

Methane Minus Fund

Multi-asset solutions for financing technological advancement and agricultural operations in the growth of *Asparagopsis Taxiformis* and the production of cattle feed, in order to reduce methane emissions in animal husbandry while also addressing climate change and poverty concerns.



Challenge

According to the Emissions Gap Report 2021, global non-CO₂ emission levels grew by 29% between 1990 and 2015. In 2030, the annual emission volume is estimated to reach 14,031 MtCO₂e. Methane (CH₄), in particular, contributes more than 60% of the total volume.

Among major sectors, agriculture is the primary source of anthropogenic non-CO₂ emissions, representing about 40% of total CH₄. Notably, cattle production is responsible for a predominant tranche of the agricultural global warming footprint, especially CH₄ emissions as a byproduct of cattle's digestive process. To curb methane emissions, over 100 countries have signed the Global Methane Pledge at COP26 to cut emissions by at least 30% by 2030.

While CH₄ is substantially more potent than CO₂ in trapping heat, the urgent need of CH₄ mitigation is called upon as an alarming rate of emission growth continues. A key contributing factor is the beef production, anticipated to rise by 88% between 2010 and 2050.

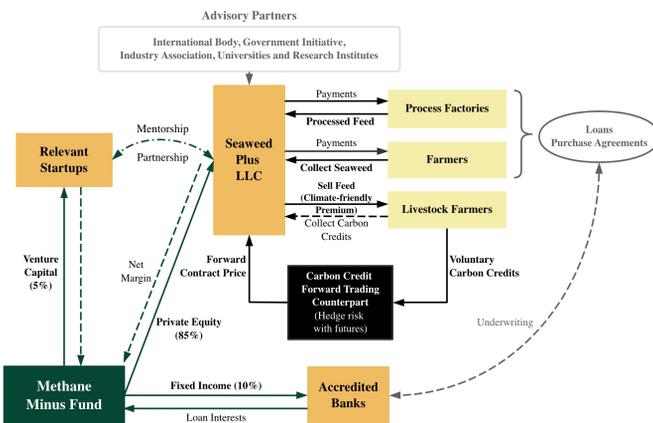
Opportunity

In 2014, James Cook University researchers demonstrated that feeding ruminant animals a diet containing a small amount of the red seaweed *Asparagopsis Taxiformis* (AT) induces unprecedented enteric methane mitigation, and that feeding less than 1% (100 g/day or less) AT results in a dramatic 90% reduction in methane emissions. Later in 2020, researchers discovered that the seaweed ingredient can even boost cattle production productivity. However, there is one significant barrier to widespread adoption of such an innovative solution: commercializing red seaweed production.

Probing into the feasibility of large-scale productions, we discovered that several startups from the United States, Europe, and Australia are in the process of developing advanced cultivation technologies, whereas China is already sophisticated in traditional seaweed aquaculture due to its long farming history. Surprisingly, evidence of existing AT cultivation by smallholder farmers in Zhejiang, China emerged, demonstrating the viability of increasing production. The most pressing challenge now faced by production expansion in China, as well as technological advancements in other developed countries, is a lack of financial capital. Consequently, we are here to help.

Fund Diagram

Our portfolio includes VC, PE, and FI investments, which promote technological advancement in production while also encouraging local farmers in China to expand their AT cultivation.



Target Market

Target Geography – Europe (EU27) cattle production industry

- The EU led the initiative to cut methane emissions by at least 30% by 2030 at COP26
- The EU is a major producer of beef and veal
- The EU is at the vanguard of ESG measures

Market Size

We assumed a moderate first-year penetration rate at 0.2% due to a hypothesis implying a slow rancher acceptance of the new feed additive, gradually growing into 1% of the total market in year 10.

