

## RUSSIAN REINDUSTRIALIZATION MECHANISM

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### ABSTRACT

Reindustrialization is a trend in the modern development of economic sectors. It forms a new understanding of the roles of industry, creates a new geography of productive forces, and ensures the transfer of all sectors of the economy to new high-tech foundations.

For Russian Federation, re-industrialization should be an ongoing process and its role is to create those industrial sectors on a new technological basis, the loss of which is fraught with a quick lag behind the leading countries and the consolidation of a regime dependent on external factors in industrial and technological development.

Reindustrialization can be implemented using various methods and methods, based on technological innovations, new knowledge, digital technologies, and lies in the fact that this large-scale event and comprehensive activities to change technological, production, economic and social processes. Without solving these problems, the effective development of production will become problematic, the more analysts connect the further growth of the world economy with industry and industrial sectors.

For successful re-industrialization in the country, cardinal changes in investment behavior, technological solutions, and organizational models are needed that will improve the efficiency of the entire process of updating industrial production. Only with an integrated approach can a sustainable technological modernization be achieved. In whatever situation the economy and the material sphere as a whole are, the strategic direction can only be the policy of reindustrialization.

**Disciplinary:** Management and Economic Science, Technological Modernization, Innovation and Sustainability Development.

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## 1. INTRODUCTION

In many countries, especially developed ones, there is a rethinking of the role of industrial

development, plans, programs, and strategies that are being developed for transferring all sectors of the economy to a new high-tech foundation. In these countries, it realized that further development of the economy is possible only based on orientation towards restoring the potential of industrial production, updating industrial capital, increasing its competitiveness through the achievements of scientific and technological progress.

Each country, depending on its characteristics, offers its methods of resolving problems associated with the development of industrial production. With the difference of these models for different countries, they have something in common, which is the main direction and this direction is the updating, modernization, and development of the material base of the economy on a new technological basis or reindustrialization.

Many researchers are involved in reindustrialization issues. S. Bodrunov [1], who was one of the first to deal with the issues of reindustrialization, made his contribution to the research of this subject, R. Greenberg [2] studied the industrial sectors that could form the core of reindustrialization, S. Gubanov [3] examined the features of neo-industrialization. Lenchuk [4] investigated the problems of deindustrialization, the causes of its occurrence and suggested solutions, N. Komkov [5] substantiated the technological aspects of reindustrialization, Romanova [6] examined the strategic foundations of reindustrialization, Sukharev [7] recommended approach to the re-industrialization as an economic policy. Foreign researchers are also involved in these issues, but they interpret reindustrialization as an industrial revolution. These include Rifkin [8], who represents reindustrialization as the third industrial revolution, Schwab [9] and Davis [[9] connect reindustrialization with digital technologies, Perez [10] and Freeman [11] determine the need for industrial policy, Reinert [12] proves the preference for the development of industrial sectors. The listed researchers and those who could not be noted contribute to the solution of the difficult problems associated with reindustrialization.

For the Russian economy, re-industrialization should be an ongoing process. Its role is to create, on a new technological basis, such industrial sectors that will not keep pace with leading countries and reduce dependence on external factors in industrial and technological development.

## **2. MATERIALS AND METHODS**

The study method is based on the use of a systematic approach and generally scientific methods: scientific abstraction, analysis, and synthesis, generalization, system-structural analysis. During the development of the proposed topics, classical and modern works of domestic and foreign scientists, statistical and empirical material collected in the process of field research were used.

## **3. RESULTS AND DISCUSSIONS**

The problems related to reindustrialization are so extensive that they require methodological and conceptual certainty. When we talk or write about this issue, we use such definitions as: “industrialization”, “deindustrialization”, “reindustrialization” or “new industrialization”, “neo-industrialization”. Each of these terms has its semantic load and its terminological purpose or replace each other.

The generic concept of these terms is the concept of "industrialization". According to the Great Soviet Encyclopedia, industrialization (from Lat. Industria - zeal, activity), is the process of creating large-scale machine production in all sectors of the economy and especially in industry.

Industrialization ensures the predominance of industrial production in the country's economy, the transformation of an agrarian or agrarian-industrial country into an industrial-agrarian or industrial one. Nature, pace, sources of funds, goals, and social consequences of industrialization are determined by the industrial relations prevailing in a given country. In the process of industrialization, the replacement of existing fixed assets by more productive machinery and equipment, the release of manual workers.

The essence of industrialization is the complete mechanization and partial automation of production, where people using machines within the framework of an industrial facility, industrial production produce various goods. In this case, the person carries out the operational management of production processes [13].

