

SHAMRAIVKA BIOGAS PLANT (SUGAR FACTORY)

TECHNOLOGY

Beet root pulp anaerobic digestion
Developer`s own technology

GENERATOR CAPACITY – 1 300 KW

ELECTRICITY YIELD – 10 500 MWH/YEAR

PROJECT LOCATION

Shamraivka, Kyiv Region, Ukraine

NUMBER OF EMPLOYEES

12

MATURITY OF PROJECT

Investment ready

INVESTMENT ASK

Total – 2 763 600 USD

Equity – 1 105 440 USD (40%)

Debt – 1 658 160 USD (60%)

LOAN TENURE – 5 years

INTEREST RATE – 6.6%

ANNUITY PAYMENTS – 438 942 USD

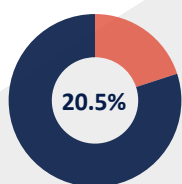
STAKE TO EQUITY INVESTOR – 90-100%

PBP – 5.4 years

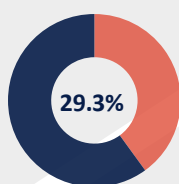
EXIT OPTION

Earn-out, third party sale (i.e. sugar factory)

IRR



ROE



- NPV: 2 218 507 USD
- WACC: 9.2%
- EBITDA Margin: 55.0%
- PAT Margin: 27.3%

DEVELOPER`S CONTRIBUTION:

- own technology/EPC contractor
- project documentation
- project management

USE OF FUNDS

Construction works, equipment purchase, delivery and installation

ANNUAL GHG REDUCTION (TONS OF CO2/YEAR):

11 097 tons of CO2

OVERVIEW

Biogas plant with the daily capacity of 16 250 m3 of biogas - 8750 m3 of biomethane equivalent (3 200 000 m3 of biomethane yearly). Input raw material – beet root pulp (125 tons per day).

Currently the project is at green field stage.

MARKET AND STRATEGY

Source of revenue – electricity sale.

Electricity has a guaranteed purchaser – the State.

The tariff is fixed in EUR and secured by law.

VALUE PROPOSITION/PROJECT ATTRACTIVENESS

The business is scalable to other sugar producing facilities considering their demand for energy sources.

Competitive advantage – price to output ratio of the equipment (2 125 USD per 1 kW of generating capacity).

BUSINESS MODEL

Purchasing cheap feedstock from a sugar factory.

The input raw material (beet root pulp) is available and excessive at the project`s location site.

Generating biogas from feedstock of vegetation origin.

Transforming biogas to electricity.

Guaranteed sales of electricity under the FIT.

CURRENT STATUS

Green field

EXPERTISE

Overall team experience - 30 years in construction, waste treatment, biogas projects.

IMPACT

CO2 emissions reduction by 11 097 tons yearly.

Balancing the national electric grid (as biogas can be stored unlike SPP or WPP).

Cleaning the river basin from excess vegetation (as an option).

GENDER FOCUS

The project ensures gender equality.

KYIV BIOGAS PLANT (CHICKEN MANURE)

TECHNOLOGY

Chicken manure anaerobic digestion
Developer`s own technology

GENERATOR CAPACITY – 360 KW

BIOHUMUS YIELD – 7 850 TONS/YEAR

PROJECT LOCATION

Kyiv, Ukraine

NUMBER OF EMPLOYEES

12

MATURITY OF PROJECT

Investment ready

INVESTMENT ASK

Total – 860 500 USD

Equity – 344 200 USD (40%)

Debt – 516 300 USD (60%)

LOAN TENURE – 5 years

INTEREST RATE – 6.6%

ANNUITY PAYMENTS – 136 673 USD

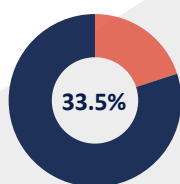
STAKE TO EQUITY INVESTOR – 50-70%

PBP – 3.6 years

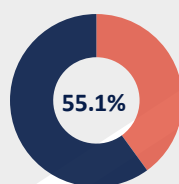
EXIT OPTION

Earn-out, buy-out, third party sale

IRR



ROE



- NPV: 1 883 208 USD
- WACC: 9.2%
- EBITDA Margin: 64.2%
- PAT Margin: 53.5%

DEVELOPER`S CONTRIBUTION:

