

# **Business plan**

Construction of a potato processing  
plant in Kamashi district



**June, 2023**

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## **Methodological comments on the business plan**

This business plan is a draft of the implementation of business operations, actions of the firm, containing information about the firm, the product, its production, the organization of operations and their effectiveness. The planning period is 2024-2030.

### **The object and subject of research and business planning**

The object of the study is the creation of a plant for the production of mashed potatoes and chips in Kamashi.

### **Goals and objectives of the business plan**

The purpose of business planning: to assess the cost-effectiveness of creating a plant for mashed potatoes and chips in Kamashi.

The challenges of business planning:

- Assessment of the economic efficiency of the project;
- Justification of investment funds for the implementation of the project;
- Planning the business operations of the future company and financial forecasting of activities.

### **Sources of information**

- Database of state statistical bodies;
- Industry Statistics;
- Data from government agencies;
- Specialized databases of the Global Innovation Trade Agency;
- Ratings;
- Information resources of market participants;
- Industry and specialized information portals;
- Materials of the sites of the subject under study (web-resources of manufacturers and suppliers, electronic trading platforms, bulletin boards, specialized forums, Internet stores);
- Regional media;
- Portals of information disclosure (reporting of public companies);
- Surveys of major market participants.

**Distribution of the business plan**

The Business Plan materials are not intended for wide distribution or publication. When making the Business Plan available to users, the purpose of the document, the assumptions adopted for its preparation, and any restrictions on its use must be communicated to them.

**Limitation of liability**

All opinions, conclusions and estimates contained in this business plan are valid as of the date hereof. The contractor is not responsible for changes in economic, political, social, or other conditions that may affect the validity of these judgments. Contractor shall not be liable for any loss or damage incurred by a third party as a result of the use of the information in this business plan.

## 1. PROJECT SUMMARY



### **Project name**

Construction of a plant for the production of mashed potatoes and chips.

**Initiator of the project** The initiator's own funds.

**Location of the project** Uzbekistan, Kamashi district.

### **The essence of the project**

The purpose of this project is to justify the cost-effectiveness and feasibility of creating a plant for the production of mashed potatoes and chips in Uzbekistan.

The initiator is to be specified.

Equipment capacity for potatoes is up to 5 tons per day, which will allow processing more than 12 thousand tons per year.

The project initiator buys potatoes and produces the following products:

- Chips;
- Dry mashed potatoes.

The idea behind the project is to organize potato processing on the territory of Kamashi neighborhood.



The stages of project implementation are shown in Table 1.1:

**Table 1.** Project implementation schedule

Project Stage	Beginning of work	Duration, days	End of job
Rationale for the investment project and management decision	01.01.2024	58	28.02.2024
Attracting financing	01.03.2024	60	30.04.2024
Buying a land plot	01.05.2024	30	31.05.2024
Plant design	01.06.2024	29	30.06.2024
Construction and installation work on the facilities	01.06.2024	152	31.10.2024
Supply of equipment and technology	01.07.2024	152	30.11.2024
Attracting staff	15.10.2024	46	30.11.2024
Purchase of initial stock raw materials and supplies	01.11.2024	29	30.11.2024
Start of production	01.12.2024	30	31.12.2024

Source: Global Innovation Trade analysis and calculations

### Investments

The volume of investment in the implementation of the project is up to 8.8 million dollars. The payback period of the project under consideration is 46 months (3 years and 10 months), taking into account discounting.

The main financial indicators of the project are presented in Table 1.2:

**Table 2** Key financial indicators

Investment performance indicators	
Calculation period (planning horizon), months.	81
Net income (NV), dollars.	16 105 596
Net discounted income (NPV), dollars.	7 945 759
Internal rate of return (IRR), % per year	48%
Profitability index (PI), units.	1,90
Payback period (PB), months.	39,9

Discounted payback period (DPB), months.	45,4
--	------

Investment performance indicators	
Investment in the project, dollars.	8 844 762
Average return on sales for the project, %	42%
Net income (cumulative), dollars.	4 157 445
Discount rate, %	12,69%

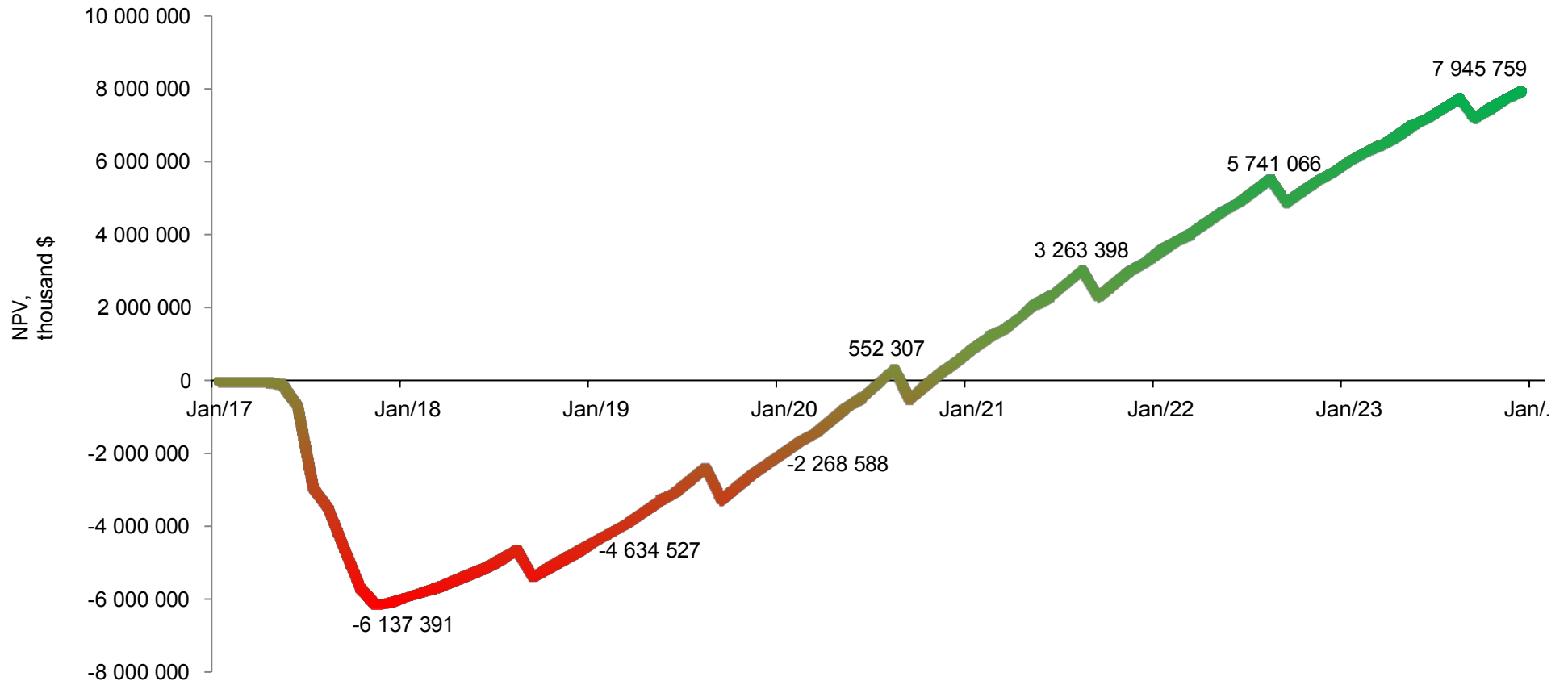
\* The definition of the concepts of financial indicators is presented in section 6.11 of this business plan

Source: Global Innovation Trade calculations

According to the study, it is clear that the project is profitable. The net discounted income of the project at the end of the project will be 7.9 million dollars. The efficiency indicators of the project demonstrate a high level.

Figure 1.1 shows the graph NPV of the project by years of its implementation. The NPV graph shows an increase in the net present value of the project by years:

Figure 1 Graph NPV of the project



Source: Global Innovation Trade calculations

## 2. ESSENCE OF THE PROPOSED PROJECT

### 2.1. Project Description

This project considered the issue of capital investment in order to create a plant for the production of mashed potatoes and chips in Uzbekistan.

To implement this project, the initiator of the project plans to build a production base, purchase equipment and machinery, as well as organize the process of potato processing to produce the following products:

- Chips - up to 1,786 tons per year;
- Dry brews - up to 775 tons per year.

The average monthly volume of potato processing is up to 1 ton per month, which is more than 12,000 tons per year. At the same time, the total income is planned to reach 2.56 million dollars a year. The number of employees involved in the project is 90 people, including 80 production employees.

### 2.2. Description of the intended products

Mashed potatoes is a finished product with a minimum moisture content (up to 8%), which is easy to store and cook.

The chips presented in the project are a snack, which is a product of a dried thin layer of mashed potatoes.

A general view of the products is shown below in Figure 2.1:

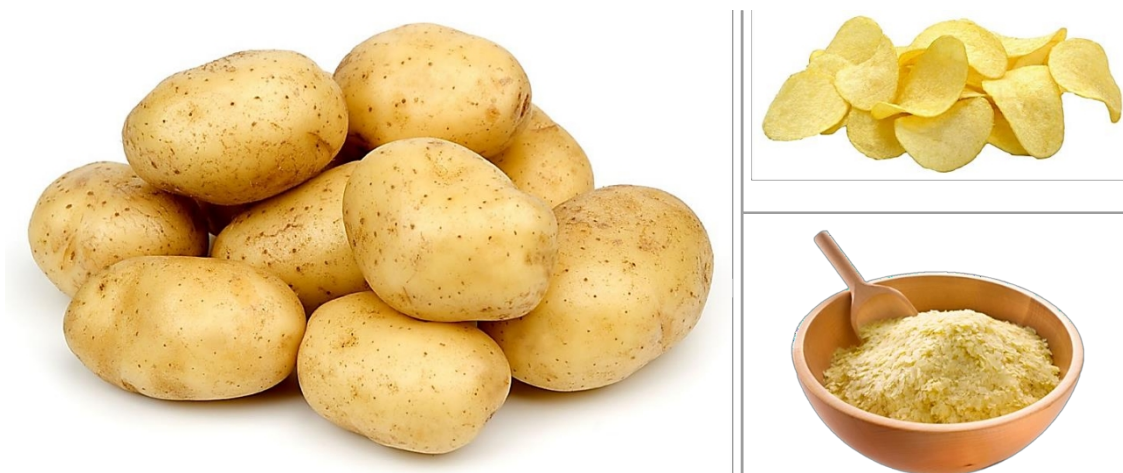
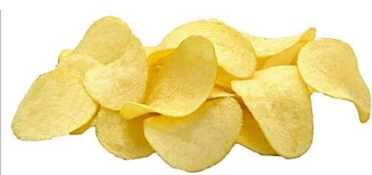


Figure 2 General view of the product



Source : <https://yandex.ru/images>

Here are the main characteristics of the products:

**Table 3** Product Specifications

Product	Number of potatoes (kg) to obtain 1 kg of product	Shelf life	Storage conditions
Dry mashed potatoes	6.17 kg of potatoes	Up to 12 months	temperature - up to 20°C, Humidity - up to 85%
Chips	4.07 kg of potatoes	Up to 4 months	temperature - up to 20°C, Humidity - up to 75%

Source: Data from equipment manufacturer

### 2.3. Project Location

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

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 road.

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

**Figure 3** Location on the map

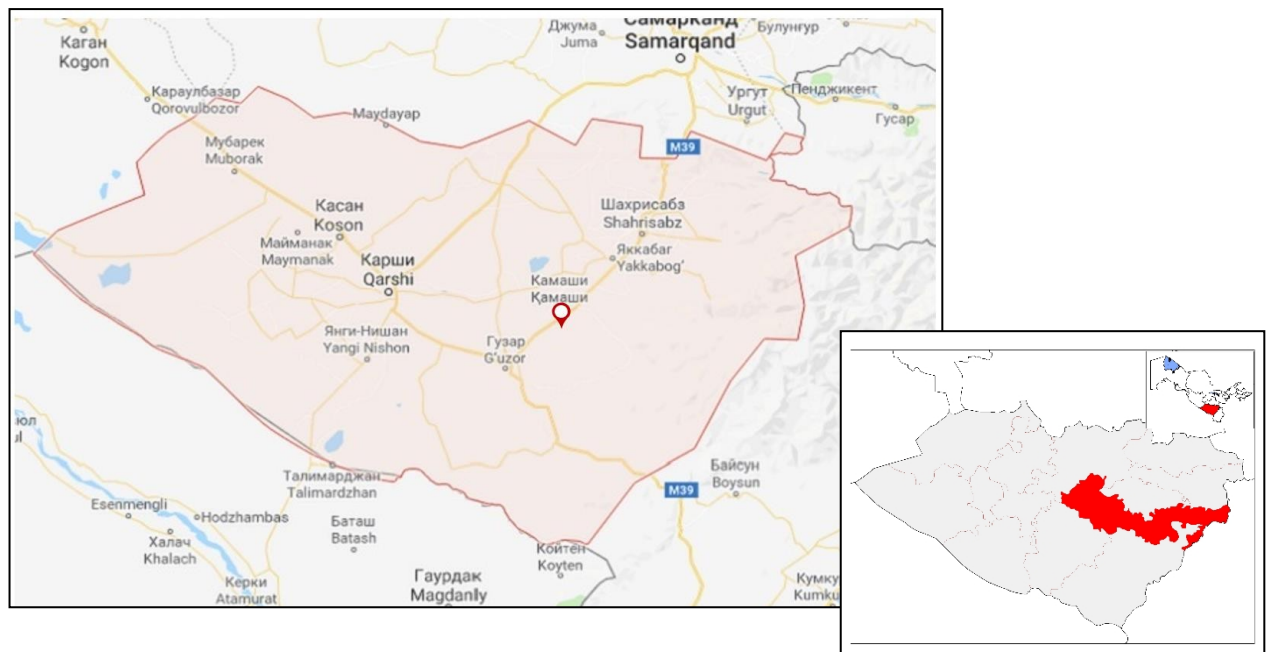


Figure 4 Overview scheme of land plots in the territory of Kamashi district



### Production building

Production building for the production of potato chips with warehouses and administrative building

- **Project assignment:** Development of architectural concept and visualization
- **Address:** Kamashi district
- **Size:** 4200 sq.m.
- **Stage:** Completed conceptual design project

The project is a conceptual architectural design of an industrial processing plant for potato chips with a warehouse of finished products and an administrative wing attached to the warehouse block.

The building consists of 3 production buildings and an administrative building on 3 floors. The project includes parking for cars and trucks through the porter and security at the entrance.

Access to the buildings is also provided for direct loading from a ramp directly from the finished product warehouse.

The entire plot of land and the buildings planned inside will be surrounded by an openwork fence.



Figure 5 Production building











## 3. MARKETING PLAN

### 3.1. General overview of the potato chips market

Uzbekistan, as a developing country with a population of over 30 million people, is one of the important potential markets for potato chips in Central Asia. The structure of Uzbekistan's economy is changing as the share of industry and services in GDP increases, and the snack market is on the rise. The proposed project involves the establishment of a potato chip production facility in Uzbekistan, equipped with automatic potato chip machines that can efficiently produce chips. This article mainly analyzes the current snack market, potato market, potato chip market and opportunities for a potato chip plant, all contributing to an overall overview of the Uzbek food market.