### **3.1 ASPECTS AND COMPLEXITIES OF REINDUSTRIALIZATION**

Reindustrialization is a complex concept, attached to it by the fact that it is used to justify the development of various industries that have different patterns of development. Machine-building, machine-tool industry, light industry, non-ferrous metallurgy, processing industry, etc., they all develop in different patterns, with their inherent features and specificity.

The use of aspects of reindustrialization is also associated with methodological difficulties, which are given to it by the lack of a universally recognized interpretation of this concept, with the definition of object boundaries, principles, and mechanisms.

The work [14] attempted to clarify the concept of “reindustrialization” and related definitions. We analyzed existing approaches to defining the concepts of “reindustrialization,” “neointustrialization,” and “new reindustrialization,” carried out a criterial analysis of the content of these terms and pointed out the main goals and instruments of the reindustrialization policy in modern foreign practice, and defined these terms.

Reindustrialization is associated with such definitions as restoration, transfer, modernization, structural adjustment, renewal, implementation, revival. With a difference in their understanding and interpretation of the substantive part, they all touch upon issues of updating (replacement), modification (change), innovation (innovation) of the production process of industrial branches or the whole industry.

Whatever term we use, they all agree on one thing. We are talking about the industry and industrial sectors, which must be subjected to various changes that will contribute to increased productivity and competitiveness. That is, we are dealing with a triad: industry - labor productivity - competitiveness. This is a general plan for reindustrialization or a strategic direction. How and how to implement reindustrialization depends on various factors, the methods used, as well as on the strategic goals that are planned to be implemented.

### **3.2 RE-INDUSTRIALIZATION STRATEGY AND POLICY**

As an example, we consider the work of a peasant farm (peasant farm), which located in the Kabardino-Balkarian Republic (Komsomolskoye, Prokhladnensky district). It was engaged in the production of livestock products (meat and milk), but the products did not bring sufficient profit and was unprofitable. The managers of the enterprise decided to change the development policy and chose as their re-industrialization strategy the milk production. The choice of such a system justified by advantage over other participants by three factors. First is the availability of land (pasture), second

is free space for the maintenance of the dairy herd, and the third was nearness to the milk processing factory.

The company bought 100 heads of Holstein-Friesian breed of cows. Purchased robotic milking machines of the German company Westphal-Mobile for these cows. In total, the cost of equipment amounted to 60 million rubles, of which 21 million rubles are government subsidies. Serving the animals and the equipment carried out by two people, all the processes for caring for the cows are automated.

The farm's production indicators are high, with an average annual milk yield of 9,500 kg, calf yield 98%, profitability from milk sales 28%.

In the immediate plans of the enterprise is to the construction of a new building for the installation of a second robotic line. The farm can afford this because it has a sown area of 1000 hectares. Also, some rooms will allow for installing new equipment and place livestock. Based on this, a decision was made in 2020 to double the number of cows. This issue will have to be resolve despite the difficulties created by the viral infection. They realized that animal husbandry is becoming a promising and profitable industry.

### **3.3 DILEMMA OF RELEVANT TECHNOLOGY**

The most severe problem of those who purchased robotic farms is the lack of local specialists who would understand the computer systems with which the equipment equipped. In the event of failure of a part or material, you have to consult with foreign specialists or colleagues from other regions, and sometimes they are invited to troubleshoot. All this brings additional costs.

Robotic farms, which dramatically increased milk production, had a positive effect on the processing industry, they gave a cumulative impact. Currently, there is a need to expand and increase existing capacities for milk processing and the construction of new ones. To solve the problem, it planned to build two milk processing plants based on Prokhladnoye OJSC and Concern-Real LLC with a capacity of 20 tons of milk per day. They will have been locating in two regions of the republic. The implementation of new investment projects in the dairy industry will lead to an increase in production by 30% and the expansion of the range of products.