As of Year 1 (2023)	Europe (EU27)
Seaweed Feed Additive Unit Price/Mt	\$5,000
Total Heads of Cattle Supply	101,347,000
Annual Seaweed Additive Consumption in Mt/Head	0.04
Total Addressable Market (TAM)	\$20,269,400,000
Penetration Rate	0.20%
Serviceable Obtainable Market (SOM)	\$40,538,800



Scalability

Following trials in the EU market, the fund can benefit from scaling to enter other regional markets such as Japan and California, U.S., which are at the forefront of methane mitigations.

As of Year 1 (2023)	Total Addressable Market (TAM)
Japan	\$1,043,000,000
California	\$1,030,000,000

Fund Profile

Investment Profile

Fund Type	Multi-Asset Fund
Investment Geography	China, European Union
Fund Size	\$50 Million
Target Leverage	10:90 (debt : equity)
Fund Life	10 Years
Asset Classes	Private Equity & Fixed Income
Target ROI	20%
Fees	2% Management Fee (Committed Capital) 20% Incentive Fee (5% Hurdle Rate)
Target Investors	Investment Bank, Endowment Development Finance Institution
Minimum Investment	\$1 Million (Accredited Investors)

Target Return on Investment

Asset Classes	Investment Object	Allocation	Expected ROI
Fixed Income	Chinese Bank Loans	10%	3.03%
Private Equity	Seaweed Plus LLC	85%	24.04%
Venture Capital	Relevant Startups	5%	13.00%
TOTAL			21.39%

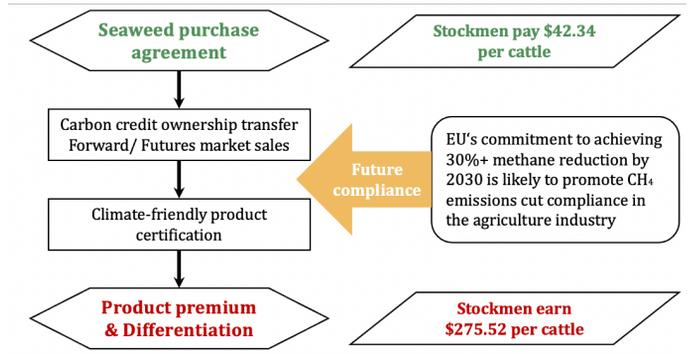
Investment Structure

Our multi-asset portfolio contributes to the optimization of the farming value chain using the framework outlined below, with the goal of creating a more sustainable agricultural landscape.

Private Equity (85%)

The majority of our fund would be directed to Seaweed Plus LLC, which would be wholly owned by the fund and would operate to support AT-integration into the farming value chain. During the course of the business, Seaweed Plus collects raw AT from local farmers in China, transports it to processing plants, and sells the finished product to European stockmen for use in feeding their cattle.

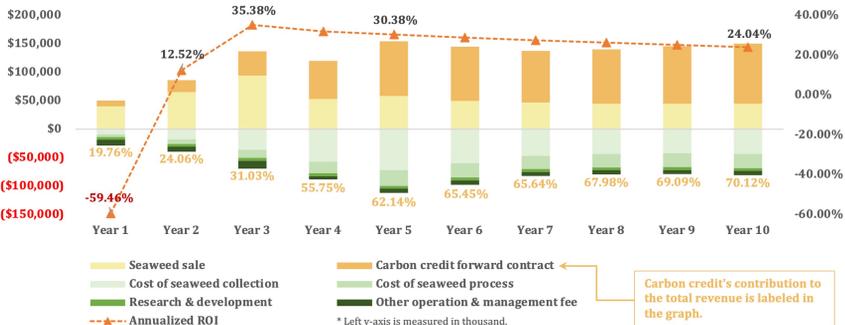
Stockmen are motivated to incorporate AT into feed because their livestock products may sell at a higher price due to climate-friendly certification. Seaweed Plus helps initiate carbon offset projects to collect, verify and trade reduced emissions as Voluntary Carbon Credits in Forward contracts with companies in need of carbon offset.



