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Development of the theoretical platform as a system foundation for industrial policy in the context of new industrialization*

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Abstract. The article considers industrial policy as a compulsory attribute of the state participation in the economic development of any country, singles out types of industrial policy and emphasizes contradictory understanding of industrial policy in Western countries and domestic economy. The author describes the features of industrial policy implementation in foreign countries and analyzes the stages of its development and implementation in Russia. The article substantiates the fact that the current trend of modern national economy development is new industrialization. It clarifies the research conceptual framework, describes the author's concept of new industrialization, reveals its functional-catalytic type and formulates the concept of "institutional contour of new industrialization". The research develops theoretical-methodological bases and proposes the theoretical platform for industrial policy in conditions of new industrialization. The platform system base is the synthesis of the institutional theory provisions, the theory of long-term technological and economic development and economic synergy. The article reveals the evolution of the industrial policy implementation mechanism and singles out the modern mechanisms, typical for industrial policy of the 21st century.

Key words: industrial policy, new industrialization, institutional contour of new industrialization, theoretical platform, implementation mechanism.

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Introduction

Industrial activity in the 21st century will be the most important factor in economic development. The multifunctional mechanism for the formation of a competitive structurally balanced economy as the total of industrial activity is industrial policy is an obligatory characteristic of government involvement in the economic development of any country. However, the forms and methods of government participation are extremely varied. They depend not only on the stage of the civilization development of the society, the level of socio-economic development of the country, the mentality of the population, but also the specificity of the institutional environment, the structural characteristics of the economy, etc.

The state carried out industrial policy which was formed in the age of industrialization in the 19th century, when technical and technological means were the key tool to solve major social and political problems [1, p. 48]. Today in this country, the problem of industrial policy, which is the central core of innovation policy, is in the focus of both public authorities and business community. This interest is mainly determined by great structural imbalances in the domestic economy that has greatly complicated the consequences of a systemic crisis, as it has had a structural nature. The overcoming the crisis, the intensifying research in the field of a new industrialization of the economy of Russia and foreign countries require industrial policy to be based on the combination of an active role of the state and market mechanisms. The role of the state in European countries is not seen from the perspective of the growth of its presence in economy, but from the position of SMART-state, it is the state, which defines goals, objectives and priorities of the development of a country.

It may be noted that the most discussed alternative models of economic policy, which define the type of industrial policy are liberal and dirigiste. The first one is characterized by a free play of market forces and the minimum of state involvement in economy. In accordance with this model, the "soft" or horizontal model of industrial policy is formed. The dirigiste model involves an active participation of the state in economy not only as a reformer, but a subject, a state entrepreneur and an investor. In this case, the "hard" or vertical model of industrial policy is formed.

At the same time there is no consensus on the understanding of the economic content of industrial policy. The term "Industrial – policy", widespread in Western countries is, first of all, the policy of the support separate, the most important sectors of economy at the different stages of its development. In the USA you can hear "industrial policy in agro-industrial complex or in tourist industry," etc. In this country, the word for word translation of the term "Industrial – policy' predetermined its understanding as the policy in the sphere of industry. The problems of the legislative implementing of industrial policy in Russia are discussed today from these perspectives.

Industrial policy in foreign countries

In global economy the priorities of the support for industrial policy are varied. For example, supporting priorities in several countries in South America include loans for fixed assets or investment projects, equity investments, loans and tax benefits for specific sectors, credit programs and tax benefits for separate regions. As an example, one of the areas of industrial policy in France, where a lot of attention is paid to the formation and implementation of industrial policy, is the benefits for R&D enterprises. The special system of the measures of industrial policy has been created and is being constantly changed in the EU.

Harvard University Professor D. Rodrik said: "In developing countries, it is difficult to find a prosperous industry, which would not have been the result of industrial policy" [13, p. 17]". Industrial policy was one of the

main instruments used by foreign countries to change the image of national industry and solve structural problems. At the same time "Industrial policy" means not only sectoral policy, but also the state policy in promoting economic recovery, including industrial recovery, from structural crisis.

