BSF SENGKOL

IMPLEMENTING CIRCULAR ECONOMY BUSINESS MODELS

ACCELERATING UNITED NATIONS' SDGS

BUILDING RESILLIENT COMMUNITIES

DECEMBER 2023

ANNUAL IMPACT REPORT

PREPARED BY: PAULA HUERTA

WWW.BAMBOOKSTUDIO.COM

WHAT ARE WE

BSF Sengkol (Lombok) is a pilot project of Organic Waste Conversion established in 2020 using Black Soldier Fly in the area of Mandalika, Lombok Tengah.
Developed under a public-private partnership, BSF Lombok is an inclusive circular business model that provides social, economic and environmental benefits to the community while establishing resilient businesses that are compatible with our capacity to regenerate our resources and absorb our waste.

WHAT WE DO

BSF Sengkol Facility creates value out of waste by bio-converting Organic Municipal Waste into Compost and Whole Larva Protein Feed for Chickens and Fish.
BSF treatment method uses Insects, Black Soldier Fly, a natural system of Bioconversion, to help decompose our food without the need of special machines, electricity, nor sophisticated technology which allows the engagement and empowerment of low-income communities.

BSF LOMBOK ORGANIC WASTE CONVERSION

ANNUAL IMPACT

Third Year of Operations 22-23

17.3* TONS GH EMISSIONS REDUCTION

ENVIRONMENTAL IMPACT

FOCUSING ON CIRCULARITY

REGENERATING LAND:

Our Compost is a mix between the Frass (Larvae Poop) and the Takakura Composting method.
This way we can assume both food waste and landscape waste.

WASTE CONVERSION:

Our Black Soldier Fly Larvas help reduce the volume of Organic Waste and convert it into Frass + Larva, which is an alternative to Protein Feed for Chickens and Fish.

30 tons
ORGANIC COMPOST PRODUCED

77 tons
ORGANIC WASTE COLLECTED

7.7 tons
LIVE LARVA SOLD/DONATED

57%
WASTE VOLUME REDUCTION

14% FROM FOOD DISTRIBUTORS EXPIRY PRODUCTS

15% FROM LOCAL CEREMONIES EVENTS & LOCAL MARKET IN PRAYA

71% RESTAURANTS WASTE COLLECTED FROM MANDALIKA KUTA AREA

PROMOTING CIRCULAR ECONOMY BUSINESSES:

We believe that moving towards a circular economy is our only path to meaningful economical, environmental and social impact. Our aim is to show that organic waste can be a valuable product that can contribute to Net Positive Agriculture and to lower GHG Emissions.

BSF LOMBOK ORGANIC WASTE CONVERSION

ANNUAL IMPACT

Third Year of Operations 22-23

EMPOWERING PEOPLE

FOCUS ON GENDER, DIVERSITY AND INCLUSION

TRAININGS PROVIDED:

1 15 80

UNRAM STUDENTS

Provide skills related to Circular Economy, Waste to Value and Economical & Social Impact of Circular Business Models.

2 0 36

BSF WASTE TREATMENT

Provide skills and knowledge on how to operate a BSF Facility, establish the nursery & breeding unit, treating waste and harvesting end products.

3 8 10

ORGANIC COMPOSTING

Provide skills on composting, to combine the BSF Residue (Frass) with the landscape waste to make the best fertiliser quality & business.

4 40 40

WASTE MANAGEMENT

Capability Building training for effective waste management system and implementation incorporating the existing players and infrastructure. **(BSF Sengkol was the hired as the Waste Management Company for the MOTO GP)**

5 11 23

ORGANIC FERTILIZER

Provide knowledge & skills on organic fertilizer vs. chemical fertiliser and how to produce organic fertilizer out of food waste or animal manure.

6 0 3

POST PROCESSING BSF

Capability Building Training on post processing live BSF larvae into different end products: Protein Palates, Dried Larvae, Insect Oil, etc.