Potato chips are the most popular savory snack in the world. And potatoes are a world food, second only to rice in the world. Potato chips are one of the potato products loved by most people around the world because of their special crispness, aroma, smell and taste.

Potato chip production is a plant for the production of potato chips, frozen fries, fried fries with automatic equipment for the production of potato chips. The production of potato chips is highly efficient and saves labor and reduces material and energy waste.

For large-scale production the factory is equipped with an automatic potato chip plant. And for small and medium-sized production of potato chips the factory is equipped with a semi-automatic potato chip plant.

Uzbekistan as a Central Asian country, its climate is suitable for growing potatoes. It produces large quantities of potatoes each year for local consumption, and the government plans to increase the area planted in the future. In addition, Uzbekistan can also import fresh potatoes from neighboring countries such as Russia at low prices, since Russia is currently experiencing inflation.

### **Decisive factors and stages of making an investment decision**

#### **SWOT analysis**

The SWOT analysis basically gives an overall picture of the whole potato chip market in Uzbekistan. This is very important for making investment decisions.

#### **STRENGTHS**

- Lots of raw materials, fresh potatoes
- Cheap labor
- High automatic potato chip line
- State support for the development of the industry
- Less competition in the potato chip market

#### **WEAKNESSES**

- Lack of storage space.
- The economy remains less developed.

#### **OPPORTUNITIES**

- Vacancy in the potato chip market
- Increase in personal income
- The food industry is booming
- People's Passion for Western Snacks
- The development of globalization

#### **THREATS**

- Competition from the growing number of new brands launched in Uzbekistan.
- Less developed technology.

#### **Key success factors**

A new brand entering the market always faces many uncertain factors. Some key success factors should be mentioned to achieve success. When a new brand enters the market, it is necessary to allocate a large budget for promotional activities. A marketing plan, promotion and advertising are needed.

The key success factors are as follows:

- Particular attention should be paid to the choice of fresh materials
- Reducing waste during production
- Innovative potato chips with a new flavor to meet market demand. Combine the dietary style of Uzbekistan and the Western style.
- Always maintain good product quality.
- Improving production efficiency and increasing the use of raw materials

### **3.2. Potatoes in Uzbekistan**

Potatoes for the harvest of 2022 in all categories of farms of Uzbekistan sown 243,000 hectares, which is 55% or 86,000 hectares more than last year. Accordingly, the projected volume of harvest in 2022 is 4.1 million tons, which is 26% or 850,000 tons more than in 2021, according to the Ministry of Agriculture of Uzbekistan.

Planted areas of potatoes by categories of potato producers and their increase compared to the previous year were distributed as follows:

153,000 hectares (more than 70,000 hectares) of farm and agricultural enterprise land, of these 115,500 hectares (more than 65,000 hectares) in the main areas and 7,300 hectares (more than 4,400 hectares) in intercrops in orchards and vineyards; 90,000 hectares (10,000 more) of small-scale farms and homesteads.

Thus, of the projected 2022 harvest of 4.1 million tons, 2.6 million tons will be produced by farms and agricultural enterprises, and 1.5 million tons - by small farms and household plots.

According to the Ministry of Agriculture, 40 districts in ten regions of the country specialize in growing potatoes, 23 districts - in seed potato production, 9 districts - in growing potato varieties of the highest grade. Nine potato clusters were created. Five modern in-vitro laboratories were also established to grow virus-free potatoes in an intensive way.

Read also: Beet and daikon export season has started in Uzbekistan



In 2021, the Uzbek-Hungarian Potato Research Center started to work in Tashkent province. Within the cooperation agreement between Hungarian University of Agriculture and Life Sciences - Potato Research Center and Ministry of Agriculture of Uzbekistan, 6 varieties belonging to Hungarian breeding - Varieties "Aranu Klipke", "Balatoni Rossa", "Demont", "Botant", "White", "09-688" were selected for testing in soil and climatic conditions of Uzbekistan. At present, scientific experiments are being carried out.

In total, 131 potato varieties recommended for planting in Uzbekistan are included in the State Crop Register, of which 19 varieties were created by local research institutes.

According to the ministry, the gross yield of potatoes in the republic in 2021 was 3.3 million tons, of which 650 thousand tons will be used for seed production for next year's harvest.

Potatoes have become the main import item in Uzbekistan's horticultural sector over the past few years. The annual volume of potato imports did not exceed 50,000 tons per year until 2016, and in 2017 potato imports amounted to 194,000 tons. In the following years, from 2017 to 2021, imports increased from 194,000 tons to 560,000 tons, i.e. almost threefold.

Analysts said potato imports to Uzbekistan in January-March 2022 totaled 223,800 tons, up 47 percent, or 71,700 tons, from the same period in 2021.



Meanwhile, the first wholesale shipments of early potatoes of the new crop arrived at Uzbek markets about a month ago, and prices have halved over the past year.

According to price monitoring data, from March 18 to April 15, 2022, average wholesale prices for potatoes from the current year's harvest decreased from 16,000 to 9,000 soum/kg (from \$1.38 to \$0.79), or 44% in four weeks. In addition, average wholesale prices for early potatoes as of April 15, 2022, are at the level of April 15, 2021.

Early potato prices tend to decline rapidly as supply increases in the wholesale markets. Assuming that the price will fall at about the same rate as in previous years, we should expect wholesale prices for early potatoes to be well below current prices by the end of April.

At the same time, wholesale prices for last year's potatoes (2021 crop) in Uzbekistan are currently at last year's level. As of April 15, 2022, their average wholesale price was 4,000 soum/kg (\$0.35) - 2.2 times cheaper than early potatoes.

### **Potato varieties in Uzbekistan**

Uzbekistan is the world's 23rd largest producer of potatoes, according to the Multimedia Center of the Ministry of Agriculture.

Currently, 131 potato varieties are recommended for planting in the country. These varieties are already included in the state register of crops. Out of 131 varieties, 19 have been created by local research institutes. Eleven of them were created in the Research Institute of Vegetables, Melons and Potatoes.

Among them: "Tuyimli" (1995), "Akrab" (1996), "Diyora" (2008), and "Kuksaroi" (2011), "Serkhosil" (2011), "Pskom" (2012), "Sarnav" (2012), "Umid 2" (2013), "Baraka" (2016), "Feruza" (2019), "Bogizagon" (2020).

It is noted that the Institute keeps the gene pool of more than 200 potato varieties. In addition to local varieties, it includes varieties from other countries (Netherlands, Germany, France, South Korea, Hungary, China, Russia, Belarus).

All-Russian Potato Research Institute named after A.G. Lorch;

- Scientific and Practical Center of the National Academy of Sciences of Belarus on Potato and Horticulture;
- China Zhengbei bayuan potato development Co. LTD;
- Hungarian Center "Hungarian University of Agriculture and Life Sciences - Potato Research Center."

The conclusion is that more than 376.9 million tons of potatoes are grown annually in more than 150 countries.

The largest producers are China, India, Russia, Ukraine, the United States, Germany, Bangladesh, Poland, France and the Netherlands. Uzbekistan ranks 23rd in this chain, the press service concludes.

**Table 4 Potato varieties in Uzbekistan and mineral composition of potatoes**

<b>Variety</b>	<b>Iron (Fe mg/100g raw weight)</b>	<b>Zinc (Zn mg/100 g raw weight)</b>	<b>Calcium (Ca mg/100 g raw weight)</b>	<b>Phosphorus (P mg/100g raw weight)</b>
Tuimli	0.31	0.38	5.59	68.00
Nevsky	0.40	0.41	8.26	58.00
Umid	0.28	0.27	4.71	45.00
Picasso	0.37	0.31	8.85	53.00
Condor	0.26	0.35	4.10	52.00
Diamant	0.24	0.42	6.00	54.50
Mondial	0.26	0.26	6.82	39.00
Kuroda	0.28	0.40	4.29	55.00
Arinda	0.38	0.44	5.51	47.00
Santé	0.33	0.38	9.26	50.00
Keep in mind	0.31	0.36	6.34	52.15
CD (p<0.05)	0.10	0.10	0.80	0.73
SUMMARY %.	3.56	0.91	3.87	0.43



### 3.3. Target customers

In Uzbekistan, sweet and salty snacks have different target consumers depending on the events people are going through. Potato chips/chips are always eaten on the street, e.g. at the cinema, on a walk or as a school lunch. Thus, potato chips/chips are sold on the streets, in restaurants, movie theaters, etc. Market research shows that 50% of children, teens and people ages 18-24 say they eat salty snacks about five times a week, and some may eat more. Adults say they eat salty snacks 4.8 times a week. Thus, target buyers of potato chips/chips may be as follows.

- Young people.
- Schoolchildren
- Average people who lead busy lives

### 3.4. A review of potential competitors.

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#### **AKMAL FAYZ BIZNES SP**

**90 906 57 75**

**Country code: +998**

**Legal name: AKMAL FAYZ BIZNES JV**

**Brand name: AKMAL FAYZ BIZNES JV**

**Address: Uzbekistan, Tashkent region, Yukorichirchik district, Akhmada Yassavi village, 15**

#### **DELTA FOOD LTD.**

**90 978 87 88**

**Country code: +998**

**Legal name: DELTA FOOD LLC**

**Brand name: DELTA FOOD LLC**

**Address: 22 Toshbulok Street, Tashkent, Yakkasaray district, Uzbekistan**

**LEELEE JV LLC**

**71 281 66 99**

**Country code: +998**

**E-mail: cuijinhan@yahoo.com**

**Legal name: YAXSHI YIL SANOAT JV LLC**

**Brand name: LEELEE JV LLC**

**Address: Uzbekistan, Tashkent, Bektemir district, 1 Ziroat str.**

**INSPIRATION SP**

**71 269 74 16**

**Country code: +998**

**Legal name: KVON UNIVERSAL ELIT JV**

**Brand name: INVESTMENT JV**

**Address: Uzbekistan, Tashkent, Yashnabad district, 25 Parkentskii av. 6 PARKENT STREET, 25**

**SIBIRSKY BEREG IP OOO**

**78 12028 81**

**Country code: +998**

**E-mail: sibirsky.bereg@mail.ru**

**Legal name: SIBIRSKY BEREG FE LLC**

**Brand name: SIBIRSKY BEREG FE LLC**

**Address: Uzbekistan, 100100, Tashkent, Yakkasaray district, 42 Bobura ave.**

## 4. ORGANIZATIONAL PLAN

### 4.1. Personnel plan

The company will employ 90 people, of whom 80 will be production personnel (table 4.1.):

**Table 5** Personnel and salaries

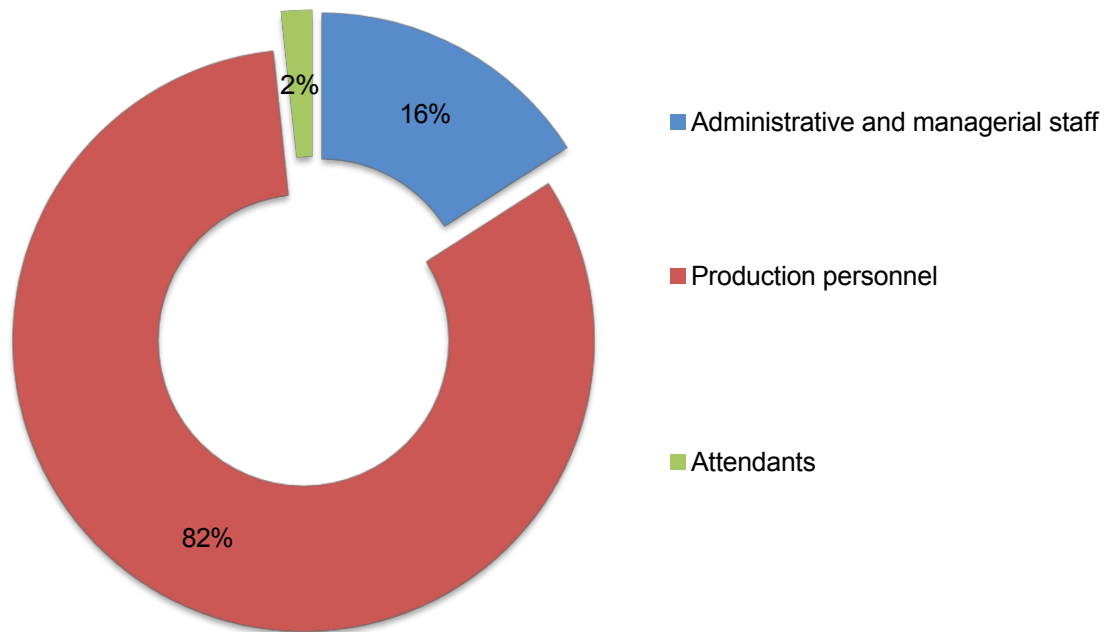
No	Job title	Number of employees	Salary of 1 worker, \$/month.	Total payroll, \$
<b>1</b>	<b>Administrative management personnel</b>	<b>8</b>		<b>5 360</b>
1.1	CEO	1	1 150	1 150
1.2	Head of Production	1	990	990
1.3	Chief Accountant	1	910	910
1.4	Purchasing and Sales Manager	2	580	1 160
1.5	Technologist	1	490	490
1.6	Warehouse Clerk	1	320	320
1.7	Office Manager	1	340	340
<b>2</b>	<b>Production personnel</b>	<b>80</b>		<b>27 720</b>
2.1	Shift supervisor	4	500	2 000
2.2	Workers on the line (mashed potato)	64	330	21 120
2.3	Workers on the line (chips)	4	330	1 320
2.4	The Mechanic	4	430	1 720
2.5	Electrician	4	390	1 560
<b>3</b>	<b>Attendants</b>	<b>2</b>		<b>560</b>
3.1	Security Guard	2	280	560
	<b>Total</b>	<b>90</b>		<b>33 640</b>

Thus, the average monthly payroll would be \$33,64,000.

The average salary in this company is \$373.8.

Below is the structure of the project's payroll (Fig. 4.1):

Figure 6 Structure of payroll



Source: Global Innovation Trade analytics

82% of the payroll consists of production personnel, the share in the general structure of the salary of the administrative and managerial staff is 16%, and the share of the service personnel is 2%.

