BUSINESS PLAN:

Creating a company production of plastic pipes for underground water, gas and sewage networks

June, 2023.

GLOBAL INNOVATION TRADE

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Methodological comments on the project

Introduction

This project is the development of a business plan for the establishment of an enterprise producing plastic pipes for underground networks of water, gas and sewerage

Geography of the project: Kamashinsky district

The object and subject of the project

The object of the business plan is an investment project for the creation of an enterprise producing plastic pipes for underground networks of water, gas and sewage.

The subject of the business plan is the economic feasibility of i n v e s t m e n t in the creation of enterprises for the production of plastic pipes for underground networks of water, gas and sewage.

Project goals and objectives

The purpose of the business plan: to assess the feasibility and cost-effectiveness of investment in the creation of enterprises for the production of plastic pipes for underground networks of water, gas and sewage.

Objectives of the business plan:

- assessment of the volume, capacity and structure of the market;
- analysis of consumers and main competitors;
- assessment of trends and prospects for market development;
- justification of the amount of investment funds to implement the project;
- assessment of the economic efficiency of investments in the project.

Research methodology: desk research: analysis of primary and secondary sources of information.

Sources of Information:

- Customer data;
- financial calculations by Global Innovation Trade analysts;
- data from state statistics;
- tax service data;
- data from industry institutions, portals;
- data from other official and open sources of information.

1. Summary of the investment project

Project name: Establishment of an enterprise for the production of plastic pipes for underground networks of water, gas and sewerage.

Initiator of the project: to be clarified.

The aim of the project: justification of the effectiveness of investments in thecreation of an enterprise for the production of plastic pipes for underground networks of water, gas and sewage.

Project site: Kamashi district.

The essence of the project: the project involves investment in the creation of an enterprise for the production of plastic pipes for underground networks of water and gas supply and sewerage.

The timeline for project implementation is shown in the table below.

Table 1. Project implementation schedule

Project Stage	Beginning of work	Duration, days	End of job
Planning the composition of the main production equipment, preparation of TOR to suppliers, analysis proposals, preparation of the technical part of the contracts, Formation of technical requirements for the production room	01.01.2024	181	30.06.2024
Planning the composition of auxiliary equipment, preparation of ToR for suppliers, analysis of proposals, preparation of the technical part of contracts, formation of technical requirements for the production room	01.01.2024	181	30.06.2024
Planning the composition of equipment for quality control, preparation of TOR to suppliers, analysis of proposals, preparation of the technical part of contracts, the formation of technical requirements for the premises of the testing laboratory	01.01.2024	181	30.06.2024

Project Stage	Beginning of work	Duration, days	End of job
Development of the technological part of the project	01.01.2024	181	30.06.2024
Definition of production and warehouse logistics	01.01.2024	181	30.06.2024
Formation of the organizational structure and staff schedules of the production and warehouse complex with a description of employees' functions	01.01.2024	181	30.06.2024
Obtaining funding	01.09.2024	29	30.09.2024
Managing the development of project documentation (together with the contractor selected by the customer)	01.08.2024	60	30.09.2024
General and special construction work (buildings, structures)	01.10.2024	364	30.09.2025
Staff recruitment and training	01.10.2024	365	01.10.2025
Acquisition and installation of main and auxiliary equipment (Phase I)	01.07.2025	91	30.09.2025
Audit of supervised installation and commissioning of main production equipment	01.10.2025	181	31.03.2026
Product certification, approvals	01.01.2025	273	01.10.2025
Start of production	01.10.2025	182	01.04.2026
Reaching full production capacity	01.04.2026	1370	31.12.2029

Source: Global Innovation Trade information

Project financing

The project provides for the use of investment credit in the amount of 5,306.3 thousand dollars, received in the 4th quarter of 2024 at 10% per annum for 5 years with deferred payments on principal debt for 1 year.

The main estimated performance indicators of the project are presented in the table below.

Table 2. Indicators of investment efficiency

Investment performance indicators	Value, thousand dollars.
Net income	3 767,8
Net cash flow NPV	627,6
Internal rate of return IRR (months), %	18,3%

Profitability index PI, units.	1,14
Payback period PB, years.	4,3
Discounted payback period DPB, years	4,7
Investment in the project	5 306,3
Average return on sales for the project, %	37,1%
Discount rate, %	11,7%

Source: Global Innovation Trade calculations

If you invest $5,306.3 thousand in the project, the net profit at the end of the forecast period will be $5,306.3 thousand. The investment in the project will pay for itself in 4 years and 3 months, and the discounted payback period is 4 years and 8 months.

The net discounted income (NPV) of the project is 627.6 thousand dollars, and the internal rate of return (IRR) is 18.3%, which is higher than the discount rate (11.7%).

The value of the profitability index (PI) is 1.14. This means that for each dollar invested in the project, the investor will receive $0.014.

2. The essence of the project

2.1. Description of the project and anticipated products

The project determines the feasibility and planned effectiveness of obtaining investment for the establishment of an enterprise for the production of plastic pipes for underground networks of water, gas and sewage in the Kamashi district.

The idea of the project is to create a modern plant in Uzbekistan for the production of plastic pipes for underground networks of water, gas and sewage.

2.2 Project Location

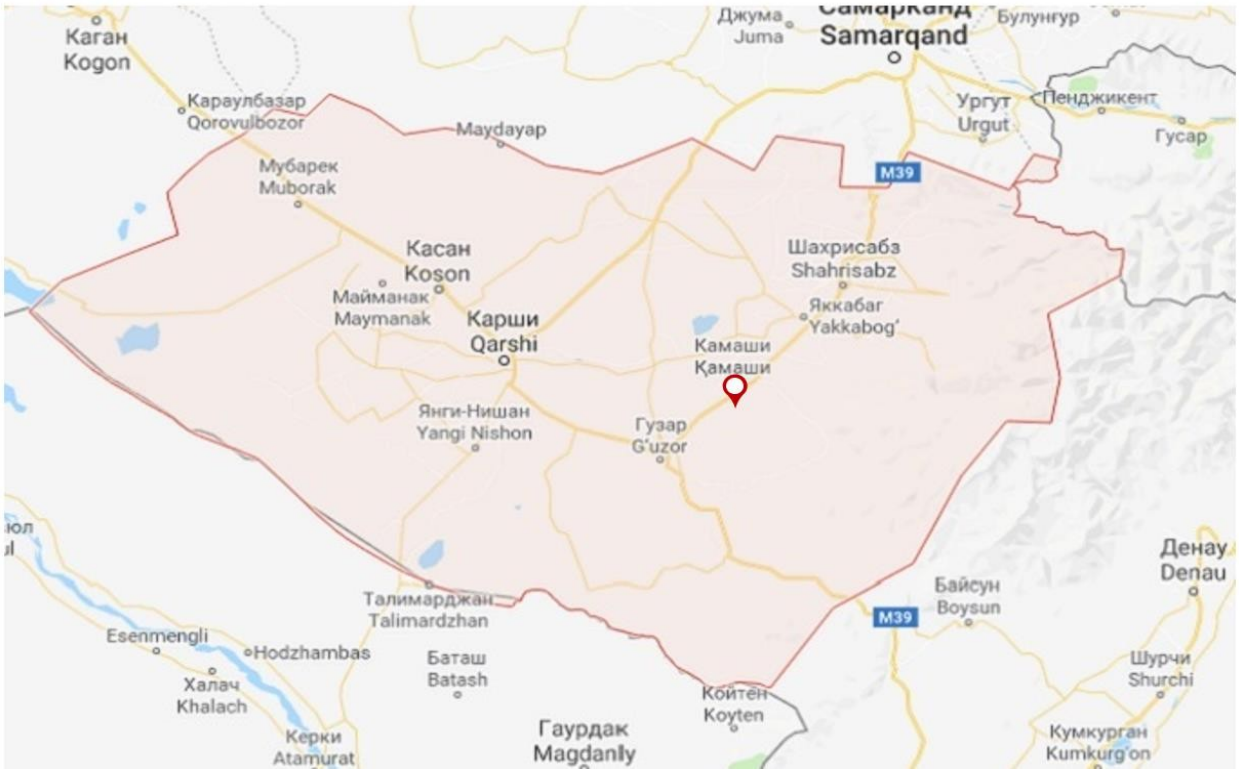
The production site is located in Kashkadarya region, Kamashi district at the following address: Oinakul village.