The experience in developed and developing countries shows the positive outcomes of the realization of industrial policy. In particular, D. Rodrik [13, p. 26] presented the interesting data on exports to the United States of five most important export items of the three countries – the economic leaders in Latin America – Brazil, Chile and Mexico. It turned out that each of these products still had the status of the beneficiary of special support programs (including aviation industry, whose development has brought Brazil to the third place in the world in the export of aircraft, and steel industry, and footwear industry). Russia has always had significant assets in aerospace complex, but missed the leadership in aircraft manufacturing, giving a large multiplier effect. The Brazilian corporation "Embraer", which started up only in the late 1970s, has become the world's third producer and exporter of aircraft (after "Boeing" and "Airbus"). Brazil has become the world leader in this promising niche of alternative power industry as the production of bioethanol and biodiesel [4].

The experience of Latin American countries, aimed in the 1990s in accordance with the recommendations of the Washington Consensus at the "soft" industrial policy, showed the unreliability of this development. During this period, the role of market mechanisms in Latin America had considerably increased while the government intervention in economic processes sharply reduced. The degree of liberalization of the economy, i.e. the decreasing government intervention, is characterized by the Index of structural reforms. The maximum value for this Index is 1. The value for this Index for Latin America in the early 1970s was 0.47. In the mid-1980s its value climbed to 0.55 and increased by the end of the 1990s by 0.82 [12]. However, the rates of economic growth of the region were considerably lower in the 1990s than before 1980, when the degree of the openness of the countries of the region and the quality of the existing institutions were inferior to these of the leading countries. In fact, the economies of three Latin American countries – Chile, Uruguay and Argentina – grew much faster in the 1990s than in the 1950–1980s.

This experience is very different from the experience of the countries such as South Korea and Taiwan (from the beginning of the 1960s), China (late 1970s) and India (from the beginning of the 1980s). In these countries universal industrial policy was widely used. There has not been well established property right and such measures of government policy, which are considered as the main obstacle to economic development, have been implemented. However, this was not an obstacle for the above-mentioned countries, on the contrary, it was the reason for success in overcoming difficulties in the economic development and the formation of modern technological structures there, corresponding to the conditions of knowledge economy.

The nature of government support in different countries and in different periods of time is being changed. For example, France in the 1960–1980s used the following instruments with clearly specified target orientation: assistance to export businesses, development of certain regions, promotion of scientific research. The assistance to industry continued to be implemented in the second half of the 1980s, but there was a shift in emphasis. 50% of the funds were allocated to the traditional industries (iron and steel, shipbuilding and textiles) while only 20% – to high technology. The overall funding went to production, then – productive investment, and only in the third place there were R&D investments. For small and medium-sized enterprises the assistance

was provided in two basic forms: subventions (70% of total aid) and loans. The core funding came to small and medium-sized enterprises and only 5.5% – directly to R&D [6, p. 27].

At the end of the 20th century the situation with the financing of R&D in France changed. The basic assistance was implemented to the so-called industrial technology[1], which was funded in the form of traditional government R&D loans, concessional finance, government contracts, infrastructure for the development of science and technology.

Industrial policy in Russia

Russia has quite a rich experience in the formation and implementation of industrial policy. In 1989–1991 there was no question of the setting of the industrial policy, because the belief in the market as a panacea for all woes prevailed. In 1992–1993 at the government level the range of sectors, supported, as a matter of priority, with a special support budget fund for priority sectors was defined.

Then (1994–1998) there was a rejection of the selection criteria. The industry and commercially viable projects (financing principle 4:1) were supported. The absence of technological progress, as well as positive structural changes led to a new stage, when the prevailing point of view was that the best industrial policy was its absence. Having been established as a result of such a policy the preservation of industrial structure predetermined the need for more active government industrial policy, which in the period of 2001–2005 implemented the universal methods of industry support.