- own technology/EPC contractor
- 40% ready facility
- project management

USE OF FUNDS

Construction works, equipment purchase, delivery and installation

ANNUAL GHG REDUCTION (TONS OF CO2/YEAR):

11 500 tons of CO2

OVERVIEW

Biogas plant with the daily production capacity of 4200 m3 of biogas - 2400 m3 of biomethane equivalent (876 000 m3 of biomethane yearly). Input raw material – chicken manure (60 tons per day).

Currently the project is approximately 40% complete.

MARKET AND STRATEGY

There are two sources of revenues: **electricity** and **fertilizer**.

Electricity has a guaranteed purchaser – the State. The tariff is fixed in EUR and secured by law.

Organic fertilizer is highly profitable commodity which has growing demand (at internal and external markets).

It is planned to focus on selling biohumus to wholesale customers with 50% discount from the current market price in Ukraine. The aim is to rapidly penetrate the market and reduce the stockpiling of the product. The export sales are also planned.

VALUE PROPOSITION/PROJECT ATTRACTIVENESS

The business is scalable at other land plots considering the abundant amount of chicken manure.

The competitive advantage is a production of an additional product – high quality organic fertilizer.

BUSINESS MODEL

Purchasing cheap feedstock from poultry farms. The input raw material is available and excessive.

Generating biogas from feedstock of animal origin.

Transforming biogas to electricity.

Guaranteed sales of electricity under the FiT.

Selling biohumus at internal and external markets.

CURRENT STATUS

Brown field

EXPERTISE

Overall team experience - 30 years in construction, waste treatment (including chicken manure), biogas projects.

IMPACT

CO2 emissions reduction by 11 500 tons yearly.

Balancing the national electric grid (as biogas can be stored unlike SPP or WPP).

New jobs, more than 800 households will benefit from new product - biohumus.

GENDER FOCUS

The project ensures gender equality.

CHERNIHIV 5 MW THERMAL POWER PLANT (TPP) ON BIOMASS

TECHNOLOGY

Biomass/biogas

PROJECT LOCATION

Chernihiv, Ukraine

NUMBER OF EMPLOYEES

17 new work placements

MATURITY OF PROJECT

Scale up, investment ready

INVESTMENT ASK

LOAN TENURE

18.7 million US\$ Debt **8** years

INTEREST RATE ON DEBT – 7.0%

CURRENCY – foreign

PRIMARY SECURITY – equipment and facilities

- Developer's contribution: USD 8.0 MN
- Average DSCR: 147.0%
- Interest coverage: 161.0%
- Debt to equity: 70:30
- EBITDA Margin: 58.0%
- PAT Margin: 17.8%

- NPV – 49 086 729 USD
- IRR – 14.9%
- PBP – 5.8 years

USE OF FUNDS

Machinery and equipment acquisition
Spanner Holz-Kraft GmbH (Germany)

ANNUAL GHG REDUCTION (TONS OF CO₂/YEAR): 18 450 tons of CO₂

OVERVIEW

This is a scale up project. 500 kW TPP is already operating successfully. It is planned to expand the facility to the total capacity of 5 MW of electricity and 7.5 MW of heat production. Feedstock – woodchips – is available in abundance. Electricity and heat sales are guaranteed by the State.

MARKET AND STRATEGY

The whole volume of electricity produced will be sold to the State Company "Guaranteed Buyer" under the feed-in tariff. Heat will be sold to a separate local company JSC "OblTeploKommunEnergo" under the existing market prices with 10% discount.

Both products will be distributed to the local grid.