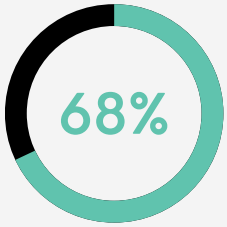
PEOPLE WORKING AT BSF SENGKOL / GENDER EQUALITY:

BSF FACILITY

WASTE COLLECTION

COMPOSTING

2 MEN



18 WOMEN

From early 2022, most man power in BSF facility is women, working voluntarily 1-2 hours per day in the facility in exchange for live larvae, that they use as feed for their chickens, ducks or fishes.

PROMOTING NEW LOCAL SUSTAINABLE BUSINESS:

31 New Organic Duck and Chickens Farms have emerged in the last year in Sengkol Village, most run by women enterpreneurs.
Three pool fish farms have also been created in Sengkol in the last year.
Women /Business owners, work voluntarily in our facility in exchange for daily larva feed.

BSF LOMBOK ORGANIC WASTE CONVERSION / KUTA MANDALIKA

RESTAURATS' SUPPORT

Third Year of Operations 22-23

LONG TERM COMMITMENT

- SEPARATING THEIR WASTE
- PAYING FOR ORGANIC WASTE COLLECTION
- CONTRIBUTING TO A SUSTAINABLE FUTURE

The Support of several businesses in Kuta has been KEY to ensure our success and has helped the region beyond our imagination.

THEIR ENVIROMENTAL POSITIVE IMPACT IS OUTSTANDING.

mama pizza

11.25 tons
ORGANIC WASTE COLLECTED

4.5 tons
COMPOST PRODUCED

2.52*
TONS GH EMISSIONS REDUCTION

Mana
ECO RETREAT

10.25 tons
ORGANIC WASTE COLLECTED

4 tons
COMPOST PRODUCED

2.29*
TONS GH EMISSIONS REDUCTION

RASCALS

11.84 tons
ORGANIC WASTE COLLECTED

4.74 tons
COMPOST PRODUCED

2.65*
TONS GH EMISSIONS REDUCTION

Kenza

8.25 tons
ORGANIC WASTE COLLECTED

3.3 tons
COMPOST PRODUCED

1.85*
TONS GH EMISSIONS REDUCTION

bush radio

6.91 tons
ORGANIC WASTE COLLECTED

2.76 tons
COMPOST PRODUCED

1.55*
TONS GH EMISSIONS REDUCTION

PORTER

2.57 tons
ORGANIC WASTE COLLECTED

1 ton
COMPOST PRODUCED

0.58*
TONS GH EMISSIONS REDUCTION

HASIL BOEMI Lombok
Artisan Natural Nut Butters

2.27 tons
ORGANIC WASTE COLLECTED

0.9 tons
COMPOST PRODUCED

0.51*
TONS GH EMISSIONS REDUCTION

OTHERS: BEGAWE/ EXPIRY PRODUCTS/ MARKETS

22.64 tons
ORGANIC WASTE COLLECTED

9 tons
COMPOST PRODUCED

5.07*
TONS GH EMISSIONS REDUCTION

*MEASURING GREEN HOUSE EMISSIONS REDUCTION FROM BSF ORGANIC WASTE CONVERSION

BSF Organic Waste Conversion uses an army of larvas as machines for decomposing food waste. A system designed by nature, without the need of any external energy, is by far the cleanest way to bio-convert biomass into compost: BSF treatment direct GHG emissions are 47 times lower than any other composting method. On top of that “the larvae can convert the carbon and nitrogen in the biomass waste, and improve the properties of the substrate to reduce the loss of gaseous carbon and nitrogen”. Besides, removing Organic Waste from Landfill if achieved globally could potentially reduce 10% of Global Methane Emissions and high potential Global Warming Potential (GWP) reduction. (Mertenat, Diener, Zurbrügg, 2018).

