# BUSINESS PLAN

## OF CONSTRUCTION THE BIOGAS STATION IN THE EL MOLLO INDUSTRIAL PARK (MORA LA NOVA, CATALONIA, SPAIN) FOR THE PRODUCTION OF BIOMETHANE – $CH_4$, CARBON DIOXIDE – $CO_2$ AND BIO-COAL PELLETS

# CONTENT

## CONFIDENTIALITY

This document is strictly confidential and is provided for consideration by commercial Banks and/or the Investors for deciding on participation in the project financing or equity investments and cannot be used for other purposes.

It is allowed to be used only by authorized persons and organizations. The document may not be distributed, copied or partially reproduced without the consent of the Owner. Please return the Business Plan in case there is no interest in participating in its implementation.

By accepting this Business Plan, the recipient accepts responsibility for compliance with these conditions.

All data, estimates, plans, proposals and conclusions regarding costs, sales volumes, sources of financing and profitability of the project, provided in this document, are relevant in the absence of force majeure circumstances and are based on the agreed opinions of the authors of the business plan.

**Table 1.1. - The financial indicators of the Project**

| Article title | Size | Unit of measurement |
|---|---|---|
| **Specifications** | | |
| Number of working hours per year | 8 064 | Hour |
| Total amount of raw materials received for processing | 110 000 | Ton/Year |
| Annual volume of solid waste processing | 80 000 | Ton/Year |
| Annual volume of straw processing | 30 000 | Ton/Year |
| **Available volume of biogas** | **19 146 600** | **$m^3$/year** |
| Biogas produced from solid waste | 24 | % |
| Biogas produced from Straw | 76 | % |
| **Annual volume of biomethane-$CH_4$ for sale** | **12 445 290** | **$m^3$/year** |
| **Annual volume of carbon dioxide-$CO_2$ for sale** | **6 701 310** | **$m^3$/year** |
| Annual volume of $CO_2$ Certificates for sale | - | Ton/Year |
| Annual volume of bio-coal pellets for sale | 9 485 | Ton/Year |
| Annual volume of metal waste for sale | 2 000 | Ton/Year |
| Annual volume of waste glass for sale | 5 920 | Ton/Year |
| Annual volume of waste papers for sale | 14 480 | Ton/Year |
| Annual volume of screenings for sale | 4 784 | Ton/Year |
| Annual volume of waste polymers for sale | 18 512 | Ton/Year |
| **Operating income** | **26 196 647** | **Euro/Year** |
| Income from sales of biomethane-$CH_4$, per year | 20 266 360 | Euro/Year |
| Income from the sale of carbon dioxide-$CO_2$, per year | 3 205 810 | Euro/Year |
| Income from the sale of $CO_2$ Certificates, per year | - | Euro/Year |
| Income from the sale of bio-coal pellets | 4 590 740 | Euro/Year |
| Income from the sale of Metal waste, per year | 605 000 | Euro/Year |
| Income from the sale of waste Glass, per year | 286 528 | Euro/Year |
| Income from the sale of paper waste, per year | 700 832 | Euro/Year |
| Income from sales of dropouts, per year | 231 546 | Euro/Year |
| Income from the sale of polymer waste, per year | 895 981 | Euro/Year |
| **Operating expenses** | **11 430 885** | **Euro/Year** |
| Depreciation | 2 623 090 | Euro/Year |
| VAT | 4 810 068 | Euro/Year |
| Income tax | 4 519 511 | Euro/Year |
| **Financial result of operating activities** | **17 388 853** | **Euro/Year** |

**Continuation Table 1.1 - The resulting indicators of the project**

| **Required Investments in the Project - TOTAL** | **31 739 395** | **Euro** |
|---|---|---|
| Cost of waste processing complex | 31 739 395 | Euro |
| Working capital | - | Euro |
| Equity | - | Euro |
| Credit funds | 31 739 395 | Euro |
| **Working capital required for project implementation** | **-** | **Euro** |
| Working capital for interest payments | - | Euro |
| Working capital to pay off the loan body | - | Euro |
| **Financing terms** | | |
| Equity | 0 | % |
| Loan for replenishment of working capital | - | Euro |
| Loan for construction of BGS | 31 739 395 | Euro |
| Annual interest rate on loan | 4,5 | % |
| Loan terms | 5,0 | Years |
| Grace period | 1,5 | Years |
| Loan interest | 4 582 375 | Euro |
| Cost of the project including interest on the loan | 36 321 770 | Euro |
| **Key project performance indicators** | | |
| Financial result at the End of the period (6 years) | 60 015 964 | Euro |
| Net Present Value NPV | 45 336 101 | Euro |
| Internal rate of return IRR (6 years) | 52,4 | % |
| Simple payback period PBP | 2,8 | Years |
| Discounted payback period DPP | 3,0 | Years |

# CHAPTER 1. PROJECT SUMMARY

Project name:

**THE PROJECT OF CONSTRUCTION THE BIOGAS STATION IN THE EL MOLLO INDUSTRIAL PARK (MORA LA NOVA, CATALONIA, SPAIN) FOR THE PRODUCTION OF BIOMETHANE – $CH_4$, CARBON DIOXIDE – $CO_2$ BIO-COAL PELLETS**

As part of the Project, it is planned to build a Biogas Station (BGS) with a production capacity of 19 146 600 $m^3$ of biogas per year.

As raw materials, food waste contained in solid household waste (MSW) entering the BGS in unsorted form, expired products intended for disposal, as well as straw (cereals, legumes and corn), from which biogas will be produced using the patented fermentation method of WABIO (Germany). The resulting biogas will be divided into biomethane - $CH_4$ and carbon dioxide - $CO_2$ for further sale to consumers. Biogas consists of biomethane - $CH_4$ (65%) and carbon dioxide - $CO_2$ (35%).

The annual production volume will be:
12 445 290 $m^3$ of biomethane - $CH_4$,
6 701 310 $m^3$ of carbon dioxide - $CO_2$,
9 485 tons of bio-coal pellets,
as well as secondary inorganic raw materials (paper, cardboard, metal, glass, polymers, screening (quantities are shown in the table below)).

The total volume of organic and inorganic waste received for processing at the BGS will amount to 110 000 tons. It includes 30 000 tons of straw (cereals, legumes, corn), 29 280 tons of food and gardening waste and 50 720 tons of inorganic waste sorted from 80 000 tons of solid waste.
The volume of organic raw materials required for the production of biogas is 59 280 tons per year. It, in turn, consists of 29 280 tons of food and garden waste sorted from 80 000 tons of solid waste entering the BGS in unsorted form and 30 000 tons of straw (cereals, legumes, corn).

The total cost of the project is 31 739 395 Euro and is expected to consist of borrowed funds. 100% required. The required loan amount is 31 739 395 Euro. The funding will be used for the following purposes: acquisition of land (4 hectares); obtaining all necessary permits; execution of design and engineering work; issuance of land documentation; costs of purchasing and managing equipment.

Financing of 100% of the Project cost is expected to be provided by a commercial bank. Financing alternative energy is part of the government's sustainable energy strategy, aimed at combating climate change and improving and stabilizing Spain's energy efficiency.

# CHAPTER 2. MARKETING PLAN

## 2.1. MARKET ANALYSIS, COMPETITIVENESS

The current situation in the world and the rising price of energy carriers encourage the Spain authorities to encourage energy producers using alternative energy sources.

### The main prerequisites for the implementation of the Project:

- Rising cost of natural gas;
- 100% guarantee of sales of produced biomethane - $CH_4$ and carbon dioxide - $CO_2$ in the Spain and European markets;
- Shortage of natural gas in Europe and Spain;
- Environmental impact: $CO_2$ minimization, organic waste recycling;
- Sale of the carbon $CO_2$-certificates;
- Social component - increase of the number of jobs;
- Huge untapped reserves of organic raw materials in Spain for biogas production.

The main fuel in Spain is natural gas. Of the 2,5 billion cubic meters of gas consumed by Spain in 2020, more than half was used in the sectors financed by the state, municipal institutions, and the population for the production of thermal energy. The market for the sale of biomethane in Spain is huge.

The advantages of using biomass are that it is a renewable energy source and it's much cheaper in compared to traditional energy sources. The cost of producing biogas from biomass is many times less than the cost of natural gas.

The WABIO technology does not require any new resources or land to grow silage corn or other energy crops for biomethane production. WABIO only uses existing organic waste and residues.

Thanks to its technology, WABIO is able to use fermentation residues from biogas plants operating in Spain as raw materials for the operation of its BGS. From the fermentation residues of these biogas plants, using the WABIO technology, it is possible to produce again an additional 70% of the volume of biomethane previously produced by these plants. It also solves the problem of spreading liquid fermentation residues that contaminate groundwater with nitrates. The required volumes of "green biomethane" and organic fertilizers can only be obtained through the use of these fermentation residues and straw left after harvest.

