



State Regulation Improvement of the Military-Industrial Complex Development in Ukraine in Terms of Transition to Modern Information Technologies

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Abstract

The military and political leadership of Ukraine considers the domestic military-industrial complex as an important component of the country's national security and defense strategy and pays special attention to increasing the efficiency of production and scientific and technical activities of defense industry enterprises and organizations. The study represents directions for improving the state regulation for the further development of the military-industrial complex in Ukraine under the conditions of the transition to modern information technologies. Proposals have been made for the formation of the organizational and economic mechanism for state regulation development of the military-industrial complex, aimed at ensuring its innovativeness, stimulating scientific and technical activity, and implementing modern information technologies systematically during the production of weapons, ammunition and military goods.

Keywords: Defense and Security of the State; State Regulation; Military-Industrial Complex; Information Technologies; Scientific and Technical Potential; Innovative Development.

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Introduction

The state activities regarding the organization of defense are of primary importance for ensuring its sovereignty, sustainable development and maintaining the welfare of citizens, especially in the conditions of the current state of war in the country, which is still ongoing in Ukraine. This concerns directly the formation of military policy and military doctrine, which include the development of military science, the development and implementation of military-technical policy, forecast and evaluation of the conduct of military operations, the implementation of appropriate measures on the international arena to resist aggression, the formation of the structure and ensuring the needed number of Armed Forces of Ukraine (hereinafter referred to as the Armed Forces), maintenance of their combat capability, combat and mobilization readiness, coordination of all units of the Armed Forces, transition of the military formation to modern information technologies, preparation of the population and territory of the country for defense, etc.

Moreover, underestimation of threats in the military sphere, insufficient attention to the development of the military organization of the state, neglect of the logistics management in

the military sphere and constant underfunding for a long time led to a significant decrease in the country's defense potential. That is why it is difficult for Ukraine to face new challenges and threats in the situation of disruption of the geopolitical balance in the world. Under such conditions, there is a need to study the problems of management in the military-industrial complex in Ukraine, to clarify the content, directions, goals and tasks of the state policy in the defense sphere of Ukraine, to reveal the basics of strategic planning and target programming of the defense sphere of Ukraine, taking into account the implementation of modern information technologies. It is necessary to develop recommendations for improving the state regulation for the development of the military-industrial complex (hereinafter referred to as the MIC) of Ukraine, namely, in relation to the study of the administrative and legal status of public management bodies in the defense sphere of Ukraine, the determination of the specifics of personnel, financial, information and analytical support of the defense of Ukraine and separation of administrative services provided in the defense sphere.

Literature Review

The modern development of information technologies leads to the increase of their role in the processes of managing troops (forces) and weapons. Implementation of the concept of network-centric warfare requires the integration of many simultaneous processes (surveillance, reconnaissance, navigation, design, modeling, etc.) in time and space. Furthermore, combat operations are carried out at a very high pace with the use of complex and highly accurate weapons. Modern information technologies combine physical, cognitive and management functions that can cover all elements of military affairs (human resources, technologies, material objects, relations), becoming a basic element of modern military strategy and tactics (Gryshchenko et al., 2022; Savytska et al., 2021, 2023; Zhuchenko et al., 2023). Information technologies become a key link in complex systems of military management during the formation of digital, audio and visual data transmission networks, as well as planning and control over material and technical support, organization of combat infrastructure (Mavlutova et al., 2021; Vasilyeva et al., 2023). It can be confidently outlined that such classic military concepts as defense, maneuver, strike tasks and rear support have been replaced by a completely different, updated functionality of the army due to the introduction of mechanisms and technologies of highly coordinated maneuver, the use of high-precision weapons, multi-level defense, organization of the effective multi-level cyber security and targeted coordinated logistical supply (Senchenko, 2014; Shyshatskyi, et al., 2019; Voronenko, et al., 2022).

Analysis of the state of the legislative framework and the practical actions of state bodies and public organizations in matters of guaranteeing military security, the current social, political and economic situation in Ukraine allows to claim that today a deep restructuring of the system of guaranteeing military security of Ukraine is needed, which will be based on the improvement of the legislative framework of Ukraine, and practical activities of state

authorities and public organizations (Behma, et al., 2013; Salnikova, 2015; Badrak, 2016; Sverhunov, 2017).

The low efficiency of state management of the military industry, the high level of corruption complicate the existing problems, lead to the insufficient level of promptness and efficiency of interdepartmental interaction, slow down the processes of reforming the Armed Forces, restructuring the domestic defense industry and its transition to modern information technologies, and create additional risks of reducing the level of effectiveness of the state's defense capability (Novikov, 2022).

The main challenges of the state management of the MIC are the limited funding and the imperfect regulatory environment: the lack of effective mechanisms for attracting investments, the low quality and inconsistency of state programs, the insufficient volumes and imperfect targeting of state defense orders, the low level of executive discipline, the lack of effective coordination and mechanisms of participation of state bodies in the management of enterprises, insufficient consideration of market mechanisms, market conditions and real opportunities for ensuring the competitiveness of defense enterprises, inefficient process of administration of export-import operations (Salman et al., 2022; Slavinskaite et al., 2022). The lack of political level in the system of military-technical cooperation and insufficient coordination of efforts in this area at the interagency level, insufficient state support and effectiveness of mechanisms for promoting the products of domestic enterprises to the foreign market also take place (National Council for the Recovery of Ukraine from the War, 2022).

There is also no tradition of legal succession of decisions (decisions important to the state after the change of government are ignored or subjected to thorough revision by successors) (Bakumenko, et al., 2016).

