

## INVESTING IN DIVERSIFICATION: OIL INDUSTRY OF KAZAKHSTAN

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**Abstract.** The article analyzes the growth of opportunities for the production of petrochemical products in the Republic of Kazakhstan. The article analyzes the dynamics of global demand for basic petrochemical products over the past 15 years. The aim of the article is to represent the effectiveness of the project on organizing the production of petrochemical products – polypropylene. The objective of the work is to highlight the characteristics of the possibilities of polypropylene production in Kazakhstan (availability of capacities, raw materials, and transport accessibility to world markets). The ways of using polypropylene in the national economy are substantiated. The analysis of the world demand for polypropylene, the structure of its consumption and production in the context of world economic regions, is considered the main world importers and exporters of polypropylene. The effectiveness of the implementation of the investment project to organize the production of polypropylene in Kazakhstan is presented in the form of a predictive analysis of the supply of marketable products to the markets of individual countries: Turkey, Western, Southern and Eastern Europe, China, the Russian Federation. The article also describes the strengths and weaknesses, potential opportunities and risks of the project for the production, sale and export of Kazakhstani polypropylene.

**Keywords:** petrochemical products, polypropylene, production and consumption, gas, consumer, global demand.

**JEL Classification:** E6, D25, L1.

### Introduction

The coronavirus pandemic had a significant negative impact on the global oil market in the second half of 2020. World quarantine measures have become a great obstacle to the normal functioning of the world's transport systems, since transport is the main consumer of oil products, which accounts for more than 70% of the demand for oil products (Gromov & Titov, 2020a). Although the first wave of the pandemic has passed, global air travel has not been restored to 2019 levels. The industry is recovering at a slower pace. Global demand for diesel, gasoline and jet fuel is relatively low. During the period of stagnation of the oil industries of the economies of oil-exporting countries, small and medium-sized oil refineries will suffer. The fall in demand for oil energy products may give rise to an oversupply of oil refining capacity. In connection with such a possible situation, large oil refineries will revise their strategic development programs towards diversifying production processes. Diversification of the oil and gas

complex of world economic systems is aimed at complicating production, introducing innovative technologies, expanding the range of value-added products. The main direction of diversification is the development of petrochemicals and the expansion of the range of petrochemical products, for which there is a constant demand in the industry markets.

Currently, petrochemistry acts as a driver of growth in the consumption of oil and petroleum products in the long term. The annual growth rate of demand for the period 2020–2030 will be about 2%, while the consumption of petroleum products by transport will remain at the level of 0.5% (Gromov & Titov, 2020b). This leads to the fact that oil-refining capacities are revising their investment projects in the direction of expanding petrochemical marketable products. Many countries are on the way to integrate into the global value-added petrochemical product chain. Republic of Kazakhstan for 30 years since formed the oil and gas production complex,

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which enabled the country to become one of the leading exporters of oil and gas at the world level. Within the framework of the implementation of the State program of industrial and innovative development of the Republic of Kazakhstan for 2020–2025 (Government of the Republic of Kazakhstan, 2019) in the last decade, Kazakhstan began a transition from a raw material orientation to the creation of enterprises for the production of oil and gas products with benefit. The transition to the creation of a high-tech industry will expand the range of marketable products of deep processing – petrochemicals (Chen et al., 2019).

State program of industrial and innovative development of the Republic of Kazakhstan for 2020–2025 was approved by Resolution of the Government of the Republic of Kazakhstan No. 1050 (2019). It is a continuation of State program of industrial and innovative development of the Republic of Kazakhstan for 2015–2019 (Ministry of Justice of the Republic of Kazakhstan, 2014), which substantiates the key indicators of the direction of diversification of the oil sector country. There is a petrochemical cluster in the Republic of Kazakhstan in the territories of Atyrau, Mangistau and Pavlodar regions. These regions were selected because the oil and gas production and oil-refining sector of the economy of Kazakhstan is concentrated here: Atyrau oil refinery, Pavlodar petrochemical plant, Shymkent oil refinery (Petro Kazakhstan Oil Products LLP). These enterprises are the main base for the expansion of oil refining and petrochemical products, have access to world industry markets, and produce 85% of Kazakh oil refining and petrochemical products. If earlier diversification in the oil and gas industry of Kazakhstan was carried out at the expense of state support through the reconstruction of the Atyrau and Pavlodar refineries, the creation of oil and gas clusters in the territories of the oil regions of the country, today, there is a development of diversification through private investment (Sokolov & Larin, 2018; Stepanenko, 2020).