In the period of 2006–2008, the "soft" industrial policy was supplemented by selective measures of supporting priority activities. At the same time the question of the formation of a national industrial policy and the transition to a competitive industrial policy was raised. The result was a slight increase in innovative capacity and an increased emphasis on the development of high-tech industries. Modern industrial policy, the policy of the 21st century, is the policy of economic restruction with the identification of the areas of possible government intervention to soften the structural changes and effective cooperation with business, civil society institutions.

Industrial policy as the tool of a new industrialization

Numerous changes in the dynamics of the vector of the domestic economy in the first decade of the 21st century intensified the researches in the field of a new industrialization. The debate on it as the current trend of modern economic development has provoked a broad-based discussion in terms of not only the possible ways and means of its implementation, but also the interpretation of the concept of a new industrialization. The analysis of the various points of view on its essential conception [2; 4; 10] showed that it was often interpreted as the creation of new sectors of economy and new businesses, forming together the so-called "new economy". Much less attention is paid to the modernization and innovative development of traditional industries that make up the economic foundation of industrial regions.

It is not also taken into account that during the formation of new industries and infrastructure there is a disparity between the technical, economic and socio-institutional spheres. In addition, in the economic system the internal contradictions between old and new technologies are arisen. The process of overcoming these internal contradictions is quite long, complex, and socially painful, and can be successfully implemented only through interactive social, political and administrative changes. Therefore, a new industrialization, in our opinion, not only affects the management and organization at the level of individual firms, industries and sectors, but also the entire system of social and political control. For its success fundamental changes in investment behavior,

[1] The term "industrial technology" means the complex of different forms of industrial innovations and R&D.

in technological solutions, in organizational models that improve efficiency, in the mentality of society and in institutional environment, which regulates and maintains the desired economic and social processes, are inevitable.

Neoindustrialization is understood as a synchronous process of creating new, high-tech sectors of economy and effective innovative renewal of its traditional sectors, with agreed between technical, economic and socio-institutional spheres qualitative changes, implemented through interactive technological, social, political and administrative changes.

In the development of this concept it seems to make sense to highlight the functional catalytic industrialization as a particular type of a new industrialization. Its typological principle is the dependence of creating new sectors of economy and the development of conjugate industries, including traditional, on realizing new opportunities of catalytic properties of innovative technologies and product innovations.

The typical example of industries, forming the basis of functional catalytic industrialization, would be nano-, bio-, info-industry, rare earth industry, composites, use of the product of which is the basis not only for the creation of new types of production and product innovations, but also for the emergence of a multiplier effect in the base sectors of economy.

Institutional outline of a new industrialization

The success of a new industrialization process is largely determined by the quality of institutional environment. It is productive, in our opinion, to use the concept of institutional matrices to investigate the influence of institutional factors on the development of processes of neoindustrialization. The first mention of them is found in the works by the neoinstitutsionalists K. Polanyi and D. North. The further conceptual development of this area is associated with the works of the researchers from the Institute of Economics of the Siberian Branch of the Russian Academy of Sciences [5]. The institutional matrix in these papers is interpreted as the form of public relations, integrated through the system of basic institutions in the major spheres of society - economy, politics and ideology. This concept has been used as basic in the study of the institutional environment of small business development in the Urals [9, p. 84]. The concept of institutional matrices is supposed to be the essential basis for this new concept, proposed by us, as the institutional outline of a new industrialization.

The institutional outline of a new industrialization - is the most significant types of economic, political and ideological work in the field of social development, with high technological and socio-economic importance of having a high multiplier effect and the capacity of self-development, contributing to the development process of a new industrialization on the basis of network communications of industrial, innovative and socio-economic systems.

A new industrialization makes new sets of demands on conducting industrial policy. The technological upgrading of basic material production sectors, for prejudging the possibility of their qualitative transformation, plays a critical role in the creating a fundamentally different technological framework to change the structure of production, focused on the priority of human development. However, nowadays there is no unified theoretical platform, which can be a basis for the system of industrial policy, equal to the requirements of the new industrialization.