The conversion rate for CO2 Emission Reduction (or Green House Emissions Equivalent) used in this reports is based on 224 kg CO2-eq. / Ton from calculating the emission reduction rate from simply directly removing organic waste from landfill. All the other potential benefits in GWP reduction and others explained above have not been computed in the conversion, but must be understood as added benefits. (Yoshida, Gable, Park, 2011)

REGENERATIVE AGRICULTURE LEARNING CENTER

Establishing Circular Economy

BSF Sengkol Mission is to help the current Food Production System to absorb its waste and become Circular: Out of a waste stream with almost no value, organic waste, we create an industrial Waste Conversion System that upcycles Organic Residue into compost and alternative protein farming feed.

THE OVERALL VISION:
To become a Global Center of Excellence on Circular Economy, Organic Waste Conversion, Regenerative Agriculture and Farming.

Long term partnership with **NGO Invest Islands Foundation / Orgaanika Farm** to help us establish a Permaculture & Regenerative Agriculture Training Center at BSF Sengkol Site. We sell Organic Veggies every Thursday in Kuta.

Recently new partnership with **NGO Wise Steps** helping us fundraising and coordinating our next steps: **The Regenerative Agriculture Center** initiative aims to improve income generation opportunities of mostly rural farmers, reduce health risks through sustainable waste management training, and improve organic waste management infrastructure whilst positioning a community led food waste management center in Sengkol as a Center of Excellence for organic waste management. The initiative is expected to serve as a catalyst for communities and various stakeholders in Lombok and West Nusa Tenggara to learn from and adapt the concepts implemented at Sengkol Organic Waste Center.

BAMBOOK SUSTAINABLE ARCHITECTURE & DESIGN

ORGANIIKA

wise steps foundation

Road Map for 24-25

OPPORTUNITY TO COLLABORATE WITH BSF SENGKOL 2024

Establishing Circular Economy Village in South Lombok

DONATIONS / PHYSICAL ASSETS / INTANGIBLE ASSETS

1	***Water Infrastructure***	1. Summersible Pump Donation. 2. Geoelectrical Survey. 3. Pipes & MEP Fixtures. 4. Deep Well Drilling. 5. Water Tanks. 6. Pressure Pumps.
2	***Improve Safety***	1. CCTV 2. Fence Construction
3	***Road Access***	1. Ramp Access Repair 2. Access Road Repair
4	***Equipement***	1. Laptop 2. Smart Phone (Social Media)
5	***Expertise***	1. Permaculture Design Expert 2. Marketing Sales & Support 3. Site Management

BAMBOOK SUSTAINABLE ARCHITECTURE & DESIGN

ORGANIIKA

wise steps foundation

BSF LOMBOK ORGANIC WASTE CONVERSION

NEXT STEPS - 2024

More restaurants joining us!

9 More Kuta - Mandalika Restaurants have joined our program and have already started to separate their Organic Waste and paying us to collect it so that we can keep making positive impact!

The current Facility Performance after three years of operations is at 70% of its capacity.
The engagement of many restaurants in Kuta which pay for waste collection HAS BEEN KEY to ensure our survival specially after the Pandemic. Also thanks to the local community and the fact that most people work voluntarily in the organic waste conversion process in exchange for larva, the facility is finally Economically Sustainable. Recently we got some funds to kick off the Regenerative Farming Learning Center but need more.
Note: The Local Community is so engaged with the facility and their new Organic Chickens and Ducks businesses are running successfully. The aim with the Regenerative Agrictulture Learning Center is that Sengkol community starts learning and implementing best circular economy and regenerative practices that will help them socially, economically and environmentally.

1

ACTION OR COMMITMENT

The local authorities must increase the Waste Collection Capabilities so that the facility can maximise its capacity and become economically viable.

2

ACTION OR COMMITMENT

There must be waste sourcing educational programs on local warungs and markets to avoid waste contamination and improve the waste conversion capacity.

3

ACTION OR COMMITMENT

Private Sector Engagement is essential in order to continue the positive impact in the region. CSR Budgets, Philanthropic Fundraises and Donations are key in order to scale up.

