Global
INNOVATION TRADE

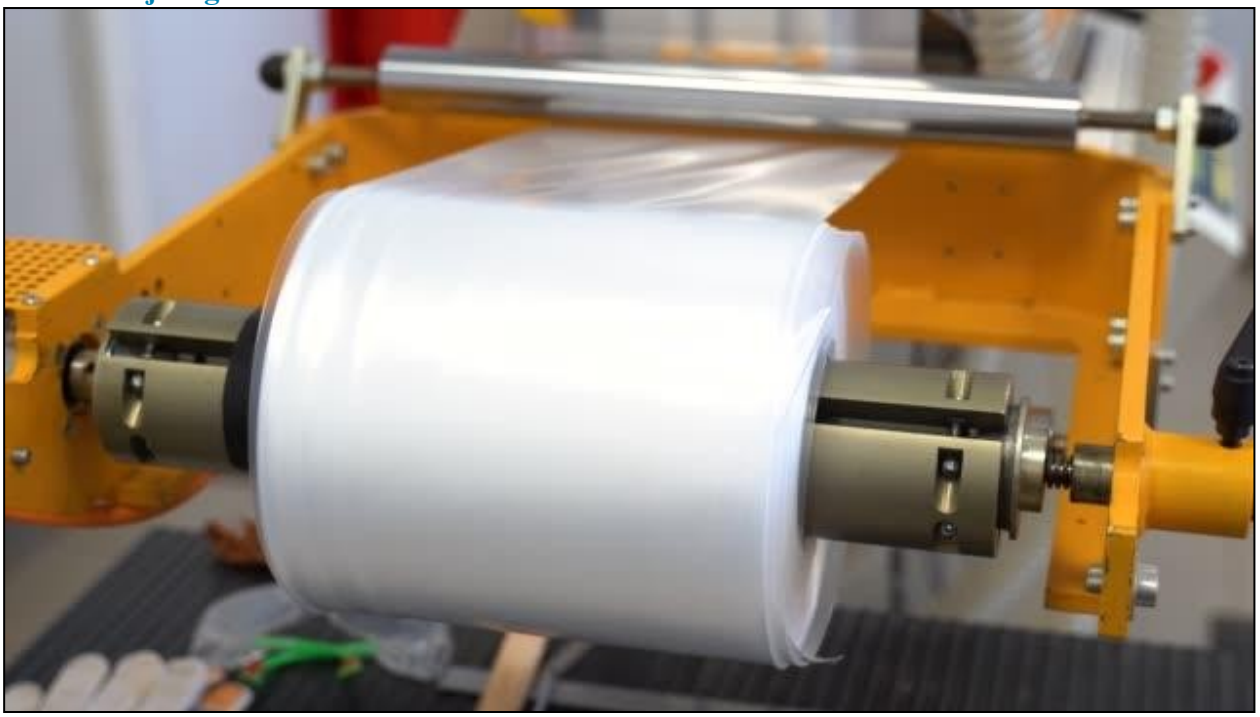
Business plan for organizing the production of polyethylene films

June 2023.

CONTENTS

1. PROJECT SUMMARY

1.1. Project goal



This project involves expanding the areas of production activities of the private enterprise "INITIATOR PROJECT" by organizing the production of polyethylene films

The project has two main goals:

1) *In the field of production organization* - production of high quality polyethylene films, which are not inferior in their quality characteristics;
2) *In the area of domestic market saturation,* the project aims to meet the dramatically increased demand for high-pressure communications.

This production is import-substituting and provides for the production of relatively cheap products that meet world standards, and is also aimed at meeting the needs of enterprises in critical structures that work under high pressure.

To this end, the PROJECT INITIATOR has contracted

"Supplier" (China) contract for the purchase of a process line for the production of polyethylene films for a total amount of $356,600. THE CONTRACT IS FOR THE PURCHASE OF A POLYETHYLENE FILM PRODUCTION LINE WORTH $356,600.

The acquired technological line is completed in accordance with the requirements of the project initiator and provides a full range of necessary basic and

auxiliary equipment, which will make it possible to set up production in a short time. The supplied equipment is characterized by easy handling, reliable operation, high quality of produced products and production flexibility.

Upon achievement of the plans for the development of production facilities, the enterprise plans to produce 5,241.6 tons per year. The technological line will be installed at the PE "INITIATOR PROJECT" own production facilities, which are located in Kamashi district of Kashkadarya region.

The results of the financial and economic evaluation of the project show the economic feasibility of implementing this project.

Project Characteristics:

Project name: "Production of polyethylene films in assortment"; Project initiator: "INITIATOR PROJECT" LLC

Planned location project: Kashkadarya region, Kamashi district

- The area of the territory: 2 thousand square meters.
- Investment cost: 615 thousand dollars:
- At the expense of borrowed funds: 15 thousand dollars;
- By means of borrowed funds: USD 600 thousand;
- Jobs to be created: 18 jobs;
- Design capacity when reaching full capacity: 400 thousand c.u.

1.2. Total project cost and funding sources

According to financial estimates, the initial cost of the project is 6,943,649,000 UZS (Eq. $615,535).

This amount is planned to be covered from the following sources:

- 6,943,649,000 UZS (equals to $615,535) from borrowed and attracted funds

In order to finance part of the cost of the contract concluded with the company "Supplier" (China) for the purchase of a technological line for the production of polyethylene films.

1.3. Planning horizon and duration of the project

The planning horizon of the Enterprise in this area for the purposes of this business plan is 5 years.

Financial and economic evaluation of the project was made within the planning horizon and the term of this project (from the beginning of its financing and to the actual completion with the repayment of credit and interest on it) is calculated for 5 years.

2. PROJECT INITIATOR

2.1. Details, status, structure

The initiator of this project to organize the production of polyethylene films is a private enterprise "INITIATOR PROJECT".

The company refers to small businesses.

The main activity of the "INITIATOR PROJECT" LLC is production. Today the company is engaged in the production and sale of polyethylene films.

2.2. Market position, existing business relationships and business reputation

The founders and management of the company decided to expand its production activities and organize the production of polyethylene films.

The head of the Enterprise has many years of experience in the polyethylene film industry. The company's staff is highly competent in the chosen field of activity, which will ensure productive and profitable work.

In its work, the Enterprise is guided by the following principles:

- production of quality products that meet all standards and customer requirements and demands;
- the use of reliable modern technologies and equipment;
- possible quick access to the design capacity;
- Providing quality services;
- fulfillment of our obligations to our partners on time;
- responding quickly and accurately to changing market needs;
- setting reasonable prices for products;
- conducting thoughtful production and sales policy that meets the main objectives of the Company.

"INITIATOR PROJECT" LLC has all the prerequisites to open a new direction of activity, namely - the production of polyethylene films for numerous enterprises, including producers of chemical, oil-chemical, machine building. The main of them can be listed below:

- extensive experience (10 years) in the production of polyethylene films;

- a clear and transparent vision of the market, supply and demand for this type of product;
- highly qualified staff;
- availability of production infrastructure;
- territorial location in the Kamashi district
- exclusive contracts for the supply of high-quality materials for production;
- The existing circle of customers, which is constantly expanding.

3. PROJECT STRATEGY

3.1. Prerequisites for the creation of the project

The main prerequisites for the creation of the project are purposeful measures taken by the leadership of the Republic of Uzbekistan to develop entrepreneurship, encourage the creation of new industries and expand the range of competitive high quality products, the fullest saturation of the domestic market, providing employment on this basis, increasing incomes and living standards of people.

The prerequisites for organizing the project are based on the following:

1. *Availability of market potential*

The project provides for the production of polyethylene films. The scope of application of this product is unusually wide *(for more details see paragraph)*

"Classification groups and characteristics of the range of polyethylene films" of this section 4.1.1. Characteristics of products, its competitiveness in the market. Structure and characteristics of the market). The project is aimed to meet the sharply increased needs for polyethylene products.

2. *Availability of human resources.*

The determining factor in the area of labor resources in the republic is the demographic processes that cause relatively high population growth, a younger age structure of the population, and, as a consequence, the growth of a significant share of the labor force. With a population of over 36 million people and being the largest country in Central Asia, Uzbekistan has an attractive potential in terms of providing a relatively inexpensive and highly skilled workforce.

3. *Availability of infrastructure and financial capabilities.*

Availability of the developed industrial infrastructure and free areas, fully acceptable for the installation of technological equipment, not requiring significant capital investments for its creation, as well as the location of the industrial infrastructure on the territory of Kamashinsky district, create initially favorable conditions for the organization of production. In addition, the availability of financial opportunities, supported by revenues from

of the existing business Enterprises increase the opportunities for the implementation of the project.

4. Favorable business climate

Stable sociopolitical stable socio-political situation,favorable investment climate, availability of necessary and inexpensive social and production infrastructure contribute to the intensive development of modern enterprises focused on the production of products with a high degree of processing. Another number of important factors that analysts point out are the low cost of energy resources, as well as the presence of a significant regional and domestic sales market. At the same time, the country has simplified the procedure for licensing and registration of enterprises, certification of products in the textile industry.

At the same time, the government continues to pursue a targeted policy of structural transformations in the economy, which is primarily aimed at improving the business climate in the country and thus increasing business activity and ensuring high rates of GDP growth. These and other factors are discussed in more detail in the next section *3.2. Economic and Industrial Policies Contributing to the Project*.

3.2. Economic and industrial policies promoting the project

Since gaining independence, Uzbekistan has pursued an active industrial policy. The main objectives of economic reforms, including industrial policy, are defined as the structural restructuring of the economy from raw material orientation to the production of finished products with high added value, increasing the competitiveness of the national economy in the world economy, as well as the integrated development of all areas of the country. In general, this approach contributes to the structural restructuring and growth of the country's economy.

The change of the top government accelerated the implementation of reforms aimed at modernizing the country. The new head of state Shavkat Mirziyoyev, abandoning the "shock therapy", relies on the gradual liberalization of the economy to implement the structural transformation of the economy. The program for the next five years of the presidency has been transformed into a voluminous document "Strategy of Actions for Further Development of the Republic for 2017-2021".

The main factors of economic growth during this period are defined:

active structural reorganization of the economy; gradual reorientation of export policy from raw materials export to export of products with high added value; continuation of the policy of economic liberalization and reduction of the state share in the economy; development of the financial sector; increased investment in human capital to form a "knowledge economy"; ensuring broad informatization of society; creation of innovative institutions; and integrated development of territories. The Strategy designated technological modernization and diversification of the economy as one of the priority tasks of economic reform. To achieve this goal, the Strategy assumes a significant increase in investment in the private sector through an investment-oriented fiscal and monetary policy.

According to the new Development Strategy approved in Uzbekistan in 2017, it is planned to more than double GDP by 2030 and increase the share of industry in the economy to 40%. To this end, eight special programs aimed at the development of chemical, textile, leather and footwear, pharmaceutical industry, processing of hydrocarbons, fruits and vegetables, and production of building materials were adopted.

Improving the attractiveness of the business environment and investment climate is an important priority, which is reflected in the Strategy for Action in the Five Priority Areas of the Republic of Uzbekistan for 2017-2021. This is due to the fact that the development of small businesses and private entrepreneurship contributes to the employment and income of the population. Thus, the increase in the share of small businesses in GDP from 31% in 2000 to 56.9% in 2016 has contributed to the growth of employment in this area from 49.7% to 78.1% respectively.

In this regard, significant changes are taking place in business: starting in 2018, businesses have been granted a moratorium on inspections for 2 years, a business ombudsman has appeared, and an extensive set of documents has been adopted to stimulate farmers and entrepreneurs who produce or produce import-substituting goods.

President Mirziyoyev also set a goal for the government to be in the top 20 countries by 2025 on the ease of doing business. Already in the ranking of the World Bank Group "Doing Business 2018". (Doing Business 2018), Uzbekistan ranked among the world's top 10 countries for improving the business climate. In a new report, the topic

The number of positions in Uzbekistan's "Reforming to Create Jobs" rose 13 places, from 87th last year to 74th this year.

The country's improved rating is the result of reforms undertaken by the government to liberalize the economy, improve the business environment, and simplify mechanisms for providing public services to entrepreneurs. In this regard, in recent years Uzbekistan has implemented fundamental reforms to improve the institutional framework for doing business. In particular, liberalization of foreign exchange policy was a fundamental step in the development of entrepreneurship, foreign trade and improvement of the investment climate in the country as a whole.

The country's position in the Doing Business ranking not only reflects the level of the business environment, but is also an important criterion for investment decisions in the international business community.

Taking into account the important role of foreign investment in the transfer of new technologies and organization of efficient production facilities, the government of the republic pays special attention to attracting foreign investment. In implementing sectoral development programs and carrying out measures to stimulate foreign investment and increase export potential, the government of the republic, along with its policy of import protectionism, uses the classic tool of industrial policy, i.e. granting special tax and customs privileges.

4. THE MARKET AND THE CONCEPT OF MARKETING

Supply and Demand

Characteristics of products, its competitiveness in the market. Structure and characteristics of the market

The new technology to be purchased will make it possible to produce high-quality polyethylene films.

Polyethylene film: description, characteristics

Film is a unique man-made material that is highly durable and incredibly popular, with a wide range of applications in various areas of human life and production. Like most different goods and products, film has a wide range of types that make human life much easier.

Film, has a number of advantages, which contribute to the promotion of this product in the market of goods and services. First of all, it is high strength and quality, which can withstand a heavy load, and at the same time not to break, not to spoil and not to tear.

Types of polyethylene film

It is worth noting that polyethylene film includes a huge range, which is widely used by man, for normal and

quality of life:

✓ Building film, in addition to its unique strength has a good waterproofing and thermal insulation of both the room and the building as a whole.

✓ Greenhouse film, in ordinary life serves as a great material,
which make amazing greenhouses, they are able to protect the crops from various climatic cataclysms.

✓ Heat shrink film. A marvelous film option that when
The material is widely used for packaging of food and toys. Widely used in packaging of food products, toys.

✓ Food film, not more than 20 microns thick, and is used
in trade, especially in the sale of products.

✓ Stretch film, which is used both in trade and in the transportation of various goods, even at great heights and distances.

✓ Low-pressure film, which is widely used in
manufacture of various covers and bags. It has unique and practical properties that allow not only to protect the goods, but also to transport them freely.

✓ Black film, has a considerable thickness, which contributes to the
neat and fast transportation over various distances. It is manufactured in black in order to hide the products not only from prying eyes, but also from direct UV rays.

Polyethylene film is generally widely used, particularly in the construction of waterproofing and vapor barrier, as it has unique properties that do not rot and various other deforming effects. It is worth noting that although it is thin, it has functions comparable to those of roofing felt. That is why a simple unique film can be laid under the foundation, and this, in itself will be a unique insulation against soil moisture, and, consequently, the building will last much longer.

It is also widely used in

work with wooden structures to protect them from various fungi and rotting.

One of the nice features is that polyethylene film is able to pass through itself streams of light, which are necessary for the development and life of plants. But it's not simple ultraviolet light, it's diffused light that doesn't ruin.