In addition, this direction will expand due to the decline in prices for raw hydrocarbons. In the context of global crises, oil refineries in Kazakhstan are revising their investment strategy, expanding their portfolios of investment projects to organize new production facilities for the production of petrochemical products (polypropylene and polyethylene). The purpose of the article is to represent the effectiveness of the project on organizing the production of petrochemical products – polypropylene. The objective of the work is to highlight the characteristics of the possibilities of polypropylene production in Kazakhstan (availability of capacities, raw materials, and transport accessibility to world markets).

## 1. Literature review

The volume of products produced in the oil and petrochemical industry in the structure formation of Kazakh economies is the main aspect of scientific interest. The role

of the oil and gas industry, its impact on national security, the impact of global demand for oil products in the long term until 2040, the progress of the recovery of world oil markets from 2014 to 2018 are presented in the publication of Professor Kondratyev (2019, 2020). The scientist in his research 2020 reveals the long-term impact of the COVID-19 pandemic on the development of oil companies in the framework of effectively overcoming the current crisis in the oil industry.

The expert of the international consulting company “McKinsey & Company” Nurazkhanov (2020) examines the impact of the COVID-19 pandemic on the development of the oil industry in Kazakhstan in a pessimistic scenario. A return in oil demand can only be expected by 2030, in connection with which oil refiners will redistribute capital towards the development of petrochemicals in order to maintain their positions in industry markets. Competitive assets will be directed to the diversification of production at large integrated oil refineries that have innovative technologies and access to world markets in commercial petrochemical products. Theoretical and practical problems of oil production and oil refining are widely studied in world scientific circles. The issues of economic mechanisms for the development of oil and gas structures, general issues of the economy of oil and gas, the effectiveness of investment oil and gas projects are discussed in the works of a number of economists: Andreyev et al. (2014); Dunayev et al. (2016); Sheveleva and Akiyeva (2016); Tcharo et al. (2018); Yang (2018); Humbatova et al. (2019).

Kazakh scientists Yegorov and Chigarkina (2015); Razakova et al. (2019); Shalbolova et al. (2017); Igaliyeva et al. (2020) have studied the development of the oil and gas complex of the Republic of Kazakhstan over the past 20 years. Research of scientists are devoted to the problems of increasing the efficiency of the integrated use of mineral resources, the formation of a cluster in the oil industry, the formation of priority areas of oil refining, diversification of oil and gas companies. In 2018, Asian Development Bank released an analytical collection “Kazakhstan: accelerating economic diversification” edited by Anderson et al. (2018), which provides analytical reviews of diversification in the oil and gas industry in Kazakhstan. The economic analysis of the world market for petrochemical products (all types of polymers) is studied by Volkova (2020), which reveals the priorities for the development of the petrochemical industry in Russia caused by the impact of the coronavirus pandemic.

## 2. Materials and methods

The methodological basis of the research is previously conducted research, the results of which are reflected in the scientific and informational literature. A large scientific and analytical base is based on materials describing the situation of the world markets of oil and petroleum products as of the second half of 2020, since today the impact of the coronavirus pandemic on the development of national economies of almost all States is being traced.

Officially, published statistical collections served as the information base for the dynamics of indicators over the years. The forecast values are used according to the analytical reports of national oil and gas management company of Kazakhstan JSC “KazMunayGas”, which is the main managing operator of oil and gas companies.

The study is carried out as part of the implementation of the State programs of industrial and innovative development of the Republic of Kazakhstan (the first program for 2015–2019, the second program for 2020–2025) (Ministry of Justice of the Republic of Kazakhstan, 2014; Government of the Republic of Kazakhstan, 2019). According to government documents, work has been carried out in Kazakhstan to reconstruct the largest oil refinery (in the city of Atyrau) to increase the number and range of petrochemical products. As part of the revision of the Investment Projects portfolio, the national oil and gas management company of Kazakhstan, JSC “KazMunayGas”, has developed a number of projects to organize the production and export of commercial petrochemical products to domestic and world industry markets. All numerical indicators used in this study are real statistical and forecast data.