With its technology, WABIO can separate the organic part from MSW (the so-called wet fraction) and use it to produce biomethane, while the sorted dry inorganic part of household waste (RDF) will be sold to thermal power plants and cement plants. Such use of organic matter to generate biogas doubles the total energy yield from municipal household waste. At the same time, the energy efficiency of thermal power plants and cement plants is significantly increased if only dry household waste (RDF) is used, which also reduces the toxicity of flue gases.

To produce the "green" biomethane, WABIO also uses excess sludge from municipal wastewater treatment plants, which can significantly reduce the high costs of its disposal. These measures alone are more than enough to replace Spain imports of natural gas. At the same time, it allows to avoid environmental pollution, because only existing organic waste is processed.

The Spain energy associations see the huge potential of the "green" biogas. For Spain alone, it will be possible to produce the equivalent of 100 terawatt-hours (TWh) of electricity per year from the biogas by 2030, and the Spain Biogas Association (AEBIG, https://aebig.org).

According to the report of Mr. Eric Schweitzer, the owner and CEO of the Berlin-based ALBA Group, one of the leading suppliers of environmental services and raw materials in Europe with an annual turnover of around 1.3 billion Euros and 5,400 employees:

"An alternative to biogas from corn is organic waste from MSW, which is practically not used today. Biogenic raw materials currently come from three sources: industrial organic waste, landscaping waste and organic waste from MSW. Garden and park waste is the largest share - almost 6,000,000 tons. Approximately 4,500,000 tons of organic waste annually comes from brown trash cans, which are green in some municipalities. In addition, there are about 4,000,000 tons of commercial organic waste such as food waste and expired food. From this amount alone, it would be possible to generate more than 1000 gigawatt-hours of "green" electricity per year, that is, one terawatt-hour."

## ADDITIONAL EFFECTS FOR SPAIN

- Independence from Russian/foreign gas imports;
- Significantly faster achievement of climate protection goals;
- Independence from wind and sun, generation Non-Stop 24/7/365;
- Annual savings on the purchase of natural gas;
- Operating costs for biomethane production remain in Spain in the form of labor, material and service costs;
- New jobs.

## BENEFITS OF THE WABIO TECHNOLOGY

WABIO has been dealing with the disposal of organic waste, including from MSW, for 30 years. WABIO has numerous patents and know-how for the recycling of organic waste. Therefore, WABIO can process organic waste from MSW, as well as other organic waste that conventional biogas plants cannot process at all or can, but at significant cost and with a much lower biogas yield.

WABIO has already implemented all of its developments in numerous biogas plants operating around the world.

Below is the photo of the WABIO biogas plant built in China with a capacity of 30 MW/h of electric energy, operating only on corn and rice straw only. This is the world's largest biogas plant, the raw material for which is exclusively straw. WABIO is currently designing and constructing four more similar BGSs in China, with the goal of independence from natural gas imports.

## 2.2. GAS MARKET

As a biogas producer, we will be able to sell the biomethane and carbon dioxide produced by us on the Spain and European markets, both to wholesalers and end users.

The cost of methane in the business plan = 135 Euro per 1 MWh.
1 $m^3$ of methane = 10 kW/h, 1000 $m^3$=10 MW/h, cost of 1000 $m^3$ = 1350 Euro (10 MW/h *135 Euro).

## 2.3. RAW MATERIAL BASE

The technology allows you to work on almost any organic (biodegradable) waste. The Project plans to process organic waste from MSW, expired food products and straw that remains after harvesting grains, legumes and corn.

The suppliers of raw materials for biogas production can be large enterprises, generating a large amount of liquid and dry organic waste, which can be used as raw materials. Preliminary agreements have been reached on the supply of food waste by large Spain companies involved in the collection and disposal of solid waste. Also, there are a large number of offers for the sale of straw from agricultural producers.

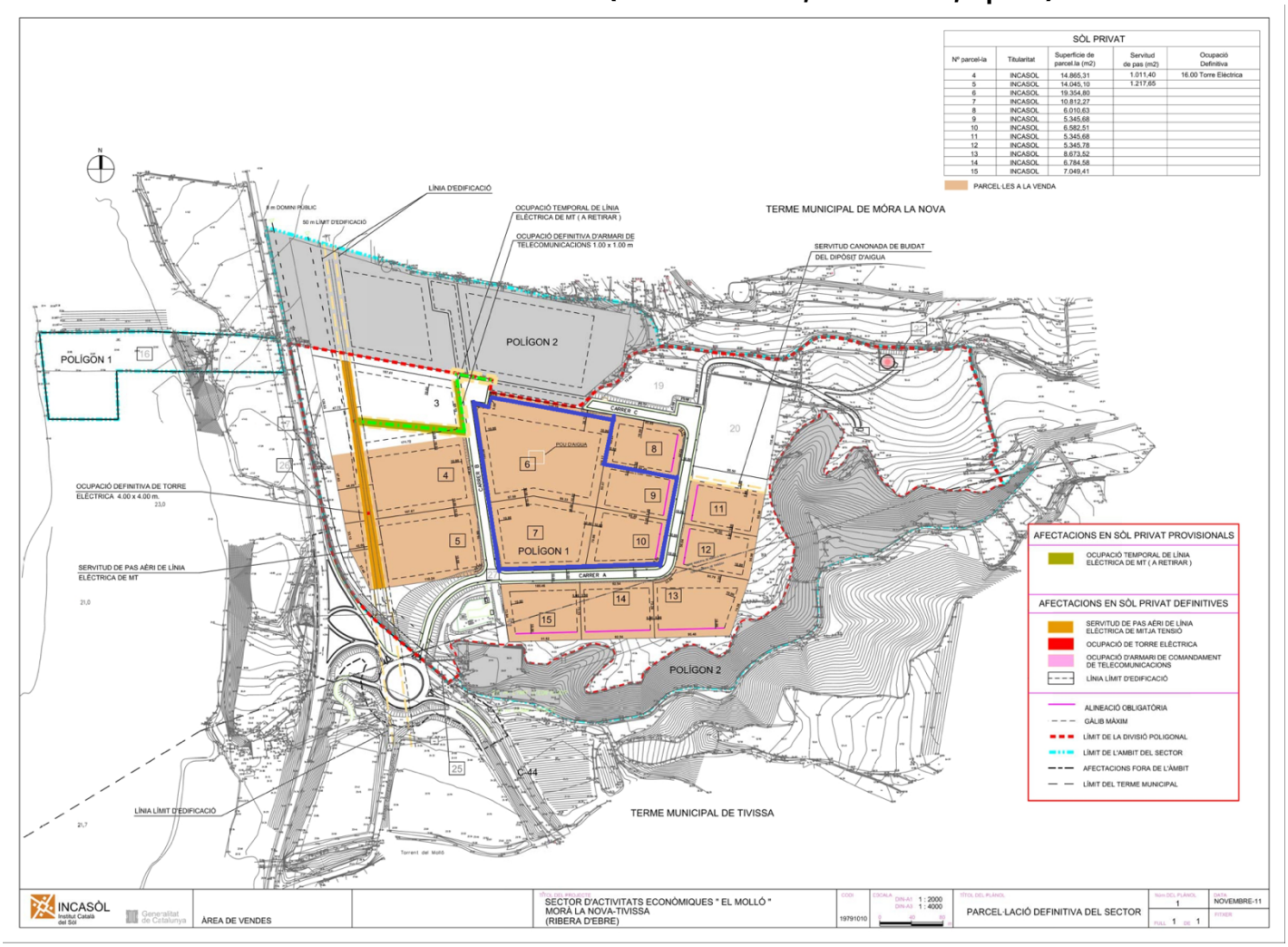
## 2.4. SWOT ANALYSIS

| Strengths | Weaknesses |
|---|---|
| • Favorable geographical position, benefits of location of the enterprise on the territory of the industrial park "El Mollo".<br>• Investment cost subsidies up to 50%.<br>• Low interest loans from federal and state governments with equity and guarantees.<br>• Technology reliability.<br>• Full provision of raw materials, the BGS can operate on virtually any dry and liquid waste, any organic raw material.<br>• The waste disposal is partially payable (part of the raw materials has a negative cost).<br>• The high cost of biomethane. Biomethane is a complete analogue of natural gas, the market is not limited.<br>• The incoming raw material can be replaced to another one without changing the equipment, the station is "omnivorous".<br>• Compliance of the Project with environmental conditions and government priorities.<br>• Availability of qualified personnel. | • Relatively high construction costs.<br>• Possible delay in construction. |
| **Capabilities** | **Threats** |
| • Absence of problems associated with the sale of products.<br>• Absence of problems associated with raw materials, the technology can work with almost any organic raw material, it can be mixed.<br>• The ability to produce electricity and heat from biogas, depending on what is currently more profitable. | • Decreasing of the methane prices.<br>• Rising prices for such raw material as straw. |

# CHAPTER 3. PROJECT IMPLEMENTATION PLAN

## 3.1. LOCATION OF THE PROJECT

**The Industrial Park "El Mollo" (Mora La Nova, Catalonia, Spain)**




The Mora la Nova "EL MOLLO" Industrial Park is located in the province of Tarragona, between Tarragona Lleida and Reus.