Methodology

The complexity of the researched topic led to the complex application of research methods, each of them allows to examine the forms and methods of state management of the military-industrial complex of Ukraine in terms of using modern information technologies. The main methods are: the dialectical method (the law of transition from general to basic and specific and vice versa), as well as general scientific methods based on it, which ensured both their novelty and scientific and reliable results. The conclusions and provisions of the study are based on the method of systematic analysis of current legislation, international legal documents, and the practice of their application taking into account social, political, demographic factors and directions of state policy implementation. The information base of the research is the regulatory and legal acts of Ukraine, official materials of the State Statistics Service of Ukraine, the Ministry of Defense of Ukraine, scientific publications of domestic and foreign scientists, and other relevant sources of information.

Results

The entire period of human existence, from the primary human civilizations to the present day, is inextricably linked with wars and conflicts. It is difficult to name at least one generation of people on the planet that was not a witness or a direct participant in the bloody events of their era. Therefore, issues of state security and stability remain the most important components of the development of sovereign countries, an urgent need of society and every person.

Currently, there are various threats to the sovereignty of Ukraine, from political methods of putting pressure on our state, including informational aggression, hindering economic stability, access to various vital resources, and direct military aggression.

In modern conditions of globalization, the strengthening of Ukrainian statehood, the formation of state identity become a reflection of the country's international positions, its place in the system of intercivilizational relations.

To guarantee the national security of Ukraine, it is necessary to develop and implement a realistic military-political course consistently, increase the level of social and economic development, strengthen the military organization of the state based on military threats to its national interests, and determine and use the most effective forms and methods for their neutralization.

The political component should be emphasized, because the main challenges for Ukraine's national security have mainly internal nature. We believe that the first and most acute threat of an internal political nature was the lack of internal consolidation of politics, government and society (Savytska et al., 2022). First of all, the stratification of society and its division based on regional, political, property, linguistic, confessional and religious diversity are quite noticeable.

In the conditions of conducting hostilities and new geopolitical realities, the urgent tasks of state importance are:

- 1) Taking systematic measures to improve sufficiently the state of affairs in the Armed Forces, reforming them according to NATO standards;
- 2) establishing activities of the military-industrial complex in the state; primary provision of the needs of security and defense sector bodies in material, technical, financial resources, weapons and military equipment.

The MIC of Ukraine should be defined as a set of enterprises that produce military products or develop technologies for military purposes. The military-industrial complex cannot work and develop effectively without ensuring certainty in the prospects for the

development of weapons systems and in state defense orders, which are necessary conditions for a rational military-technical policy.

The need to reform the military industry is due to the following main features:

- 1) Carrying out military reform in the country, reducing the Armed Forces and the state defense order;
- 2) The need to concentrate state funds for the implementation of programs aimed primarily at solving the most important defense and national economic problems;
- 3) Restructuring of the defense industry through the creation of industries and scientific teams viable in market conditions with the formation of widely diversified, sustainable inter-branch structures on their basis;
- 4) The need to preserve and use competitive scientific potential effectively according to the global standards as a basis for creating modern types of materials and products;
- 5) Decreasing social tension in regions with a significant concentration of defense enterprises, provision of reliable social guarantees to employees of the military industry who are released from military manufacturing;
- 6) The need to develop effective military-technical cooperation between Ukraine and foreign countries (Bezzub, 2016).

Military reforms must be carried out in accordance with the economic capabilities of the state, which necessitates the reform of the military-technical policy in the MIC.

The interests of the country require bringing the military-industrial complex of Ukraine, the production capacities of defense organizations and enterprises in line with the needs of the expected future demand for weapons and military equipment for all power structures and the implementation of international contracts, as well as civilian science-intensive products on the domestic and foreign markets.

For this purpose, it is considered expedient, taking into account the challenges and threats to the national security of the state and its defense capability in the current century, to ensure the solution of issues regarding:

- 1) preparing the state to repel armed aggression, increasing the ability of state authorities, military administration and local self-government bodies, defense forces, the civil defense system, the military-industrial complex to function in crisis situations that threaten national security, and in a special period;

- 2) reforming the system of mobilization itself and mobilization training, formation of appropriate conditions for staffing the Armed Forces of Ukraine, other military formations in accordance with the laws of Ukraine with professional personnel, implementation of the principle of extraterritoriality, creation of an electronic register of conscripts;
- 3) Creation of a powerful, numerous, military-trained reserve assigned to designated military units, ready for rapid deployment and capable of performing assigned tasks;
- 4) Active preparation of the population and the territory of the state for performing defense tasks, improvement of the territorial defense system;
- 5) modernization and anticipatory development of the defense-industrial complex, expansion of its production capacities, production of weapons and military equipment competitive on the world market, import substitution and increase of domestic production of critical components and materials;
- 6) Deepening of military-industrial and military-technical cooperation with other states, primarily NATO and EU member states;
- 7) support for promising, practically oriented scientific research in the field of national security and defense;
- 8) bilateral and multilateral cooperation with partner states for ensuring Ukraine's defense capability, obtaining modern samples of weapons and military equipment, and preventing artificial restrictions in the military-technical cooperation.

In accordance with the Decree of the President of Ukraine "On the Goals of Sustainable Development of Ukraine for the Period Until 2030", in order to ensure the national interests of Ukraine regarding the sustainable development of the economy, civil society and the state, in order to achieve an increase in the living standards of the population, it is necessary to ensure the creation of sustainable infrastructure, the promotion of comprehensive and sustainable industrialization and innovation (Decree of the President of Ukraine, 2021). In modern conditions, this should concern especially the military-industrial complex.

Therefore, attention should be focused on the formation of new management bodies for ensuring national security, emphasis should be put on the system of management, control, communications, computer support, intelligence and information support, as well as logistics in the entire security sector. In the Armed Forces of Ukraine, priority should be given to the complete renewal of the structure, starting from the management bodies and ending with the personnel lists of units, as well as the optimization of all systems and standards of support, the introduction of new types of weapons and military equipment, the revision of tactics and strategy taking into account modern requirements. The intelligence system should be

completely revised, from the intelligence units to the intelligence bodies of the Ministry of Defense of Ukraine.

