

Kellogg Morgan Stanley Sustainability Challenge

SeaLess Plastic Fund

Investment Proposal: Our fund addresses the plastic waste issue and seaweed supply challenges in the Indonesia. Our proposal seeks to help the seaweed industry meet the growing demand for seaweed while enabling businesses transition to this bio-degradable, ecologically friendly, and job-creating material.

Challenge

According to the Borgen Project, Indonesia contributes around 11.2% of all the plastic waste in the ocean each year making it the world's second largest plastic polluter after China. Most recently, Indonesia reportedly produced around 9.52 million tons in 2019 marking a nearly doubling of the plastic waste it produced in 2010 when it was estimated at 5.05 million according to Indostats.

Being the largest archipelagic country, the majority of Indonesia's population (80%) relies its coasts for food fish. Indonesia produces 24,500 tons of plastic waste daily, with the majority ending up polluting its rivers and coasts. Therefore, plastic pollution poses a significant human health risk towards the 273.5 million Indonesians (as of 2020), of which 56.7% live in an urban area.

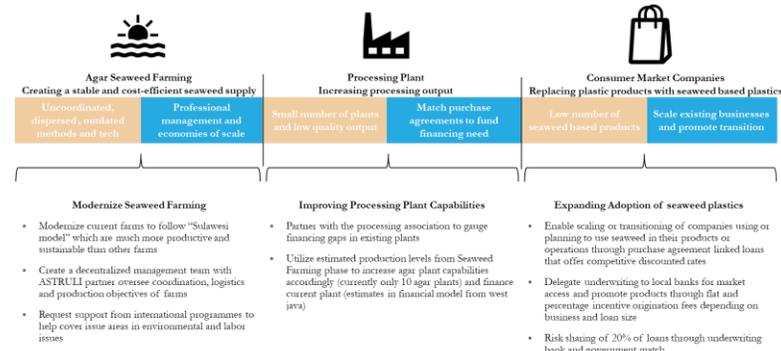
Aiming to mitigate against this ecological and health hazard, seaweed-based bioplastics have been touted as one of the most viable alternatives as they share many of the valuable properties of plastic but are also bio-degradable (naturally decomposed) and low resource intensive.

Alternatives	Carbon Sequestration	Requires Land	Requires Freshwater	Human Toxicity
Plastic Bags	✗	✓	✓	✓
Crop-based Bio-plastic	✗	✓	✓	✓
Seaweed based Bio-plastic	✓	✗	✗	✗

However, costs associated with the underdevelopment of the domestic seaweed industry paired with high export demand have made the material unaffordable for the local economy. With the exception of South Sulawesi, whose production eclipses the aggregate of remaining production regions, the lack of unified farming practices, harvesting protocol, post-harvest processing control render supply vulnerable to volatile pricing, climatic shocks, inconsistent quality. In addition, downstream final products and operations also require affordable financing as businesses seek to transition into using seaweed-based bioplastics.

Investment Overview	
Fund Type	Multi-Asset Income Fund
Fund size	\$4.6 million
Allocation	85% Fixed Income, 15% Private Equity
Target Geography	Indonesia – (Banten and Jakarta West regions)
Investment Period	7 years
Revenue Streams	Sales from red seaweed, Loan yields and purchase agreements
Target Return	11% IRR (22% Average Annual Yield)
Target Impact	
Fees	Management Fees, Origination Fees, Seed Funding
Target Investor Profile	Development Funds, Family Foundations
Partners	ILO International Programme Office (UN), UN Environmental Programme (UN), Indonesia Seaweed Industry Association (ASTRULI), Ministry of Trade (Indonesia Government)

Innovative Solution



Proposed investments seek to improve the reliability and stability in seaweed supply market through collection operations in an LLC and help the finance transition or scaling of businesses through an innovative purchase agreement linked loan instrument called "SeaLess Plastic" (SLP) Loans.

LLC would be a joint partnership with ASTRULI, a seaweed industry association, and local government, who already pledged investments in seaweed farming operations and collect, dry, store and sell seaweed. Operations would be strategically executed so as to coordinate annual harvests and help farmers learn the "Sulawesi farming model" compensating those who follow advice with stable and annual seaweed purchase agreements pledged by "Blue Loans"

Sealess Plastic Loans	Rate	Purchase Requirement	Target Borrower	Purpose	Additional Details
Out of Blue	6.50	Not Applicable	Transitioning Companies (penalty)	Quicker repayment and redeployment of loan	Borrowers who fail to renew purchase agreements
Blue	5.50	Purchase agreement within 2 Months	Transitioning Companies	Ease transition with discount and deferred agreement	Turns to True Blue once purchase agreement executes
True Blue	4.50	Minimum Purchase agreement	Seaweed Integrated Companies	Scale companies with seaweed-based products/ops.	Turns Out of Blue until purchase agreement renewed

The SPL Loans would be underwritten by local banks who would earn an origination fee that is flat for small loans and a percentage for medium to large loans. They would be liable for 10% of loan and matched with a 10% government guarantee offering a 20% insurance on any defaults ensuring rigorous due diligence in underwriting process. The loans would be priced at an annual basis with interest linked to purchase agreements that are automatically renewed at the end of each month. Companies would receive their starting rate based on the date they commitment to agree to buy seaweed. For companies looking to transition to seaweed, they would be eligible for the Blue rate contingent on purchasing within 2 months which would decrease to True Blue rate once fulfilled. Any failure to renew purchase agreement would increase rate to Out of Blue until it is renewed or loan is repaid.