The film is used to burn the plants, but on the contrary, it participates in the process of photosynthesis. But if you use a film of different colors, this effect will be greatly reduced.

Technical film

This type of film has a low passage of light. That is why it cannot be used for agricultural purposes, only for simple technical and industrial purposes. The quality of this product is quite high, although it is made from recycled raw materials. And, usually, the term of correct and proper operation is equal to three years, which by itself itself unique and incredible. Also, this film has a high percentage of insulation, protecting structures from steam and moisture that are present in today's atmosphere.

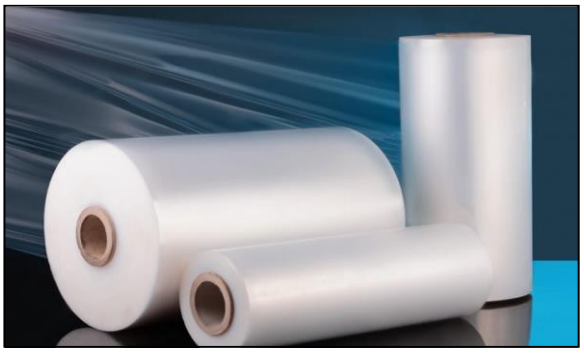
Reinforced film

In contrast to the technical film, this type of film has a unique life span, which amounts to about seven years. This is usually achieved due to the unique mesh, which gives the material quality strength and durability. Reinforced film has a wide range of dvantages that set it apart apart from other polyethylene products. First of all, it is perfectly able to withstand various natural disasters that occur in the environment. And it is the reinforced film is able to withstand both a sharp rise in temperature and its decline, without changing its quality.

It is worth noting that the mesh, usually serves as an amazing connecting material, which completely protects the polyethylene from various mechanical damages, or rather, tears.

It is this type of film, as well as greenhouse film, can be used in the production of greenhouses, which are popular in the modern world.

Stretch film



Stretch film (may be spelled differently: "stretch") is a modern packaging material with the ability to stretch (elongation - up to 250%) and return to its original state. Compared to conventional film materials, it has an increased resistance to tear, high resistance to puncture, impact and penetration.

Parameters and characteristics

Film thickness	17 microns, 20 microns
Prestretch	**200%**
Width	**450mm, 500mm**
Winding length	**100 - 300 м**
Net roller weight standard	**2.0 kg - 2.3 kg**
Net weight options	**07.kg - 2.5 kg**

Stretch film made of polyethylene is a modern packaging material. It is designed for strapping (strapping or wrapping) of goods, both in groups and individually.

The bonding of layers to each other occurs through pre-stretching before use (pre-stretch): the urge to return to the original state creates a "holding" force.

Due to its exceptional qualities, ease of use and relatively inexpensive cost of stretch film is widely used in almost all areas of production, trade and logistics as a packaging material.

The table above shows the standard parameters of the strapping, which is most often used in packaging. Possible width - from 125 mm to 500 mm, net weight - from 0.5 kg.

Production

For to make stretch are used SEVA (copolymers ethylene acetate) and LLD PE (linear low-density polyethylene). In the production of the film, sleeve or flat-slot technology is used.

Stretch wrap is manual, used for manual wrapping, and machine (automatic), used for machine wrapping.

Operational features

Wrapping goods with stretch film allows you to securely fasten a group of items, protecting them from moisture, dirt, as well as mechanical damage during storage and transportation.

When wrapping objects with the film, a "sticking" effect is formed between its own layers, so there is no need for additional fixation. The film can be used not only for packing industrial goods, but also for food products, as it is absolutely harmless and environmentally friendly.

This film is characterized by high strength, resistance to puncture and high degree of stretching. Among the main advantages of the film over other materials for packaging goods are: versatility, low weight of the film in a roll, low price, ease of use and high elasticity.

In addition, after using the film, it can be easily removed from the product, leaving no traces on it.

Air bubble film

Air bubble film is an indispensable packaging material if you need, above all, to protect your things or products from any dynamic effects (bumps, chips, scratches, etc.), which are inevitable in the transportation of products and warehouse operations. It is used primarily for packaging fragile and expensive single items: computers, office equipment, furniture, mirrors, etc., as well as to protect the surfaces of expensive products.

Parameters and characteristics

Types of films	double-layer, triple-layer
Density	**50 - 110 g/m²**
Standard web width	**0.25m, 1.2m, 1.5m**
Standard winding length	**50 m, 100 m**
Bubble diameter	**10 mm**

Air bubble film (A-BF) is a flexible plastic packaging material, the surface of which is covered by a uniform layer of air-filled bubbles. Its softness, elasticity, volume and excellent insulating properties have resulted in the widest applications of bubble wrap. Using air bubble film you can pack and/or protect against temperature fluctuations:

- Valuable fragile or breakable objects
- heavy objects with sharp protrusions
- machinery and equipment
- Artwork and antiques
- trees, flowers and garden shrubs
- greenhouse plants
- engineering communications in construction and much more. Technical

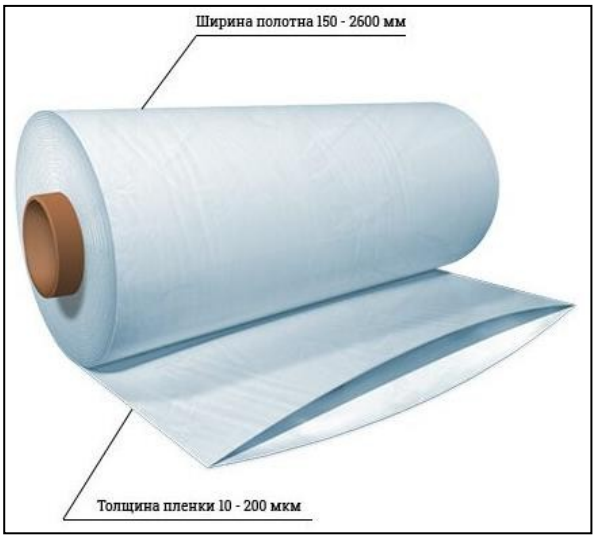
characteristics and properties:

- film type - two-layer, three-layer
- roll width - 0.25 m, 1.2 m, 1.5 m
- roll length - 50 m, 100 m
- air bubble height - 4 mm
- air bubble diameter - 10 mm
- color - transparent, yellow, MICS
- additional properties - with antistatic.

The unique properties are due to the unusual structure of the air bubble film. It consists of two or three layers. The first (base) is high-pressure polyethylene. The substrate is usually dense and flat, and a bubbly second layer is welded to it. The air bubbles are hermetically sealed and between do not come into contact with each other. If for any reason (mechanical damage, cutting) the integrity of one bubble is compromised, the others retain their structure and the overall cushioning and thermal

insulation properties of the GDP do not change. If it is three-layered, a similar dense layer of polyethylene is welded on top of the bubble layer. This makes the material even more resistant to shocks and impacts. Therefore, three-layer bubble wrap is recommended for packing the most fragile and valuable items or those that are too heavy and bulky.

Shrink wrap



Heat shrink film is used both for bulk packaging of products on pallets and substrates (example: bricks on pallets, bulk packaging of bottles, cans and boxes of beverages and foods, which we can see in hypermarkets and large chain stores) and for single packaging (example: cornices, doors, building panels in construction stores)

Shrink-wrap film is produced by using high-pressure polyethylene as the main component, with the addition of low-pressure polyethylene HDPE and linear polyethylene LLDPE in certain proportions.

Parameters and characteristics

Manufacturing options	web, sleeve, half-sleeve
Width	**up to 870mm**
Thickness	**up to 120 microns**

Heat shrink film properties

There is an interesting property behind heat shrinking: The heat shrinkable film is stretched during production (technological processing) and then cooled in this stretched state to fix this so called orientation of the film. Then, when this material is used in the packaging process, it is heated in special thermal cabinets or by means of hair dryers (depending on the packaging method) and tends to return to its original dimensions, thus shrinking and fixing the products.

This is a property which has shrink wrap, otherwise known as "polymer memory".

Heat shrinkable LDPE film is a modern packaging material, widely used in the production and transportation of many types of industrial and agricultural products. Among them:

- foodstuffs;
- construction materials;
- household chemicals and a variety of care products;
- beauty products;
- crockery;
- home appliances;
- technological equipment;
- printing products and much more.

When packaging food products, shrink wrap contributes to their better preservation, longer shelf life and, accordingly, higher turnover and lower losses. The film reduces shrinkage and improves the quality of the product. So fruits and vegetables in such packaging ripen and retain their flavor.

Goods, packed in shrink wrap, not only get a reliable protective cover, they look more attractive and bright. The film comes in the following types:

1. Polyvinyl chloride (PVC) heat shrink film.
2. Polyolefin shrink film (POF).
3. Heat shrink polyethylene shrink wrap, made by high pressure polyethylene (LDPE) from

4.1.1. Existing potential, assessment of market development prospects

Recently, demand for packaged food and pharmaceuticals has been increasing rapidly in a number of emerging economies such as China, India, Turkey, Poland, Brazil and Mexico, which, in turn, is driving the rapid development of the plastic sheet and film market. Such films and sheets are used on an industrial scale in the production of packaging for food, pharmaceutical and medical products, consumer goods, and technical products. Films and sheets are also used in agriculture, construction, healthcare, and other sectors of the economy.

Most of the sheets and films packaging is used in manufacturing, and to a slightly lesser extent - for packaging of pharmaceutical and medical products. Experts of the analytical company MarketsandMarkets (USA) predict that over the next five years the most rapid consumption of polymer films will increase precisely in the production of packaging for pharmaceutical and medical products.

The global market for polymer sheets and films is fragmented and in regions such as North America and Europe has already reached a state of saturation. However, in Asia-Pacific (APAC), the market is still at a low level of development and therefore has a huge potential for growth.

There are some signs of consolidation of economic entities in the production of plastic sheets and films recently. The largest companies in this market are implementing strategies aimed at expanding their production facilities to ensure continuous development.

According to the study, the main material for the production of flexible sheets and films is polyethylene. Recently, however, other materials have been widely used. Thus, BOPP films have become very popular. At

In the production of specialty films, materials such as ethylene vinyl alcohol copolymer (EVA), polylactic acid, polyvinylidene chloride (PVDC), polyvinyl alcohol (PVA) and polyamides are widely used in the industry. In more mature markets, such as North America and Europe, it is the demand for specialty films, rather than traditional polymer sheets and films, that is growing at the fastest rate.

According to estimates by MarketMarkets, the market for plastic sheets and films was $112.4 billion in 2019, with most experts agreeing that the market will grow by an average of 4.4% annually from 2018 to 2022. The largest market for sheet and film consumption is the food packaging industry, with the food packaging industry set to grow at an average annual growth rate of 5.2% from 2018 to 2022.

Geographically, the largest market for packaging film consumption is in the Asia-Pacific region: in 2019, the market volume of this region accounted for approximately 33% of the total global packaging films market.

Experts forecast that the global packaging films consumption in physical terms will grow at an average annual growth rate of 3.4% from 2018 to 2022. On the other hand, in terms of value, the global packaging films consumption will grow at a CAGR of 4.4% during the period 2018-2022.

4.1. Marketing concept, sales forecast

The concept of marketing polyethylene films (round and profile) is aimed at the production of finished products.

The main factors affecting the sales of products in these categories are:

1. Price of goods;
2. Quality;
3. Assortment;
4. Geographical coverage in relation to the main consumers. Strategy marketing Enterprises will be based on quality of the products, constant study of the demand for a given type of product, flexible response tothe market situation, a n d , based on this, the production of the most of in-demand products, as well as moderate pricing.

4.2.1. Location of product markets, market segmentation

According to the territorial characteristic, the market for products can be conditionally divided into local and export.

Production and sales policy of the Company is aimed primarily at meeting the needs of the population in the domestic market. This is reflected in the sales program *(see section 4.2.3. Sales program, sales channels)*, according to which the Company plans to sell 70% of its products in the domestic market and, accordingly, to export 30%.

Export of products is mainly aimed at formation of an additional sales market to diversify sales. Export deliveries will be made mainly to the CIS and neighboring countries.

Based on the type of activity of potential customers, the following market segments should be identified:

1. Manufacturing companies

This segment is formed due to the demand directly from manufacturing enterprises to meet their needs for raw materials and supplies. By territorial location it covers the whole republic *(see below)*.

2. Trading companies

Consumers in this segment are wholesale trading companies specializing in the supply of raw materials for production needs of light industry enterprises. By territorial feature it covers both local and export markets.

An analysis of these segments is shown in the table below.

Market analysis by type of consumer activity

Indicator	Production companies	Trading companies
Type of product	**Plastic films**	
Purpose to purchase products	For your own production needs	**For resale**
Description/characteristics of consumers	Manufacturers, builders	**Wholesale suppliers of raw materials for chemical petroleum chemical industries**
Geographic location	г. Tashkent and others regions of the republic	**г. Tashkent и all regions of the republic**
Demand for products (decrease, increase or stable)	Increase	**Increase**
Buying capability for the product	Moderate Good	**Good**

Indicator	Production companies	Trading companies
Product attractiveness for consumers	Essential Goods	**Assorted goods**
Phase of life Cycle Market	Growth (Phase III)	**Growth (Phase III)**
Stability of demand	Permanent	**Seasonal**
Elasticity of demand	Elastic	**Inelastic**
The buying process	Wholesale purchase	**Wholesale purchase**
Intensity and acuteness of competition	**Low**	**Moderate**

The main potential consumers of the products are local businesses that sell metal products. The current structure of polyethylene films consumption based on the purpose is given in

Characteristics of products, their competitiveness in the market. Structure and characteristics of the market.

B Currently, producers of polyethylene films are located in the Tashkent region, which accounts for the bulk of domestic production.

Consequently, the company has a convenient location in relation to the main potential consumers within the country.

4.2.2. Expected competition from from existing potential local and foreign producers

ARHAT GROUP LTD.
E-mail: info@arhat.uz
Web site: arhat.uz
Legal name: ARHAT GROUP LLC
Brand name: ARHAT GROUP LLC
Address: 5 Jami Square, Tashkent, Almazar District, Uzbekistan

DOVON LTD.

Faxes: +998 71 257 84 32

E-mail: info@plenka.uz

Web site: plenka.uz

Legal name: DOVON LLC

Brand name: DOVONLLC

Address: Uzbekistan, 100209, Tashkent, Sergeli district, 2 Jaloyir str.

DODAPAKET

E-mail: dodapaket@gmail.com

Web site: dodapaket.uz

Legal name: MAKON PLAST LLC

Brand name: DODAPAKET

Address: Uzbekistan, Tashkent, Uchtepa district, 48A, Takachi str.

MASTER PRINT LLC

E-mail: masterprint.uz@mail.ru

Website: masterprint.uz

Legal name: MASTER PRINT LLC

Brand name: MASTER PRINT LLC

Address: Uzbekistan, 100052, Tashkent, Mirzo-Ulugbek district, 1. YANGITARNOV street, 8

POWER PLAST LTD.