The process of reforming the military-industrial complex should include:

- 1) The President's participation in the formation of military-technical and defense-industrial policy;
- 2) Improvement of organizational, scientific and technical aspects of military-technical policy;
- 3) Strengthening the system of state management of the military-industrial sphere in market conditions;
- 4) Rejecting planned methods of management in the military-industrial complex, implementation of market principles in the activity;
- 5) Comprehensive strengthening of the innovative component of defense-industrial activity;
- 6) Improvement of the practice of public-private partnership in the military-industrial sphere;
- 7) Achievement of technical and economic indicators in the domestic military-industrial complex that are comparable to the global level, and on this basis, increasing its contribution to the socio-economic development of the country.

Among the main measures for implementing the reform of the national security and defense system there should be functional optimization (reduction of duplicate and redundant structures), centralization of purchases, optimization of the logistics support system, renewal of doctrinal and conceptual approaches to ensuring national security, creation of an effective state crisis response system (network of situational centers of central executive authorities) for the leading role of the National Security and Defense Council of Ukraine, attracting foreign investments and forming an effective public-private partnership model, introducing the cluster principle of personnel rotation, reviewing qualification requirements and ensuring strict compliance with these requirements, and full re-certification of personnel, and both professional and personal qualities of a person should be determinants.

The development of defense potential requires investments, which can be obtained through state support for defense production, centralized capital investments, protectionist measures for domestic producers and knowledge-intensive production, financing of restructuring defense industries, and the creation of a high-tech base using dual technologies (Kovalenko, 2016). Such policy will allow, after a while, to increase the competitiveness of the products of the domestic military-industrial complex on the world market.

Among the proposals for solving priority problems for Ukraine, we will single out the following ones listed in the table 1.

Table 1. Ways of solving problematic issues of the military industry development in Ukraine

Global	Practical
Normalization of the economy	Establishing relations between the army and the military industry
Careful review of foreign policy guidelines	Creation of a centralized body for managing the export of military equipment of Ukraine (to prevent shadow exports)
	Creation of preferential conditions for industrial complex enterprises
	Review of foreign policy orientations and restructuring of Ukraine's foreign economic relations
	Modernization of the domestic military industry according to the established system of landmarks

The following are the main directions of reforming military-industrial complex enterprises:

- 1) optimization of the composition of defense enterprises due to the concentration of state defense orders at state-owned factories, their unification by technological and cooperative “chains” into corporations, holdings and financial and industrial groups, central companies that would have state defense orders at the level of 75-80% of production capacity that meets the criterion of economic profitability;
- 2) A significant increase in the share of research and development works in the defense order, provision of targeted support for basic (critical) technologies. It is also necessary to support more actively the creation of dual-use technologies that are used simultaneously for military and civilian needs. MIC enterprises implementing such technologies should be financed by a special line of the state budget or through presidential programs;
- 3) The direction of the technical rearmament of defense enterprises for the rational diversification of production, for the use of mainly flexible production, based on the fact that the state defense order will be focused on the production of weapons and military equipment in the future, mainly in small series and will not provide a decisive loading of MIC production capacity;
- 4) Involvement of non-traditional sources of financing in the military industry.

The economic condition of MIC enterprises is characterized by an imbalance in the structure of defense production, a high level of depreciation of fixed assets, low profitability of the work of most enterprises, and a low level of utilization of production capacity. The high level of resource consumption and low profitability of enterprises prevent the increase of competitiveness of their products in foreign markets.

Low investment attractiveness of enterprises, difficult access to credit resources, political restrictions on access to foreign sources, the need to increase the technological level of the production capacity of defense enterprises are also distinctive features (Kovalenko, 2017).

State administration bodies can perform certain regulation and support functions of the sustainable development of the MIC, if the formation of such regulation system is based on the mandatory implementation of the organization principles.

The following are the main principles of state regulation:

- 1) Combination of economic and state goals;
- 2) Programmatic regulation and support of the military-industrial complex;
- 3) Guaranteed state support for the sustainable development of the military industry;
- 4) Motivational orientation of state regulation and support;
- 5) Maximum effective use of available resources;
- 6) Indicativeness and directiveness of state regulation (Malynovskyi, 2009).

In modern conditions of finding ways from the crisis for MIC, the problem of forming an effective organizational and economic mechanism arises.

The organizational and economic mechanism of the MIC development can be implemented through such levers, which can be grouped according to two main features: the levers of the organizational mechanism and the levers of the economic management mechanism.

The organizational and economic mechanism is a system of levers, tools and measures of the institutional system of state administration, as well as informational and legislative and regulatory support, with the help of which both external and internal industrial and economic relations in the MIC are organized.

The organizational mechanism for the MIC development involves the development of normative and legal documents; improvement of the organizational and production structure and management, organizational and technical support for the development of the military industry, the use of operational management and control, marketing and information support, etc.

The economic mechanism becomes apparent through forecasting and planning, investment and credit support for the MIC development, financial and credit regulation, taxation and insurance, improvement of the system of foreign economic and domestic industrial relations.

It should be outlined that the division into the organizational and economic mechanism is quite relative, because the achievement of the specified goals of system development through the implementation of a certain strategy, which involves moving in certain directions with the help of certain tools (levers), can be carried out only under the condition of complex use of both organizational, as well as economic levers that ensure and strengthen mutual action and development, changing the system in a certain direction. All these levers affect the processes of cooperation and integration, the use of production technologies, the introduction of innovations, etc.

Regulation of the industry is provided by a number of documents that are constantly changing. Security challenges arising both from its internal environment and from the external political environment require the development and implementation of a certain state policy in the field of security, especially in that part of it, which ensures the protection of society and the state from military threats.