To the right, there is an illustration of a transitioning business who wants to finance its transition to seaweed-based products. While not eligible for the True Blue rate, the borrower can get the Blue rate and use discounted loan to fund transition and begin purchases within 2 months.

	Month 1	Month 2	Month 3
Rate	Blue	Out of Blue	Out of Blue
Purchase Agreement	Waived	Waived	Purchase

Impact Metrics



Seaweed based Plastics outcompetes every alternative on the market. As a form of extractive aquaculture, seaweed-based bioplastics not only rid the market of single use plastics but also provide Indonesia a solution towards reducing carbon emissions and coastal eutrophication while providing higher food and economic security.

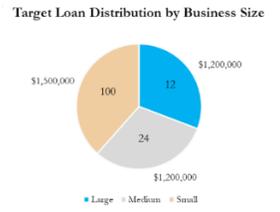
Completely reliant on saline or brackish water, seaweed-based bioplastics do not require scarce freshwater resources. Gracilaria's flexibility towards pond and open-water cultivation releases huge potential areas for cultivation without infringing on limited cropland. In addition, co-cultivation with shrimp or freshwater fish in ponds could mitigate eutrophication while maximizing space.

Financial Model

Collection and SeaLess Plastic Loans 7-Year Net Revenue (USD Thousands)



Year	Collection	SeaLess Loans	Annual Total	Target Loan Distribution by Business Size
0	\$ (700,000.00)	\$ (3,900,000.00)	\$ (4,600,000.00)	
1	\$ 91,400.00	\$ 574,264.10	\$ 665,664.10	
2	\$ 106,000.00	\$ 746,543.33	\$ 852,543.33	
3	\$ 135,200.00	\$ 803,969.74	\$ 939,169.74	
4	\$ 154,666.67	\$ 918,822.56	\$ 1,073,489.23	
5	\$ 154,666.67	\$ 1,033,675.38	\$ 1,188,342.05	
6	\$ 154,666.67	\$ 1,091,101.79	\$ 1,245,768.46	
7	\$ 154,666.67	\$ 1,125,557.63	\$ 1,280,224.30	
Time Horizon Total	\$ 951,266.67	\$ 6,293,934.53		
IRR		11%		



Collection estimates are based on low to high estimated production levels from 60 farms derived from similar projects and at a selling price of .60 cents per kg. (Net Margin of .20 cents)

Yield estimates are based on 136 loans fully amortized annual loans at the "Blue Rate" distributed based on business size with the largest concentration (74%) on small businesses. No reinvestment is considered.

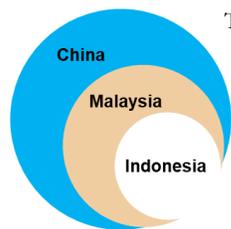
Risk Management

Financial	Operational	Legal
<ul style="list-style-type: none"> The fund would be insured through a government and underwriting bank guarantee for 20% of principal increasing risk adjusted return Distressed loan officer would be housed in LLC and serve to restructure distressed loans and collect guarantees Annual structure of loans allows for servicing of businesses who might lack depth in their credit history allowing a larger deployment of loans 	<ul style="list-style-type: none"> Partnership with industry association ASTRULI allows fund to tap into established networks of farmers and processing plant increasing credibility and buy-in in the industry Delegating underwriting to local banks ensures market penetration and deployment of funds as local banks tap into already existing or identified relations Collection in around 60 farms spreads the risk of not meeting production objectives and storage allows reserves to make up any below average production 	<ul style="list-style-type: none"> Partnership with international organization and government ensures transparency in project through multichannel reporting Working with local banks and businesses helps government become interested and want to help in project in terms of compliance and risk sharing Only accredited banks would be allowed to sell SeaLess Plastic Loans ensuring best practices are done in underwriting process

Addressable Market

With the current annual growth rate of 1.07%, Indonesia is expected to have 305.7 million citizens in 2035 and an urban population of 66.6%. The population has a high annual consumption of 700 plastic bags per capita which government is attempting to curb with taxes, bans and civic campaigns creating a demand for a seaweed-based bioplastic. For example, in the 2017 World Ocean Summit Declaration, the government committed to spend \$1 billion annually on the reduction of plastic waste in order to achieve its goal to reduce plastic waste in its water by 70% within 8 years. Additionally, taxes of Rp 200 on plastic bags or Rp 30,000 on plastic per kilogram were finalized since the end of 2019. In tandem, there is a concurrent policy focus on alleviating pressures on Indonesia's coastal sustainability with seaweed farming being promoted by the government as an alternative environmentally friendly livelihood overfishing. Coupling Indonesians' high demand for plastic and the government's efforts to reduce plastic pollution and promote the seaweed farming sector, Indonesia is an ideal market for biodegradable plastic substitutes.

Scalability



The first SeaLess Plastic fund focuses near one out of 10 processing plants as a starting point. Thus, this strategy could be scaled across Indonesia near other processing plants. Outside of Indonesia, the fund can target nearby nations such as Malaysia which shares many similarities with the Indonesia. Later iterations of the fund can target China, who is already one of the world's largest producers of seaweed and is trying to curb its plastic waste levels which amount to 59.08 million tons annually, 74% of which are inadequately managed. In all, the SeaLess Plastic fund would be easily scalable within Indonesia and nearby countries and ultimately China who shares a similar high plastic demands as well as the geographical and climatic similarities.

Investor Appeal

Size of the investment, target impact, and income fund allocation would make this opportunity particularly appealing for development funds and family foundations whose have a low risk appetite. In particular, foundations and family offices whose impact non-financial goals are addressed by the Fund.

IRR 11%



6 SGD\$