E-mail: zomplast@mail.ru

Web site: palmaplast.uz

Legal name: POWER PLAST LLC
Brand name: POWER PLAST LLC

Address: Uzbekistan, Tashkent region, Zangiata district, Eshonguzar district, 1 A. Khozhiboev Street

POLIMER GALANTERY HP

E-mail: polimergalantery@mail.ru

Web site: polimergalantery.uz

Legal name: POLIMER GALANTERY PE

Brand name: POLIMER GALANTERY PE

Address: Uzbekistan, 100069, Tashkent, Almazar district, 51, YANGI ALMAZAR str.

SIRDARYO-MEGA-LUKS SP SP LLC

E-mail: mega_luks@mail.ru

Website: smt.uz

Legal name: SIRDARYO-MEGA-LUKS JV LLC

Brand name: SIRDARYO-MEGA-LUKS JV LLC

Address: Uzbekistan, Syrdarya region, Syrdarya, 382 UZBEKISTAN str.

TURBO PLAST PLUS SP SP LTD

E-mail: tpptashkent@gmail.com

Web site: turboplast.uz

Legal name: TURBO PLAST PLUS JV LLC

Brand name: TURBO PLAST PLUS JV LLC

Address: Uzbekistan, Tashkent, Bektemir district, 43 Oltintopgan str.

UZ PRO LABEL LTD.

E-mail: uzprolabel@mail.ru

Web site: uzprolabel.uz

Legal name: UZ PRO LABEL LLC

Brand name: UZ PRO LABEL LLC

Address: Uzbekistan, 100000, Tashkent, Mirzo-Ulugbek district, 13A, Khamid Alimdzhan Street

The main stimulating factor in any branch of production is healthy competition. In this competition, the company that can win and hold its position on the market will succeed.

Competition from local and foreign manufacturers

A potential direct competitor of this project is ZIZZAH POLYMER PLAST LLC, one of the leading producers of polyethylene films in Republic of Uzbekistan.

ZIZZAH POLYMER PLAST LLC is the first enterprise in the Republic of Uzbekistan where mass production of high density polyethylene films has been established. Battenfeld technological production lines, "Drossbach" (Germany), for the production of smooth, drainage-corrugated and capillary pipes consist of equipment that allows the production of polyethylene films of PE-63, PE-80 and PE-100 type. Products produced by the company are used in water supply, land reclamation and irrigation systems in many regions of Uzbekistan and neighboring countries.

In accordance with current changes in the polymer market, JV Ltd. "ZIZZAH POLYMER PLAST has the ability to constantly modify the equipment to meet all customer needs. Thus, the production of polyethylene films has been established, and for the first time in Uzbekistan the production of geomembrane film, specially designed to create impervious sealed screens at industrial and civil construction sites, has been established, which is currently in operation at large industrial facilities in Uzbekistan.

Competitive advantages

The competitiveness of the Enterprise will be ensured on the basis of the following parameters:

1. Price

Low internal production costs. tax benefits and preferences as a FEZ participant, as well as the absence of additional costs associated with imports, including trade margins, transportation and customs costs, will allow to have a price advantage over competitors *(see also section 4.2.3. Sales program, sales channels)*.

2. Territorial proximity to major consumers

As noted in the previous section *4.2.1 Location of markets, market segmentation*, the company has a favorable location in relation to major consumers.

3. Compliance with all quality standards

The use of manufacturing equipment that meets all modern requirements guarantees the production of high quality.

4.2.3. Sales program, sales channels

Sales Program

The sales forecast is necessary to determine the production and sales program, as well as to calculate the financial performance of the project. In fact, it lays down the value of the company's projected sales turnover.

Sales of finished products are closely related to the rhythm of production, pricing policy, marketing activities to promote products.

The enterprise is focused mainly on the domestic market, the products of the PE "INITIATOR PROJECT" will be affordable in price parameters in comparison with competitors' offers.

The pricing policy of the Company is aimed at providing the market with inexpensive seamless pipes, which are not inferior to their foreign counterparts in terms of quality characteristics. Price formation is based on market conditions and full production cost. The pricing also takes into account consumers' purchasing power,

Defined by the average level of profitability of their productions.

Projected selling prices for products are shown in the table below.

Forecast selling prices for products

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Packaging polyethylene films					
Price per unit, sum	24 150	24 150	24 150	24 150	**24 150**
Price per unit, Eq. USA	2,1	2,1	2,1	2,1	**2,1**
Indicator	**1 year**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Polyethylene bags like "T-shirt."					
Price per unit, sum	19 550	19 550	19 550	19 550	**19 550**
Price per unit, Eq. USA	**1,7**	**1,7**	**1,7**	**1,7**	**1,7**

Based on the forecasted parameters of devaluation of the exchange rate of the soum against the US dollar.

The annual indexation of selling prices for products in the national currency is envisaged.

Sales

Sales policy of the Company aims primarily to meet the needs of the population and production companies in the domestic market.

The company plans to sell products both on the domestic and foreign markets.

The products will be shipped in. In accordance with the technical parameters given in *4.1.1 Characteristics of products, its competitiveness on the market. Structure and characteristics of the market.*

The projected sales volumes of products are shown in the table below.

Sales Program

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Sales plan for domestic market					
Share of sales on the domestic market	***100%***	***80%***	***70%***	***70%***	***70%***
Domestic sales in physical terms (kg)	**4 158 336**	**3 562 541**	**3 300 679**	**3 484 135**	**3 667 591**
Packaging plastic films	*1 782 144*	*1 526 803*	*1 414 577*	*1 493 201*	***1 571 825***
Polyethylene bags T-shirt type	*2 376 192*	*2 035 738*	*1 886 102*	*1 990 934*	***2 095 766***
Sales in the external market in monetary terms, mln UZS	**89 493**	**76 671**	**71 035**	**74 984**	**78 932**
Packaging plastic films	*43 039*	*36 872*	*34 162*	*36 061*	***37 960***
Polyethylene bags T-shirt type	*46 455*	*39 799*	*36 873*	*38 923*	***40 972***
Export sales plan					
Share of export sales	***0%***	***20%***	***30%***	***30%***	***30%***
Sales at exports in kind (kg)	**-**	**890 635**	**1 414 577**	**1 493 201**	**1 571 825**
Packaging plastic films	-	*381 701*	*606 247*	*639 943*	***673 639***

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Polyethylene bags T-shirt type	-	*508 934*	*808 330*	*853 258*	***898 186***
Sales at exports In monetary terms, U.S. dollars. US$	-	**1 666 760**	**2 647 279**	**2 794 419**	**2 941 558**

The sales program is developed on the basis of plans for the development of the production cycle, taking into account the projected selling prices.

Marketing activities

Support for the sales program will be based on the results of the study on a regular basis consumer preferences, including through market research, as well as through marketing and advertising campaigns.

Promotion of products on the market will be carried out through specialized Internet sites, thematic and business publications, participation in exhibitions.

The cost of analyzing market opportunities, market selection, advertising, sales promotion, improving the quality of products laid within 2% of sales each month.

Sales channels

Sales of manufactured finished products will be made directly from

Packaging plastic films	-	***801 572***	***1 273 119***	***1 343 881***	***1 414 642***
Plastic bags T-shirt type	-	*865 188*	*1 374 160*	*1 450 538*	***1 526 916***
Total sales, million UZS	**89 493**	**95 839**	**101 479**	**107 119**	**112 760**

Enterprises. The principle of the Enterprise is as follows:

Searching for a buyer (getting an order) - receiving an order (signing an agreement/contract) - buying raw materials (contract for supply) - manufacturing (production) - shipment (insurance, shipment to the supplier, or self-delivery (depends on the batch of goods) - receiving payment (the remainder, or on the fact of shipment of the batch).

Today we already have a number of agreements with consumers polyethylene films. Signed protocols intentions can available upon request.

4.2. Production program

The production program for the project is designed based on the mode of operation of the Enterprise and plans for the development of production capacity over the years *(see Production capacity with development over the years)*.

Mode of operation

The operating mode established at the Enterprise is shown in the following table:

Table. Mode of operation

Number of working hours per shift	**8**	**Hours**
Number of work shifts per day	2	**Shifts**
Duration working weeks	6	**Days**
Number of weeks per year	**52**	**Weeks**

This mode of operation is justified by the availability of year-round supply of raw materials, as well as the norms of labor legislation in force on the territory of the Republic of Uzbekistan.

Planned production program

The planned production program, in accordance with the plan for the development of production capacity *(see also the*

7.1. Production capacity with development by years), is presented in the table.

Table. Production program

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Capacity utilization in office hours	80%	85%	90%	95%	**100%**
Production volume in natural	**4 193 280**	**4 455 360**	**4 717 440**	**4 979 520**	**5 241 600**

in terms of (kg)					
Packaging plastic films	*1 797 120*	*1 909 440*	*2 021 760*	*2 134 080*	***2 246 400***
Polyethylene T-shirt bags	***2 396 160***	***2 545 920***	***2 695 680***	***2 845 440***	***2 995 200***

The volume of production in physical terms is calculated on the basis of the average actual load of specialists and equipment. The volume of production in monetary terms represents the average annual output at prices indexed at the discount rate.

4.4. Cost estimation (marketing budget)

In accordance with the marketing concept, a budget of 1% of sales will be allocated annually for marketing activities described in section *4.2.3. Sales program, sales channels*. The volume of expenses for these purposes is given in the table.

Table. Marketing costs, million soums

Indicator	In the investment period	1 year*	Year 2	Year 3	Year 4	Year 5
Marketing costs and advertising	50	9	10	10	11	11

These costs are classified as overhead costs and are included in the cost of sales.

5. MATERIAL RESOURCES

5.1. Classification of raw materials, materials, components

The materials and components required for the production of seamless pipes are divided into:

1. Basic Materials.

These are materials that are part of a manufactured product, forming its basis, or are necessary components in its manufacture.

2. Auxiliary materials.

These are materials that are necessary for the production process, but which are not included in tangible form in the final product. As a rule, auxiliary materials are necessary to ensure the technological process of production. The main attribute by which a material is classified as an auxiliary material is its absence in the composition of the finished product.

Basic materials

Among the wide variety of polymer waste we can distinguish the following groups of raw materials:

Polyethylene (PE). It comes in two varieties - high-pressure polyethylene (HDPE) and low-pressure polyethylene (LDPE). The fundamental difference is elasticity. LDPE is more flexible, pliable and frost-resistant. HDPE, on the contrary, is harder, stiffer and somewhat less resistant to frost. Most often in the manufacture of plastic pipes are used combinations of them. So in the secondary pipe you can select the composition depending on your preferences for properties. By changing the HDPE/HDPE ratio, it is possible to adjust the performance characteristics of technical pipes.

Polypropylene. Universal material for pipe profile extrusion. As a rule, there are homo-, block and random copolymers of polypropylene in the mixture of plastic waste. But they are sufficiently close in properties, in addition, their blends are well processed in different proportions without loss of quality characteristics.

Polyvinyl chloride (PVC). It is also one of the universal raw materials for plastic pipes. PVC is more difficult to work with, because it needs additional stabilization and loses its properties very quickly in extrusion. Products made of recycled PVC will be extremely short-lived. However, recycled PVC is often is added to the composition of sewage pipes.

5.2. Project need, availability and provision

The technological process of production of polyethylene films on a metal basis involves the use of raw materials, the list, the origin and rates of expenditure per unit of production of which are given *in the table*.

Table. Rates of consumption of raw materials per unit of production

Name	Unit.	Packaging polyethylene tapes	Polyethylene bags type "T-shirt."	Origins
The main raw materials and materials				
Blown marks polyethylene	kg	1,4	-	**local**
Casting marks polyethylene	kg	-	0,7	**local**
Dyes	**kg**	**0,3**	**0,3**	**local**

At maximum capacity, the equipment to be purchased can produce the maximum amount of polyethylene films per year *(see the section Production capacity with development by years)*. Taking into account these assumptions, as well as based on the data accepted in section 4.3. Production program, the estimated annual need for materials will be:

Table. Annual demand for raw materials and supplies

Indicator	Unit.	At max power	1 year	Year 2	Year 3	Year 4	Year 5
The main raw materials and materials							
Blown polyethylene grades	kg	3 144 960	2 515 968	2 673 216	2 830 464	2 987 712	**3 144 960**
Molded polyethylene grades	kg	2 096 640	1 677 312	1 782 144	1 886 976	1 991 808	**2 096 640**

Indicator	Unit.	At max power	1 year	Year 2	Year 3	Year 4	Year 5
Dyes	**kg**	**3 144 960**	**2 515 968**	**2 673 216**	**2 830 464**	**2 987 712**	**3 144 960**

Currently, the company is working with potential suppliers to sign protocols of intent to ensure the necessary supply of raw materials in accordance with the anticipated production program.

5.3. Providing energy and other resources

As part of this project to organize the production of polyethylene films, based on the specifics of production, the following types of energy and other resources will be used for technological and domestic needs:

Electricity

Electric energy consumption is provided by process equipment, for lighting and other household needs. The average estimated hourly electricity consumption is shown in the table below.

Table. Calculation of electricity consumption, kWh

Indicator	NUMBER	Consumption per unit.	Consumption of all
For production needs		**48**	**56**
Machine for the production of T-shirt bag machine	1	8	**8**
Machine for production. Bagging machine for rolls without bushing	1	10	**10**
Extruder for p/e film production	1	10	**10**
Extruder for LDPE, LLDPE production	1	10	**10**
Extruder for HDPE film production	1	6	**6**
Line for production of p/e	3	4	**12**

Indicator	NUMBER	Consumption per unit.	Consumption of all
films			
For household needs		**20**	**20**
Lighting	1	10	**10**
Other needs	1	10	**10**
Total		**68**	**76**

The volume of electricity consumption is calculated based on the technical characteristics of the equipment to be installed, lighting parameters, and other needs. The total rated capacity is 317.0 kW per hour.

Natural gas

The calculated gas flow rate, in given volumes, is given in the table.

Table. Calculation of natural gas consumption, m³/h

Indicator	Unit.	Value
Nominal gas flow rate	m3/h	**1,1**
Calculated natural gas consumption	**m3/h**	**1,1**

The use of natural gas for other production and household needs is not provided.

Tap water

According to the adopted technological scheme, the use of tap water for industrial needs is not provided. The demand for tap water for other purposes is given below:

Table. Calculation of tap water consumption, m³/h

Indicator	Value
Production	**15**
Household needs	**5**
Total	**20**

The company has all the necessary utilities and infrastructure to organize the production of polyethylene films.

The enterprise is provided with the necessary natural gas, electricity, steam, tap water, sewage system. Engineering networks and equipment are in good condition and do not require repair. The premises where the equipment will be installed are provided with all necessary infrastructure.

5.4. Estimating the necessary costs

Material costs

In the production of polyethylene films, material costs are variable costs, which are formed from the following costs:

- on raw materials and supplies;
- for energy and other resources for production needs.