Thus, the Law of Ukraine “On the Defense of Ukraine” assumes that the preparation of the state for defense includes, in particular, the formation and implementation of the military, military-economic, military-technical and military-industrial policy of the state, the provision of the Armed Forces of Ukraine, other military formations created in accordance with the laws of Ukraine, weapons, military and other equipment (Law of Ukraine, 1991).

In order to avert and neutralize threats to national interests of Ukraine, the National Security Strategy of Ukraine (Decree of the President of Ukraine, 2020) and Military Security of Ukraine (Decree of the President of Ukraine, 2021) were developed and approved by the Decrees of the President of Ukraine. The new edition of the National Security Strategy of Ukraine envisages strengthening the potential of the defense industry, primarily scientific and technological, and its effective use in the interests of the economic development of the state, as well as security and defense sector bodies.

In addition, the creation of new Ukrainian state, administrative reform, optimization of the system of central executive bodies, and the reform of the Armed Forces of Ukraine raised a number of problems inextricably linked to the ability of executive bodies to ensure the implementation of arms and military equipment for state orders and the preparation of MIC production.

The system of state administration bodies providing the military-industrial complex of Ukraine consists of:

- 1) Verkhovna Rada of Ukraine, President of Ukraine, Cabinet of Ministers of Ukraine;
- 2) Ministry of Defense of Ukraine;
- 3) General Staff of the Armed Forces of Ukraine;

- 4) National Security Council of Ukraine;
- 5) Interdepartmental Commission on Defense-Industrial Complex;
- 6) Management of state-owned subjects in the defense-industrial complex.

The system of MIC state regulation is also undergoing constant changes aimed at finding the optimal model and reducing the number of state administration links.

In the system of state authorities, the Verkhovna Rada of Ukraine plays an important role, making timely decisions aimed at ensuring the state's defense capability. The President of Ukraine occupies a special place and plays a decisive role in matters of foreign policy, national security and defense of the country, ensuring state independence, integrity of Ukraine's territory, compliance with the Constitution of Ukraine, human and citizen rights and freedoms.

According to the Constitution of Ukraine, the Verkhovna Rada of Ukraine has the authority to declare a state of war and conclude peace at the request of the President of Ukraine, approve the decision of the President of Ukraine to use the Armed Forces of Ukraine and other military formations in the event of armed aggression against Ukraine.

The main body in the system of central executive bodies, which ensures the formation and implementation of state policy on national security issues in the military sphere, the sphere of defense and military construction in peacetime and special periods, is the Ministry of Defense of Ukraine.

The latter assigns the following tasks:

- 1) ensuring the formation and implementation of state policy on issues of national security in the military sphere, the sphere of defense and military construction in peacetime and a special period regarding:
 - Defense planning;
 - Military-technical policy in the field of defense;
 - Military personnel policy;
- 2) Implementation of military-political and administrative management of the Armed Forces;
- 3) In the established order, carrying out the coordination of the activities of state bodies and local self-government bodies regarding the preparation of the state for defense;
- 4) Within the limits of the powers provided for by law, ensuring the implementation of the state policy on defense issues related to the use of the airspace of Ukraine and the protection of the state's sovereignty.

The main purpose of the military-technical policy is the development and implementation of measures to support and develop the technical component of the country's defense potential and its rational use in the interests of the technical support of the state's military security. The military-technical policy determines the activity of state administration bodies, aimed at a comprehensive, coordinated solution of the problems of equipping the Armed Forces and other military formations with weapons and military equipment according to their goals, tasks, resources and deadlines. The main goal of the military-technical policy of the state is to equip the Armed Forces and other military formations with weapons and military equipment according to their assigned functions.

Defense planning is an integral part of the system of strategic planning and management of state resources in the sphere of defense, which is carried out within the time limits established by law in order to ensure the necessary level of defense capability of the state by substantiating the prospects for the development of the Armed Forces of Ukraine and other military formations, taking into account the nature of real and potential threats in the military sphere and economic capabilities of the state, specifying certain measures, performers and terms of their implementation.

In order to ensure the implementation of defense reform in Ukraine, the gradual increase of the operational capacity of the Armed Forces of Ukraine, other components of the defense forces, and more rational use of the resources of the Armed Forces, it is planned to introduce changes to the laws of Ukraine and other regulatory legal acts in the following directions:

- 1) Legislative regulation of the powers and procedure for the leadership of the defense forces by the Supreme Commander-in-Chief of the Armed Forces of Ukraine and the Commander-in-Chief of the Armed Forces of Ukraine;
- 2) clarification of the main functions and tasks of the Ministry of Defense of Ukraine, the General Staff of the Armed Forces of Ukraine, as well as other bodies of the defense forces at the strategic, operational and tactical levels;
- 3) revising and supplementing the provisions of the Ukrainian defense legislation, taking into account new forms and methods of conducting operations (combat, special operations), improving issues of organizing and conducting the territorial defense of Ukraine, creating and training a military reserve;
- 4) Put in order changes regarding the improvement of the organizational structures of the defense forces and optimization of the number of personnel, including changes to the overall structure of the Armed Forces of Ukraine;
- 5) Legislative regulation of issues regarding the functioning of the defense forces management system;

- 6) Legislative regulation of changes in the procedures for public procurement in the sphere of defense;
- 7) Legislative regulation of issues regarding the system of material and technical support of the defense forces, taking into account the Euro-Atlantic experience;
- 8) Making changes to the normative legal acts regarding the volumes and procedure for keeping operational stocks;
- 9) improvement of legislation regarding the functioning of the military-industrial planning system as a component of the planning system in the security and defense sector, which is a part of the national system of state forecasting and strategic planning;
- 10) Development of normative legal acts aimed at increasing the effectiveness of military-technical policy implementation, further development of the military-industrial complex and long-term strategic documents aimed at the development of weapons and military equipment for the defense forces.

