



# Modernization and innovation: Economic and institutional role

## Modernización e innovación: parte económica e institucional

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#### ABSTRACT:

This article proposes an interpretation of modernization and tools for its implementation in the interests of developing national or regional economy. We used morphological analysis of "modernization" and "innovation development", the historical method for identification of common modernization reforms in the US, Germany, Japan, Turkey, China and the justification that they form a "modernization complex" – a system of institutional and social economic elements transforming the structure of society.

**Keywords:** Modernization types, innovative development, model of economic development, information economy

#### RESUMEN:

Este artículo propone una interpretación de la categoría de modernización y las herramientas para su implementación en el interés del desarrollo de la economía nacional o regional. Los autores utilizaron los métodos de análisis morfológico de los conceptos de "modernización" y "desarrollo de la innovación", el método histórico en la identificación del elementos comunes de reformas de modernización en los Estados Unidos, Alemania, Japón, Turquía, China y la justificación de que formar un "complejo de modernización" – un sistema de elementos económicos institucionales y sociales que transforman la estructura de la sociedad.

**Palabras clave:** Tipos de modernización, desarrollo innovador, modelo de desarrollo económico, economía de la información

## 1. Introduction

A hypothesis is that modernization is a universal historical and institutional phenomenon representing a special complex of modernization – a system of economic, social, state, legal, scientific and technological institutions of a country or a geo-economic region into a more modern concrete-historical form. At the level of public administration, business, large public institutions there is an understanding of the need for innovative development and modernization transformations. In the Joint Communiqué following the 14th meeting of the Council of Heads of Government of the member states of the Shanghai Cooperation

Organization (SCO) (2015), the importance of cooperation was stressed, including through "the construction of new and modernization of existing international transport corridors". There are no significant differences, as modernization is understood as reforms and improvement of equipment and technologies that advance society along the path of innovation.

Initially, "modernization" did not have a semantic content in the part of the formation of any specific business institutions, and state's achievement of certain social and economic indicators. The most widely used classification of modernization is that by dominant idea and intellectual organization of the implementation mechanism. Here, the following types of modernization are singled out: traditional modernization as transformations of traditional societies based on the development of equipment and industrial technology – industrialization (Lerner, 1965); convergence, put forward in the 1950s with the success of the scientific and technical revolution (Rostow, 1971; Black, 1976, p. 8); neo-modernization – Turkey, the countries of Latin America (Kaypak & Akin, 2017; Sakwa, 2012); post-modernization and comparative democratization (Sakwa, 2012; Capistrano et al., 2008, pp. 71-72). There are always links between belief systems and political and socio-economic variables (Table 1).

**Table 1**  
Classification of modernization by dominant idea and implementation

Type	Dominant idea
Traditional	Objectivity and inevitability of technical and economic and social progress. The mechanisms can be different, they can produce failures and negative results. But it will still be overcome, since progress is inevitable. The main task is <i>modernization</i> – the transition from the traditional (pre-industrial) society to the society of "modernity"
Convergence	Smoothing the differences and contradictions between capitalism and socialism as a result of their interpenetration and mutual enrichment that leads to a gradual elimination of differences and the synthesis of the two systems
Neo	The attempt by some countries to implement the overtaking model of modernization (Westernization) despite significant national-ethnic, political, geo-economic features
Post	Development of a traditional society based on modern identity, which is interpreted as an opportunity for the countries of the East "to pass through certain stages of Western development, especially the painful processes of changing identity to Western"

It is becoming obvious that in the first place, fundamentally different factors are put forward: creative and entrepreneurial abilities of the individual, intellectual and communication capabilities (human capital), a permanent update of scientific and technological knowledge (Scerri, 2017, p. 1147); social capital of the society expanding abilities of individuals forming a platform for decentralization on local management (Džinić and Manojlović, 2018, pp. 261-277) and its efficient integration into scientific and technological teams targeted at original entrepreneurship projects; availability of innovative public infrastructure; duration of the active, creative phase of human life, which allows getting maximal return on investment in human and social capital. Modernization is considered in the context of the main content of reforms and the period of their implementation (Table 2) – as a permanent complex transformation (Lerner, 1965, p. 438) and catch-up development (Sedlyar, 2014, pp. 24-28).

**Table 2**  
Types of modernization by content and period of reforms

	Basic context of		Transformation

Type	idea	Form of manifestation of basic changes	principles
Permanent complex transformation of society	Modernization as a synonym for the social and economic progress of humanity	A broad evolutionary transformation of the technological and socio-economic foundations of society. At the present stage, it is globalization, formation of a society that is less and less limited by the national boundaries	Progressive, interrelated development of social, political technological, economic and other institutions of society
Catch-up development	Set of institutional transformations of the traditional society towards the transition to a society of "modernity"	Controlled transformation on the principles of: industrialization, urbanization, liberalization, rationalization, bureaucratization, democratization, spread of market dominance, spread of individualism and motivation for personal success	Transfer of the experience of developed countries to the grounds of national states that are stagnant in their social and economic development (often)

None of the approaches focuses on the study of a global mechanism for modernizing states or large geo-economic territories. Similarly, similarities and differences in modernization and innovative development are not sufficiently explored. Black (1976, pp. 67-68) considers modernization as the ability to "study to learn" and links it with the expansion of social systems' ability to process information and to understand it adequately. Others analyzed modernization as an "irreversible and progressive... process of unification, gradual convergence of communities" (Rostow, 1971; Levy, 1966). Wojciech Woźniak emphasizes the role of intellectuals and elites in shaping the discourse of modernization and national policy (Woźniak, 2014, p. 172), while the existence of the lower strata of society is seen as an obstacle, a ballast for accelerating the pace of modernization.