The article uses methodological approaches to analyzing the expansion of petrochemical production, and assesses the effectiveness of investment projects in the sale of products that the projects are aimed at. The selected hypothesis, based on the analysis and synthesis of actual indicators and the obtained evaluation criteria, allowed us to make a forecast assessment of the production and consumption of petrochemical products in various markets in the context of world regions. The research strategy was chosen as an inductive one, since in order to obtain scientific results, this article uses real indicators obtained as a result of studying the economic activity of oil refineries, and it was possible to conduct the most accurate analysis. The research uses methods of system analysis, comparative and statistical analysis, methods of

graphic illustration and tabular presentation. The methods used helped to highlight opportunities for the production of petrochemical products, dynamics of global demand for basic petrochemical products over the past 15 years and represent the effectiveness of the project on organizing the production of petrochemical products – polypropylene.

### 3. Results and discussion

The economies of the oil producing countries are currently at a level of uncertainty, as the COVID-19 pandemic has negatively affected the global oil and oil products market the most. Analysts predict a global decline in oil consumption in 2021 relative to 2019. According to leading analysts, the recovery of global demand to the level before the crisis consumption will take about 5 years. Quarantine, which takes place in almost all countries – the largest oil consuming countries, limited the functioning of the sectors of economies – buyers of oil and oil products: the industry – aviation, water and road transport. As demand for crude oil and petroleum fuels declines, many countries are moving to diversify their refineries towards deep processing of hydrocarbon resources. The products of the petrochemical industry of today is more widely in demand because of the pandemic of coronavirus identified the need for the use of individual protective equipment in a wider range and in large volumes. Dynamics of global consumption of basic petrochemical products (Figure 1) shows growth trends.

The production of petrochemical products in the Republic of Kazakhstan in the modern period is at the stage of formation. Until 2020, the country mainly exported crude oil to world markets. However, the global oil crisis, which also affected the country’s economy, is becoming a driving force behind the reorientation of the oil industry to expand production, marketing and export of petrochemical products. In 2004, the Program for the