The district occupies an area of more than 2.66 thousand square kilometers. It is located 60 kilometers from Karshi city and 485 kilometers from Tashkent.

The district is connected to Karshi city by a road1.

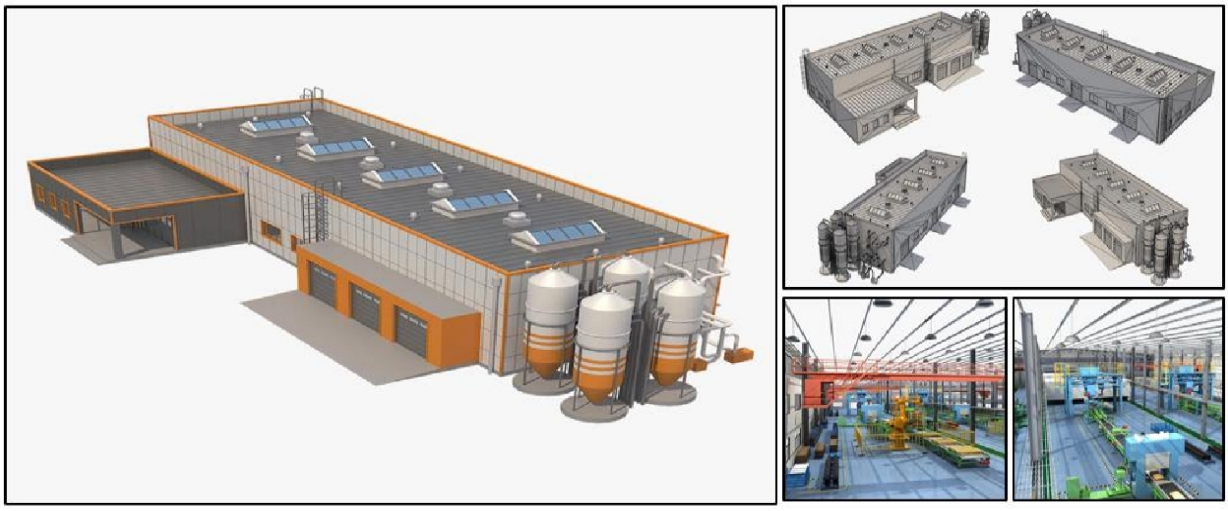
The population of the Kashkadarya region as of 2023 is 3.5 million people, and the population of the Kamashin region itself is 286,000.

Figure 1: Location on the map

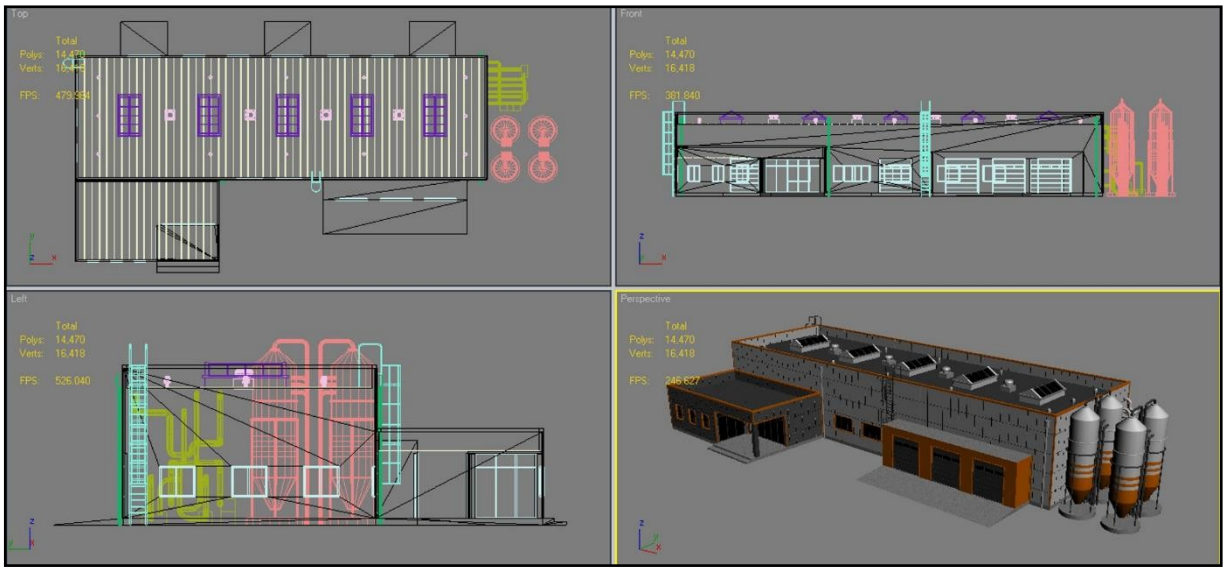


Source: Yandex.map

Figure 2 Overview scheme of land plots in the territory of Kamashi district



Source: Global Innovation Trad



3. MARKETING PLAN

General analysis of the product market. Plastics processing is a special field of modern chemical technology, which combines the achievements of polymer chemistry and materials science, chemical engineering and automation of complex, difficult-to-regulate processes. There is a tendency to increase the consumption of plastics in the world, one of the indicators of economic development of the state is the level of consumption of plastics per capita. In industry, the replacement of metal elements with plastic ones in products has become irreversible.

Plastic is lighter, not exposed to corrosion and chemicals, with the help of machining it is possible to produce parts of any shape. Polyethylene pipes - produced in accordance with international standard 18599-2001 by continuous screw extrusion. Designed for the construction of pipelines transporting water, including utility-potable, and other liquids and gases. According to PKM 2458 of 25.12.2015. "On measures for further comprehensive development and modernization of water supply and sewerage systems of the Republic of Uzbekistan for the period 2016-2017" is to sell pipes and fittings (equal and unequal) to construction organizations and retail outlets.

Consumer goods:

A) are made by injection molding from polyethylene, polypropylene and other thermoplastic materials.

B) products made by welding polyethylene film: bags of different sizes for food packaging, as well as packaging for industrial products.

Every year demand in the domestic market increases for all grades of polyethylene. This means that consumers' demand for polyethylene products increases annually. In the future, the growth of sales market within the Republic of large-sized pipe products will gain increasing momentum as a large volume of construction of water supply and sewerage systems is planned for 2014-2020.

The market for the production of various plastic pipes has expanded significantly in recent years. This is due to the uncomplicated production technology, as well as the high demand for this product. Plastic pipes have a wide range of applications. They are used in sewage and heating systems, in water and gas supply systems, as well as for arrangement of "warm floor". Various raw materials are used for the production of plastic pipes: high and low pressure polymers, polypropylene, polybutene, polyvinylchloride, etc. Their production is environmentally friendly and uncomplicated, it is based on extrusion. The full-cycle plastic pipe production line, in addition to the extruder, includes a pipe cutting machine, raw material feeding system, calibration and cooling baths, mixer, pulling device, conveyor belt, vacuum forming machine and pipe stacker.

Uzbek plastic pipe market in 2021, increasing by 3.5% compared to.
Market value increased by an average of +2.3% per year from 2012 to 2021.

Export: After two years of growth, foreign shipments of plastic pipes, up -17.5% in 2022. Overall, exports showed a marked decline. The most notable growth rate was recorded in 2020 with an increase of 47%. Kazakhstan, Tajikistan and Kyrgyzstan were the main destinations for plastic pipe exports from Uzbekistan, which together accounted for 45% of total exports. These countries were followed by Turkmenistan, South Korea, and Russia, which accounted for another 3.8%. From 2017 to 2022, South Korea recorded the highest growth (+28.2%), while shipments for other leaders grew at a more modest rate.

Imports: plastic pipes in Uzbekistan in 2022 decreased by -13.9% compared to the previous year. The most notable growth rate was recorded in 2019, when imports increased by 69% compared with the previous year. Turkey, Russia and China were the main suppliers of plastic pipes to Uzbekistan, accounting for 36% of total imports. Iran and Turkmenistan were slightly behind, together accounting for another 9.4%. From 2017 to 2022, Turkmenistan (+51.9%) had the most notable growth in purchases among the major suppliers, while imports from other leaders grew at a more modest rate.