## 4.2. Work schedule for the project

The stages of project implementation are shown in Table 4.2:

Table 6 Project implementation schedule

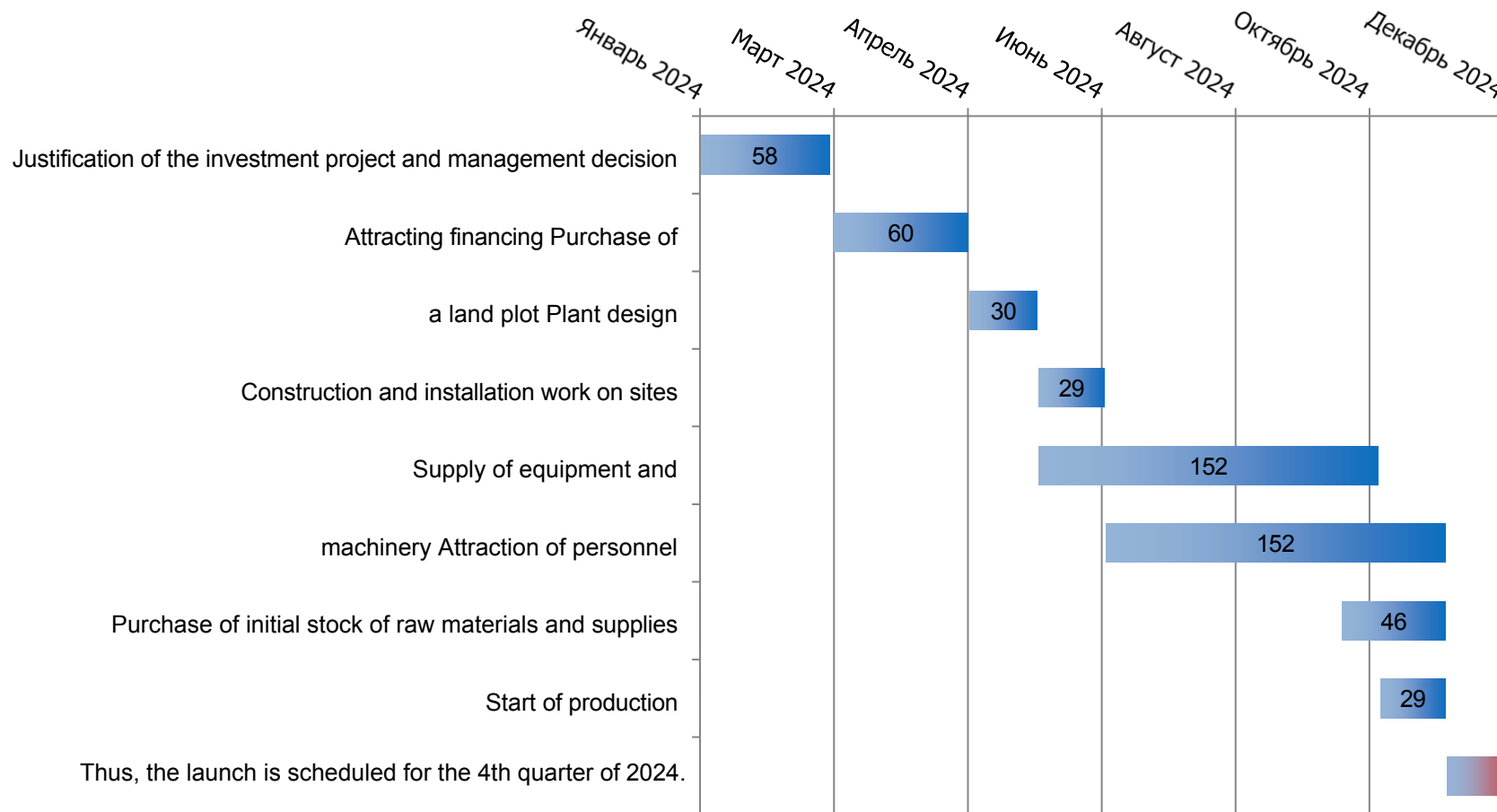
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Buying a land plot	01.05.2024	30	31.05.2024
Plant design	01.06.2024	29	30.06.2024
Construction and installation work on the facilities	01.06.2024	152	31.10.2024

Project Stage	Beginning of work	Duration, days	End of job
Supply of equipment and technology	01.07.2024	152	30.11.2024
Attracting staff	15.10.2024	46	30.11.2024
Purchase of initial stock raw materials and supplies	01.11.2024	29	30.11.2024
Start of production	01.12.2024	30	31.12.2024

Source: Global Innovation Trade analysis and calculations

The project implementation schedule is shown graphically in Figure 4.2:

Figure 7 Project implementation schedule



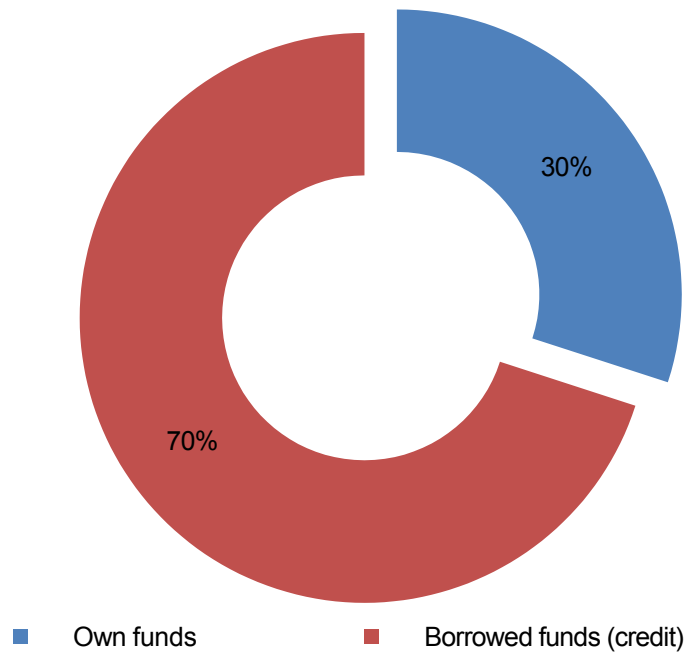
Source: Global Innovation Trade analysis and calculations

### 4.3. Sources, forms and conditions of financing

The project plans to use its own funds and credit facilities.

The distribution of shares is shown in Fig. 4.3:

Figure 8 Structure of project financing, %



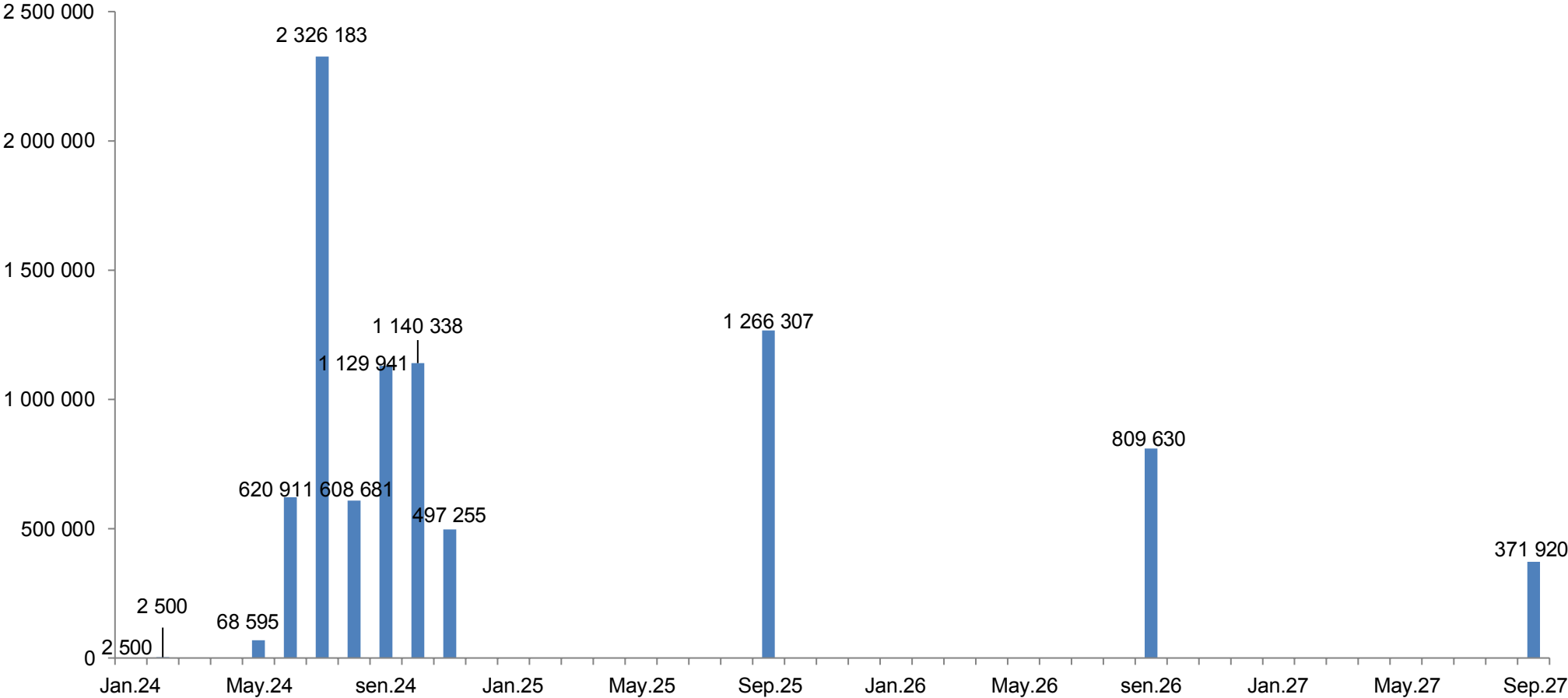
Source: Global Innovation Trade analytics

Loan terms and conditions:

- Loan rate - 12%;
- Loan term - 5 years;
- Deferral of payments on the principal debt - 2 years.

Below is the project financing schedule (Figure 4.4):

Figure 9 Financing of the investment project, dollars.



Source: Global Innovation Trade analytics

The project needs funding until September 2027 inclusive. The main costs are in the 3rd-4th quarters of 2024.



## 5. WORK PLAN

### 5.1. Description of buildings and premises

The production base will include the following facilities:

**Table 7** Production base

No	Base facilities	Cost, dollars.
1	Administrative Building	43 070
2	Raw material storage	1 083 690
3	The warehouse of finished products	487 779
4	Workshop building	164 176
5	Boiler house (2.4 Gcal/hour)	118 228
6	Finishing work	30 000
7	Workplace preparation	6 890
8	Waste disposal site	175 688
9	Production water supply	840 000
10	Fence	15 502
11	CAT	5 167
12	Security system	34 449
13	Lighting	20 669
14	Chief assembly (mashed potato line)	171 100
<b>Total:</b>		<b>3 196 406</b>

Source: Designers' data

### 5.2. Description of basic equipment and techniques

Below is a general list of the main equipment (Table 5.2):

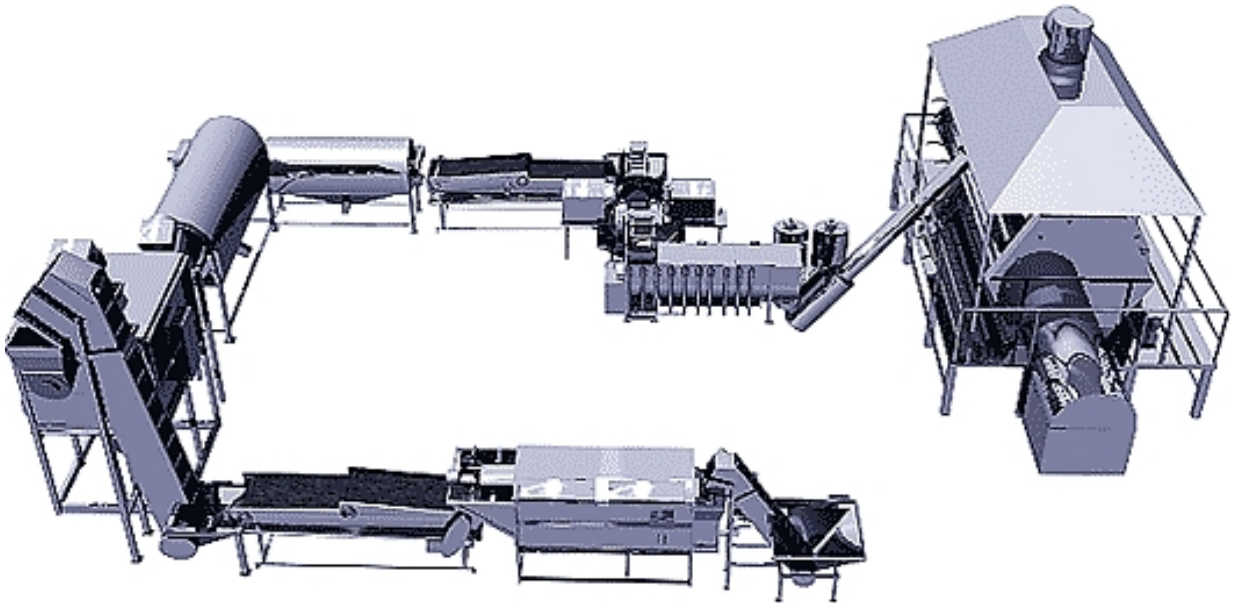
**Table 8:** Description of main equipment

No	Equipment and machinery	Quantity	Cost, dollars.
1	Mashed potato production complex	1	1 711 000
2	Moulded chips production complex	1	120 000
3	Packaging machine	1	56 410
4	Forklift	1	10 335
<b>Total:</b>			<b>1 897 744</b>

Source: Global Innovation Trade analytics

Below in Fig. 5.2 shows a general view of the line for the production of dry mashed potatoes.

Figure 10 General view of the production line for the production of dry mashed potatoes

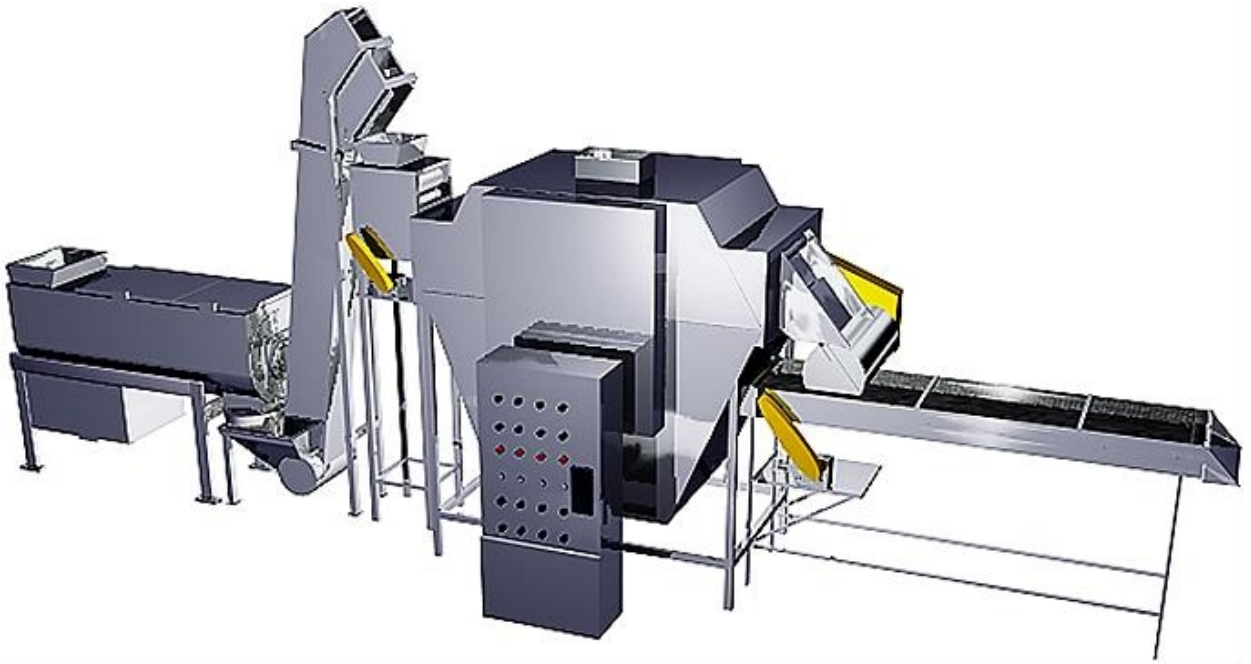


Source: Commercial offer JLLC "MLECH"

The cost of the line is **\$1,711,000**.