A number of modernizations have come to the end successfully and are inspiring examples for other states – Japan and Germany after the World War II, Ireland, Finland, Turkey (late 19th and almost the entire 20th century), China and the countries of southeast Asia and India, and Brazil in the second half of the 20th century, and a few others. Researchers have the idea that "the various elements of modernization are closely related, because in a certain historical sense they must come together" (Lerner, 1965, p. 438). If reforms in a particular country or region did not ensure the replication of the experience of world leaders with integration into the world market economy, then at the theoretical level this was not seen as modernization (Mau and Drobyshevskaya, 2013; Barro, 2015). Miranda (2011, p. 85) assesses modernization in Brazil as finished in economic and material dimension, but insignificant in political-institutional dimension: pluralism, deliberations, and democratization. India combined local traditions and civil nationalism (Mishra, 2014, p. 83). "Chang Kyung-Soop proposed modernity and individualization without individualism, characterizing the specificity of modernization in South Korea: the contradictory coexistence of the collectivist family culture and the manifestations of individualization of Korean women" (Hong, 2017, p. 102). At the given consideration modernization is actually not only for developing countries, but also for all countries of the world. We identified the place of modernization and innovations in social progress, in the evolution of civilization, and the most general conditions for carrying out modernization reforms at the level of the geo-economic region or nation. The results of the research will be useful for increasing the effectiveness of projects and programs, and for both innovative development and modernization.

## 2. Materials and methods

Based on the historical method, information on the nature and results of modernization reforms in countries such as the USA, Germany, Japan, Turkey, China and others was identified and analyzed. The experts' conclusions on the nature and outcomes of these

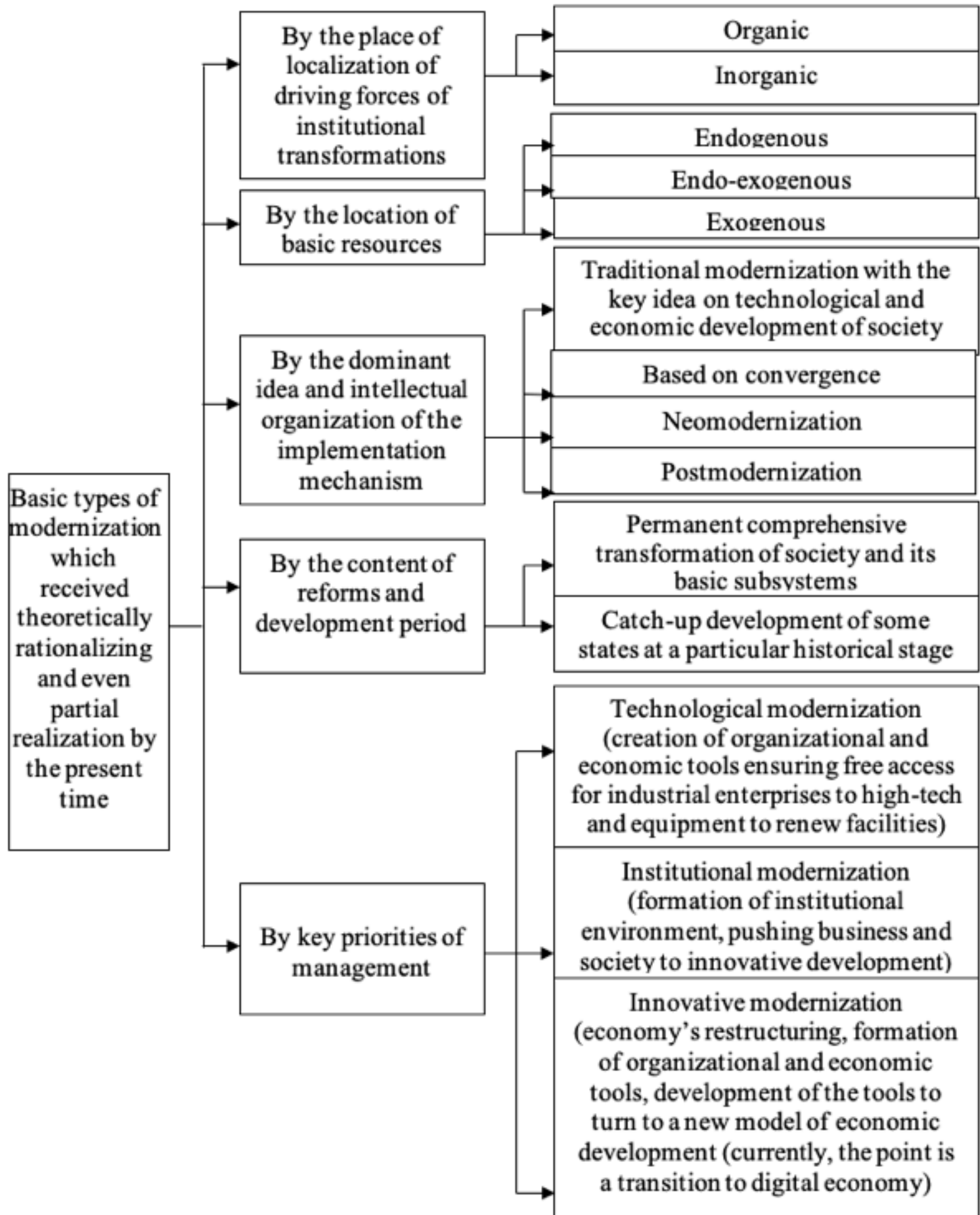
processes were analyzed (Pursiainen, 2012; Chin, 2011). Analysis and synthesis, the logical method and the analogy method made it possible to identify the common elements of modernization that took place in different countries in the 19th and 20th centuries, and justify that they form a modernization complex – a system of institutional and socio-economic elements transforming the structure of society in the direction of its modernizing. Logical comparison allowed developing a model of the modernization cycle (using structural-functional modeling) and a model of a systemic interaction of the processes of social progress of human civilization, flowing at various institutional levels. The model allowed reveal general conditions for modernization reforms at the level of a country or a geo-economic region.

