

WAYS OF DEVELOPMENT OF THE CHEMICAL INDUSTRY AND ITS EXPORT OF SOUTH KOREA

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ABSTRACT

This article examines the current state of the chemical industry in South Korea, the country's main chemicals, the largest enterprises in the chemical industry and their revenue, exports, imports and trade balance in chemicals trade. And also, the programs and legal acts on the regulation of the chemical industry of South Korea were studied.

KEYWORDS: *Chemical Industry, Enterprises, Revenue, Export, Import, Balance Of Trade, Regulation, Industry, Chemicals.*

INTRODUCTION

Over the past century, the Republic of Korea has gone from one of the poorest countries in the world to a country with an exemplary model of an industrially and economically developed type. Because of this, members of the administrative apparatus and researchers from developing countries with the prospect of economic development through industrialization began to show interest in the Korean economic strategy. Since this experience can become a very important factor in the formation of the economies of those countries that have not yet reached the level of developed countries.

Despite the fact that the South Korean petrochemical industry is quite young (its development began in the 70s of the XX century), it is one of the most important sectors of the country's economy. Since the late 1980s, the demand for petrochemical products has grown one and a half times faster than the country's gross national product.

LITERATURE VIEW

Below is a list of researchers who have previously worked on the development of this topic.

Research in the field of the history of the development of the Korean economy was conducted by: Song Chang-hwan (1959), Kim Yong-bong [1] (1984), Cho Sun (1988), Cha Myung-soo (1988), Lee Dae-geun [2] (2005), Song Tae-kyung (2013), Park Myung-ho [3] (2013), Ha Yong-soo (2014), Joo Sung-hwan, Kim Jin-wook (2015), Lee Yong-hoon [4] (2016), etc.

In the works of these scientists, the history of economic development was considered in the period from the XVII century to the present day and taking into account political, social and educational factors.

Research in the field of the Korean economy in Russia is represented by the works of the following authors: general history of the Korean economy: Irgebaev A.T.[5], Osipov V.I. (1990), Sinitsyn B.V. (1967) and others; history of the development of the Korean economy: Hwak Shin Hyun [6] (1990), Levchenko G.Ya (2006), Vorontsov A.V. (1998), Anosova

L.A.[7], Matveeva G.S. (1994) and others; crises of the Korean economy: Osipova O.A., Pukhov A.G. (1999), Polekhin A.S. (2000), Andrianov V.D. (1999) and others.

RESEARCH METHODOLOGY

This work is an abridged version presenting the results of the research work carried out by the author in the direction of studying the positive and negative factors of development in the economic history and chemical industry of South Korea. The paper uses the following methods: content analysis, which allowed aggregating existing approaches to understanding the essence and tasks of the mechanisms of development of South Korea; scientific synthesis aimed at developing practice-oriented solutions on the stated topic.

ANALYSIS AND RESULTS

The chemical industry of South Korea is the fifth in the world and the third in Asia in terms of volume in monetary terms [8]. In the structure of the gross value added of South Korea, the manufacturing sector occupies 28.7%. The production of chemicals and chemical products is the second largest manufacturing industry, accounting for 2.4% of the country's GVA or \$34.4 billion [9].

Against the backdrop of the economic downturn of 2019 and the crisis of 2020, the value added dropped to the levels of 2015. The market volume of chemicals and chemical products in South Korea in 2020 amounted to \$ 157 billion. In the next few years, low growth rates are projected – 1.6% per year [10], with the average annual GDP growth rate of South Korea in 2010-2019 at 3.3% [11] and the forecast for 2021 and 2022 at 3.8% and 2.8%, respectively [12].

The average annual growth rate of chemicals and chemical products in the period from 2009 to 2019 was 3%, which is higher than in the US, EU and Japan (1.3%, and 1.4% and 1.5% respectively), but less than in China (9.3%), and Russia (5,5%)[13].

The market is based on large-tonnage basic chemicals and products, which account for 85.1% of the market [14]. The structure of shipments in monetary terms is dominated by basic chemicals with a share of 43%, other large segments are plastics and synthetic rubber in primary forms (27%) and detergents and cosmetics (10%) (Fig. 1)[15]. The structure of sales by product type has not changed for several years.