Plastic pipe manufacturers

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Web site: asiapipe.uz

Legal name: ASIA PIPEPLAST OOO

Brand name: ASIA PIPEPLAST OOO

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Web site: pipes.uz

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BEKOBOD-SINTEX FE LLC

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TIN: 302873581

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SATURN PLAST JV

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ELSHOD PLAST HP

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Country code: +998

Website: 304658371

Legal name: ELSHOD PLAST PE Brand name:

Global market

The global market for plastic pipes is valued at more than $37.34 billion as of 2023. Persistence Market Research predicts that their sales will grow at 5.5% per year, and the market is expected to be valued at about $63.78 billion by the end of 2033.

The plastic (PVC) pipe market will grow at an impressive rate due to growing demand from residential, commercial, and industrial sectors. In particular, growing urbanization and industrialization, increasing infrastructure development activities across the globe, growing demand for energy-efficient products, and increasing government initiatives to protect the environment will have an impact. Plastic (PVC) pipes offer excellent cost savings over traditional metal or concrete piping systems because they require less maintenance over their lifetime. In addition, advances in technology have made it possible to produce plastic (PVC) pipes with higher strength characteristics that can withstand extreme temperatures and pressures, reports.

Market Drivers

The plastic (PVC) pipe market is expected to grow significantly during the forecast period owing to several factors. One of the major market drivers is the growing demand from end-use industries such as water supply, sewerage, and irrigation. Plastic (PVC) pipes are widely used in these industries due to their lower cost, ease of installation, and corrosion resistance. The need to conserve water is also driving the growth of the plastic (PVC) pipe market. Plastic (PVC) pipes are used in water supply systems because they are lightweight and easy to transport, install and repair.

Growing need for improved infrastructure in developing countries is another driver of the plastic (PVC) pipes market. Governments of developing countries are investing heavily in infrastructure development, including construction of water and sewerage systems, which is driving the demand for plastic (PVC) pipes. Growing adoption of plastic (PVC) pipes in the oil & gas industry for transporting various fluids is also expected to drive the market growth.

Market constraints

Although the plastic pipe market is expected to exhibit significant growth over the forecast period, there are several factors that are expected to restrain the market growth. One major factor is the growing concern over plastic waste pollution. Disposal of plastic waste is a major concern and can have a significant impact on the environment. Growing concerns about pollution are expected to lead to stricter regulations, which could affect the growth of the plastic (PVC) pipe market.

4. Organizational Plan

4.1. Personnel plan

The staffing table of the production enterprisewas formedthe following structural units:

1. Administrative and managerial.
2. Auxiliary production personnel.
3. Key production personnel.

In the calculation part of the business plan was formed payroll plan, based on the conditions of the above-mentioned structural units.

The project provides for the creation of at least 37 new jobs with a stable income and all social guarantees.

Since the 4th quarter of 2024, it is planned to release part of the administrative and managerial staff in order to ensure the preparation of organizational issues of the project, in the 1 quarter of 2025, the entire administration will be released.

After the completion of construction and installation work, connecting utilities, interior decoration, delivery and installation of equipment, from the 4th quarter of 2025, from the period of commissioning the main and auxiliary production personnel, as well as the commercial department.

The average wage per employee at the facility will be over $674.59 per month. The personnel plan

and payroll are shown in the table below.

Table 3: Staffing and payroll

№	Job title	Number of employees	Salary of one employee, thousand dollars/month.	Salaries of employees, thousand dollars/month.
1	**Administrative and management personnel**	**10**		**7,92**
1.1	Administration	6	0,84	5,04
1.2	Commercial Department	4	0,72	2,88
2	**Production personnel**	**13**		**9,36**
2.1	Tube production	6	0,72	4,32
2.2	Manufacturing of fittings	2	0,72	1,44
2.3	Scrap recycling	1	0,72	0,72
2.4	Technological personnel	2	0,72	1,44
2.5	Chief mechanic and power engineering service	2	0,72	1,44
3	**Auxiliary production personnel**	**14**		**7,68**
3.1	Warehousing	4	0,60	2,40
3.2	Motor Transport Department	4	0,60	2,40
3.3	Security	6	0,48	2,88
	Total payroll	**37**		**24,96**
	Insurance premiums			**7,99**
	Total payroll			**32,95**

Source: Global Innovation Trade data

4.2. Work schedule for the project

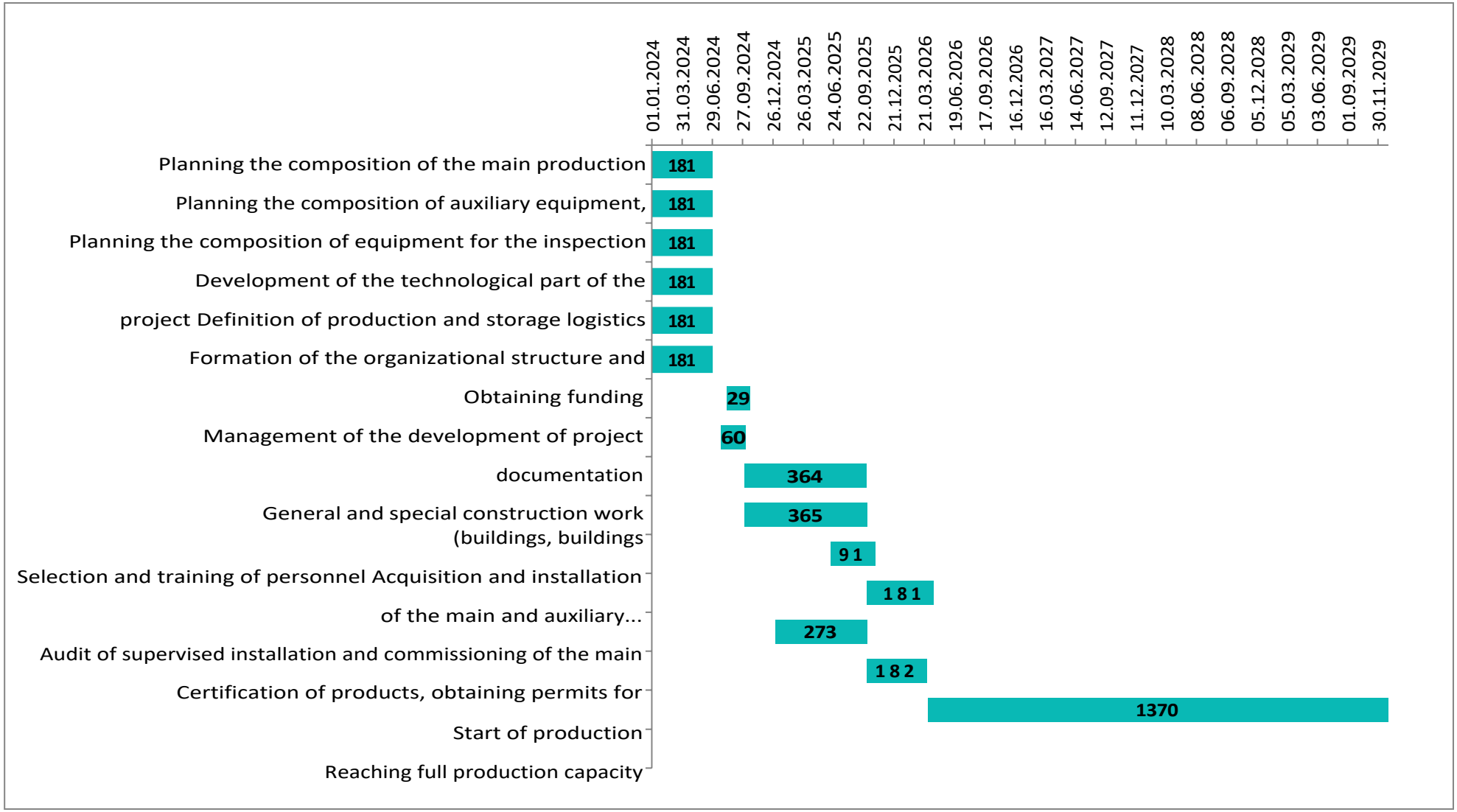
Project phases and their timelines are shown in the figure below.

So far, work has been done on preliminary research, conceptualizing the project, and establishing business relationships.

After obtaining an investment loan in the 4th quarter of 2024, it is planned to acquire ownership of the land, carry out construction and installation work, purchase and installation and launch production equipment.

From the 4th quarter of 2028, the project provides for the launch of production at full capacity.

