



COFFEE INNOVATION

Khe Sanh Cooperative Organic Fertilizer Production Model

Inclusive Business Model for Biofertilizer Production



CHALLENGE

The current practices lead to very low incomes for farmers and insufficient quality inhibiting the cooperative's ambition to position itself as a high quality organic coffee producer which would in return allow for higher profitability of farmers. Overuse of chemical fertilizers and herbicides are also contributing to the soil degradation and downward cycle of coffee quality and yield.

INNOVATION

TRANSPARENT & INCLUSIVE BUSINESS MODELS

This innovation is an inclusive business model building on circular economy principles. The cooperative establishes a large scale organic fertilizer production facility to transform the waste from coffee processing, which will provide members with organic fertilizer cheaper than locally available chemical fertilizers.



COMPANY DESCRIPTION

Khe Sanh Agri-Product Cooperative was formally established in 2019 with seven founding members to create more sustainable farming approaches, improve the quality of coffee production, access new markets and increase the profitability of individual farmers.

NUMBER OF STAFF

6 PERMANENT, 20 SEASONAL



COST-BENEFIT ANALYSIS

COSTS

CONSTRUCTION: EUR 53,500 (INC LAND AND LABOR)

EQUIPMENT: EUR 14,000

MATERIALS: EUR 8,000

TECHNICAL CONSULTANTS (FARMER TRAINING, SURVEYS): EUR 6,000

OTHER (MARKETING CONSULTANT, PACKAGING ETC.): EUR 6,000

EFFECTS ON REVENUE

COFFEE CHERRY PRICE EXPECTED TO DOUBLE;
FERTILIZER VALUE EXPECTED 7 BILLION VND/YEAR

EFFECTS ON YIELD

NONE IN SHORT TERM



PREPARATION

TIMELINE

3-6 MONTHS

MATERIALS & EQUIPMENT

- SEE ANNEX 1 & 2

STAFFING REQUIREMENTS

5 FT

1 PT

15 SEASONAL (PT)



LESSONS LEARNED

TAKEAWAYS

Changing farmer behavior requires both involvement in the project and seeing the product used successfully before widespread adoption

CHALLENGES

- Alignment with coffee harvest timing.
- COVID delays
- Some machinery not available in local market
- Farmers not motivated to learn about this process because of lack of familiarity and return on investment

RESULTS

As a result of Khe Sanh's trial,



80 hectares

OWNED BY 100 FARMER
HOUSEHOLDS WILL APPLY
BIOFERTILIZER



300

COFFEE FARMERS WILL APPLY
KAC BIOFERTILIZER FROM
YEAR 2 ONWARD



5,000

TONS OF BIO-FERTILIZER



20 jobs

CREATED

IMPLEMENTATION

1

INSTRUCTIONS FOR CONSTRUCTION OF BIOFERTILIZER PRODUCTION WORKSHOP

- Survey the construction area
- Develop the construction design
- Procure construction materials
- Contract and monitor the construction works



The machinery line to produce biofertilizers



2

INSTRUCTIONS FOR ASSEMBLY OF EQUIPMENT AND MACHINERY

- Installation equipment and machinery is provided by the service provider, each product has specific instructions and has a specified warranty time.
- Please contact service providers to consultant /get their technical instruction.



3

TRAIN TECHNICAL STAFF AND WORKERS ON BIOFERTILIZER PRODUCTION

ANNEX 1

Construction Materials (Installation Only)