4

ACTION OR COMMITMENT

Policy Development and Implementation is essential to legally develop Circular Economy Businesses around NTB Province, Indonesia.

BSF LOMBOK ORGANIC WASTE CONVERSION

ACCELERATING SDGS

Out of 17 SDGS, BSF Lombok contributes to 12 SDGS

"Developing a circular agriculture based on the production of **black soldier flies (BSF)** as feed and using the BSF waste stream as biofertilizer can support poverty alleviation, food security, economic integration, sustainable communities in rural areas, thus promoting participation and reintegration of former conflict actors to support peace and justice." (K.Barragan, 2020)

ECONOMIC PILLAR

SDG 1: NO POVERTY

By creating new revenue models and jobs that require no high education, allowing locals, both men and women, to easily learn the process and do the job without any minimum pre-skilled requirements.

SDG 2: ZERO HUNGER

By producing both Natural Fertiliser which is proven to increase agricultural yields of local farmers by 30% and Organic Protein Feed which is a cheaper and healthier substitute to Poultry and Aquaculture Feed.

SDG 3: GOOD HEALTH & WELLBEING

By removing Organic Waste safely from landfills which create methane and off-gassing to neighbouring communities.

SDG 8: DECENT WORK & ECONOMIC GROWTH

By providing continuous trainings and job opportunities empowering the local community and creating new business models and revenues out of a market that didn't exist before.

BSF LOMBOK ORGANIC WASTE CONVERSION

ACCELERATING SDGS

ECONOMIC PILLAR

SDG 9: INDUSTRY, INNOVATION & INFRASTRUCTURE

By investing in circular economy business models and innovation in the form of industrial insect farming and waste management systems infrastructure.

ENVIRONMENTAL PILLAR

SDG 6: CLEAN WATER & SANITATION

By removing Organic Waste from public drains and open landfills, by training on BSF treatment of animal manure to avoid Typhoid contamination and by promoting Organic Natural Fertilizer instead of chemical fertilizers which pollute underground water sources.

SDG 12: RESPONSIBLE CONSUMPTION & PRODUCTION

By establishing a production model that emits No GHG and that converts a product of zero value into two end products of great positive impact.

SDG 13: CLIMATE ACTION

By creating clean resilient industries that use Nature as an alley without emitting CO2, avoiding methane production in landfills and returning nutrients back to the soil. By creating alternative protein feed that needs significant less land and water than the traditional soy plantations.

SDG 14: LIFE BELOW WATER

By producing alternative Aquaculture Feed to fisheries which currently account for 30% of the global wild fishing.

BSF LOMBOK ORGANIC WASTE CONVERSION

ACCELERATING SDGS

ENVIRONMENTAL PILLAR

SDG 15: LIFE ON LAND

By returning nutrients back to the soil by producing Natural Organic Fertiliser that improves the soil texture allowing it to hold more water and increase its bacterial and fungal activity.

SOCIAL PILLAR

SDG 5: GENDER EQUALITY

By creating inclusive employment and empowering, which includes women and youth.

SDG 12: PEACE, JUSTICE & STRONG INSTITUTIONS

By creating new revenue models that help low income communities in food security and poverty alleviation therefore contributing to support peace and justice.

BSF LOMBOK

@LookUpAgro/

@BsfSengkol/

Sengkol, Pujut, Kabupaten Lombok Tengah, Nusa Tenggara Bar. 83573

+62 819-9327-0305

Want to know more?

STAY IN TOUCH

WWW.BAMBOOKSTUDIO.COM
JALAN RAYA KUTA, LOMBOK TENGAH, INDONESIA

This project would have not been possible with the contributions of:

Kementerian PPN/ Bappenas

kerja sama jerman DEUTSCHE ZUSAMMENARBEIT

diimplementasikan oleh: giz

renerg

PROBSF

BUMDES SENGKOL

eawag aquatic research

BSF LOMBOK ORGANIC WASTE CONVERSION SYSTEM

KALBE

BAMBOOK SUSTAINABLE ARCHITECTURE & DESIGN