Fig. 5.3 shows a view of the production line for the production of chips:

Figure 11 General view of the production line for the production of chips



Source: Commercial offer JLLC "MLECH"

The cost of the line is **\$120,000**.

Fig. 5.4 shows a general view of the filling line:

**Figure 12 General view of the filling machine**



Source: Additional Liability Company "Elementary Machines"

The cost of the line is **\$56,41,000**.

### **5.3. Product technology**

Principle of operation of the complex for the production **of dry mashed potatoes**:

1. The tub of the feeder conveyor is equipped with an overflow spigot for draining excess water into the sewage system, DN 50. The conveyor in its lower part is equipped with a manhole for sanitary treatment and a drainage spigot for water discharge after sanitary treatment DU 50. Drive power of the motor-reducer is 1,5 kW. Water is fed into the conveyor bunker of the feeder conveyor with a hose, the potatoes are soaked from the clogged dirt, the potatoes are fed by the conveyor to the stone pickup of the washing machine.

2. The water is pumped under pressure to the stone trap of the washing machine, the flow of water throws the potatoes into the washing drum, and the stones with a large mass fall to the bottom of the stone trap and are removed through the inspection hatch at the end of the shift. In the washing drum the potatoes are removed from the dirt and clogged soil by rubbing against the drum corners, rubber fingers and against each other, from the drum the potatoes go for strangling and unloading. Power of electrical equipment is 4.65 kW. Water consumption is 1-1.5 m<sup>3</sup>. Depending on the type of soil (loamy, greasy chernozem, etc.), we can recommend to put in line 2 washing machines. From the inspection conveyor the potatoes go to the inspection conveyor.

3. Washed vegetables, arrive on the inspection conveyor belt and move with it. In the process of movement workers remove vegetables that are not suitable for processing. Damaged vegetables are transferred to the space of the belt bounded by shields and transferred for disposal. Standard vegetables are smothered and fed for further processing. The drive power of the inspection conveyor is 1.1 kW.

4. Inspected vegetables go to the receiving hopper of the elevator, where they are grasped by the elevator blades and lifted into the receiving hopper of the batching conveyor of the steam-thermal unit. Drive power of the gearmotor is 1,5 kW.

5. The main working body of the device is an autoclave chamber where thermal treatment and separation of peels from potatoes and other vegetables takes place under steam pressure. The chamber is a body with a feed hopper, rod body, rod, gate, throat, trunnions, stars, elbow, spigots, bracket, latch, compensator, springs, supports, piston, sleeves, nozzle, flange placed in it.

Before loading, the chamber is oriented with the filling funnel upwards. In this case, the gate is located in the extreme lower position and provides free entry of vegetables through the hopper. Return of the gate to the extreme lower position is carried out by the spring and due to its own mass of the parts included in the gate.

After the dosing conveyor into the cavity of the cylinder portion of the potatoes is sealed chamber, which is carried out by running steam through the branch pipe and the elbow in the lower part of the chamber. At the same time, the piston connected with the rod and the mushroom-shaped gate starts moving upwards until the gate comes into contact with the sealing ring located in the chamber throat. The steam displaces air and condensate from the inner cavity of the chamber.

When the mushroom-shaped plug comes into contact with the sealing ring, the main steam pressure of at least 0.8 MPa starts to flow into the chamber through the branch pipe, due to which the final clamping of the plug with its subsequent fixation is performed.

The shutter is locked with a latch mounted on an adjustable bracket. From the moment of locking of the shutter the steam-thermal treatment of potatoes starts directly. In order to intensify the process at the same time as the steam is supplied, the chamber receives a rotary motion from the drive.

At the end of treatment the chamber is automatically stopped, oriented with the feed hopper downwards, the steam supply is cut off and at the same time water is injected into the elbow, which enters the chamber through a nozzle. Once the water injection is complete, steam is quickly released from the chamber by opening the valve, and then, after a programmed time delay, the chamber is rotated again. When the chamber reaches the vertical position phase with the funnel upwards, the shutter is moved away from the throat by the spring and takes the lower end position.

Unloading of potatoes takes place with the rotating chamber. After unloading, the cycle repeats. The processed potatoes are transported by the spiral conveyors included in the machine to the next technological operation.

Cycle time is based on loading a batch of 80 kg of potatoes and is 168 seconds. Installed power is 18 kW/hour. Water consumption 2m<sup>3</sup>/hour. Steam consumption is 2000 kg/hour. Steam pressure is 0,8 MPa.

6. The peeled potatoes enter the inlet tray of the washing and peeling machine. On the tray the potatoes enter the drum. As the drum rotates, the tubers rub against each other and against the plates of the drum simultaneously moving along it to the discharge chute. The potatoes are rinsed with water which is supplied through a strangling device, and the waste that has stuck to the drum plates is removed. Last through slots in the drum fall into the receiving bottom and through the branch pipe are discharged to the outside. Installed power is 1.1 kW/h. Water flow rate 4 m<sup>3</sup>.

7. Washed and peeled vegetables enter the inspection conveyor belt and move with it. In the process of movement workers remove vegetables that are not suitable for processing. Damaged vegetables are transferred to the space of the belt bounded by shields and transferred for disposal. Standard vegetables are smothered and fed for further processing. The drive power of the inspection conveyor is 1.1 kW.

8. Peeled vegetables, from the peeling machine, go to the inspection conveyor belt and move with it. In the process of movement, workers remove vegetables that are not suitable for processing. Damaged vegetables are transferred to a space on the belt bounded by shields and transferred for disposal. Standard vegetables are smothered and fed for further processing. The drive power of the inspection conveyor is 1.1 kW.

9. Peeled, inspected vegetables go to the feeder conveyor of the cutting machine. Water is fed into the hopper of the feeder conveyor, the potatoes are caught by the conveyor blades and fed into the cutter's hopper, the potatoes feeding speed is regulated by the engine speed converter or gear motor with the set speed and must not exceed the cutting machine's clamping speed. The tub of the feeder hopper is equipped with an overflow pipe, for drainage of excess water into the sewage system, DN 50. The conveyor in its lower part is equipped with a manhole for sanitary treatment and a drainage spigot for draining water after sanitary treatment DU 50. Drive power of the motor-reducer is 1,5 kW.

10. Peeled inspected vegetables go into the hopper of the cutting machine. From there they enter the rotating rotor. The raw material, caught by the rotating carriers, is pressed by centrifugal force to the inner wall of the drum and is fed to the melting knife, which cuts it into slices (the thickness of slices is adjustable). All knives are made of heat-treated stainless steel. To improve the quality of cutting, in the cutting zone through the pipe DN 20 water is supplied. The total power of the cutting machine drives is 2,65 kW.

Hard foreign objects (stones, scrap, etc.) are not allowed to get into the cutting machine. For the convenience of routine maintenance of the cutter (replacement, sharpening of blades, etc. according to the equipment passport) and to avoid downtime of the line we recommend installation of two cutters.

11. In the case of abrasive cleaning. The sliced potatoes are fed to the starch washing machine. The sliced potatoes are moved by vibration along the perforated sieves cascaded, in the upper part of the machine there is a nozzle block, the water from the nozzles washes the free starch from the surface of the sliced potatoes, the washed starch with water passing through the perforated bottom goes to the inclined tray where it is disposed into the sewer. Potatoes into the feeder conveyor of the cooking machine.

12. The tub of the feeder conveyor is equipped with an overflow spigot for draining excess water into the sewage system, DN 50. The conveyor in its lower part is equipped with a manhole for sanitary treatment and a drainage spigot for water discharge after sanitary treatment DU 50. Drive power of the motor-reducer is 0,75 kW. In the feeder conveyor bunker, water is fed with a hose, the potatoes are conveyed to the receiving bunker of the cooker by the conveyor.

13. The potatoes are continuously fed through the hopper into the tub, which simultaneously receives steam of the required parameters from the steam line via the manifold. An auger moves the potatoes from the loading area to the unloading area. While moving the potatoes are steamed until fully cooked, the ready product is discharged through the tray and goes on potato masher. Duration of cooking from 20 to 40 minutes at 100 ° C, the steam consumption (at  $p = 6h102-8h102$  kPa) 400 kg / hr. Installed power 2.2 kW/hour.

14. The cooked potatoes enter the delivery hopper of the potato masher, are picked up by a screw with a variable pitch, in the process of moving from the loading unit to the unloading unit the potatoes are kneaded, pressed through the grid and transferred to the distribution screw of the single-shaft dryer. In the receiving hopper of the potato masher, a solution of distilled monoglycerides is also dosed.

15. The distribution auger distributes the mashed potato mass evenly over the length of the drying roll. The distribution rollers envelop the mashed potato mass and apply it in a thin layer to the surface of the drying roll. Steam is injected into the roll. Owing to the sticking of mashed potatoes on the hot surface of the roll a film of dry potato puree is formed, which is removed from the roll by the scraper blades and through a tray goes to the screw conveyor, which crushes and takes away the ready product to the package. Steam temperature is 160C. Steam flow rate is 1 470 kg/hour. Installed power 18,2 kilowatt/hour. Mass 21,000 kg.

The finished product is a flake (0.2-0.3 mm thick) from white to yellow and cream color of different shades (depending on the variety of potatoes and additives used). The humidity of the product is not more than 12%. Bulk density of 200-300  $kg/m^3$ .



The complex for the production of **molded chips** works as follows:

The mixer is designed for preparing potato mass. It includes a body, a shaft with blades, a drive, a manhole, a lever.

The feeder is designed to feed the cooked potato mass into the molder. It consists of a frame, drive and tensioning drums, belt with scrapers, drive.

The shaper is designed to give the pre-cooked potato mass a ribbon shape. It includes two pairs of rollers, drums and a conveyor. The rollers are set with different gaps between them for constant belt compaction, the drum is designed to drive the conveyor.

The conveyor is designed to transfer the molded belt to the furnace. It consists of a frame, a conveyor belt driven by a drum and rollers (tensioning, supporting).

The furnace is designed for frying the molded strips in vegetable oil at a temperature of 165... 174 °C and includes a bath with built-in tubular electric heaters, in which the drums, covered with grids, are placed. The top of the bath is closed by a casing with a gas exhaust port.

Cutting is a shaft driven by the common drive of the furnace, with a knife installed on it to cut the strip into strips 40...50x200 mm.

The conveyor is designed to remove the fried chips and their cooling. The cooling is performed by a fan installed above the conveyor.

The electrical cabinet is designed to contain electrical equipment and control equipment of the complex. It is a welded construction, on the external panels of which there are indicating devices, buttons, light-signal armature.

The tank is designed for oil cleaning and cooling.

It is a container with a cooling jacket at the bottom and a filter at the top.

The cooling and filtration system is equipped with a spigot and valve for water supply to the cooling jacket of the tank. There is a spigot and valve for the water supply to the tank.

The valve is designed to drain the sludge and water, and the valve is designed to pour oil into the furnace bath. The spigot and valve are designed to drain water from the cooling jacket of the tank. Piping, valve, is designed for filling the furnace bath with oil from a tank that is not part of the complex.

The gate valve and spigot are for draining oil from the furnace into the tank.

The shredder is designed for crushing potato flakes. It includes frame, hopper, body, shaft with drums, drive, sieve, discharge spout.

Can be installed independently of the complex in another room.

Crushed potato flakes are dosed together with other components (starch, etc.) and water, loaded into the mixer body and mixed into a homogeneous mass by the blades of the shaft. The prepared mass is discharged through a hatch, which is opened by a lever, into the feeder, which by means of a belt with scrapers, evenly feeds the mass into the moulder hopper, where the rollers roll it out into a thin strip.

The molded ribbon is fed by conveyor to the oven, where it is fried in vegetable oil. The fried ribbon is cut into strips and cooled with a fan.

The oil in the furnace is heated by the heating elements and cooled and cleaned in the tank. The oil is cleaned with a filter.

The potato flakes are crushed in the grinder, which can be installed in a separate room.

The molder and furnace are controlled from the electric cabinet panel. The mixer, feeder and chopper are controlled individually.

The electrical equipment of the dry mashed potato chips production complex of the Sh12-KFCH type includes:

1. Electric heaters TEN-100A 13/ChR220-24 pcs. - EKI...EK24.
2. Electric motor 4AMA90L6Y3, P=1,5 kW; n=1000 rpm - drum drive.
3. Electric motor 4AMA90L6Y3, P=1,5 kW; n=1000 rpm - molder drive.
4. Electric cabinet SH12-KFCH/3.

Dried mashed potatoes (flakes, granules) are ground on a hammer crusher or other grinding devices to a particle size of no more than 1.5 mm.

Dried onion, garlic, and beet, previously dried to a moisture content of 8%, are ground and sifted through a sieve with a hole size of 0.5-0.8 mm.

Powdered components are sifted through a sieve with aperture size: 1.2-1.6; table salt 2.0-2.5.

All components in accordance with the recipe is dosed into the mixer, where with continuous stirring add water or water-salt solution. Mixing is carried out until a homogeneous mass, with a dry matter fraction of 55-62%.

The resulting mass is fed into the charging hopper of the molding machine and formed into ribbon by rolling it into a sheet not more than 0.8 mm thick.

Formed band continuously conveyor belt fed into the roasting machine 5, where roasted in sunflower, soybean or cottonseed oil, or a mixture of oils (sunflower 30%, cotton 70%) at 165-175 0C for 30 seconds.

The oil level in the fryer is kept constant by adding, periodically or continuously, fresh oil.

The acid number of the oil in the frying process should not exceed 2.5 µg KOH (according to GOST 5476-80).

Continuously incoming fried strip is cut on a cutting device into plates of rectangular, square or (new development) hexagonal shape, remove excess oil and cool to a temperature of 25-30 0C.

The finished product is inspected, removing undercooked pieces and fines, and sent for packing and packaging.

Chips stored at a temperature not exceeding 200C for 30 days - if packed in cardboard boxes, 4 months - if packed in metallized film.

In addition, it is necessary to note the following point: since the process is continuous and the equipment is designed to work around the clock, it is necessary to stop the plant once a month and wash the equipment with a mixture (water and caustic soda).

#### 5.4. Raw materials and components

The main raw material for the production of mashed potatoes is potatoes.

After making dry mashed potatoes, the product is the basis for making chips. This business plan uses a recipe for potato chips with onions. The main ingredients are presented below:

**Table 9:** Description of basic raw materials and supplies

No	Purchasing raw materials	unit/ton of finished of the product
1	Dry mashed potatoes	660.0 kg.
2	Potato starch	128.2 kg.
3	Common salt	19.2 kg.
4	Chopped dried onions (powder)	12.9 kg.
5	Drinking water	34,7 л.
6	Vegetable oil	366,0 л.

Source: Global Innovation Trade analytics

Requirements for potatoes:

- Round shape of tubers, oval-shaped tubers are allowed; tubers with excrescences, rotten, frozen, green, diseased tubers are not recyclable admissible;
- the size of the tuber in cross-section should not exceed 100 mm, but not less than 60 mm; the optimal size is 75-80 mm;
- the number of sprouting eyes, with their superficial occurrence, should not exceed 1 per 2 <sup>cm<sup>2</sup></sup>; the depth of occurrence of eyes should not exceed 1 mm;
- The dry matter content of potatoes must be at least 22-25% of the total weight of the potatoes; it is not allowed to exceed 2% of the sugar content of the potatoes, going to processing; no more than 1.5% of the nitrogen content is allowed;
- Only one variety of potatoes may be processed in each batch of raw materials, with the same time and storage conditions.