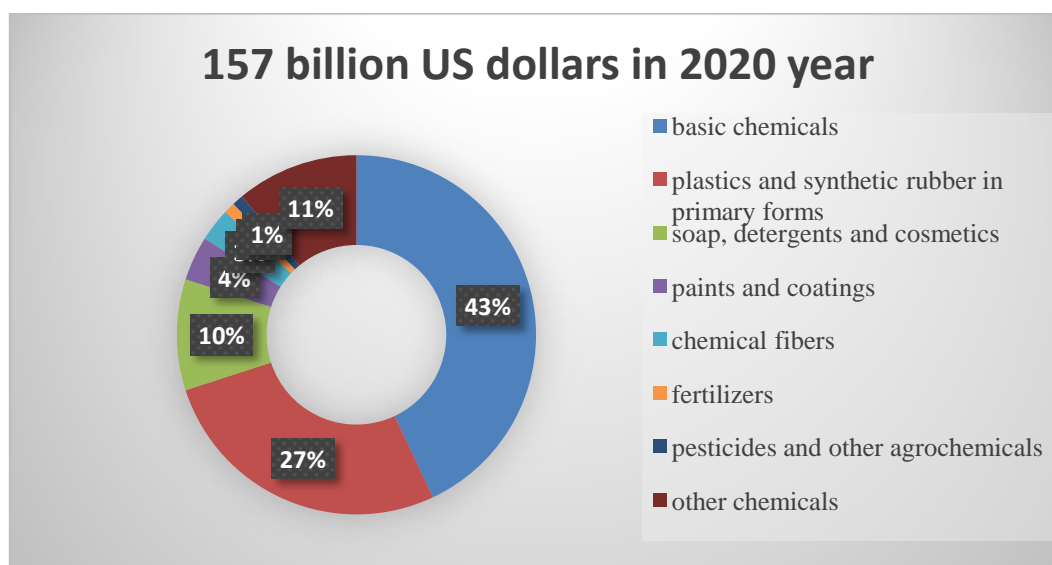


Fig.1. Revenue structure of the South Korean chemical industry by product

The largest enterprises of the chemical industry in South Korea diversify their revenue by product types. The market leaders are (Fig. 2):

- LG Chem is the largest company by revenue, produces a wide range of products (PVC, acrylates, specialized plastics, etc.)
- Lotte Chemicals is a manufacturer of petrochemical raw materials, aromatic substances, and large-tonnage chemicals
- Hanwa Chemicals – manufacturer of basic chemicals, specialized materials
- SK Innovation is the largest petrochemical company producing lubricants and chemical products. The company has the largest oil refinery in South Korea and 34% of the retail fuel sales market in the country [16].

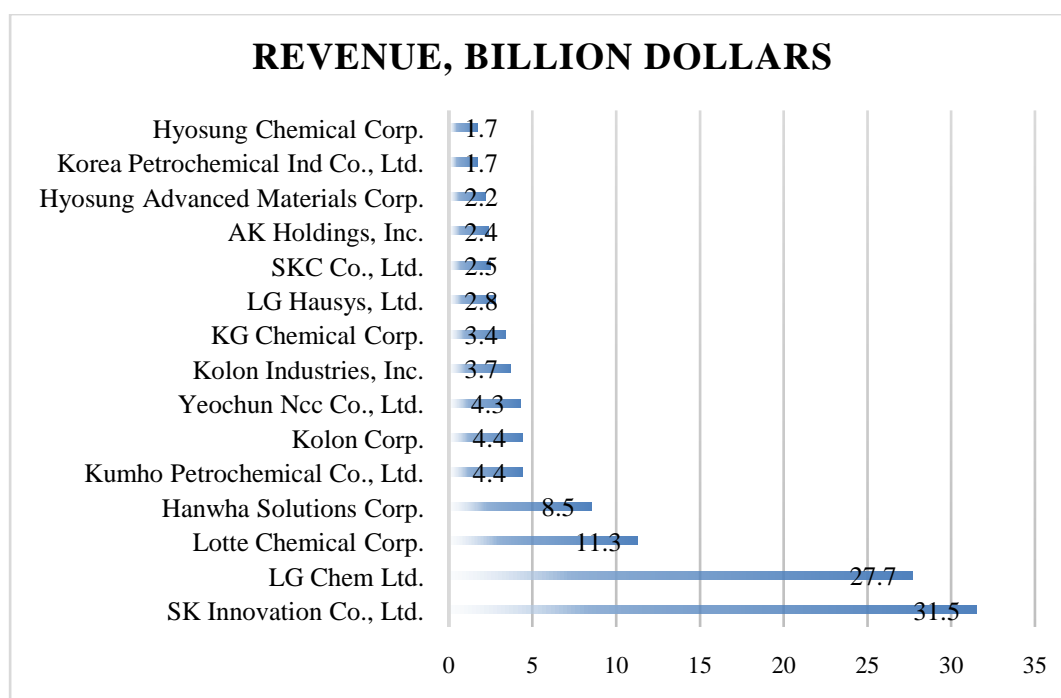


Fig.2. The largest chemical industry enterprises in South Korea by revenue, 2020 y.

It is worth noting that each of the 25 largest chemical companies in the world has production facilities in South Korea [17].