Figure 3: Timetable for project implementation



4.3. Sources, forms and conditions of financing

Funding for the project will be **$5,306,300.**

In the project it is planned to use the funds of the investment loan. The conditions for obtaining the credit are presented in the table below.

Table 4: Conditions for obtaining an investment loan.

Terms of the investment loan	Unit.	Value
Amount of investment credit	thousand dollars.	5 306,3
The term of the investment loan	block	20
Rate on investment credit, annual	%	10%
Rate on investment credit, months.	%	2,4%
Deferral of principal payments	block	8

Source: Global Innovation Trade information

4.4. Project funding schedule

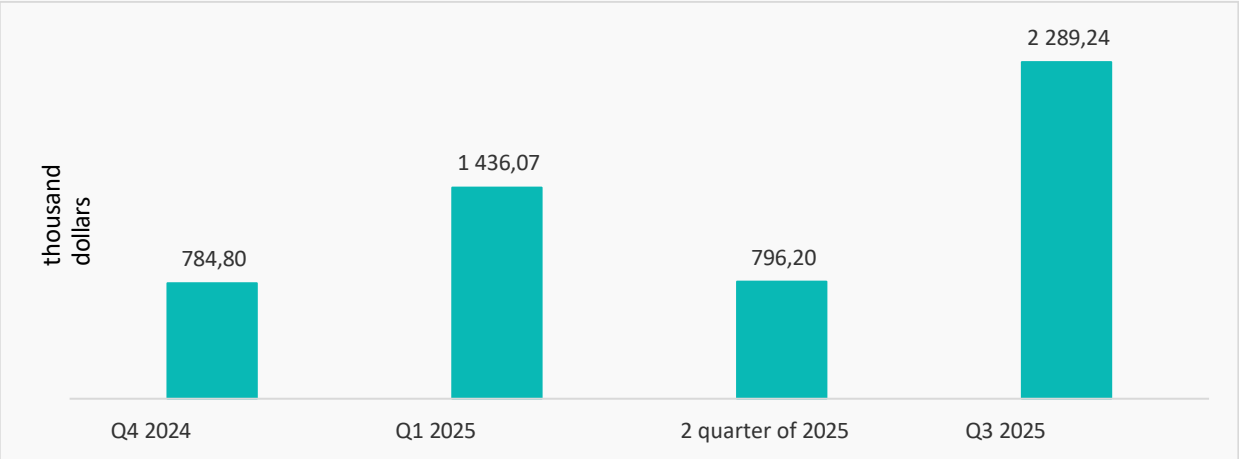
It is planned to obtain an investment loan to finance the project in Q4 2024.

The investment phase of the project lasts from the 4th quarter of 2024 to the 3rd quarter of 2025.

Payment under contracts with equipment suppliers is assumed in two stages: 30% in advance payments and 70% at final settlement.

The project financing schedule is shown in the figure below.

Figure 4: Financing schedule for the project



Source: Global Innovation Trade information

5. Production plan

5.1. Description of buildings and structures

The project provides for construction and installation works on the acquired site in the period from October 2024 to September 2025. It is planned to prepare a site for the installation of production buildings and facilities on the land plot.

All the structures to be erected will comply with the requirements for this kind of construction.

5.2. Calculating the cost of construction

The project cost of construction and installation works is $3,120.0 thousand, including VAT.

5.3. Equipment *(thousands of dollars)*

1	Line for the production of pressure three-cell pipes 20-160 mm		313

2	Pressure pipe production line 160-630 mm		668
3	Protective layer (on 2 lines)		150
4	Peripheral equipment and laboratory		330

5.4. Raw materials and components

Supplier of raw materials: Shurtan Gas Chemical Complex LLC (Shurtan settlement) - produces:

- polyethylene;
- liquefied gas;
- light condensation;
- granulated sulfur;
- purified natural gas;
- other finished polyethylene products.

Location - (Southern part of Uzbekistan) Shurtan settlement, Guzar district, Kashkadarya region)

POLYETILEN

The production process of the main product - polyethylene - is carried out using SCLAIRTECH liquid-phase polymerization technology under license from the North American company NOVA Chemicals. The main advantage of this technology is the possibility to vary physicochemical and rheological properties of polyethylene using sequential mode of tube-type and autoclave-type reactors. This makes it possible to produce linear polyethylene of different types in a single processing line. Obtained polymer is completely separated from solvents, residual catalysts, purified from present harmful substances and fed to main extruder in melted form with lowest content of volatile compounds. All necessary additives are added in liquid or molten form which guarantees good blending and complete homogenization. Polyethylene produced with this technology can be used for all products that come into contact with foodstuffs and the human body without any harm to health.

Purchase procedure

According to Presidential Decree No. PP-3386 of November 14, 2017 "On measures to improve the competitive environment, eliminate conditions of abuse and plunder, strengthen payment discipline, reduce accounts receivable and payable arrears on fuel and energy supply, as well as other liquid products", as well as under the Cabinet of Ministers Decree No. 57 of February 05, 2004 "On continuing to introduce market-based mechanisms for the sale of highly liquid products, with

At the moment the main commodity raw materials produced by the Shurtan Gas Chemical Complex are sold on the high-liquidity platform of the commodity exchange.

What should be done by those customers who would like to buy products of the complex through the exchange for the first time?

1. Visiting the official website of JSC "UzRTCB" - http://www.uzex.uz, choosing a list of brokers from the department of interactive services, get acquainted with the brokerage firms that have passed at this time accreditation of the commodity exchange, as well as a list of stockbrokers.

The purchaser may enter into a service agreement with the purchaser's location or with a brokerage firm of his choice at his discretion.

2. The broker helps the buyer to register at the exchange and the accounting and clearing house of the exchange, the Buyer in accordance with his order, on his own behalf and at his own expense performs all activities on the contract for the purchase and sale of products on the exchange trading and registration on the exchange.

3. After opening a personal user account (LPA) for the Buyer in the Exchange accounting and clearing house, with the indication of the LPA and the account of the brokerage office, the amount of the advance payment (depending on the type of product, from 2% to 10%, for polyethylene and liquefied gas is set at 10%) is sent to the account of the Exchange accounting and clearing house.

4. According to the contract with the brokerage firm the Buyer makes an order in the prescribed form, for the purchase of products offered on the exchange trading.

5. According to the results of exchange trading, after the broker purchases the product, the broker, having drawn up a contract, hands it over to the buyer for execution.

6. According to the terms of the contract after making 100% payment within 5 working days, the buyer sends with the vehicle with the power of attorney of his authorized person to the complex. Regarding the removal of products the buyer applies to the department of sales and marketing.

The established terms for export of products: for polyethylene and liquefied gas - 10 banking days, for technical sulfur - 7 banking days.