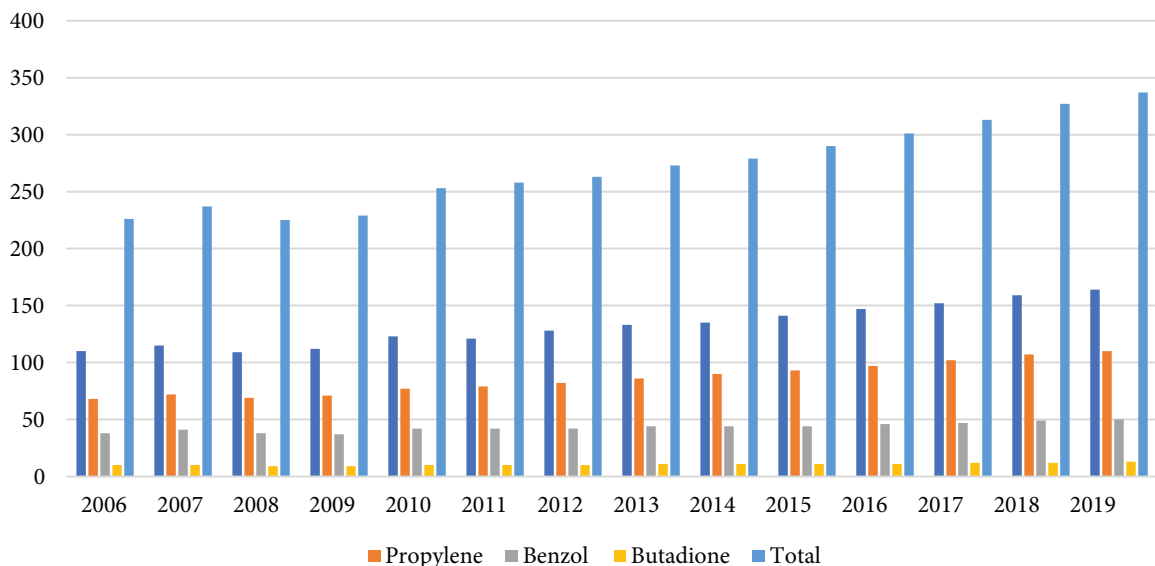


Figure 1. World consumption of basic petrochemical products, million tons

development of the petrochemical industry of the Republic of Kazakhstan for 2008–2013 (Ministry of Justice of the Republic of Kazakhstan, 2004) was adopted for the production of petrochemical products with high benefit in the Republic of Kazakhstan. As part of this program, the country's largest Atyrau oil refinery was modernized. Today Kazakhstan is focused on increasing the output of two types of petrochemical products (polypropylene). Starting from 2021, the Atyrau oil refinery plans to increase the production of petrochemical products – polypropylene up to 500 thousand tons per year. Operator is Kazakhstan Petrochemical Industries Inc., LLP. The expected production capacity is 500 thousand tons of polypropylene per year. Manufactured products are various grades of polypropylene homopolymers, polypropylene. Most of the grades produced will be intended for fiber production (25 grades) and injection molding (21 grades). There will also be produced grades of homopolymers intended for films (7 grades), cast film (5 grades), thermoforming (4 grades) and other products (3 grades). The plant will be focused on the export of manufactured products and the domestic market of Kazakhstan.

The plant is currently under construction and is expected to start in August 2021. The amount of capital investment was about 1.7 billion United States (US) dollars. The plant is located on the territory of the Special economic zone “National industrial petrochemical Technopark”, the purpose of which is to develop the petrochemical industry in Kazakhstan by providing tax incentives. Industrial complex of Kazakhstan Petrochemical Industries Inc., LLP includes:

- a propane dehydrogenation unit with a capacity of 503 thousand tons per year. Propane processing will be carried out using Lummus Catofin technology;
- a propylene polymerization unit with a capacity of 500 thousand tons per year. The processing of propylene will be carried out using the Lummus Novolen technology;
- finished goods warehouse for product packaging 1.5–1.8 thousand tons per day.

The main asset for the propane dehydrogenation (PDH) unit is liquefied propane, which will be supplied to production in tanks by rail from the Tengizchevroil field. It is expected that the project will be highly competitive in terms of cost relative to the world's largest exporters due to the low cost of propane, which will fully utilize the plant's 500 000 tonnes of capacity. The project can provide the lowest cost even in regions geographically remote from Kazakhstan, such as China or Western Europe. The low share of transportation costs in the cost structure of polypropylene expands the possible geography of supplies to various geographically remote countries. If characterize polypropylene as a commodity product, can say that polypropylene is a synthetic thermoplastic polymer belonging to the class of polyolefins, a product of propylene polymerization, a white solid. Polypropylene is divided into two types: polypropylene homopolymer and polypropylene

copolymer (Suerbaev et al., 2007, 2012; Appazov et al., 2017). The second type contains ethylene, which gives the final product additional properties (frost resistance, elasticity). Polypropylene is used as a raw material in the injection molding process, in the production of synthetic fibers, films, and in the production of plastics by extrusion. The key end-use industries for polypropylene are:

- packaging: films, containers, bags, bottles, containers for cargo transportation;
- electronics: household appliances, insulating shells;
- automotive: shock absorbers, body and interior parts, batteries;
- consumer goods: equipment, household goods, toys, furniture;
- construction: pipes, windows, geotextiles;
- other industries: medicine (inhalers, syringes, hygiene products), agriculture (films, pipes), etc.

Polypropylene is produced by polymerizing propylene.

Propylene, in turn, is obtained in several main ways:

- steam cracking (raw materials are naphtha, ethane, propane, etc.) – more than 50% of the world's polypropylene production capacity;
- a by-product of oil refining – about 25% of the world's polypropylene production capacity.

In recent years, methods for the targeted production of propylene have gained popularity:

- dehydrogenation of propane (PDH, propane is the raw material) – more than 10% of the world's capacities, it has experienced significant development in recent years thanks to the development of offshore gas fields in the United States, which serves as a raw material for the production of propane;
- logistics technology (methanol is the raw material) – about 7% of the capacity.

