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## THE ROLE OF THE COPPER CLUSTER IN THE INNOVATIVE DEVELOPMENT OF ELECTRICAL ENGINEERING ENTERPRISES

Submission Date: April 20, 2023, Accepted Date: April 25, 2023,

Published Date: April 30, 2023

Crossref doi: <https://doi.org/10.37547/ijmef/Volume03Issue04-04>

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### ABSTRACT

The rapid development of the global green economy, the increase in the production of renewable energy sources and electric cars are increasing the demand for the electrical engineering industry. In our country, in the conditions of modernization of the economy and transition to innovative production, deep quality changes are taking place in the branches of the electrical engineering industry. This article is devoted to the discussion of reforms, strategies and methods that should be implemented in this direction.

### KEYWORDS

Innovation, innovative potential, real sector, electrotechnical industry, modernization, diversification.

### INTRODUCTION

Ensuring a high level of competitiveness of industrial enterprises operating in the national economy of countries, successful implementation of all plans for the comprehensive development of our regions, in turn requires the establishment of an effective

innovation system. We can create a stable economic environment by supporting the enterprises of the real sector of our country's economy, first of all, by modernizing production, expanding cooperative relations, establishing strong cooperation, stimulating

domestic demand for products produced in our country, and increasing the innovative potential of enterprises [1].

In recent years, the electrical engineering industry in our country has developed rapidly and is becoming the main link of our industry. For this purpose, one of the most important priority tasks in the focus of the "Strategy of Actions" for socio-economic development of our republic for 2017-2021 is "increasing the share of industry in the structure of the national economy, rapid development, modernization and diversification of high-tech industries, industrialization of each region priority tasks have been set for ensuring comprehensive and effective use of its potential. After that, the decree of our president on the new "Development strategy" of Uzbekistan for 2022-2026 was signed, in which expansion and support of the use of renewable energy sources and social, commercial and administrative energy efficiency improvement programs of buildings and structures were adopted [2,3,4].

It should be noted that the development of theoretical and methodological bases for improving the innovative potential of industrial enterprises in the conditions of international competition and modernization of national production is being studied by the scientists of our country as a special, independent object of scientific research [4,5,6,7,8].

Research methodology

The article uses methods of observation, abstract-logical thinking, systematic approach, and economic interpretation. In particular, it is carried out by analyzing the problems of innovative activity in the electrical engineering industry with the help of a systematic approach, setting the tasks correctly in the research process and finding their solution and economic interpretation [9-14]. The state of development of the electrical engineering industry market is evaluated through the monitoring method and formed on the basis of reliable sources through logical thinking.

Analysis and results

In recent years, positive dynamics have been observed in the development of the electrotechnical industry of our country, and it is expected to become one of the "drivers" of the development of the economy of Uzbekistan. In the "Strategy of Development of New Uzbekistan for 2022-2026" during this period, the task is to increase the volume of production of industrial products by 1.4 times, including the volume of production of high added value products in the electrical engineering industry by 2 times, and the export by 3 times. About 500 production enterprises are operating in this sector in our country. Most of them are considered small enterprises, producing more than 2,000 products. 32,000 people are working in the industry. The largest 86 enterprises that produce more than 90 percent of the total volume of electrical engineering products are part of the "O'zeltexsanoat"

association, and 39 of them produce household appliances, 17 of them produce cable-wire products, 30 of power equipment and other electrical engineering products [15-19].

In the five-year period from 2017 to 2021, the volume of products produced by electrical engineering enterprises increased 5 times, that is, from 3.4 trillion soums to 16.7 trillion soums, household appliances - 6 times, cable-wire products increased by 1.5 times, power equipment and other products by 8.7 times.

The President's decision PQ-5011 of March 2, 2021 defined the main indicators of the development of the electrical engineering network for 2021-2022. These

indicators were more than fulfilled by the end of 2021.

