed farming communities; improved propagules; transparency)

The project will explore several biorefinery solutions that will increase the value of seaweed biomass and provide environmental benefits. The environmental benefits from biorefinery solutions include zero or almost zero waste with all parts of the biomass converted to a valuable product or precursor to a higher value product; use of fresh biomass as an input in a process that does not use chemicals (i.e. alkali) that can pollute soil and water; and promote a circular economy as with the production of pellets that are processed into bio-plastics, which are biodegradable and can be recycled into fertilizer. Economic and social benefits include better price and more demand for the farmers? fresh seaweed products; reduced cost from doing away with drying; and more employment opportunities along the value chain.

In the Philippines, the project will connect seaweed biomass (produced by the project under 3.1.1 and through existing seaweed farms) to market. The project will both ensure a premium price for the Raw Dried Seaweed (RDS) in exchange for adhering to environmental criteria, and establish technologies to add more value to seaweed biomass at the site level. Added-value technologies will reduce the communities? dependency on one single market (carrageenan extraction industry), the project will establish new processing technologies in Roxas. Value-added to seaweed biomass means greater income for the communities, and provides an incentive to the seaweed farmers to further expand seaweed farms and production capacity (furthering social and environmental benefits). The project will focus on equal opportunity for participation, parity in decision-making relevant to the management and operation of the enterprise, and equity in benefit sharing for men and women.

The exact type of processing technology will be selected during execution from the following:

- Use of eucheumatoids for e.g., bread, noodle production.
- Liqui fertilizer production - Collection of seaweed juice/ drippings and preserved for use as fertilizer
- Fish feed
- Bioplastic refinery - At Brabender, a technology is being developed to process eucheumatoids via extrusion into a plastic-like material.

Also under this Output, Coast4C will set up a traceability system for seaweed farmers to access price premium available through Coast4C?s market linkages, in exchange seaweed farmers need to be able to demonstrate that they are meeting social, environmental and quality criteria. Along with purchasing seaweed at a premium, Coast4C will support an initiative to recycle end-of-life fishing nets to reduce plastic pollution and provide additional income to the communities.

In Viet Nam, the project will establish a Kappaphycus seedling hatchery, providing good quality and adequate supply of seedlings to improve the growth rate and productivity of the pilot farms/zones. The hatchery will be established by the seedling extension service center in Nha Trang, which is under DARD. The center will provide the financing with support from the Project to enable the center to develop a business model. In addition, the project will pilot one biorefinery system piloted (with at least 30% co-financing from private sector). There has been limited analysis of potential biorefinery seaweed products as new ?bridge? markets to promote increased growth of seaweed farming. However, potential biorefinery solutions are emerging and stakeholder consultations confirmed a strong interest in developing this segment, including developing downstream biorefinery processing for pre-treatment, fractionation, extraction, and purification and the associated production facilities to support such products being brought to the market.

Outcome 3.2. Generating benefits from seaweed aquaculture for target communities

In addition to piloting new technologies, the project will work with organized men and women seaweed farmers in target communities to (a) increase the effectiveness of activities under Outcome 1, and (b) improve the practices and benefits for existing seaweed farms and seaweed farmers. To improve seaweed farming practices, the project will develop and deploy a Sustainable Seaweed Toolkit that incorporates the Principles of Responsible and Safe Seaweed Aquaculture (from Outcome 1.1) and food safety, environmental safety and operational safety protocols identified by the Global Safe Seaweed Coalition Platform and best practices identified under Component 1.

To address barriers related to lack of finance and selling power, the project will build support systems and tools related to marketing, business, and finance. The Toolkit and trainings will be provided to seaweed farmers and seaweed cooperatives/associations in the target communities. The Gender Action Plan includes activities to ensure men and women?s participation and capacity building.

Output 3.2.1. Sustainable Seaweed Toolkit and trainings for improved production and processing and market access

In the Philippines, BFAR will conduct training on the operation and management of an offshore large-scale farm on Green Island (Roxas, Palawan) and Zamboanga. Different toolkits will be prepared. These include a toolkit for selected farmers who will be trained on offshore seaweed farming operation and management under 3.2.2. Training will include safety procedures in operating and maintaining the offshore structure for a sustainable seaweed production.

Coast4C will develop a toolkit and training materials for sustainable practices that enable farmers to meet the criteria for price premium. This will include: a toolkit that documents the lessons learned from the project and methods applied, and a training of trainers to personnel of BFAR and members of the

cooperative on sustainability and quality requirements. These sustainable practices will extend on the Philippine Good Aquaculture Practices and incorporate best practices produced by the Safe Seaweed Coalition. The content will be tailored specifically to the requirements of buyers willing to pay a premium for the seaweed. These materials will basically provide a ?how-to? guide for implementing the steps and practices required to qualify for premium prices.

In Viet Nam, the deliverable is capacity building (awareness and training) programs developed and implemented on these skills:

- Seedling selection, maintenance and production (200 farmers/staff trained)
- Product value chain development, domestic market access strategy, and export development plans (100 farmers/staff trained)
- Establishing effective e-commerce platforms and e-marketing (40 local women)
- Post-harvest processing, product quality assurance, safety and environmental standards (100 farmers/staff trained)

Additional capacity-building for improved production and processing will be ensure that project results on farm management and value-chain models are optimized for community-based value addition, with the aim to facilitate adoption of improved technology, facilitate market access, enhance value, manage markets risks, raise incomes and generate local jobs. Informed by Best Practices from Output 1.1.2 and results of the pilots (Outcome 3.1), training modules and information packages will be developed and delivered (via workshops, seminars and peer-to-peer exchanges) on: seedling selection, maintenance and production standards (200 farmers/staff trained); product value chain development, export development plans and domestic market strategy (100 farmers/staff trained); post-harvest processing standards including HACCP, ISO and other product quality and safety standards (100 farmers/staff trained) and; international environmental standards (e.g. ASC, MSC, organic). The training and awareness program will be uniformly implemented across the seaweed sector with representation sought from all farming areas.

Because of the vital importance of digital media in product marketing and market development, and the lead role of women in this segment of the value chain, this Output will include parallel training for women in the local seaweed farming community on the use of e-commerce platforms (i.e. e-retail site development; online promotion and marketing; customer service; packaging; delivery and transactions).

Output 3.2.2. Seaweed farmer/cooperative support systems

In the Philippines, focus will be on capability building on the range of skills, aptitudes and practices to govern, strengthen and sustain a cooperative. Trainings (total of 16 sessions in 4 years) will be undertaken once every quarter to develop the knowledge, skills and attitudes of the local seaweed farmers and enable them to lead, manage and sustain their seaweed farming activities, trading, and livelihood (with additional seaweed value chain) beyond the 4-year duration of the project. The existing cooperative in Palawan will be strengthened, while a new cooperative will be established in Zamboanga.

In Viet Nam, farmer cooperatives will be formed at all 3 pilot sites, two for *Kappaphycus* and one for *Caulerpa*, with membership sought from raw dried seaweed producers as well as other segments of the supply chain including processing companies and/or suppliers. As the formal establishment of a farmer ?cooperative? can be a lengthy process, the Project will initially form a voluntary ?group? of production households (about 20-30 households per site) to ensure their early participation in the activities. The local stakeholders? meetings and field surveys have confirmed a generally strong interest among local stakeholders to participate. Component 3 activities will build the group?s internal operational capacities that will support its formal designation as a Cooperative (operating at Commune level).

To achieve this, the project will help organize official meetings in all 3 sites, in order to agree on scope and common objectives and to confirm early interest. Once a minimum threshold of interest (e.g 3 individual farmers and at least one private sector member) is achieved, the project will facilitate the development of a draft charter outlining common agreed objectives. Complementing other training and awareness-raising activities conducted through the project (e.g. 3.2.1), additional sign-on will be achieved through subsequent group and/or individual consultations.

Outcome 3.3. Expanded collaboration with the finance sector and private sector to support seaweed value chains in Philippines and Viet Nam

The project will leverage the finance and private sector to unlock finance, scale up seaweed production, and increase demand for seaweed biomass. This includes developing bankable business propositions to co-finance and scale up activities under Outcome 3.1, including processing and biorefinery technologies that bring value to seaweed farming communities while also contributing to the increasing demand for seaweed biomass.

Output 3.3.1. Development of 3-4 bankable business propositions to scale up sustainable seaweed value chain solutions tested under 3.1 and new innovative solutions

In the Philippines, there will be four investment propositions: an upscaled model of a deepwater farm (Roxas) and of an offshore farm using the modified circular cage (Zamboanga), and at least two value adding enterprises. The farm model will be based on an analysis of the performance over the project period of the demonstration farms. The value adding enterprises will be based on the performance of the community-based enterprise established by the project and the performance of the biorefinery. Feasibility studies of three different products (e.g. fertilizers, fishmeal/oil replacement products, blue sugars for bio-plastics) will inform the business models. These will be carried by the national PMU with technical support of BFAR and Coast4C.

In Viet Nam, the deliverable is to develop a portfolio of (at least 3) bankable business projects based on project models, feasibility assessments, and research. In order to optimize results from the models advanced in Outcome 3.1 (and to take fullest advantage of new capacities developed under Outcome 3.2) it will be necessary to identify private sector partners and investors to secure further investment in seaweed value chains focused on innovative production - including testing technologies (biorefinery, seedlings) developed under the project and/or new models identified - in order to ensure that these projects are scaled up and succeed in bringing more value to seaweed farming communities and the national economy.

To secure such investment the Project will work with the private sector and local communities to advance 3 bankable business propositions for industrial scale off-the-coast seaweed farming. Based on the results of Outcome 3.1, assessments of value chain and financial requirements will be conducted for the products developed in pilots. Following this ? and anchored by a fully engaged farmers? cooperative, new capability and capacity in production and value-chain development, and a newly created multi-stakeholder platform -- a portfolio of projects for commercial-scale operation will be generated in close collaboration with the private sector and development partners (e.g. World Bank).

Output 3.3.2. Investment seminars and industry and investment forums conducted in collaboration with government representatives, development partners and private sector, including key value chain actors

In the Philippines, business models from 3.3.1 will refined by reviews from private industry and the Department of Trade and Industry before they are presented in investment forums. The organization of the forums will be a joint responsibility of national executing agency (BFAR), Coast4C and the Regional PMU. Advice and collaboration in the organization of the forums will be sought from the Board of Investments of the Department of Trade and Industry. Investment funds, development banks,

and private industry will be invited to the forums; at least 2 will be organized on the second half of Year 4.

In Viet Nam, the deliverable is to organize at least 2 investment seminars with investment funds (e.g., Aqua-Spark, IDH, DFCD and other identified sources), to promote innovation, models and develop investment opportunities. Similarly, investment seminars with investment funds (e.g., Aqua-Spark, IDH, DFCD and other identified sources) will be organized by the National-PMU in collaboration with industry advisors. National seminars will be chaired by D-Fish with possible co-chairing (e.g. World Bank) explored.

Component 4: Knowledge Management, M&E, and IW Learn (regional)

Lessons learned and experiences from the project will be shared widely in regional and international forums. Project results will be widely disseminated through various media including a website created and dedicated to the Project. The activities will be monitored, evaluated and the lessons communicated to stakeholders.

Outcome 4.1. Full participation in IW: LEARN and knowledge management/communication

The Project will adhere to and support the knowledge exchange objectives of a GEF project. The different users of information in the industry and along the value chain, from farmers to policy makers, will be catered to, their needs assessed and information from the project focused on meeting these information needs. Knowledge products will be packaged as solutions to relevant issues and problems, designed and presented to stimulate innovative ideas. Messages will be geared to informing decisions and guiding actions that lead to desired changes in behaviors of actors along the seaweed value chain in line with regulations, standards and codes of practice. These will be shared widely and in a timely manner.

To ensure knowledge from the project is appropriately documented and disseminated, the project will implement a knowledge management and communications plan. A mix of knowledge exchange media and activities will be carried out to share the results of the Project with relevant users of the information at the national, regional, and global levels to inform policy, programs, and development initiatives and provide decision support for seaweed aquaculture and processing enterprises. The knowledge products will support scaling up of project results.

Communication and knowledge products will include: a guide for establishing and managing offshore seaweed farms, lessons and best practices associated with deploying seaweed value chain technologies, trainings and toolkits for improved seaweed production, guidelines for achieving safety principles, guidelines for compliance with best practices, lessons in equitable participation among various actors and between genders in and sharing of benefits from business transactions along the seaweed value chain, national seaweed development strategies and action plans, methodologies for development of a seaweed area management plan that considers risks and user conflicts, and a report on the achievement of regional seaweed metrics and targets.

Knowledge management and communications will build on project partner?s existing networks and communication mechanisms. SEAFDEC is a key partner for ensuring regional knowledge dissemination and uptake of project results in national policies and strategies.

The project will actively participate in and contribute to IW: LEARN, including PMU attendance at regional meetings, the GEF IW Conference, and twinning exchanges. A website will be developed that is linked and searchable through IW: LEARN?s International Waters Information Management System.

This will be the web-based platform to disseminate project results to a global audience and to relevant institutions and practitioners.

Finally, the Safe Seaweed Coalition will post project-developed knowledge products as appropriate, reaching a broad membership of practitioners and decision makers along the seaweed value chain.

Output 4.1.1. Participation in two IW:LEARN regional meetings and one GEF International Waters Conference, delivering IW:LEARN experience notes

As a GEF IW funded project, this project will actively participate in the IW:LEARN community, including participation in the IW:LEARN community through the development of a project webpage on the IW:LEARN website; Develop IW:LEARN experience notes and publish to share lessons learned and best practices from the project; support in-person participation ? selected from the regional and national executing agencies and the project management units -- to IW:LEARN events. Relevant IW:LEARN events include a project twinning, regional thematic IW:LEARN event(s), and the biannual IW:LEARN Conference (IWC).

Output 4.1.2. Knowledge management and communication platform and products

The project will develop knowledge and communication products, and host webinars/side-events, to disseminate and scale up the project?s technical and policy products at a regional level. The full Knowledge Management and Communications Plan can be found in Appendix 3 of the ProDoc, and includes development of communication. Communication and knowledge products will be shared directly with key stakeholders via methods defined in the Stakeholder Engagement Plan, including target communities, governments, and partner organizations.

A key communication product will be the documentation of environmental benefits specific to seaweed production, including those related to coral reefs, marine life, other ecosystem services (breeding places and shelter to marine life), and carbon mitigation potential. This will be linked to the regular monitoring of the seaweed farms. The project will also focus on documenting and sharing gender perspectives, experiences, and lessons.

Outcome 4.2. Monitoring and evaluation system in place

The Project Management Unit and project partners will follow an M&E plan to monitor and report on project progress, and identify any areas where adaptive management is needed. A bi-annual Progress Report, including tracking against the results framework and work plan.

Output 4.2.1. Monitoring and Evaluation reports (including project progress reports, midterm evaluation, terminal evaluation)

The PMU will follow an M&E plan (see Section 2.7) to monitor and report on project progress and identify any areas where adaptive management is required. Under this Output, the PMU will draft and deliver the following:

- A six-month Project Progress Report (PPR) and a 12-month PPR, which includes tracking against the results framework and work plan (and from which the PIR is generated and submitted to the GEF Secretariat);
- Annual Work Plan and Budget (AWP&B) with implementation targets;
- Quarterly Financial Report;
- Annual adaptive management meeting to review project results and discuss any necessary adjustments to the project strategy; and
- Closeout report.

