

CleanJava Fund

CleanJava Fund is committed to reducing pollution levels in Central Javanese urban areas by transforming waste to fertilizer and fulfilling farmer demand for organic fertilizers



CHALLENGE

Indonesia has one of the highest population densities and waste production levels in the World, generating 64 million tonnes of waste annually. It is approximated that only half of the waste gets collected, and the remaining are disposed illegally at unmannned land and rivers, posing as a health, safety and environmental hazard. Megacities such as Jakarta (CGK) and Surabaya (SUB) account for 5% of annual waste production, and its volume increases between 2% to 4% annually. Around 52.5% of total waste is in a form of recyclable bio-waste that can be processed into organic fertilizer. This could mean that 13.5% of 18 million tons of total annual demand for Central Java organic fertilizer might be satisfied. On the other hand, the projected demand for organic fertilizers exceeds 160 million tons per annum for the whole country. There is a means of fulfilling a portion of the demand in a sustainable way through matching bio-waste supply with fertilizer demand through a conversion process. Concurrently, waste management is improved and pollution in urban areas can be reduced significantly.

SOLUTION

We propose to bridge a link between the bio-waste demand and fertilizer supply by converting the waste into organic fertilizers without harmful emissions. Although there are similar foreign investments made in Indonesia, the capital is currently flowing into the Metal, Machinery and Electronic Industry at 13.4% followed by Chemical and Pharmaceutical Industry at 10.0%.

CleanJava Fund seeks to provide capital to the Association of Fertilizer Producers (APPI) to mitigate the waste issues on Java's megacities while generating revenue by converting said bio-waste into organic fertilizers. While the Fund provides the capital, APPI runs the setup, construction, and operations through an Indonesian registered Operating Company (OpCo).

The Fund seeks to achieve the following environmental and social goals:

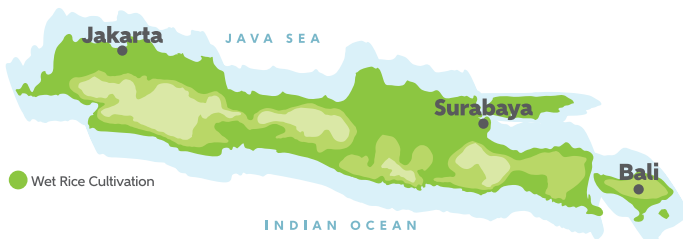
- Reduction in waste dumping in Central Java
- Providing Javanese wet rice farmers with lower cost and higher quality organic fertilizer
- Creating a sustainable link between waste producers and consumers through the conversion of bio-waste into organic fertilizer using specialized machinery



Machine that converts waste into organic fertilizer

GEOGRAPHIC FOCUS

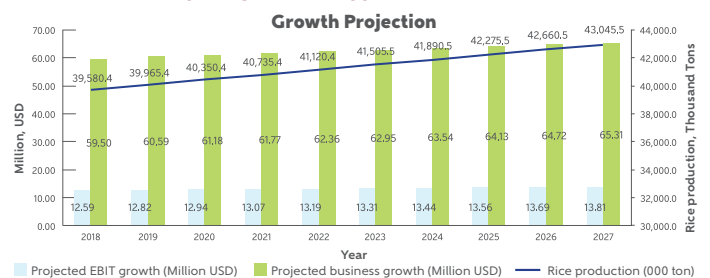
The fund invests in the Indonesian island of Java to tie up the organic waste supplying states of Jakarta and Surabaya to the demand for fertilizers in rice farming in Central Java.



OPPORTUNITY

Category	Pro-Investment Conditions	Implications
Agriculture	The Indonesian Government funds and backs new innovation in fertilizers	The OpCo gets government and APPI members support to adopt this new technology in a joint venture entity
	Indonesia sees rice as a primary agricultural export by 2024	Stable source of demand for organic fertilizer and future growth opportunity
Waste Disposal	CGK and SUB produces 38,524 cubic meters of waste a day, of which 75% consists of bio-waste. Both cities face challenges in waste collection and recycling.	<ul style="list-style-type: none">• Stable source of raw material for organic fertilizers• High environmental impact
Economic	The government's export strategy is to move its exportation goods up the value chain	Stable source of demand and future growth opportunity in export markets and international trade

SIZE OF ADDRESSABLE MARKET



- 56% of Indonesia's paddy fields are located on Java island, amounting to 5.6 million hectares in total.
- In Indonesia, wet rice farmers practice two harvests each year with each harvest requiring an estimated 8 tons of manure per hectare.
- The projected demand of fertilizer is approximately 18 million tons per year
- Since population growth drives rice consumption and hence rice production in Asia, rice production growth can be projected based on population growth.
- We project the demand for fertilizer will grow proportionately to the growth of rice production, hence projected revenue and EBIT to reach USD 65.31 and USD 13.81 million respectively by 2027