Technical characteristics

№	Марка и Вид ПЭ		Density, g/cm3 Диапазон	MFI, g/10min Диапазон	Вид переработки	Рекомендуемая область применения
ЛИТЬЕВЫЕ МАРКИ						
1	I-0754	HDPE	0,952 – 0,956	5,0 – 8,0	Литье под давлением	Для изделий культурно бытового назначения и хозяйственного обихода.
2	I-0760	HDPE	0,958 – 0,962	5,5 – 8,5		Для общего назначения
3	I-1561	HDPE	0,958 – 0,962	13,0 – 18,0		Для изготовления тары, корзин, ящиков и т.д.
4	I-2560	HDPE	0,958 – 0,962	20,0 – 30,0		Для общего назначения, тара, корзина
5	I-1625	LLDPE	0,922 – 0.928	12,0 – 20,0		Ящики для отходов
6	I-0525	LLDPE	0,923 – 0.927	4,0 – 6,0		Для мелко объемных изделий (крышки, цветы)
FILM GRADES ПЛЕНОЧНЫЕ МАРКИ						
7	F-Y720	LLDPE	0,918 – 0,922	0,60 – 0,90	Экструзия	Промышленная упаковка (толстая плёнка).
8	F-0120	LLDPE	0,918 – 0,922	0,80 – 1,50		Пленка общего назначения
9	F-0220	LLDPE	0,918 – 0,922	1,5 – 2,5		Для изготовления особо тонкой пленки (плёнка мульчирования)
10	F-0320	LLDPE	0,918 – 0,922	2,5 – 3,5		Тонкая пленка (основной слой стретч плёнок)
11	F-Y336	MDPE	0,934 – 0,938	0,24 – 0,30		Для пленок и пленочных изделий (пакеты).
12	F-Y240	HDPE	0,936 – 0,942	0,19 – 0,31		Для пленок и пленочных изделий (пакеты).
13	F-Y346	HDPE	0,942 – 0,948	0,19 – 0,31		Шуршащая пленка и пленочных изделий (пакеты).
КАБЕЛЬНЫЕ МАРКИ						
14	WC-Y434	MDPE	0,932 – 0,936	0,30 – 0,46	Экструзия	Для изоляции проводов и кабеля.
15	WC-Y734	MDPE	0,932 – 0,936	0,60 – 0,85		Для оболочек кабеля (жесткий шланг).
ТРУБНЫЕ МАРКИ						
16	P-Y337	MDPE	0,936 – 0,940	0,21 – 0,33	Экструзия	базовая марка для газопроводных труб
17	P-Y342	HDPE	0,940 – 0,944	0,24 – 0,36		Трубные изделия, базовая марка для напорных трубопроводов
18	P-Y456	HDPE	0,952 – 0,958	0,31 – 0,51		трубы большого диаметра (дренаж)
ВЫДУВНЫЕ МАРКИ						
19	B-Y250	HDPE	0,948 – 0,952	0,19 – 0,30	Выдувное формование	Канистры, предназначенные для непрерывных экструзионных машин.
20	B-Y456	HDPE	0,954 – 0,958	0,33 – 0,43		Выдувные изделия общего назначения.
21	B-Y460	HDPE	0,958 – 0,962	0,33 – 0,43		Формование бутылок для упаковки и хранения жидкостей.
РОТАЦИОННЫЕ						
22	R-0333	MDPE	0,931 – 0,935	2,5 – 3,3	Ротационное формование	Для крупногабаритных изделий (резервуары и ящики для агрохимической продукции, горючего).
23	R-0338	MDPE	0,935 – 0,940	2,0 – 3,0		
24	R-0448	HDPE	0,946 – 0,950	3,1 – 4,1		
ОРИЕНТАЦИОННЫЕ ЛЕНТЫ						
25	O-Y446	HDPE	0,944 – 0,948	0,33 – 0,43	Экструзия	Для лент, мононитей для промышленных мешков, ориентированных пленок.

Consumption of raw materials and resources is shown in the table below.

Table 5. Consumption of raw materials, materials, energy and other costs in the production of project products

Indicators	Unit.	Value
Consumption of raw materials per 1 kg of water-gas-electricity pipes	dollars.	0,12
Electricity consumption	kW per month	600
Gas consumption for heating in the summer months	cubic meters per month	5 000
Gas consumption for heating in winter months	cubic meters per month	45 000
Water consumption and wastewater disposal	cubic meters per month	1 500
Electricity consumption during production start-up	kW per month	1 000
Advertising and PR excerpts	thousand dollars per month	3,0
Other fixed costs	thousand dollars per month	0,6
Other variable costs	% of variable costs	5%

Source: Global Innovation Trade information

6. Financial plan

6.1. Initial data and assumptions

In the economic evaluation of the project was adopted 5-year planning horizon, planning step - a quarter.

Product Assumptions

Annually it is planned to produce plastic pipes for underground water, gas and sewage networks in the amount of 4 000 000 kg per year. For the calculations of this project the indicators of average quarterly production volume are used, taking into account Global Innovation Trade plans, equipment capacity and seasonal demand for the manufactured products.

Table 6. Planned production volumes at maximum capacity utilization per year, taking into account seasonality

Production volume	Unit.	Q1	2nd quarter	Q3	4th quarter
Maximum output of water-gas-electricity pipes	kilo in block	520 000	1 000 000	1 360 000	1 120 000

Source: Global Innovation Trade data

Assumptions about investment costs

Investment costs are divided into 3 categories:

1. Investments for the purchase and construction of production buildings, facilities.
2. Investments for the purchase of production equipment.
3. Other investments.

Assumptions about the initial working capital requirements

The need for initial working capital at the initial stage of the project is planned to cover at the expense of VAT refunds from the cost of forming fixed assets.

Assumption about the discount rate

The project adopted a discount rate of 11.7% per year. Below is the rationale for the calculation of this indicator.

The cumulative construction method is based on summing up the risk-free rate of income and risk premiums for investing in the enterprise being evaluated. The method best takes into account all kinds of investment risks associated with both the factors common to industry and economy of nature, as well as the specifics of the enterprise being evaluated. The calculations are made according to the formula:

$$r = r_{rb} + \sum_{i=1}^{n} Ri$$

where r is the discount rate; r_{rb} is the base (risk-free or least risky) rate; R_i is the premium for the i-type of risk; n is the number of risk premiums. Let us present below the calculation according to this methodology.

Table 7. Calculation of the discount rate

Constituents	%
The size of the risk-free rate*	4,67
Amount of country risk adjustment	2,00
Amount of industry risk adjustment	2,00
Amount of other risk adjustment	3,00
Discount rate	**11,67**

Source: Global Innovation Trade calculations

Thus, the value of the discount rate in accordance with the expert calculation was 11.7% per annum.

Assumptions about revenues, financial results and cash flows (DDS)

All of the above indicators were used to build revenue plans, profit and loss projections and cash flow.

6.2. Nomenclature and prices

The project provides for the production of plastic pipes for underground water, gas and sewage networks. Estimated target price of produced pipes is $130 per 1 kg.

6.3. Investment costs

The total amount of investments in the project is $5,306.3 thousand. The composition of investments by cost categories is given in the table below.

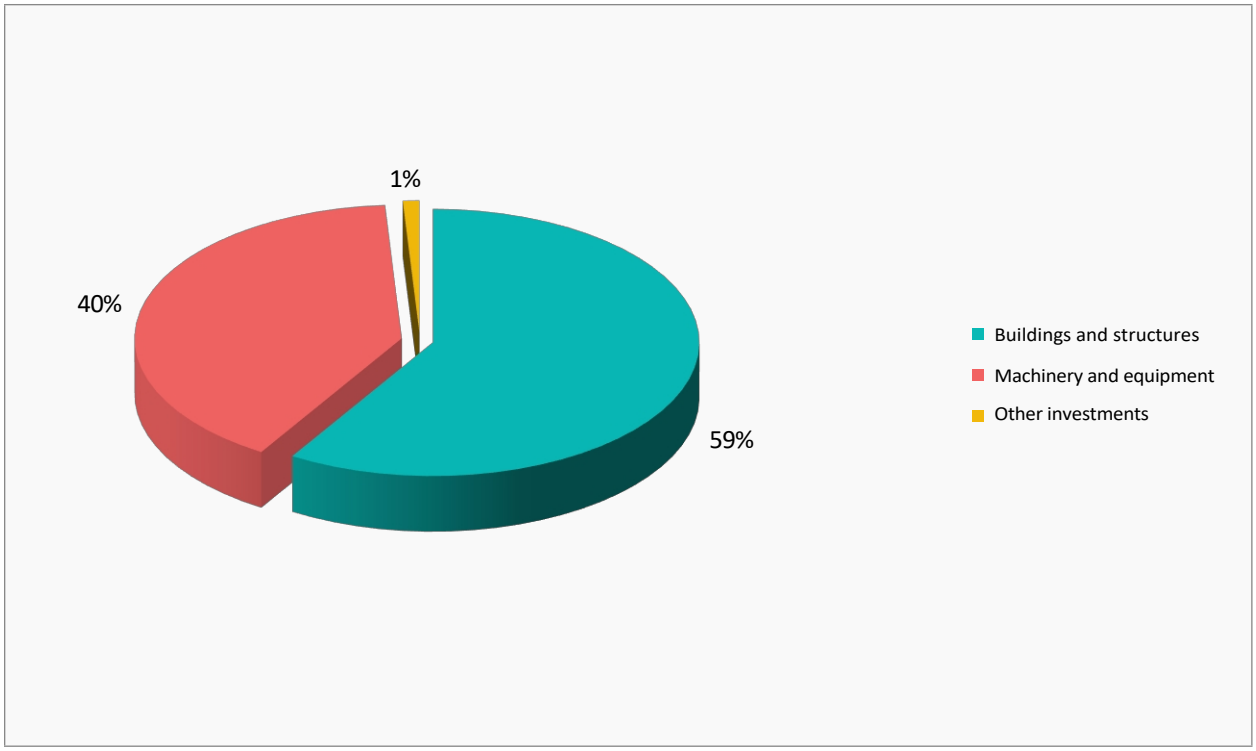
Table 8: Composition of project investments by cost category

Cost item	Cost, thousand dollars.
Buildings and structures	**3 120,0**
Machinery and equipment	**2 132,9**
Other investments	**53,4**
Total	***5 306,3***

Source: Global Innovation Trade information

The structure of investment costs is shown in the figure below.