Theoretical platform for the formation of industrial policy

There are different viewpoints on the theoretical nature of industrial policy. (E. Yasin believes that government, including industrial, policy should not be related to certain theoretical models. The position by G. Kolodko seems to be more reasonable, according to which the policy should be based on the theory that

explains the mechanisms of functioning of economy and its growth. A good policy can be formulated and implemented only on the basis of a good economic theory). Our position is that the presence of a theoretical platform and its timely adjustment are obligatory in the formation of industrial policy.

The necessity for a new theoretical platform of industrial policy is determined by such features of modern economy as multilevel, polystructure, heterogeneity, instability, multifactor, and fractal. This involves the mandatory participation of the state not only at different hierarchical levels, but also business and civil society institutions, as the subjects of industrial policy. The researches carried out in the Institute of Economics, The Ural Branch of the Russian Academy of Sciences, have allowed to develop the proposals for the formation of modern theoretical platform of national industrial policy. The fundamental basis of this platform can be the synthesis of the concepts of the institutional theory, the theory of a long-term techno-economic development and economic synergy.

The institutional classical theory (its most prominent representative - W. Samuels) is, in our opinion, one of the core theories in the development of the theoretical foundations of industrial policy for the following reasons. Institutionalist-classics consider economy as an organic, evolving system. It is particularly important from the standpoint of industrial policy to take into account the emphasis that institutionalists do in terms of the application of the theory to the problems of policy and the economic role of a state. They emphasize that the power structure (including legal rights) determines whose interests must be taken into account, and, hence, optimal solutions by Pareto are specific for each structures.

Institutionalists emphasize the actuality of taking into account the inherent link between any action and technology at the formation of industrial policy. Therefore, the rules for conducting this action are not set out on the basis of free individual rational choice but on the basis of technological basis of objective parameters. Thus, a mandatory attribute of institutions in terms of institutional classics is the subject-pragmatic content related in the framework of industrial policy to the achievement of higher technological stage, the increasing the competitiveness of economy on the basis of its new industrialization. The understanding of the institution by institutionalists as a collective action, controlling and expanding an individual action, plays a special role. That is, in this framework the priority is given to sociality, collectivity in relation to personality [7]. This position determines the multistakeholder model of industrial policy, when not only government and business, but also science, education, civil society institutions are involved in the development of ideology of formation of industrial policy and its implementation.

As a government is "deeply involved as both dependent and independent variable in the socio-economic structure of power" [8, p. 137], the main practical problem of the formation of industrial policy is the non-juxtaposition of permissibility of government intervention in economy to its total absence. The most significant is what interests government will support; what priorities will be the most important for it. Institutionalists emphasize that the vector of the formation of government industrial policy is determined by the system of legal relations in a particular society. Therefore, its improvement determines the efficiency and effectiveness of industrial policy in any country.

The theory of long-term technical and economic development mainly explains the regularities of geotechnological dynamics. The studies by K. Peres, S. Glazyev, V. Dementiev, B. Kuzyk, V. Majewski, Y. Yakovets showed that in the technological structure of economy you could define the groups of technological sets, linked with the similar technological chains and formed reproduced integrity that was the basis of the relevant technical economic paradigm and forming technological structures.

The researches of the above-mentioned scientific school have established a number of the regularities of long-term economic development, which should be considered, in our opinion, in the formation of the functional multistakeholder model of industrial policy. The following regularities should be noted:

– alternation of long waves of economic conditions;

– deep technological shifts that fundamentally change the structure of the world economy as a factor in recurrent structural crises;

– non-equilibrium of processes of techno-economic development, the life cycle of which has its internal logic and objective limitations;

– non-linear path of development, distribution and replacement technologies;

– uncertainty and alternative technological trajectories in the early lifecycle of the directions of technical and economic development;

– the presence of gaps between the phases of the lifecycle evolution of technologies, the ability of overcoming these gaps depends on the state of innovation and investment institutions of the system.