Here, on the Costa Bravo, where the historical markets of the West and the growing markets of Eastern Europe merge companies and investors will find the best framework conditions.

Located in the Province of Tarragona, the El Mollo Industrial Park offers all the advantages of being located in the heart of Spain, namely:

- close proximity to the highways connecting the industrial park with Tarragona (57 km), Reus (45 km) and Lleida (76 km). During the EU's eastern enlargement, motorways had already widened significantly;
- within a radius of 150 km there are several international airports;
- the technical infrastructure meets the most modern requirements.

This dynamic development was only possible thanks to co-financing from the Government of Spain and the Free State of Catalonia, as well as the municipalities of Tarragona.

A total of € 130,000,000 was invested between 2002 and 2014 in electricity and gas networks, water supply and wastewater treatment, road construction and advertising.

**Ideal basic conditions**

The Industrial Park is focused on the needs of industrial companies and offers the potential for sustainable development to further expand local and regional value chains. The total area is about 12 hectares, which are currently for sale and available for immediate use. Another advantage of the industrial park is lower operating costs and the availability of qualified personnel.

In the El Molo Industrial Park, investors receive the most favorable conditions for the implementation of their projects - from personal consultations to individual subsidy programs and subsidies for investment expenses.

**MORA LA NOVA particularly offers the support with following issues:**

- The subsidies of up to 50% of investment costs;
- Reduction of operating costs.

### 3.2. PROJECT PROGRESS DESCRIPTION

For the implementation of the Project of construction of BGS, has all the necessary conditions, namely:

- Availability of infrastructure and engineering networks;
- Connection to electric, gas networks, water supply and sewerage;
- Suppliers of raw materials are selected;
- Availability of the qualified personnel.

At the first stage of the Project works it's planned to purchase a Project site, to develop the Project documentation, to obtain the necessary building permits and to pay for the necessary technological equipment. At the second stage, it is planned to carry out the pre-construction works. The active stage of the Project implementation will begin in March 2024, accordingly, in September 2025 It is planned to start production and commence commercial operations.

Straw, food and garden waste will be used as organic raw materials for BGS. Organic and inorganic raw materials will be supplied to the facility in the amount of 110 000 tons, including 30 000 tons of straw (cereals, legumes, corn), 29 280 tons of food and gardening waste and 50 720 tons of inorganic waste sorted from 80 000 tons of solid waste. The main mode of transport for the delivery of raw materials will be motor transport.

Both packaged and unpackaged organic waste from the food industry and gastronomy are going to be processed. The unpacking system allows to accept packaged waste, spoiled and expired products. It separates packaged waste into usable biomass and foreign matter. While organic components are used to produce biogas, inorganic waste is separated into metals, inert materials and plastics.

After processing and storage, biomass suitable for use is sanitized. To destroy potential pathogens, the biomass is heated to a temperature of 70 °C for at least one hour.

After homogenization, the biomass enters the main fermenter, where most of the organic material is decomposed into biogas at a temperature of about 42 °C. After that, the resulting biogas is sent to a gas storage tank, which is located on top of the post-digester. The biogas is then desulfurized and dried.

After passing through the activated carbon filter, the biogas enters the gas tank, then goes to the post- treatment. After post-treatment, the biogas is separated into biomethane-$CH_4$ and carbon dioxide-$CO_2$. Biomethane is transported Biomethane is transported via gas networks to consumers or liquefied, while carbon dioxide $CO_2$ is liquefied and delivered to consumers by road.

Solid and liquid fermentation residues are used as organic fertilizers in agriculture. Pollution water is purified at the ultrafiltration unit and discharged into the sewer. $CO_2$ certificates are sold to "polluting companies".

**In result of the processing, the following products will be produced in the BGS:**

- Biomethane-$CH_4$;
- Carbon dioxide-$CO_2$;
- $CO_2$-certificates;
- Bio-coal pellets;
- Metal waste;
- Broken glass;
- Screening (gravel, sand, small stones, crushed construction debris);
- Polymer waste.

**The list of the BGS machines and equipment:**

The BGS complex includes all the necessary turnkey technological equipment, all technical documentation for equipment, buildings and structures. The term of the warranty for equipment, materials and work is 24 months from the date of commissioning of the BGS.

## Table 3.1. - Calendar plan for Project implementation, thousand EUR excluding VAT

| Article title | 1 month | 2 month | 3 month | 4 month | 5 month | 6 month | 7 month | 8 month | 9 month | 10 month | 11 month | 12 month | 1 year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purchase of land for construction | | | € 1 370,90 | | | | | | | | | | € 1 370,90 |
| Plant design | | € 400,00 | € 400,00 | € 400,00 | € 400,00 | € 400,00 | | | | | | | € 2 000,00 |
| Permitting documentation | | | | | | € 500,00 | | | | | | | € 500,00 |
| Construction | | | | | | | € 550,00 | € 550,00 | € 550,00 | € 550,00 | € 550,00 | € 550,00 | € 3 300,00 |
| Network connection | | € 500,00 | | | | | | | | | | | € 500,00 |
| Unexpected expenses | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | € 50,00 | | | € 500,00 |
| **Cost of work/services** | € 50,00 | € 950,00 | € 1 820,90 | € 450,00 | € 450,00 | € 950,00 | € 600,00 | € 600,00 | € 600,00 | € 600,00 | € 550,00 | € 550,00 | |
| Equipment for sorting raw materials | | | | | | | € 2 800,00 | | | | | | € 2 800,00 |
| Biogas production equipment | | | | | | | € 6 000,00 | | | | | | € 6 000,00 |
| Biogas cleaning and drying equipment | | | | | | | | € 1 400,00 | | | | | € 1 400,00 |
| Equipment for separating Biogas into Methane- $CH_4$ and $CO_2$ | | | | | | | | | € 1 300,00 | | | | € 1 300,00 |
| Liquefaction equipment - $CH_4$ and $CO_2$ | | | | | | | | | | € 314,00 | | | € 314,00 |
| Equipment for bio-coal pellets | | | | | | | | € 1 500,00 | € 1 500,00 | € 146,00 | | | € 3 146,00 |
| Equipment for storing finished products | | | | | | | | | | € 900,00 | | | € 900,00 |
| **Cost of equipment** | € - | € - | € - | € - | € - | € - | € 8 800,00 | € 2 900,00 | € 2 800,00 | € 1 360,00 | € - | € - | |
| Customs duty | | | | | | | | | | | | | |
| VAT | € 10,50 | € 199,50 | € 382,39 | € 94,50 | € 94,50 | € 199,50 | € 1 974,00 | € 735,00 | € 714,00 | € 411,60 | € 115,50 | € 115,50 | € 5 046,49 |
| **TOTAL thousand EUR** | € 60,50 | € 1 149,50 | € 2 203,29 | € 544,50 | € 544,50 | € 1 149,50 | € 11 374,00 | € 4 235,00 | € 4 114,00 | € 2 371,60 | € 665,50 | € 665,50 | € 29 077,39 |

| Article title | 1 month | 2 month | 3 month | 4 month | 5 month | 6 month | 7 month | 8 month | 9 month | 10 month | 11 month | 12 month | 2nd year | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Purchase of land for construction | | | | | | | | | | | | | € - | € 1 370,90 |
| Plant design | | | | | | | | | | | | | € - | € 2 000,00 |
| Permitting documentation | | | | | | | | | | | | | € - | € 500,00 |
| Construction | € 550,00 | € 550,00 | € 550,00 | € 550,00 | | | | | | | | | € 2 200,00 | € 5 500,00 |
| Network connection | | | | | | | | | | | | | € - | € 500,00 |
| Unexpected expenses | | | | | | | | | | | | | € - | € 500,00 |
| **Cost of work/services** | € 550,00 | € 550,00 | € 550,00 | € 550,00 | € - | € - | € - | € - | € - | € - | € - | € - | | |
| Equipment for sorting raw materials | | | | | | | | | | | | | € - | € 2 800,00 |
| Biogas production equipment | | | | | | | | | | | | | € - | € 6 000,00 |
| Biogas cleaning and drying equipment | | | | | | | | | | | | | € - | € 1 400,00 |
| Equipment for separating Biogas into Methane- $CH_4$ and $CO_2$ | | | | | | | | | | | | | € - | € 1 300,00 |
| Liquefaction equipment - $CH_4$ and $CO_2$ | | | | | | | | | | | | | | € 314,00 |
| Equipment for bio-coal pellets | | | | | | | | | | | | | | € 3 146,00 |
| Equipment for storing finished products | | | | | | | | | | | | | € - | € 900,00 |
| **Cost of equipment** | € - | € - | € - | € - | € - | € - | € - | € - | € - | € - | € - | € - | | |
| Customs duty | | | | | | | | | | | | | | |
| VAT | € 115,50 | € 115,50 | € 115,50 | € 115,50 | € - | € - | € - | € - | € - | € - | € - | € - | € 462,00 | € 5 508,49 |
| **TOTAL thousand EUR** | € 665,50 | € 665,50 | € 665,50 | € 665,50 | € - | € - | € - | € - | € - | € - | € - | € - | € 2 662,00 | € 31 739,39 |