ESTIMATED IMPACT OF THE JOINT VENTURE TO JAVA

Sustainable Development Goals (SDGs)	Environmental & Social Impact
SDG 1 - No Poverty	• Cultivation cost of crops will be reduced by USD 20 per ton of yield produce, as farmers do not need to buy expensive organic fertilizers
SDG 2 - Zero Hunger	• Harvest Index, an important metric used for harvest size projection, will increase by 17.6% over a 10-year period
SDG 3 - Good Health and Well-being	• Reduction of CO2 emission by 246,499 tons per a year • Total hydrocarbon emissions estimated to reduce by 1.4 million cubic meters per a day (approximately 4% of daily emissions). Where presently, hydrocarbon levels in Jakarta's air is 50% above World Health Organization recommended level, with organic waste accounting for 8% of hydrocarbon emissions
SDG 6 - Clean Water and Sanitation	• Organic municipal solid waste dumped into rivers will be reduced by 1.3% over a 10-year period in target region
SDG 11 - Sustainable Cities and Communities	• Estimated that CGK's landfills run out of capacity by 2032, but implemented solution will extend useful life of landfills by 7 years
SDG 17 - Partnerships to achieve the Goals	• 500 new jobs will be created during the 10-year period through direct employment and outsourcing services • The OpCo will generate USD 18 million in tax revenues over the 10-year period for the Indonesian Government

10-YEAR FORECASTED PER DOLLAR INVESTMENT IMPACT

Investment	Waste Reduction	Savings to Farmer	Return
USD 1	2.54 m ³	USD 10.15	USD 2.47

References

- <http://www.insideindonesia.org/an-ocean-of-rubbish> World Bank's Ease of Doing Business (Indonesia), Environment and Forestry Ministry
- <http://www.appi.or.id/> Association of Fertilizer Producers
- <http://www.bi.go.id/en/statistik/perbankan/Indonesia/Default.aspx> Indonesian Banking Statistics
- <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> United Nations, Sustainable Development Goals
- <http://www.scholarsresearchlibrary.com/articles/effect-of-organic-and-chemical-fertilizers-on-amount-of-essence-biological-yield-and-harvest-index-of-matricaria-chamomi.pdf> Effect of organic and chemical fertilizers on amount essence, biological yield and harvest index
- <http://www.knowledgebank.iri.org/qualityseedcourse/index.php/module-3-production-rice-seed-in-upland-mainmenu-129/8-fertilizer-management-mainmenu-137> Production of Rise Seed in Upland Environment

A man wearing a straw hat and a blue shirt stands in a field, holding a small object. A large green recycling symbol is overlaid on the image.

A man wearing a straw hat and a blue shirt stands in a field, holding a small object. A large green recycling symbol is overlaid on the image.

```

graph TD
    TI[TARGET INVESTORS] -- Investment --> SPV[SPV INCORPORATED IN BVI]
    SPV -- Return --> TI
    SPV -- Investment --> PTB[PT BARISAN BUMI INCORPORATED IN INDONESIA]
    PTB -- Return --> SPV
    PTB -- Investment --> IJP[INDONESIAN JV PARTNERS]
    IJP -- Return --> PTB
    IJP -- Investment --> JWRF[JAVANESE WET RICE FARMERS]
    JWRF -- Pay back --> IJP
    JWRF -- Sell fertilizer --> JWRF
    JWRF -- Collect organic waste --> WRM[Waste Recycling machines]
    WRM -- Waste Recycling machines --> JWRF
    WRM -- Sell fertilizer --> JWRF
    WRM -- Collect organic waste --> JWRF
  
```

The flowchart illustrates the business model for PT Barisan Bumi, a waste recycling company. It shows the flow of capital and goods between various stakeholders:

- Target Investors** (represented by a person icon) provide **Investment** to the **SPV INCORPORATED IN BVI** and receive a **Return**.
- The **SPV INCORPORATED IN BVI** provides **Investment** to **PT BARISAN BUMI INCORPORATED IN INDONESIA** and receives a **Return**.
- PT BARISAN BUMI INCORPORATED IN INDONESIA** provides **Investment** to **INDONESIAN JV PARTNERS** (represented by logos of PT Barisan Bumi, PT Barisan Bumi, PT Barisan Bumi, PT Barisan Bumi, and PT Barisan Bumi) and receives a **Return**.
- INDONESIAN JV PARTNERS** provide **Investment** to **JAVANESE WET RICE FARMERS** (represented by a person icon) and receive a **Pay back**.
- JAVANESE WET RICE FARMERS** provide **Sell fertilizer** to **Waste Recycling machines** (represented by a machine icon) and receive **Collect organic waste**.
- Waste Recycling machines** provide **Waste Recycling machines** to **JAVANESE WET RICE FARMERS** and receive **Sell fertilizer**.
- JAVANESE WET RICE FARMERS** provide **Sell fertilizer** to **JAVANESE WET RICE FARMERS** and receive **Collect organic waste**.