Synergetics. These patterns are largely similar to the methodological ideas of self-organization theory, or synergetics. It has absorbed the systems theory and the theory of evolution, focusing on the study of non-equilibrium situations, the threshold points of development and quality transitions. The basis of synergetics is an interdisciplinary approach that is used to identify and explain the evolution in coordinates "space – time" for the "design the future". Synergetics should be regarded as a new scientific paradigm.

Economic synergetics plays a special role from the position of forming a new paradigm. Economics, unlike the natural sciences, is full of the subjective activity. The problem of the subject exists in the economic sciences initially, and only then the problem of non-linearity, uncertainty, chance and necessity comes. This is especially important in the formation of industrial policy, because control and management subjects affect the effectiveness of its implementation.

It must be emphasized that synergetics has an interaction analysis (subject-subject relationship), that means the reference to specific historical subjects. Consequently, modern economy, in the space of which states, market institutions of different types, large, medium and small business structure, financial funds, the banking system, the population interact, is impossible to be investigated outside the interaction theory, and hence outside synergetics (this fact has helped to transform government industrial policy into national).

Thus, among a number of basic properties, which allow us to consider synergetics from these positions, we can note two features which are directly related to the formation of industrial policy:

1. Synergetics grew out from modern communicative stage in the development of society and it is the science of the interaction as the universal mechanism of functioning and development of complex open systems, nature and society.

2. Synergetics, being the science of formation, works with irreversible time and space, that concerned to all levels of nature and society, and is directly related to industrial policy, in particular to the formation of a new technological system (TS) and its intellectual core.

At the formation of industrial policy it is important to consider the principles of co-evolution, the principles of non-linear synthesis of different structures to complex structural holistic formations. Coevolution is not just the process of adaptation of separate technologies to each other during the formation of a new TS. Its replacement requires changes in social and institutional systems, which promotes a more active implementation of the technologies of a new TS. Coevolution is an interactive

communication between individuals within social organizations and the human community as a whole.

Synergetic principles of coevolution, focused on the distant future, which is almost impossible to design on the base of traditional methods, are necessary for effective management. They can be used for formation of the strategic vision for the future, for long-term planning, for development of government industrial policy in a globalizing world.

The general pattern of co-evolutionary development is that the union in the long historical perspective is beneficial not only to weak elements, in view of aging technological structures, but also strong, highly developed elements, i.e. the elements that form the core of technological order. The most important synergetic idea is that a certain amount of chaos for sustainable development process of coevolution is required, i.e. spontaneity of development and self-management, as well as a certain amount of external control. Moreover, these two components – the self-organization from the bottom and the organization from the top – should be balanced, and that determines the specificity of industrial policy at different stages of economic development.

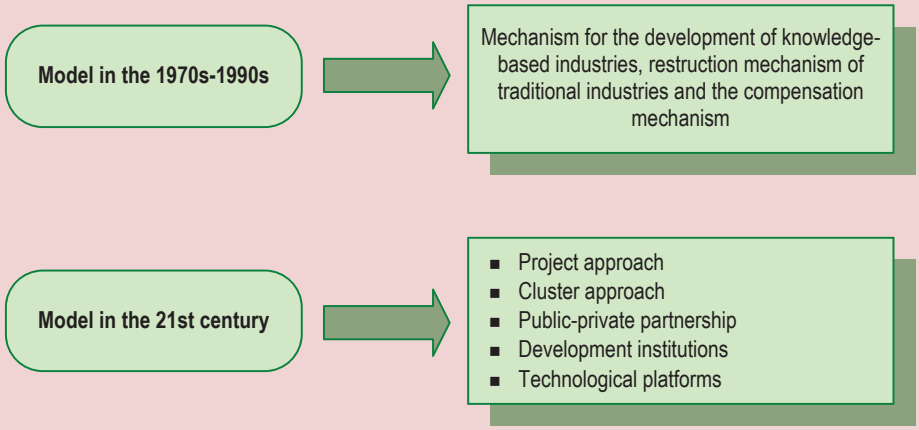
The mentioned positions of institutional theory, the theory of the long-term feasibility and synergetics can be, in our opinion, a reliable theoretical and methodological basis for the formation of industrial policy.