From 2015 to 2019, global consumption of polypropylene grew faster than the global economy due to the active replacement of traditional materials in construction, automotive, electronics, and packaging, and in 2019, global consumption was 73 million tons. In the long term, demand for polypropylene is projected to grow by 3.6% per year on average, largely due to increased consumption in developing countries. At the same time, demand in developed countries is expected to slow down due to the saturation of markets with polypropylene and the completion of the process of replacing traditional materials with plastic in most consumer industries. The key consumer regions are China, North America and South Asia (Table 1).

Global polypropylene production grew at an average rate of 3.8% between 2015 and 2019. About a third of the world's production is concentrated in China. The largest producing countries besides China are the USA, India and Saudi Arabia (Table 2).

Global polypropylene imports grew on average by 3.6% per year in the period 2015–2019 and amounted to 30 million tons in 2019. The world's largest importing regions are China, Western Europe and Southeast Asia. In total, the three key importers account for almost half



Table 1. Structure of world consumption of polypropylene, %

Region	Years				
	2015	2016	2017	2018	2019
China	33	34	35	36	37
North America	13	12	12	12	11
South Asia	8	8	8	8	9
Southeast Asia	7	7	7	8	8
East Asia (cut to China)	6	6	6	6	5
Western Europe	6	6	6	5	5
Other regions	27	27	25	25	25

Table 2. Structure of world polypropylene production, %

Region	Years				
	2015	2016	2017	2018	2019
China	27	29	20	31	32
Near East	13	13	12	12	12
North America	12	12	eleven	eleven	ten
East Asia (except China)	ten	ten	ten	ten	ten
Western Europe	ten	ten	nine	nine	eight
Southeast Asia	7	7	7	eight	eight
Other regions	20	20	20	20	20

(45%) of world polypropylene imports. The world's largest exporting regions are the Middle East, Western Europe and Southeast Asia, providing more than half of the world's polypropylene trade. The Middle East is the largest exporter of polypropylene due to its low production costs. The key exporting countries are Saudi Arabia and the United Arab Emirates (UAE). High export volumes in Western Europe are due to intensive trade within the region, as well as supplies to other European countries. Despite the high costs of polypropylene production, European consumers are focused on regional purchases, which guarantee the stability and quality of supplies. Key suppliers are Belgium and Germany. South Korea is the second largest exporting country after Saudi Arabia.

Investment cycles are typical for the global polypropylene market. Over the past 5 years, authors have seen an increase in the current capacity utilization of key world exporters (Middle East, South-East Asia, East Asia, and Europe). Currently, a new investment cycle is entering the global polypropylene market, in which global capacity is expected to increase by 15% (12 million tons). Despite the introduction of additional capacities for the production of polypropylene, the products of the Kazakhstan Petrochemical Industries Inc., LLP Project in the amount equal to the production capacity (up to 500 thousand tons) may be a competitor compared to key producers in the target markets due to the low cost of production. Due to the high utilization of current capacities, it is expected that Kazakhstan's key competitors will increase their polypropylene

production capacity by almost 8.5 million tons by 2025, and by another 5 million tons by 2030. Mainly suppliers from South-East Asia, Russia, and the Middle East will provide the growth. The Turkish market is characterized by a high level of consumption and undeveloped domestic production, which causes a significant volume of imports (1.8 million tons in 2019). At the same time, in the long term, import growth is projected at an average of 2.5% per year. Turkey is one of the most geographically close markets to Kazakhstan and is characterized by a high netback compared to Asian markets. Western and southern Europe are also major importers of polypropylene: 2.6 million tons and 1.7 million tons in 2019, respectively. Despite the fact that the market is expected to stagnate consumption and imports, the European market remains the most attractive in terms of product cost and netback (Park et al., 2020).