A Mid-term and a Terminal Evaluation will be conducted by independent consultants. The results framework includes specific indicators and methods to reflect gender perspectives.

The detailed project strategy can be found in Section 2.2 of the Project Document. There have been several changes since PIF stage.

- *Under Component 1, the strategy has adjusted slightly. Rather than ?Support towards the International Seaweed Coalition Platform? and ?regional metric targets and guide for implementing best practices to reach targets,? SEAFDEC will support development of a Guide to Promoting a Sustainable Seaweed Industry in the SEA Region, and will support SEA Regional Principles for Responsible and Safe Seaweed Aquaculture, including toolkit for applying principles. A regional Seaweed Technical Working Group will be constituted to support this development and ensure regional buy-in and input.*
- *Under Component 2, the project will no longer support an updated Seaweed Carrageenan Industry Roadmap for the Philippines ? this was undertaken through baseline initiatives while the project was under development. Instead, BFAR will support implementation of the Philippine Seaweed Industry Roadmap (2022-2026), which is pending approval by the Department of Agriculture, at the municipal level (targeting the two municipalities where the project will work). In addition, a new output was added for VN: An open source Information Management System (IMS) to facilitate national and provincial-level planning and management of the seaweed aquaculture sector.*
- *Under Component 3, rather than four off-shore demonstration farms, the project will support six demonstration farms. Four demonstration farms will be offshore, and two farms will be in degraded former shrimp ponds and in adjacent shallow nearshore area. The output ?Proof of concept of a scalable seaweed carbon credit model? was deleted. There are baseline initiatives exploring whether this is a viable concept, and if deemed viable the project will work to connect to this work.*

4) alignment with GEF focal area

The project is aligned with the GEF Focal Area on International Waters. It will directly support the following International Waters Focal Area objectives:

1. IW-1-1: Strengthen blue economy opportunities through sustainable healthy coastal and marine ecosystems. The project will strengthen sustainable seaweed production and processing in Viet Nam and Philippines, which supports both national development strategies as well as healthy coastal and marine ecosystems. Regionally, the project will support knowledge sharing of seaweed as a blue economy opportunity through the regional executing agency.

2. Objective IW-1-3: Strengthen blue economy opportunities by addressing pollution caused by nutrient accumulation compounded by deoxygenation in marine environments. This project will work closely with the private sector, communities, and academic institutions to support innovative technologies for seaweed production and processing. Seaweed production will help address eutrophication from nutrient accumulation, acidification and deoxygenation in marine environments. Processing will include biorefinery technology (operated on-site or at the community level) that makes use of the entire biomass and reduces or does away with the use of alkali to extract the colloids), as well as the production of precursor products such as pellets for bio-films or higher-value product forms that are biodegradable.

The goal of the International Waters focal area is the promotion of collective management for transboundary water systems and subsequent implementation of the full range of policy, legal, and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services. The project will contribute to this goal by focusing on, among others, preventing degradation

of the marine environment and combating ocean hypoxia. It will bring the lessons and experiences learned from the project (such as marine spatial planning, zoning and development of an integrated area management plan for seaweed sites that considers the competing users of the common resource, and evidence of farmed seaweed?s capacity to mitigate deoxygenation and eutrophication) to SAP?s knowledge-based action planning for the management of coastal habitats. The project?s output, ?Guide to promoting regional seaweed development in the SEA region? will contain approaches and best practices that can be most effectively implemented through regional cooperation. The Guide thus complements SAP?s program for regional cooperation in the management of the marine and coastal environment of the South China Sea.

Outscaling the results of the Project to the Southeast Asian Region will be facilitated through the intergovernmental mechanisms of SEAFDEC and ASEAN and to other countries through Lloyds Register and the Safe Seaweed Coalition.

There has been no major change since PIF stage.

5) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

The project will build off a baseline of private sector, government, academic, and NGO initiatives to strengthen and support scaling up of the seaweed value chain.

BASELINE

? Global initiatives ? various private sector actors are driving seaweed value chains. The Global Safe Seaweed Coalition is working with a range of stakeholders to establish standards (e.g. for food, environmental and workers? safety) to help standardize the seaweed sector.

? Regional initiatives - SEAFDEC helps coordinate member states and facilitates information on various research programs and technologies (including for seaweed). The South China Sea SAP also provides an important baseline from which the project can build.

? National ? Philippines and Viet Nam have various initiatives to strengthen seaweed farming and have seaweed associations (or aquaculture associations with seaweed now prominent in their portfolio such as the Viet Nam Seaculture Association). The Project will build on the following initiatives:

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  - Initial results of research and development to develop seed stock that are resistant to diseases and ongoing efforts to develop seed stock tolerant to higher sea temperature.
  - National efforts to further improve seaweed farming practices and promote adherence to (in the Philippines) national standards of good seaweed aquaculture practice and product (raw dried seaweed) quality.
  - Ongoing research and technology development in the Philippines on the production of bio-stimulants (fertilizer), bio-pharmaceuticals and other higher value products.
  - Technology development involving a foreign technology company and a Philippine university, and another local company aimed at producing pellets with a facility that can be operated at the community or site level, the pellets being raw materials for the

manufacture of bio-plastic packaging and other products which can then, after use, be degraded and processed into fertilizer.

- In Viet Nam, the expansion in the production and local demand of the food species, *Caulerpa lentillifera* is being promoted. It is now being cultured in degraded shrimp ponds. It has a high market value in domestic markets and a good prospect for export of processed product forms. The cropping cycle is also short i.e. around 30 days.

Other initiatives at the regional and national levels to which the Project will contribute includes:

•Regional and national climate change policies and action plans.
•Coastal resources management policies and projects on biodiversity conservation, mitigation of pollution of marine waters, and improved productivity of aquaculture and fisheries.
•Regional and national strategies to promote the sustainable development of the marine resources guided by the concept of Blue Economy.
•Marine biodiversity conservation or enhancement.

ALTERNATIVE SCENARIO

With GEF financing, the project will build on the above-described baseline to (1) accelerate seaweed farming in Philippines and Viet Nam (as well as regionally through knowledge sharing and eventually a broader-scoped technical cooperation), thereby supporting seaweed farmer livelihoods resilience and community development, (2) bring investment to biorefinery solutions for new and existing seaweed products. The biorefinery solutions will be localized (e.g. near seaweed farming communities), which will generate new sources of income and additional jobs. In addition, the new products will encourage greater uptake of seaweed biomass upstream; (3) promote better practices for seaweed farming and seaweed value chains through the Safe Seaweed Coalition and trainings/toolkits.

GEF finance allows the project to provide the technical assistance to governments and the seaweed industry sector in general to:

? Build an enabling environment for sustainable seaweed farming with inputs to the policy and practice of marine spatial planning, zoning, and seaweed culture area management.

? Boost the seaweed aquaculture development strategies with the range of knowledge to be generated and shared by the project from siting, site management, good aquaculture practices, post-harvest practices and technology, value addition, and development of value chains for seaweed products.

The environmental benefits to which the project will contribute are:

? Reduced pollution load in coastal waters by assimilation of nutrients, such as N and P.

? Reduced acidification and deoxygenation of marine waters

? Sustained coastal and marine ecosystems goods (i.e. coral reefs, marine life that constitute the various trophic levels) and services (such as provision of breeding places and shelter to marine life), and maintained capacity of natural systems to sequester carbon.

? Maintenance or improvement of the conditions for marine biodiversity

? Increased ecosystem resilience

Overall, the project will strengthen blue economy opportunities while also addressing pollution reduction. Seaweed captures nitrogen, phosphorus, and carbon which helps reverse or mitigate eutrophication, supporting local and global ocean health. In addition, the project will generate socio-economic benefits, including improved livelihoods and increased income from seaweed farming and processing.

A table showing the baseline, alternative scenario, and global environmental benefits is included in the ProDoc (Section 3.1)

There has been no major change since PIF stage.

6) global environmental benefits (GEFTF)

Increased seaweed farming ? supported by zoning, plans, and investments? will yield numerous global environmental benefits including:

? Carbon, Nitrogen and Phosphorous capture, which helps prevent or reverse eutrophication

? Increased biodiversity due to healthier marine habitats (linked to above)

In addition, the project will contribute to:

? Orderly expansion and development of the seaweed industry marked by environmental and social responsibility.

? Biodegradable and recyclable (into bio-stimulant) packaging materials, which will help reduce plastic pollution.

? Reduce use of fossil-fuel based fertilizer

? Higher quality RDS and value added products expand the demand for seaweed. This has to be met by increased production through the expansion in production area, which increases and spreads the environmental benefits generated by seaweed farming.

The proposed project will contribute to following four GEF Core Indicators:

Core Indicator 5: Area of marine habitat under improved practices to benefit biodiversity: Seaweed contributes to nitrogen and phosphorus capture, thereby reducing pollution and hypoxia. By ensuring an enabling environment for seaweed farming regionally, and in the Philippines and Viet Nam specifically, and through the project demonstration farms, the project is expected to contribute to a significant amount of nutrient capture (1,878 metric tons of nitrogen, 35.8 metric tons of phosphorus) to reduce pollution and hypoxia in the Sulu Sea and South China Sea. This can reduce stressors on habitat for marine biodiversity. The project will bring 1,882 hectares of marine habitat under improved practices.

Core Indicator 6: Greenhouse Gas Emissions Mitigated: Seaweed absorbs a significant amount of carbon. While some of the absorbed CO2 may be released during the processing stage, studies show that 5-10% of the seaweed biomass will end up in deep-sea sedimentation before harvest, serving as a permanent carbon capture. Additionally, some of the seaweeds may serve to reduce biogas production from the animal husbandry sector, offsetting any CO2 re-release. Overall, through seaweed production, the project will contribute to 290 metric tons of greenhouse gas mitigation.

Core Indicator 7: Number of shared water ecosystems (fresh or marine) under new or improved cooperative management: 2. The project will support national/local reforms, including regulatory frameworks, for seaweed value chains in Philippines and Viet Nam and the Sulu Sea and South China Sea. This work will be tied together at the regional level through the lead executing agency. Also towards this core indicator, the project will dedicate 1% of the budget to IW Learn activities, including creation of a website for a seaweed platform, participation in the biannual IW Conference, and twinning events. The project will produce experience and results notes under Component 4 to support knowledge sharing and scaling up of project results.

Core Indicator 11: Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment. Through strengthened seaweed value chains, including the establishment of medium-scale seaweed farms, the project will support income generation and livelihoods to local seaweed farmers in Philippines and Viet Nam. The majority of seaweed farmers are women, therefore it is expected that many of these beneficiaries will be women.

It is expected that the project will also provide training and tools that directly benefit government staff, communities, and private sector actors. Overall, the project will directly benefit 4,000 men and 11,000 women.

The core indicator targets have decreased since PIF stage. Sequestration rates have significantly reduced largely because planned area of pilot farms and areas expected to be under improved management is estimated to be a little over 2,000 hectares in all four sites. The expected expansion after the project of farms under improved management is 15,000 ha in Viet Nam and 25,000 in the Philippines. This is based on the national targets for production expansion in 2025 and 2030 for Viet Nam and regional and provincial plans (Zamboanga Peninsula and Palawan) in the Philippines. This 35,000 ha would absorb around 60,000 mt over a six year period from project termination to 2030.

7) innovativeness, sustainability and potential for scaling up ?

The project is **innovative** in several respects:

? In the context of the Philippines and Viet Nam and, more broadly of Southeast Asia, offshore commercial-scale farming has not been demonstrated for the seaweed species popularly grown in the region i.e the carageenophytes. The project will introduce and test the suitability of systems (and structures) for growing seaweed in an offshore or off-the-coast environment. It will produce a Production System Model or models, if there are more than one species, based on several successful crops. The Model will describe the biological and technical feasibilities, economic viability, and social acceptability of the farming system. In Viet Nam the project will support the expansion of the culture of the food species, Caulerpa

lentillifera, in degraded shrimp ponds. Substituting seaweed for shrimp in degraded shrimp ponds would provide environmental, economic and social benefits: no mechanical aeration, no need for expensive shrimp post-larvae, no feeding with high protein feed whose main ingredient is fish, no usage of anti-microbials and chemicals, and the seaweed assimilates the dissolved nutrients in the culture water. Caulerpa has also a much shorter crop cycle (30 days compared to 90-180 days for shrimp) and, in Viet Nam as well as in the Philippines and Thailand, the domestic price for Caulerpa is high.

? Introducing and demonstrating as well as training local people (growers) on the application of a bio-refinery system that would make full use of the seaweed plant, produce precursor materials (i.e. pellets) for processing into biodegradable higher value products like bio-plastics, or produce a finished product such as fish feed with seaweed as one of the ingredients and a binder. This would be a new technology for seaweed farmers in the Philippines and Viet Nam and, in general, Southeast Asia.

? Developing investment models in the manufacture of higher value products and promoting them for prospective public-private or private financing is a new strategic approach to the development of the seaweed industries of most of Southeast Asia.

Sustainability will be accomplished through a number of approaches:

? Strengthened planning and enabling conditions, which will continue to guide the seaweed sector in both the Philippines and Viet Nam, as well as regionally. This includes:

- Development of a ?Regional Guide for Promoting a Sustainable Seaweed Industry in SEA Region,? which SEAFDEC will continue to oversee and support past project close. The project will also support standards for good aquaculture practice and promote their adoption (and long-term application) by national standard authorities and industry groups through webinars and workshops.
- In Viet Nam and the Philippines, D-Fish and BFAR, respectively will continue to oversee project-developed plans (e.g. National Seaweed Plan) and legal/policy measures.
- In Viet Nam, the project will support the Provincial social and economic development plans by providing technical (information and lessons learned) inputs to the planning process.

? The project will develop a sustainability/exit strategy for supported seaweed farms and biorefinery solutions to ensure sustainability. This includes the following: For seaweed farms, the project will train seaweed farmers in any new technology and management requirements. During the project, the PMU will identify who will take over the seaweed farm(s) after project close ? this will likely be a cooperative or association that has received training through the project, and meets set criteria (fiduciary, social, etc). Business plans (including financials) will be supported. It is expected that the farms will be financially self-sufficient by the end of the project, and that farmers will continue to utilize the farm sites for seaweed production.

- For biorefinery solutions, the project will consider ?likelihood of sustainability? as part of the selection criteria during execution. This should include consideration of operating and maintenance costs, and current and potential market. Biorefinery options will be selected through a participatory approach with communities to ensure buy-in, and trainings will be provided to develop their capacity. Community enterprises, cooperatives, and associations will be established and/or strengthened to ensure continued ownership. Finally, the project will work to link these products to market to ensure, where possible, a positive cash flow by the end of the project, and conditions to ensure continued use of the biorefinery solutions after project close.