The volume of exports of chemicals and chemical products from South Korea in 2020 amounted to \$ 65.6 billion (Fig. 3). Exports accounted for 41.8% of the revenue structure, which underlines the impact of the industry on international trade. The volume of imports amounted to \$40.8 billion in 2020, which forms a positive trade balance of \$24.8 billion. South Korea's key trading partners are China, the United States and Japan. The main exported goods are industrial equipment, cars and spare parts, but chemicals and chemical products are also among the ten largest types of products by volume in value terms. Among the exported goods are plastics and basic organic chemicals, and among the imported ones are basic organic chemicals, plastics and chemical products [18]. South Korea is focused on the import of raw materials and intermediate products, including high-tech, their processing and export of the resulting products.

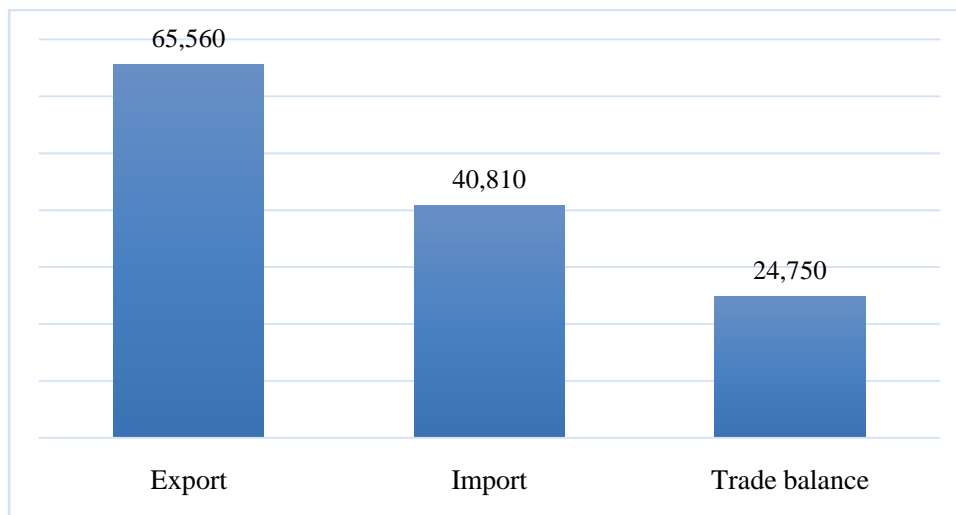


Fig.3. Export, import and trade balance of South Korea on trade in chemicals, million dollars, 2020

The country is moving away from traditional chemical segments. Industries such as pesticides, dyes and pigments, to the production of end products and materials for electronics. The industry focuses on increasing added value, quality, specialization in the production of chemical products for manufacturers of automobiles and electronics [19].

The key document defining the development of South Korea's industry is the Manufacturing Renaissance Vision program.

The program highlights the directions of industrial development until 2030, defines goals and measures to achieve them. Within the framework of the program, 3 areas of industrial development are highlighted.

Accelerating manufacturing innovation with a focus on smart, eco-friendly and connected technologies

- Development of a national strategy in the field of artificial intelligence;
- Creation of 30 thousand "smart" productions in which equipment and processes function through the Internet of Things;
- Creation of 2 thousand intelligent factories based on artificial intelligence by 2030;
- Tax benefits for "green" investments;
- The Clean Factory project, which provides for reducing emissions of pollutants;

Developing new innovative industries and increasing the added value of existing industries

- Provision of public and private investments in industries such as semiconductor manufacturing, biotechnology, cars of the future;
- Development of roadmaps for new industry technologies;

Transformation of the industrial ecosystem (personnel, technology, finance and procurement) with a focus on innovation

- Creation of a government-wide "roadmap" for personnel development;
- Development of an innovative scheme of engineering education;
- Creation of an accelerated procurement system for innovative products;

State support of the industry is aimed at reorienting production from large-tonnage chemicals and chemical products to high-tech environmentally safe functional materials - for example, plastic for the production of flexible displays, high-tech epoxy molding masses [20]. The measures include public investments in priority areas of research and development.

CONCLUSION

State national research institutes are being established for the development of research and development in the chemical industry. One of the largest institutes is the Korea Research Institute of Chemical Technology (KRICT), whose activities are aimed at increasing the competitiveness of the industry [21].

An important area is the development of international trade. South Korea has free trade agreements with the United States, the European Union, China and other countries [22], which implies preferential terms of trade, the abolition or reduction of customs tariffs. Negotiations on the conclusion of a free trade agreement are underway with Russia [23].

Regulation of the production of chemicals, aimed, among other things, at environmental safety, is carried out through the following main regulatory legal acts:

- The Chemical Controls Act – aimed at regulating hazardous substances and responding to incidents;
- K-REACH (the Act on the Registration and Evaluation of Chemicals) – describes the registration and evaluation of new and existing substances.

Provisions for various types of products are described by separate regulatory legal acts. For example, the regulation of fertilizer production describes the Fertilizer Control Act [24].

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