A significant volume of imports (1.6 million tons) characterizes the Eastern European market, while the melon market is one of the most developing, where the expected growth rate of consumption will be 2.7% on average per year. The Eastern European market has not yet reached saturation, which is reflected in a rather low indicator of polypropylene consumption per capita. In addition, this market is the most attractive in terms of netback value and delivery availability. China is the largest importer of polypropylene in the world (3.5 million tons) and, despite the introduction of a significant amount of its own capacity; imports in the country are expected to increase to 6.5 million tons by 2030. At the same time, the Chinese market is quite competitive and is characterized by low entry barriers for new players. The share of imports in the Russian Federation market has historically not exceeded 0.2 million tons, or 15% of consumption (Ozdoyev et al., 2019). The Russian market is one of the most marginal with an attractive netback. However, capacity in Russia is expected to increase from 1.7 million tons to 3.7 million tons by 2030. Some of these capacities will be export-oriented, but a number of new production capacities will be introduced in regions that are geographically affected by Key Performance Indicators (KPI). Capacity in the regions close to Kazakhstan will grow by 750 thousand tons to 1.340 thousand tons in the next 5 years. In this regard, it is predicted that the share of Russia in the supply of Kazakhstan Petrochemical Industries Inc., LLP for export will be insignificant.

According to the planning, it is expected that after commissioning, the Kazakh enterprise should focus on large spot markets, such as Turkey and China, where it is possible to increase sales in a relatively short time within 1–2 years at the expense of competitive prices and, thus, load production capacity as quickly as possible. In the future, within 3–4 years, the Kazakhstan petrochemical plant has the opportunity to enter and increase sales in more marginal European markets, thereby redistributing sales between target regions (Coggona et al., 2021). Longer access to European markets is due to a relatively small share of the spot market, as European consumers

have high requirements for supply stability and product quality (Francis Prashanth et al., 2021). It is predicted that the supply of Kazakhstan Petrochemical Industries Inc., LLP to export markets may reach more than 460 thousand tons of polypropylene homopolymers in 2025, which, taking into account supplies to the domestic market of Kazakhstan, will fully load the enterprise's capacity (homopolymers are the main type of imported polypropylene). In 2019, the share of polypropylene homopolymers was 68%. The structure of world trade by types of polypropylene has remained stable over the past 4 years. The revenue of the Kazakhstan Project from the export sale of this type of petrochemical products may amount to almost 600 million US dollars after commissioning and reaching the design capacity in 2024, with an increase in the volume of commercial products to 740 million US dollars by 2030.

Historically, one of the highest prices for polypropylene characterizes the European market. This is because local consumers prefer deliveries from local European Union (EU) manufacturers, as they are more reliable and provide the necessary quality and delivery time of products. At the same time, the production of polypropylene in Europe has a fairly high cost due to the high cost of raw materials, and as a result, a high sales price. The reason for the relatively low price level in China is high competition between "cheap" middle Eastern producers, as well as large Asian exporters (South Korea, Singapore, etc.), which have a short transport shoulder to the Chinese market. The Turkish market is characterized by a slightly more attractive price compared to China due to less competition in the market between exporters, which is due to the greater distance from major manufacturers in Southeast Asia (Sherwood, 2020).

It should be noted that the ratio of prices in the markets has been maintained for a long time, despite the different intensity of new capacity development in different regions. The main factor in this is the relatively low share of transport costs in the cost of polypropylene production, which makes it possible for major exporters, in the event of increased competition in one of the markets, to reorient their production to other regions, thus preserving the historical supply-demand ratio between the markets. Prices in China and Turkey are formed based on Cost and

Freight (CFR), since the main part of polypropylene is delivered to these countries through seaports. The spot price in Europe is calculated based on free delivered (FD) for Western Europe. This basis includes the cost of delivery to the final consumer, including payment of import duties. At the same time, the spot quotation for Western Europe is also applicable for the markets of southern and Eastern Europe, due to the almost identical price level in these markets (Figure 2).

Predictive analysis of sales and exports of polypropylene produced Kazakhstan Petrochemical Industries Inc., LLP by 2030 is presented in Table 3.