Based on the annual requirements given in Section *5.2. Project need, availability and supply*, as well as the projected prices shown in *Table 21*, the costs of raw materials and supplies are calculated for the years of the project *(see Table 22)*.

The list of raw materials, their prices, the required quantities in kind and in money terms are also given in *Appendices 7 and 8*.

Table. Forecast prices for raw materials and supplies, thousand soums

Indicator	Unit. change	Year 1	Year 2	Year 3	Year 4	Year 5
The main raw materials and materials						
Blown marks polyethylene	kg	11 245	11 245	11 245	11 245	**11 245**
Casting marks polyethylene	kg	10 342	10 342	10 342	10 342	**10 342**
Dyes	**kg**	**7 824**	**7 824**	**7 824**	**7 824**	**7 824**

Based on the projected prices for raw materials and supplies and the calculation of the annual need, given in Section *5.2. Project need, availability and supply*, the total annual costs were calculated, which are shown in the table.

Table. Costs of raw materials and supplies, million UZS.

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Main raw materials	***81 655***	***65 324***	***69 406***	***73 489***	***77 572***	***81 655***
Blow marks polyethylene	35 365	28 292	30 060	31 829	33 597	**35 365**
Casting marks polyethylene	21 683	17 347	18 431	19 515	20 599	**21 683**
Dyes	24 606	19 685	20 915	22 146	23 376	**24 606**
Total costs	**81 655**	**65 324**	**69 406**	**73 489**	**77 572**	**81 655**

Forecast prices for public services are calculated on the basis of the current tariff schedule for legal entities, taking into account the historical average annual growth of the cost of tariffs. They are given in *the table*.

Table. Projected prices for energy and other resources, sum

Indicator	Unit. change.	1 year	Year 2	Year 3	Year 4	Year 5
Electricity	kWh	750	750	750	750	**750**
Natural gas	м³	1 000	1 000	1 000	1 000	**1 000**
Plumbing water	**м³**	**650**	**650**	**650**	**650**	**650**

The annual consumption of energy and other resources is given in

Appendix 12. Calculated on the basis of these data the total cost of utilities for production and household needs for the five-year period looks as follows:

Table. Costs of utilities, million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
At production needs	**263**	**211**	**224**	**237**	**250**	**263**
Electricity	209	167	178	188	199	**209**
Natural gas	5	4	5	5	5	**5**
Tap water	49	39	41	44	46	**49**
At Economic domestic needs	**91**	**73**	**77**	**82**	**87**	**91**
Electricity	75	60	64	67	71	**75**
Natural gas	-	-	-	-	-	**-**
Tap water	16	13	14	15	15	**16**
Total costs	**355**	**284**	**301**	**319**	**337**	**355**

The consumption of resources is calculated for the full capacity of the enterprise, which will depend on the volume of production. But this dependence is not linear, but with some inertia.

Utility costs are classified as other operating expenses, which are charged to the income statement.

6. SITE LOCATION

6.1. Characteristics of the selected site

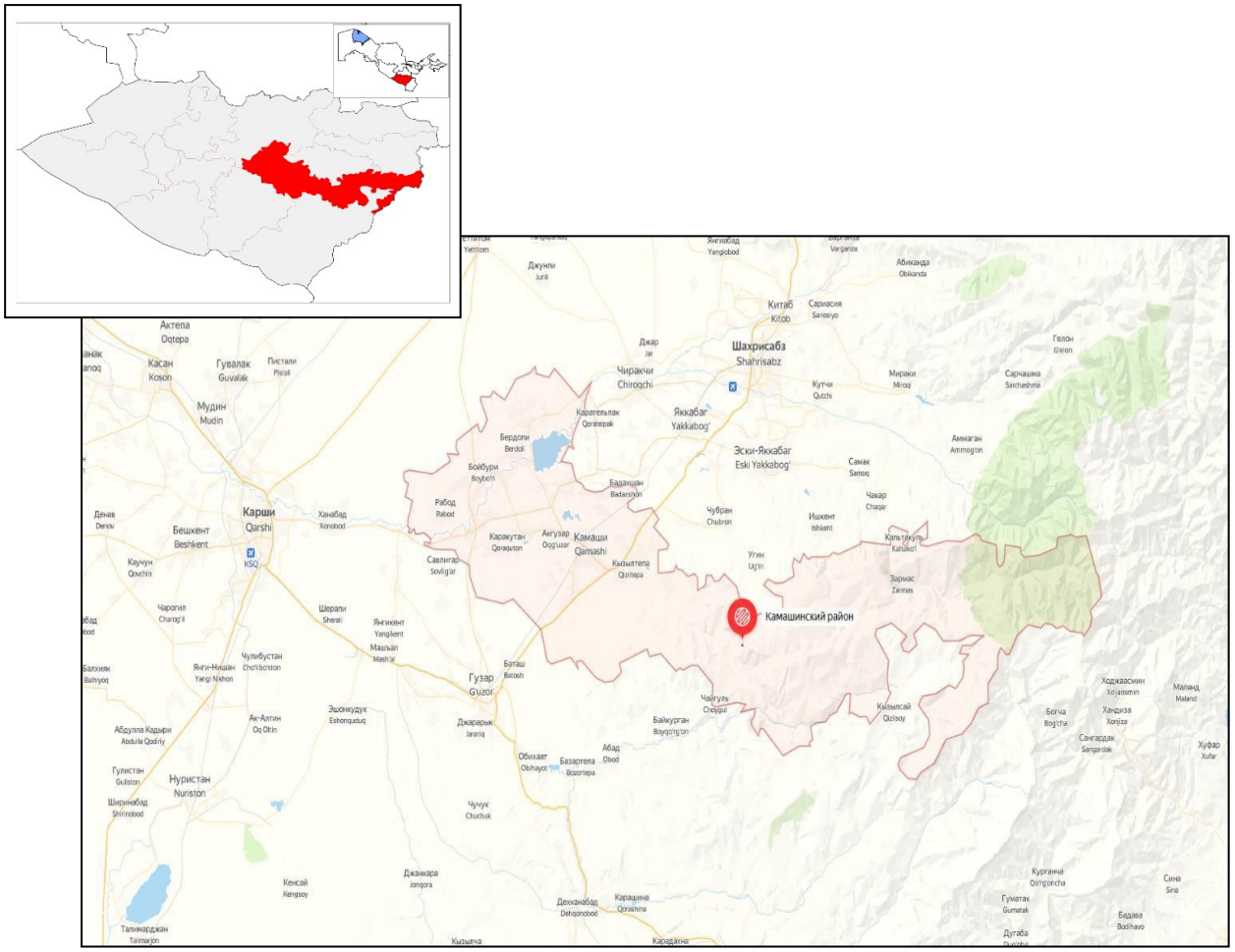
The production site is located in Kashkadarya region, Kamashi district, Navoi village.

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 road.

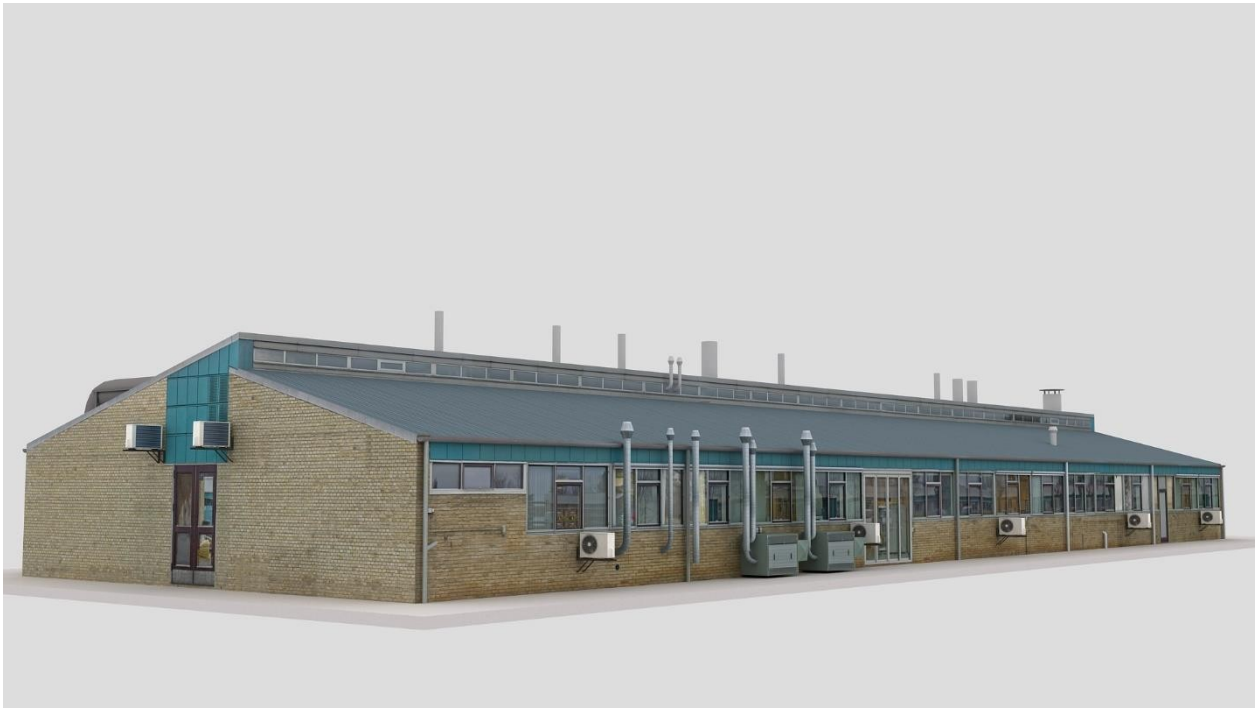
The population of the Kashkadarya region as of 2023 is 3.5 million people, and the population of the Kamashi district is 286,000.