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### **3. Results**

The existing views on modernization made are presented on the Figure 1.

**Figure 1**  
Basic types of modernization



## Basic types of modernization

The modernization complex is focused on the goal of modernizing, which involves the inclusion of the modernization object in its entirety (the whole country, the whole region) in global world development trends, taking into account the available historical experience, location, global challenges and risks significant for the territory at this time. Borrowing and replacing the "cultural core, the loss of which can lead not to modernization, but to the destruction of the foundation of the existence of a particular society" is possible (Lukmanova and Sirazetdinova, 2015, p. 48).

By definition of the notion of system, the modernization complex should consist of elements. The functional purpose of the system (the modernization complex) is to purposefully and consistently transform society in such a way that in its development it moves in the direction of achieving the most modern socioeconomic state. Therefore, the basic elements of

modernization should be universal and present at different historical stages, but they must change the concrete historical form, depending on the tasks of the stage.

The study of the experience of modernization has made it possible to identify the elemental composition of the modernization complex and to characterize its tasks (Table 3).

**Table 3**  
Basic elements and tasks of the modernization complex

<b>Modernization Complex</b>	
<b>Elements</b>	<b>Tasks of modernization</b>
1. Essence	To build the commitment of society to the ideas of modernization through clarifying its essence
2. Object	To initially correctly outline the object of modernization as a single entity that interacts with neighboring countries and regions
3. General sequence of reforming	To organize the algorithm of reforms in such a way that the institutional stage ensures the best implementation of the stage of economic and technological transformations
4. Resources and markets	<ul style="list-style-type: none"> <li>- To create new or improve existing support mechanisms for own manufacturer;</li> <li>- To create conditions for balanced cooperation with the world community based on new factors of economic growth</li> </ul>
5. General vector of institutional transformations	<ul style="list-style-type: none"> <li>- To get involved in business all new strata of the population, to decrease transaction costs of entrepreneurship activity;</li> <li>- To expand the number of spheres and directions of entrepreneurship;</li> <li>- To improve the quality of support for entrepreneurial initiatives, entrepreneurial potential of citizens</li> </ul>
6. Political and economic methods	- To achieve the widest possible social base, to form a set of forms and tools for carrying out reforms
7. Non-productive load on the economy	<ul style="list-style-type: none"> <li>- To prevent corruption schemes;</li> <li>- To ensure effective trajectory of the state's social policy, preventing systemic risks;</li> <li>- To ensure commercialization of innovations from defense industries in civilian sectors;</li> <li>- To eliminate adventurism in international relations.</li> </ul>
8. Modernization of the structure of material production	<ul style="list-style-type: none"> <li>- To form <i>new</i> industries that produce the ultimate innovative product of mass demand and the related production facilities;</li> <li>- To form the <i>mechanisms</i> of: <ul style="list-style-type: none"> <li>• "modernizing" industries that are at the stage of maturity;</li> <li>• turning traditional industries that ceased to bring commercial revenues (but which are necessary for the economy) to the mode of operation of infrastructure, socially significant facilities</li> </ul> </li> </ul>
9. State participation	- To form a strong position of the state in carrying out reforms. and defining the areas in which governmental participation is necessary

First, for the success of modernization, the task of shaping the society's commitment to

modernization through clarification of its essence must be solved.

Second, the greatest effect of modernization should be expected if the whole society – the entire system of its internal institutions and structures, as well as the institutions and structures of interaction with the international community (the latter being the subject of modernization) will be considered as the object. Especially important is the interaction with geoeconomic neighbors, as any system (for example, transport and logistics, information, trade, financial, scientific and technological, etc.) can fully reveal its potential only in conditions of freedom of incoming and outgoing flows. Therefore, an important task is to properly outline the object of modernization, so that it could be modernized as a single integrity and organically "fit" (as an open system) into the context of interaction between neighboring countries and regions.

Third, the overall sequence in the implementation of modernization reforms has a significant impact on their success. It means that, first, institutional conditions for modernization transformations (consolidation of elites and nations around ideas, development of the legal environment, preparation of state mechanisms) should be made ready. This stage is called institutional. Then comes the stage when practical steps are taken by the state and society to transform the economy and scientific and technological institutions and systems. The authors call this the stage of economic and technological transformations. The task of modernization is to organize the reform algorithm in such a way that the institutional stage ensures the best implementation of the stage of economic and technological transformations.