Asset Class	Private Equity Joint Venture Fund
Fund Name	CleanJava Fund 1
Investment Manager	D2AV Investment Management
Securities	Series A Common Stock
Fund Size	USD 19.5 million
Min. Investment	USD 500,000, Investment period: 3 years
Target Investor Pool	Indonesian & Int'l Sovereign Wealth Funds, Hedge Funds, Accredited Investors
Fees & Incentives	2% p.a. Management Fees, Performance Fees 20%
Return	IRR: 28.5%; Modified IRR: 23% MOIC: 4.27x, Expected dividend yield: 25.9%
Capital Call Periods	1st year, 2nd year and 3rd year
Time Horizon	10 years

Period	Worst - USD 20	Base - USD 25	Best - USD 30
1	(10,00)	(5,00)	(5,00)
2	(5,00)	(5,00)	(5,00)
3	(5,00)	(5,00)	(5,00)
4	(5,00)	(5,00)	(10,00)
5	(5,00)	(5,00)	(10,00)
6	(5,00)	(5,00)	(10,00)
7	(5,00)	(5,00)	(10,00)
8	(5,00)	(5,00)	(10,00)
9	(5,00)	(5,00)	(10,00)
10	(5,00)	(45,00)	(90,00)

Costs / Machinery	USD 500k per machine, 56 machines total
Machine Installation	3 tranches over 1 years equal sized installations, total 1 factory
Inflation Rate	3.25% (Bank Sentral Republik Indonesia) applicable on machinery costs
Leverage	None for Pilot CleanJava Fund 1. Refer to Scalability for details.
Returns	Prorated based on 49% OpCo ownership
Net Working Capital	USD 5 million
End of Time Horizon	Fund sells off its shareholding in the OpCo at the end of year 10
Time Horizon	10 years

Category	Risks	Mitigation
Foreign Exchange	Capital raised in USD and business related cash flows are in IDR	Currency hedges will be undertaken by the fund to reduce exposure to FX risks if any. Correspondingly all contracts will be drafted in USD terms
Operational	Too many parties involved in the OpCo	<ul style="list-style-type: none"> • Fund has sufficient voting power to identify and appoint heads for every major divisions to run the operations (i.e. sourcing, conversion, and distributions) • Fund has asset managers in place to monitor performance, as well as exercising controls over the heads locally
Control	SPV is a minority shareholder in the OpCo	<ul style="list-style-type: none"> • GP/LP structure for the OpCo • Set up a board structure in OpCo drawing up supermajority vote on major decisions (e.g. dividend distribution, remuneration, investment, and other policies to mitigate agency costs and increase minority shareholder protection)
Regulatory	Government bears a nationalistic stance with current imposition of Foreign Investment limit	<ul style="list-style-type: none"> • JV meets the requirement of local influence in Perseroan Terbatas (PT: limited liability) companies • Encourage the Government to participate as an anchor investor

The SPV will engage local Universities and Environmental Research Institutes to independently measure and validate the Impact Metrics on a regular basis using GIIRS and IRIS methodologies, wherever lacking.

Impact	Key Stakeholders	Measurement Method
Waste Reduction	<ul style="list-style-type: none">• Citizens of Javanese cities	<ul style="list-style-type: none">• Indonesia Ministry of Environment's statistics of Waste• UNSD• National Disaster Management Agency
Reduced Impact to Global Warming	<ul style="list-style-type: none">• Citizens of Javanese cities	<ul style="list-style-type: none">• Indonesia Ministry of Environment and Forestry's SIGN SMART benchmarked to World Health Organization "Guidance on indoor air quality" to monitor CO₂ level• WRI Indonesia (province-level statistics)
Cost of Agriculture Business and Harvest Yield Increase	<ul style="list-style-type: none">• Farmers• OpCo	<ul style="list-style-type: none">• OpCo's Fertilizer prices against Market Rates• The JV's EBIT performance• Harvest Index
Promotion of Organic Fertilizers	<ul style="list-style-type: none">• OpCo	<ul style="list-style-type: none">• Fertilizer Sales Revenue for the OpCo• Official APPI Statistics of Fertilizer Demand

The Series 1 will be a pilot run focused on Java island, seeking to assess the longer term profitability of this cooperative JV. The Fund seeks to boost its credibility by attracting Indonesian Government investment. Subsequent Series can be implemented to the other larger Indonesian islands such as Sumatra as well as other Southeast Asian countries with large agriculture industry and experiencing rapid urbanization concurrently. In such a case, our subsequent series would incorporate the use of leverage. For subsequent series, the Fund would target family offices and UHNW individuals based in ASEAN to serve as a means of portfolio diversification in the aspect of Green Finance.

Special Mention: Dr Jack Hong (Singapore Management University),
Mr Iain Henderson (United Nations),
Mr Ashwin Halgeri (Northwestern University),
Mr C.S. Lim (Apollo Global Management),
Ms. Catherine Goh (BNP Paribas Asset Management),
Mr Donovan Goh (Credit Suisse Asset Management),
Ms. Zaneta Low