? The project will provide trainings, workshops, and exchanges to support best practices, learning, and capacity at the local, national, and regional level. This includes trainings for seaweed farmers, establishing cooperatives where appropriate, and supporting existing cooperatives. If these trainings and outcomes are shown to be successful, it is expected that these practices will continue to be applied by seaweed farmers long-term.

A successful project outcome would catalyze **scaling up** of the project within the project countries and across Southeast Asia. Support to this will be through several key strategies:

? Once the project has proof of concept for the offshore seaweed farming, as well as biorefinery solutions, models and guidance documents will be developed and shared (under Component 4) to allow for application in other seascapes.

? In Viet Nam, the project will map seaweed zones in 10 provinces to be used for a national-level MSP but also provincial-level planning. While the project will only directly develop two provincial seaweed development plans (to guide pilot seaweed farms), the project will support the deployment of guidelines and trainings to upscale the planning process to the other seaweed-zoned provinces.

To support scaling up of project results, the project will rely on SEAFDECs membership and outreach through Component 1 and Component 4. The project will ensure a global reach through the Safe Seaweed Coalition, which will publish knowledge products as appropriate and allow reach to a global audience that may take up project results. A complement to this approach is engagement with national industry associations, donor and technical assistance agencies, NGOs, and academic and R&D institutions, which could apply project findings and scale up the pilots.

There have been no major changes since PIF stage.

[1] https://www.pnas.org/content/117/10/5351
[2] https://www.lrfoundation.org.uk/en/news/seaweed-manifesto-launch/

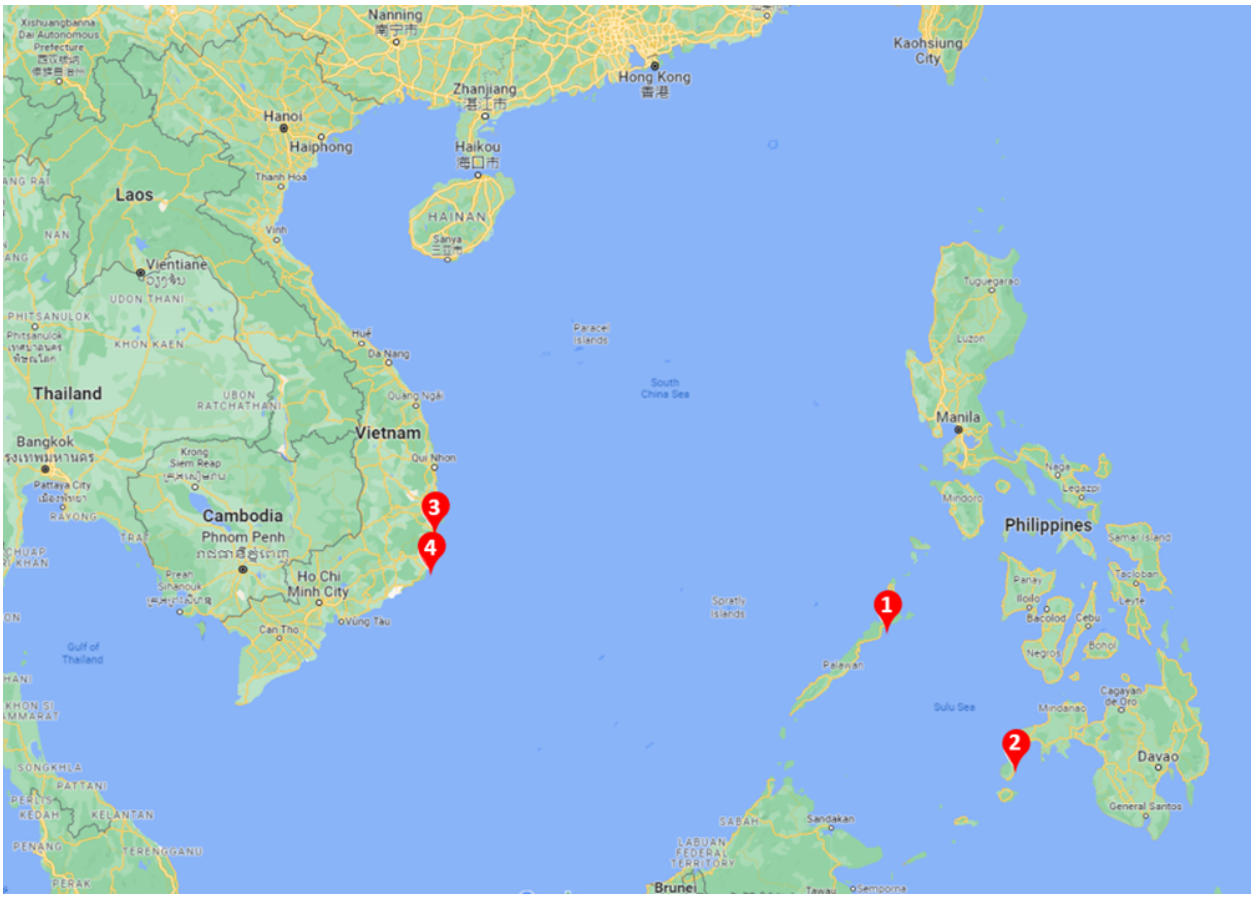
[3] World Bank (2019). Situation Assessment of Integrated Coastal Zone Management (ICZM) in Viet Nam. Hanoi: World Bank

[4] https://projects.worldbank.org/en/projects-operations/project-detail/P132317

[5] Kien Giang, Phu Yen, Khanh Hoa, Quang Ninh, Hai Phong, Ba Ria - Vung Tau, Ninh Thuan and Binh Thuan, Binh Dinh, Ca Mau, as identified in Decision 339.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.



Philippines Sites

Viet Nam Sites

PHILIPPINES

1. Green Island, Roxas, Palawan Province, Philippines: 10.3096? N, 119.2630? E
2. Buenavista, Zamboanga City, Zamboanga del Sur, Philippines: 7?14'9"N ? 122?15'19"E.

VIET NAM

3. Khanh Hoa, Province, Vietnam
4. Ninh Thuan Province, Vietnam

There have been no major changes since PIF stage.

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

The PMU will be responsible for ensuring compliance with the GEF and WWF standards on Stakeholder Engagement, specifically the WWF Standard on Stakeholder Engagement and the associated Procedures for Implementation of the Standard on Stakeholder Engagement. A Stakeholder Engagement Plan has been developed for the Philippines, Viet Nam, and Regional level (3 stakeholder engagement plan?s total).

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

A Stakeholder Engagement Plan has been attached for Philippines, Viet Nam, and the Regional level. This includes the means and timing of engagement, as well as how information will be disseminated. The project has budgeted for consultations, workshops, and travel costs to ensure proper stakeholder engagement throughout the life of the project. A Safeguards and Gender Officer will be recruited to the National PMU (one in VN, one in PH) and will be responsible for ensuring implementation of the Stakeholder Engagement Plan, in line with safeguards and gender standards. SEAFDEC will be responsible for implementing the regional Stakeholder Engagement Plan, and oversight of the PH and VN National PMUs.

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor; Yes

Co-financier; Yes

Member of project steering committee or equivalent decision-making body;

Executor or co-executor; Yes

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

A Gender Analysis and Gender Action Plan were conducted for the Philippines, Viet Nam, and Regional (3 Gender Analyses and Gender Action Plans total) to ensure gender mainstreaming throughout the project cycle. The Gender Analysis is an examination of gender, the differences between men and women, their access, control and use of resources and the implications for the project goals, objectives, outcomes and outputs. The gender analysis is the basis of the gender action plan, the main tool for the mainstreaming of gender in the project. The Gender Analysis and Gender Action Plan (for Philippines and Viet Nam) have been uploaded as part of the submission. The Gender Analysis and Gender Action Plan for the regional level can be found in Section 2.5 of the ProDoc.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources; No

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

The Project will stimulate private sector investment in the production of new seaweed products and participation in new seaweed product value chains, which will diversify income opportunities and enhance the livelihoods and resilience of communities engaged in seaweed production. It will identify investment opportunities for private sector and government and produce investment models for large scale offshore seaweed farming that can be operated by organized farmers (i.e. cooperative) or a private company, community-based bio-refinery technology operated by an association or cooperative of seaweed farmers, small-medium-scale community-based production of seaweed-based consumer products, and commercial scale processing of low-carbon and biodegradable high-value products. It will provide information and technical inputs to improve and strengthen the policy environment to enable the above initiatives and especially to give assurance that the investments are protected. Training will also be provided to the operation of a bio-refinery and processing of consumer products. A support system will be devised for the associations or cooperatives and the community based small scale enterprise to access and effectively utilize technical, information, and financial services.

The project has received a co-finance letter from Brabender and Tri Tin Company. Brabender may be selected as a partner to support bioplastic biorefinery solutions in Philippines under Output 3.1.2. Tri Tin Company will provide co-financing to support piloting of seaweed farms under Output 3.1.1.

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

Project Risks

Risk	Risk Level	Project Mitigation
Local governments and local communities are not supportive of the Project	Low	Local governments have been engaged during project development. In the Philippines, a potential area estimated to be 300 hectares has been identified and scouted by the officers of the Northern Palawan Fishermen Cooperative. A biological, natural, and social risk assessment was carried out with the participation of provincial, municipal, community stakeholders. A SWOT analysis during one (on-line) meeting provides the basis for a project implementation strategy that would enhance their livelihood strategies and, just as important, does not disrupt community relations. In Viet Nam, MARD - D-Fish National Mariculture Strategy to 2030 seeks to empower the local governments for management of the coastal and offshore areas so that the implementation of the Strategy, which hews towards industrial scale aquaculture production units (on sites that will be leased) is guided by regulations which formulation benefit from a wider stakeholder consultation. The Project has also consulted with the local governments, local officers of national agencies (MARD, MONRE) and local leaders on ways that it can provide technical inputs to support the Strategy.

Project scale being industrial rather than small scale and being sited in offshore sites, could appear to local communities as irrelevant to their livelihood strategies and more oriented towards the interest of large enterprises.	Medium	The Project has met (virtual mostly but also in-person) with the community stakeholders including the local government, NGOs, and other projects operating in the area to describe and explain the environmental, economic, and social benefits expected from the Project that will accrue to the communities. The common understanding was arrived that project activities should foster the sense of co-ownership of the project. The mechanisms by which they will be able to attain scale, such as a cooperative or a formal association (of producers), will rely on the formation or strengthening and professionalization of a cooperative or association. The cooperative should have a significant role and not appear as a mere surrogate to other (outside) players. Appropriate support to the cooperative or association will be provided. It will be made clear that the project is a pilot and its positive results will eventually redound to the benefit of the cooperative, the community, the seaweed industry, and the environment. Viet Nam?s Marine Fisheries Development Strategy to 2045 envisions the expansion of mariculture at an industrial scale. This makes it even more critical to carry out the risk mitigation strategies described above so that the communities and the organized groups in the project site/s will be supportive because they play a significant role in Project implementation and have a sense of co-ownership of the results.
Culturally inappropriate project delivery will hamper relationships with and social acceptability by the community of the project	Low	Working with local community facilitators, opinion leaders and organized farmer and women groups, the project 1) will ensure appropriate community protocols are followed, does not debase local culture and traditions; and (2) be sensitive to local issues that have the potential to turn into problems, and plan and carry out ways to resolve them before they escalate into a social conflict.
The social risk from power asymmetry in the community by which the members with more power tend to appropriate the major roles in and benefits from the project.	Medium/ Low	With organized groups that are managed professionally, the probability of this risk arising would be low. The project will engage and provide opportunities for meaningful participation of cooperatives/associations. Where these are not existing, the project will encourage and provide appropriate assistance to the formal organization of farmers associations. It will strive to be transparent and fair in its engagements. It will ensure equitable benefit sharing under the social safeguards strategy.
Conflicts arise with other users of the marine resources particularly on the location of the demonstration farm once established.	Low	The Project has consulted with the Local Governments (in PH and in VN) and the local communities, to obtain information and assurance ? backed by local regulation -- that the site of the project does not obstruct navigation, does not prevent fishers from accessing fishing grounds. And that there will be an assurance of security to the Project demonstration farm. An area management plan that comprises good management practices and safety standards for the identified seaweed farm site will avoid negative impacts of the farm operation on the environment and thus to other users of the same marine landscape.

Natural risks spawned by climate change such as rising sea temperature, adverse weather events (typhoons, monsoons) will disrupt project operations.	Medium to High	The project will use cultivars that are tolerant to temperature fluctuations, especially higher water temperature. Providers of quality planting materials ? science and technology institutions -- have been engaged. Timing of crops will be informed by local knowledge and long-term forecasts to avoid the months when typhoons or monsoons occur. The Project will employ a culture system and use structures that provide protection to the crop from strong winds and rough seas. Sites will also be located in areas that are reasonably sheltered from strong winds and currents.
Biological risks such as pests, grazers and predators, endo- and epiphytes, and diseases impact on the growth of the demonstration crops.	Medium	Sites are being selected that pose minimal risks from these factors; deeper offshore waters are generally less prone to epiphyte and endophyte infestation. Disease-resistant planting materials will be sourced and used for the demonstration crop (as mentioned above, providers of these quality materials have been engaged).
Risk from the demonstration farm to protected marine life like dugongs and sea turtles	Medium to High	The Green island site is a nesting area of dugongs. And there is the risk of their and the sea turtles? entanglement in the seaweed lines. In Zamboanga, the cage structures do not pose this risk. There is obviously no such risk with culture ponds. The field personnel will be instructed to regularly inspect the farm and free any dugong or sea turtle found entangled in the ropes.
Chemical risks such as pollution from agricultural and domestic runoffs, oil spills, unsuitable water parameters in growing area renders the area unsuitable for a seaweed demonstration farm.	Medium	The sites selected are in areas that are not exposed to heavy runoffs from land-based activities and with sufficient chemical and dissolved oxygen content. Offshore and deeper waters are generally safe from industrial, agricultural, and domestic discharges, and well oxygenated. Consultations have also confirmed the sites are designated solely for seaweed farming and will be outside the navigation routes for fishing and transport vessels.
Public health risk, particularly the Covid19 pandemic	High	Advisories on precautionary, exigency, and emergency measures by WHO and the government health authority will be heeded and complied with. These will be brought to the attention of all project personnel and anyone doing personal transaction with any project staff for the purpose of having a common understanding and as much as possible mutual agreement of the need for and benefits of compliance. This would mitigate the impact of the pandemic on project staff, the community and people whom the project staff meet personally in the course of project operations.