Description (neutral)	Unit	Quantity
Cement PCB30- Bim Son brand or equivalent (ton)	ton	100
6 holes brick (gạch 6 lỗ)	piece	9000
Steel phi 6 (thép phi 6)	kg	500
steel phi 10 (thép phi 10)	cây	100
Steel phi 12	cây	30
steel phi 14	cây	30
stone 1/2 (đá 1/2)	m3	105
sand (Cát đỏ)	m3	105
sand (Cát trắng)	m3	10
zinc tube 114 -2,1ly (ống kẽm)	tube	12
corrugated iron 4,5 zen (tôn lợp)	m2	450
Steel box 50*100*1.8 (Thép hộp)	box	80
Steel net B40 -height 1,8m (thép lưới B40, cao 1.8m)	kg	300
Rolling door (Cửa cuốn)	m2	28
water pipe Φ110, 3mm thickness - De Nhat brand or equivalent	m	80
water pipe Φ27, 1,5mm thickness - De Nhat brand or equivalent	m	80
water pump; capacity 1HP- Galaxy Italy brand or equivalent	item	1
capacitor 35M, Galaxy Italy brand or equivalent/ Tụ điện 35 Mê, hãng Galaxy Italy hoặc tương đương.	item	
Power cord 3x2,5, DAPHACO brand or equivalent	m	85
glue silicon/ keo silicon; plastic adaptor, connector, De NHAT Brand or equivalent/co, cút nhựa, hãng Đệ nhất hoặc tương đương	item	12
Plastic Cover Φ110, De Nhat brand or equivalent/ Chút đầy fi 110, chất liệu nhựa, hãng Đệ Nhất or tương đương	item	1
steel cable to drop the water pump, Φ 4mm -made in Korea or equivalent	m	85
labour work for soil drilling and pipe assembly	m	45
labour work for rocky drilling	m	35
liquid for drilling	m3	5
labour work for blowing and cleaning well	shift	1
water tank 2 cubic meter - Son Ha brand or equivalent	item	1
Water station- concrete frame (4m height; width 2m; length 2m)	station	1

ANNEX 2

Equipment & Machinery (Ongoing use)

Description (neutral)	Quantity
1. Grinder machine - Capacity 3-6 tons/h (depending on input materials and humidity) Main materials: + Steel plates with 8mm and 5mm thickness + Mortar shaft: made of Φ70 steel + mortar plate: made of steel plate with 10mm thickness + Frame: made of U10 steel with 5mm thickness + Crushing hammer: made of car leaf spring + UCP 212 ball bearing with grease, origin: Japan or equivalent + Motor 22 kw + Mobile wheels and wheel locks + Device trimmer feet: M20 + Full range of transmission protection, painted steel materials	1
2. Jig machine Screening surface: 1m width x 3m length Main materials: + Screening slider/feet: U10 steel with 5mm thickness + Frame : U8 steel 4mm thickness + U6 steel 3mm thickness + Screening mesh of 8mm steel + Screening box: steel plate 2mm width and other materials. Ensuring tightness so that the materials are not squashed out + Shaft: Φ 70 + UCP 214 ball bearing with grease, origin: Japan + Outlet: extend the size out of the machine frame + Full range of transmission protection, painted steel materials + Normal motor: 3,7 kW, origin: PARMA EU or equivalent	1
3.Quantitative funnel + Heigh: 2m, length x width: 2mx2m Weight: 2 tons + Main material is 2mm steel plate + Frame: U8 steel with 4mm thickness + V4 and other materials + New motor 1,5 Kw, origin: PARMA EU	1
4. Belt conveyor 6m/băng tải 6m + Frame: C16 steel with 4mm thick + Feet: steel of Φ 49 and 3mm thick + Wheel D400. 4 layers of tape with 8mm thickness + Roller Φ 50, thick 5mm, roller bearing 303. Main batch Φ170, UCP 207 bearing + New geared motor 1,5 Kw, origin: PARMA EU or equivalent	1
5.Electrical cabinet Automatic system, automatic disconnection in the event of an incident, The devices include: + Attomat + magnetic starter + LG power cord or equivalent	1
6. Tire wheel loading machine Brand name: DHT or equivalent Model: DHT918A or equivalent manufacture country: China or equivalent Manufacture year: 2020 Status: 100% brand new Volume bucket (m3): 0,6 Lifting capacity (kg): 1500 Engine: Diesel; wattage (kw): 42	

For further information:

Khe Sanh Agri-Product Cooperative (Hợp tác xã Nông sản Khe Sanh)

Nguyen Thi Hang- KAC Director and Nguyen Thi Loi – Advisor

Email: kackhesanh@gmail.com

Website: <http://khesanh.com.vn>



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Registered offices

Bonn and Eschborn

Dag-Hammarskjöld-Weg 1-5

65760 Eschborn

T +49 61 96 79-0

F +49 61 96 79-11 15

E info@giz.de

I www.giz.de

E info@giz.de

I www.giz.de

Editors:

Khe Sanh Agri-Product Cooperative and Jen Green, Jakarta

Design:

Vanna Sann, Phnom Penh

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MISSION

The Fund's objective is to increase profitability of small-holder coffee farmers, and foster greater, more equitable value distribution in the supply chain through promoting innovative farming systems, transparent and inclusive business models, and access to new markets.