VALUE PROPOSITION/PROJECT ATTRACTIVENESS

Experienced team, guaranteed sales, stable feedstock supply, proven technology, sustainable financial indicators.

Primary security – new equipment, current facility (500 kW).
Moratorium – none.

BUSINESS MODEL

Electricity and heat are generated from local fuel (woodchips) and sold under fixed tariffs to the local grid.

Total revenue – 9 224 627 USD (2nd year)

EBITDA – 5 139 259 USD (2nd year)

CURRENT STATUS

500 kW TPP is successfully operating. All the permits and licenses are in place.

Land lease agreement in place for the expanded facility.

Pre-PPAs and other regulatory approvals regarding the expanded facility will be obtained upon allocated financing.

EXPERTISE

The company's staff consists of more than 440 employees. The management team has over 5 years of expertise in renewable energy sector, including MSW management. Total years of experience in energy sector – over 20 years.

IMPACT

The project reduces CO₂ emissions as well as provides cheaper and more stable source of heat to the local consumers.

GENDER FOCUS

The project provides equal opportunities for men and women.

FATTY ACIDS PRODUCTION SCALE UP

TECHNOLOGY

Oils and fats industry wastes refinery

PROJECT LOCATION

Pereyaslav-Khmelnytsky, Kyiv region, Ukraine

NUMBER OF EMPLOYEES

26 new work placements

MATURITY OF PROJECT

Scale up, investment ready

INVESTMENT ASK

LOAN TENURE

3.10 million US\$ Debt **4** years

INTEREST RATE ON DEBT – 8.0%

CURRENCY – foreign

PRIMARY SECURITY – new equipment, existing facilities and corporate rights

- Developer's contribution: USD 1.96 MN
- Average DSCR: 3.0
- Interest coverage: 14.0
- Debt to equity: 61:39
- EBITDA Margin: 58.0%
- PAT Margin: 40.6%
- NPV – 14 583 981 USD
- IRR – 110.9%
- PBP – 1.8 years

USE OF FUNDS

Machinery and equipment acquisition
BASS SMS Canzler GmbH (Germany)

ANNUAL GHG REDUCTION (TONS OF CO₂/YEAR): 1 023 tons of CO₂

OVERVIEW

This is a scale up project. The current facility has been successfully operating for 5 years with total production capacity of **400 tons** of fatty carboxylic acids (**FCA**) per month. It is planned to introduce additional line to produce another **1000 tons** of distilled fatty carboxylic acids (**DFCA**) per month. Feedstock – oils and fats industry wastes – is available in abundance. Final product sales are established.

MARKET AND STRATEGY

It is planned to export the entire production volume.

The main buyers from Europe (Germany and Poland) are the producers of biodiesel.

The buyers from EU countries, Israel and India are willing to place additional orders.

It is expected to reach 34% market share (of Ukrainian export volumes) after the new line is commissioned.

VALUE PROPOSITION/PROJECT ATTRACTIVENESS

Experienced team, established sales, stable feedstock supply, proven technology, sustainable financial indicators.

Primary security – new equipment, existing facility and corporate rights.

Moratorium – none.

BUSINESS MODEL

Raw materials for the new line will come directly as waste products from the oils and fats producers (soap stock and hydrofuse). These wastes will be refined to high quality DFCA and exported primarily to biodiesel or animal feed producers.

Total revenue – 6 891 477 USD (2nd year)

EBITDA – 3 533 278 USD (2nd year)

CURRENT STATUS

400 tons of FCA production factory operates successfully.

All the permits and licenses are in place.

Land lease agreement in place for the expanded facility.

EXPERTISE

The developer has its own well trained administrative and production personnel.

The management team has over 5 years of expertise in fatty acids production sector.

The existing production facility is certified according to ISCC.

IMPACT

The project reduces CO₂ emissions as well as utilizes toxic wastes from oils and fats industry (which are otherwise being dumped illegally).

GENDER FOCUS

The project provides equal opportunities for men and women.