Climate Risks and Mitigations

Country	Climate Change Risk	Impacts on Communities and the Environment	Mitigations

PH and VN	Coastal communities face climate hazards that include a **rise in sea surface temperatures.**	Ocean warming and ocean acidification put seaweed, and surrounding coral reefs, under stress. Warming ocean waters have also been associated with ice-ice disease, which deteriorates the quality and yields of seaweed. Coral bleaching, as well as warming water temperatures, may result in less ecological habitat for fish and sea life in the area. This could cause a general decline in fish populations in the project areas and negatively impact seaweed harvesting.	The project will work with academic institutions that are researching more climate and disease resilient seaweed strains. Climate and disease resilient propagules will be explored for the demonstration farms. The project will also incorporate climate resilient training where applicable.
PH and VN	Coastal communities in the Philippines and Viet Nam face an **increase in frequency and severity of storms and typhoons.** In the off-season alone (around December), the Philippines has seen an increase in typhoon occurrences of more than 70% (from 2012-2020). Typhoons overall are becoming more destructive. La Ni?a events trigger a more erratic precipitation pattern and correlate closely with a rise in frequency of severe **storms** and climate events. The number of rainy days and associated storms in the Philippines has increased overall since the 1990s.[1]	Impacts recognized in the Philippines include infrastructure damage, loss of livelihoods and even loss of life. Typhoon Rai, which struck Philippines (including Palawan, one of the project areas) in December 2021, caused significant damage to buildings, crops, and left 397 people dead and more than half a million affected people displaced. 74% of the country?s population is exposed to multiple climate threats at any given time.[2] In Viet Nam, tropical storms cause major damage to property and infrastructure, as well as costing lives.	Aspects of the project were designed to combat the increasing frequency and severity of storms. For the project site in Green Island, the site was selected because it is protected by corals, which will help in dispersing strong waves during typhoons and protect the seaweed farm. In Philippines and Viet Nam, the project will apply a robust design of seaweed farm infrastructure as well as utilize early warning to save crops before typhoons hit the region.
PH and VN	The Philippines and in Viet Nam, are experiencing significant **sea level rise.**	Sea level rise is a threat to coastal communities and is expected to result in thousands of climate refugees. The increase in natural disasters and the rising sea level also cause damage to the reef systems and coastal mangroves, having detrimental effects on coastal communities and their associated economic stability.	The project may explore insurance protection against loss of crops and/or infrastructure in the face of extreme climate related disasters.

VN	**Severe drought** is a major climate risk that communities face in the project area. The frequency and intensity of dry spells causing droughts have increased under the influence of the El Ni?o effect. One of the project sites, Ninh Thuan, is one of the hottest and most drought-ridden areas in the country. The province has the lowest average rainfall in the country (about 750 mm per year) and is also the hottest province of Vietnam, with an average temperature of about 27 degrees C.[3]	Particularly in Ninh Thuan (although it has been noted as an issue in Khanh Hoa as well), severe drought poses risks to farmer communities, where impacts on water resources and also on the electrical grid may disrupt supply chains and/or operations. In the case of drought, the availability of water resources is limited (this is a particular issue for the inland earthen caulerpa ponds in Khanh Hoa).	The project will consider the impacts that drought has on communities in the areas that are most susceptible during project implementation.

Note: Climate risks were identified using the WWF Climate Risk Screening tool. The Screen was conducted for both Philippines and Viet Nam, and is uploaded with the submission.

COVID-19 Risk Analysis

Risk category	Potential Risk	Mitigations and Plans
Risk of the ongoing COVID-19 pandemic affect project implementation	COVID-19 delays may impact timelines for project implementation.	Project start-up and implementation may be delayed due to COVID-19. Adaptive adjustments will be considered in annual workplans to mitigate such delays. The project will utilize remote working tools to support and engage with partners and stakeholders where needed (including for regional workshops and trainings, etc).
Stakeholder engagement process	COVID-19 restrictions may limit effective engagement with stakeholders ? particularly local communities (as a result of, for example, travel restrictions)	Consultations will only be undertaken in compliance with national and local guidelines, and with COVID-19 precautions in place. This may involve, for example, small group sizes, the use of testing, and PPE. The PMU and N-PMU?s will develop guidance on COVID protocols. In all cases, continued attention will be given to ensuring the voices of IP, women, youth, and any underrepresented community members.
Livelihood/ economic challenges	COVID-19 impacts may lead to increased livelihood/economic challenges and isolation of the communities.	The project will support seaweed value chains, which will strengthen livelihoods in the project areas. The strategy includes specific provisions around linking to markets to.

COVID-19 Opportunity Analysis

Opportunity Category	Plan
Reduce the vulnerability of affected communities within the project landscape	The project will support more secure and sustainable livelihoods and enhanced livelihood assets for the target communities. Improved incomes will come through the production of more and better-quality biomass, production and sale of traditional product forms, and participation in the production and sale of higher value products. Social co-benefits are in the form of a secure livelihood, more employment generated by the production of and trade in traditional and new consumer products, improved food security.
Protect and restore natural systems and their ecological functionality	Seaweed has numerous environmental benefits for the marine environments, including carbon capture and assimilation of excess nutrients from coastal waters, which is associated with mitigation of ocean eutrophication and acidification as well as improvement of habitat for marine life. Marine spatial planning will ensure seaweed farms are placed in a socially and ecologically sustainable way.
Include a focus on production landscapes and land-use practices within them to decrease the risk of human/nature conflicts	The project will support safe and sustainable seaweed farming. The safeguards documents have mitigations in place for any human/nature conflicts.
Promote circular solutions to reduce unsustainable resource extraction and environmental degradation?	The project may support a bioplastic refinery solution in the Philippines under Output 3.1.2 (based on selection criteria during implementation). Coast4C will support an initiative to recycle end-of-life fishing nets to reduce plastic pollution and provide additional income to the communities. Finally, plastic alternatives for the seaweed farms will be explored.

[1] Folland, C.K., J.A. Renwick, M.J. Salinger, N. Jiang, and N.A. Rayner, 2003: Trends and variations in South Pacific Islands and ocean surface temperatures. Journal of Climate., 16, 2859-2874 and Folland, C.K., J.A. Renwick, M.J. Salinger, and A.B. Mullan, 2002: Relative influences of the Interdecadal Pacific Oscillation and ENSO on the South Pacific Convergence. Zone. Geophysical Research Letters, 29, 21-1-21-4

[2] GFDRR Country Profile for the Philippines

[3] Tuan, N. and Canh, T. (2021) Analysis of Trends in Drought with the Non-Parametric Approach in Vietnam: A Case Study in Ninh Thuan Province. American Journal of Climate Change, 10, 51-84. doi: 10.4236/ajcc.2021.101004.

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

The institutional arrangement for project implementation includes WWF as the GEF Agency, the Southeast Asian Fisheries Development Center (SEAFDEC) as the Lead Regional Executing Agency (its Secretariat in Bangkok, Thailand will host the Project Management Unit), the Bureau of Fisheries and Aquatic Resources (BFAR) of the Philippines and Directorate of Fisheries (D-fish) of Viet Nam as the project executing partners in the Philippines and Viet Nam, respectively, and a Project Steering Committee.

LEAD EXECUTING AGENCY

SEAFDEC is the Lead Executing Agency for the project. It will be responsible for overseeing the implementation of project activities. SEAFDEC will provide the regional leadership for the project. As an intergovernmental body with 11 member states, its regional mandate assures the incorporation of project results into its regional development programme and outscaling of the relevant aspects of the pilot projects. It will be the instrument for region-wide outscaling, sharing information, lessons and expertise, and promoting the adoption of SEA regional safety Principles and a Regional Guide to Promote a Sustainable Seaweed Aquaculture Industry.

PROJECT MANAGEMENT UNIT

As part of its responsibilities, SEAFDEC will host a Project Management Unit (PMU) at headquarters (Bangkok, Thailand). The PMU will be comprised of the following members. All will be recruited by SEAFDEC.

? The Project Manager/Technical Advisor will have overall responsibility for the implementation of the Project and specific responsibility for the execution of Components 1 and 4. The Project Manager/Technical Advisor will coordinate with the Managers of the Philippines and Viet Nam National Project Management Units (N-PMU). He/she is responsible for completing project progress reports, annual results framework and workplan reporting, and collaborative development of the annual work plan and budget.

? The Finance and Administrative Officer reports to the PM/Technical Advisor and is responsible for overall financial oversight of the project, including tracking the budget, facilitating financial transactions, and preparing and delivering the quarterly financial reports.

? A Technical Specialist (TS) will be posted in the Aquaculture Department (AQD) and will provide technical inputs and assistance to Component 1 activities.

NATIONAL PROJECT EXECUTING AGENCIES

The national partners responsible for project implementation in the Philippines and Viet Nam are BFAR and D-Fish, respectively. BFAR and D-fish are responsible for national-level project management and delivery of Component 2 and 3 (with contributions to Component 4); they will report to SEAFDEC.

BFAR and D-Fish will establish a national-level project management unit. (N-PMU) responsible for project management and execution of the activities in indicated in the Strategy and the Project Results Framework.

BFAR will recruit the following positions to the N-PMU: Project Manager, Project Development Officer, an Administration and Finance Officer, a Safeguards and Gender Specialist, and a project assistant. The BFAR N-PMU will subgrant to Coast4C for activities under Component 2 and Component 3.

D-fish will recruit the following positions to the N-PMU: a Project Manager, 2 project technical staff (one focused on Component 2/policy work, one focused on Component 3/seaweed value chains), a finance-admin officer, and a Safeguards/Gender/M&E Specialist. In Viet Nam, the N-PMU will work with Tri Tin company for pilot testing Caulerpa culture in nearshore waters, a potential expansion area for small producers.

BFAR will constitute a National Project Coordinating Committee to provide strategic direction to the project and ensure cross sector coordination. The members shall be high level officers engaged in program management and/or policy making at the agency and sectoral levels and, from the academic sector, in research and development on marine science.

In addition, two local coordinating groups, each one for Palawan and Zamboanga, will be organized by BFAR. These ?on the ground? coordinating committees will be composed of local officials, environmental officers and seaweed association leaders knowledgeable on the seaweed industry. They will carry out joint local stakeholders planning in line with Project objectives and strategies, promote local stakeholders? understanding of the Project objectives, strategies and outputs, and ensure local stakeholders? active and equitable representation in the Project plans and activities.

D-Fish will form a multi-sectoral Expert Working Group (EWG) to review Viet Nam?s National Seaweed Plan (NSP) and support stakeholder consultation and input from a diversity of public and private actors. Relevant Ministries and Departments will nominate their representatives in the EWG.

PROJECT STEERING COMMITTEE

A Project Steering Committee (PSC) will be formed to serve as the oversight, advisory, and support body for the project. The PSC will consist of a representative from the Ministry of Agriculture and Rural Development (VN), Ministry of Natural Resources and Environment (VN), Department of Agriculture (PH), Department of Natural Resources and Environment (PH), Seaweed Industry Association of the Philippines, and SEAFDEC. A representative from WWF-PH and WWF-VN and a member of the WWF GEF Agency team will hold an ?observer status? in the Project Steering Committee.

WWF GEF AGENCY

WWF-US, through its WWF GEF Agency will: (i) provide consistent and regular project oversight to ensure the achievement of project objectives; (ii) liaise between the project and the GEF Secretariat; (iii) report on project progress to GEF Secretariat (annual Project Implementation Report); (iv) ensure that both GEF and WWF policy requirements and standards are applied and met (i.e. reporting obligations, technical, fiduciary, M&E); (v) approve annual workplan and budget; (vi) approve budget revisions, certify fund availability and transfer funds; (vii) organize the terminal evaluation and review project audits; (viii) certify project operational and financial completion, and (ix) provide no-objection to key terms of reference for project management unit.

Coordination with other relevant GEF Projects

The project will coordinate with the following GEF-financed projects:

1. Implementing the Strategic Action Program for the South China Sea and Gulf of Thailand (UNEP; 2017-2023; GEF financing: $15 million). UNOPS and SEAFDEC are executing this project in China, Cambodia, Indonesia, Philippines, Thailand, Viet Nam. Its objective is ?to assist countries in meeting the targets of the approved Strategic Action Programme (SAP) for the marine and coastal environment of the South China Sea (SCS) through implementation of the National Action Plans in support of the SAP, and strengthening regional co-ordination for SCS SAP implementation.? The Inter-Ministry Committee (IMC) includes representatives from each of the countries. The project aligns well with the South China Sea SAP, which clearly identifies unsustainable aquaculture as a key threat to the SCS region (for example, on mangroves and seagrass, as well as coastal pollution).
2. Build on action plans of the Sulu?Sulawesi Marine Ecoregion, which includes the Philippines, Indonesia, and Malaysia. Outscaling the results of the project to this ecoregion would contribute to the marine biodiversity objectives of the SSME Conservation Plan.
3. Towards Sustainable and Conversion-Free Aquaculture in Indonesian Seas Large Marine Ecosystem (ISLME) (ADB; GEF ID: 10867; GEF financing: $4,449,542). This has two sub-projects: Shrimp in Indonesia and Seaweed in Timor Leste. The seaweed project is focused on ?increasing Post-harvest Capabilities to Enhance Seaweed Aquaculture Livelihoods in Timor-Leste.? The proposed project expects to apply the lessons from the Policy and Regulatory gap framework analysis undertaken by the Blue Horizon Project to generate policy recommendations including zoning, mooring, prevention of marine mammal entanglements, carrying capacity, etc. The projects will coordinate on international market engagement. The Blue Horizon Project can strengthen its own post-harvest and marketing aspects through a cross-learning arrangement with the Timor Leste sub-project, which advocates a market-oriented strategy and seeks to identify ways to amplify ecosystem services of seaweed aquaculture by generating better marketing conditions.
4. Coral Reef Rescue (CRR) (WWF; GEF ID: 10575; GEF financing: $7,000,000). This GEF project contributes to the Global Coral Reef Rescue Initiative (CRRI), a global multistakeholder partnership aimed at protecting the health of coral reef ecosystems in the face of climate threats. CRRI focuses on coral reefs identified through a global analysis as having substantially lower exposure to climate change stress due to local oceanographic conditions such as currents and upwelling. Areas prioritized for site-based action under the proposed CRR GEF Project include 8 municipalities in Palawan. These are near the Blue Horizon Project site on Green Island in Roxas town. The Project?s activities on marine spatial planning in Roxas could contribute to the CRR project by incorporating coral reef considerations and ensuring that seaweeds are placed in an ecologically friendly way (e.g. not intruding on coral reefs).

7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

This project is consistent, and provides support to, national seaweed development strategies and plans in Viet Nam and Philippines. In Viet Nam, the project provides direct support to the country?s Marine Aquaculture Strategy, which targets 400,000 MT of seaweed production by 2030, of which 100,000 MT will come from offshore operations. In the Philippines, the project contributes to development of the seaweed sector, a goal of the DA-BFAR Fisheries Roadmap. Seaweed aquaculture also contributes to the Sustainable Development Goals that both Viet Nam and Philippines have committed to, especially the environment, biodiversity, and climate targets.[1] At the regional level, the project is consistent with the

implementation of the South China Sea Strategic Action Programme, of which Viet Nam and the Philippines are signatories.