Figure 5. Structure of investment costs of the project



Source: Global Innovation Trade data,

6.4. Tax deductions

The general system of taxation is used to calculate the project.

Tax rates, as well as parameters for calculating the amount of taxes to be paid, are shown in the table below.

Table 9: Tax environment of the project

Type of tax	Value
Insurance premiums	32,0%
Property tax	2,2%
VAT on the formation of fixed assets	20,0%
VAT operating activities	20,0%
Income tax	20,0%
PIT	13,0%
Land tax	1,5%

Source: Global Innovation Trade information

The amounts of tax deductions by year of the project are shown in the table below.

Table 10. Amounts of tax deductions for the project

Type of tax/Year	2024	2025	2026	2027	2028	2029
VAT	0,0	18,4	165,2	315,5	431,3	465,5
Social contributions	2,4	38,5	95,8	95,8	95,8	95,8
Property tax	0,0	14,1	53,6	50,8	47,9	45,0
Land tax	0,1	0,1	0,1	0,1	0,1	0,1
Income tax	0,0	0,0	0,0	15,3	142,6	204,7
TOTAL taxes for the customer's company	**2,5**	**71,1**	**314,8**	**477,5**	**717,7**	**811,1**
PIT	1,0	15,6	38,9	38,9	38,9	38,9
TOTAL tax flow from the project including personal income tax	**3,5**	**86,7**	**353,7**	**516,4**	**756,7**	**850,1**

Source: Global Innovation Trade data

6.5. Operating costs (fixed and variable)

Fixed costs of the project are costs that do not depend on changes in production volume, as well as salaries of administrative and management personnel.

The annual fixed costs of the project are shown in the table below.

Table 11. Fixed costs of the project, thousand dollars.

Cost item	The amount of expenses in 2029
Payroll of administrative and managerial personnel	187,2
Advertising costs, marketing events	36,0
Other fixed costs, including administrative outsourcing (legal, mediation services)	7,2
Total fixed costs	***230,4***

Source: Global Innovation Trade data, Global Innovation Trade calculations

The variable costs of a project are the costs of raw materials, goods and materials needed to produce the product, as well as the wage costs of production personnel.

Table 12. Variable costs of the project, thousand dollars.

Cost item	Amount in 2029, thousand dollars.
Payroll of main production personnel	112,3
Raw materials	480.0
Energy Carriers	36,5
Other variable costs	247,4
TOTAL variable costs	**876.3**

Source: Global Innovation Trade data

6.6. Sales Plan

Plan of production and sales of the project is calculated by quarters, taking into account the seasonality of production and presented in the table below.

The start of production is planned for the 4th quarter of 2025, after the installation and commissioning of equipment.

Starting in Q4 2028, the project will reach full production capacity.

Table 13. Plan of production and sales of the project products, kg

Indicator	4 quarter 2025 of the year	1 quarter 2025 of the year	2 quarter 2026 of the year	3 quarter 2026 of the year	4 quarter 2026 of the year	1 quarter 2027 of the year	2 quarter 2027 of the year	3 quarter 2027 of the year	4 quarter 2027 of the year	1 quarter 2028 of the year	2 quarter 2028 of the year	3 quarter 2028 of the year	4 quarter 2028 of the year	1 quarter 2029 of the year	2 quarter 2029 of the year	3 quarter 2029 of the year	4 quarter 2029 of the year
Plan production of water-gas electricity pipes, kg	168 000	78 000	300 000	408 000	672 000	312 000	600 000	816 000	1 008 000	468 000	900 000	1 224 000	1 120 000	520 000	1 000 000	1 360 000	1 120 000

Source: Global Innovation Trade data, Global Innovation Trade calculations

6.7. Revenue Calculation

Below is a forecast of revenues from the sale of products planned for production by years of the project.

Table 14. Revenues from sales of the project products, thous.

Parameter/year	2024	2025	2026	2027	2028	2029
Revenue	-	262,1	2 274,5	4 268,2	5 790,7	6 240,0

Source: Global Innovation Trade data, Global Innovation Trade calculations

6.8. Forecast of profits and losses

The table below shows the calculation of financial results by years of the project. The calculation showed that the project becomes profitable from the second year of its implementation.

Table 15. Projected statement of financial results, thousand dollars.

Income / expense item	2024 year	2025 year	2026 year	2027 year	2028 year	2029 year
Revenue from sales	0,0	277,2	2 405,7	4 514,4	6 124,8	6 600,0
Direct costs	0,0	203,3	1 640,9	2 994,5	4 026,1	4 330,2
Margin income	0,0	73,9	764,8	1 519,9	2 098,7	2 269,8
General business fixed costs	11,6	97,8	188,3	192,0	192,0	192,0
Taxes (except income tax)	2,5	71,1	314,8	462,2	575,1	606,4
EBITDA	-14,0	-95,0	261,8	865,7	1 331,6	1 471,3
EBITDA, % (to revenue) average	0%	-34%	11%	19%	22%	22%
Depreciation of fixed assets	0,0	96,0	383,9	383,9	383,9	383,9
EBIT	-14,0	-191,0	-122,1	481,8	947,7	1 087,4
Payment of interest on loans and credits	128,0	511,8	511,8	405,2	234,6	64,0
Profit (Loss) before taxation	-142,0	-702,8	-634,0	76,6	713,1	1 023,4
Income tax	0,0	0,0	0,0	15,3	142,6	204,7
Retained earnings	-142,0	-606,8	-250,0	445,2	954,4	1 202,7
Return on sales	0%	-219%	-10%	10%	16%	18%

Source: Global Innovation Trade calculations

6.9. Cash flow forecast

Cash flow projections by year are shown in the table below. Cash flow projections by quarter are shown in the Appendix.

Positive cash flow balance for the entire calculation period indicates the feasibility of the project.

Table 16. Projected statement of cash flows, thous.

CASH FLOW	2024 year	2025 year	2026 year	2027 year	2028 year	2029 year
INVESTMENT CASH FLOW (ICEF)	-789,6	-3 898,1				
OPERATING CASH FLOW (OPF)	2,7	194,8	797,6	2 405,3	3 716,7	4 211,0
Income total	130,8	903,7	2 274,5	4 268,2	5 790,7	6 240,0
Costs total	128,1	708,9	1 476,9	1 862,9	2 074,0	2 029,0
FINANCIAL CASH FLOW (FDP)	4 634,3		-386,2	-1 544,8	-1 544,8	-1 158,6
Payment of the body of the debt			386,2	1 544,8	1 544,8	1 158,6
Borrowed funds	4 634,3					
Cash-flow total	3 847,4	-3 703,3	411,4	860,5	2 172,0	3 052,4
Cash-flow at the end of the period	3 847,4	144,1	555,5	1 416,0	3 588,0	6 640,4
Net cash flow (NFC)	3 847,4	-3 703,3	411,4	860,5	2 172,0	3 052,4
NPD cumulative total	3 847,4	144,1	555,5	1 416,0	3 588,0	6 640,4
Discounted NPD cumulative total	**3 445,3**	**319,1**	**616,0**	**1166,8**	**2 447,5**	**3 439,6**

Source: Global Innovation Trade calculations

6.10. Project efficiency analysis

6.10.1. Methodology for assessing the effectiveness of the project

Evaluation of investment projects is carried out according to the following main indicators:

1. Net present value, NPV.
2. Profitability index, PI.
3. Payback period, PBP.
4. Discounted Payback Period, DPBP.
5. Internal rate of return, IRR.

5.10.2. Project performance indicators

Performance indicators of an investment project allows you to determine the effectiveness of investment of funds in a particular project. The following indicators are used for this purpose:

- net discounted (discounted) income (cash flow);
- net present value, NPV;
- payback period (time), PBP;

- discounted payback period, DPBP;
- internal rate of return (profitability);
- the rate of return on investment, IRR (modified rate of return on investment, MIRR);
- profitability index;
- profitability index;
- profitability index, PI.