Table 3. Market share of Kazakhstan in export of polypropylene to world markets (forecast), %

Country	Years						
	2021	2022	2023	2024	2025	...	2030
Turkey	3	7	ten	ten	eight	...	7
Western Europe	0	0	1	3	3	...	3
Southern Europe	0	0	1	3	3	...	3
Eastern Europe	1	1	2	five	6	...	6
China	2	3	3	3	2	...	1

According to the project's business plan, Turkey will be one of the main buyers of Kazakhstan's petrochemical products-polypropylene (29%). The main aspect of competitiveness in the middle East region is price. Local consumers, as a rule, do not have strict requirements for quality or delivery conditions. The spot market segment prevails (90%). Higher netback compared to China. The Turkish market is likely to be particularly important for the Project in the first years after launch, since this market can increase the volume of deliveries in a relatively short time with acceptable margins. At the same time, in the following years, there will be a need to enter more marginal and premium markets for polypropylene in Europe. It is planned to export 18% to Western Europe and 12% to Southern Europe. European consumers have serious requirements for long-term sustainability of supply and product quality. For this reason, reliable European suppliers dominate both markets.

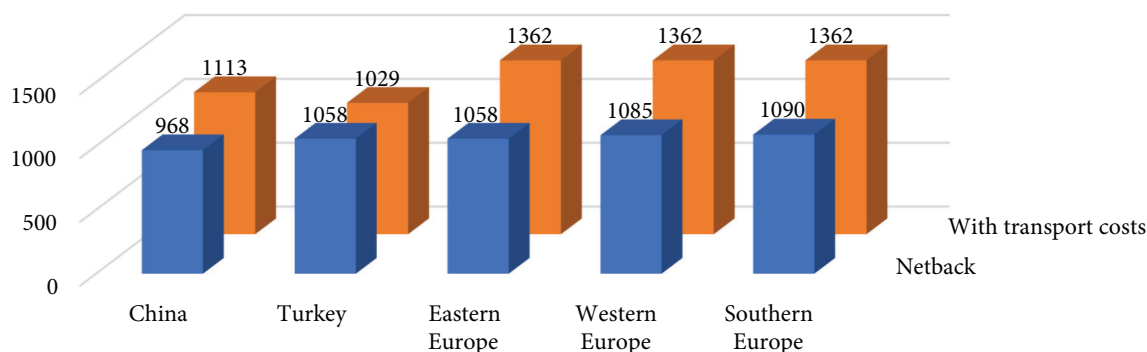


Figure 2. Netback in Kazakhstan on target markets, \$/ton (polypropylene)

The worldwide economic crisis caused changes in the oil business. One of the movers in this area is the Republic of Kazakhstan. As a result, there was a need to increase petrochemical product production and market share. The availability of petrochemical products and net cost make polypropylene manufacture the most alluring. Such a project can play a significant role in the polypropylene production business because it is competitive (Bekbauov et al., 2016).

A significant share of sales on a contract basis (about 60%). However, it is most attractive in terms of netback. As the region is more difficult for new suppliers to enter, it is expected that the Project will take up to 5 years to reach the target shipment volumes. 23% of the annual production of polypropylene is planned to be supplied to Eastern Europe. This region is in its infancy and is characterized by a large number of small

consumers. In this market, it is usually easier for new suppliers to organize sales of products. The region as a whole is also characterized by high consumer requirements for product quality and delivery conditions, but, as a rule, they are slightly lower than in other European regions due to the less developed market. The Chinese market is almost entirely spot market, where price is the main factor of competition. It is planned to export 15% of the annual production volume to this region. The Chinese market is at the same time the largest, but also the least marginal due to high competition in the region. Despite the significant geographic distance, the Project is competitive in terms of cost and can switch to itself certain market volumes. Table 4 presents SWOT (strengths, weaknesses, opportunities, threats)-analysis of the Project for the production, marketing and export of polypropylene in Kazakhstan.

Table 4. SWOT-analysis of the Project on the organization of production and marketing of polypropylene