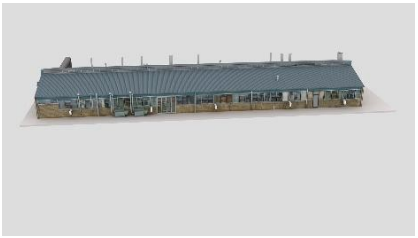
Project Location

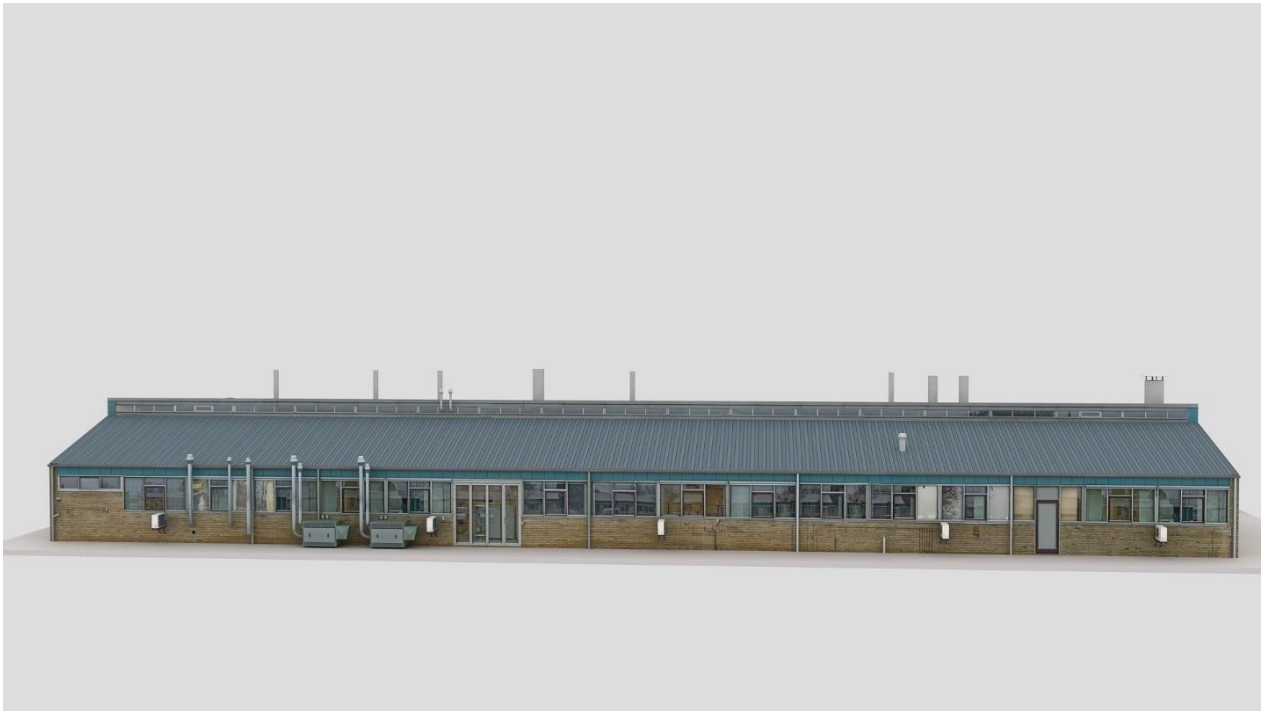


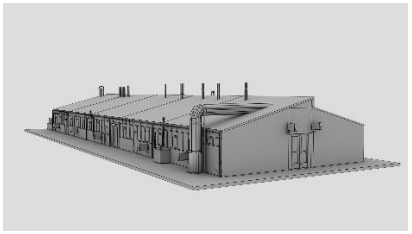
Production area

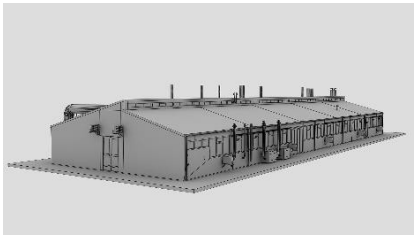
Production building

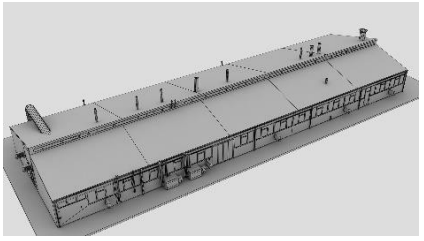


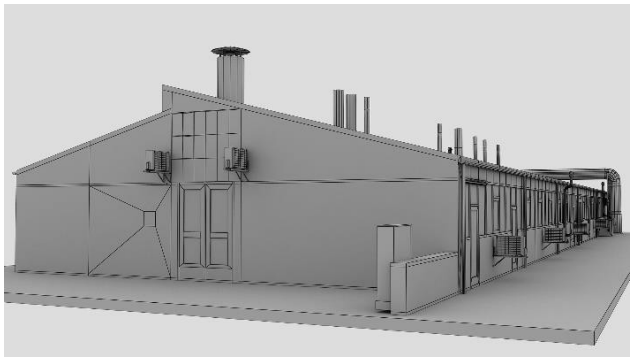


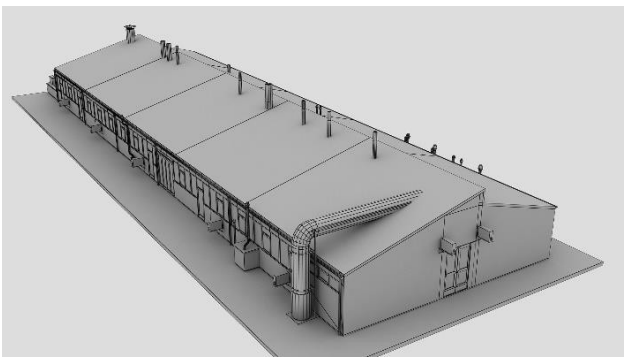


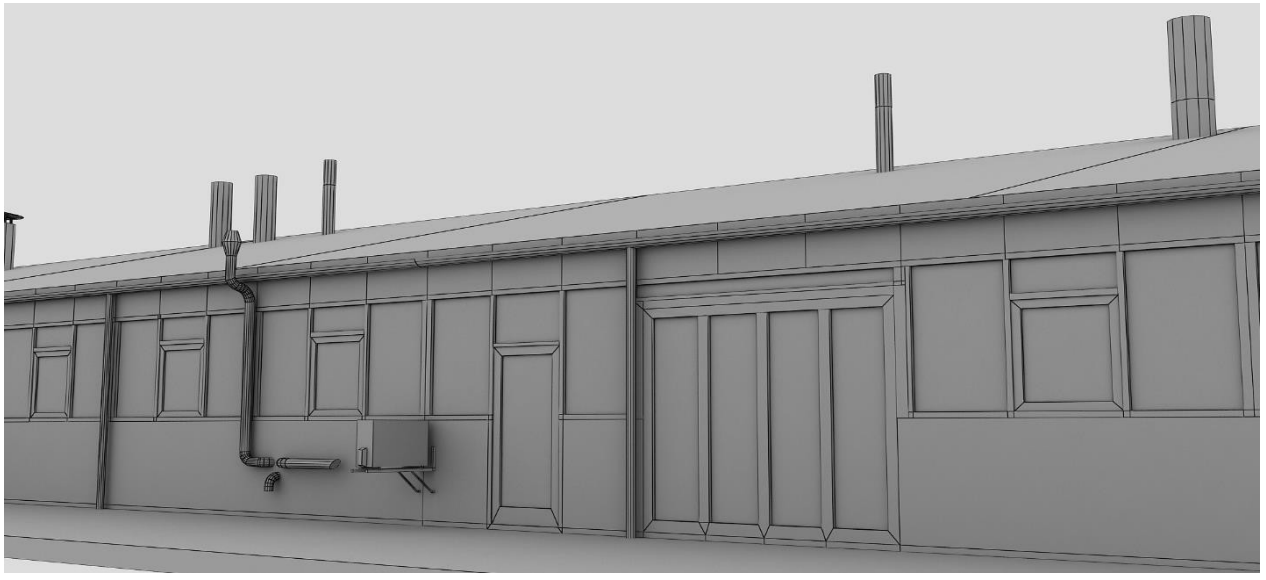












6.1.1. Remoteness from markets and finished products

From the point of view of transport infrastructure the production complex of PE "INITIATOR

In the location area. Which greatly facilitates both the delivery of raw components to ensure the operation of the enterprise, and the transportation of finished products. As noted in section *4.2.1. Location of sales markets, market segmentation*, the main consumers of the products planned for production are concentrated in the regions of Kashkadarya, Surkhandarya, Samarkand and Bukhara, including the city of Tashkent. This means that the sales market and finished products are in lose proximity, and the greatest distance is not more than 250 km.

6.1.2. Evaluation of industrial and social infrastructure

The production complex of the Enterprise is located in the Kamashi district. The facility is fully provided with engineering communications necessary for production activities and connected to external systems of electricity, gas, water and other utility networks.

The industrial complex has the necessary space, buildings and facilities for industrial activity. Also, there is all the necessary infrastructure for production, warehousing, electricity, water and gas supply. Production of polyethylene films will be located in the currently under construction 2 buildings with a total area of 5670 m^2 *(see section "Polyethylene films production").*

**(7.3.3 Principle space-planning and design solutions, their parameters, special requirements).*

The production complex is close to places with raw materials and labor resources.

6.1.3. Ecology, environmental impact

The enterprise in its direct activities is guided by the Law of the Republic of Uzbekistan "On atmospheric air protection" № 353-1 from 27.12.1996. When designing and constructing a new facility, all requirements of the said law are observed. This project is executed with consideration of technological design norms, construction, sanitary and other norms acting on the territory of Uzbekistan.

Analysis of the natural features of the production area showed a number of environmental problems caused by the introduction into the atmosphere of harmful emissions from enterprises located in the surrounding area, primarily JSC "Kukonspirt. However, due to the well-dispersed capacity of the atmosphere (low recurrence of weak winds, surface inversions) of the area, the concentration of harmful emissions does not exceed the relevant standards. Thus, this project can be classified as a project with low environmental risks.

The operation of technological equipment does not have a negative impact on the environment and will not require additional costs for environmental measures. Its impact on the environment is discussed in the section.

6.2. Rationale for site selection and critical aspects

When choosing the location of production, the management of the Enterprise was based on the following factors:

- availability of necessary infrastructure - own production complex
- availability of production and other auxiliary premises, structurally meeting the production requirements of the project;
- provision of energy and other resources, developed engineering infrastructure (electricity, gas, water supply);
- convenient location in relation to transport routes, with access roads for rail and truck transport;
- location on the territory of Kamashi district of Kashkadarya region;
- Availability of experienced specialists and necessary labor resources at the enterprise.

Based on all of the above, we can conclude that the company is provided with everything necessary for the successful implementation of this project.

7. DESIGN AND TECHNOLOGY

7.1. Production capacity with development by years.

The production capacity is calculated based on the technical characteristics of the equipment purchased, the technological process used, as well as the operating mode established at the Enterprise *(see section 4.3. Production Program)*.

All equipment in the technological line for the production of polyethylene films and elbows belongs to the machines of continuous operation. Annual output at maximum capacity utilization is given in the table below.

Table. Output at maximum capacity per year

Product name	Rated capacity of the equipment and hour (kg)	Equipment load per day (hours)	Number of working days in year	Maximum annual production capacity (kg)
Packaging polyethylene films	*450*	*16*	*312*	***2 246 400***
Polyethylene bags of the type "T-shirt."	***600***			***2 995 200***

Due to the fact that the project organizes the production of a new type of product, provides a phased loading of production facilities.

Table. Development of production capacities

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Capacity utilization during working hours	80%	85%	90%	95%	**100%**
Volume of output per year(kg)	**4 193 280**	**4 455 360**	**4 717 440**	**4 979 520**	**5 241 600**

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Packaging polyethylene films	*1 797 120*	*1 909 440*	*2 021 760*	*2 134 080*	***2 246 400***
T-shirt type plastic bags	***2 396 160***	***2 545 920***	***2 695 680***	***2 845 440***	***2 995 200***

7.2. Technology and equipment

7.2.1. Characteristics of technology, flowchart of technological process

Process of technological production of t-shirt bags

Plastic bags are made from a polymeric substance known as polyethylene (PE) and formed from long chains of carbon and hydrogen atoms. The structures of these chains can vary depending on what type of polyethylene is to be produced, but almost all of them are used in the production of different types of plastic bags.

For example, HDPE is high-density polyethylene and is the most common type of polyethylene used to create bags. This plastic is made from straight chains of molecules that have very few branching, remaining linear from beginning to end.

This linear structure creates a very strong material that can withstand loads of significant mass without breaking. LDPE is a plastic created with low density, i.e. from branching chains of polymeric materials. It is a very lightweight, almost filmic plastic that is used to make the dry cleaning bags needed most often to wrap items of clothing. The structure of LLDPE, when compared to linear low density polyethylene, is also not branched, but it does not have the same strength as HDPE. This means that bags made from LLDPE plastics need to be thicker and heavier to provide the necessary strength. Bags used in clothing stores are a common example of bags made from this substance.

Polyethylene is one of the most versatile and widely used thermoplastics in the world due to its excellent properties such as strength, almost zero moisture absorption, excellent chemical inertness, low coefficient of friction, easy processing, etc.

Extrusion

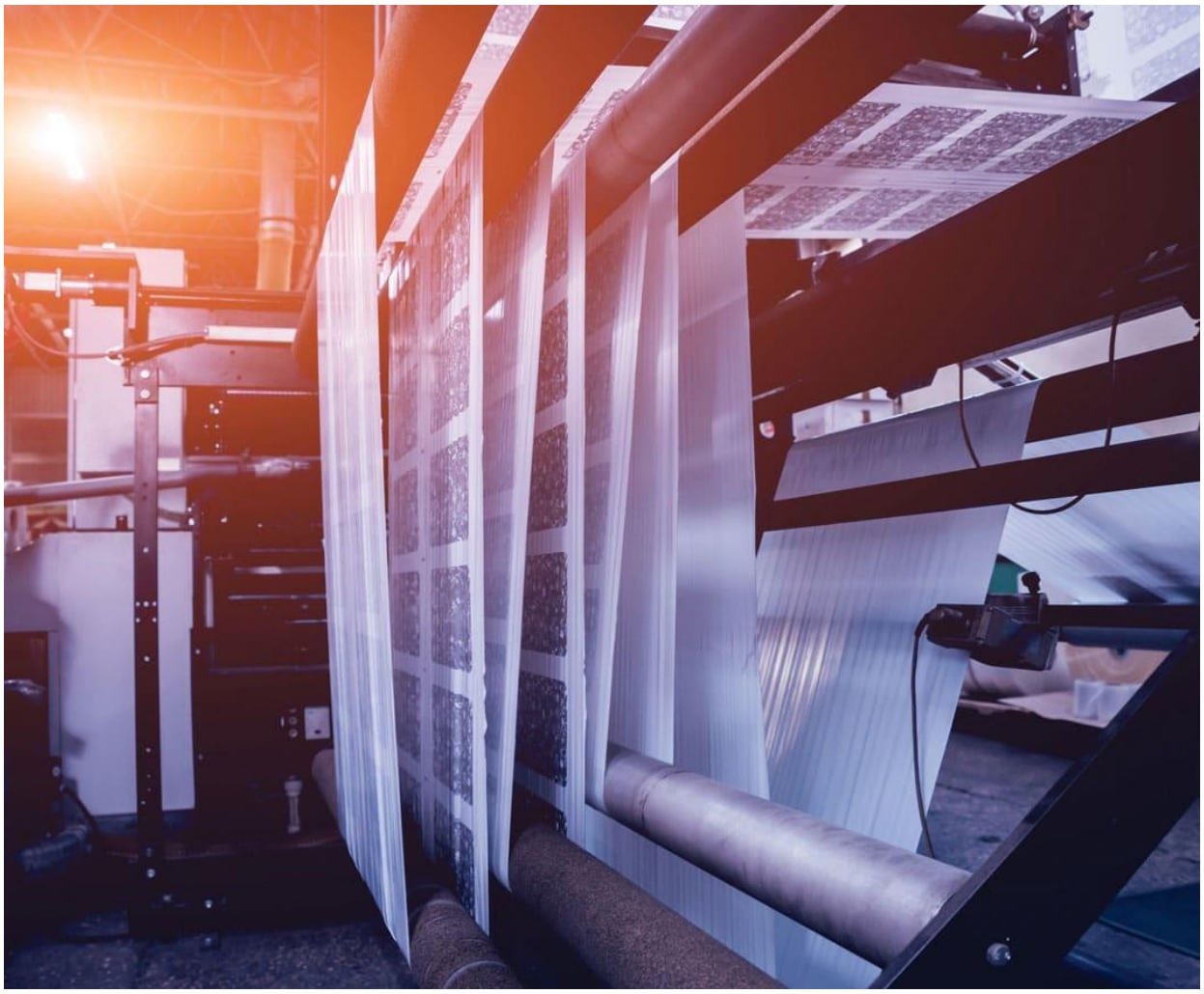
Manufacturing a plastic bag is a technological process, which consists of two main production steps.

The first step consists in the manufacture of plastic film, and it is called - extrusion, and, more often it is accepted to talk about two directions of this technology: extrusion of cast film and extrusion with blown film.

Cast films are used for packaging food and textiles, wrapping flowers, laminating other materials, etc. Typically, the cast film process involves an extrusion operation, which is the simultaneous extrusion of two or more materials from the same die to form a multilayer film. This is because in many cases, the final application of plastic film requires a strength that cannot be achieved if the film consists of only one material. For example, food packaging applications require films with oxygen barrier capabilities. The number of layers, their position in the coextrudate and their individual thickness are variables that vary depending on the specific film application.

In the cast film extrusion process, the molten polymer passes through a flat die to take the shape of a flat film. The matrix system consists of a die and a feed unit (if it is co-extrusion) or just a die if the process is based on monolayer extrusion technology. The process begins by feeding the pellets via a gravimetric feed system to one or more extruders. The materials are then melted and mixed with the extruders, filtered and fed into the die system. Immediately after leaving the die, the molten raw material enters the cooling unit where its temperature is lowered by interaction with cold water through a cooling roller.

In the cast film cycle, the degree of drawing and orientation is much lower than in the blown film process.



In addition, the mechanical properties of the film are lower in the transverse direction compared to materials obtained from the blown film process due to the higher level of orientation experienced by the film during the blowing process.

Blow mold extruder

And since in the process of bag production there is most often no need to use dense films for the primary material, blown film extrusion has become the most common process by which films specifically for bags are made in the future.

Blow mold extruder operation

Such a production line also initially uses an extruder (several extruders) designed to heat the polyethylene plastic pellets to a high temperature. This temperature melts and plasticizes the pellets, at which time the melted plastic is fed into the die of the machine, where the thickness that the bag should have is determined.

But then the process involves the continuous blowing of the plastic to a size several times larger than the original die diameter with the formation of a thin tubular film. The plastic melt is extruded through the die vertically from bottom to top, and air is introduced into the resulting bubble through an opening in the middle of the molding head to fill the bubble volume like a balloon.

To cool the film, an air ring is placed on top of the die, which strikes the hot film with air currents coming through channels from a powerful fan.

The tubular film bubble then moves upwards (constant atmospheric pressure is maintained inside it), and cools down almost completely in the open air until it passes through a system of pressure rollers. The latter elements serve to flatten the tube into a web, i.e. to form a single strip.

As a rule, the expansion coefficient between the die and the blown film tube will be 1.5-4 times the diameter of the die. The deflection between the wall thickness of the melt and the thickness of the cooled film occurs in both the radial and longitudinal directions. This is easily controlled by changing the values of the air volume inside the bubble and the velocity of departure.

A flexographic printing machine is often added to the automatic bag production line, with the help of which the bag acquires the appropriate graphic design.