## 6. FINANCIAL PLAN

### 6.1. Initial data and assumptions

A seven-year planning horizon was adopted in the economic evaluation of the project. The assumptions adopted in the project are described below.

#### Product Assumptions

The products of this company are: chips and dry mashed potatoes.

To calculate this project uses an indicator of the average annual volume of production, taking into account the plans of the Initiators of the project and the productivity of the equipment, annually planned to sell:

- Chips - up to 1,786 tons per year;
- Dry mashed potatoes - up to 775 tons per year.

The plant will annually process up to 12 thousand tons of potatoes. Production will start in December 2024.

#### Assumptions about price

The project assumes the average cost of products:

- Chips - \$5,422.21/ton;
- Dry mashed potatoes - \$885.00/ton.

#### Assumption about the production plan

- Chips - up to 149 tons per month (year-round production);
- Dry mashed potatoes - 65 tons per month (production from September to April).

The average level of potato processing - up to 12 thousand tons per year. This plan is conditioned by the capacity of the equipment and plans of the Project Initiator.

#### Assumptions about investment costs

Investment costs are divided into two categories: the initial costs of creating the company and working capital of the project. To determine the amount of necessary initial working capital, a forecast calculation of profits and losses on current activities of the company until the moment of reaching self-sufficiency was made.

#### Assumptions about the initial working capital requirements

In order to calculate the initial working capital, a list of resources required to carry out all current activities of the project was analyzed. This list included such categories of costs as:

- Administrative costs;

- Employee Compensation Fund;
- Other costs.

#### Assumption about the discount rate

The project adopted a discount rate of 12.69% per year. Below is the rationale for calculating this rate.

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

$$r = r_b + \sum_{i=1}^n R_i$$

where  $r$  is the discount rate;  $r_b$  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 10.** Determination of the cost of equity

Evaluation Factor	Expert evaluation, %
The size of the risk-free rate	5,00%
Amount of country risk adjustment	6,50%
Amount of industry risk adjustment	2,50%
Amount of other risk adjustment	3,00%
<b>Cost of equity</b>	<b>17,00%</b>

Source: Global Innovation Trade analysis and calculations

Then, based on this, the discount rate was determined.

**Table 11.** Determination of the discount rate

Constituents	%
Equity share	30%
Share of borrowed capital	70%
Tax	10,00%
Cost of equity	17,00%
Cost of borrowed capital	12,00%
<b>Total discount rate</b>	<b>12,69%</b>

Source: Global Innovation Trade analysis and calculations



Thus, the expert calculation of the discount rate was 12.69% per annum.

### Assumptions about revenue, profit and loss projections (P&L) and cash flow (CFP)

All of the above indicators were used to build revenue, P&L, and DDS plans.

## 6.2. Nomenclature and prices

For the calculation in this project, the following product nomenclature and price was adopted:

Table 12 Nomenclature and prices

Company products	Average volumes sales, t/month.	Price, \$/t
Chips	149	5 422,21
Dry mashed potatoes	65	885,00
Main raw materials	Consumption, t/month.	Price, \$/t
Potatoes	1 004	140,00
Tariffs, fuel costs	Consumption	Cost, dollars.
Electricity	200 kWh	0,03
Coal for the boiler room	340 tons/month.	69,21

Source: Global Innovation Trade calculations

The costs listed in the table are averaged over the year.

## 6.3. Investment costs

The capital costs that would be required to create the plant are shown in Table 6.4:

Table 13 Investment costs of the project, dollars.

No	Capital expenditures	Price, \$	Quantity	Cost, \$
<b>1</b>	<b>Preparatory work</b>			<b>39 449</b>
1.1	Business plan	5 000	1	5 000
1.2	Project documentation	34 449	-	34 449
<b>2</b>	<b>Construction and installation work</b>			<b>3 196 407</b>

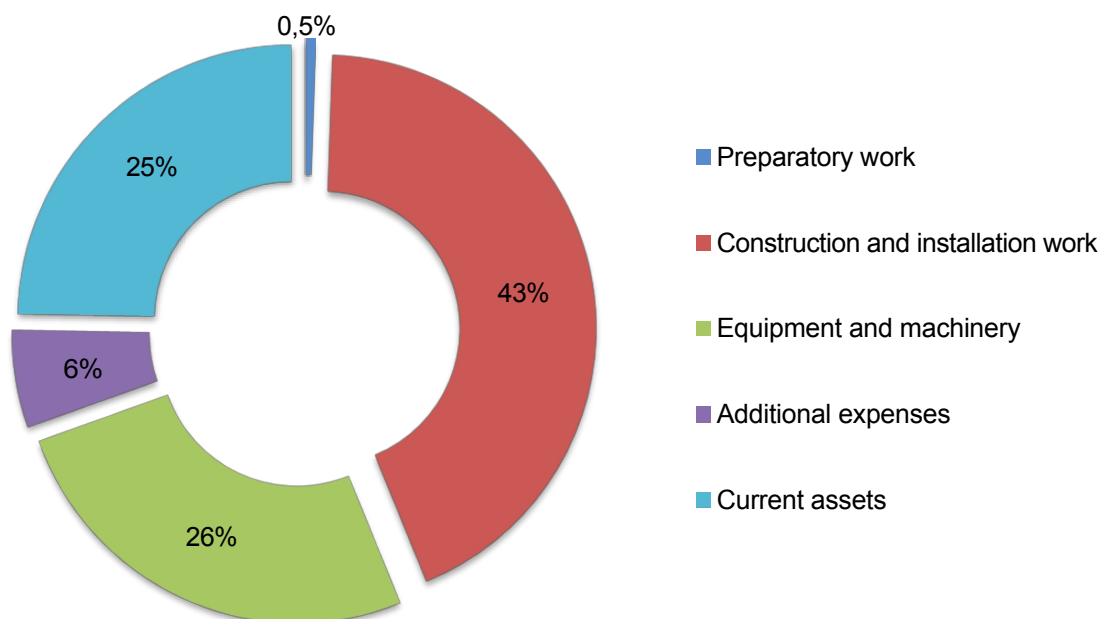
No	Capital expenditures	Price, \$	Quantity	Cost, \$
2.1	Administrative Building	43 070	1	43 070
2.2	Raw material storage	1 083 690	1	1 083 690
2.3	The warehouse of finished products	487 779	1	487 779
2.4	Workshop building	164 176	1	164 176
2.5	Boiler house (2.4 Gcal/hour)	118 228	1	118 228
2.6	Finishing work	30 000	-	30 000
2.7	Workplace preparation	861	8	6 890
2.8	Waste disposal site	175 688	1	175 688
2.9	Production water supply	840 000	-	840 000
2.10	Fence	15 502	-	15 502
2.11	CAT	5 167	1	5 167
2.12	Security system	34 449	-	34 449
2.13	Lighting	20 669	-	20 669
2.14	Chief assembly (mashed potato line)	171 100	-	171 100
<b>3</b>	<b>Equipment and machinery</b>			<b>1 897 744</b>
3.1	Mashed potato production complex	1 711 000	1	1 711 000
3.2	Moulded chips production complex	120 000	1	120 000
3.3	Packaging machine	56 410	1	56 410
3.4	Forklift	10 335	1	10 335
<b>4</b>	<b>Additional expenses</b>			<b>423 887</b>
4.1	Uniforms	258	80	20 669
4.2	Marketing company (incl. site development)	51 673	-	51 673
4.3	Unforeseen expenses (5%)	-	5,0%	351 545
<b>5</b>	<b>Current assets</b>			<b>1 824 961</b>
5.1	Purchasing raw materials	1 824 961	-	1 824 961
<b>Total capital costs</b>				<b>7 382 447</b>
Coverage of the cache-flo deficit				1 462 314
<b>Total investment in the project</b>				<b>8 844 762</b>

\* Data is subject to change during the design and material procurement process.

Source: Global Innovation Trade analysis and calculations

The figure shows the structure of investment categories for the project:

Figure 13 Structure of investments in the project, %



As the diagram shows, most of the project investments are for the purchase of equipment (25%), construction and installation work - 43%, preparatory work is 0.5% in the structure of investments. Additional expenses do not exceed 6% of total investments.

#### 6.4. Initial working capital requirement

The need for initial working capital is composed primarily of the cost of purchasing raw materials.

Working capital is included in the investment costs of this project and amounts to 1.8 million dollars, which in the structure of investment costs takes about 25% of the total amount of capital investment.

#### 6.5. Tax deductions

In the project it is planned to apply the general system of taxation. Under the general tax regime (or as it is often called DST), we mean the tax payment regime established for organizations with various organizational and legal forms. Enterprises that use the DTA keep full accounting, using all accounting accounts, as well as analytics and sub-accounts. In addition, such organizations must fill out tax registers with a number not exceeding a hundred. The main taxes of the regime are shown in Table 6.5:

**Table 14** Tax environment under the DOS

Period	Rate
Income tax	10,00 %
Income tax	0,00 %
Property tax (group 3)	0,80%
Land tax (industrial)	1,6%
VAT	12,00%

Source: Tax Code of RK

In addition, monthly contributions are due to the pension fund, and quarterly reporting of contributions, as well as biannual reporting of individual information. Payments are also made monthly to the insurance fund, and reports are submitted quarterly.

## 6.6. Operating costs (fixed and variable)

**Fixed project costs** are project costs that do not depend on changes in production volume. They include, as a rule, maintenance and management costs. The main fixed costs are presented in Table 6.6:

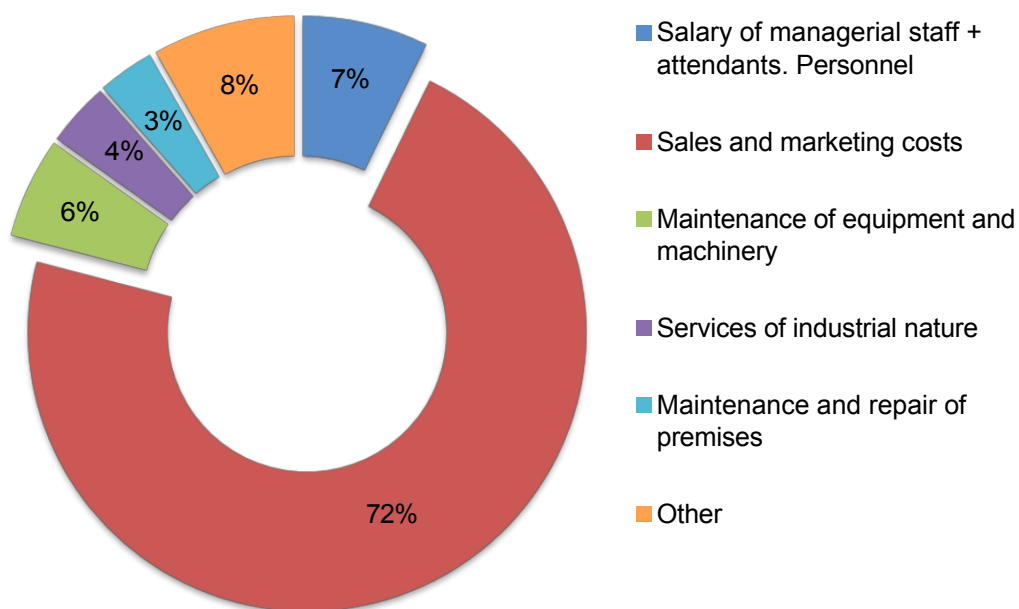
**Table 15** Fixed Costs, dollars.

Nº	Indicator	Costs, \$ per month.
1	Salary of managerial staff + attendants. Personnel	5 920
2	Sales and marketing costs	58 655
3	Maintenance of equipment and machinery	4 744
4	Services of industrial nature	3 000
5	Maintenance and repair of premises	2 664
6	Costs of overalls	1 722
7	Legal support for business (outsourcing)	1 500
8	Utility bills	1 100
9	Cleaning (outsourcing)	900
10	Electricity	700
11	Communication and Internet	520
12	Office expenses	260
	<b>TOTAL</b>	<b>81 686</b>

Source: Global Innovation Trade analysis and calculations

The fixed cost structure of the project is shown below:

Figure 14 Structure of fixed costs, %



Most of the fixed assets (72%) are sales and marketing costs, wages of managerial and service personnel take 7% of the structure, equipment maintenance and of equipment takes up 6% of the costs.

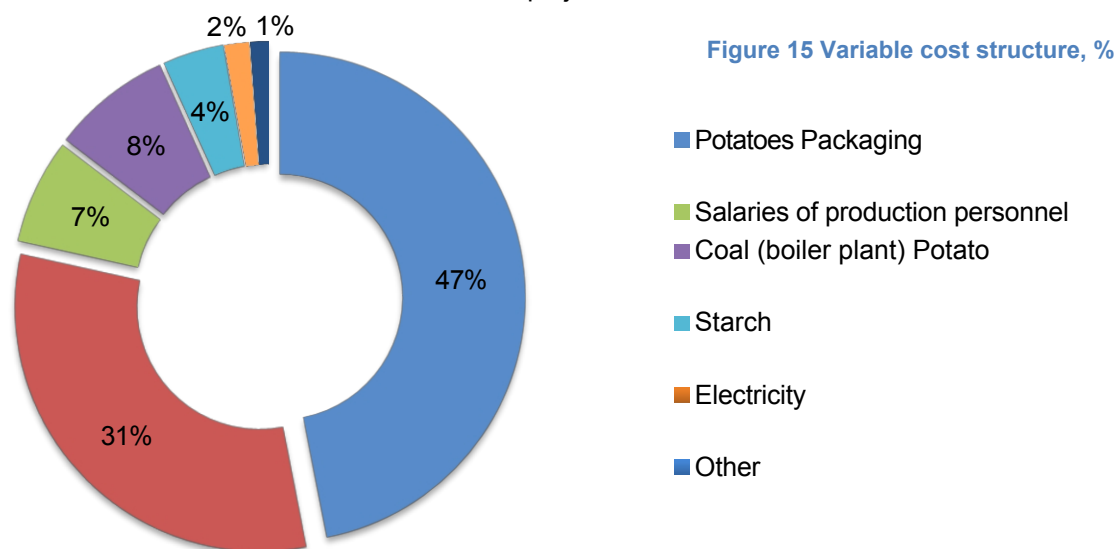
**Project variable costs** are the costs of raw materials necessary for the production process:

Table 16 Variable costs, dollars.

No	Purchasing raw materials	Average cost per month, \$
1	Potatoes	140 561
2	Electricity	4 716
3	Coal (boiler room)	23 545
4	Potato starch	12 020
5	Common salt	286
6	Chopped dried onions	2 880
7	Vegetable oil	340
8	Packaging	94 443
9	Salaries of production personnel	20 680
	<b>Total</b>	<b>299 471</b>

Source: Global Innovation Trade analysis and calculations

Below is the structure of the variable costs of the project:



Source: Global Innovation Trade analysis and calculations

The main part of variable costs are the costs for the purchase of potatoes (47%) and packaging of products (31%). Salaries of production personnel account for 7% in the structure of costs, the cost of buying coal for the boiler house accounts for 8% of variable costs.

The rest of the costs are distributed between the costs of buying starch (4%), electricity (2%) and other costs 1%.