Strengths of the Project	Weaknesses of the Project	Project Opportunities	Potential threats to the Project
Possibility to purchase propane (key raw materials) at prices on preferential terms with Tengizchevroil, which will allow the Project's products to be one of the most competitive in the analyzed target markets.	High barriers to entry into the most marginal market – Western and Southern Europe (low spot market share, predominance of fixed-term contracts, high requirements for product certification, requirements for delivery times and security of supply).	There is potential for expanding the geography of target markets for finished products. The most promising areas of implementation can also include the least marginal, but fast-growing markets in India and Southeast Asia.	Risk of impossibility of execution by Tengizchevroil propane supply agreements in terms of pricing policy or sufficient supply volumes, which can lead to an increase in production costs and a decrease in competitiveness.
A wide geography of supplies and a diversified planned structure of sales by country of purchase.	The start of operation of the enterprise (2021) falls on the beginning of the investment cycle in the global market, when in the next 5 years a “wave” of commissioning of new capacities and a decrease in the utilization of enterprises are expected.	Rather dynamic growth rates of polypropylene consumption in the world are expected: the growth rates may exceed the growth rates of the world economy, which is associated with the continuation of the trend of replacing traditional materials (metals, wood, and glass) with polypropylene.	New environmental restrictions on the use of primary polymers, including polypropylene, are possible.
Widely planned brand diversification of polypropylene homopolymers.	More significant transport advantage from Kazakhstan to all target markets in comparison with most competitors, as well as rather complex multimodal logistics routes. Despite the fact that the cost of transport advantage, as a rule, does not exceed 20% of the total cost of products, the existing logistics can greatly affect the timing and continuity of supplies.	The COVID-19 pandemic has given additional impetus to the development of online commerce and delivery as an additional factor in the growth of demand for packaging.	The emergence of new players on the world market is expected, for example, the growth of export of competitive products from Russia.
State support for the project, including preferential tax treatment within the Special Economic Zone “National industrial petrochemical Technopark”.		The trend towards lighter materials used in various industries and consumer products is expected to continue, which is driving the use of polypropylene.	
Possibility of using the existing infrastructure for building logistic routes.		Environmental restrictions are predominantly focused on Polyethylene terephthalate (PET) and polyethylene, which allows polypropylene to displace other types of plastics in some segments (for example, replacing disposable plastic bags with reusable nonwoven polypropylene bags).	

## Conclusions

The economies of the oil producing countries are currently at a level of uncertainty, as the COVID-19 pandemic has negatively affected the global oil and oil products market the most. Analysts predict a global decline in oil consumption in 2021 relative to 2019. According to leading analysts, the recovery of global demand to the level before the crisis consumption will take about 5 years. Quarantine, which takes place in almost all countries – the largest oil consuming countries, limited the functioning of the sectors of economies – buyers of oil and oil products: the industry – aviation, water and road transport. As demand for crude oil and petroleum fuels declines, many countries are moving to diversify their refineries towards deep processing of hydrocarbon resources.

The oil industry underwent reorientations due to the world global crisis. The Republic of Kazakhstan is one of the leaders in this field. Therefore, there was a need to expand the production and market of petrochemical products. Polypropylene production is the most attractive in terms of net cost and availability of petrochemical products. Such a project is competitive, so it can occupy an important place in the polypropylene production. The analyzed information will be useful for further research and improvement of the market economics of petrochemical products.

The ways of using polypropylene in the national economy are substantiated. The analysis of the world demand for polypropylene, the structure of its consumption and production in the context of world economic regions, is considered the main world importers and exporters of polypropylene. The effectiveness of the implementation of the investment project to organize the production of polypropylene in Kazakhstan is presented in the form of a predictive analysis of the supply of marketable products to the markets of individual countries: Turkey, Western, Southern and Eastern Europe, China, and the Russian Federation.

An analyzed example of the active involvement of investments in the oil refining industry is the construction of a complex for the production of polypropylene in the Atyrau region with a capacity of 500,000 tons per hour and a cost of \$1.7 billion. The project can provide the lowest cost of refined products even in regions geographically distant from Kazakhstan, such as China or Western Europe. The implementation of this project will attract investments in the amount of about \$11 billion, create more than 13,000 jobs during the construction phase and more than 1,500 permanent jobs. In addition to the above-mentioned project, projects with a total cost of 3 billion US dollars, which are planned to be implemented in Zhambyl, Atyrau, and Turkestan regions, are currently at various stages of development.

High barriers to entry to the most marginal market, a “wave” of introduction of new capacities and a decrease in the workload of enterprises – all these factors can negatively affect investment projects related to

the oil refining industry. The insufficient statistical base makes it difficult to make more specific assumptions about the development and further operation of new oil refining complexes in the future. Therefore, there are enough sides to this research question that need to be covered significantly. This article can be a basis for future scientific works, which will include information about investing in the oil refining industry of the Republic of Kazakhstan.

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