But to facilitate quality adhesion of inks to the surface of the film, it is necessary to carry out a surface pretreatment. Coronation is the most commonly used of the existing methods, which increases the surface energy of the film and, therefore, its surface tension. The system includes a power source and a cleaning station. The power source converts 50/60 Hz power to a much higher frequency power in the range of 10 to 30

kHz. This high-frequency energy is applied to the processing station and applied to the film surface using two high potential electrodes, while the other (low potential) is applied through an air gap, which is typically between 0.5" and 1". The surface tension on the film surface increases when a high potential difference occurs, which ionizes the air.

Flexographic printing

Winding machines are used to convert extruded film into rolls of material. The winding process must be such that the film retains its properties and dimensions when these rolls are later unwound and transformed into packages.

The line components do not act by themselves, they are controlled by a computerized system. The main computer is the center that integrates and controls all line components in an organized manner. A good control system should provide operators with an easy-to-operate graphical interface or monitoring system.

The main tasks of a computer are:

- Controls startup, shutdown and line speed.
- Control of the mass of material fed into the extruders, as well as control of the extruder speed, which is necessary to maintain a constant throughput.
- Controls all temperature zones and temperatures of all materials.
- Web tension control.
- Storing and analyzing all recipes, storing operational data and control of the alarm system.

Molding (conversion)

The direct production of bags, also called conversion, requires machines that combine high production capacity, cycle safety, reliability of design elements, and an optimal ratio of product quality to labor and operating costs. The machines must also be flexible enough to adapt to changes in bag length, material and bag type.

Bagging machine

Bag making machines come in a variety of configurations based on the types of bags produced by this machinery.

The cycle consists in the fact that the film roll is unwound into the operating area of the machine, where it is subjected to a number of technological deformation operations such as thermal welding, cutting, die-cutting. All operations are performed in fully automatic mode and require operator intervention only for replenishment of raw material rolls and removal of the finished product.

Setting up the bagging machine

In the feed section, the flexible packaging film is unwound from the roll on the feed roll. Retracting rolls are used to move the film through the machine and to maintain a constant tension force. Feeding is usually staggered, and other operations, such as sealing and cutting, are carried out with a brief suspension of film movement. In the sealing section, temperature-controlled electrical elements come into contact with the film web for a fraction of a second, during which the seams are welded. The welding temperature and duration of the process depend on the type of material and must be kept constant for different machine speeds. The configuration of the welding element and therefore the format of the machine depends on the type of welding dictated by the bag design. In most machine formats, welding is accompanied by cutting. The finished bags are stacked on the receiving table.

In addition to these basic functions, depending on the package design, additional operations such as attaching a zipper, applying holes, attaching handles, etc. can be performed. The corresponding accessories are available as an option on the machine base.

Side-weld bag making machines are the most common type of such machines. Material from two unwinders is stacked together and fed into the machine. The tape is usually cut with a hot knife, which welds and cuts at the same time. The bags are sealed only on the sides. The bottom of the bag is closed because of the folding operation, and the top of the bag can remain open or closed with a zipper or similar fastener. The simple configuration of this type of machine has servos for the feeders only and VFDs for all other axes. More modern versions of this type of equipment use servo drives for feeders, welders and stackers.

Process of technological production of greenhouse polyethylene films

For the production of greenhouse film, a continuous extrusion or extrusion method is used.

This is done in two ways:

The material is squeezed out through an extruder head or die in the form of a sleeve or tube. The film is then pressed into the desired thickness using an air flow at a certain pressure. The amount of pressure depends on:

Die shapes.

The fluidity of the material.The velocity of its flow.

Extruder for film manufacturing

Squeezing the mass of polyethylene through a narrow slit, which determines the thickness of the material.

Production of greenhouse film

Colored polyethylene films are made in the same way with the addition of the operation associated with the preparation of dye concentrate.

Tape dyes

To produce it, steel rollers are used, in which the rolls rotate at different speeds.

Scheme of color film production

ORGANIZATION OF THE FILM PRODUCTION PROCESS

How is greenhouse film produced by extrusion through an extruder head and what are its special features? An extruder is a complex that includes electronic, electromechanical and mechanical equipment that meets certain requirements during installation and operation.

Requirements for the preparation of the unit operation:

The extruder must be installed in a room that meets all safety and sanitary requirements. These are:

The size of the room. The presence of a ventilation system.Good lighting.

The room should be closed. It is not allowed to have sudden temperature changes, direct sunlight on the equipment. The room is chosen class P-11f by PU3, with climatic execution - U, category - 4 according to GOST 15150-69.

When constructing the foundation and floors, the parameters of the load on them are taken into account. In this case the safety margin exceeds the nominal load of the weight of the equipment by 1.5 times.

The electrical cable can be copper or aluminum, the cross-section is chosen depending on the capacity of the unit. The connection of the equipment is made through an automatic starter AP, the required power.

In the presence of surge noise in the network and a voltage deviation greater than 5%, You need an uninterruptible power supply to stabilize the voltage in the network.

Throughout the life of the equipment, the operating instructions of the equipment must be followed, otherwise the supplier will not be held responsible for its operation.

SET-UP

The operator prepares the equipment for work with his own hands. In this case, his actions depend on:

Will it be new equipment, or after its overhaul.

Emergency or routine repairs.

Scheduled shutdowns related to the transition to make a different type of film, tooling changes, cleaning, or stopping the machine for the weekend.

Changing the batch of raw materials.

Start-up of new and repaired equipment is carried out with a test it and acceptance.

It is obligatory that the responsible specialists, who repair the unit, as well as the process engineer, who supervises the test, are present. The operator will perform sequential operations as directed by the process engineer, according to the test program.

EQUIPMENT ADJUSTMENT

The unit is aligned by adjusting screws for the horizontal position of the working elements, which is controlled by the level.

The drafting system roller is aligned by adjusting the positioning bolts on the base.

The extrusion head is aligned with the level - its center should be in the middle of the tangent to the pulling shaft.

A qualified electrician connects the electrical cable to the control panel. The switches must be in the "off" position.

An annular gap is attached through which air is supplied to the air hose of the flexible type for the blower.

Check the connection of phases according to the direction of rotation of the motor and the rotation of the fan used to blow the hose according to the arrows. If necessary, the connection is adjusted.

Check the tension of the main motor drive belt and that the pulley is not rubbing against the guard.

Ensure that the extruder and the motor pulley axes are parallel. Extruder assembly

Check the oil level in the pneumatic gearbox by connecting the pneumatic actuator to the pneumatic gearbox.

The operation of the pneumatic units is monitored to ensure synchronization and no leakage.

Checked:

Tight fit of heaters to cylinder and head housing, thermocouples in sockets to avoid deviations in instrument readings.

Heater temperature. For each type of polymer, it has different values.Temperature in the center of the mandrel.

The main engine starts up.

The blower is checked for blowing on the cylinder.

Make sure that the retainer remains securely locked in place after replacing the mesh. The alignment of the clamp axis and the adapter head is ensured. Checked at tightening all the bolts that could loose during shipment.

The paper sleeve is put on the winder and the machine is ready to start.

The order of the work is as follows:

The stretcher support is lifted to the required height. For polyethylene of high density LDPE or thickness, the support is raised higher, which improves cooling, and for low density LDPE, the support is set lower.

The temperature settings are checked according to the instructions. Polymer is loaded into the hopper.

The main motor of the extruder starts. Initially, its speed is 60 rpm. After the polymer is squeezed out of the head, the speed increases.

The stabilizer is installed. Check the integrity of its coating. Cord or twine of cloth or polypropylene is passed through the rolls. Laying the strands for the plastic The extrudate coming out of the extruder head is clamped in a loop from one the end of the twine. To avoid the sleeve sticking together, start blowing gradually, then close the draw rolls and pull the extrudate through.

The pulling rolls are switched on.

The compacted part of the extruder is cut and removed.

When pulling the inflated film, which passes in the pulling device through the pressure roller, the latter is pressed by a pneumatic switch.

The speed of the tensioner motor is adjusted so that there are no tears in the film when it is pulled through. The first winding is performed on the adjustment sleeve.

Air is pumped gently into the inside of the sleeve until the film is the desired width. In this case, it is necessary to adjust properly the volume of the air blown by the fan - so that the film is cooled accordingly extrusion speeds.

Pumping the hose with air

If the sleeve is heavily inflated, to reduce the width of the bubble, the film should be pierced with a knife and part of the air released to the specified width of the sleeve. By changing the extraction speed, the film thickness is adjusted.

When you reach a given thickness of the film, lay the desired size folds.

Adjustable wooden compression frame, and wedges for tabs.

The work hub is installed, and the bale is wound without any crashes, folds, or misalignments.

Film winding on rolls

After the extruder has been running continuously for about 4 hours, you should take the mesh out and inspect it for integrity and the presence of metal elements.

The resulting film, the entire structure should be homogeneous throughout the diameter and meet the requirements of GOST 10354-82. It is easy to set up the production of film greenhouses from the obtained material.

7.2.2. The impact of technology on the environment

Operation of the equipment strictly according to its intended purpose does not include the use of materials that are harmful to health and have a harmful effect on the environment.

During the operation of industrial waste treatment equipment, dust from synthetic fibers can be released into the atmosphere.

The production technology complies with internationally accepted quality standards and has no adverse impact on the environment during operation. Estimated maximum concentrations generated by the plant's off-site emissions do not exceed the established norms.

7.2.3. Equipment layout

Construction of the layout of equipment is necessary to ensure a rational layout of the shops. Input materials for this are:

- selected technological process scheme;
- layout, quantity and dimensions of the selected equipment;

- the number of sections working in parallel;

- the size and profile of the production facilities;

- location of workplaces, passageways and passageways;

- places of input of raw and auxiliary materials, output of finished or semi-finished products, disposal of production wastes, places of entry of engineering networks.

7.2.4. Transfer of know-how, training

Transfer of know-how and staff training is provided in the contract for the purchase of a technological line for the production of polyethylene films, concluded with the company "Supplier". Supplier's representatives will train and instruct the production staff of the Company on the operation and maintenance of technological equipment during the installation and adjustment of the equipment.

7.2.5. Rationale for the choice of technology and equipment, advantages and disadvantages

The choice of technology and equipment is justified by the fact that when evaluating the properties and economics of sial sheets of various production methods, it was found that seamless pipes are the most preferable.

The use of steel coils as the basic material is justified by the fact that steel coils occupy the leading position among polyethylene films. They account for about 58% of the output of all polyethylene films and profiles. This is explained by versatility and high indicators of physical and mechanical properties of steel rolls, including: almost complete invariability of physical and mechanical properties in the wet state, the highest thermal resistance, and other operational characteristics *(see more in section 5.1. Classification of raw materials, materials, components).*

Selection of technological equipment, general supplier

The general supplier of technological equipment is the company "Supplier", with which PE "INITIATOR PROJECT" signed a contract for the purchase of a technological line for the equipment of the production of polyethylene films on a metal base. The technological line complete in according to technological process and includes the following equipment:

Table. List of equipment to be purchased

Name	Quantity	Price		Amount	
		dollars. USA	Eq. mln. soum	dollars. USA	eq. mln. soum
Machine for production. T-shirt bags	1	65 000	748	65 000	**748**
Machine for production. Packaging machine filling in coils without a bushing	1	55 000	633	55 000	**633**
Extruder for film production	1	34 600	398	34 600	**398**
Extruder for production of LDPE, LDPE	1	35 000	403	35 000	**403**
Extruder for manufacturing HDPE film	1	32 000	368	32 000	**368**
Production line bubble wrap	3	45 000	518	135 000	**1 553**
Total				**356 600**	**4 101**

The cost of purchased technological equipment n is 113.0 thousand dollars. U.S.

(including the cost of transportation in CIP-Tashkent, supervised installation, commissioning and staff training).

Before making a choice on the proposal of the company "Supplier", the employees of the Company analyzed the market of equipment for production of polyethylene films.
Several offers of suppliers of similar equipment were studied. On the basis of offers provided by other suppliers, the choice was made in favor of this set of technological line and it can be said that the offer of the company "Supplier", in comparison with similar offers of other companies, is the most optimal.

The purchased technological line provides the whole range of necessary main and auxiliary equipment, which will allow to set up the production in a short time. Equipment for production of polyethylene films is new and unused, and meets all modern standards for this kind of equipment. The equipment supplied is notable for its easy handling, reliable operation, unpretentious maintenance, high quality of the products produced and production flexibility.

7.2.6. Product compliance with international standards

Compliance of the products manufactured with international standards is guaranteed by the supplier of the equipment. The quality of the products is guaranteed by obtaining a Certificate of Conformity to the standards of the Republic of Uzbekistan.

In the future, the company will work on the development and implementation of quality management system, as well as planned to obtain an international certificate for compliance with ISO. It is envisaged to introduce product quality control and management along the entire chain of the technological process.

7.2.7.Localization prospects

As the production technology is mastered, the company plans to set up production of steel plates, planned production at LLC "Tashkent Metallurgical Plant", the launch of the facility is planned for May 2019, which will allow localization of the raw material base. This, in turn, may have a favorable impact on the cost of the Company's products.

Expanding the range of polyacrylonitrile fibers and mastering the production of polyester fibers by the chemical enterprises of the country will create the possibility of deepening localization in the future.

7.3. Construction

7.3.1. Situation Plan

The planned production of polyethylene films and taps will be located on the territory of the Kamashi district The situation plan of the land plot with the application of all existing facilities is given in the project documentation, which is attached to the package of documents of this project.

7.3.2. Site preparation and development

The area of buildings and structures, which will house the workshops for the production of polyethylene films will be 5670 m^2. At the moment the following construction works are carried out in the buildings:

- the construction of exterior walls and interior partitions;
- roofing of the floor and ceiling;
- finishing work, etc.

The buildings and territory of the workshops will be ready for installation by the time the equipment arrives. The size and parameters of the equipment have already been agreed with the equipment manufacturers during the contract with the general supplier.

Access roads are asphalted. There are auxiliary facilities, storage rooms and open area under the canopy.

On the territory of the shop, at the expense of the Enterprise, it will be necessary to prepare the foundation for the imported equipment and conduct all necessary engineering communications. Construction of additional utilities and auxiliary facilities associated with the purchase of a new fleet of technological equipment is not required.

The condition of the existing and under construction buildings and structures is satisfactory and meets all standards and SNIP for similar production facilities.

During construction, anti-seismic measures were taken and the conditions of soils and climate were taken into account.

7.3.3. Engineering communications

In accordance with the current legislation of the Republic of Uzbekistan for enterprises - participants of free economic zones is provided guaranteed connection to utilities with their connection to the production sites.

The sources of gas, electricity, water and sewage of the object are the existing engineering networks of the production complex. All engineering communications are connected to the buildings and structures of polyethylene films production location. Engineering networks and equipment are in good condition and do not require repair.

7.3.4. Volumes of construction and installation work, the need for construction materials and machinery

In order to accommodate the polyethylene film shop, 2 buildings with a total area of 5670 sq.m with construction works for a total amount of 1650 million UZS are being erected.