The project is consistent with the following national and regional strategies, plans, reports, and assessments under relevant conventions:

Country	Title	Relevance to Project
PH	Philippine Action Plan for Sustainable Consumption and Production[2][1] (Aligned with SDGs)	The Philippine Action Plan for SCP (PAP4SCP) is a guiding framework to influence and steer sustainable behavior and practices across sectors and levels of government by implementing policy reforms and set of actions over the period 2020-2040. Its goal is to increase the nation?s uptake of green products and services. The Project can contribute to the Action Plan?s sub-outcome of having national resources efficiently used and equitably allocated. It has a direct contribution to the intermediate outcome of increasing innovations and investments in green technologies and systems.
PH	National Adaptation Plan (NAP)[3][2]	Outlines a long-term program and strategies for adaptation and mitigation. In 2010, the Government of the Philippines released its National Framework Strategy on Climate Change (NFSCC). The framework stresses a balance between adaptation and mitigation, and laid the groundwork for the development of the National Climate Change Action Plan (NCCAP) for 2011? 2028. It has seven priority sectors for adaptation. Two of these are ecosystem and environmental stability and knowledge and capacity development.
PH	DA-BFAR Fisheries Roadmaps	BFAR?s seaweed industry roadmap (2016-2022) includes 3 components: (1) Improved/increased production; (2) organized seaweed farmers; and (3) promotion/commercialization of seaweed products.
PH	?Seaweed Industry Roadmap? of the Seaweed Cooperatives	The Seaweed Industry Roadmap 2016-2020 (recently updated for the period 2022-2026) focused on two major red seaweeds species, namely, Eucheuma and Kappaphycus. The roadmap was spearheaded (and updated) by BFAR; it is among the agriculture sector roadmaps of the Department of Agriculture. Three programs that have been implemented are training for farmers in good farming practices and production of climate-resilient species, training of seaweed farmers in entrepreneurial skills, and promoting community-based product champions. An important objective is to reduce the importation of raw dried seaweed for local processing.
PH	National Science and Technology Plan for Seaweed[4][3]	Includes milestones/targets for the decade, including interventions on research and development, promotion of technology transfer, policy, and capacity building.
VN	National Action Plan for The Implementation of the 2030 Sustainable Development Agenda[5][4]	Viet Nam?s commitment to the following sustainable development goals (2030) are relevant to this project: Eliminate hunger, ensure food security, improve nutrition, and promote sustainable agricultural development; Achieve gender equality; Ensure sustainable, comprehensive, and continuous economic growth; Ensure sustainable production and consumption; Sustainably conserve and utilize the ocean, the sea, and marine resources for sustainable development

VN	Marine economic development strategy to 2030, with a vision to 2045 (Marine Aquaculture Strategy)	? Viet Nam adopted a marine economic development strategy to 2030, with a vision to 2045 on 11 March 2021. This strategy gives a strong emphasis on sustainable aquaculture with an orientation towards industrial scale production. The strategy draws its conceptual guide from the Blue Economy. The Strategy?s development orientation for the aquaculture subsector relevant to the Project includes: ? Develop effective farming of aquatic species of certain economic value, associated with ecological environment protection, proactively adapting to climate change. ? Develop marine aquaculture into a commodity production sector, encouraging the development of industrial-scale aquaculture in open sea zones; creating a large volume of products for export processing and domestic consumption. ? Develop farming of microalgae and seaweeds to serve food needs and supply raw materials for other economic sectors (e.g. cosmetics, pharmaceuticals). Cultivating ornamental and recreational aquatic creatures and those used as handicrafts and pharmaceuticals to meet the needs of domestic and foreign consumer markets. ? Encourage the development of aquaculture models that apply new and advanced technologies, reduce production costs, are environmentally friendly, and adapt to climate change; organic and ecological farming models, applying certification standards for good aquaculture practices (GAP) for value enhancement and sustainable development. The strategy targets 400,000 MT of seaweed production by 2030, of which 100,000 MT will come from offshore operations.
Regional	ASEAN Joint Response to Climate Change[6]	An ASEAN Action Plan on Joint Response to Climate Change was adopted by the 12th ASEAN Ministerial Meeting on Environment held on 26 September 2012, to implement the ASEAN Leaders' Statement on Joint Response to Climate Change issued at the 16th ASEAN Summit in 2010. The Project contributes to the mitigation of climate change impacts on marine ecosystems as well as to community resilience to climate change risks.
Regional	ASEAN?s Blueprint for the ASEAN Socio-Cultural Community - Cooperation on Coastal and Marine Environment[7]	ASEAN?s Blueprint for the ASEAN Socio-Cultural Community (ASCC Blueprint) 2025 serves as the guiding mandate of the ASEAN Working Group on Coastal and Marine Environment. The Group aims to ensure that ASEAN?s coastal and marine environment are sustainably managed; representative ecosystems, pristine areas and species marine environment instilled. Among its 7 priority programmes to which the Project has direct contribution are: Coastal and Marine Pollution Mitigation (nutrients, marine debris, eutrophication etc.); Climate Change Issues and Impacts in Coastal Areas; and Integrated Coastal Management (ICM) and Marine Spatial Planning (MSP)
Regional	Strategic Action Program for South China Sea and the Gulf of Thailand[8]	The Strategic Action Program for South China Sea and the Gulf of Thailand (implemented by UNEP and GEF) aims to assist countries in meeting the targets of the coastal and marine environment components of the Strategic Action Programme for the South China Sea through implementation of the National Action Plans. The Project will have a direct contribution to Component 1: Reducing habitat degradation and loss via national and local reforms to achieve Strategic Action Programme targets for coastal habitat management in the South China Sea and Gulf of Thailand

[1] https://www.nature.com/articles/s41893-021-00773-9?proof=t
[2]https://sdg.neda.gov.ph/philippine-action-plan-for-sustainable-consumption-and-production-pap4scp/#:~:text=The%20Philippine%20Action%20Plan%20for,term%20(2030%2D2040).

[3] https://napglobalnetwork.org/wp-content/uploads/2018/02/Philippines-NAP-process-country-poster-Feb2018.pdf

[4] http://www.pcaarrd.dost.gov.ph/home/isp/images/matrices/seaweeds.pdf

[5]https://Vietnam.un.org/sites/default/files/2020-08/ke%20hoach%20hanh%20dong%20quoc%20gia_04-07-ENG_CHXHCNVN.pdf

[6]https://environment.asean.org/wp-content/uploads/2015/06/ANNEX-8-Lead-Countries-for-ASEAN-Action-Plan-on-Joint-Response-to-Climate-Change-27-March-2013.pdf

[7] ASEAN Cooperation on Environment. https://environment.asean.org/awgcme/
[8] https://scssap.org/about-us/scs-sap-implementation-project

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

The project?s knowledge management and communications strategy will ensure the knowledge products as well as the lessons, methods and tools related to their development are recorded, stored and shared with relevant stakeholders and users. They will also be disseminated to other sets of audiences that would have interest in the information. The communication strategy will include a mechanism for receiving feedback. Knowledge management and communication is tracked and budgeted under Output 4.2.1.

Lessons learned and best practices were assessed and documented during the PPG stage (see Section 3.8 in the Project Document, and Appendix 7).

Monitoring and evaluation reports The PMU will follow an M&E plan to monitor and report on project progress and identify any areas where adaptive management is required (see M&E section). Under Output 4.2.1, the PMU will produce a semi-annual Project Progress Report, which includes annual tracking against the results framework and work plan. A Project Implementation Report will be generated yearly by the WWF GEF Agency and submitted to the GEF Secretariat. An Annual Adaptive Management meeting will be carried out to review project results and discuss any necessary adjustments to the project strategy. A Midterm Evaluation will be conducted, and its report used as a basis also for determining adjustments in project strategy. A Reflection meeting will be organized before the project terminates to discuss exit and sustainability strategies. Finally, the Terminal Evaluation will be conducted and its report made publicly available by the PMU and the WWF GEF Agency.

Lessons learned, best practices, and challenges and how they were addressed will be captured from the national project implementation reports, training activities and workshops, and from stakeholders? statements at the annual Adaptive Management meetings. The knowledge developed will include lessons learned from the project that will incorporate feedback and experiences from the communities and other

local stakeholders. An overview report of the project?s achievements and the lessons and experiences from the processes that enabled their achievement will be written and disseminated widely.

Knowledge and Communication products

The PMU will develop and disseminate knowledge products that support the technical and policy-oriented outputs of the project. Among its knowledge sharing functions will be organizing regional workshops, seminars, exchanges, and participation in conferences and seminars. The Project will initiate, coordinate, undertake activities to produce the following knowledge and communication products:

Year 1

? Reports of the site assessments and site management plans
? Reports of the policy gap analyses.

Year 2

? Reports on the marine spatial planning, zoning and area management activities.
? Reports on the market studies of consumer products produced for the domestic markets
? Reports on the technical assessments of the pilot farms based on 3 crop cycles
? A prototype training manual for deepwater seaweed farming.
? Reports of seaweed aquaculture area management including conflict mitigation and risk management

Year 3

? Reports of the technical and economic performance assessments of the pilot seaweed farms based on 6 crop cycles (Kappaphycus) and 12 crop cycles (Caulerpa).
? Reports of value chain analyses of selected high value product forms.
? Report of the technical and economic performance assessments of bio-refinery systems
? Reports of feasibility studies of the production of three products by community enterprises.
? Investment model of a community-based bio-refinery (2)
? Training modules on best management practices.

Year 4

? Guide to Promoting Sustainable Seaweed Aquaculture in the SEA Region (1)

? Regional Principles of Responsible and Safe Seaweed Aquaculture (1)

? Toolkit to guide application of Principles in developing standards of safety as well as provide guidelines for updating or developing national codes of practice and industry best management practices (1)(1)

? Information package contributing to the development of standards of environmental safety, workers? safety, and product safety (1)

? Farming System Models of deepwater seaweed farms (PH -2; VN -2)

? Farming System Model of a nearshore Caulerpa small-scale farm (VN -1)

? Investment models of an SME engaged in value adding i.e. processing and marketing of consumer products (PH-3, VN-3)

? Package of good practices:

- o Manuals, Handbooks and Guidelines for Deepwater large scale seaweed farming (2)
- o Guidelines for providing and sustaining a Support System (enterprise management, association management, technical skills, value chain development) for seaweed farmer and processors associations or cooperative (2)
- o Guidelines for establishing and maintaining a seedbank for high quality seaweed propagules (1)

? National Seaweed Development Plan (VN) incorporating results of the project salient to policy, management and technical aspects of the Plan (1)

Knowledge product development and sharing

The knowledge products developed above will be packaged into formal, publicly available information products, adhering to SEAFDEC, WWF and GEF brand guidelines.

A public-facing website, hosted by SEAFDEC, will be developed for the project to ensure that the targeted stakeholders and interested parties have access to knowledge and communication products developed under the project. The PMU will report on the progress, challenges and how they were overcome, best practices, and lessons learned at key events, training, and workshops.

The communication and knowledge products will be shared directly with key stakeholders via methods defined in the Stakeholder Engagement Plan including.

Budget and Roles and Responsibilities

$159,125 has been budgeted to support knowledge management and communication products. The PMU in coordination with the National PMUs will validate the KM and Communications Strategy and Plan and finalize the timetable for initiating and completing the deliverables. A communication specialist (consultancy) will be recruited by SEAFDEC to support development of communication products and materials. He/she will capture knowledge from the regional and national level and package in a consistent way.

The production of information materials will be a collaborative work among the regional and national management units in planning the materials, collecting and assembling the data and information including assuring the relevance, validity and reliability of the information. Dissemination of the products at the regional and global levels will be the overall responsibility of the PMU. The National PMUs will perform this function at the national and local levels.

The full Knowledge Management and Communication Plan can be found in Appendix 3.

9. Monitoring and Evaluation

Describe the budgeted M and E plan

The project monitoring and evaluation plan has been developed in coordination with various stakeholders. The following reports will be delivered as part of the project?s monitoring and evaluation plan.

M&E/ Reporting Document	How the document will be used	Timeframe	Responsible
Inception Report	? Summarize decisions made during inception workshop, including changes to project design, budget, Results Framework, etc.	Within three months of inception workshop	PMU Project Manager /Technical Advisor and M&E Officer
Annual Work Plan and Budget (AWP&B)	? Plan activities and budget for each project year	Annual	PMU Project Manager/Technical Advisor
Quarterly Field Report	? Inform PMU PM on progress, challenges and needs of activities in field.	Every three months	N-PMU
Quarterly Financial Reports	? Assess financial progress and management.	Every three months	PMU F&A officer N-PMU
WWF Project Progress Report (PPR), annual Results Framework and workplan tracking.	? Document project progress ? Inform management decisions and drafting of annual workplan and budget; ? Share lessons internally and externally; ? Report to the PSC and GEF Agency on the project progress.	Every six months	PMU Project Manager/Technical Advisor, N-PMU
Project Closeout Report	? Based on the format of the PPR ? Summarize project results and overall outcomes to the PSC and GEF Agency.	One month after technical close	PMU Project Manager/Technical Advisor
Mid-term Project Evaluation Report	? External formative evaluation of the project; ? Recommendations for adaptive management for the second half of the project period; ? Inform PSC, GEF and other stakeholders of project performance to date.	Midterm	External expert or organization
Terminal Project Evaluation Report	? External summative evaluation of the overall project; ? Recommendations for GEF and those designing related projects.	Before project completion	External expert or organization

$350,220 has been budgeted for M&E.

Budgeted activity	Budget
BFAR (PH) will receive a subgrant to implement the M&E plan at the national level. This will cover staff time of the N-PMU staff time to monitor project results, including monitoring of safeguards and gender.	42,240
D-Fish (VN) will receive a subgrant to implement the M&E plan at the national level. This will cover staff time of the N-PMU staff time to monitor project results, including monitoring of safeguards and gender.	18,480
A mid-term and terminal evaluation have been budgeted as part of the M&E Plan (at $45,000 each)	99,000
An M&E specialist will be recruited by SEAFDEC Year 1 of the project to support a more detailed M&E Plan and methodologies, and setting up M&E systems for the Project Manager/Technical Advisor to implement throughout the life of the project.	33,000
40% of the SEAFDEC Project Manager/Technical Advisor?s time has been budgeted to M&E, as he/she will be responsible for overall monitoring of the project and delivering M&E reports according to the M&E Plan.	72,500
Annual reflection workshops with the full team, as well as workshops for developing the annual workplan, have been budgeted	36,000
Travel is budgeted for implementing the M&E Plan (monitoring missions, travel to workshops listed above)	49,000
Total	$350,220

The complete M&E Plan can be found in Section 2.7 of the Project Document.

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The project?s contribution to the ultimate goal of human well-being is the sum total of the environmental, economic and social benefits that it generates. The benefits are inter-related, and their synergy enhances the overall outcome.

Among the noteworthy social and economic benefits are the increased opportunities for the farming households, but especially the women who have a major participation in the family seaweed enterprise in Southeast Asia, to earn more; this contributes to their empowerment at the household and community levels. Empowerment enhances their opportunities and capacity to earn more income. Direct economic benefit comes from the improvement of farm household and community revenues from higher crop

productivity, higher production volume and better-quality farm product, small-scale production and sale of seaweed-based consumer products, and better access to market.

The synergy can be expressed thus: A healthy and resilient ecosystem can better support economic development and contribute to social cohesion and resilience. Economic development fosters social stability and provides a better platform for promoting social equity and gender equity. Social stability and equity are requisites of a conducive social climate, that encourages investments in economic development and environmental management. Economically developed communities tend to pay more attention and allocate more resources to improve their environment.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

The Project will Comply with WWF?s Environmental and Social Safeguards Framework (ESSF), as detailed in the Environmental and Social Safeguards Integrated Policies and Procedures (SIPP). The Project has been categorized as Category ?B? given that it is essentially a conservation initiative, expected to generate significant positive and durable social, economic, and environmental benefits. Any adverse environmental and social impacts are expected to be minor and site specific and can be mitigated.