In addition, it is assumed that during the implementation of defense reform measures, changes will be made to other laws, regulations and conceptual documents in case they are necessary.

The set of tools for state regulation and support of the MIC should be considered in three directions: support for production activities, regulation and support for product sales, and state financial support. This approach makes it possible to structure and analyze measures of state influence on the MIC functioning more deeply.

The ongoing situation in 2022 shows that there is a need for fundamental changes in approaches to the state policy formation. The state leadership has determined the main strategic direction of the implementation of state policy in the field of defense – military, foreign policy, state, economic, informational, environmental security, critical infrastructure security, cyber security of Ukraine and other areas (Law of Ukraine, 2018).

Recently, the military-administrative division of the state has been approved. The system of management of the Armed Forces has been improved, and the Joint Operational Headquarters has been formed. The creation of a separate type of troops, Special Operations Forces, has been finished, and the Command of Special Operations Forces has been formed. The training of troops has been improved: instructors from the armies of NATO countries and the European Union have been involved in the training of the Ukrainian military.

Despite the constant difficult situation in the area of hostilities, the important task of the Ministry of Defense was to reform the Armed Forces in order to create combat-ready, well-equipped troops (forces) prepared for their assigned tasks.

In recent years, the Armed Forces of Ukraine have restored combat capability, gained combat experience, operational capability, the necessary level of technical equipment and material security to protect the sovereignty and territorial integrity of the state, and due to that they stabilized the situation in the area of the anti-terrorist operation.

The system of management and comprehensive support of the Armed Forces has been improved: pilot projects of the management of state-owned enterprises have been launched; material, food and medical support for the military; automation of management processes, as well as processes of accounting and movement of material resources.

In the circumstances of military aggression it is necessary to accelerate the reform of the MIC, especially regarding the production of a variety of modern high-precision weapons and reducing dependence on the import of components. In modern conditions, external cooperation becomes an important factor in the development of the domestic industrial complex, which determines the directions of institutional and structural changes, allows to obtain financial and technical support, establish cooperation in the field of scientific and technical developments, and also contributes to the realization of export potential. Cooperation with international organizations becomes a priority direction, which allows the use of multilateral mechanisms of external relations.

The programs for reforming the MIC during the years of independence contained numerous measures to deepen cooperation with international organizations, but they remained ineffective. As the realities of the last two years have shown, the significance, content, and intensity of this cooperation must be changed fundamentally, especially in terms of ensuring the development of the domestic military industry. Furthermore, cooperation with international organizations should be considered as a special factor that stimulates and directs internal reforms.

Until recent years, Ukraine had a sufficiently extensive system of relations with international organizations, including in the field of security and defense. However, well-known events have changed the significance of external cooperation, requiring a transition to a new stage. For this purpose, the main problems that slow down and reduce the effectiveness of interaction with international organizations should be considered and taken into account, namely: political instability, imperfection of the legislative and legal framework, low pace of internal reforms, corruption component, etc. Given the relevance of cooperation with international organizations to the needs of Ukraine, it is necessary to pay much more attention to this sphere of foreign policy and accelerate changes within the country.

Ukraine's main strategic partners in the field of military-technical cooperation and security are NATO and the EU.

The Charter on the Special Partnership between Ukraine and the North Atlantic Treaty Organization (1997) became the basic document for the development of Ukraine's relations with NATO, which defined the principles and a wide range of areas of consultation and/or cooperation, as well as relevant practical mechanisms. In particular, cooperation covered the sphere of weapons and defense (Bezzub, 2016). In accordance with the Declaration on the Supplement to the Charter of a Special Partnership (2009), NATO, among other things, continued to promote defense reforms. In the practical sphere, cooperation covered the implementation of military reform, as well as the defense and technical sphere.

Considering the Armed Forces, the restoration of the main weapons systems, optimization of the staffing and number, raising the capacity of the troops, introduction of modern technologies of collection, processing, display and exchange of information have been ensured. In order to improve the equipment and the material and technical support of the Armed Forces, the order for enterprises of the MIC was formed.

Defense and technical cooperation with NATO is focused on: the use of modern technologies, technical standards for the purpose of developing weapons and military equipment; joining Ukraine to the projects of the "smart defense", other multinational projects related to weapons (with the aim of optimizing costs for their development, production, procurement, modernization and repair of weapons and military equipment); using opportunities for cooperation with NATO in the field of weapons and technical standards for the further development of the MIC.

Cooperation with the EU in the field of security and defense is an important component of the general integration course of Ukraine, taking into account the fact that a large number of states have concluded contracts for the supply of weapons. The Association Agreement provides convergence of interests in the field of foreign policy and security policy, in particular cooperation in the field of disarmament, non-proliferation, arms control and arms export, as well as improvement of mutually beneficial dialogue in the space sphere. Military-technical cooperation covers issues related to the improvement of military capabilities, in particular issues of a technical nature.

Military intervention in Ukraine actualizes the need for accelerated modernization of the armed forces and strengthening of the country's defense capabilities. First of all, this should be ensured by the domestic MIC, which is capable of producing a wide range of modern weapons, military equipment and other military goods. However, this requires significant costs, which creates the problem of finding financial resources and their compensation.

Assessment of capabilities (capacity) in the development, production, equipping, modernization, maintenance and disposal of weapons and military equipment is carried out by analyzing the capabilities (capacity) of research institutions and enterprises of the national

economy of Ukraine to meet the needs of the Armed Forces in new and refurbished (modernized) types of weapons and military equipment.

Furthermore, domestic industrial and scientific research opportunities are analyzed, as well as opportunities for military-technical cooperation, including cooperation or joint production, procurement abroad, leasing of modern weapons, special and military equipment.