## 6.7. The cost of production

Calculation of the cost of dry mashed potatoes is presented below:

**Table 17** Cost of mashed potatoes, USD.

Cost items	Mashed potatoes	
	Consumption for the entire products per month, dollars.	Consumption, USD per 1 ton
Potatoes	140 561	0,58
Electricity	4 716	0,02
Coal (boiler room)	23 545	0,10
Salaries of production personnel	31 320	0,13
<b>Production cost</b>	<b>200 142</b>	<b>0,82</b>
Fixed costs	81 686	0,33
<b>Cost, USD/tonne</b>		<b>1,15</b>

Source: Global Innovation Trade analysis and calculations

Thus, the cost of mashed potatoes will be **\$1.15/kg**.

**Table 18** Cost of chips, dollars.

Cost items	Mashed potatoes 148 827	
	Consumption for all products per month, dollars	Consumption, USD per 1 ton
Potato starch	12 020	0,08
Common salt	286	0,00
Chopped dried onions	2 880	0,02
Vegetable oil	340	0,00
Packaging	94 443	0,63
Salaries of production personnel	2 320	0,02
<b>The cost of mashed potatoes</b>		<b>1,15</b>
<b>Cost, \$/tonne</b>		<b>1,91</b>

Source: Global Innovation Trade analysis and calculations

The cost of chips will be **\$1.91/kg**.



## 6.8. Sales Plan

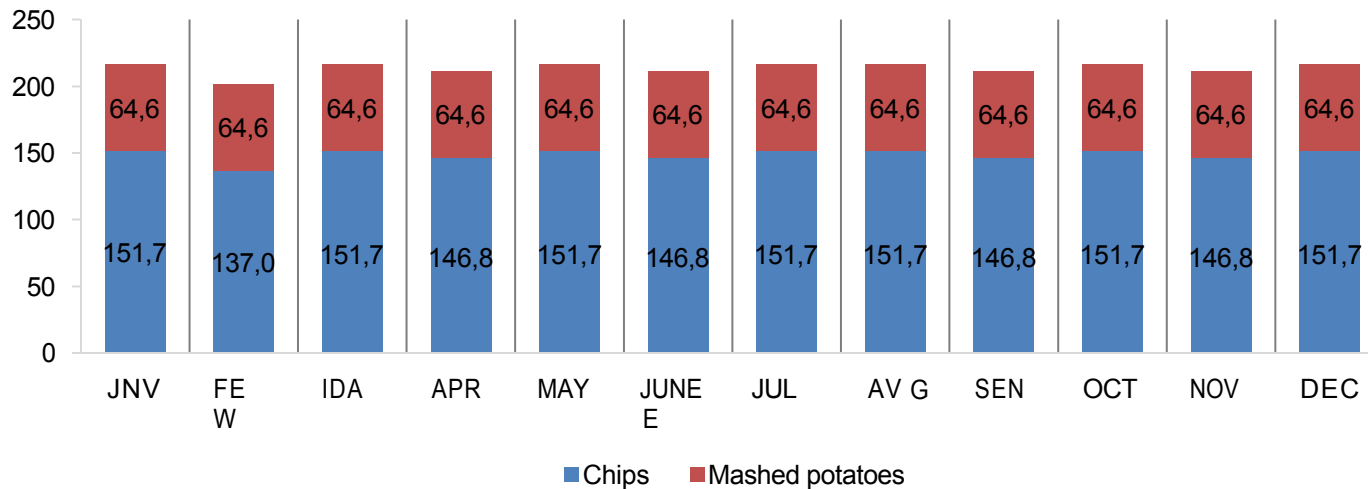
This project assumes an annual volume of potato processing of up to 12 thousand tons/year. Project launch - Q4 2024.

Table 19 Work plan by year, tons

Period	2024 y.	2025 y.	2026 y.	2027 y.	2028 y.	2029 y.	2030 y.
Chips	61	947	1 376	1 742	1 786	1 786	1 786
Dry mashed potatoes	14	263	520	690	775	775	775
<b>Total</b>	<b>75</b>	<b>1 210</b>	<b>1 896</b>	<b>2 432</b>	<b>2 561</b>	<b>2 561</b>	<b>2 561</b>

Source: Global Innovation Trade analysis and calculations

Figure 16 Seasonality of sales, tons



Source: Global Innovation Trade analysis and calculations

The production dynamics for the planned period (2024 - 2030) are presented below.

## 6.9. Revenue Calculation

The calculation of revenue is based on the sales plan and cost per product. The revenue plan in the first years of sales is presented in the table:

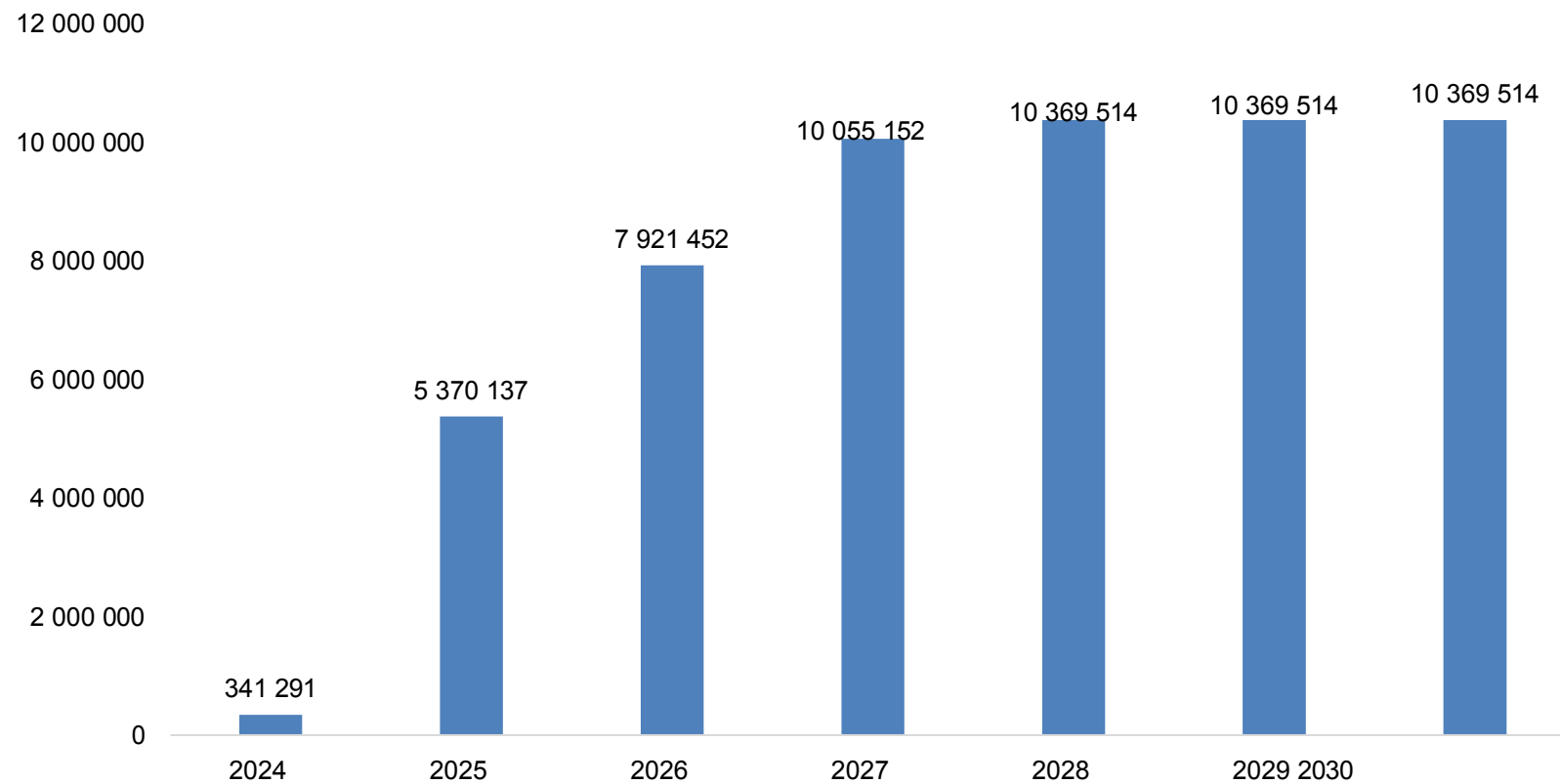
**Table 20** Revenue plan by year, dollars.

Period	2024 г.	2025 г.	2026 г.	2027 г.	2028 г.	2029 г.	2030 г.
Chips	329 004	5 137 392	7 461 466	9 444 349	9 683 642	9 683 642	9 683 642
Dry mashed potatoes	12 287	232 744	459 986	610 804	685 872	685 872	685 872
<b>Total</b>	<b>341 291</b>	<b>5 370 137</b>	<b>7 921 452</b>	<b>10 055 152</b>	<b>10 369 514</b>	<b>10 369 514</b>	<b>10 369 514</b>

Source: Global Innovation Trade analysis and calculations

Next (point 6.9) consider the profit and loss projection through 2030.

Figure 17 Revenue trends, dollars per capita



Source: Global Innovation Trade analysis and calculations

## 6.10. Profit and loss forecast

The profit and loss statement by year is shown in Table 6.12:

**Table 21** Profit and Loss Statement, US Dollars

Income / expense item	2024	2025	2026	2027	2028	2029	2030
Revenue from sales	341 291	5 370 137	7 921 452	10 055 152	10 369 514	10 369 514	10 369 514
Initial costs	1 064 367	633 154	404 815	185 960	0	0	0
Variable costs	63 573	1 369 176	2 476 711	3 259 432	3 525 523	3 525 523	3 525 523
Gross profit	-786 650	3 367 807	5 039 927	6 609 760	6 843 992	6 843 992	6 843 992
Fixed costs	97 786	980 226	980 226	980 226	980 226	980 226	980 226
Taxes (except income tax)	37 400	149 600	252 586	785 952	812 061	812 061	812 061
<b>EBITDA</b>	<b>-921 835</b>	<b>2 237 980</b>	<b>3 807 115</b>	<b>4 843 582</b>	<b>5 051 705</b>	<b>5 051 705</b>	<b>5 051 705</b>
EBITDA, % (to revenue) average	-	42%	48%	48%	49%	49%	49%
Depreciation of fixed assets	36 027	432 322	432 322	432 322	432 322	432 322	432 322
<b>EBIT</b>	<b>-957 862</b>	<b>1 805 659</b>	<b>3 374 793</b>	<b>4 411 260</b>	<b>4 619 383</b>	<b>4 619 383</b>	<b>4 619 383</b>
Payment of interest on loans and credits	277 830	601 804	471 870	325 457	160 476	13 286	0
Profit (Loss) before taxation	-1 235 692	1 203 855	2 902 924	4 085 803	4 458 908	4 606 097	4 619 383
Income tax	0	17 455	277 014	408 580	445 891	460 610	461 938
<b>Retained earnings</b>	<b>-1 235 692</b>	<b>1 186 401</b>	<b>2 625 910</b>	<b>3 677 223</b>	<b>4 013 017</b>	<b>4 145 487</b>	<b>4 157 445</b>
<b>Retained earnings on an accrual basis</b>	<b>-1 235 692</b>	<b>1 186 401</b>	<b>2 625 910</b>	<b>3 677 223</b>	<b>4 013 017</b>	<b>4 145 487</b>	<b>4 157 445</b>
Net income	-1 235 692	1 186 401	2 625 910	3 677 223	4 013 017	4 145 487	4 157 445
Return on sales	-	34%	43%	44%	45%	45%	45%

Source: Global Innovation Trade analysis and calculations

## 6.11. Cash flow forecast

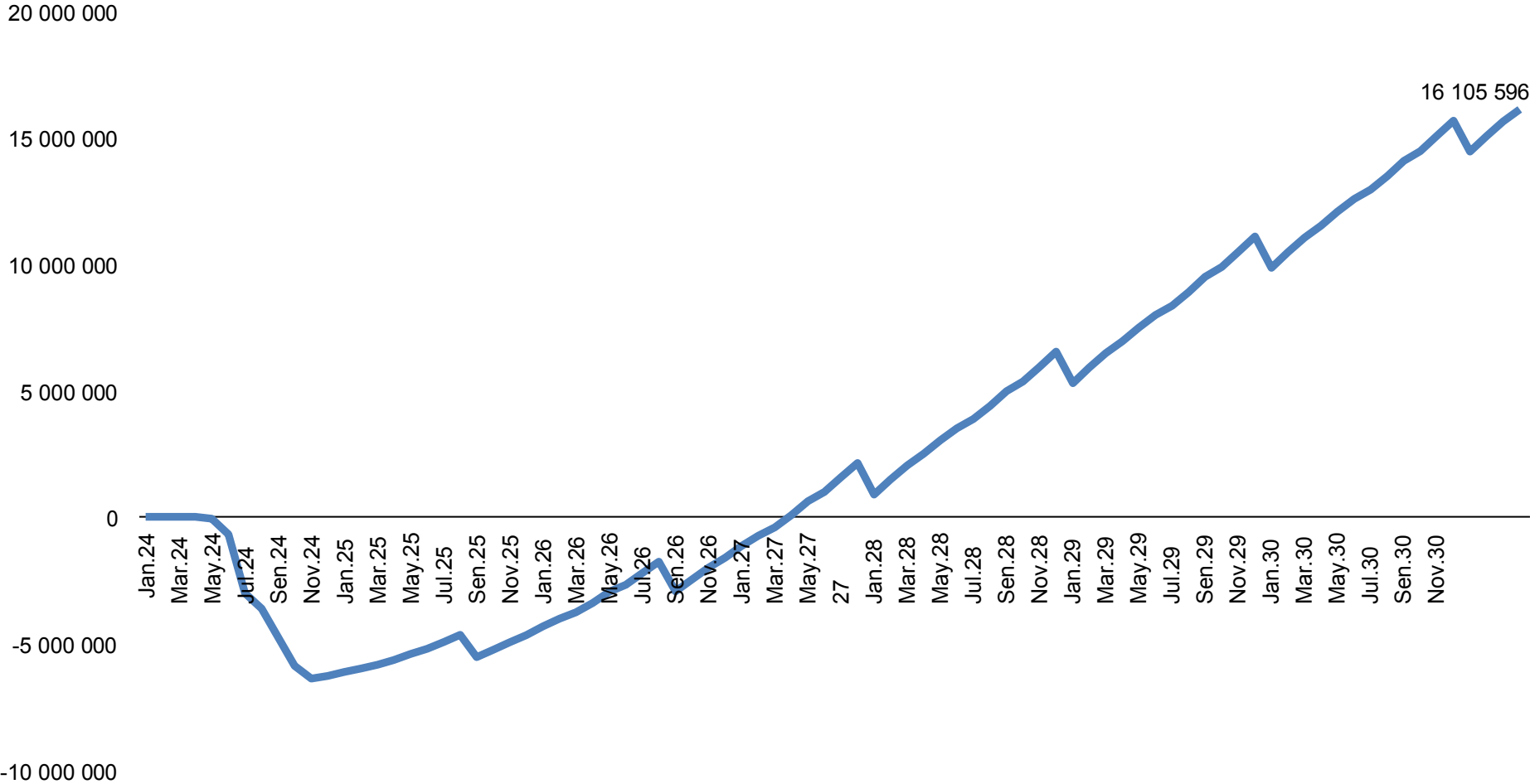
Cash flow forecast by years is shown in Table 6.13. Cash flow forecast by months is shown in the appendix.