## 3.3. PLANT STAFF PLAN

**Table 3.2.**

| Structural subdivision | Job title | Pers. | Salary, Euro | Total, Euro |
|---|---|---|---|---|
| **Administrative staff** | | | | |
| Control | Plant manager | 2 | 3 000,00 € | 6 000,00 € |
| Accounting | Accountant/Consultant | 1 | 2 000,00 € | 2 000,00 € |
| **Total administrative staff** | | **3** | | **8 000,00 €** |
| **Production personnel** | | | | |
| Production and technical department | Operator, electrician | 2 | 2 500,00 € | 5 000,00 € |
| | Operator, mechanic | 2 | 3 200,00 € | 6 400,00 € |
| | Operator | 6 | 2 000,00 € | 12 000,00 € |
| | laboratory assistant | 2 | 1 500,00 € | 3 000,00 € |
| Production personnel | Operator | 8 | 2 000,00 € | 16 000,00 € |
| **Total production staff** | | **20** | | **42 400,00 €** |
| **TOGETHER AROUND THE STATION** | | **23** | | **50 400,00 €** |
| Taxes on salaries of administrative staff | | | | 3 200,00 € |
| Taxes on payroll of production personnel | | | | 16 960,00 € |
| **TAXES TOTAL** | | | | **20 160,00 €** |
| **TOTAL - wages with taxes for the enterprise** | | | | **70 560,00 €** |

## 3.4. ENVIRONMENTAL ASSESSMENT

An important aspect is the impact of the BGS on the environment. The environmental assessment of the project is carried out by the Spain specialized state bodies. The operation of the facility is permitted in case of compliance with the requirements of environmental legislation.

# CHAPTER 4. FINANCIAL PLAN

## 4.1. PROJECT PERFORMANCE

**Table 4.1.**

| Article title | Meaning | Unit of measurement |
|---|---|---|
| **The main indicators of the project:** | | |
| **The total amount of raw materials entering processing** | **110 000** | **Tons per year** |
| Share of MSW waste | 80 000 | Tons per year |
| Straw share | 30 000 | Tons per year |
| **Available amount of biogas** | **19 146 600** | **$m^3$/year** |
| Biogas produced from food waste | 24,09 | % |
| Biogas produced from straw | 75,91 | % |
| Biomethane-$CH_4$ content in biogas | 65 | % |
| Available amount of biomethane $CH_4$ | 12 445 290 | $m^3$/year |
| Calorific value of the biomethane produced (1$m^3$ $CH_4$) | 9,969 | kW/$m^3$ |
| **Calorific value of the available biomethane $CH_4$** | **124 067** | **MW per year** |
| Content of carbon dioxide-$CO_2$ in biogas | 35 | % |
| Available amount of carbon dioxide $CO_2$ | 6 701 310 | $m^3$/year |
| Specific gravity coefficient of $CO_2$ | 1,98 | kg/$m^3$ |
| **Mass of carbon dioxide produced - $CO_2$** | **13 247** | **Tons per year** |
| **Annual volume of solid household waste** | **80 000** | **Tons per year** |
| **Sort line parameters:** | | |
| Sorting line performance | 96 768 | Tons per year |
| Number of working hours per year | 8 064 | Hours per year |
| Sorting line performance | 12 000 | Kg per Hour |
| **Maintenance and repair costs:** | | |
| Spare parts for sorting line | 84 000,00 | Euro/Year |
| Sorting line maintenance | 5 000,00 | Euro/Year |

**Table continuation 4.1.**

| Article title | Meaning | Unit of measurement |
|---|---|---|
| **Solid waste morphology:** | | |
| The proportion of food waste | 35,5 | % |
| The proportion of paper in waste | 18,1 | % |
| The proportion of metal in the waste | 2,5 | % |
| The proportion of polymer packaging in waste | 12,5 | % |
| The proportion of multi-layer packaging in waste | 4,1 | % |
| The proportion of wood in the waste | 1,1 | % |
| The proportion of textiles in waste | 5,1 | % |
| The proportion of glass in waste | 7,4 | % |
| The proportion of leather, rubber in the waste | 1,4 | % |
| The proportion of stones in the waste | 2,5 | % |
| The proportion of bones in the waste | 3,2 | % |
| The proportion of seven in the waste | 3,1 | % |
| The proportion of hazardous waste | 0,6 | % |
| The proportion of construction waste in the waste | 2,9 | % |
| **Secondary raw materials are sorted:** | | |
| Quantity of metal (for sale) | 0,248 | Tons per Hour |
| Quantity of glass (for sale) | 0,734 | Tons per Hour |
| Quantity of paper (for sale) | 1,796 | Tons per Hour |
| Dropout quantity (for sale) | 0,593 | Tons per Hour |
| Quantity of polymers (for sale) | 2,296 | Tons per Hour |
| Amount of organic matter (for processing) | 3,631 | Tons per Hour |

**Table continuation 4.1.**

| Article title | Meaning | Unit of measurement |
|---|---|---|
| **Annual volume of organic waste processing** | **59 280,00** | **tons per year** |
| **BGS parameters** | | |
| Number of working hours per year | 8 064 | Hours per year |
| Annual consumption of organic raw materials | 59 280 | Tons per year |
| **Planned BGS capacity for biogas** | **19 146 600** | **$m^3$ / year** |
| Available amount of biomethane $CH_4$ | 12 445 290 | $m^3$ / year |
| Calorific value of biomethane-$CH_4$ for sale | 124 067 | Megawatts per year |
| Available amount of carbon dioxide $CO_2$ | 6 701 310 | $m^3$ / year |
| Amount of carbon dioxide $CO_2$ for sale | 13 247 | Tons per year |
| Amount of bio-coal pellets for sale | 9 485 | Tons per year |

| | | |
|---|---|---|
| **Amount of sorted food waste** | **29 280** | **tons per year** |
| Available amount of the original feedstock (OS) | 29 280 | t / year |
| Dry matter content (TS) | 350 | kg/ton OS |
| Available dry matter TS | 10 248 | t / year |
| Water goes hand in hand with DS | 19 032 | t / year |
| Organic DS | 75 | % DS |
| Available biogenic organic content | 7 686 | t / year |
| Average gas yield from WABIO fermentation | 0,6 | $m^3$ / kg DM |
| **Available amount of biogas** | **4 611 600** | **$m^3$ / year** |
| Average residence time in the fermenter | 40 | Day |
| Average $CH_4$ content in biogas | 65 | % |

| | | |
|---|---|---|
| **Straw** | **30 000** | **tons per year** |
| Available amount of the original feedstock (OS) | 30 000 | t / year |
| Dry matter content (TS) | 850 | kg/ton OS |
| Available dry matter TS | 25 500 | t / year |
| Water goes hand in hand with DS | 4 500 | t / year |
| Organic DS | 95 | % DS |
| Available biogenic organic content | 24 225 | t / year |
| Average gas yield from WABIO fermentation | 0,60 | $m^3$ / kg DM |
| **Available amount of biogas** | **14 535 000** | **$m^3$ / year** |
| Average residence time in the fermenter | 51 | Day |
| Average $CH_4$ content in biogas | 65 | % |