The study of the current state of the world arms market confirms the possibilities of expanding Ukraine's niches in many segments, primarily: 1) naval equipment (boats and small amphibious ships); 2) armored vehicles, combat tanks and other combat armored vehicles; 3) small arms, light weapons and portable air defense systems of new generations; 4) military transport aircraft; 5) missile weapons. Anti-satellite weapons may be developed in the future.

To increase the volume of exports of weapons and military equipment, the following measures should be taken:

1. Transition to new models of supply and improvement of the after-sales service system in accordance with international practice;
2. Creation of multi-functional representative offices that would protect the interests of military-industrial complex enterprises abroad;
3. Formation of a complex system of military-technical cooperation, which is especially important in terms of penetrating the markets of EU countries.

Regarding the latter, it should be singled out that Ukrainian enterprises should strive for inclusion in European cooperative structures that are engaged in the development and manufacture of weapons. Industrial cooperation will make it possible to increase the export of components and parts, as well as to import technologies. In addition, interaction with European structures allows broader marketing opportunities for post-socialist EU member states and associated member states. Moreover, inclusion in European structures will contribute to the gradual liberalization of the MIC and the rapprochement of the military and civilian sectors. Proposals for compliance with the requirements of transparency in the supply of weapons, that is, further inclusion in the international control system, are traditional for Ukraine.

The defense budget for 2023 will ensure the fulfillment of the tasks assigned to the Armed Forces of Ukraine and replenish partially the military units with updated models of weapons and military equipment. It is also planned to direct financial resources to the restoration of the potential of the naval forces, the development of the Special Operations Forces, the renewal of the military training ground, the repair of weapons and military

equipment, and the continuation of the initiated reforms regarding the transition of the troops to NATO standards.

Activities related to the implementation of state target programs for the reform and development of the military-industrial complex, the development and implementation of new technologies, the expansion of existing production capacities for the production of defense products, related to state secrets, are carried out in compliance with the requirements of the legislation on state secrets.

Budget funds are directed to the implementation of the state defense order in the following directions:

- 1) Increasing the existing production capacity;
- 2) Creation and implementation of special technologies and materials for the manufacture of new defense products and modernization of existing ones;
- 3) Creation and acquisition of special defense equipment;
- 4) Preparation for production of defense products;
- 5) Adjustment of mass manufacturing of defense products at enterprises;
- 6) Development and implementation of new special technologies.

The construction of the army model adequate to modern challenges and threats is determined by the following factors:

Firstly, there has been a significant increase in the number of military operations and peacekeeping operations recently, based on the principle of maximum use of forces. Ukraine takes an active part in hostilities and peacekeeping operations. For the military, the ability to apply the skills of limited violence or the use of violence, the ability to cooperate with various social structures (state, public, professional), possessing broad views and a fairly high level of education become relevant;

Secondly, in modern conditions, the role of the army in society is changing significantly. Recently, the social functions of the army have been significantly expanded, and new principles of relations between the army and society have been formed. Providing assistance to central and local authorities, local self-government bodies in ensuring the protection of the civilian population, protection from the consequences of accidents at high-risk facilities, emergency rescue and recovery work are the legally approved functions of the Armed Forces of Ukraine today. There are new requirements for the level of professionalism of the military, that is the formation of a harmonious combination of professional and social components;

Thirdly, the material and technical base is being updated, the management system is being improved. The troops receive the latest models of weapons and military equipment. Effective operation of modern weapons requires high professional training. This actualizes the problem of improving the quality of training of military specialists, forming a high level of the professional component of the military's personality potential. Furthermore, the tactical and technical characteristics of modern weapons testify to their great destructive capabilities, which actualizes the problem of forming social responsibility when deciding on its use, forming the social component of the potential of a soldier's personality (Lukhanin & Sirenko, 2014).

Thus, in modern conditions, the army's need for a new type of the military, whose main characteristic is a high level of socio-professional potential, is growing. Unfortunately, today the theoretical and methodological principles of creating an optimal model of the military are not sufficient, the social mechanism of forming the socio-professional potential of the personality of the military of the Armed Forces of Ukraine has not been studied, and the technologies for raising their level have not been developed.

The integration of the Ukrainian economy into the European economic space creates both certain advantages and certain risks for the functioning of the Ukrainian MIC, which is covered by a systemic crisis. Therefore, before getting rid of a share of national economic sovereignty in favor of integration intentions, it is necessary to improve carefully the security legislation of Ukraine as a whole, and especially in the military-industrial sphere.

According to the current Military Doctrine of Ukraine, the state must ensure the development of the scientific, technical, technological and production base of the MIC; development, modernization and equipment of the Armed Forces of Ukraine (Decree of the President of Ukraine, 2021).

Therefore, today, the need for the formation and implementation of the state technical policy as a long-term strategic course of the state aimed at the effective use of scientific and technical potential and the transformation of Ukraine into a technologically oriented state with developed national industries, the development and timely implementation of especial priority from the standpoint of national security and economic growth of technologies that will provide an opportunity to solve crucial problems for the state that affect directly the country's defense capability.

One of the main indicators of the development level of MIC is the level of its innovativeness. Innovative processes involve the cooperation of scientists who develop innovations, and the state that implements these innovations both in domestic and foreign markets. Despite the significant achievements of domestic science, the commercialization of positive results of scientific research on innovation activity requires the implementation of a consistent and effective state policy in the field of innovation.