The proposed theoretical platform for formation of industrial policy includes the mandatory use of modern methodology of identifying its priorities. The most reliable and proven method in the world practice is foresight, the theoretical foundation of that has much in common with the above-mentioned basic positions which form a modern approach to industrial policy.

Mechanism for the implementation of industrial policy

The successful realization of the priorities of industrial policy is largely determined by appropriate mechanism for its implementation, which is understood as the system of measures used to achieve the stated objectives. It may be noted that this mechanism, as well as industrial policy itself has been undergone the major changes *(fig. 1)*. In the 1990s the basic model of the mechanism for the implementation of both state and regional industrial policy is the mechanism for the development of knowledge-based industries, restructuring mechanism of

Figure 1. Mechanisms for implementation of industrial policy [11]



traditional industries and the compensation mechanism. The latter was intended not only to reduce the negative social consequences of the transformation of industrial complex areas, but also to solve problems which were common to both traditional and high-tech industries (the problems of structural unemployment, infrastructural support of industrial restructuring, increasing "innovation intensity" of industrial complex, etc.).

The changing conditions and new requirements for a modern industrial policy predetermine the necessity of the development of new approaches to the mechanism of its implementation. Five approaches can be identified as the most important:

1. The implementation of *priority industrial projects* of different scale. Administrative, financial, structural, technological, human and market resources are connected within the framework of the project as a tool of industrial policy.

2. *Cluster approach* – is not only the means to achieve such objectives of industrial policy as structural changes, modernization of economy, increasing its competitiveness, strengthening the innovation focus, but also a powerful tool for regional development.

3. *Public-Private Partnership (PPP)* has a long history, but a special attention is being paid to its development in the national economy at the moment. The development of relations between the government and private business is characterized by the fact that they can be successfully implemented not only at the federal level, but also at lower levels of the social system – the level of regions and municipal level. This is important from the perspective of the formation of industrial policy, because there is a growing necessity for its implementation at different hierarchical levels. This is due to the redistribution of financial flows in favor of particular regions and, as mentioned above, to the practicality of expanding range of individuals and organizations interested in the implementation of industrial policy.