**Table continuation 4.1.**

| Article title | Meaning | Unit of measurement |
|---|---|---|
| **Material costs** | | |
| NPK fertilizer for desulfurization | 3 000,00 | Euro/year |
| Diesel fuel | 30 000,00 | Euro/year |
| Personal safety equipment | 5 000,00 | Euro/year |
| **Maintenance and repair costs** | | |
| Pump spare parts | 50 000,00 | Euro/year |
| Agitator spare parts | 50 000,00 | Euro/year |
| External repair work | 100 000,00 | Euro/year |
| Energy costs per process – preparation – separation – purification of methane $CH_4$ and $CO_2$ | 618 038,08 | Euro per year |
| **Expenses for other needs** | | |
| Insurance | 150 000,00 | Euro per year |
| Lease | - | Euro per month |
| Office/overhead costs | 10 000,00 | Euro per month |
| Management company | 15 000,00 | Euro per month |
| **Tariffs and prices** | | |
| Fee for accepting waste | -50,00 | Euro per 1 ton |
| Selling price of biomethane-$CH_4$ €/MW | 135,00 | Euro per MWh |
| Selling price of carbon dioxide $CO_2$ | 200,00 | Euro per 1 ton |
| Compensation for carbon dioxide $CO_2$ | - | Euro per year |
| Straw price | 50,00 | Euro per 1 ton |
| Price of waste metal (on the secondary market) | 250,00 | Euro per 1 ton |
| Price of glass waste (on the secondary market) | 40,00 | Euro per 1 ton |
| Price of waste paper (on the secondary market) | 50,00 | Euro per 1 ton |
| Dropout price (on the secondary market) | 25,00 | Euro per 1 ton |
| Price of waste polymers (in the secondary market) | 100,00 | Euro per 1 ton |
| Price of bio-coal pellets | 400,00 | Euro / ton |
| Diesel price | 1,50 | Euro / liter |
| Return on investment | - | % |
| Return on investment | - | Euro |
| **Taxes and Fees** | | |
| VAT | 21 | % |
| Tariff rate | - | % |
| Income tax | 25 | % |

**Table continuation 4.1.**

| Article title | Meaning | Unit of measurement |
|---|---|---|
| **Financing conditions** | | |
| **Credit TOTAL** | **31 739 395** | **Thousand euro** |
| Annual interest rate | 4,5 | % |
| Loan term | 5 | Year |
| Payment deadline | 1,5 | Year |
| Discount rate | 5 | % |
| **Investments in the construction of the complex** | | |
| Acquisition of land for construction, without VAT | 1 370,90 | Thousand euro |
| Plant design | 2 000,00 | Thousand euro |
| Permitting documentation | 500,00 | Thousand euro |
| Construction | 5 500,00 | Thousand euro |
| Network connection | 500,00 | Thousand euro |
| Unexpected expenses | 500,00 | Thousand euro |
| **Cost of work/services** | **10 370,90** | **Thousand euro** |
| Equipment for sorting raw materials | 2 800,00 | Thousand euro |
| Biogas production equipment | 6 000,00 | Thousand euro |
| Biogas cleaning and drying equipment | 1 400,00 | Thousand euro |
| Equipment for separating Biogas into Methane-$CH_4$ and $CO_2$ | 1 300,00 | Thousand euro |
| Liquefaction equipment - $CH_4$ and $CO_2$ | 314,00 | Thousand euro |
| Equipment for bio-coal pellets | 3 146,00 | Thousand euro |
| Equipment for storing finished products | 900,00 | Thousand euro |
| **Cost of equipment** | **15 860,00** | **Thousand euro** |
| Customs duty | - | Thousand euro |
| VAT | 5 508,49 | Thousand euro |
| **Investing together** | **31 739,39** | **Thousand euro** |

## 4.2. TOTAL PROJECT COST, SOURCES AND TERMS OF FINANCING

**Table 4.2. - Investment loan, thousand EUR**

**Investment loan, thousand EUR**
**Credit rate 4,5 %**

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | TOTAL |
|---|---|---|---|---|---|---|
| **Loan for construction of BGS** | € 31 739,39 | € - | € - | € - | € - | € 31 739,39 |
| Paying off the loan body | € - | € 4 534,20 | € 9 068,40 | € 9 068,40 | € 9 068,40 | € 31 739,39 |
| **Loan balance** | € 31 739,39 | € 27 205,20 | € 18 136,80 | € 9 068,40 | -€ 0,00 | -€ 0,00 |
| Interest accrued | € 1 428,27 | € 1 368,76 | € 1 003,19 | € 595,11 | € 187,04 | € 4 582,38 |
| Interest accrued (credit holidays) | € - | € 289,06 | € 578,11 | € 578,11 | € 578,11 | € 2 023,39 |
| **Interest paid** | € - | € 960,68 | € 1 615,31 | € 1 207,23 | € 799,15 | € 4 582,38 |

## 4.3. INCOME AND EXPENDITURE PLAN FOR THE PROJECT

The main revenues are planned from September 2025, after the launch of the BGS into operation. These data are reflected in the income and expenditure calculations for the project.

Project profit is formed from:

- Sales of biomethane-$CH_4$;
- Sales of carbon dioxide-$CO_2$;
- Implementation of $CO_2$-certificates;
- Sales of Bio-coal pellets;
- Sales of ferrous and non-ferrous metals;
- Sales of screening implementations (gravel, sand, small stones, crushed construction debris);
- Sales of polymeric waste;
- Sales of paper and cardboard.

The calculation of production volumes and gross profit from sales is given in table 4.3.

**Table 4.3. - The calculation of production volumes and gross profit from sales**

## Planned work schedule

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| Working days of the biogas plant | | 168 | 336 | 336 | 336 | 336 | 1 512 |
| Biogas plant opening hours | | 4 032 | 8 064 | 8 064 | 8 064 | 8 064 | 36 288 |

## Production plan

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| Accepted MSW, tons | | 40 000 | 80 000 | 80 000 | 80 000 | 80 000 | 360 000 |
| Straw accepted, tons | | 15 000 | 30 000 | 30 000 | 30 000 | 30 000 | 135 000 |
| Biogas produced, 1000 $m^3$ | | 9 573 | 19 147 | 19 147 | 19 147 | 19 147 | 86 160 |
| Biomethane-$CH_4$ for sale, MW | | 62 034 | 124 067 | 124 067 | 124 067 | 124 067 | 558 302 |
| Carbon dioxide-$CO_2$ for sale, tons | | 6 624 | 13 247 | 13 247 | 13 247 | 13 247 | 59 612 |
| Bio-coal pellets for sale, tons | | 4 743 | 9 485 | 9 485 | 9 485 | 9 485 | 42 683 |
| Sorted Metal for sale, tons | | 1 000 | 2 000 | 2 000 | 2 000 | 2 000 | 9 000 |
| Sorted Glass for sale, tons | | 2 960 | 5 920 | 5 920 | 5 920 | 5 920 | 26 640 |
| Sorted Paper for sale, tons | | 7 240 | 14 480 | 14 480 | 14 480 | 14 480 | 65 160 |
| Sorted Dropout for sale, tons | | 2 392 | 4 784 | 4 784 | 4 784 | 4 784 | 21 528 |
| Sorted Polymers for sale, tons | | 9 256 | 18 512 | 18 512 | 18 512 | 18 512 | 83 304 |

**Raw material costs, including VAT**

**Thousand EUR**

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| Food waste | | -€ 2 420,00 | -€ 4 840,00 | -€ 4 840,00 | -€ 4 840,00 | -€ 4 840,00 | -€ 21 780,00 |
| Straw | | € 907,50 | € 1 815,00 | € 1 815,00 | € 1 815,00 | € 1 815,00 | € 8 167,50 |
| **Total, thousand EUR** | | -€ 1 512,50 | -€ 3 025,00 | -€ 3 025,00 | -€ 3 025,00 | -€ 3 025,00 | -€ 13 612,50 |