The main principles of the state innovation policy are:

- 1) Focus on the innovative way of development of Ukraine's economy;
- 2) Determination of state priorities for innovative development;
- 3) Formation of the legal framework in the field of innovation activities;
- 4) Creation of conditions for preservation, development and use of domestic scientific, technical and innovative potential;
- 5) Ensuring interaction of science, education, production, financial and credit sphere in the development of innovative activity;
- 6) Effective use of market mechanisms to promote innovative activities, support of entrepreneurship in the scientific and industrial sphere;
- 7) Implementation of measures to support international scientific and technological cooperation, technology transfer, protection of domestic products on the domestic market and their promotion on the foreign market;
- 8) Financial support, implementation of favorable credit, tax and customs policy in the field of innovative activity;
- 9) Promoting the development of innovative infrastructure;
- 10) Information provision of innovative activity subjects;
- 11) Training personnel for innovative activities (Law of Ukraine, 2002).

To ensure the implementation of the main programs, the following measures are supposed to be taken:

- 1) Develop a concept for the development of the national innovation system, which ensures the creation of a competitive military-industrial sector of research and development and conditions for its expanded reproduction and development;
- 2) form, on the basis of a competitive selection, a block of breakthrough technologies in the priority directions for the MIC development;
- 3) expand the regulatory and legal framework in terms of financing targeted programs for the MIC modernization;
- 4) develop and implement mechanisms for tax stimulation of innovative activity in the MIC, including granting benefits to those companies that finance projects corresponding to the state's innovative development strategy and priority directions for the development and manufacturing of AMT;

5) Develop a regulatory framework for accelerated depreciation for innovative enterprises of the MIC, while the priority should be to support innovative projects of enterprises that make up the core of the MIC of Ukraine;

6) Ensure the development of the infrastructure of innovative processes, including the creation of national and regional information funds of innovative projects, technology parks, business incubators, technology transfer centers, engineering, venture entrepreneurship, innovation and technology centers and the training of personnel for the innovation sphere, including technical specialists that have modern tools for promoting innovations in production.

Innovative provision of the country's MIC complex in modern conditions is possible with the help of:

- 1) Implementation (stimulation) of effective strategic management;
- 2) Introduction of the rational MIC structure.

Implementation (stimulation) of effective strategic management. This process should be carried out simultaneously with the corresponding measures of administrative reform (improvement of the functions and structure of state authorities, the regulatory and legal framework of their activities).

In particular, state planning should be based on the following main principles:

- 1) The targeted program nature of management, i.e. the state's military-industrial policy should be determined by the State Program for the Reform and Development of the MIC as a part of the National Strategy for Social and Economic Development of Ukraine;
- 2) the State Program must be coordinated with the reform programs of the Armed Forces and the development of weapons, and contain: priorities and goals for the long- and medium-term perspective; medium- and short-term results are required (a clear list of enterprises with a definition of the changes to be provided); determination of resources for their implementation (organizational, legal, financial, material, personnel); a complete list and sequence of measures, the order of transfer of results and interaction between performers; summary estimate of financial needs for the implementation of the short-term plan (budget proposals);
- 3) obligation, transparency and clarity of state plans including the adoption of the reform and development of the military industry, which ensures transparency, clarity and security of budget expenditures, by the Verkhovna Rada of Ukraine simultaneously with the State Budget of the State Program (and every year the annual plan for its implementation should be developed). Strategic and programmatic documents should be developed on the alternative

basis with the representatives of MIC enterprises and specialized public organizations (analytical centers);

4) Limited state intrusion that means the Program is a directive document only for state bodies as executors of strategic and current plans;

5) MIC enterprises, regardless of the form of ownership, receive program tasks on a competitive basis and in the form of contracts for their implementation; for all other subjects of economic activity, the Program serves as an indicative plan and a tool for motivating their activities;

6) concentration of efforts on priority areas under the conditions of resource limitations, the realism of the Program is based on the selection of priorities for the MIC development, their presentation in the form of a limited (sufficient) number of achievable goals and the concentration on their implementation of the efforts of the executors with the appropriate provision of their resources. The priorities and tasks of the Program are determined on the basis of a forecast of the dynamic changes in the economic and political situation on the foreign and domestic markets of weapons and dual-purpose products, as well as a comprehensive analysis of the conditions and competitive advantages and disadvantages of domestic enterprises, their potential partners and competitors.

Introduction of the rational MIC structure. It was mentioned above that the most effective structure of the defense industry can be considered as the one focused on the construction of not individual basic weapons (aircraft, ships, tanks, etc.), but systems of providing certain components of combat application for forces and means: support combat, movement of forces and means to the right place, high-precision defeat of the enemy, protection of territory, forces and objects, integration of forces and means in the combat area.

This structure, in fact, can be considered effective for large companies that have stable positions in the arms market (or the necessary prerequisites for their conquest) and the ability to deploy the necessary cooperative network.

The development of technologically complex basic types of conventional weapons and their integration into military systems or networks have turned into major tasks, the implementation of which requires significant financial resources and highly qualified labor force. Attempts to become self-sufficient in the production of modern conventional weapons can cause two problems: either the need to find extraordinary alternatives to the supply of weapons, or the urgent need to export them. The success or failure of a self-sufficiency policy depends on its financial support in most cases. A large domestic market (for example, in the USA) or a strong economy (USA, EU, Japan) help to withstand large expenditures on R&D without the need to resort to exports in order to save resources on the growth of production scales. Therefore, in these cases, export is not a necessary economic condition, and its

regulation can be carried out, at least potentially, on moral grounds. Other countries are forced to export.

Ukrainian enterprises (based on their potential) can only count on a certain position in such a network (for example, enterprises of the aviation industry may count on cooperation in the creation of systems for the movement of troops over long distances). In most cases, it is expedient for them to focus on the implementation of existing opportunities in traditional markets, their gradual expansion, the use of the received profits for technological development, and afterwards focus on separate segments of the above-mentioned sectors within the framework of created or new schemes of international defense-industrial cooperation.