Fourth, all successful modernizations have always had at the end of the institutional stage an obvious for the society prospect of increment of economic growth, both in terms of available resources and sales markets. This is the main convincing motive for consolidating society around the ideas of modernization. In other words, the most important direction of the institutional stage is the formation of additional incentives and more favorable conditions for long-term economic growth, compared with the previous period. This task determines the need to identify what additional resources can be involved in the economic turnover, the rationale for new markets, the development trends of traditional ones.

Fifth, modernization is a project. Concentration of efforts and means is an important methodological element of any project. The history of successful modernizations shows that the determining direction of the concentration of efforts and means was the expansion of the economically active stratum of the population, in particular, the entrepreneurial one.

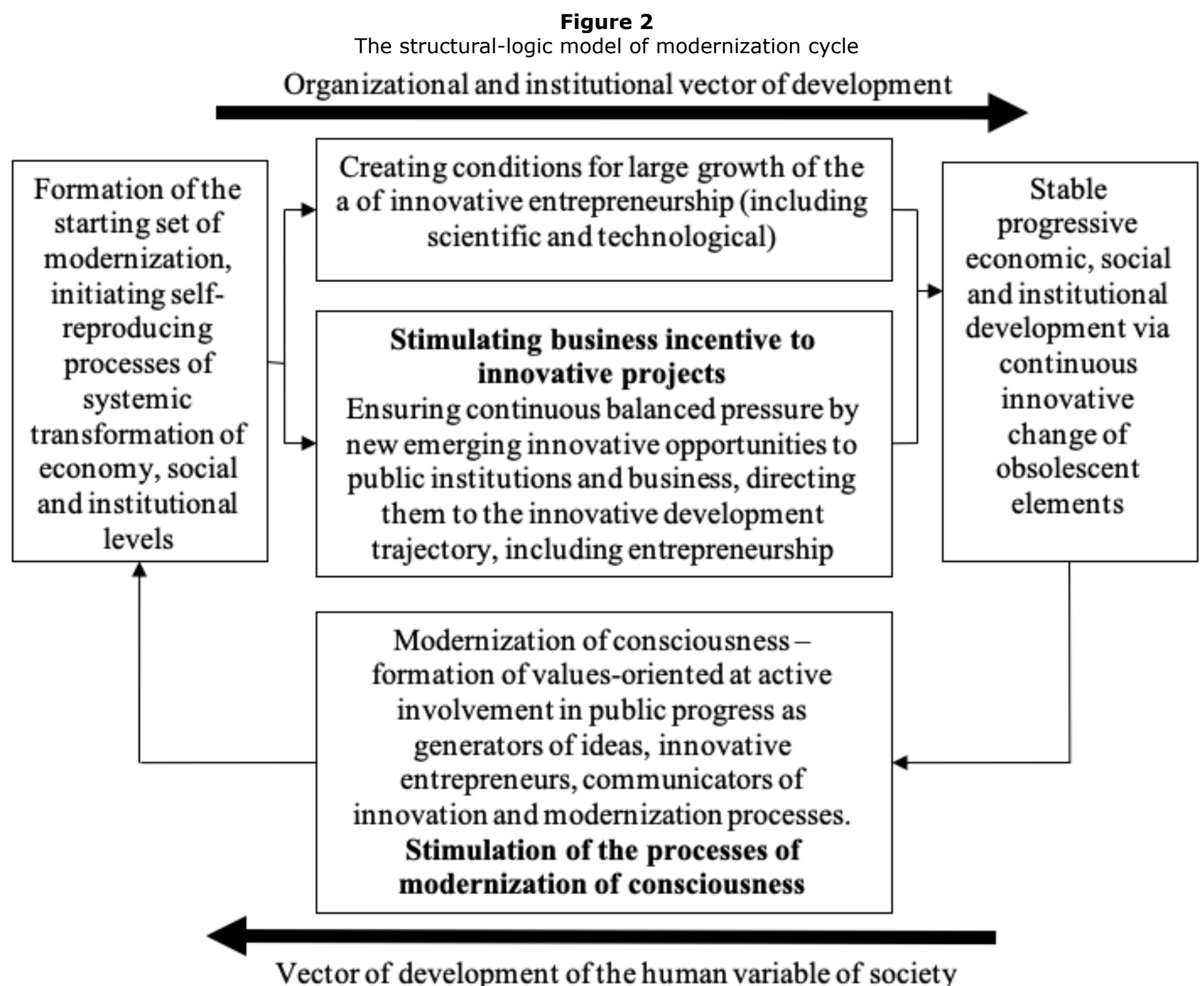
Sixth, there is an obvious relationship between the social base of modernization and the range of available forms of its implementation: with a broad social base and a high level of social mobilization around reforms, a combination of forms can be applied – from democratic to coercive (both stick and carrot). Modernization has become a key part of the British political discourse from Thatcher to Blair and Cameron (Byrne et al., 2012). In the conditions of a narrow social base and a low level of mobilization, a narrower range of forms, and hence management tools (in the economy, institutions, social sphere, science and technology) can be used. Moreover, with a decrease in the social base, the emphasis is reduced to compulsory forms and management tools, with a decrease in the range of forms and instruments available for use, shifting emphasis to coercive forms and tools: reducing the speed of reforms, increasing costs and risks, and reducing the inevitability of reforms. Therefore, the most important task is to achieve the broadest possible social base in order to form a wide range of forms and instruments for carrying out reforms that would have a wider opportunity for maneuvering.