Safeguards mitigation plans have been prepared for both Viet Nam and the Philippines. For Viet Nam, an Environmental and Social Management Framework (ESMF), including a Process Framework (PF), has been prepared. For the Philippines, an ESMF, including a PF and an Indigenous Peoples Planning Framework (IPPF), has been prepared. These ESMFS define procedures for managing the project activities? potential environmental and social risks and impacts.

The Project is required to comply with WWF?s Standard on Environmental and Social Risk Management, the Standard on Grievance Mechanisms, and the Standard on Stakeholder Engagement. The following standards below have been considered and if necessary, triggered.

Standard on Protection of Natural Habitats*:* This standard has been triggered as the project will support the creation for four seaweed demonstration farms, which will include small scale infrastructure and planting of seaweed propagules. No invasive species will be used. There is also the potential that the infrastructure could lead to marine mammal entanglement. Measures to avoid, minimize, and/or mitigate these risks to natural habitats have been incorporated into the ESMFs for both Viet Nam and the Philippines.

Standard on Restriction of Access and Resettlement: This standard has been triggered because the project will support marine spatial plans / provincial seaweed development plans for target sites. These development plans may include marine zoning restrictions, which might restrict access to fishing or other traditional uses. However, by making offshore farms, there should not be the same level of tenure issues as near-shore farms. The sites will be placed somewhere that avoids or minimizes access restriction. For both Viet Nam and the Philippines, the Process Framework, as part of the ESMF, details the mitigation measures for access restriction.

Standard on Indigenous Peoples: As a precautionary approach, this standard has been triggered as there are Indigenous Peoples present in the project areas for the Philippines. Local stakeholder meetings showed that there are two classifications of residents on Green Island, Roxas ? local residents (those born and raised on Green Island) and migrants (i.e., residents who came from other provinces or municipalities in Palawan. The Cuyunon is the largest ethnic group residing on Green Island (originally from the municipality of Cuyo in Palawan) and are also involved in seaweed farming. The Cuyunons are identified as one of the indigenous groups in Palawan, but unlike the other ethnic groups, they are well-integrated into communities and the whole province (i.e., have adopted the national system of governance). They have also become less and less distinguishable because they have long intermingled with residents from other municipalities in Palawan. In the two demonstration sites in Viet Nam, no indigenous peoples are present. An IPPF will be prepared as part of the ESMF for the Philippines.

Standard on Community Health and Safety: This standard has been triggered. Under Component 3, there will be four demonstration offshore seaweed farms. This might bring additional challenges like ensuring workers? wellbeing in demanding environments. Protecting the safety of employees and infrastructure might be challenging in difficult conditions and remote areas that are harder to reach and monitor from land. Mitigation measures to avoid or minimize these risks have been incorporated into the ESMFs for Viet Nam and the Philippines.

Standard on Pest Management: Seaweed farming does not require any inputs (pesticides), therefore the project is not expected to contribute to pesticide use or other relevant chemicals and this standard has not been triggered.

Standard on Cultural Resources: This standard is not triggered as the project is highly unlikely to have an impact on cultural resources.

Two Safeguards and Gender Officers will be hired for the Project; one in the National-PMU in Viet Nam, and the other in the National-PMU in Philippines. The Safeguards Officers will implement the ESMFs and conduct compliance monitoring, supervision, and reporting. The EAs will implement the ESMFs and associated monitoring, and where there might be gaps in capacity, the Safeguards Officer will build capacity through trainings and collaboration.

A project-level grievance mechanism will be developed in the first six months of implementation for both Viet Nam and the Philippines, in line with the guidance and principles established in the ESMFs. The WWF GEF Agency?s grievance mechanism will be available throughout the project lifecycle, and accessible to stakeholder and project-affected peoples.

The final ESMFs (including PFs and IPPF) and the Stakeholder Engagement Plans (SEPs), will be disclosed on the websites of the EAs for a 45-day public disclosure period and final documentation will be disclosed in country in a locally accessible manner for at least 45 days in order to issue the Safeguards Compliance Memo prior to Agency Approval.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
WWF GEF 10573_Blue Horizon Vietnam ESMF	**CEO Endorsement ESS**	
WWF GEF 10573_ Blue Horizon_Philippines ESMF	**CEO Endorsement ESS**	
Blue Horizon_Safeguards Categorization Memo	**CEO Endorsement ESS**	
ESS PIF pre-screen_Blue Horizon	**Project PIF ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Objective: Create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits										
	Core indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)	Area of seascape directly farmed under the project; area under implementation of project-developed MSPs and area management plans	Total size of the pilot farms in PH and VN Calculate total area of the pilot farms in PH and VN, and area under implementation of project developed MSPs / area management plans / provincial plans	BFAR and D-fish Project Staff	PH pilot farms MSP VN Pilot farms MSPs/ AMPs Provincial Plans	0 ha 0 ha 0	32 0 2 0 (2)	62 1500 15 365 (380)	92 1500 45 335 (380)	152 1500 100 280 (380)
	Core Indicator 6 Greenhouse gas emissions mitigated	Tons CO_2 assimilated by the pilot farms during project life	Estimated tons CO_2 assimilated per ton raw dried seaweed harvested x total harvests from all crop cycles.	BFAR and D-fish Project Staff	PH VN	0 mt 0 mt	14 0.17	84.00 71.60	120.0 95.5	195.0 95.5

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
	Core indicator 7 Number of shared marine ecosystems under new or improved management	Refers to the South China Sea (Viet Nam) and the Sulu Sea (Philippines)	The project will calculate increases in sub-indicator scores. If the score increases over the life of the project, the shared water ecosystem should be counted.	PMU				2		2
	Core Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment	Direct beneficiaries: all individuals receiving targeted support from the project. Targeted support is the intentional and direct assistance to individuals or groups who are aware that they are receiving that support and/or who use the specific resources	Count recipients of project support, such as training, workshops and seminars, and the provision of support mechanisms such as being organized into cooperatives/associations, being assisted to access input sources and markets, and direct engagement in seaweed demonstration farms and value-add initiatives.	PMU, BFAR and D-fish Project Staff	Total Female Male	0 0 0				15,000[1][5] 11,000 4,000

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
	Metric tons of nitrogen and phosphorus captured	Captured: seaweed absorption (from seaweed demonstration farms and those of the Project beneficiaries) of nitrogen and phosphorus	A methodology based on research results of UP MSI will be developed and applied for calculating the amount of nutrient sequestered.	BFAR D-fish Project Staff	Nitrogen (PH) Phosphorus (PH) Nitrogen (VN) Phosphorus (VN)	0 mt 0 mt 0 0	43 2 2.22 0.02	254 10 963 8.86	367 15 1,285 11.8	593 24 1,285 11.8
Component 1: Regional approach and capacity for seaweed value chains in SE Asia										

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Outcome 1.1 Regionally adopted plans and principles to harmonize seaweed aquaculture in SE Asia	Status of Regional Principles of Responsible and Safe Seaweed Aquaculture adopted and applied	Regional Principles of responsible and safe seaweed aquaculture (Product Safety, Environmental Safety and Operational Safety), aligned to Safe Seaweed Coalition <u>Adopting</u>: signed off and adopted by SEAFDEC member countries	Scale of 1 to 4 1 = No regional principles 2 =Principles and Toolkit under development to guide their application in the development of safety standards in place 3 = Principles and Toolkit drafted and validated by S-TWG 4 = Principles adopted by SEAFDEC Governing Council 5 = 2 countries apply principles in updating or formulating their codes, of practice and national standards	PMU SEAF-DEC BFAR D-Fish Project Staff	-	1	1	2	3	4

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
	Regional Seaweed Aquaculture Sector Management Guide and Seaweed Technical Working Group in place	Regional Guide: Guide for promoting a sustainable seaweed sector adopted/endorsed by SEAFDEC Council	Rating on a scale of 1 to 5: 1 = No regional Guide adopted or technical working group in place. 2 = Regional Guide under development and TWG being constituted. 3 = Regional Guide drafted and validated and TWG organized & mandated. 4 = Regional Guide adopted by SEAFDEC Council and TWG functional.	PMU		1	2	3	4	4
	# Participants successfully completing regional trainings	Successful graduates of the trainings	Post-training evaluation of participants? competence	PMU AQD	Modules Trainings conducted	0		100	200	200
Component 2: Enabling Environment for Seaweed Aquaculture in PH and VN										

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Outcome 2.1. Improved planning for seaweed aquaculture and capture of nutrients from the ocean	Number of Area Management Plans adopted	Area Management Plan, adopted by local government, for areas zoned for seaweed. Includes risk management plan and a conflict mitigation plan [2]	Area management plans developed, agreed by seaweed farmers operating in the Area, and adopted by local governments.	Project Staff BFAR/ Coast4C D-Fish	Total PH VN	 0 0		5 2 3		
Outcome 2.2: Robust institutional and regulatory frameworks ensure that expansion of seaweed farming is sustainable, responsible, and equitabl	# plans developed or updated in VN informed by (1) a policy and regulatory gap analysis and (2) the results of the project. In PH Municipal level regulations are informed by and aligned to	Refers to a national seaweed development strategy that contains policies, regulations, technical guidelines, and institutional arrangements that ensure a supportive enabling environment for the sustainable expansion of seaweed farming,	PH: Municipal level consultations on the applications at the local level of the Seaweed Industry Roadmap. Municipal ordinances issued based on the results of the consultations	BFAR Project Staff	PH	0				2 sets of municipal ordinances aligned with the Industry Roadmap in the two municipalities

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
e	Seaweed Industry Roadmap from local consultations.	responsible farming, and equitable participation in the value chains of farmed seaweed.	VN: Marine Fisheries Development Strategy adds a specific National Seaweed Development Plan	MARD/ D-Fish Project Staff	VN	1				Formulate 1 new strategy
Component 3: Seaweed Value Chains (production + processing + marketing)										
Outcome 3.1: Improved technologies and testing for seaweed value chains	No. pilot demonstration farms provide evidence of the feasibility of different seaweed farming options	Technology applied and production systems followed in the successful demonstration of a different seaweed farming options	Scalable Production System Models developed based on the overall performance of the pilot demonstration farms.	Project staff BFAR D-Fish	Total PH VN	0 0 0				6 2 4

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
in PH and VN	No. of value addition technologies are trialed, adopted by organized groups and assessed of their technical feasibility and economic viability Cumulative	Technical feasibility of the production technology and systems and economic viability of the products of the seaweed-based value addition enterprises.	Number of new products which markets have been accessed by the community.		Total PH VN	0 0 0			-	5 3 2

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Outcome 3.2: Generating benefits from seaweed aquaculture for target communities	No. of associations/ cooperatives of seaweed farmers and/or processors established or strengthened. Cumulative	Refers to formally establishing cooperatives/ associations according to national guidance/process	Count number of cooperatives established (with necessary national level paperwork). Count number of cooperatives strengthened through project supported trainings	Project staff BFAR D-Fish	PH VN PH	0 0 0	 3	1		1 3 1

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
	% targeted seaweed farming household report they have increased benefits from the seaweed farm and value addition initiatives. Benefits are: - Income - Empowerment - Capacity - Access to resources	Refers to the benefits generated through project supported activities, including demonstration farms and value- add enterprises and gained by farming households	Once seaweed demonstration farms/enterp-rises are operational, undertake annual assessments (end of Y2-4) to assess quantitative and qualitative changes in the benefits gained by each household in the project area; Compare to baseline to calculate % increase. A survey will be developed Y1 to assess benefits being generated for the target communities. The following categories will be assessed:[3] ? Income (%/$ change) ? Women?s empowerment ? Capacity ? Access to resources	BFAR/ Coast4C D-Fish Partners	PH VN By category	0	Baseline Survey done	10% increase in reported benefits from baseline survey, for 20% of HHs in project area	30% increase in reported benefits from baseline survey, for 40% of HHs in project area	50% increase in reported benefits from baseline survey, for 70% of HHs in project area

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Outcome 3.3: Expanded collaboration with the finance sector and private sector to support seaweed value chains in Philippines and Viet Nam	No. of commercial enterprises under Outcome 3.1 that receive funding (in part or full) by private sector $ in private sector co-financing contributing to the project or scaling up project results	Refers to the project leveraging the finance and private sector to access sources of financing, promote investments., scale up seaweed production and increase demand for seaweed biomass and finished products.	Count number of commercial enterprises that received funding from private sector. Calculate funding leveraged through co-finance commitment letters, assessing funded prospectuses	PMU BFAR/ Coast4C D-Fish	PH 0 VN 0					
Component 4: Knowledge Management and M&E										

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
Outcome 4.1: Full participation in IW:LEARN and knowledge management/ communication	GEF Core indicator 7.4: Level of engagement in IW: Learn through participation and delivery of key products	This indicator is based on a rating for the level of engagement in International Waters Learning Exchange and Resource Network (IW:LEARN).	Projects provide a rating on a scale of 1 to 4: 1 = No participation 2 = Website in line with IW:LEARN guidance active 3 = As above, plus strong participation in training/twinning events and production of at least 1 experience note and 1 results note 4 = As above, plus active participation of project staff and country representatives at IW conferences and the provision of spatial data and other data points via project website.	PMU SEAFDEC BFAR D-Fish		1	2	2	4	4

Project Outcome	Indicator	Definition	Method/ source	Who	Disaggregate	Base line	Targets			
							YR 1	YR 2	YR 3	YR4
	% implement-tation of communication plan	Communication plan: see Appendix 3.	Measure how many communication products are developed against communication plan (overall and validated each year)	PMU			100 %	100 %	100 %	100%
Outcome 4.2. Monitoring and evaluation system in place	% M&E plan implemented in a timely manner	M&E plan implemented: delivery of reporting documents in time (PPR, PIR, QFR, AWP&B, RF tracking, PCR), annual reflection workshop, Mid-term & Terminal evaluations	Reports produced from the conduct of the various project management activities and project milestones.	PMU			100 %	100 %	100 %	100%

1. Carbon= kg of biomass dry weight (A) x 27.5g C per kg DW (then convert to metric tonne)

2. Nitrogen= A x 370 g NO3 per kg DW (then convert to metric tonne)

3. Phosphorous= A x 3.402 g P per kg DW (then convert to metric tonne)

A = total dry weight (DW) of Eucheumatoid (Kappaphycus or Eucheuma) harvested. Convert wet weight to dry weight: 1 kg WW = 0.20 kg DW.

Note:

The conversion factors above are conservative estimates for eucheumatoids (not applicable for Caulerpa)

Assumption is that C, N, and P uptake happen only during the day (12hr daylight).

[1] Beneficiaries and participants of country projects: PH 7500; VN 6500; Beneficiaries and participants of regional level activities: 1000

[2] Based on provincial or local coastal and marine resources development plan, expansion areas are identified and assessed -- using biological, physical, environmental and social criteria ? for suitability to deepwater seaweed farming. Site specific development plans are formulated for the suitable sites. The result informs initiatives of other local governments in marine spatial planning, zoning, and aquaculture area development planning.