Currently under construction work on the erection of buildings and the laying of utilities (sewage and water supply). The construction is carried out by self-propelled method at the expense of the enterprise's own funds. All necessary materials have been purchased in the amount sufficient to complete the construction.

7.4. Estimation of costs taking into account construction in progress

The capital cost of the project is 6,836,500,000 soums, the cost of which includes:

- technological equipment in the amount of 5 186 500 000 soums;
- construction and installation works in the volume of 1,650,000,000 UZS for the erection of buildings of the workshop for the production of polyethylene films.

The assessment and structure of the costs of construction work is given in more detail in the design and estimate documentation, which is attached to the package of documents of this project.

8. ORGANIZATION AND OVERHEAD

8.1. Organizational structure of the company

The basis of the organizational structure of the company is the linear-functional type, which implies the presence of line managers, as well as their subordinate functional services. Organizational functions are grouped into the following units:

- General Guidance;
- Accounting and Finance;
- Commercial Issues Management;
- Production Management.

8.2. Overhead costs (general and administrative)

Overhead costs are indirect costs of the enterprise, arising in addition to the main costs of the enterprise for the production and sale of products / works / services. Overhead costs are included in the cost of production, costs of its production and circulation. Overhead costs are determined per volume of production on the basis of actual costs by cost items and distributed per unit on the basis of the volume of production and cost allocation coefficients.

The overhead structure of the planned production will consist of the following types of costs:

1. Production overheads

- labor costs of the main production and auxiliary personnel;
- the cost of importing raw materials and supplies;
- depreciation of fixed assets;
- the cost of maintenance and current repairs of the premises;
- costs of maintenance, maintenance and spare parts for technological equipment.

2. Expenses of the period

- expenses for remuneration of administrative and management personnel;
- implementation costs;
- the cost of banking services;
- other operating expenses.

8.2.1. Production overheads

Labor costs for production and auxiliary personnel

It is assumed that the project for the production of polyethylene films during the planning period will employ 28 people production and 5 people and support staff *(see section 9.1. The need and availability of human resources)*.

Taking into account the fact that it is necessary to make contributions to social insurance, employment and pension funds in the amount of 15%, as well as the 15% annual increase in the size of the minimum wage, the annual labor costs of production personnel will be:

Labor costs of production personnel, million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Labor costs production staff	**696**	**696**	**696**	**696**	**696**	**696**
Salary of the main production staff	526	526	526	526	526	**526**
Salary support staff	90	90	90	90	90	**90**
ESP deductions	**80**	**80**	**80**	**80**	**80**	**80**

Other production costs

This project also includes other costs attributable to production overheads *(see Table 37)*.

Other production costs, million soums

Indicator	At max. power	Year 1	Year 2	Year 3	Year 4	Year 5
Other production costs	**1 145**	**1 145**	**1 105**	**1 066**	**1 026**	**986**
Depreciation fixed assets	798	798	798	798	798	**798**
The costs of content and room maintenance	173	173	164	155	146	**137**
Maintenance and technical expenses maintenance and spare parts for technological equipment	**174**	**174**	**144**	**113**	**82**	**51**

Depreciation is charged at the rates established by the Tax Code of the Republic of Uzbekistan and in accordance with NASU standards. On this basis, depreciation of buildings and constructions is charged at a rate of 5% per year, and depreciation of technological equipment at 15% per year.

8.2.2. Expenses of the period

Labor costs for administrative and managerial staff

For the implementation of this project it is envisaged to involve administrative and managerial staff of 5 people. According to the staff schedule of the enterprise, their monthly salary is set as a multiple of the minimum wage *(see section 9.1. Needs and availability of human resources)*.

Thus, the total annual labor costs of administrative andthe management staff, taking into account

account the unified social payment (15%), will make 73 million UZS in the first year of activity with a subsequent annual increase of 15% *(see the table)*.

Table. Labor costs of administrative and managerial staff, mln.

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Labor costs PMA	**73**	**73**	**73**	**73**	**73**	**73**
Salary of the administrative assistant	65	65	65	65	65	**65**
ESP deductions	**8**	**8**	**8**	**8**	**8**	**8**

Implementation costs

The scope and content of implementation costs are discussed in detail in *4.4.*

Cost estimation (marketing budget). Expenses for banking services

The cost of banking services shall be at the established rates of the servicing bank, which are as follows:

Fee for settlement services	0,3%	of debit turnover
Subscription fee for services Bank-Customer	**1**	**Minimum monthly wage**

The volume of costs calculated by the above tariffs is given in *the table.*

Table. Costs of banking services,million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Expenses for banking	**60**	**48**	**52**	**54**	**57**	**60**
Commission for settlement services	56	45	48	51	54	**56**
Subscription fee for services Bank-Customer	**4**	**4**	**4**	**4**	**4**	**4**

Other operating expenses

This project also includes other expenses that are charged to expenses for the period *(see table)*.

Volume of other operating expenses, million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Other operating costs	**314**	**273**	**284**	**294**	**304**	**314**
Utilities	91	73	77	82	87	**91**
Communication costs and Communications	28	28	28	28	28	**28**
Expenses for office and office supplies accessories	4	4	4	4	4	**4**
Transportation expenses	43	43	43	43	43	**43**
Other expenses	36	36	36	36	36	**36**

Reserve at incidental expenses	**113**	**89**	**96**	**101**	**107**	**113**

The structure of utility costs for household needs is described in more detail in section *5.4. Estimation of necessary costs*.

Communication and communication costs for this project are estimated at $150 per month. The annual increase in costs is due to the devaluation of the Uzbek currency against the US dollar. The annual increase in costs is due to the devaluation of the sum against the U.S. dollar. USD.

A monthly allocation of funds is provided for other operating expenses:

- Expenses for office and office supplies - 1 minimum wage;
- for transportation costs - 15 minimum wages;
- for other purposes - 10 minimum wages.

Annual increase in expenditures in national currencyis envisaged based on the annual indexation of the minimum wage by 15%.

It also provides for the formation of a contingency reserve in the amount of 1% of revenue.

8.3. Cost estimation

The total overhead costs for the calculation period of the project by section and by year are shown in *the table*.

Volume of overhead costs, million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Production invoices expenses	1 841	1 841	1 801	1 761	1 721	**1 681**
Expenses of the period	459	403	418	432	445	**459**
Total invoices expenses	**2 300**	**2 244**	**2 219**	**2 193**	**2 166**	**2 140**

9. HUMAN RESOURCES

9.1. Needs and availability of human resources

Staff schedule

Calculation of the number of personnel by structural subdivisions and positions is presented in the table.

Staff schedule

Indicator	Monthly salary, minimum wage	Number of people	
		At max power	Years 1- 5
PMA		**2**	**2**
Manager	10	1	**1**
Chief Accountant	8	1	**1**
Main production staff		**12**	**10**
Head of Production of the site	8	1	**2**
Operators winding line	5	3	**8**
Operators production line	5	4	**8**
Packaging operators lines	5	4	**10**
Auxiliary staff		**4**	**4**
Locksmith	5	1	**1**
Electrician	5	1	**2**
Security Guard	5	2	**2**
Total		**18**	**18**

For new production at reaching and maximum capacity will require staff of 18 people, including:

- the main production personnel - 12 people;

- auxiliary personnel - 4 people;

- AUP - 2 people.

In accordance with the staff schedule, based on the estimated volume of production, during the project implementation the average annual number of employees of the Enterprise will be 18 people, including administrative, management, production and support staff. This number of staff is sufficient in terms of the organization of activities and the subsequent development of capacity on the planning horizon of the Enterprise for the purposes of this business plan. When reaching the maximum production capacity, the company's staff will increase by 20 percent of the total number of personnel, and 10 percent at the expense of the quota of the Federation "Union" increase in the number of the main production personnel.

INITIATOR PROJECT PE has the necessary personnel potential. The enterprise is staffed with experienced management and engineering-technical personnel, as well as skilled workers. The enterprise employs qualified specialists in marketing and management, technical staff has special training to ensure high quality of manufactured products.

Functional Responsibilities

The general management of the store is carried out by the manager, who makes decisions on the operational management of the store (including management issues

personnel). He decides independently all questions of the store's activity, represents its interests. He issues orders and instructions that are binding on all employees of the store. The manager bears full responsibility within the limits of his authority for the activities of the store, ensuring the safety of commodity and material values, cash and other property. Coordinates his work with the Director of the Company and the General meeting of the founders.

Chief Accountant – organizes the accounting.

The Department is responsible for the economic and financial activities of the enterprise and control over the economical use of material, labor and financial resources. Organizes accounting of incoming funds, inventories and fixed assets, accounting of production and circulation costs, execution of works, as well as financial, settlement and credit operations.

The overall management of production activities and the organization of quality control will be carried out by the director of production, who will independently monitor the activities of specialists.

The main task of the auxiliary personnel is to ensure reliable, safe, uninterrupted and accident-free operation of production facilities, taking into account the rational organization of jobs, which achieves optimal productivity, high quality of equipment maintenance at the lowest material and labor costs.

Occupational Safety and Health

The layout solution of the production and auxiliary buildings is aimed at ensuring the safe and rational performance of all technological operations with full respect for sanitary and hygienic working conditions.

General management of occupational health and safety is the responsibility of the managers and engineers and technicians of the company. Compliance with safety rules and instructions is mandatory for all persons engaged in production.

Special measures are provided for the creation of normal working conditions and occupational safety:

- mechanization of production processes;
- mechanization of loading and unloading operations and transportation of raw materials and finished products;
- Creating a comfortable temperature regime in the workplace;
- Ensuring that the room is ventilated through;
- Workplace lighting with natural and artificial light;
- grounding of live parts of the equipment;
- painting of supply and discharge pipelines in the appropriate regulatory colors.

9.2. Recruitment requirements and training

Employees and applicants for employment must have a specialized secondary or higher education, depending on the position held.

Personnel requirements are established on the basis of employment contracts between employees and management, they include the following measures:

- Compliance with occupational health, safety and industrial hygiene requirements, compliance with legal regulations;

- compliance with the job description;

- strict observance of the confidentiality of all information obtained in the community;

- Observance of labor and technological discipline, the rules of internal order, approved by order of the director, execution of lawful orders of the employer.

Personnel training is provided in the contract for the purchase of a technological line for the production of polyethylene films on a metal base, concluded with the company "Supplier. Supplier's representatives will train and instruct production employees of the Company on operation and maintenance of technological equipment during installation and adjustment of the equipment.

Due to the fact that the PE "INITIATOR PROJECT" is an operating organization, and the employees of the company have experience in working with production equipment, additional special training of personnel at the initial stage is not required. In the future training and professional development of the personnel will be carried out as necessary with the allocation of funds.

9.3. Cost estimation

Labor costs are based on the number of personnel involved in the project, as well as the annual increase in the average monthly wage per employee in accordance with the annual indexation of the minimum wage. The costs of the section for the planning period are as follows:

Volume of labor costs, million soums

Indicator	At max power	1 year	Year 2	Year 3	Year 4	Year 5
Expenses for wages and salaries production staff	696	696	696	696	696	**696**
Expenses for payment of labor of the AUP	73	73	73	73	73	**73**
Total expenses at wages	**769**	**769**	**769**	**769**	**769**	**769**

Labor costs of production and auxiliary personnel are classified as production costs and are included in labor costs of production personnel.

Labor costs for administrative and managerial staff are classified as overhead costs and are included in labor costs for administrative and managerial staff.

10. PROJECT IMPLEMENTATION SCHEME

10.1 Stages of project implementation

The stages of project implementation are divided into 3 periods: pre-investment, investment and post-investment.

In pre-investment period was supposed to carry out the following activities:

- study of the artificial fur market;
- studying types и comparative analysis prices for products, provided for release at the enterprise, the study of the sales market;
- studying technological process production. The production process of the project is to be studied;
- researching commercial proposals, conclusion of contracts, choosing a supplier of equipment and raw materials;
- estimation of the volume of costs for the provision of services expected in the implementation of this project;
- at based on obtained information received development of business plan for economic efficiency;
- concluding contracts for the purchase of necessary equipment, coordination of delivery schedules;
- organizational measures to attract credit funds.

All activities, with the exception of except last item, planned in the pre-investment period, are now full implemented.y

Investment period implementation of of the project it is possible subdivided into the following stages:

- opening of funding;
- purchase of the necessary technological equipment;
- preparations for facilities and carrying out necessary engineering communications;
- supply of equipment and other inventory;
- installation of equipment and inventory.

The production phase of the project can be divided into the following stages:

- the beginning of industrial activity;
- gradual development of the design capacity;
- increase in the volume of output;
- repayment of the bank loan.

The project will be implemented with a phased development of capacity *(see section*

10.2. Project implementation schedule

The planning horizon and implementation period of this project (from the beginning of its financing and to the actual completion with repayment of the loan and interest on it) is calculated for 5 years. The schedule of the investment period is shown in the picture.

Image. Graph of the investment period

Name of stages	1-	2-	3-	4-	5-	6-	7-	8-	9-	10-	11-	12-
Pre-investment studies, project feasibility study												
Manufacturing and equipment delivery												
Transportation												
Preparing production facilities												
Installation equipment installation, commissioning works												
Staff training												
Start of operation new equipment												

The schedule of the investment period is based on the terms of the contract concluded with the company "Supplier. (China).

Total manufacturing time of the equipment in the project is 3 months. Supply, installation and commissioning works are provided for another 3 months. During the commissioning period the supplier's specialists will train local personnel to work on the equipment and its operation. Thus, the equipment will be put into operation in 6 months after the start of financing.

Since, as experience shows, the issues associated with the organization of obtaining credit can not be accurately regulated, planning of pre-operating activities in the investment period is carried out with the signing of the loan agreement.

10.3. Project implementation budget

The project implementation budget is 6,943,649,000 soums (US$615,535 in Eq.). Structure of expenses, and also the mechanism and sources of financing under the project in the following sections.

11. PROJECT FINANCIAL AND ECONOMIC EVALUATION

11.1 Full investment costs

Total investment costs are 6,943,649,000 UZS
(in Eq.615,535. USA dollars.

11.2 Project financing

11.2.1 Structure and breakdown of investments

The structure and breakdown of investments is shown in the image.

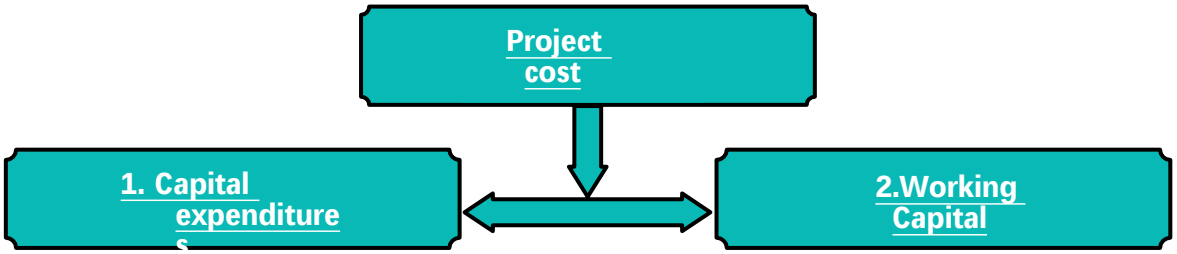


Image. Structure of investments

1. Capital costs include:

- construction and installation works in the volume of 1,650,000,000 UZS for the erection of buildings of the workshop for the production of polyethylene films;
- technological equipment in the amount of 4,100,900,000 soums.