Seventh, modernization requires considerable funds, because it involves a wide range of tasks to be solved. Therefore, it is important to optimize the non-productive diversion of funds from the budget during this period. The tasks in optimization, taking into account modern realities, are as follows: prevention of corruption schemes, inefficiency in spending public funds due to low professionalism of officials; a well-reasoned, effective trajectory of the state's social policy that prevents systemic risks; commercialization of innovations from defense industries in civilian sectors, provided that the defense potential is not impaired; elimination of adventurism in international relations, etc.

Eighth, the core of the economy at all times has been the material provision of society. Therefore, modernization should focus on the development of the structure of material production. In this regard, the main tasks of modernization are the formation of: (1) new industries producing: (a) ultimate innovative products of mass demand; (b) production facilities for the former; (2) formation of mechanisms for: (a) modernization of industries that are at the stage of maturity and do not have significant financial resources for innovative development; (b) turning of traditional industries that are at the stage of decline and ceased to bring commercial revenues (but being necessary for the economy) to the mode of functioning of infrastructure, socially significant facilities. And, finally, without participation, systemic changes at the level of the state or large regions are not possible.

### "Modernization" and "innovative development". The modernization cycle model

We showed the similarity is in general orientation of modernization and innovative development. Let us consider the differences. The main context of modernization is the comprehensive, systematic development of a specific country or a geo-economic region (a compact, relatively evenly evolving human community). Even if only modernization of the economy is considered (that is, modernization of a single subsystem of society), then actions aimed at bringing a particular society to the world level of development are suggested as well. The results of modernization should find a positive reflection in the life of citizens. Modernization makes sense only if it is permanent and represents a transition to self-reproducing innovative self-renewal and continuous actualization, "modernizing" society. That is, if modernization is seen as a "modernization cycle" (Figure 2).



Modernization cycle includes two mutually supportive development vectors. The first vector: 1. Formation of the launching complex of modernization, which initiates the processes of



systemic self-renewal of the economy, social and institutional spheres of society;

2.1. expansion of the entrepreneurial stratum of the population on the basis of scientific, technological and creative achievements;

2.2. achievement of constant, balanced "pressure" from newly emerging innovative opportunities on the public institutions, business, state, motivating society to constant renewal;

3. sustainable progressive economic, scientific and technological institutional and social development due to the constant innovative replacement of obsolete elements, i.e. the formation of a system of innovative continuity that ensures the necessary speed of society's acceptance of the flow of innovation.

But this vector cannot be realized without a deep transformation of public consciousness. Therefore, the second vector of development is the modernization of consciousness. It is understood as an adjustment of the society's thinking, orienting its members to new models of perception of being and behavior patterns, such as motivating citizens on the individual and group levels to permanent self-development, scientific and technological and entrepreneurial creativity, social responsibility, desire to make a personal contribution to social progress. Modernization of consciousness involves the formation of new values that should become the driving force of social progress at a new historical stage in the development of civilization. These values should encourage people to move from consumer ideals to the ideals of self-development and creativity.

Consideration of modernization from the proposed positions explains why efforts aimed at blind copying of someone's experience in this area are inexpedient, meaningless and even harmful. Modernization project is always a very individual project. It should be borne in mind that the modernization of society in all its components is based on innovative development as a global, universal resource. Through this, all the modernization projects are interconnected and are an integral part of the historical progress of the human civilization.

The *innovative development* is an objectively unfolding, global, historically successive process of improving the economic sphere and consumer values on the basis of scientific and technological innovations, as well as the development of human capital. Innovative development is aimed at improving the methods, forms, labor facilities, development of production/instrumental labor base, expansion of areas of activity, which together should provide an increase in volume (quantity) and improved the quality of consumer values to economically viable levels. Thus, innovative development is a process of world, civilizational scale. It objectively crosses the borders of countries and continents. In the 20th century, this process has most powerfully manifested itself as the process of the global spread of industrial innovation. In the 21st century, we expect that this process will prove most powerful in:

- changing the view on the essence of labor, which is increasingly understood as intellectual activity, with its result contributing to the development of society;
- restructuring of a person's way of life, which adapts to new psycho-physiological, information, socio-cultural needs;
- formation of an effective system of intellectual and moral development of a human, without which a person cannot navigate within the needs of society, generate higher level needs.

Countries and geo-economic regions may not have the same level of inclusion in the process of innovative development. Moreover, within the framework of one country or region, the territories, industries, enterprises and people can be included in the process of innovative development to varying degrees.

But at the world level this process is steadily progressing, it relies on all available resources of the world community, is stimulated and supported by the entire human community, the world's diversity of civilizations and countries.