In particular, the volume of production was 16.7 trillion soums (15 trillion soums according to the plan), the export volume was 562.5 million dollars (450 million dollars according to the plan).

In the first half of 2022, the volume of products produced by electrical engineering enterprises increased by 14.2% compared to the same period last year, i.e. from 7.21 trillion soums to 8.23 trillion soums. At the same time, according to the results of 6 months, the share of industrial products in the total volume of manufactured industrial products (in 2021) decreased from 3.6 percent to 3.27 percent this year.

**Table 1. Indicators of the volume of production of electrical engineering products**

<i>Types of products</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>	<i>2021 (6month)</i>	<i>2022 (6month)</i>
All	3375.4	4432.3	7644.4	12618	16695.9	7207.2	8229.3
Household appliances	927.0	1040.0	2097.0	4730.0	5598.6	2211.5	2732.6
Share of total volume	27.5%	23.5%	26.4%	37.5%	33.5%	30.7%	33.2%
Cable-wire	1717.9	1617.2	2628.9	2645.0	4738.7	2507.8	3005.2
Share of total volume	50.9%	36.5%	33.1%	21.0%	28.4%	34.8%	36.5%
Power equipment and other products	730.5	1775.1	3218.5	5243	6358.6	2487.8	2491.6
Share of total volume	21.6%	40.0%	40.5%	41.6%	38.1%	34.5%	30.3%

In addition, based on the results of the 6 months of 2022, the share of electrotechnical products in the gross added value of the processing industry (according to IFUT 26-27) is "Production of computer, electrical and optical products" type of activity compared to the same period last year. decreased

from 2.2 percent to 1.5 percent, while "production of electrical equipment" remained unchanged and amounted to 1.6 percent.

"According to the results of the first half of 2022, the total volume of export of electrical engineering products increased by 52.8%, including household

appliances by 59.3%." In the first half of 2022, compared to the same period last year, the highest growth rates are household appliances (up 23.7 percent, i.e. from 2.21 trillion soums to 2.73 trillion soums), cable and wire products (by 19.8 percent, i.e. from 2.5 trillion soums to 3.0 trillion soums) was observed in the production sector, the production volume of power equipment and other products did not change and 2.5 trillion

soums organized. For example, in the first half of this year, 302,600 units of refrigerators and freezers were produced, which is 7.4% more than the same period last year (281,800 in 2021, 185,300 in 2020).

According to the results of the first half of this year, cable and wire products - 36.5%, household appliances - 33.2%, power equipment and other products - 30.3% took the largest share in the volume of production.

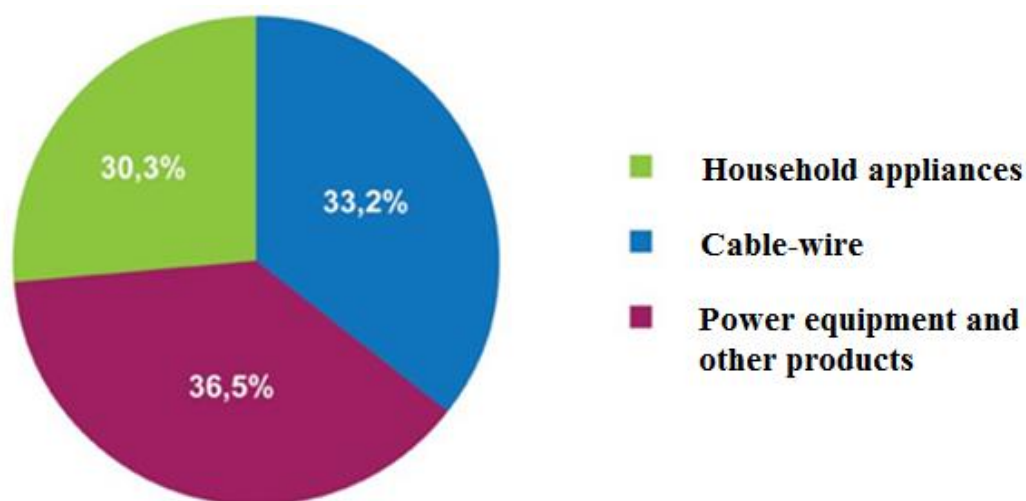


Fig. 1. Indicators of the volume of production of electrical engineering products