## Continuation of Table 4.3. - Plan of income and expenses for the project, with VAT (Thousand EUR)

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| **GROSS INCOME** | | € 15 391,40 | € 30 782,80 | € 30 782,80 | € 30 782,80 | € 30 782,80 | € 138 522,59 |
| Income from the sale of biomethane-$CH_4$, including VAT | | € 10 133,18 | € 20 266,36 | € 20 266,36 | € 20 266,36 | € 20 266,36 | € 91 198,62 |
| Income from the sale of Carbon dioxide-$CO_2$, including VAT | | € 1 602,91 | € 3 205,81 | € 3 205,81 | € 3 205,81 | € 3 205,81 | € 14 426,15 |
| Income from the sale of $CO_2$-Certificates, including VAT | | € - | € - | € - | € - | € - | € - |
| Income from the sale of Bio-coal pellets, including VAT | | € 2 295,37 | € 4 590,74 | € 4 590,74 | € 4 590,74 | € 4 590,74 | € 20 658,33 |
| Income from the sale of waste Metal, including VAT | | € 302,50 | € 605,00 | € 605,00 | € 605,00 | € 605,00 | € 2 722,50 |
| Income from the sale of glass waste, including VAT | | € 143,26 | € 286,53 | € 286,53 | € 286,53 | € 286,53 | € 1 289,38 |
| Income from the sale of paper waste, including VAT | | € 350,42 | € 700,83 | € 700,83 | € 700,83 | € 700,83 | € 3 153,74 |
| Income from the sale of Dropout, including VAT | | € 115,77 | € 231,55 | € 231,55 | € 231,55 | € 231,55 | € 1 041,96 |
| Income from the sale of polymer waste, including VAT | | € 447,99 | € 895,98 | € 895,98 | € 895,98 | € 895,98 | € 4 031,91 |
| **GROSS EXPENDITURE** | | € 572,49 | € 521,78 | € 521,78 | € 521,78 | € 521,78 | € 2 659,62 |
| **Production costs** | | € 1 156,34 | € 2 312,68 | € 2 312,68 | € 2 312,68 | € 2 312,68 | € 10 407,06 |
| Rent of the land plot, without VAT | | € - | € - | € - | € - | € - | € - |
| Production staff salary | | -€ 254,40 | -€ 508,80 | -€ 508,80 | -€ 508,80 | -€ 508,80 | -€ 2 289,60 |
| Taxes on payroll of production personnel | | -€ 101,76 | -€ 203,52 | -€ 203,52 | -€ 203,52 | -€ 203,52 | -€ 915,84 |
| Cost of Food Waste, including VAT | | € 2 420,00 | € 4 840,00 | € 4 840,00 | € 4 840,00 | € 4 840,00 | € 21 780,00 |
| Straw cost, with VAT | | -€ 907,50 | -€ 1 815,00 | -€ 1 815,00 | -€ 1 815,00 | -€ 1 815,00 | -€ 8 167,50 |
| **Sorting line** | | -€ 53,85 | -€ 107,69 | -€ 107,69 | -€ 107,69 | -€ 107,69 | -€ 484,61 |
| Spare parts for sorting line, with VAT | | -€ 50,82 | -€ 101,64 | -€ 101,64 | -€ 101,64 | -€ 101,64 | -€ 457,38 |
| Maintenance of the sorting line, with VAT | | -€ 3,03 | -€ 6,05 | -€ 6,05 | -€ 6,05 | -€ 6,05 | -€ 27,23 |
| **BGS on organic waste** | | -€ 206,31 | -€ 1 035,81 | -€ 1 035,81 | -€ 1 035,81 | -€ 1 035,81 | -€ 4 349,53 |
| Spare parts for the pump, with VAT | | -€ 30,25 | -€ 60,50 | -€ 60,50 | -€ 60,50 | -€ 60,50 | -€ 272,25 |
| Spare parts for agitator, with VAT | | -€ 30,25 | -€ 60,50 | -€ 60,50 | -€ 60,50 | -€ 60,50 | -€ 272,25 |
| External repairs, with VAT | | -€ 60,50 | -€ 121,00 | -€ 121,00 | -€ 121,00 | -€ 121,00 | -€ 544,50 |
| NPK fertilizer for desulfurization, with VAT | | -€ 1,82 | -€ 3,63 | -€ 3,63 | -€ 3,63 | -€ 3,63 | -€ 16,34 |
| Diesel fuel with VAT | | -€ 18,15 | -€ 36,30 | -€ 36,30 | -€ 36,30 | -€ 36,30 | -€ 163,35 |
| Personnel safety equipment, VAT incl. | | -€ 3,03 | -€ 6,05 | -€ 6,05 | -€ 6,05 | -€ 6,05 | -€ 27,23 |
| Energy costs for the process-preparation-separation-purification of biomethane-$CH_4$ and $CO_2$, with VAT | | -€ 373,91 | -€ 747,83 | -€ 747,83 | -€ 747,83 | -€ 747,83 | -€ 3 365,22 |
| **Administrative expenses** | | -€ 323,70 | -€ 647,40 | -€ 647,40 | -€ 647,40 | -€ 647,40 | -€ 2 913,30 |
| Insurance, without VAT | | -€ 75,00 | -€ 150,00 | -€ 150,00 | -€ 150,00 | -€ 150,00 | -€ 675,00 |
| Cost of office / overhead expenses, including VAT | | -€ 72,60 | -€ 145,20 | -€ 145,20 | -€ 145,20 | -€ 145,20 | -€ 653,40 |
| Administrative staff salary | | -€ 48,00 | -€ 96,00 | -€ 96,00 | -€ 96,00 | -€ 96,00 | -€ 432,00 |
| Taxes on salaries of administrative staff | | -€ 19,20 | -€ 38,40 | -€ 38,40 | -€ 38,40 | -€ 38,40 | -€ 172,80 |
| Management company, with VAT | | -€ 108,90 | -€ 217,80 | -€ 217,80 | -€ 217,80 | -€ 217,80 | -€ 980,10 |
| **TOTAL** | | € 15 963,88 | € 31 304,58 | € 31 304,58 | € 31 304,58 | € 31 304,58 | € 141 182,21 |

## 4.4. PROJECT CASH FLOW PLAN

**Table 4.4. - PROJECT CASH FLOW PLAN**

| | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| **OPERATING ACTIVITIES** | | | | | | | |
| **Operating income** | | 15 391,40 € | 30 782,80 € | 30 782,80 € | 30 782,80 € | 30 782,80 € | 138 522,59 € |
| Income from the sale of biomethane-$CH_4$, including VAT | | 10 133,18 € | 20 266,36 € | 20 266,36 € | 20 266,36 € | 20 266,36 € | 91 198,62 € |
| Income from the sale of Carbon dioxide-$CO_2$, including VAT | | 1 602,91 € | 3 205,81 € | 3 205,81 € | 3 205,81 € | 3 205,81 € | 14 426,15 € |
| Income from the sale of $CO_2$-Certificates, including VAT | | | | | | | |
| Income from the sale of Bio-coal pellets, including VAT | | 2 295,37 € | 4 590,74 € | 4 590,74 € | 4 590,74 € | 4 590,74 € | 20 658,33 € |
| Income from the sale of waste Metal, including VAT | | 302,50 € | 605,00 € | 605,00 € | 605,00 € | 605,00 € | 2 722,50 € |
| Income from the sale of glass waste, including VAT | | 143,26 € | 286,53 € | 286,53 € | 286,53 € | 286,53 € | 1 289,38 € |
| Income from the sale of glass waste, including VAT | | 350,42 € | 700,83 € | 700,83 € | 700,83 € | 700,83 € | 3 153,74 € |
| Income from the sale of glass waste, including VAT | | 115,77 € | 231,55 € | 231,55 € | 231,55 € | 231,55 € | 1 041,96 € |
| Income from the sale of glass waste, including VAT | | 447,99 € | 895,98 € | 895,98 € | 895,98 € | 895,98 € | 4 031,91 € |
| **Operating expenses** | 4 930,99 € | -5 920,42 € | -13 072,36 € | -13 174,38 € | -13 276,40 € | -13 476,19 € | -53 988,76 € |
| Rent of land, excluding VAT | | | | | | | |
| Salary of production personnel | | -254,40 € | -508,80 € | -508,80 € | -508,80 € | -508,80 € | -2 289,60 € |
| Salary taxes for production personnel | | -101,76 € | -203,52 € | -203,52 € | -203,52 € | -203,52 € | -915,84 € |
| Cost of solid waste, including VAT | | 2 420,00 € | 4 840,00 € | 4 840,00 € | 4 840,00 € | 4 840,00 € | 21 780,00 € |
| Cost of Straw, including VAT | | -907,50 € | -1 815,00 € | -1 815,00 € | -1 815,00 € | -1 815,00 € | -8 167,50 € |
| Spare parts for sorting line, including VAT | | -50,82 € | -101,64 € | -101,64 € | -101,64 € | -101,64 € | -457,38 € |
| Maintenance of the sorting line, including VAT | | -3,03 € | -6,05 € | -6,05 € | -6,05 € | -6,05 € | -27,23 € |
| Spare parts for the pump, including VAT | | -30,25 € | -60,50 € | -60,50 € | -60,50 € | -60,50 € | -272,25 € |
| Spare parts for mixer, including VAT | | -30,25 € | -60,50 € | -60,50 € | -60,50 € | -60,50 € | -272,25 € |
| External repair work, including VAT | | -60,50 € | -121,00 € | -121,00 € | -121,00 € | -121,00 € | -544,50 € |
| NPK fertilizer for desulfurization, with VAT | | -1,82 € | -3,63 € | -3,63 € | -3,63 € | -3,63 € | -16,34 € |
| Diesel fuel with VAT | | -18,15 € | -36,30 € | -36,30 € | -36,30 € | -36,30 € | -163,35 € |
| Personnel safety equipment, including VAT | | -3,03 € | -6,05 € | -6,05 € | -6,05 € | -6,05 € | -27,23 € |
| Energy consumption for the process - preparation - separation - purification of biomethane-$CH_4$ and $CO_2$, including VAT | | -373,91 € | -747,83 € | -747,83 € | -747,83 € | -747,83 € | -3 365,22 € |
| Insurance, excluding VAT | | -75,00 € | -150,00 € | -150,00 € | -150,00 € | -150,00 € | -675,00 € |
| Cost of office/overhead expenses, including VAT | | -72,60 € | -145,20 € | -145,20 € | -145,20 € | -145,20 € | -653,40 € |
| Administrative staff salaries | | -48,00 € | -96,00 € | -96,00 € | -96,00 € | -96,00 € | -432,00 € |
| Salary taxes for administrative personnel | | -19,20 € | -38,40 € | -38,40 € | -38,40 € | -38,40 € | -172,80 € |
| Management company, with VAT | | -108,90 € | -217,80 € | -217,80 € | -217,80 € | -217,80 € | -980,10 € |
| Depreciation | | -1 311,55 € | -2 623,09 € | -2 623,09 € | -2 623,09 € | -2 623,09 € | -11 803,91 € |
| VAT | 4 930,99 € | -2 225,51 € | -5 606,01 € | -5 606,01 € | -5 606,01 € | -5 606,01 € | -19 718,56 € |
| Income tax | | -2 644,26 € | -5 365,04 € | -5 467,06 € | -5 569,08 € | -5 768,87 € | -24 814,32 € |
| **Financial result of operating activities** | 4 930,99 € | 10 782,52 € | 20 333,53 € | 20 231,51 € | 20 129,49 € | 19 929,70 € | 96 337,73 € |