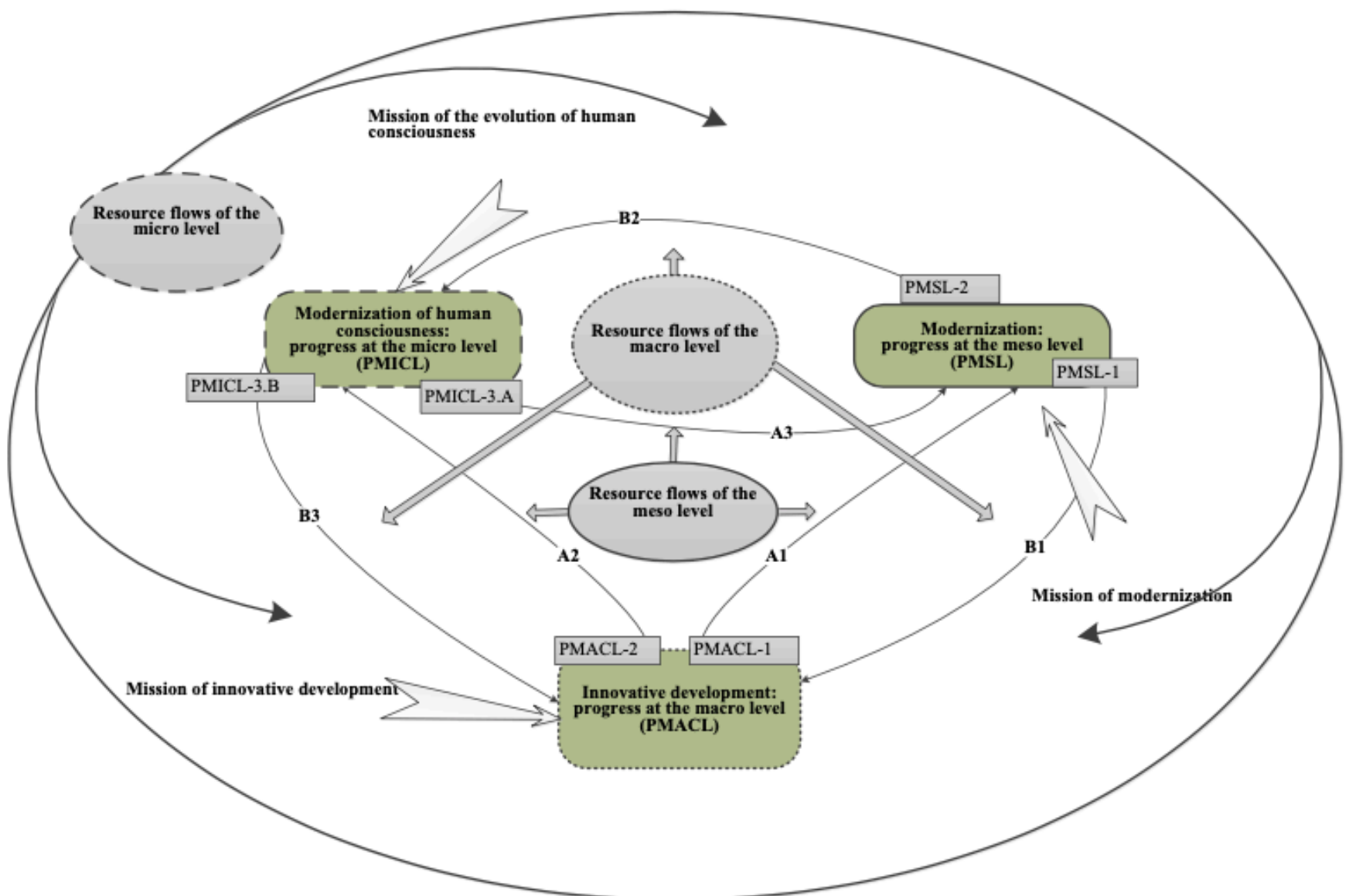
Thus, innovative development and modernization – are not equivalent processes, but internally they are organically linked.

## Model of systemic interaction of institutions of different levels

The consideration of innovative development and modernization in the context of the historical evolution of human civilization made it possible to form a structural and logical model of systemic interaction of the processes of social progress that promote it at the micro, meso and macro levels. To realize the universal progress of human civilization (UPHC), resources are needed. They are not resources in the usual sense – i.e. not objects of consumption. They cannot be "taken" from somewhere or from someone. These are not factors of production, not institutions, not structures and not even people. They are formed as a symbiosis of simultaneously appearing new resources and conditions for their use, "streams of change" – in factors of production, in institutions and structures, in the organization of human societies, in the minds of people. The latter is embodied in a special configuration of human capital, providing in a particular place the propensity of individuals to creative, innovative entrepreneurship, including in the format of teamwork.. The main resource elements that ensure UPHC is progress on three levels: innovation development, modernization and evolution of human consciousness. These organizational levels are integrating functionally compatible, scale-matched processes and systems (Figure 3).

**Figure 3**

Structural-logical model of social progress in the course of the historical evolution of human civilization



Notes:

- A1, A2, A3 – the circle of resource flows (PMSL)
- B1, B2, B3 – the circle of resource flows of innovative development (PMACL)
- (A1, A2, A3) & (B1, B2, B3) – the interaction of resource flows of PMSL and PMACL ensuring modernization of human consciousness and, respectively, progress at the micro level (PMICL)
- PMACL-1, PMACL-2 – markers denoting the output of the resource flow generated at macro level
- PMICL-3.A, PMICL-3.B – markers denoting the output of the resource flow generated at micro level
- PMSL-1, PMSL-2 – the markers denoting the output of the resource flow generated

at the meso level

A1, A2, A3, B1, B2, B3 – The vectors of resource flows of general progress of human civilization

The interaction of model elements in a generalized form are presented in Table 4.