2. The initial working capital required to implement this project is 1,192,749,000 soums. Working capital will be used to cover costs during the investment period as follows:

- to cover production costs - 793,149,000 soums;
- to cover the expenses of the period - 399,600,000 UZS;

11.2.2 Mechanism and sources of funding

The project will be financed from the PE "INITIATOR PROJECT" own funds:

- 6,943,649,000 UZS (equivalent of $615,535) from borrowed and lent funds

11.3 Total costs of products sold

The total cost of products sold consists of the following costs: production costs, period costs, financial costs.

The volumes of costs of products sold are shown in the following table:

Total costs of products sold, million soums

Indicator	At max. power	1 year	Year 2	Year 3	Year 4	Year 5
Production cost of production	**83 759**	**67 375**	**71 431**	**75 487**	**79 544**	**83 600**
- Stocks products at the end of the year	940	752	799	846	893	**940**
Production cost goods sold	**82 819**	**66 623**	**70 632**	**74 641**	**78 650**	**82 659**
Expenses of the period	459	403	418	432	445	**459**
Operating cost goods sold	**83 278**	**67 027**	**71 050**	**75 073**	**79 096**	**83 118**
The costs of financial activities	-	-	-	-	-	-
Total costs goods sold	**83 278**	**67 027**	**71 050**	**75 073**	**79 096**	**83 118**

The financial costs of the project include: payments principal and interest payments on the loan.

11.4 Assessment of economic efficiency

11.4.1 Analysis of key financial indicators

The financial analysis of the project shows that it achieves sustainable performance. Full calculation of the financial and economic indicators for the implementation of this

of the project can be found in the section

At evaluating financial and economic of the project (planning horizon - 5 years) the following indicators were obtained:

Balance sheet indicators

Forecast balance sheet reflects financial state of production at at the end of the calculated period of time. *(see table)*.

Indicators on the balance sheet, mln UZS / %

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Current assets	**25 616**	**46 883**	**69 478**	**93 362**	**118 581**
Cash	6 343	26 591	48 126	70 831	**94 871**
Accounts receivable debt	6 252	6 696	7 090	7 484	**7 878**
Advances issued	6 611	6 793	7 066	7 458	**7 850**
Inventory values	6 410	6 803	7 196	7 590	**7 983**
Fixed assets	**6 953**	**6 156**	**5 358**	**4 560**	**3 763**
Total assets	**32 569**	**53 039**	**74 836**	**97 922**	**122 344**
Current liabilities	**1 168**	**1 247**	**1 318**	**1 388**	**1 459**
Advances received	1 119	1 198	1 268	1 339	**1 409**
Bills payable	49	49	49	49	**49**
Long-term commitments	-	-	-	-	**-**
Equity	**31 401**	**51 792**	**73 518**	**96 534**	**120 885**
Total liabilities	**32 569**	**53 039**	**74 836**	**97 922**	**122 344**
Coefficients					
Coverage Ratio	22	38	53	67	**81**

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
(current liquidity)					
Coefficient autonomy	0,96	0,98	0,98	0,99	**0,99**
Coefficient of the availability of the SS	**0,95**	**0,97**	**0,98**	**0,99**	**0,99**

This projected balance sheet does not take into account the assets and liabilities of existing production.

Indicators of the forecast balance sheet indicate a high financial stability of the company, the balance of financial flows, the availability of funds to maintain its activities over the estimated period of time, including servicing the loans received and producing products.

Coverage ratio (current liquidity) indicators show an extremely high level of solvency of the company. The ratio of current assets to short-term liabilities (current liabilities) during the whole calculation period remains at a very high level, from 22 to 81, which characterizes the company's high ability to withstand rapid changes in market conditions and the business environment.

Indicators of the coefficient of autonomy, from 0,96 in year 1 to 0,99 in year 5, testify to a high financial independence of the Enterprise.

The coefficient of provision of current assets with own circulating assets (0.95-0.99) also shows the degree of provision of the organization with own circulating assets, necessary for its financial stability.

Financial result indicators

An important factor in assessing the return on investment is the profitability.

The projected statement of financial results *(see Appendix 20)* reflects the operating activities of the new production of polyethylene films. Financial results show that the implementation of this project will allow its initiator to make a profit after payment of all costs during the whole period of project implementation *(see table)*.

Indicators of project profitability, mln UZS / %

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Net income	18 457	20 391	21 726	23 016	**24 351**
Gross profitability	21,5%	22,7%	23,2%	23,3%	**23,4%**
Pure profitability	**17,9%**	**19,0%**	**19,4%**	**19,4%**	**19,5%**

The expected net profit of the production when reaching 100% of maximum capacity in the fifth year of operation will be 24.4 billion soums.

Cash flow indicators

Cash flow reflects the balances of the structure of actual cash receipts and payments of the Enterprise within the framework of the implementation of this project *(see also Annexes 23, 24)*. Indicators of cash flow for the period of 5 years are shown in the table.

Table. Indicators of cash flow, mln UZS / x

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Total receipts money	103 605	95 918	101 550	107 190	**112 830**
Total outflows cash	104 172	79 973	83 002	87 504	**91 929**
Balance flow cash	6 343	20 249	21 534	22 705	**24 040**
Accumulation balance cash balance	6 343	26 591	48 126	70 831	**94 871**
Flow cash flow for debt service	**6 343**	**20 249**	**21 534**	**22 705**	**24 040**

Projected cash flow from the project is calculated in accordance with the sales plan. Indicators show the sufficiency of cash flow to carry out financial and economic activities.

Breakeven point

The project reaches the break-even point at the next level:

Table. Calculation of breakeven point mln. soum, %

Indicator	Value
Proceeds from product sales	**112 760**
Fixed production costs	**1 118**
Variable production costs	**83 100**
Breakeven point	**3,77%**

At the level of capacity utilization of 3.77%, revenues fully cover costs, and the production and sale of each subsequent unit of production will bring profit to the enterprise. Estimated volumes of sales significantly exceed the break-even point indicator. From which we can conclude that the company has a decent margin of safety.

Indicators NPV, IRR.

Net discounted income (NPV) is the balance of all operating and investment cash flows, taking into account additionally the cost of capital used. If the calculations show that the project covers its internal costs and also brings the owners of the capital income not lower than they demanded (not lower than the discount rate), then the NPV of such a project will be positive, and the project itself will be effective.

The internal rate of return (IRR) of a project is the value of the discount rate at which the NPV is zero. In other words, IRR shows what maximum annual return on invested money an investor can put in his calculations to make the project look attractive. If the resulting IRR value is higher than the return on capital expected by the investor, then it can be said that the project is effective. If bank money is used to finance the project, the IRR will demonstrate the maximum amount of the interest rate on the loan that the project is theoretically capable of paying back.

To assess the economic efficiency of this project, the size of the discount rate is calculated as the average of the refinancing rate, annual inflation and the annual devaluation of the sum against the U.S. dollar for the planning period, which reflects the real process of depreciation of projected cash flows on investment projects implemented in the territory of the Republic of Uzbekistan.

When calculating the financial and economic efficiency of the project, the discount rate is taken at the level of:

Table 51. Indicators of the discount rate (%)

Indicator	1 year	Year 2	Year 3	Year 4	Year 5
Rate discounting	**12,8%**	**12,8%**	**12,8%**	**12,8%**	**12,8%**

Calculation of NPV, IRR for the project is presented in the table.

Calculation of NPV, IRR,mln.

Period	Cash operating flow	Rate discounting	NPV	IRR
Investment period	-6 944	12,8%		
1 year*	6 343	12,8%	-12 944	**-5%**
Year 2	20 249	12,8%	18 610	**52%**
Year 3	21 534	12,8%	23 634	**84%**
Year 4	22 705	12,8%	37 683	**96%**
Year 5	**24 040**	**12,8%**	**50 876**	**101%**

* including investment period

In general, the activities of the production of polyethylene films shows a significant profitability of production and investment attractiveness.

11.4.2 Sensitivity of the project to major risks

Sensitivity analysis of the project to the main risks that may have a negative impact on its implementation, provides the following possible scenarios of events:

1. Reduced selling price
2. Rising costs of raw materials and supplies
3. Reduced production capacity.

Reduced selling price

The sensitivity analysis of the project shows almost 20% margin of safety to a decrease in the sales price of the finished product at projected costs.

It should also be noted the fact that the projected prices for finished products adopted in the project are conservative and, accordingly, below the established in reality prices.

Rising costs of raw materials and supplies

Sensitivity analysis of the project shows almost 20% margin of safety to the increase in the cost of raw materials at the projected sales volumes.

However, given the fact that in the development of this business plan to calculate production costs took the upper limit of prices for raw materials, some increase in prices for raw materials for a certain period of time is quite acceptable and will not critically affect the economic performance of the project.

Reduced production capacity

The sensitivity analysis of the project shows almost 20% margin of safety to a decrease in production volumes at projected costs.

The impact of other risks on the implementation of this project is discussed in

11.4.3 Impact on the national economy

This project provides expansion production of competitive import-substituting products - metal-based polyethylene films.

The project strategy corresponds to the medium-term forecasts of the prospective development of the republic and the priority tasks of structural reforms in the economy. With the successful implementation of the plans in the business project under consideration, its positive impact on the country's economy is ensured. It is reflected in the following indicators:

- Organization of production focused on the production of import-substituting products, increasing the efficiency of the use of investment resources, to produce high quality products;
- Market saturation, as well as partial satisfaction of the growing demand on the part of enterprises of light industry for knitted furs, covered today mainly by imports;
- Creation of new industries in free economic zones.
- Creation of new jobs, a positive impact on the social and economic situation in Kashkadarya region;
- Receipt of taxes and fees in the budget.

Analysis of demand for seamless pipes and elbows and its trends *(see section 4.1.3. Existing demand, main factors and indicators of its growth)*,

allows us to draw conclusions about the high potential of the market for the Company's products. Finished products expected to be produced will have a stable demand in the market, and the quality of the products will meet state standards.

The advantages and benefits available in the case of this project are discussed in the section.

12. CONCLUSIONS

12.1. The main advantages and disadvantages of the project

The advantages of this project include the following factors:

1. Introduction of advanced technology focused on the production of high value-added products.

4. Meeting market demands with high quality products that are in constant demand.

5. Creation of new industries in free economic zones, promoting the development of infrastructure in the region;

6. Creation of 18 jobs at the initial stage with the increase to 40 people at full capacity. and thus contribute to the growth of employment of the population;

7. Receipt of taxes and fees in the budget, a positive impact on the socio-economic situation in Kashkadarya region;

8. The use of environmentally friendly technologies that do not require additional costs associated with environmental protection measures.

9. High payback on the project with relatively low capital expenditures.

The disadvantages of the project can be attributed to the volatile market conditions.

12.2. Risks and aspects of uncertainty

As an economic category, risk is an event that may or may not happen. If such an event occurs, different economic results are possible: negative (loss, damage, loss); zero; positive (gain, benefit, profit).

The main factors generating the main risks of this project and creating a real threat to the very existence of the Enterprise are:

Legal risks are the risks associated with imperfect legislation, unclear documents, uncertainty of judicial measures in the event of disagreements between the founders or business partners.

Despite the fact that the Republic of Uzbekistan has created and is improving the legislative and regulatory framework to ensure the activities of the subjects of The presence of factors affecting legal risks cannot yet be denied in the context of entrepreneurial activities created by both local and foreign investors.

These include: the existence of a bureaucratic apparatus, the ongoing process of improvement of legislation.

Measures to reduce risk:

- clear and unambiguous wording of the relevant articles in the documents;

- Engaging specialists with practical experience in this area to draw up documents;

- allocation of the necessary financial resources to pay for top-notch lawyers and specialists.

Production risks are risks associated with insufficient product quality. A significant risk may be the lack of highly qualified personnel.

Measures to reduce risk:

- Clear scheduling and management of project implementation;

- training of qualified personnel.

Marketing risks are the risks associated with delays in entering the market, wrong choice of marketing strategy, errors in pricing policy, and insufficient market research. Market entry delays can be caused both by production and technical reasons, and by the company's unpreparedness to effectively sell and promote its products on the market.

Measures to reduce risks:

- creation of a strong marketing service;

- developing a marketing strategy;

- marketing research: volumes, prices, customers;

- conducting a study on the segmentation of the domestic market.

Financial risks are associated with the probability of loss of financial results (i.e. cash), consumer insolvency, unstable demand, price reductions by competitors, lack of working capital. One of the factors of financial risk is the need for timely investment, the availability of which is a prerequisite for the start of the project: how much they will be delayed, so delayed will be the start of the project.

Measures to reduce risks:

- variety the variety of financing schemes offered for the project, both from own funds and from borrowed ones;
- development investment and financial strategy, goal of which is to get into the zone of profitable operation;
- carrying out a set of measures to find investment resources for the development of the enterprise.

Environmental risks are risks associated with pollution and air emissions and discharges to water.

This production is practically free from environmental risks.

Natural risks are risks associated with natural hazards: earthquakes, floods, storms, fires, epidemics, droughts, etc.

Measures to reduce risks:

- compulsory insurance.

12.3. Assessing the feasibility of the project

Before taking the initiative to implement this project, the current situation on the market of polyethylene films of the Republic of Uzbekistan was carefully studied, really considering all the risks that could directly or indirectly affect the implementation of this project.

Based on the calculations made, as well as analysis of the entire program to implement this project, which is presented in this business plan, we can conclude on the viability and effectiveness of this project.

The implementation of this project provides a number of advantages and benefits, which are discussed in more detail in sections *11.4.3. Impact on the national economy and 12.1. The main advantages and disadvantages of the project.*

Ability to provide raw materials in sufficient quantities for this production, a large market, the preparedness of the production area, the availability of modern technology and extensive experience of managers of the enterprise in the production sphere,

as well as the availability of qualified personnel, quality products, as well as its high liquidity make the chances of the feasibility of this project high.

The financial and economic analysis of the project suggests that. that presented project can be implemented c high efficiency. From the above calculations it is clear that the implementation of this project, taking into account the use of bank credit will allow to get the specified profit and repay interest and credit amount in the planned time. Despite the fact that all estimates are made conservatively, based on minimum prices for finished products, financial indicators speak o high profitability and payback period of the project. In general, the selected project activity shows significant profitability of production and investment attractiveness. Based on the above, we can state that the implementation of this project will give an opportunity to implement the idea of the project initiators to organize the production of polyethylene films, as well as to participate in the process of deep economic transformations taking place in the Republic of Uzbekistan.

13. INFORMATION ABOUT THE PROJECT PERFORMER

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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