## Continuation of Table 4.4

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| **INVESTMENT ACTIVITIES** | | | | | | | |
| Income from investment activities | | | | | | | |
| Own funds to purchase a plot for construction | | | | | | | |
| Own funds to pay for design | | | | | | | |
| Own funds to pay for permits | | | | | | | |
| Own funds to pay for connection to the network | | | | | | | |
| Own funds to pay for construction | | | | | | | |
| Own funds for operating activities | | | | | | | |
| Own funds to pay for equipment | | | | | | | |
| Own funds for paying VAT | | | | | | | |
| Own funds for unexpected expenses | | | | | | | |
| Working capital for interest payments | | | | | | | |
| Working capital to pay off the loan body | | | | | | | |
| Return on investment | | | | | | | |
| **Investment activity expenses** | -29 077,39 € | -2 662,00 € | | | | | -31 739,39 € |
| Acquisition of land for construction | -1 370,90 € | | | | | | -1 370,90 € |
| Plant design | -2 000,00 € | | | | | | -2 000,00 € |
| Permitting documentation | -500,00 € | | | | | | -500,00 € |
| Construction | -3 300,00 € | -2 200,00 € | | | | | -5 500,00 € |
| Network connection | -500,00 € | | | | | | -500,00 € |
| Unexpected expenses | -500,00 € | | | | | | -500,00 € |
| Equipment for sorting raw materials | -2 800,00 € | | | | | | -2 800,00 € |
| Biogas production equipment | -6 000,00 € | | | | | | -6 000,00 € |
| Biogas cleaning and drying equipment | -1 400,00 € | | | | | | -1 400,00 € |
| Equipment for separating Biogas into Methane-$CH_4$ and $CO_2$ | -1 300,00 € | | | | | | -1 300,00 € |
| Liquefaction equipment - $CH_4$ and $CO_2$ | -314,00 € | | | | | | -314,00 € |
| Equipment for bio-coal pellets | -3 146,00 € | | | | | | -3 146,00 € |
| Equipment for storing finished products | -900,00 € | | | | | | -900,00 € |
| Customs duty | | | | | | | |
| VAT | -5 046,49 € | -462,00 € | | | | | -5 508,49 € |
| **Financial result of investment activities** | -29 077,39 € | -2 662,00 € | | | | | -31 739,39 € |

**Continuation of Table 4.4**

| Article title | 1 month | 2 month | 3 month | 4 month | 5 month | 6 month | 7 month | 8 month | 9 month | 10 month | 11 month | 12 month | 1 year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **FINANCIAL ACTIVITIES** | | | | | | | | | | | | | |
| Income from financial activities | 60,50 € | 1 149,50 € | 2 203,29 € | 544,50 € | 544,50 € | 1 149,50 € | 11 374,00 € | 4 235,00 € | 4 114,00 € | 2 371,60 € | 665,50 € | 665,50 € | 29 077,39 € |
| Getting a loan | 60,50 € | 1 149,50 € | 2 203,29 € | 544,50 € | 544,50 € | 1 149,50 € | 11 374,00 € | 4 235,00 € | 4 114,00 € | 2 371,60 € | 665,50 € | 665,50 € | 29 077,39 € |
| Financial activity expenses | | | | | | | | | | | | | |
| Paying off the loan body | | | | | | | | | | | | | |
| Payment of interest on the loan | | | | | | | | | | | | | |
| **Financial result of financial activities** | 60,50 € | 1 149,50 € | 2 203,29 € | 544,50 € | 544,50 € | 1 149,50 € | 11 374,00 € | 4 235,00 € | 4 114,00 € | 2 371,60 € | 665,50 € | 665,50 € | 29 077,39 € |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total Cash Flow** | | 10,50 € | 199,50 € | 382,39 € | 94,50 € | 94,50 € | 199,50 € | 1 974,00 € | 735,00 € | 714,00 € | 411,60 € | 115,50 € | 4 930,99 € |
| **Total cash flow accumulated** | | 10,50 € | 210,00 € | 592,39 € | 686,89 € | 781,39 € | 980,89 € | 2 954,89 € | 3 689,89 € | 4 403,89 € | 4 815,49 € | 4 930,99 € | 4 930,99 € |

## VAT (income-expenses)
## Thousand EUR

| Article title | 1 month | 2 month | 3 month | 4 month | 5 month | 6 month | 7 month | 8 month | 9 month | 10 month | 11 month | 12 month | 1 year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VAT on investments | -10,50 € | -199,50 € | -382,39 € | -94,50 € | -94,50 € | -199,50 € | -1 974,00 € | -735,00 € | -714,00 € | -411,60 € | -115,50 € | -115,50 € | -5 046,49 € |
| VAT (income-expenses) | | | | | | | | | | | | | |
| VAT accumulated | -10,50 € | -199,50 € | -382,39 € | -94,50 € | -94,50 € | -199,50 € | -1 974,00 € | -735,00 € | -714,00 € | -411,60 € | -115,50 € | -115,50 € | -5 046,49 € |
| VAT payable | | | | | | | | | | | | | |
| VAT recoverable | | 10,50 € | 199,50 € | 382,39 € | 94,50 € | 94,50 € | 199,50 € | 1 974,00 € | 735,00 € | 714,00 € | 411,60 € | 115,50 € | 4 930,99 € |

**Continuation of Table 4.4**

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| Income from financial activities | 29 077,39 € | 2 662,00 € | | | | | 31 739,39 € |
| Getting a loan | 29 077,39 € | 2 662,00 € | | | | | 31 739,39 € |
| Financial activity expenses | | -5 494,88 € | -10 683,71 € | -10 275,63 € | -9 867,55 € | 0,00 € | -36 321,77 € |
| Paying off the loan body | | -4 534,20 € | -9 068,40 € | -9 068,40 € | -9 068,40 € | | -31 739,39 € |
| Payment of interest on the loan | | -960,68 € | -1 615,31 € | -1 207,23 € | -799,15 € | 0,00 € | -4 582,38 € |
| **Financial result of financial activities** | 29 077,39 € | -2 832,88 € | -10 683,71 € | -10 275,63 € | -9 867,55 € | 0,00 € | -4 582,38 € |
| | | | | | | | |
| **Total Cash Flow** | 4 930,99 € | 5 287,64 € | 9 649,82 € | 9 955,88 € | 10 261,94 € | 19 929,70 € | 60 015,96 € |
| **Total cash flow accumulated** | 4 930,99 € | 10 218,63 € | 19 868,45 € | 29 824,33 € | 40 086,26 € | 60 015,96 € | 164 944,62 € |

## VAT (income-expenses)
## Thousand EUR

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | TOTAL |
|---|---|---|---|---|---|---|---|
| VAT on investments | -5 046,49 € | -462,00 € | | | | | -5 508,49 € |
| VAT (income-expenses) | | 2 803,01 € | 5 606,01 € | 5 606,01 € | 5 606,01 € | 5 606,01 € | 25 227,05 € |
| VAT accumulated | -5 046,49 € | | | | | | -5 046,49 € |
| VAT payable | | 2 803,01 € | 5 606,01 € | 5 606,01 € | 5 606,01 € | 5 606,01 € | 25 227,05 € |
| VAT recoverable | 4 930,99 € | 577,50 € | | | | | 5 508,49 € |

# CHAPTER 5. PROJECT PERFORMANCE EVALUATION

## Definition of the indicators of project effectiveness

### DR - Discount Rate

Means the interest rate applied against future payments to take into account risk factors and uncertainties over time. A high rate indicates a high level of project risk.

$$DR = \frac{R - t}{1 + t}$$

where **R** is the accepted rate of return, **t** - average annual inflation.