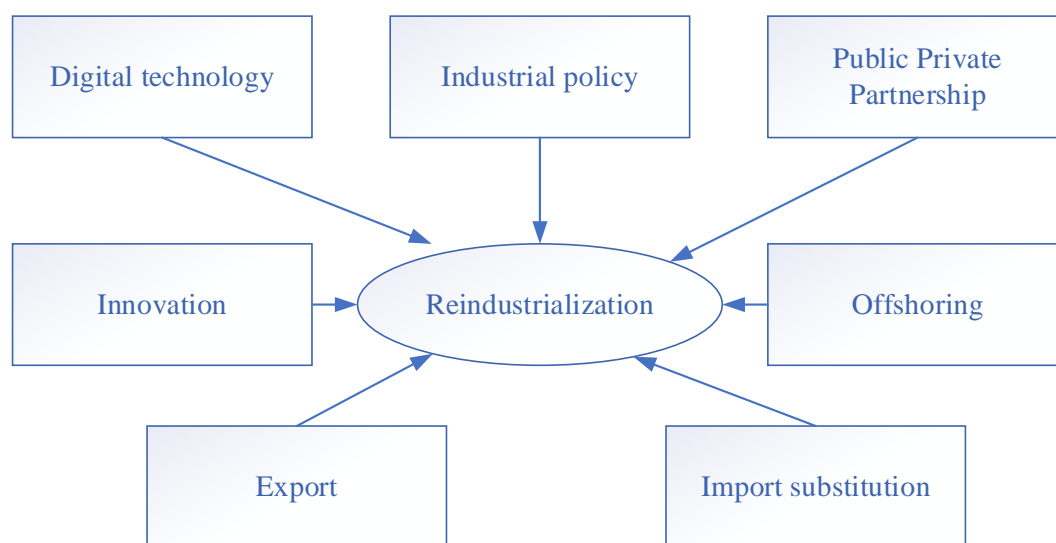
The Nalchik Dairy Plant (NMK) also began reindustrialization. A robotic farm, which discussed a little higher, is the supplier of raw materials for the plant. The plant carries out modernization and reconstruction using digital technologies and, if in the past, the plant used SCADA, RFID, partly ERP, now it launches new lines based on the information and digital technologies. The plant began to introduce a PLM-system, which will provide for the management of the product life cycle. A characteristic feature of this system is its ability to ensure interactions between different manufacturers and various enterprises. The goal of introducing digital technologies is to increase labor productivity, reduce production costs, improve product quality and consumer satisfaction, consolidate competitive advantages. The use of information technology to automate the production process, control logistics, and optimize operating costs will allow the company to save up to 10 to 14% of costs. Increasing production volumes and improving product quality allowed the enterprise (NMK) to expand the geography of sales, penetrate and gain a foothold in the dairy markets of Moscow, St. Petersburg, Stavropol and Krasnodar Territories, which themselves are producers of food products.

Our understanding and approach to reindustrialization are that we consider reindustrialization as

a technological policy, the essence of which is to modernize the technological basis (fixed assets or means of production) of industrial sectors and the entire material sphere based on new (innovative, digital, nanocrystalline, etc.) technologies Replacing existing fixed assets with modern, more productive and environmentally sound ones.

### 3.4 MECHANISMS AND INSTRUMENTS OF REINDUSTRIALIZATION

Reindustrialization should be a continuous process, in modern conditions, its role should consist (taking into account emerging trends in the development of the world economy) in the constant creation of a new technological basis of those industries whose loss is fraught with a quick lag behind the leading countries. To solve these problems re-industrialization should have a set of mechanisms and tools (Figure 1). The integrated use of these mechanisms and tools will allow the economic entity (firm, enterprise, company, industry) to gain a competitive advantage.



**Figure 1:** Mechanisms and instruments of reindustrialization.

Speaking about reindustrialization, it is necessary to indicate what is the reason for reindustrialization, which generates it. There may be various factors, and one of them is deindustrialization.

As Lenchuk [4] states, “deindustrialization as an economic process is the result of a large-scale reduction in the demand markets for the products of national producers as a result of the dynamic loss of their competitiveness and inability to fend off the process of its decline. At the same time, we are talking about such a scale of decline in industrial activity, which, in turn, leads to deep degradation of the main factors of industrial production, significantly worsening the conditions for their reproduction not only in terms of value but also in the physical sense. There is physical and moral aging of industrial funds; not only a large-scale reduction in those employed in industry, but also the loss of skills of industrial labor, the demand for highly skilled labor, including engineering, and the quality of its reproduction are reduced; production teams break up, traditional national industrial brands leave the market ”[4].

### 3.5 DEINDUSTRIALIZATION

Developed and developing countries, including Russia, also faced de-industrialization. But the

origin of this phenomenon is different. For developed countries, the process of deindustrialization is mainly associated with the transfer of production to other countries in the “search” of ways to reduce costs, especially labor and competitiveness. In Russia, deindustrialization has other reasons; they are determined by the transformation processes that were carried out in the 90s. As a result, the industrial-basic sectors of the economy were destroyed. The consequences were difficult not only for Russia but also for other republics that were part of the country. Tarash and Golodnyuk [15] note: “one of the main reasons for the deindustrialization of the economy in post-Soviet countries during the period of market reforms was the mass fragmentation of integral property complexes, as a result of which unified technological chains of production were destroyed”.

### 3.6 REINDUSTRIALIZATION ISSUES

Almost all countries of the world are involved in reindustrialization issues, but this process in each of them occurs in different ways. All of them use certain methods and methods that match the characteristics of these countries.