Income Statement in Specified Years

Seaweed Plus LLC	Year 1 2023	Year 2 2024	Year 10 2032
Seaweed sale	40,539	65,870	45,053
Carbon credit forward contract	9,982	20,868	105,713
Total net sales	50,521	86,737	150,766
Cost of seaweed collection	(9,141)	(17,762)	(43,178)
Cost of seaweed process	(4,155)	(7,689)	(24,861)
Carbon credit-related fee	(150)	(50)	(50)
Research & development	(5,000)	(5,000)	(5,000)
Other operation & management fee	(10,104)	(8,674)	(7,538)
Total expenses	(28,551)	(39,176)	(80,627)
EBITA (Operating income)	21,970	47,562	70,139
Tax (VAT and Tariff)	(4,394)	(9,512)	(14,028)
Net Income	17,576	38,049	56,111
NPV of return	(25,269)	11,303	323,868
Annualized ROI	-59.46%	12.52%	24.04%

Ten-year Financial Performance



Fixed Income (10%)

Directed to Chinese domestic banks, FI investment promotes AT farming transition and global business expansion by underwriting loans (0.5% Origination Fee) to farmers and processing plants at below-market rates. The farmers' willingness to sell the AT feed and form a long-term partnership determines the loan level.

Level	Allocation	Rate	Seaweed Sold Requirement	Target Borrower	Return on Interest
A	15%	SOFR + 3.0%	long-term contract (3-5 years)	long-term partnership with process plants and AT farmers	2.5%
B	75%	SOFR + 3.5%	quarterly fixed sales agreement	most individual AT farmers	3.0%
C	10%	SOFR + 4.5%	fail to sell the seaweed to LLC within one year	transitioning farmers	4.0%

Venture Capital (5%)

The smallest part of our portfolio is devoted to startups focusing on technological development to improve efficiency in AT growth and large-scale production.

Scenario	Probability	Return
IPO	0.30%	1000%
M&A	2.00%	500%
Fail	97.70%	0%
TOTAL		13.00%

The capital invested is used to promote agricultural industry innovation while generating a potential return. Because the AT farming and feed market is still in its early stages and the fund has a narrow industry focus, we assume a conservative possibility of generating a superior return through ordinary exit options.

Target Investors



Our potential LPs usually finance enterprises and intermediaries that result in long-term growth and sustained benefits to communities, with some of them focusing specifically on the Agri-tech industry. Typical investors include:

- Traditional investment bank
- Development finance institution
- Thematic VC
- Family office
- Foundation
- Endowment

Impact

Environmental Impact

Addresses frequently overlooked livestock methane emission problem when more awareness are drawn to carbon emissions in energy sectors, contributing to 20-30% CH₄ reduction in agriculture industry.



Social Impact

- **SDG 1.2** reduce the proportion of people living in poverty, **1.4** access to microfinance, **1.5** reduce exposure and vulnerability to climate-related shocks and disasters;
- **SDG 12.8** awareness for sustainable development;
- **SDG 13.1** strengthen resilience and adaptive capacity to climate-related hazards;
- **SDG 17.6** enhance multi-stakeholder partnerships that mobilize and share knowledge, expertise, and financial resources.

Risk Management

Type	Risk	Mitigation
Regulatory	Agriculture and Food administrations may tighten regulations of feed additives	Monitor policy changes closely and proactively communicate with policy makers and relevant industry organizations
	Voluntary carbon market price (forward contract) may have fluctuation	Make use of voluntary carbon credit futures market to hedge
Market	Competitors' invasion effect can be more significant than we expected	Provide the stockmen with long-term purchase discounts; R&D and VC investment can empower technology development
Financial	Loan default (seaweed farmers and process plants)	Refine the default and remedy parts in the loan contracts
	Currency rate fluctuation	Hedge with currency rate derivatives
Others	Natural disasters (typhoon, cold spell)	Short-term insurance
	Milk yield and lactose component may decrease	Climate-friendly product premium can make up for this small loss