### PV - Present Value

The present value of future receipts decreases over time, taking into account the discount rate:

$$PV = \sum_{i=0}^{n} \frac{CF_i}{(1 + DR)^i}$$

where $\mathbf{CF_i}$ is the cash flow of the i-th period (year);
**DR** - discount rate;
**i** = 0...15 - periods;
**n** = 15 - project implementation period (years).

### NPV – Net Present Value

Means the present value of the future cash flows from the project minus the initial investment in the project.

$$NPV = PV - I,$$

where **PV** is the present cost of the project,
**I** - is the amount of initial investment.

If NPV>0, then the project can be recommended for implementation.

The payback period of an **PBP** - is the period that is required to return the initial investment by accumulating net real money flows received from the project.

### IRR - Internal Rate of Return

Means the discount rate at which the present value of future flows equals the investment.

**Table 5.1.**

Project efficiency assessment 5%

| Article title | 1 year | 2 year | 3 year | 4 year | 5 year | 6 year | IRR |
|---|---|---|---|---|---|---|---|
| Total cash flow | -24 146,40 € | 7 159,84 € | 18 718,22 € | 19 024,28 € | 19 330,34 € | 19 929,70 € | |
| Cumulative total cash flow | -24 146,40 € | -16 986,57 € | 1 731,65 € | 20 755,93 € | 40 086,26 € | 60 015,96 € | |
| Discounted Cash Flow | -22 996,58 € | 6 494,18 € | 16 169,50 € | 15 651,32 € | 15 145,82 € | 14 871,85 € | |
| Cumulative discounted cash flow | -22 996,58 € | -16 502,39 € | -332,89 € | 15 318,43 € | 30 464,25 € | 45 336,10 € | NPV |

# CHAPTER 6. RISKS AND MITIGATION MEASURES

During the implementation of the project, various risks may arise that will affect the economic efficiency of the Project.

This Project can be affected by the following types of risks:

- The risk of reducing of the natural gas prices;
- The risk of delay in obtaining the necessary construction permits.

A decrease in the natural gas prices is not expected; in the contrary, all forecasts indicate an increase in the prices. The state continues to stimulate producers of biomethane from alternative sources. Even if the price of natural gas decreases, the cost of Biogas production will make it possible to profit from the sale of biomethane and carbon dioxide under direct contracts. In the coming months, an increase in the price of energy carriers in Spain is expected. Delays in obtaining permits is not expected as well, because the construction works are planned on the territory of the industrial park, which has the most favorable conditions for obtaining the necessary permits, the management company will provide maximum assistance in the implementation of the project.

### Raw Material risk

The risk is minimized. WABIO technology makes it possible to work on almost any biomass, the amount of available raw materials many times exceeds the amount required for the operation of the enterprise.

### Technological risk

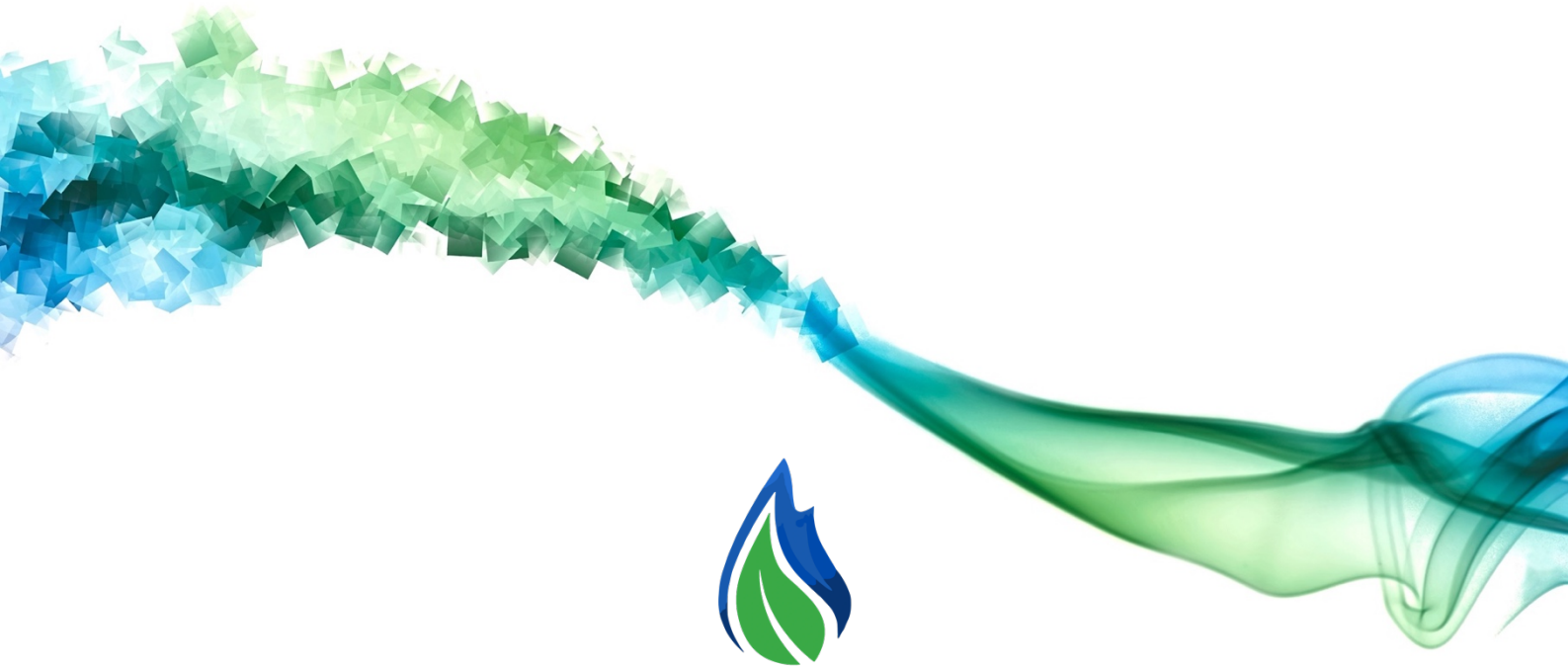
WABIO technology is very reliable and time-tested, the company has vast experience in completed projects. A similar plant was built back in 2010 in Germany, in the city of Bad Köstritz, the enterprise is currently operating perfectly. The Project will use equipment from leading world manufacturers. Equipment is purchased under contracts, with a guarantee and after-sales service.

### Financial risk

The risk is associated with attracting of debt instruments to finance the project. The loan is 100% of the Project costs.
The financial indicators of the project show that the company generates sufficient profit to repay the loan, which is several times greater than the payments on the loan. If necessary, early repayment of loan obligations is possible.

### Environmental risks

These are the threats of loss of resources by business entities due to their destructive impact on the environment: the risk of air pollution, the risk of water pollution, the risk of soil pollution. To minimize this type of risk, specialized expertise will be carried out and environmental protection measures will be implemented. WABIO's advanced patented technology is as environmentally friendly as possible and meets all necessary environmental requirements.



**TARRAGONA BIOGAS**

Carre Sant Jordi 7
43850 Cambrils (Tarragona, Katalonien, Spain)
Tel.: +34 630 72 92 94

Email: info@tgnbiogas.es

Web: www.tgnbiogas.es

**Managing Director:** Davyd Lavrynenko Volkov

**Commercial Register:** NIF: B-56914005

**Place of Jurisdiction:** Cambrils

WABIO

Solution Partner
Automation
SIEMENS

BIT
Braun Industrial Trading GmbH

**SIEMENS Solution Partner**

Exkl. Vertreter von Railtech ALU Singe für GUS und Warschau (Constellium)
Exkl. Repräsentant der RBS wave für GUS, Europa und Brasilien (EnBW)