**Table 22** Cash Flow Forecast, US Dollars

	2024	2025	2026	2027	2028	2029	2030
<b>INVESTMENT CASH FLOW (ICEF)</b>	<b>-6 158 518</b>	<b>-633 154</b>	<b>-404 815</b>	<b>-185 960</b>	<b>0</b>	<b>0</b>	<b>0</b>
Capital expenditures	6 158 518	633 154	404 815	185 960	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	<b>-135 298</b>	<b>2 251 876</b>	<b>3 463 047</b>	<b>4 295 505</b>	<b>4 445 339</b>	<b>4 577 809</b>	<b>4 589 767</b>
Revenue total	<b>341 291</b>	<b>5 370 137</b>	<b>7 921 452</b>	<b>10 055 152</b>	<b>10 369 514</b>	<b>10 369 514</b>	<b>10 369 514</b>
Expenses total	161 359	2 349 403	3 456 937	4 239 658	4 505 749	4 505 749	4 505 749
<i>Variable costs</i>	<i>63 573</i>	<i>1 369 176</i>	<i>2 476 711</i>	<i>3 259 432</i>	<i>3 525 523</i>	<i>3 525 523</i>	<i>3 525 523</i>
<i>Fixed costs</i>	<i>97 786</i>	<i>980 226</i>	<i>980 226</i>	<i>980 226</i>	<i>980 226</i>	<i>980 226</i>	<i>980 226</i>
Accrued taxes and payments	37 400	167 055	529 599	1 194 533	1 257 951	1 272 670	1 273 999
Payments of interest on the loan	277 830	601 804	471 870	325 457	160 476	13 286	0
<b>FINANCIAL CASH FLOW (FDP)</b>	<b>6 396 903</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Own funds	243 385	0	0	0	0	0	0
Borrowed funds	6 153 518	0	0	0	0	0	0
Payment of the body of the debt	0	0	1 232 812	1 942 379	2 188 721	789 607	0
<b>Net cash flow (NFC)</b>	<b>-6 293 816</b>	<b>1 618 722</b>	<b>3 058 231</b>	<b>4 109 544</b>	<b>4 445 339</b>	<b>4 577 809</b>	<b>4 589 767</b>
<b>Cumulative NPD</b>	<b>-6 293 816</b>	<b>-4 675 094</b>	<b>-1 616 862</b>	<b>2 492 682</b>	<b>6 938 020</b>	<b>11 515 829</b>	<b>16 105 596</b>

Source: Global Innovation Trade analysis and calculations

Figure 18 Net cash flow graph, dollars per capita



Source: Global Innovation Trade analysis and calculations

## 6.12. Project efficiency analysis

### 6.12.1 Methodology for assessing the effectiveness of the project

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

- Net present value NPV
- Profitability index PI
- PBP payback period
- Discounted payback period DPBP
- Internal rate of return IRR

### 6.12.2 Project performance indicators

Performance indicators of an investment project make it possible to determine the efficiency of investment of funds in this or that project. When analyzing the effectiveness of investment projects the following indicators of investment efficiency are used: Net discounted (discounted) income (cash flow); Net present value, NPV; Payback period (period), PBP; Discounted Payback period, DPBP; Internal rate of return (profitability), Rate of Return, IRR (Modified Rate of Return, MIRR); Profitability index, profitability index, PI.

### 6.12.3 Net present value (NPV)

Net present value (commonly abbreviated as NPV) is the sum of discounted simultaneous differences between the benefits and costs of a project. - The sum of discounted simultaneous differences between benefits and costs of a project. 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 1.

$$NPV = \sum_{t=0}^T \frac{CF_t(1)}{(1+i)^t}$$

Where i is the discount rate;

CF<sub>t</sub> - 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 and shows an estimate of the effect of the investment, adjusted to the present time, taking into account the varying time value of money. If the NPV is greater than 0, the investment is profitable, and if the NPV is less than 0, 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
- indicator takes into account the value of money over time (using the discount factor in the formulas).

Negative qualities of NPV:

- the indicator does not take risks into account.
- does not take into account the probability of the event outcome, since all cash flows and the discount factor are predicted values.

#### 6.12.4 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:

$$\sum_{t=0}^N \frac{OF_t}{(1+r)^t} = \frac{\sum_{t=0}^N IF_t(1+r)^{n-t}}{(1+MIRR)^n} \quad (2)$$

Where OF<sub>t</sub>, - cash outflow in the N-th period (in absolute value); IF<sub>t</sub>, - cash inflow in the N-th period;

d - the cost of the source of funding for this project; n - the duration of the project.

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

### 6.12.5 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.

Profitability index PI is calculated by formula 3.

$$PI = \frac{NPV}{Investments} \quad (3)$$

PI values:

For an effective project PI must be greater than 1

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

### 6.12.6 Payback Period (PBP)

Payback period (PBP) - the expected period of recovery of the initial investment from the net cash proceeds. The time in which revenues from the operating activities of the enterprise will exceed the cost of the investment.

PBP payback period is calculated by formula 4.  $PBP =$

$$Investments/ACF \quad (4)$$

Where Investments is the initial investment;

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

### 6.12.7 Discounted Payback Period (DPBP)

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

The discounted payback period DPBP is calculated by formula 5.

$$DPBP = t^- - \frac{NPV_{t^-}}{NPV_{t^+} - NPV_{t^-}} \quad (5)$$

Where  $t^-$ ,  $t^+$  - the period when negative and positive NPV were observed.

### 6.12.8 Project efficiency analysis

The main financial indicators are shown in Table 6.14:

**Table 23** Indicators of investment efficiency

Investment performance indicators	
Calculation period (planning horizon), months.	81
Net income (NV), dollars.	16 105 596
Net discounted income (NPV), dollars.	7 945 759
Internal rate of return (IRR), % per year	48%
Profitability index (PI), units.	1,90
Payback period (PB), months.	39,9
Discounted payback period (DPB), months.	45,4
Investment in the project, dollars.	8 844 762
Average return on sales for the project, %	42%
Net income (cumulative), dollars.	4 157 445
Discount rate, %	12,69%

*Source: Global Innovation Trade analysis and calculations*

According to the study, it is clear that the project is profitable. It will pay off in 3 years and 4 months. The payback period with discounting will be 3 years and 10 months. The net profit of the project will be about 4.2 million dollars until 2030.

Net cash flow NPV of \$7.95 million at the end of the period shows the amount of cash the investor will receive from the project after cash inflows recoup his initial investment costs and the periodic cash outflows associated with the project, taking into account the time value of money and the risks of the project.

The internal rate of return was 48%, which is significantly higher than the discount rate (12.69%) and is a good indicator for similar projects.

The PI of 1.90 means that at the end of 2030 for every dollar invested, the Investor will receive 1.90 dollars (discounted).

Figure 6.6 shows the NPV of the project:

Figure 19 Graph NPV of the project



Source: Global Innovation Trade analysis and calculations

On the NPV graph we see the increase in the net present value of the project by years of its implementation.

## 7. PROJECT RISK ANALYSIS

### 7.1. Quantitative risk analysis

Table 7.1 shows the sensitivity of the project to changes in external market conditions:

**Table 24** Sensitivity analysis

Indicator	NPV, dollars.		IRR	
Base value	7 945 759		48%	
Deviations	Δ	%	Δ	%
A 5% reduction in the price of chips	6 892 159	-13,3%	43%	-8,8%
Reducing the price of mashed potatoes by 5%	7 868 479	-1,0%	47%	-0,6%
A 5% decrease in the production volume of chips	7 052 866	-11,2%	44%	-7,4%
Decrease in mashed potatoes production by 5%	7 733 318	-2,7%	47%	-1,7%

**Continued**

Indicator	PI, units.		PB, months.	
Base value	1,90		39,9	
Deviations	Δ	%	Δ	%
A 5% reduction in the price of chips	1,78	-6,3%	40,8	-2,4%
Reducing the price of mashed potatoes by 5%	1,89	-0,5%	39,9	-0,2%
A 5% decrease in the production volume of chips	1,80	-5,3%	40,7	-2,0%
Decrease in mashed potatoes production by 5%	1,87	-1,3%	40,1	-0,5%

*Source: calculations of the financial model*

According to the results of the analysis, there is a dependence of the project on prices and sales volumes.

The greatest influence on the project has a change in the price of chips and change in the production volume of chips.

## 7.2. Qualitative risk analysis

The main possible risks, the probability of their realization, the degree of danger and ways to reduce the risks are shown in the table below.

**Table 25** Main risks of the project

<b>Risk</b>	<b>Probability and degree of danger. Manifestations of Negative Influence</b>	<b>Leveling tools risks</b>
<b>Production risks</b>		
Breakdown of technological equipment	Probability: medium Degree of danger: high Impact: production stoppage	Timely provision of facilities with all necessary supplies, timely equipment service
Shortage of qualified personnel	Probability: medium Degree of danger: medium Impact: disruption of production process, problems with product quality	Effective personnel policy, attractive motivation system
Disruption of supplies of raw materials	Probability: low Degree of danger: medium Impact: breach of obligations under the timeline	Logistics chain optimization, deadline tracking of the manufacturing partners
<b>Market risks</b>		
Dumping competitors' prices	Probability: low Degree of danger: medium Impact: decrease in profit companies	Reducing costs and the cost of production, increasing loyalty customers (promotions, discounts)
Increase in prices for raw materials	Probability: medium Degree of danger: medium Impact: decrease in profit companies	Adequate price increases for finished products
<b>Financial risks</b>		
Delayed payments from consumers	Probability: low Degree of danger: medium Impact: lack of a working resource companies	Tracking the payment schedule for the work done, controlling upholding commitments
Shortage of working capital of funds in the investment phase of the company	Probability: low Degree of danger: medium Impact: "freezing" the project	Planning of expenditures and cash receipts

Risk	Probability and degree of danger. Manifestations of Negative Influence	Leveling tools risks
		funds in the investment project phase

Source: Global Innovation Trade analysis and calculations

Thus, according to analysts at Global Innovation Trade, the most significant risks of the project will be

Figure 20 Project risk assessment



\* Score derived from a 3-point scale, taking into account the probability of the event

Source: Global Innovation Trade analysis and calculations



### 7.3. Project break-even point

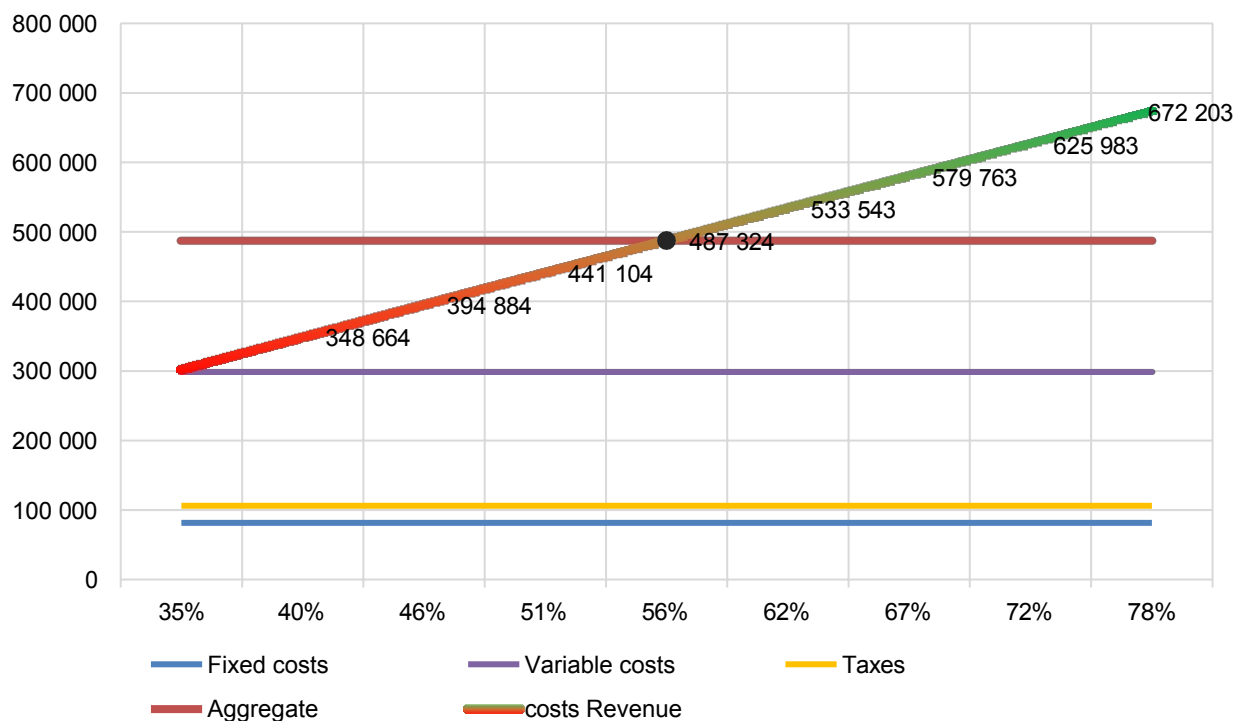
The break-even point determines what the volume of sales should be in order for the company to work on a break-even basis, to cover all its costs without making a profit. To calculate the break-even point, we have to divide the costs into two components:

Variable costs - increasing in proportion to the increase in production (volume of services).

Fixed costs - does not depend on the number of services rendered (goods sold) and whether the volume of operations is increasing or decreasing.

For this company, the break-even point graph will look as follows (Figure 7.2):

Figure 21 Break-even point chart, dollars



Source: Global Innovation Trade analysis and calculations

The break-even point is of great importance in the stability of the company and its solvency. Thus, the degree of excess of sales over the break-even point determines the financial strength (margin of stability) of the company.

The break-even point chart shows that the company must sell products for at least \$487.3 thousand per month to make a profit on sales (this is 56% of the planned production level).