5.10.3. Net present value (NPV)

Net Present Value (NPV) is the sum of discounted simultaneous differences between the benefits and costs of a project. - The sum of the discounted simultaneous differences between the benefits and costs of a project. It is the sum of cash flows (receipts and payments) associated with operational and investment activities, reduced (discounted) at the beginning of the investment.

Net discounted income NPV is calculated by the formula:

$$NPV = \sum_{t=o}^{T} \frac{CFt}{(1+i)^t},$$

where i is the discount rate;

CFt - net cash flow of period t;

T - the duration of the project in periods.

The NPV calculation is a standard method of evaluating the effectiveness of an investment project, which shows an estimate of the effect of the investment reduced to the present time, taking into account the varying time value of money. If the NPV is greater than 0, the investment is profitable, otherwise the investment is unprofitable.

With the help of NPV can also assess the relative effectiveness of alternative investments (with the same initial investment is more profitable project with the highest NPV).

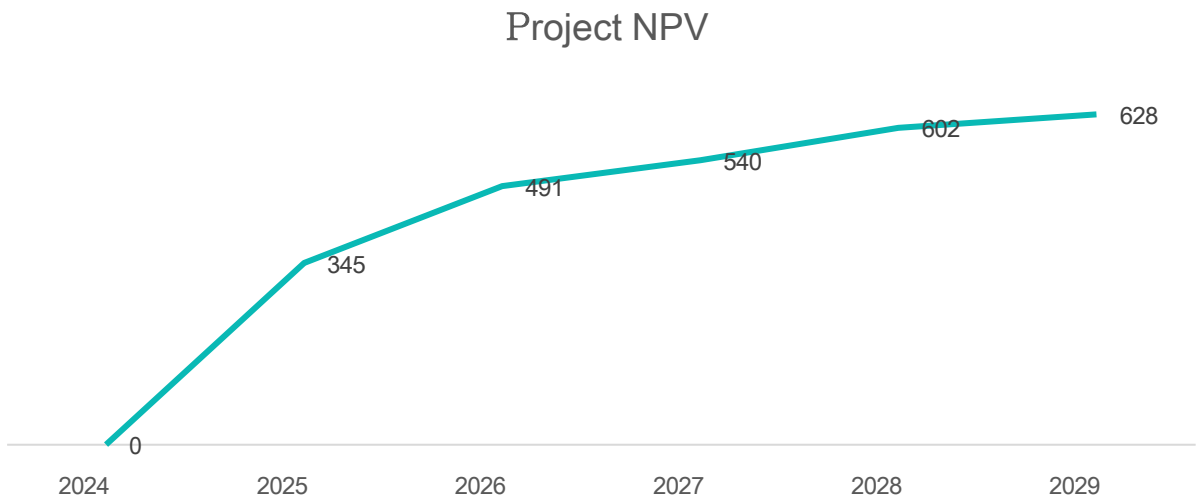
Positive qualities of NPV:

- clear criteria for decision-making;
- consideration of the value of money over time (using the discount factor in the formulas).

Negative qualities NPV associated with the fact that this indicator does not take into account:

- risks;
- probability of event outcomes, since all cash flows and discount factor are predicted values.

The net discounted income of the presented project is **$627.6 thousand.**



5.10.4. Internal rate of return (IRR)

In the case of heterogeneous cash flows, as in this project, can be applied appropriate analogue of IRR - the modified internal rate of return (MIRR).

The calculation algorithm involves several procedures. First, the total discounted value of all outflows and the total accrued value of all inflows are calculated, and both discounting and accretion are performed at the price of the project's financing source. The accrued value of inflows is called the terminal value. Then the discount rate is determined, which equalizes the total present value of outflows and the terminal value, which in this case is the MIRR. So, the general formula for calculation is as follows:

$$\sum_{t=0}^{N} \frac{OF_t}{(1+r)^1} = \frac{\sum_{t=0}^{N} IF_t(1+r)^{n-1}}{(1+MIRR)^n},$$

where $_{OFt}$ is the cash outflow in the N-th period (in absolute value);

$_{IFt}$ - cash inflow in the N-th period;

r is the cost of the source of funding for this project;

n is the duration of the project.

Note, that the formula has makes sense, if terminal value exceeds the sum of discounted outflows.

The internal rate of return of this project is **18.3%**, which is higher than the discount rate and not bad for projects of this kind.

5.10.5. Return on investment index (PI)

The profitability index (PI) is the discounted value of cash proceeds from the project (NPV) per unit of investment. It shows the relative profitability of the project.

The profitability index PI is calculated by the formula:

$$PI = \frac{NPV}{Investments}$$

For an effective project, the PI must be greater than 1.

Discounted cost and investment return indices are greater than 1 if the NPV is positive for that stream.

The project's return on investment index is **1.14** units, which means that for each dollar invested, the investor will receive $1.14.

5.10.6. Payback Period (PBP)

Payback period (PBP) - expected period of reimbursement of the initial investment from the net cash proceeds, i.e. the time for which the proceeds from the operating activities of the enterprise will exceed the costs of the investment.

PBP payback period is calculated using the formula:

PBP= Investments/ACF,

where Investments is the initial investment;

ACF - Annual Cash Flow (average annual amount of net cash flow). The payback

period of the project is **4 years and 3 months**.

5.10.7. Discounted Payback Period (DPBP)

Discounted Payback Period (DPBP) - payback period (see above), but including discounting.

The discounted payback period DPBP is calculated by the formula:

DPBP=t_-NPV_(t_)/(NPV_(t+)- NPV_(t_)),

where t_- and t_+ are the periods when negative and positive NPV were observed. The discounted

payback period of the project is **4 years and 8 months**.

5.10.8. Other indicators

The average return on sales for the project is 37.1%.

The project has a net cumulative income of $313,986,000.

7. Project risk analysis

7.1. Project sustainability analysis

The table below shows the sensitivity of the project to changes in its key parameters.

Indicator	NPV		IRR		PI		PB	
Base value	627,6		18%		1,14		4,3	
Deviations	Δ	%	Δ	%	Δ	%	Δ	%
Product price reduction by 5%	273,7	-56,4%	15%	-20,2%	1,06	-6,7%	4,5	-2,4%
Decrease in production volume by 5%	302,3	-51,8%	15%	-18,6%	1,07	-6,2%	4,4	-2,2%
Increase in investment costs by 5%	567,3	-9,6%	18%	-3,6%	1,12	-1,1%	4,4	-0,4%
Increase in variable costs by 5%	585,4	-6,7%	18%	-2,4%	1,13	-0,8%	4,4	-0,3%
Increase in fixed costs by 5%	602,4	-4,0%	18%	-1,5%	1,13	-0,5%	4,4	-0,2%
Increasing the discount rate by 5%	563,6	-10,2%	18%	0,0%	1,12	-1,2%	4,3	0,0%

Source: Global In calculations novation Trade

According to the results of the analysis, there is the greatest dependence of the effectiveness of the project on the selling price of the products produced and the volume of production. The impact of changes in the amount of fixed, variable and investment costs on the effectiveness of the project is insignificant.

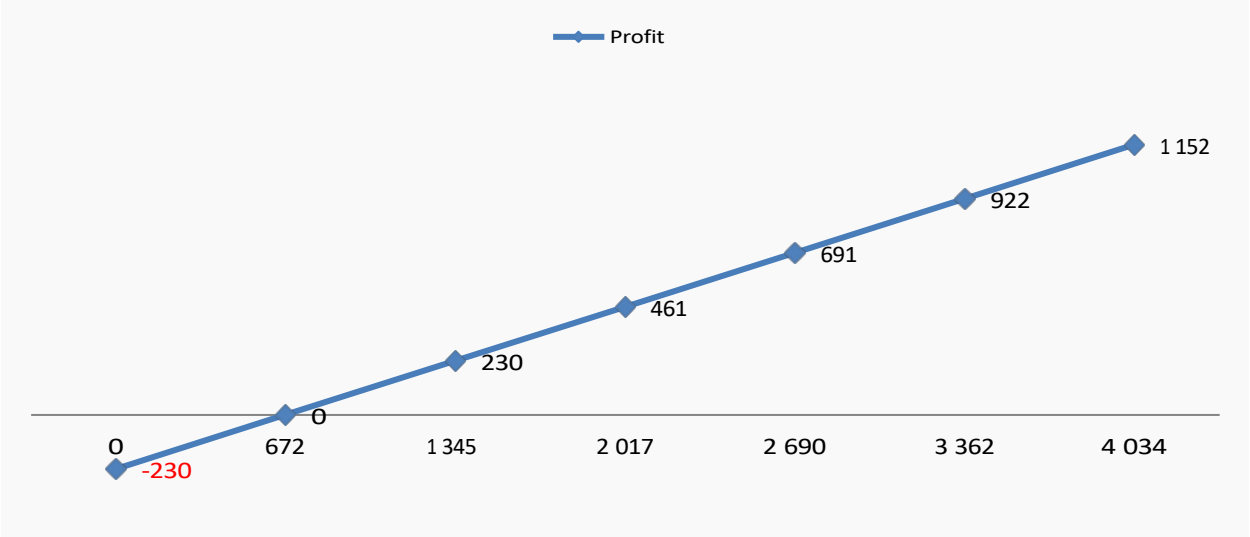
7.2. Project break-even point

The break-even point determines what the volume of sales should be in order for production to work on a break-even basis, to cover all its costs without making a profit. To calculate the break-even point, we have to divide the costs into two components:

1. 1. Variable costs - increase in proportion to the increase in production (volume of services).
2. 2. Fixed costs - do not depend on the number of services rendered (goods sold) and on whether the volume of operations increases or decreases.

For this project, the graph of the dependence of profit on sales volume will look as follows.

Figure 6. Break-even point chart, thousand dollars.



Source: Global Innovation Trade calculations

The break-even point is of great importance in the stability of the company and its solvency. Thus, the degree to which sales volume exceeds the break-even point determines the financial strength (margin of safety) of the company.

The break-even point of the project is 258.2 thousand dollars. This means that in the year should be produced at least 258.2 thousand dollars to make a profit from sales (it is about 5% of the planned volume of production and sales of products). The reason for the low value of the breakeven point is a small share of fixed costs in the cost of production.

The low value of the break-even point indicates a significant level of solvency of the enterprise and a high level of its financial reliability.

Applications

7.3. Cash flow statement by quarter

Cash flow	1 quar. 2024 of the year	2 quar. 2024 of the year	3 quar. 2024 of the year	4 quar. 2024 of the year	1 quar. 2025 of the year	2 quar. 2025 of the year	3 quar. 2025 of the year	4 quar. 2025 of the year
INVESTMENT CASH FLOW (ICEF)					-789,6	-1 250,7	-812,4	-1 835,0
Buildings and structures					784,8	796,2	796,2	796,2
Equipment						438,3		1 022,6
Current assets								
Other investments					4,8	16,2	16,2	16,2
OPERATING CASH FLOW (OPF)					2,7	67,7	-5,3	165,1
Revenues from sales of project products								
Costs total					128,1	138,0	138,0	138,0
Variable costs								
Fixed costs					*13,9*	*21,4*	*21,4*	*21,4*
Payments of interest on borrowed funds					111,8	111,8	111,8	111,8
Accrued taxes and payments					2,5	4,8	4,8	4,8
VAT recoverable					130,8	205,7	132,7	303,1
FINANCIAL CASH FLOW (FDP)					4 634,3			
Payment of the body of the debt								
Borrowed funds					4 634,3			
Net cash flow (NFC)					3 847,4	-1 182,9	-817,7	-1 669,9
Cumulative NPD					3 847,4	2 664,5	1 846,8	176,9
Cash balance at the beginning of the period						3 847,4	2 664,5	1 846,8
Cash balance at the end of the period					3 847,4	2 664,5	1 846,8	176,9
Discounted NPD					3 445,3	-1 030,5	-692,9	-1 376,6

Discounted NPD cumulative total					3 445,3	2 414,9	1 721,9	345,3

Cash flow	1 quar. 2026 of the year	2 quar. 2026 of the year	3 quar. 2026 of the year	4 quar. 2026 of the year	1 quar. 2027 of the year	2 quar. 2027 of the year	3 quar. 2027 of the year	4 quar. 2027 of the year
INVESTMENT CASH FLOW (ICEF)								
Buildings and structures								
Equipment								
Current assets								
Other investments								
OPERATING CASH FLOW (OPF)	-32,8	-139,4	123,8	252,9	140,1	501,2	768,6	995,4
Revenues from sales of project products	262,1	121,7	468,0	636,5	486,7	936,0	1 273,0	1 572,5
Costs total	294,9	261,0	344,2	383,6	346,6	434,8	504,4	577,1
Variable costs	*53,4*	*41,9*	*67,9*	*81,5*	*79,1*	*106,3*	*133,5*	*171,9*
Fixed costs	*53,1*	*53,1*	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*
Payments of interest on borrowed funds	111,8	111,8	111,8	111,8	102,4	93,1	83,8	74,5
Accrued taxes and payments	76,6	54,3	106,9	132,7	107,5	177,8	229,4	273,0
VAT recoverable								
FINANCIAL CASH FLOW (FDP)					-386,2	-386,2	-386,2	-386,2
Payment of the body of the debt					386,2	386,2	386,2	386,2
Borrowed funds								
Net cash flow (NFC)	-32,8	-139,4	123,8	252,9	-246,1	115,0	382,4	609,2
Cumulative NPD	144,1	4,7	128,6	381,4	309,4	424,4	806,8	1 416,0
Cash balance at the beginning of the period	176,9	144,1	4,7	128,6	555,5	309,4	424,4	806,8
Cash balance at the end of the period	144,1	4,7	128,6	381,4	309,4	424,4	806,8	1 416,0
Discounted NPD	-26,3	-108,7	94,0	186,7	-171,9	78,1	252,8	391,8
Discounted NPD cumulative total	319,1	210,3	304,3	491,0	444,1	522,2	775,0	1 166,8

Cash flow	1 quar. 2026 of the year	2 quar. 2026 of the year	3 quar. 2026 of the year	4 quar. 2026 of the year	1 quar. 2027 of the year	2 quar. 2027 of the year	3 quar. 2027 of the year	4 quar. 2027 of the year
INVESTMENT CASH FLOW (ICEF)								
Buildings and structures								
Equipment								
Current assets								
Other investments								
OPERATING CASH FLOW (OPF)	360,2	897,1	1 293,6	1 165,8	458,9	1 054,4	1 493,9	1 203,8
Revenues from sales of project products	730,1	1 404,0	1 909,4	1 747,2	811,2	1 560,0	2 121,6	1 747,2
Costs total	369,9	506,9	615,8	581,4	352,3	505,6	627,7	543,4
Variable costs	*103,9*	*144,7*	*185,5*	*187,8*	*112,2*	*157,5*	*202,9*	*187,8*
Fixed costs	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*	*57,6*
Payments of interest on borrowed funds	65,2	55,9	46,6	37,2	27,9	18,6	9,3	
Accrued taxes and payments	143,2	248,7	326,1	298,8	154,6	271,8	357,9	298,1
VAT recoverable								
FINANCIAL CASH FLOW (FDP)	-386,2	-386,2	-386,2	-386,2	-386,2	-386,2	-386,2	
Payment of the body of the debt	386,2	386,2	386,2	386,2	386,2	386,2	386,2	
Borrowed funds								
Net cash flow (NFC)	-26,0	510,9	907,4	779,6	72,7	668,2	1 107,7	1 203,8
Cumulative NPD	1 390,0	1 901,0	2 808,4	3 588,0	3 660,7	4 328,9	5 436,7	6 640,4
Cash balance at the beginning of the period	1 416,0	1 390,0	1 901,0	2 808,4	3 588,0	3 660,7	4 328,9	5 436,7
Cash balance at the end of the period	1 390,0	1 901,0	2 808,4	3 588,0	3 660,7	4 328,9	5 436,7	6 640,4

Discounted NPD	-16,2	310,9	537,2	448,9	40,7	364,1	587,2	
Discounted NPD cumulative total	1 150,5	1 461,4	1 998,6	2 447,5	2 488,3	2 852,4	3 439,6	3 439,6

Project prepared by Global Innovation Trade

Business plan "Opening of clinker production" was made by the research agency "**Global Innovation Trade**". All our specialists have impressive experience in developing business plans, supported by deep knowledge in various areas of economics and business, the presence of a strong information base, knowledge of the most advanced approaches to business organization, knowledge of the latest methods of calculation and their competent adaptation to the specifics of the region or a particular industry.

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