Before the crisis, both developed and developing countries paid special attention to the problems of offshoring and outsourcing, which in general means the process of transferring various types of activities outside the country or corporation. Now the reverse operation is taking place, returning to the metropolis or to the territories from where they were transferred. The process of redeploying an industrial enterprise to our country can be carried out in various ways. These include re-scoring, back-shoring, and no-scoring.

Restoring is the return of industrial production to the country where the parent company is located, is the reverse process of offshoring.

Backshoring is understood as the return of part of the production process that used to be in another country, its reconstruction, and concentration on the domestic territory.

Nyershoring is usually called the transfer of offshore operations to a country located next to the country of registration of the parent company.

Of interest are the methods and methods of carrying out reindustrialization by various countries and their comparative analysis. Especially now, when most countries are intensively engaged in this process. We begin our analysis with the United States, which is at the forefront of this issue. The US uses such a method as reshoring - the return to the historical homeland of industries previously transferred to other countries. But they should not “return” with the baggage that was transferred to another country, not with the technologies that they used in the host country, but with completely new ones created or being created in the country. In the US, this is done at the state level and administratively.

We agree with Zakharov notes [16], “the following can be noted as arguments in favor of reindustrialization in the USA. First, manufacturing creates the effects of the spread of new knowledge throughout the rest of the economy. New knowledge and technologies, managerial forms used in the production of new products, will inevitably spread to other business projects. Secondly, a decrease in the market share in knowledge-based industries harms the entire economy. So, if a country loses an aerospace industry, then the entire innovation ecosystem is degrading, which makes it difficult to develop new enterprises and generate new technologies. If technological opportunities are lost in one industry, then it is almost impossible to revive it. This hinders the growth of other industries, which weakens overall competitiveness. Thirdly, if production goes abroad, then

innovations usually follow the same lines, weakening the country's international competitiveness” [16].

### 3.7 LESSION LEARN

We analyzed the process of reindustrialization takes place in European countries. This procedure in these countries occurs a little differently than in the USA. Yes, in some countries, in particular in the UK, re-scoring is observed, but not in such a harsh form as in the USA. In the EU, more attention is paid to the innovative re-equipment of existing industries, with their modernization and technologicalization.

Europe, in the process of re-industrializing the economy, has relied on the high-tech industry. This is due to the competitiveness of the final product. Given the high cost of labor in Europe, high social standards, and the lack of cheap energy, defeat competitors can only be based on the production of unique products.

European Commission emphasizes, the focus should be on the development of high-tech industry sectors - the IT industry, telecommunications, optical devices, aircraft, space technology, the production of new materials, pharmaceuticals, and medical equipment” [15].

In Russia, as well as in other countries, we are engaged in the issues of reindustrialization, but unfortunately not on such a scale and not as intensively as the situation the country is in.

### 3.8 REINDUSTRIALIZATION FRAMEWORK

The reasons that cause the need for reindustrialization for different countries are different. While the United States and the EU are addressing this issue to establish industrial production in their countries, for Russia we think that question is to re-create a new industry, manufacturing, especially machine building and machine tool building. It is necessary to recreate technological complexes that existed before the reforms or to create new technological chains that encompass neighboring states and friendly countries and are competitive.

In Russia, the issue of reindustrialization should be resolved in the framework of updating the economic system, choosing a new model and strategy for economic development. However, we share the point of view according to which reindustrialization should be based on new, most modern technologies.

One can agree with [17] that “it is also appropriate to recall that industrial production is a priority basis for the modernization of the national economy, without which it is doomed to constant dependence on market phenomena. On the other hand, if a country does not have its developed industrial sector, then there will be no innovation since the manufacturing industry is the most advanced innovative technological segment of the national economic system. Besides, the heavy industry allows you to create new jobs, not only in most industrial enterprises but in related industries, in other areas of the economy” [17].

We think that the transition of Russia to the tracks of reindustrialization is associated with the solution of three problems: firstly, it is necessary to restore the level of industrial production that the country had before the reforms; secondly, it is necessary to create a technological base, which will be a supplier of machinery and equipment, with which you can create highly technological sectors; thirdly, to develop high-tech industries.

## 4. CONCLUSION

For successful re-industrialization in the country, cardinal changes in investment behavior, technological solutions, and organizational models are needed that will improve the efficiency of the entire process of updating industrial production. Only with an integrated approach can a sustainable technological modernization be achieved. In whatever situation the economy and the material sphere as a whole are, the strategic direction can only be the policy of reindustrialization and solution of three problems: firstly, it is necessary to restore the level of industrial production that the country had before the reforms; secondly, it is necessary to create a technological base, which will be a supplier of machinery and equipment, with which you can create highly technological sectors; thirdly, to develop high-tech industries.

## 5. AVAILABILITY OF DATA AND MATERIAL

Data can be made available by contacting the corresponding authors

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