## 8. APPLICATIONS

### 8.1. Statement of Cash Flows by Month, US Dollars

	Jan.24	Feb.24	mar.24	Apr.24	May.24	Jun.24	July 24.	Aug. 24	sen.24	Oct. 24	Nov.24	Dec. 24
<b>INVESTMENT CASH FLOW (ICEF)</b>	-2 500	-2 500	0	0	-67 445	-613 105	-2 296 285	-573 682	-1 085 175	-1 082 488	-435 338	0
Capital expenditures	2 500	2 500	0	0	67 445	613 105	2 296 285	573 682	1 085 175	1 082 488	435 338	0
<b>OPERATING CASH FLOW (OPF)</b>	0	0	0	0	-1 150	-7 806	-29 898	-34 999	-44 766	-57 849	-61 916	103 088
Revenue total	0	0	0	0	0	0	0	0	0	0	0	341 291
Expenses total	0	0	0	0	1 150	1 150	1 150	1 150	1 150	4 770	5 580	145 259
<i>Variable costs</i>	0	0	0	0	0	0	0	0	0	0	0	63 573
<i>Fixed costs</i>	0	0	0	0	1 150	1 150	1 150	1 150	1 150	4 770	5 580	81 686
Accrued taxes and payments	0	0	0	0	0	0	0	0	0	0	0	37 400
Payments of interest on the loan	0	0	0	0	0	6 656	28 748	33 849	43 616	53 079	56 336	55 545
<b>FINANCIAL CASH FLOW (FDP)</b>	2 500	2 500	0	0	68 595	620 911	2 326 183	608 681	1 129 941	1 140 338	497 255	0
Own funds	2 500	2 500	0	0	1 150	7 806	29 898	34 999	44 766	57 849	61 916	0
Borrowed funds	0	0	0	0	67 445	613 105	2 296 285	573 682	1 085 175	1 082 488	435 338	0
Payment of the body of the debt	0	0	0	0	0	0	0	0	0	0	0	0
<b>Net cash flow (NFC)</b>	-2 500	-2 500	0	0	-68 595	-620 911	-2 326 183	-608 681	-1 129 941	-1 140 338	-497 255	103 088
<b>Cumulative NPD</b>	-2 500	-5 000	-5 000	-5 000	-73 595	-694 506	-3 020 688	-3 629 370	-4 759 311	-5 899 649	-6 396 903	-6 293 816
Cash balance at the beginning of the period	0	0	0	0	0	0	0	0	0	0	0	0
Cash balance at the end of the period	0	0	0	0	0	0	0	0	0	0	0	103 088
<b>Net discounted income (NPV)</b>	-2 500	-2 525	0	0	-67 916	-608 673	-2 257 750	-584 924	-1 075 085	-1 074 231	-463 789	95 197
<b>NPV on an accrual basis</b>	-2 500	-5 025	-5 025	-5 025	-72 941	-681 613	-2 939 363	-3 524 287	-4 599 372	-5 673 602	-6 137 391	-6 042 194

	Jan.25	fev.25	mar.25	Apr. 25	May.25	Jun 25	July 25	Aug. 25	sen.25	Oct. 25	Nov. 25	Dec. 25
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	-633 154	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	633 154	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	154 883	140 224	146 299	187 550	238 201	203 950	269 135	284 614	-250 017	294 880	295 708	286 447
Revenue total	357 741	339 027	390 642	394 305	423 542	426 140	456 443	472 893	495 217	527 118	527 052	560 019
Expenses total	148 113	144 866	153 822	154 457	133 876	134 165	137 533	139 361	642 327	185 062	185 050	190 770
<i>Variable costs</i>	66 428	63 181	72 136	72 772	52 191	52 480	55 847	57 675	560 642	103 376	103 365	109 085
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	0	0	37 400	0	0	37 400	0	0	54 855	0	0	37 400
Payments of interest on the loan	54 745	53 937	53 121	52 297	51 465	50 624	49 775	48 918	48 051	47 177	46 293	45 401
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	0	0	0	0	0	0	0	0	0	0	0	0
<b>Net cash flow (NFC)</b>	154 883	140 224	146 299	187 550	238 201	203 950	269 135	284 614	-883 170	294 880	295 708	286 447
<b>Cumulative NPD</b>	-6 138 933	-5 998 709	-5 852 410	-5 664 860	-5 426 659	-5 222 708	-4 953 574	-4 668 959	-5 552 129	-5 257 250	-4 961 541	-4 675 094
Cash balance at the beginning of the period	103 088	257 971	398 195	544 493	732 044	970 245	1 174 195	1 443 330	1 727 944	844 774	1 139 654	1 435 362
Cash balance at the end of the period	257 971	398 195	544 493	732 044	970 245	1 174 195	1 443 330	1 727 944	844 774	1 139 654	1 435 362	1 721 810
<b>Net discounted income (NPV)</b>	141 612	126 939	131 127	166 435	209 290	177 422	231 809	242 714	-745 692	246 511	244 756	234 743
<b>NPV on an accrual basis</b>	-5 900 582	-5 773 643	-5 642 516	-5 476 080	-5 266 790	-5 089 368	-4 857 559	-4 614 846	-5 360 537	-5 114 026	-4 869 270	-4 634 527

	Jan.26	Feb.26	mar.26	Apr.26	May.26	Jun 26	July 26.	Aug 26	sen.26	Oct. 26	Nov. 26	Dec. 26
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	-404 815	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	404 815	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	338 345	307 935	256 428	366 038	434 392	285 874	465 540	448 375	-774 258	475 919	462 402	396 056
Revenue total	576 469	538 573	609 369	606 639	642 270	638 473	675 170	691 620	700 386	738 681	732 221	771 581
Expenses total	193 624	187 049	199 333	198 859	167 074	166 652	170 730	172 558	1 316 100	226 790	225 669	232 499
<i>Variable costs</i>	111 939	105 364	117 648	117 174	85 388	84 966	89 044	90 873	1 234 414	145 104	143 983	150 813
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	0	0	110 938	0	0	146 091	0	32 754	121 586	0	9 174	109 056
Payments of interest on the loan	44 500	43 589	42 670	41 741	40 804	39 856	38 900	37 933	36 957	35 972	34 976	33 971
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	0	0	0	0	202 361	142 850	144 278	145 721	147 178	148 650	150 136	151 638
<b>Net cash flow (NFC)</b>	338 345	307 935	256 428	366 038	434 392	285 874	465 540	448 375	-1 179 073	475 919	462 402	396 056
<b>Cumulative NPD</b>	-4 336 749	-4 028 814	-3 772 386	-3 406 348	-2 971 956	-2 686 082	-2 220 542	-1 772 167	-2 951 240	-2 475 321	-2 012 919	-1 616 862
Cash balance at the beginning of the period	1 721 810	2 060 154	2 368 089	2 624 517	2 990 555	3 222 586	3 365 610	3 686 872	3 989 526	2 663 275	2 990 545	3 302 810
Cash balance at the end of the period	2 060 154	2 368 089	2 624 517	2 990 555	3 222 586	3 365 610	3 686 872	3 989 526	2 663 275	2 990 545	3 302 810	3 547 229
<b>Net discounted income (NPV)</b>	274 526	247 377	203 960	288 259	338 700	220 691	355 832	339 318	-883 453	353 064	339 639	288 026
<b>NPV on an accrual basis</b>	-4 360 001	-4 112 624	-3 908 664	-3 620 405	-3 281 705	-3 061 014	-2 705 181	-2 365 864	-3 249 317	-2 896 253	-2 556 614	-2 268 588

	Jan.27	fev.27	mar.27	Apr.27	May.27	Jun.27	July 27.	Aug. 27	sen.27	Oct. 27	Nov.27	Dec. 27
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	-185 960	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	185 960	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	457 152	416 258	324 847	477 722	556 812	368 514	572 001	573 090	-1 066 860	601 742	554 537	459 691
Revenue total	788 032	730 955	820 932	811 808	853 832	843 643	870 283	870 283	853 026	879 666	853 026	879 666
Expenses total	235 353	225 449	241 061	239 478	196 488	195 356	198 316	198 316	1 750 726	254 579	249 956	254 579
<i>Variable costs</i>	153 667	143 764	159 376	157 793	114 803	113 670	116 631	116 631	1 669 041	172 893	168 271	172 893
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	62 572	57 319	224 131	64 760	71 742	252 051	73 320	73 320	144 704	0	26 309	144 305
Payments of interest on the loan	32 955	31 929	30 894	29 847	28 790	27 723	26 645	25 556	24 456	23 346	22 224	21 091
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	153 154	154 686	156 233	157 795	159 373	160 967	162 576	164 202	165 844	167 502	169 178	170 869
<b>Net cash flow (NFC)</b>	457 152	416 258	324 847	477 722	556 812	368 514	572 001	573 090	-1 252 821	601 742	554 537	459 691
<b>Cumulative NPD</b>	-1 159 711	-743 453	-418 606	59 116	615 928	984 441	1 556 443	2 129 533	876 712	1 478 454	2 032 991	2 492 682
Cash balance at the beginning of the period	3 547 229	3 851 226	4 112 798	4 281 412	4 601 340	4 998 778	5 206 325	5 615 750	6 024 639	4 605 974	5 040 213	5 425 572
Cash balance at the end of the period	3 851 226	4 112 798	4 281 412	4 601 340	4 998 778	5 206 325	5 615 750	6 024 639	4 605 974	5 040 213	5 425 572	5 714 394
<b>Net discounted income (NPV)</b>	329 164	296 751	229 290	333 856	385 274	252 460	387 984	384 872	-833 028	396 149	361 456	296 667
<b>NPV on an accrual basis</b>	-1 939 424	-1 642 673	-1 413 383	-1 079 526	-694 252	-441 792	-53 809	331 064	-501 965	-105 816	255 640	552 307

	Jan.28	Feb.28	mar.28	Apr.28	May.28	Jun.28	July 28.	Aug.28	sen.28	Oct. 28	Nov.28	Dec. 28
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	0	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	534 496	476 955	359 140	518 433	587 319	377 230	589 737	590 964	-1 242 295	615 969	568 906	468 485
Revenue total	879 666	799 746	879 666	853 026	879 666	853 026	879 666	879 666	853 026	879 666	853 026	879 666
Expenses total	254 579	240 712	254 579	249 956	203 271	200 310	203 271	203 271	1 936 687	254 579	249 956	254 579
<i>Variable costs</i>	172 893	159 026	172 893	168 271	121 585	118 625	121 585	121 585	1 855 001	172 893	168 271	172 893
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	70 645	63 289	248 324	68 193	73 823	261 435	73 823	73 823	148 265	0	26 309	150 025
Payments of interest on the loan	19 947	18 791	17 623	16 444	15 254	14 051	12 836	11 609	10 370	9 118	7 854	6 578
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	172 578	174 304	176 047	177 807	179 585	181 381	183 195	185 027	186 877	188 746	190 633	192 540
<b>Net cash flow (NFC)</b>	534 496	476 955	359 140	518 433	587 319	377 230	589 737	590 964	-1 242 295	615 969	568 906	468 485
<b>Cumulative NPD</b>	3 027 178	3 504 133	3 863 273	4 381 706	4 969 025	5 346 255	5 935 992	6 526 955	5 284 660	5 900 629	6 469 536	6 938 020
Cash balance at the beginning of the period	5 714 394	6 076 313	6 378 963	6 562 057	6 902 682	7 310 416	7 506 265	7 912 807	8 318 744	6 889 571	7 316 794	7 695 067
Cash balance at the end of the period	6 076 313	6 378 963	6 562 057	6 902 682	7 310 416	7 506 265	7 912 807	8 318 744	6 889 571	7 316 794	7 695 067	7 971 012
<b>Net discounted income (NPV)</b>	341 527	301 741	224 957	321 517	360 632	229 337	354 979	352 194	-733 033	359 861	329 075	268 304
<b>NPV on an accrual basis</b>	893 834	1 195 575	1 420 532	1 742 050	2 102 682	2 332 018	2 686 997	3 039 191	2 306 158	2 666 019	2 995 094	3 263 398

	Jan.29	fev.29	mar.29	Apr.29	May.29	June 29	July 29.	Aug. 29	sen.29	Oct. 29	Nov. 29	Dec. 29
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	0	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	549 155	491 760	369 652	533 535	602 573	386 841	602 573	602 573	-1 234 370	625 087	576 761	471 670
Revenue total	879 666	799 746	879 666	853 026	879 666	853 026	879 666	879 666	853 026	879 666	853 026	879 666
Expenses total	254 579	240 712	254 579	249 956	203 271	200 310	203 271	203 271	1 936 687	254 579	249 956	254 579
<i>Variable costs</i>	172 893	159 026	172 893	168 271	121 585	118 625	121 585	121 585	1 855 001	172 893	168 271	172 893
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	70 645	63 289	252 765	68 193	73 823	265 875	73 823	73 823	150 709	0	26 309	153 417
Payments of interest on the loan	5 288	3 986	2 670	1 342	0	0	0	0	0	0	0	0
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	194 465	196 410	198 374	200 358	0	0	0	0	0	0	0	0
<b>Net cash flow (NFC)</b>	549 155	491 760	369 652	533 535	602 573	386 841	602 573	602 573	-1 234 370	625 087	576 761	471 670
<b>Cumulative NPD</b>	7 487 175	7 978 935	8 348 586	8 882 121	9 484 694	9 871 535	10 474 108	11 076 680	9 842 311	10 467 398	11 044 159	11 515 829
Cash balance at the beginning of the period	7 971 012	8 325 702	8 621 051	8 792 329	9 125 507	9 728 079	10 114 920	10 717 493	11 320 065	10 085 696	10 710 783	11 287 544
Cash balance at the end of the period	8 325 702	8 621 051	8 792 329	9 125 507	9 728 079	10 114 920	10 717 493	11 320 065	10 085 696	10 710 783	11 287 544	11 759 215
<b>Net discounted income (NPV)</b>	311 389	276 082	205 474	293 632	328 343	208 702	321 871	318 683	-646 357	324 075	296 058	239 716
<b>NPV on an accrual basis</b>	3 574 787	3 850 869	4 056 342	4 349 974	4 678 317	4 887 019	5 208 890	5 527 573	4 881 217	5 205 291	5 501 350	5 741 066



	Jan.30	fev.30	mar.30	Apr.30	May.30	Jun 30	July 30	Aug 30	sen.30	Oct. 30	Nov. 30	Dec. 30
<b>INVESTMENT CASH FLOW (ICEF)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Capital expenditures	0	0	0	0	0	0	0	0	0	0	0	0
<b>OPERATING CASH FLOW (OPF)</b>	554 443	495 745	371 128	534 877	602 573	386 706	602 573	602 573	-1 234 370	625 087	576 761	471 670
Revenue total	879 666	799 746	879 666	853 026	879 666	853 026	879 666	879 666	853 026	879 666	853 026	879 666
Expenses total	254 579	240 712	254 579	249 956	203 271	200 310	203 271	203 271	1 936 687	254 579	249 956	254 579
<i>Variable costs</i>	172 893	159 026	172 893	168 271	121 585	118 625	121 585	121 585	1 855 001	172 893	168 271	172 893
<i>Fixed costs</i>	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686	81 686
Accrued taxes and payments	70 645	63 289	253 960	68 193	73 823	266 010	73 823	73 823	150 709	0	26 309	153 417
Payments of interest on the loan	0	0	0	0	0	0	0	0	0	0	0	0
<b>FINANCIAL CASH FLOW (FDP)</b>	0	0	0	0	0	0	0	0	0	0	0	0
Own funds	0	0	0	0	0	0	0	0	0	0	0	0
Borrowed funds	0	0	0	0	0	0	0	0	0	0	0	0
Payment of the body of the debt	0	0	0	0	0	0	0	0	0	0	0	0
<b>Net cash flow (NFC)</b>	554 443	495 745	371 128	534 877	602 573	386 706	602 573	602 573	-1 234 370	625 087	576 761	471 670
<b>Cumulative NPD</b>	12 070 272	12 566 017	12 937 145	13 472 022	14 074 595	14 461 301	15 063 874	15 666 447	14 432 077	15 057 165	15 633 925	16 105 596
Cash balance at the beginning of the period	11 759 215	12 313 657	12 809 403	13 180 530	13 715 407	14 317 980	14 704 687	15 307 259	15 909 832	14 675 463	15 300 550	15 877 311
Cash balance at the end of the period	12 313 657	12 809 403	13 180 530	13 715 407	14 317 980	14 704 687	15 307 259	15 909 832	14 675 463	15 300 550	15 877 311	16 348 981
<b>Net discounted income (NPV)</b>	278 993	246 986	183 069	261 230	291 377	185 142	285 634	282 805	-573 588	287 590	262 728	212 729
<b>NPV on an accrual basis</b>	6 020 059	6 267 045	6 450 114	6 711 344	7 002 721	7 187 863	7 473 497	7 756 302	7 182 714	7 470 303	7 733 031	7 945 759

## Information about the performer of the project

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.

### Performer Research:

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