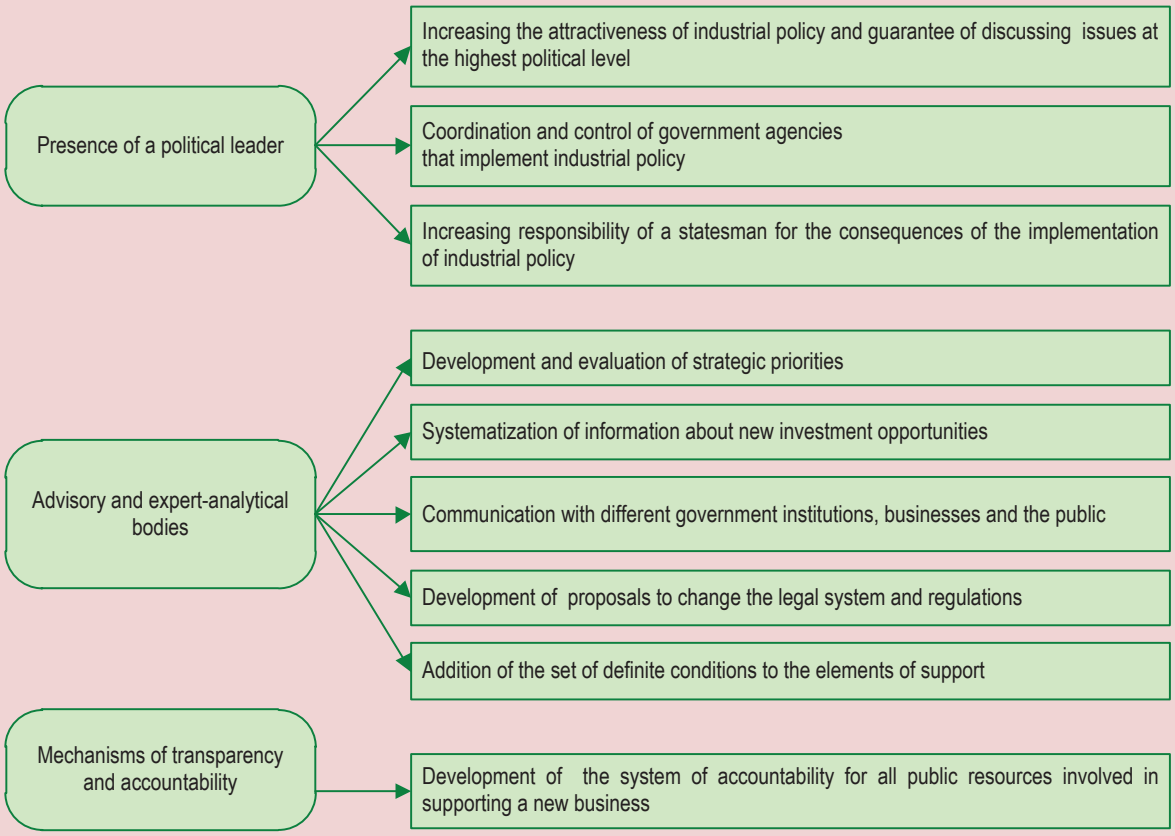
4. *Development institutions*, established in Russia, are divided into administrative, for example, special economic zones, and financial, such as an investment fund, Russian Venture Company, Bank of the Development of the Russian Federation, etc. In addition, development institutions are complemented at the regional level by complementary development institutions as the catalysts for innovation growth and effective tools of state regional industrial policy.

5. *Technological platforms* are one of the most important instruments of industrial policy, implementing national technological development priorities. Technology platforms are intended to overcome the gaps between science and business, based on a strong focus of scientific researches on industry requirements. The coordination of researches and the possible ways of their practical application will allow to make R&D order more precisely and accelerate their commercialization on the basis of public-private partnerships.

The successful implementation of industrial policy is largely determined by the availability and efficiency of public institutions which participate in its holding *(fig. 2)*.

The participation of a political leader in the implementation of industrial policy and its full responsibility for the consequences of its realization seems to be obligatory. The importance of the focused work of advisory and expert-analytical bodies, developing and evaluating strategic priorities, systematizing information about new investment opportunities, communicating with different government institutions, businesses and the public, developing proposals to change the legal system and regulations, is increasing. The strategic cooperation of civil society with the government and the private sector is the foundation that will allow to offer the ways of effective reducing any barriers to the obstacles to the restructuring of the national economy and achieving the stated objectives of industrial policy.

Figure 2. Formation of public institutions for the implementation of industrial policy [11]



Conclusion

The formation of industrial policy based on the theoretical platform, as it has been explained above, will contribute to its implementation not as a static system, but the system, which can change, self-build, develop and finally go to the mode of self-organizational functioning. In this case the economic content of industrial policy will be aimed at implementing of a competitive vector of structural changes, correcting market forces by increasing or reducing the effect of the distribution of resources, assisting in achieving synergetic effect, maximizing its own potential for economic growth, reducing the risk of production losses and rent-seeking. This industrial policy can be an effective tool of a new industrialization of the domestic economy. In this case the interaction of a variety of activities with high technological and socio-economic significance is achieved and that will contribute to the establishment and development of structurally – balanced, high-tech, competitive domestic economy.

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