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THE ESSENCE OF FINANCING THE SPACE INDUSTRY IN THE POST-WAR PERIOD AS AN INTEGRAL PART OF THE COUNTRY'S RECONSTRUCTION PLAN

ABSTRACT

This paper studies the issue of financing the Space Industry at the State Level in the Postwar period as part of the country's recovery plan, as one of the foremost critical zones of technological development and to ensure space security and defence. The European Space Agency (ESA) is identified as the main player in the European space sector. It is determined that the current structure of ESA – Space 4.0 – provides for the success of European space activities in close coordination with the needs of European societies and economies. Despite all the prospects, offered by the Space Industry, a number of barriers can hinder full participation in the space economy. These 'barriers' include the requirement of large capital investments, technological risk and longer development times. Public-private partnerships have been identified, as an effective way to overcome these barriers, so the government should play an important role in promoting innovation through the space sector. The war in Ukraine, which began on February 24, 2022, once again, reminds us of the unique value, and critical use of outer space for security and defence purposes. From intelligence gathering and monitoring to the availability of communications. It is determined that the war already has serious consequences for the European space sector. The Space Industry of Ukraine is a critical component of the national economy of Ukraine because it is the motor of numerous imaginative changes in other segments of the economy and contributes to the improvement of social, political, financial and natural circles of society. In Ukraine, there's an incessant disappointment in the State to fulfil its commitments to the ventures in the Space Industry. In the conditions of full-scale, 'war' the Space Industry is a key element of national security and defence of Ukraine. The financing of the Space Industry at the State level in the post-war period is crucial as part of the country's recovery plan.

Keywords: space industry, financing, full-scale war, Ukraine, investment promotion, economy, space security and defence

JEL Classification: F60, L62, O14

INTRODUCTION

Nowadays, extraordinary innovative propels and an unused entrepreneurial soul are quickly forming the new space economy. The space sector is seeing the rise of unused private performing artists who see unsurpassed commercial opportunities in space exploration and exploitation through advanced technology and the data revolution. Historically, Europe has been at the forefront of space exploration, investing significant financial resources in space infrastructures, such as the Copernicus and Galileo programs.

The EU can still boast of academic and scientific achievements but risks losing them in the next wave of space innovation if it does not take the opportunity to fortify more ventures within the modern space sector. There is a general belief that outer space should be used for the benefit of all Mankind, but only some countries have the necessary technological base for access to space.

Space technologies with their impact on science, the economy and the well-being of citizens are, mostly chosen by developing countries as one of the priority areas of technological development. However, the Global Space Industry already has a surplus of capacity, and there are doubts about the need for additional capacity in developing countries.

As a result of the analysis of the appropriate conditions for the effective application of technologies, such as the formation of United Nations (UN) regional centres of space science and technology, complex technology transfer packages, joint development of space systems and space projects within the framework of regional organizations, where agreed groups and special agreements with prominent space agencies are considered, which are specific mechanisms that are already in use. The identification of promising scientific and technical vectors of development, which will guarantee the determining factors of the success of space enterprises in Ukraine, is a strategic task both for the Government of Ukraine and for the space enterprises themselves.

This issue gets to be significant in association with the proposition for assisting change of endeavours within the Space Industry of Ukraine, the usage of a corporate change of the State Space Agency of Ukraine.

In our opinion, this study is a step toward a general discussion of obstacles, opportunities and prospects for space development that could ensure space security and defence, so it is important to consider the issue of financing the Space Industry at the State level in the post-war period.

LITERATURE REVIEW

As part of the country's 'reconstruction plan', a small number of scholars study the Space Industry at the State level during the post-war period. As most of the research is, conducted by, International organizations and Governments in modern conditions. Space management was studied by Nedozhogina O., Costantini S., Turusinova A.; the development of organisational and legal forms of space industry enterprises was studied by Dzhur O., Mikhailichenko M.A.; scientific and technical development of space industry enterprises was studied by Dzhur O., Dzhur Y.

In part, such scientists as E. Marpreanu paid attention to the research of public administration in the space sphere in the 2019 analytical document "Space research - statistics and facts"; I. Andrushko in his 2006 work "Space Law: Concept and Content"; O. Beglii in his 2002 work "Legal regulation of the world market of space services and technologies"; A. Hurov in his 2019 work "Legal protection of near-Earth outer space from clogging"; S. Negoda in the work of 2000 "Legal regulation of international commercial space projects"; O. Stelmakh in his 2016 work "International legal security regime of research and use of outer space for peaceful purposes". All the researchers in their writings only fragmentarily investigated the financing of the space sphere, in general, not to mention the post-war period and the component part of the country's recovery plan. That is why the article is currently quite relevant and timely.