**Table 4**  
Types of modernization by the content and period of reforms

<b>Vectors and vector groups denoting resource flows of UPHC</b>	<b>Source of resource flow</b>	<b>Marker denoting the "source" – beginning of resource flow in Figure 3</b>	<b>Levels of UPHC that are consumers of the resource flow</b>
<b>Innovative development (macro level – level of the whole civilization)</b>			
B1	Progress at the meso level	PMSL-1	macro level
(B3 +B2)	Progress at the micro level	PMICL-3.B	macro level
	Progress at the meso level	PMSL-2	micro level
<b>Modernization (meso level – the level of a single country, geoeconomic union of countries)</b>			
A1	Progress at the macro level	PMACL-1	meso level
(A3 +A2)	Progress at the micro level	PMICL-3.A	meso level
	Progress at the micro level	PMACL-2	micro level
<b>Modernization of human consciousness (micro level)</b>			
B2	Progress at the meso level	PMSL-2	micro level
(A2+B1)	Progress at the macro level	PMACL-2	micro level
	Progress at the meso level	PMSL-1	macro level
A2	Progress at the macro level	PMACL-2	micro level
(B2+ A1)	Progress at the meso level	PMSL-2	micro level
	Progress at the macro level	PMACL-1	meso level

1) Innovative development is a process with the mission to ensure progress at the macro level (the level of human civilization as a single global integrity). This is a global, transhistorical process of mastering the opportunities of nature by human civilization based on the development of its intellectual, psychophysical, socio-cultural, economic and scientific-technological capabilities.

The progress at the macro level will be denoted as PMACL (Figure 3).

Innovative development in the proposed understanding is always based on resource flows of UPHC, including:

1.1. Progress at the meso level in the interests of macro level, i.e., in the interests of the whole civilization (the source of the resource flow source is PMSL-1). The resource flow

vector is B1. It should be noted here that PMSL-1 does not have a geo-economic link to a particular country or group of countries. PMSL-1 is a synthesis of private progress of countries and continents, complementing and motivating each other. This is a "broad stream of development," which provides solutions to specific tasks, overcoming problems and challenges, taking into account the specific geo-economic territory at the world level, on the basis of advanced knowledge achieved by mankind, the best world experience.

1.2. Progress at the micro level in the interests of the whole civilization (the resource flow source marker is PMICL-3B), which relies on the meso level progress for the evolution of human consciousness (marker-PMSL-2). The resource flows are indicated in Figure 3 by the vector group B3 and B2 (vector B3 + B2).

The resource flow, denoted by the vector B3 (the marker of beginning of the PMICL-3B flow) is the flow of individuals' development at the spiritual, moral, psychoemotional, intellectual, physical and communication levels. It emerges in the process of interaction of individuals and social groups at the interregional and interethnic levels and is embodied in the form of the exchange of knowledge, experience and skills, in the form of their rethinking, taking into account the experience and knowledge gained in a particular region, in a specific ethno-cultural community. Thus, without a world ethno-cultural and intellectual diversity, without a regionally distributed network of ethnic groups and states, this flow cannot emerge. PMICL-3.B forms the paradigm of personal development, which: on the one hand is universal – "general human"; on the other hand it has a concrete historical ethno-cultural form of the embodiment of individual consciousness.

The resource flow, denoted by the vector B2 (the marker of beginning of the PMSL-2 flow) is the flow that provides the "nutrient medium" for the development of the micro level – it forms the conditions for the development of individuals and social groups at the regional level.

2) Modernization has a mission to ensure progress at the meso level (the level of local socio-economic systems: specific countries, geo-economic regions – regional alliances).

The progress at the meso level will be denoted as PMSL (Figure 3). Modernization in the above understanding is always based on the resource flows of UPHC, including:

2.1. Progress at the macro level (the resource flow source marker is PMACL-1). The resource flow vector is A1. PMACL-1 forms the priorities, general context, agenda for modernization, determines the range of acceptable principles, models of civilizational development that can be realized at the meso level in the current historical period, denotes the risks.

2.2. Progress at the micro level for the meso level (marker is PMICL-3.A), which is provided by progress at the macro level for the benefit of the micro level (the resource flow source marker is PMACL-2). The resource flows are indicated in Figure 3 by the vector group A3 and A2 (vector A3 + vector A2).

The resource flow, indicated by the vector A3 (the resource flow source marker is PMICL-3.A) is the flow of individuals' development on the spiritual, moral, psychoemotional, intellectual, physical and communication levels. It emerges in the process of interaction of individuals and social groups at the intra-regional and intra-national levels and is embodied in the form of increasing, comprehending, using the knowledge, experience and skills of the local cultural-historical community of people.

The resource flow, indicated by the vector A2 (resource flow source marker – PMACL-2) is the flow that "feeds" the micro level of national development, enriches it through the involvement of individuals' developments in UPHC.

3) Modernization of consciousness ensures the evolution of human consciousness.

Modernization of human consciousness requires qualitative development: (a) at the individual level, (b) at the teamwork level (the ability to form working groups acting as a unit for the common goal), (c) at the level of social groups related institutionally.

PMICL has the highest level of mission that goes to the cosmic level – this is the formation of a fundamental resource for the evolution of the human population, as an element of the universe. Therefore, PMICL resources derive from progress at the macro level (PMACL) and

meso level (PMSL) – simultaneously.

Modernization of consciousness relies on resource flows of UPHC, including:

3.1. Progress at the meso level in the interest of the micro level (the resource flow source marker is PMSL-2). The resource flow vector is B2.

3.2. Progress at the macro level in the interest of the micro level (PMACL-2), which is provided by progress at the meso level for the benefit of the macro level (the resource flow source marker is PMSL-1). The resource flows are indicated in Figure 3 by the vector group A2 and B1 (vector A2 + vector B1).

3.3. Progress at the macro level is in the interest of the micro level (the resource flow source marker is PMACL-2). The resource flow vector is A2.