[3] Example sub-indicators to be assessed: Income from Seaweed farms; Income from value-adding enterprise; #families report increased income; # families report being empowered; #families report increased capacity; #families report having better access to resources; %increase in income; %increase in empowerment; %increase in capacity; %Increase in access to resources

Formula to calculate Carbon, Nitrogen (NO3) and Phosphorous sequestration by eucheumatoids

Source: Dr Michael Roleda, Marine Science Institute, University of the Philippines

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Council Comments

	Comment	Response
UK	We note GEF has to be careful that projects do not inadvertently appear to support territorial claims in disputed territories. Climate change and biodiversity are global issues and are not separated by political/geographical boundaries. The South China Sea is also a sensitive area although we do note that the project is flagged as ?international waters?.	The project sites will take place in the EEZ of the Philippines and Viet Nam, respectively. Activities will be in line with the South China Sea SAP.

Australia	Regarding the regional project in the Philippines and Viet Nam, we note that it is working in the South China Sea. Could you provide more information as to where in the South China Sea this project will be operating?	An initial agency response was provided. During project development, specific sites were selected. This includes: i. Green Island, Roxas, Palawan Province, Philippines ii. Buenavista, Zamboanga City, Zamboanga del Sur, Philippines iii. Ninh Thuan Province, Vietnam iv. Khanh Hoa, Province, Vietnam Coordinates and a map have been provided in the Portal and in the ProDoc submission (see Appendix 1). The sites in Philippines are along the Sulu Sea, and the sites in Viet Nam are along the South China Sea.

German y	Germany approves the following PIF in the work program but asks that the following comments are taken into account. Germany welcomes the proposal to work in the coastal and marine ecosystems of the Philippines and Viet Nam for the expansion of seaweed aquaculture and the respective value chains. The regional scope for relevance of expected results and impact beyond the two countries is comprehensible. Suggestions for improvements to be made during the drafting of the final project proposal: ? Germany suggests to seek cooperation and synergies with the ongoing bilateral cooperation between Viet Nam and Germany ?Working for a climate-resilient future for the Mekong Delta? which works on improving coastal zone management, climate change resilience impact, gender mainstreaming, regional coordination of investment planning, sustainable value chains for aquaculture products, and cooperation with the private sector and civil society to further develop value chains (https://www.giz.de/en/worldwide/73408.html). ? Germany suggests to consider what form of continuation the four planned demonstration farms can have, beyond the lifetime of the project, in order to continue to serve the purpose of capacity building for farmers and other stakeholders.	? In Viet Nam, the project will seek cooperation and synergies with the ongoing project ?Working for a climate-resilient future for the Mekong Delta.? While the Blue Horizon project is not working specifically in the Mekong Delta, the project plans to outscale to 10 provinces in Viet Nam. This will provide the opportunity for cooperation and leveraging between the two projects. In addition, as noted by Germany, given that similar topics are being addressed by both projects, the project will seek to promote cooperation and learning between the two projects. ? GIZ and their active GoV partners in the Mekong Delta project will be engaged and synergy sought in terms of the seaweed management plans and any inputs into provincial coastal planning processes The project will also share results in the Mekong Delta Forum in which coastal functional zoning is a major topic. ? The pilot demonstration farms for Kappaphycus will be turned over to the Cooperatives that will be organized during the project implementation that will take part in the farms? management and operation. The Caulerpa demonstration farms ? operated in cooperation with a private firm that pioneered Caulerpa farming and product processing -- and will continue to provide training and a source of technical advice as well as planting materials to farmers beyond the lifetime of the project. The pilots become the basis for scalability led by market incentives and drivers. The cooperatives will be established and, as evidenced with shrimp, will be self-sustaining (i.e. deriving economic benefits will be the way in which capacity building will continue). The expected new investments by EoP will themselves ensure continuation.

Norway / Denmark	General comment: ? Overall, this is a good project that aligns well with Vietnam?s marine economy priorities and taps into a potential resource of the country. Specific comments: ? Further elaboration on rationales for selecting Vietnam and the Philippines for this project and how they could complement or cooperate in this project; ? The mapping of the related projects should include on-going and upcoming projects on climate change, marine plastics and blue economy and how this project could cooperate and synergize; ? The role, division of work and labour among the project?s regional, national and local partners and stakeholders should be further spelled out. Private sector, sea culture associations and local NGOs should be given adequate attention; ? The risk mitigation should be improved as the overall risk assessed is from medium to high. There is also little or no assessment of potential risks negatively affecting crosscutting issues, especially with regard to environmental impact. Reference is made to assessments and methodologies for ecosystem carrying capacities and ASC & MSC seaweed standards with guiding principles for sustainable seaweed production. This is important but needs to be further assessed. ? Even though seaweed potentially could have many positive effects on food security and climate change, there are still large knowledge gaps attached to the potential negative impacts on the ecosystem from large scale seaweed production and will necessitate a more complete understanding in order to balance environmental risks with the benefits that seaweed cultivation projects can offer. Large amounts of seaweed biomass can lead to oxygen deficiency, changes in biodiversity and poor ecological condition. Large uptake of nutrients will be able to outcompete natural seaweed and algae growth which in turn can affect the basis of the food chain, fish stock and ultimately humans. Whether seaweed cultivation contributes to the unwanted spread of species, genes and diseases is currently largely unknown. ? The Scottish Association for Marine Science is an important partner in this regard. They have published work on the environmental risks associated with the development of seaweed farming, and identified potential risks, effects, mitigating measures and monitoring requirements with regard to seaweed cultivation (Addition of Artificial Material, Absorption of Kinetic Energy, Release of Dissolved and Particulate Matter, Habitat for Diseases, Parasites and	? The rationale for selecting the Project countries as well as the project sites (and the description of the sites) is found in Section 1.1 page 9 of the ProDoc. The Philippines and Viet Nam offer the context and experiences from which the Project can draw lessons that will be broadly applicable and relevant to the Southeast Asian Region. Their seaweed industries represent the range of social, economic, environmental and governance issues that the Project seeks to address. The knowledge management strategy includes sharing of experiences and lessons between the two projects and with other countries. ? A number of ongoing and upcoming regional (GEF and Non-GEF) projects have been identified for collaboration. These are noted in Section 1.6 of the ProDoc. In terms of marine plastics, the Project will build on ongoing programs by Coast4C and include an activity on collection and recycling of discarded fishing gears. Baseline initiatives on blue economy and climate change are also included in this section. ? The sections on Institutional Arrangement and Stakeholder Engagement (2.3 and 2.4 in the ProDoc) describe the roles and relationships among the various stakeholders (national, regional, local and global; government agencies, CSOs, INGOs, private industry associations, farmers? associations/cooperatives, Women?s Unions, and technical assistance agencies) at various stages of the project development, implementation, and post-implementation. ? The potential risks that could impact the project and the project sites ? social, biological, natural, economic ? have been identified, assessed, characterized and their mitigation measures described. The threats from climate change and the pandemic and the strategies and measure to manage the impacts are given special attention (see Section 3.5 of the ProDoc). There are views on both sides of the scientific establishment on the positive and negative impacts of large scale production of seaweed on the ecosystem. The latest on this is represented by this article: https://theconversation.com/kelp-wont-help-why-seaweed-may-not-be-a-silver-bullet-for-carbon-storage-after-all-178018 The Project will keep abreast of scientific

USA	? The USAID Protect Wildlife Program, which closed in December 2020, has supported three community-based organizations in southern Palawan and Zamboanga City with conservation-oriented seaweed production. We recommend that this project utilize the lessons learned from that work. ? When looking at adaptations and new technologies, we recommend looking at the negative impact of climate change on seaweed production, and its connection with ?ice-ice disease.? We also recommend exploring ?aged? seaweed in later iterations of the project to increase carbon sequestration.	? Lessons Learned from the ?Protect Wildlife Program? informed the preparation of the Project Document (please see Section 3.8 of the ProDoc). ? The climate change risk analysis carried out during Project preparation identifies mitigation measures including opportunities for seaweed farming to help communities adapt to the climate change impacts (Section 3.5 Table 16 of the ProDoc). One negative impact of climate change on seaweed farming is the rise in water temperature. This is addressed by siting seaweed farms in deeper and cooler areas. Ice-ice and other diseases as well as a rising seawater temperature are going to be addressed by the project?s sourcing of seedlings ? through partnership with research institutions and the establishment of nurseries of seaweed, with the technical assistance from the institutions -- that are bred for tolerance to these pressures. As to the potential of ?aged? seaweed for increased carbon sequestration, the prospect of harvesting the crops of Eucheumatoids (the species to be used in the pilot farms) very late could be economically unviable to farmers. The project will nevertheless explore this option.

STAP Comments

Comment

STAP Overall Assessment and Rating: Concur

STAP welcomes the Blue Horizon project from WWF-US to provide ocean relief through seaweed aquaculture.

The project has an excellent focus on a promising market opportunity for low-impact food production with strong environmental benefits, aligned with Blue Economy agenda. This includes potential to offset more environmentally harmful land-based food production systems.

It also offers an excellent opportunity for scaling market-driven solutions, with good prospects for driving increased private investment in target countries and beyond. The project includes investment to support innovative technology (off-shore production) and financing (carbon credit markets). It also follows the global analysis on siting farms and selection of technologies, which increases the project?s likelihood of success and scaling.

The theory of change provides good specification of how project outcomes respond to primary barriers. It provides clear logic with excellent benefits addressing climate change and biodiversity, in addition to economic and food-security benefits. There is a very good initial specification of quantified targets.

The project offers very good, specific and well-referenced identification of gender barriers, as well as positive trends to take these barriers into account. Among GEF projects, this is an unusually good opportunity to advance gender equality through employment and entrepreneurship at multiple stages of input provision, production, processing and trade. Even if the direct numbers of beneficiaries targeted are modest, the potential for scaling these benefits is much larger and merits attention.

Finally, the project does a good job identifying multinational private sector and foundation actors. However, stakeholder identification at the national and sub-national levels remains preliminary. Initial identification of roles is provided; however, this needs further development before CEO endorsement.

Question	**STAP comment**	**Response**
Is there a clearly-articulated vision of how the innovation will be scaled-up, for example, over time, across geographies, among institutional actors?	Yes, though additional detail on mechanisms for scaling, leveraging existing networks (SEAFDEC, Global Seaweed Coalition) would be helpful prior to CEO endorsement.	Thank you for your comment. Additional detail has been provided on the scaling and leveraging of existing networks (SEAFDEC, Safe Seaweed Coalition) in section 3.7 of the ProDoc and in the Portal submission.

Will incremental adaptation be required, or more fundamental transformational change to achieve long term sustainability?	This is a domain where incremental change is beneficial, but rapid scaling of the technology and value chains will require some degree of transformation in policy & regulatory environment and investment patterns.	The project will facilitate rapid scaling through a private sector and investor engagement strategy; develop business prospectuses and models for scaling the seaweed farms and value-add processing technologies; and support policy and regulatory environments (to zone for seaweed expansion; policies/regulations to support seaweed development in an environmentally and socially conscious way).
Project Map and Coordinates. Please provide geo-referenced information and map where the project interventions will take place.	Maps lack geo-coordinates and site or provincial-level detail.	Maps and geo-coordinates of the site and provincial level have now been provided in the Portal submission and Appendix 1 of the ProDoc.
Have all the key relevant stakeholders been identified to cover the complexity of the problem, and project implementation barriers?	Stakeholder identification at national and sub-national levels remains preliminary. Good identification of multinational private sector and foundation actors.	Key stakeholders at the national and sub-national levels have been identified and

What are the stakeholders? roles, and how will their combined roles contribute to robust project design, to achieving global environmental outcomes, and to lessons learned and knowledge?	Preliminary identification of roles provided; needs further development before CEO endorsement.	included in the project?s Stakeholder Engagement Plans. The Stakeholder Engagement Plans for the Philippines, Vietnam, and Regional level describe the roles and responsibilities of the global/regional, national and local stakeholders. It is submitted with the Project Document in a separate volume.
Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project?s control? Are there social and environmental risks which could affect the project?	Brief but adequate. Includes important issue of potential for conflict between small- and medium-scale producers, and effect on inequality. Climate risk screening technology is indicated but should be further elaborated.	The risks to the project have been expanded upon in the Portal and in the ProDoc (section 3.5). A detailed climate risk screening was developed during project development for Philippines and Viet Nam, the climate risk screening has been uploaded to the portal, and risks have been summarized in the ProDoc (section 3.5).
Have specific lessons learned from previous projects been cited?	Would be good to specify particular lessons learned prior to CEO endorsement.	Lessons learned have been identified and included in the ProDoc (summarized in Section 3.8, and detailed in Appendix 10)

What overall approach will be taken, and what knowledge management indicators and metrics will be used?	KM well integrated as component 4. Would be good to specify indicators and metrics for KM.	The KM plan has been developed further during project development, and includes metrics and an overarching indicator in the results framework.

GEF Secretariat Comments for PPG

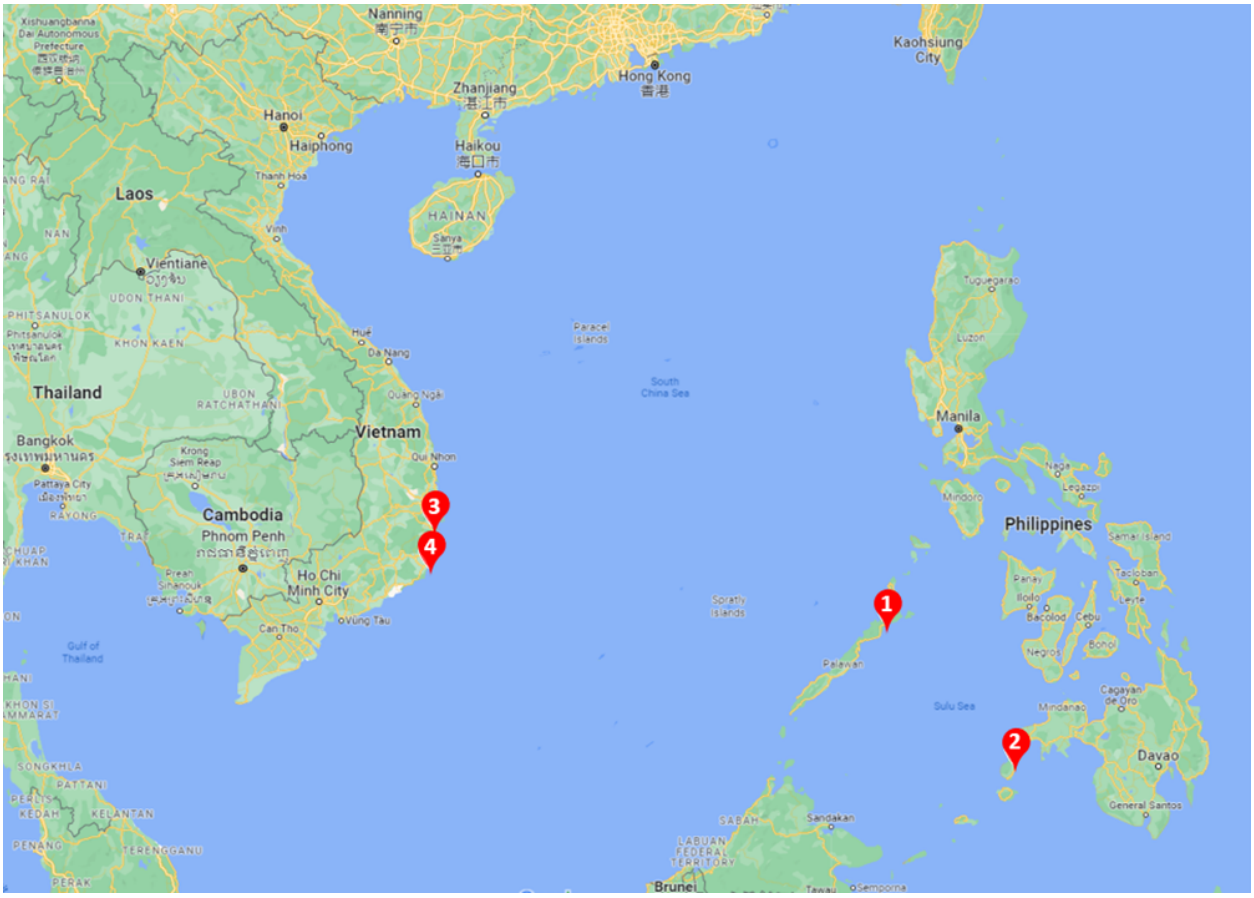
Comment	Response
Please be aware that at the time of CEO Endorsement, proof of the very large fraction of the cofinancing that has been listed as Private sector (~69% of the entire identified co-financing at PIF stage).	Co-financing has been confirmed and letters have been secured. This includes some private sector entities, including Brabender and Tri Tin Company. Additional private sector co-financing will be sought during project execution through a private sector and investment engagement strategy.

ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: $150,000			
Project Preparation Activities Implemented	***GETF/LDCF/SCCF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
Project Lead Consultant	40,000		40,000
PH National Consultant	20,216	6,000	14,216
PH Community Engagement and Gender Specialist	10,574	2,643	7,931
WWF Viet Nam ((covers national consultant, community engagement and gender consultant, policy specialist, seaweed specialist)	50,000	50,000	
WWF PH (covers honorariums for consultants, validation workshop, WWF PH focal point time)	15,231	7930	7,301
Safeguards consultant	11,000		11,000
Agency Approval	2,979		2,979
Total	**150,000**	**66,573**	**83,427**

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



Philippines Sites

Viet Nam Sites

PHILIPPINES
1. Green Island, Roxas, Palawan Province, Philippines
2. Buenavista, Zamboanga City, Zamboanga del Sur, Philippines

VIET NAM
3. Khanh Hoa, Province, Vietnam
4. Ninh Thuan Province, Vietnam

ANNEX E: Project Budget Table

Please attach a project budget table.

Blue Horizon: Ocean Relief through Seaweed Aquaculture
Project Budget by Output

Expenditure Category	Detailed Description	Budget notes and assumptions *footnotes below*	Component (USDeq.) TOTAL COMPONENT 1	TOTAL COMPONENT 2	TOTAL COMPONENT 3	TOTAL COMPONENT 4	Subtotal	PMC	Total Project	Responsible Entity (Executing Entity receiving funds from the GEF Agency)[1]
Grants/ Sub-grants	BFAR (PH)	1	$ -	$ 416,282	$ 1,731,546	$ 127,600	$ 2,275,428		$ 2,275,428	SEAFDEC
	D-Fish (VN)	2	$ -	$ 995,710	$ 1,179,233	$ 100,485	$ 2,275,429		$ 2,275,429	SEAFDEC
Total Sub-grants			**$ -**	**$ 1,411,992**	**$ 2,910,780**	**$ 228,085**	**$ 4,550,857**	**$ -**	**$ 4,550,857**	
Contractual Services – Individual	Translation services		$ -	$ -	$ -	$ 10,000	$ 10,000		$ 10,000	SEAFDEC
	Printing and design services		$ 10,000	$ -	$ -	$ 4,000	$ 14,000		$ 14,000	SEAFDEC
Total Contractual Services - Individuals			**$ 10,000**	**$ -**	**$ -**	**$ 14,000**	**$ 24,000**	**$ -**	**$ 24,000**	
Contractual Services – Company	Annual Financial Audit		$ -	$ -	$ -	$ -	$ -	$ 26,000	$ 26,000	SEAFDEC
	Website hosting@AQD		$ -	$ -	$ -	$ 400	$ 400		$ 400	SEAFDEC
Total Contractual Services - Company			**$ -**	**$ -**	**$ -**	**$ 400**	**$ 400**	**$ 26,000**	**$ 26,400**	
International Consultants	Midterm evaluation consultant		$ -	$ -	$ -	$ 49,500	$ 49,500		$ 49,500	SEAFDEC
	Terminal evaluation consultant		$ -	$ -	$ -	$ 49,500	$ 49,500		$ 49,500	SEAFDEC
	Consultant for output 1.1.2	3	$ 111,760	$ -	$ -	$ -	$ 111,760		$ 111,760	SEAFDEC
	Consultant for output 1.1.3	4	$ 108,680	$ -	$ -	$ -	$ 108,680		$ 108,680	SEAFDEC
	Consultant for output 1.1.4	5	$ 138,600	$ -	$ -	$ -	$ 138,600		$ 138,600	SEAFDEC
	IT Specialist	6	$ -			$ 39,600	$ 39,600		$ 39,600	SEAFDEC
	Communication Specialist	7	$ -			$ 39,600	$ 39,600		$ 39,600	SEAFDEC
	M&E Specialist to develop the M&E plan	8	$ -			$ 33,000	$ 33,000		$ 33,000	SEAFDEC
Total International Consultants			**$ 359,040**	**$ -**	**$ -**	**$ 211,200**	**$ 570,240**	**$ -**	**$ 570,240**	
Salary and benefits / Staff costs	Project Manager/Technical Advisor	9	$ 80,873	$ -	$ -	$ 72,500	$ 153,373	$ 21,627	$ 175,000	SEAFDEC
	Admin and Finance Officer	10	$ -	$ -	$ -	$ -	$ -	$ 90,000	$ 90,000	SEAFDEC
	Project Technical Specialist (AQD)	11	$ 48,000	$ -	$ -	$ -	$ 48,000		$ 48,000	SEAFDEC
Total Staff Costs			**$ 128,873**	**$ -**	**$ -**	**$ 72,500**	**$ 201,373**	**$ 111,627**	**$ 313,000**	
Trainings, Workshops, Meetings	Meetings for output 1.1.1 (at least 10 meetings)	12	$ 93,417	$ -	$ -	$ -	$ 93,417		$ 93,417	SEAFDEC
	Webinar for output 1.1.2 (1 time)	13	$ 10,000	$ -	$ -	$ -	$ 10,000		$ 10,000	SEAFDEC
	Webinar for output 1.1.3 (1 time)	13	$ 10,000	$ -	$ -	$ -	$ 10,000		$ 10,000	SEAFDEC
	Webinar and training for output 1.1.4	13	$ 8,000				$ 8,000		$ 8,000	SEAFDEC
	Meetings cost for Outputs 4.2.1 (Adaptive meetings: 2 onlines and 2 in-person)	14	$ -	$ -	$ -	$ 32,000	$ 32,000		$ 32,000	SEAFDEC
	Meetings cost for Outputs 4.2.1 (planing workplans before Adaptive meetings)					$ 4,000	$ 4,000		$ 4,000	SEAFDEC
Total Trainings, Workshpos, Meetings			**$ 121,417**	**$ -**	**$ -**	**$ 36,000**	**$ 157,417**	**$ -**	**$ 157,417**	
Travel	Travel of staff	15	$ 18,000	$ -	$ -	$ 28,000	$ 46,000		$ 46,000	SEAFDEC
	Travel of TWG, experts	16	$ 54,000	$ -	$ -	$ -	$ 54,000		$ 54,000	SEAFDEC
	Group Training (20 p/in-person course)	17	$ 72,000	$ -	$ -	$ -	$ 72,000		$ 72,000	SEAFDEC
	Annual Reflection meetings (2 times)	18	$ -	$ -	$ -	$ 20,000	$ 20,000		$ 20,000	SEAFDEC
	Annual meetings for reviewing work plan and budget	19	$ -	$ -	$ -	$ 16,000	$ 16,000		$ 16,000	SEAFDEC
Total Travel			**$ 144,000**	**$ -**	**$ -**	**$ 64,000**	**$ 208,000**	**$ -**	**$ 208,000**	
Office Supplies	Laptops (3 units)	20	$ -	$ -	$ -	$ -	$ -	$ 6,000	$ 6,000	SEAFDEC
	Printers (2 units)	21				$ -	$ -	$ 2,000	$ 2,000	SEAFDEC
	Desks (3 units)	22				$ -	$ -	$ 1,500	$ 1,500	SEAFDEC
	Chairs (3 units)	23				$ -	$ -	$ 600	$ 600	SEAFDEC
	Server (1 unit) @AQD					$ 2,000	$ 2,000		$ 2,000	SEAFDEC
	Air con (1 unit)					$ -	$ -	$ 1,000	$ 1,000	SEAFDEC
	Other office supplies	24	$ -			$ -	$ -	$ 1,000	$ 1,000	SEAFDEC
Total Office Supplies			**$ -**	**$ -**	**$ -**	**$ 2,000**	**$ 2,000**	**$ 12,100**	**$ 14,100**	
Other Operating Costs	Sundry (communications, postage, copies, freight, clearance charges, etc)	25	$ -	$ -	$ -	$ -	$ -	$ 1,542	$ 1,542	SEAFDEC
	SEAFDEC Operating Costs (rent, HR, legal)		$ -	$ -	$ -	$ -	$ -	$ 134,446	$ 134,446	SEAFDEC
Total Operating cost and other costs			**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 135,987**	**$ 135,987**	
Total			**$ 763,330**	**$ 1,411,992**	**$ 2,910,780**	**$ 628,185**	**$ 5,714,286**	**$ 285,714**	**$ 6,000,000**	

Budget Notes and Assumptions

1 BFAR subgrant will cover activities under Component 2, 3, and 4 in the Philippines. This includes personnel to undertake the technical components, a subgrant of $300,000 to Coast4C to support transparency and marine spatial planning processes in Roxas, $856,000 to establish/operate/monitor the offshore seaweed farms and value-add initiatives (value-add initiatives to be selected during execution, see ProDoc for process and list of eligible activities), trainings and workshops (including developing a new cooperative and strengthening an existing cooperative), and implementing activities related to safeguards and gender.

2 D-Fish subgrant will cover activities under Component 2, 3 and 4 in Viet Nam. This include subgrants and works to establish 4 seaweed farms, biorefinery systems (with an additional 80% coming from private sector co-financing), and an aquaculture seedling service center for better propagules. It will also include budget to establish an information management system under Output 2.2.2, local consultants to support various outputs (including marine spatial planning, national seaweed plan, policies and regulations, bankable business propositions, seaweed toolkit, cooperative development, value-add initiatives), budget to implement safeguards measures and support communication products and knowledge sharing at the national level, budget for staff to support the technical components, workshops and trainings (including participation in SEAFDEC hosted meetings, IW:LEARN, and meetings/workshops with local and national government and seaweed farmers), and travel to project sites and for regional/global meetings (e.g. IW: LEARN).

3 Consultant budgeted a for 247 days

4 Consultant budgeted for 247 days

5 Consultants budgeted for 120 days (3 modules)

6 Consultant budgeted for 120 days

7 Consultant budgeted for 120 days (over 4 years)

8	The M&E Specialist will be recruited for 2-3 months of time, Year 1 of the project. He/she will help establish detailed M&E methodologies with project partners and set up a robust M&E system, which the Project Manager will then implement for the remainder of the project.
9	The Project Manager/Technical Advisor position will be a fixed-term, full-time position. The budget is inclusive of salary and benefits. Six months are included for start-up/close out (total of 54 months budgeted). The Project Manager/Technical Advisor will spend 12.5% time on project management, 41.5% time on monitoring and reporting, and 46% on Technical Delivery under Component 1. A TOR is included in Appendix 5.
10	This will be a fixed-term, full time position. The budget is inclusive of salary and benefits. Six months are included for start-up/close out (total of 54 months budgeted).
11	This will be a fixed-term, full time position. The position is budgeted for 4 years.
12	Meeting costs including meeting materials, daily subsistence allowance, accommodation cost of participants, meeting venue, and meals and coffee break
13	Webinar costs include meeting costs, publication and distribution of materials, food and coffee breaks for project staff at SEC, AQD, PMU and other incidental expenses (e.g. upgrade zoom meeting to webinars, etc.)
14	In person meetings include costs related to meeting materials, daily subsistence allowance, accommodation cost of participants, meeting venue, and meals and coffee break. Webinar costs include food, coffee breaks
15	Output 1.1.1 (2 staff for 5 roundtrip tickets within regional are budgeted); Output 1.1.4 (2 staff for 4 roundtrip tickets within the region are budgeted); Output 4.1.1 (1 staff for 3 roundtrip tickets are budgeted); Output 4.2.1 (2 staff for 4 roundtrip tickets are budgeted). May include all flights, buses, trains, vans, cars, taxi, terminal allowance, fuel, DSA, accommodation visa
16	Output 1.1.1 (15 experts for 10 roundtrip tickets are budgeted); Output 1.1.4 (2 staff for 6 roundtrip tickets are budgeted) include flights, buses, trains, vans, cars, taxi, terminal allowance, fuel
17	Output 1.1.4 (60 trainees for 60 roundtrip tickets are budgeted, travel will be regional including local transportation for visit the sites (rental cars, vans, boats, etc.), DSA, accommodation, training package and trips
18	Travel for [15-20 participants for 40 roundtrip tickets for 2 in-person meetings are budgeted) include flights, buses, trains, vans, cars, taxi, terminal allowance, fuel, DSA accomdations
19	Travels for 2 project staff during the years for reviewing, budgeting and planning before Annual reflection workshops is budgeted for 4 years, DSA, accommodation
20	3 laptops are budgeted (for PM, F&A Officer, and Technical Specialist) @ $2,000 each
21	2 printers are budgeted (1 for SEAFDEC HQ and 1 for AQD) @ $1,000 each
22	3 desks are budgeted (for PM, F&A Officer, and Technical Specialist) @ $500 each
23	3 chairs are budgeted (for PM, F&A Officer, and Technical Specialist) @ $200 each
24	Office supplies (e.g. small meeting table (PMU), ink cartridge, headset and camera and equipment for online meeting, lockers, external harddisks, licenced software, shelve for safe, pocket wifi, extension, paper, paper clip, staple, pen, pencil, stationaries, folders, shelf, etc. for PMU and Technical Specialist @ AQD.
25	bank fee, zoom, internet, postage, copies, freight, clearance charges, etc.

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).