It is worth noting that due to the rapid development of the global green economy, the increase in the production of renewable energy sources and electric cars, the demand for copper in the world is expected to increase by 40% by 2030. This, in turn, raises the need for further processing of OKMK raw materials and the transition to the production of products with high added value. At the moment, the income of Uzbekistan from the copper industry is 2.5 billion dollars. By 2029, with an increase in copper production to 400,000 tons, this indicator can reach 7-8 billion US dollars due to the

creation of high-value finished product production capacities, taking into account related industries. For this purpose, on June 24, President Shavkat Mirziyoyev's decision PQ 5159 "On additional measures for the development of the mining and metallurgical industry and related industries" was adopted on the establishment of a copper industry cluster [20-24].

Within the framework of the copper industry cluster, deep processing of copper will amount to 320,000 tons by 2029. Proposals aimed at the production of finished products with high added value from copper and

copper-based alloys, i.e. 40 promising projects, were developed in the republic.

"The concept of the development of the technological center for the development and introduction of innovative technologies, as well as the concept of the scientific-technological center of rare metals and alloys under Almalik KMK JSC, was developed and introduced to the official ministries and agencies. Implementation of 19 promising projects worth 75.2 million dollars and 8 projects to increase copper processing has been determined in this area. By establishing a new system of mutual cooperation between science and production, the technology of production of palladium today has been improved, and as a result, the labor intensity has been reduced from 54 processes to 14, and the purity of the metal has increased from 70 percent to 99 percent [25-28].

In order to increase the export potential of our country, to increase new types of products, to create new jobs, on the basis of the Scientific Production Association for the Production of Rare Metals and Hard Alloys, to expand the production chain of high-value-added products based on copper and rare metals 2022 —The program for 2026 has been developed.

The total cost of these projects is 65 million dollars and after the launch, 460 additional jobs will be created. In particular, the program includes promising projects such as powder for additive technologies (3D printing), production of complex-shaped parts for engines (gears, connecting rods, etc.), copper powder, thin

copper sheets and belts, electric motors, servo motors, graphite electric brushes received. In addition, the production of several types of new products was determined at the Angren Pipe Plant. These are copper fittings, capillary tubes, copper fittings, copper rings for strip coating. It is also planned to gradually increase the copper processing capacity of this plant. Currently, the plant processes 8,000 tons of copper per year, and in 2022, this figure is expected to reach 20,000 tons. Currently, the necessary documents of this project are being developed. According to the order of the head of our country, by 2026, 80% of the copper produced in our country will be processed. This will enable the production of high-value finished goods and create new jobs.

### CONCLUSIONS

Innovation is a state of continuous development, being the main factor of innovative economic activity, scientific and technical production process, being the main factor of practical active fundamental renewal and generation, fundamental scientific research should effectively lead to economic activity for the effective development of the economic system.

This sphere is new for our country, so certainly, we have several problems in this field. Namely:

- The field of electrical engineering is a new, not yet fully researched field for our country;
- The electrotechnical industry is not fully systematized in our country;



- Non-availability of mature specialists in the electrical engineering industry;

In order for innovative situation in the field of electrotechnical to function effectively, the following should exist and be formed in the country:

- Fundamental scientific research should be conducted based on the relevant economic policy for the effective development of economic sectors;
- It is necessary to establish new production enterprises, organize production of new types of products and provision of services at the expense of encouraging existing enterprises;
- Attracting a lot of investment in the field of electrical engineering;
- Attracting qualified specialists;

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