3.4. Progress at the meso level in the interest of the micro level (the source of the resource flow source is PMSL-2), which is provided by progress at the macro level in the interest of the meso level (the resource flow source marker is PMACL-1). Resource flows are indicated in Figure 3 by the vector group B2 and A1 (vector B2 + vector A1).

The interaction of the progress of human civilization at the three levels is a closed, self-developing system. Its structural-logical model is presented in Figure 3.

For the success of modernization it is necessary:

1. To understand at the national level, the level of the geo-economic region: (a) the available directions of general civilizational progress, actual global challenges and risks; (c) the peculiarities and deep interests of the people, the tasks of development in the economic and cultural-historical directions; (b) the opportunities that, on the basis of satisfying their development tasks, can be integrated (be useful) for general civilizational progress. The solution of these problems forms the vector A1 (Figure 3) – the contribution of progress on the general civilization level to the implementation of the modernization mission.

2. To assess the achievements of the general civilizational progress in the development of the individual and social groups and to form mechanisms for using useful experience at the national level, taking into account the specifics and deep interests of the people. The solution of these problems is formed by the vectors A2 and B2 (Figure 3),

3. To develop and use own directions of development of the individual and social groups, using the potential of their specificity, cultural and historical features (vector B2 (Figure 3)),

4. To develop a mechanism for mobilizing the individual and social groups to solve the modernization tasks (vectors B2 to A3 (Figure 3)).

Thus, all the above-mentioned institutions (modernization, innovation development, evolution of human consciousness) represent the progress of human civilization in a certain sphere. Their development is interdependent. The system of resource support for each of the institutions is formed by resource flows that emanate from the other two. Table 4 examines the system of resource support for modernization, innovative development and the evolution of human consciousness.

According to the structural-logical model of social progress in the course of the historical evolution of human civilization (Figure 3) and the resource elements of the evolution of human civilization (Table 4), there is a systemic interdependence of progress at the meso level (modernization), macro level (innovative development) and micro level (evolution of human consciousness). Moreover, the micro level – the evolution of human consciousness – has the highest level of mission, because it determines the essence and place of mankind as an element of the universe. Therefore, resources for progress at the micro level (in the figure and in the table – PMICL) are drawn from the progress at the meso level (PMSL) and progress at the macro level (PMACL). That is, meso and macro levels are providers (service-related) in connection with the micro level. The supporting levels must develop in a balanced manner. Otherwise, they will not fulfill their functions in creating the necessary resource base (resource flow systems) for the progress of human civilization.

Here it should be noted that the evolution of human consciousness (progress at the micro level) is achieved through the integration of the two systems of micro level's resource flows,

the vectors of resource groups of which have a counter direction (Figure 3). This is what ensures the increment of a new quality to human consciousness.

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## 4. Discussion

The conclusions obtained as a result of this research made it possible to single out the most general conditions for carrying out modernization reforms at the level of the geo-economic region or nation. These include:

1. Complexity of reforms of public institutions and economic systems.
2. A strict sequence of modernization transformations, which consists in the fact that reforms are first carried out in the field of public institutions, and then in economy.
3. Identification and fixation at the stage of institutional reforms of the potential right of country or region to increase access for local businesses to strategic resources and to markets for finished products that will grow in the long term (at least 30 years).
6. Strict, purposeful, limited in time (starting from the day of declaration) implementation of reforms in the field of public institutions, ensuring the possibility of further economic reforms on the basis of liberal-democratic methods.
7. Relying at the stage of institutional reforms on the active, educated, interested, faithful minority, taking into account long-term interests of the majority. At the stage of economic and technological transformations – on the majority.
4. The heart of economic reforms is structural modernization of the production sector, which will provide for the locomotive, as a rule, interrelated directions of development, the prospects for long-term growth in line with the world's leading trends. Targeted government support, although according to Mark Hampton “to an extent, the tropes of order and modernization contradicted the idea of a free-wheeling capitalist economy”. (Hampton, 2015, p. 100).
5. Creation of conditions for the realization of entrepreneurial and creative activity of a larger number of citizens of the society, in comparison with the previous period and/or with other objects of comparison (countries, regions).
8. Maximum reduction in the level of unproductive workload on the economy, which ensures an increase in the efficiency of the investment process.
9. Active participation by the state in modernization, its promotion and protection of its interests from internal and external destabilizing factors.

In the course of carrying out specific reforms, this list can serve as an appropriate benchmark. It should be analyzed in terms of national and/or regional specifics, supplemented or amended.

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## 5. Conclusions

The modern management science proposed two main approaches – innovative development and modernization. However, the opportunities of their application are limited by differences in the scientific, technological and socio-economic level in different countries and continents.

Despite the fact that progress at the personal and group levels is a micro level in the process of the historical evolution of human civilization, but it lays the foundation for any modernization and global innovative development. Therefore, it must be given special significance. It must move forward both at the meso and macro levels. Modernization, according to the proposed rationalizing, is theoretically possible at the level of individual national states and geo-economic regions (that is, at the meso level) and, according to the examples given, is realized in individual cases. But one must not forget that the key element is the presence of an active global innovation process. The complexity lies in the fact that despite the globality of individual systems (information, financial, transport and logistics), many countries and regions lag behind in economic, socio-cultural, institutional, and political development from leaders and cannot join on a parity basis in these processes. The need for the evolution of human consciousness to rely on the listed resource groups generates a



universal systemic dependence – the dependence of each development on the development of all and vice versa.

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