It is known that the common problem of all independent states, including Ukraine, is to clarify the status and role of each constituent element of the military organization in the system of guaranteeing military security. The high rating of the power structure in the mind of the state leadership, usually formed subjectively by lobbying for corporate interests, using “relations”, joining a certain political, regional or family-clan grouping, or considerations of one’s own security and political future, makes it possible to receive organizational preferences in the form of additional allocations, privileges and an unjustified increase in the number of personnel.

First of all, as part of the announced modernization of Ukraine, it is necessary to review the approaches to the construction of its security, taking into account the current trends in the world. Today, a large part of international organizations, NATO and the EU do not distinguish defense and security any longer, calling them the security sector. Under this definition, they mean all bodies and forces whose duty is to protect society, the state and its institutions. It includes core structures, such as the armed forces, law enforcement agencies, paramilitary formations, intelligence and security agencies, customs service, coast guard and border service, as well as those institutions that form, implement and control internal and external security policy (Iikelen & Fluri, 2006).

Implementation of the defense reform will contribute to:

- 1) Study and implementation of the best world practices and experience of the functioning of military management bodies and the execution of crisis response tasks by troops (forces);
- 2) rational use of personnel potential, formed with those who have combat experience gained during participation in counter-terrorist operations, as well as professionally trained in military educational institutions of NATO and EU member states;
- 3) effective use of international material and technical assistance, including that received from the United States of America, NATO member states and the European Union, as well as

NATO Trust Funds created in accordance with the provisions of the Charter on the Special Partnership between Ukraine and the North Atlantic Treaty Organization on support of sovereignty, independence and territorial integrity of Ukraine;

4) closer cooperation with NATO, implementation of Alliance standards in all spheres of military activity and achievement of the criteria necessary for membership in the North Atlantic Treaty Organization, including by receiving direct assistance from foreign defense experts (advisors);

5) Consultative and advisory, informational and financial support of the defense forces from civil society and volunteer movements of Ukraine (Sobolev, 2012).

The technological development of the military-industrial complex is carried out on the basis of the implementation of a project approach with the absolutely dominant role of the state. Taking into account modern conditions and trends, as well as the processes currently taking place in the military industry and adjacent areas, this allows to estimate the probability of realizing the optimal option for the technological development of this sector of the Ukrainian economy as quite high, but associated with a large number of risks and uncertainties of various kinds.

The determination of the military-political status, the development of the internal market of defense products, the restructuring and reform of ownership, as well as the adaptation of the legislative field of activity of defense enterprises are the main factors of progress on the way to European and Euro-Atlantic integration of Ukraine in the military-industrial sphere.

The MIC of Ukraine is capable of producing AMTs, which are not inferior in their characteristics to the best world samples. But until recently, the Ukrainian MIC has worked mainly for the foreign market, and not for strengthening the Armed Forces of Ukraine. Eventually, we could establish our own mass production of weapons and military equipment and satisfy 90% of our army needs. Therefore, today we need more temporary financial support from the West to establish mass military production. And this should happen in the shortest possible time.

Conclusion

In the study, a comprehensive theoretical generalization was conducted and a new solution to the current scientific problem was proposed, which includes the scientific and theoretical substantiation of directions for improving state regulation of the military-industrial complex of Ukraine in terms of transition to modern information technologies.

The formation and affirmation of Ukraine as an independent state is connected, first of all, with ensuring its own national security. Achieving the needed level of defense capability

of the state is carried out through the formation and implementation of the military-economic, military-industrial and military-technical policy of Ukraine.

The creation of a powerful military-industrial complex in Ukraine is an urgent problem today. The model of the complex mechanism for ensuring the effectiveness of the management of the military-industrial complex is based on the concepts and theories of state administration, the system of subject-object relations, a set of mechanisms (organizational and legal, economic, organization and management of territorial defense, civil-military relations, involvement and recovery (reimbursement) of resources of military structures, etc.).

The problem of substantiation, selection of rational directions and means, as well as development of the military-industrial complex should be considered as a problem that meets the needs of customers (defined tasks and goals), available and necessary technical, economic, material and labor resources, as well as modern technologies, for the further implementation. Solving this problem means taking into account complex interdependent factors and determines the choice of an approach that should provide the effective solution to the issues of scientific and technical forecasting and exploratory design.

This research allows to come to a conclusion about the need to develop and implement a realistic military-political course consistently, increase the level of social and economic development, strengthen the military organization of the state, based on military threats to its national interests, determine and use the most effective forms and methods for their neutralization.

Particular attention should be paid to the drawbacks of state regulation of the military-industrial complex. Moreover, the interests of the country require bringing the military-industrial complex of Ukraine, the production capacities of defense organizations and enterprises in line with the needs of the existing demand for weapons and military equipment for all military structures.

Conceptual approaches to increasing the efficiency of state regulation of the military industry are considered. Among the areas of state support, the following can be distinguished: ensuring the development of the scientific and technical, technological and production base of the military industry; development, modernization of weapons and military equipment for the Armed Forces of Ukraine.

It was outlined that in order to improve and develop the MIC, it is necessary to review the approaches to Ukraine's security, taking into account the current worldwide trends. It is emphasized that a significant part of international organizations, NATO and the EU do not distinguish defense and security any longer, calling them the security sector. Under this definition, they mean all bodies and forces whose duty is to protect society, the state and its institutions. They include core structures such as the armed forces, law enforcement agencies,

paramilitary formations, intelligence and security agencies, customs service, coast guard and border service, as well as those institutions that form, implement and monitor internal and external security policies.

It was designated that the determination of the military-political status, the development of the internal market of defense products, the restructuring and reforming of ownership, as well as the adaptation of the legislative field of defense enterprise activities are the main factors to make progress on the way to European and Euro-Atlantic integration of Ukraine in the military-industrial sphere.

The perspective research should be focused on the commercialization of positive scientific and technical results, the implementation of which requires the consistent and effective state policy for providing innovations.

Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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