AIMS AND OBJECTIVES

The reason for the article is to ponder the financing of the Space Industry at the State level in the post-war period as part of the country's recovery plan to ensure space security and defence. To achieve this goal, the following tasks are required:

1. Analyze the current state and features of the financing of the space industry in comparison with the pre-war and post-war periods;
2. To improve the current state of funding of the space industry at the state level in Ukraine;
3. Provide proposals for financing the space industry in the post-war period as part of the country's recovery plan.

METHODS

The methodological approach to the presented work was formed taking into account the activities carried out during the research. In this process, both general scientific, and socio-scientific methods and methods of scientific knowledge were used.

Accordingly, the historical and legal method made it possible to determine the prerequisites for the emergence, development and formation of the space industry throughout its existence in terms of its financing. The comparative legal method was used to compare the defining approaches to the formation and development of space industry financing. The system-structural method contributed to the awareness of the selection of the main elements, risks and positive elements of the

prospective post-war reconstruction plan of the country in terms of financing the space sphere. In addition, the forecasting method is a formulated model for the development of further financing of the space sphere in the country.

The specified research methods make it possible to formulate the main directions and boundaries of the research of the problem, as well as to determine the possibility of determining the directions for improving the financing of the space sphere, with the aim of increasing its quality and efficiency.

The work also used the method of analysis and synthesis during the research on the adaptation of the space sphere during military operations and the use of the content analysis method during the characterization of the necessary documents from the subject under study.

RESULTS

Intensification of space activities, the emergence of new actors together with new technologies and business concepts have posed and, continue to compose recent challenges to guarantee the long-term steadiness of the space environment and security of space operations [1]. That is why the financing of the space sphere in today's conditions attracts considerable attention both from the side of practical specialists and the scientific community. That is why there is an urgent need to study the issues of financing the space industry at the present time and in the post-war period of the country's formation.

Technological acceleration is putting increasing pressure on European economies to innovate and grow research in advanced industries several sectors are, expected to be drivers of future financial improvement. One of them is the space segment, which since 2013 has seen significant changes around the world (number of jobs composed, annual income growth, etc.) [2].

In 2016, many countries, such as Turkey, Denmark, Poland and The Czech Republic, made the historic decision to compose specific frameworks for the coordination of space activities, relevant ministries or space offices [3].

The move was motivated by the realization that the space sector may already be dominated by "big players" (US, UK, China, etc.), and its recent increase in popularity, visibility and revenue has meant that there are still promising opportunities to use Space.

Space sector activities and technological advances are also reflected in different sectors (IT, logistics, biomedicine, etc.), such as commercial satellite navigation, which is an important part of almost all devices used, and is currently the driving force behind space achievements [4].

The European Space Agency (ESA) is the main player in the European space sector, which brings together, as of 2021, twenty-two (22) members, one (1) associate member and seven (7) co-operating States. This combined, the space potential of European part states, giving openings for European nations to co-operate – and be on an equal footing – with NASA, as well as to obtain social and financial benefits from large-scale space programs that would not otherwise be possible for a single European country.

The actual structure of ESA – Space 4.0 – provides for the success of European space activities in close coordination with the needs of European societies and economies. This means that the space sector has come a long way from "space travel" and pure scientific discoveries to the launch of satellite technology and Earth observation, which provide many benefits in terms of Disaster Mitigation, Transport, Agricultural and Forestry Management, Navigation and rescue Activities [5].

Future space exploration promises to pave the way for the extraction of natural resources from the Earth's surface, which will provide the self-sufficiency of the space economy.

Despite all the prospects offered by the space sector, there are barriers that can hinder full participation in the space economy. These include technological risks, high capital requirements and longer development times. Public-private partnerships are common within the space economy and can be a compelling way to overcome these barriers [6].

Therefore, the government has a vital part to play in progressing advancement through the space segment.

Public-private partnerships typically involve some joint venture between State industry and/or Government lease, in which the government agrees to purchase sufficient commercial space products or services needed to make the business viable, and considers especially vital approaches to empower the private segment to contribute to space capabilities [7].

The war in Ukraine, which began on February 24, 2022, once again reminds us, of the critical importance and unique value of the use of outer space for security and defence purposes, from situational monitoring and intelligence gathering to ensure the availability of communications. The recent cyberattack on ViaSat's commercial satellite, which affected Ukraine's military, damaged civilian terminals across Europe and affected thousands of wind turbines in Germany, and highlighted growing challenges to protecting space infrastructure.

The war is a unique shock to the international and European space sectors through sanctions and embargoes that have severed the close ties that the Western space parties have established with their Russian counterparts in recent decades. For the European space sector, the war had quite serious consequences, namely:

- Delay in the mission of the rover ExoMars (probably until 2026 or later), which was originally scheduled to launch in September this year. ESA launches over the next 18 months, which are, planned for Soyuz include, two pairs of Sentinel 1C radar satellites, EarthCARE satellites, Galileo satellites, and Euclid infrared space telescope. The ESA also acknowledged that the launch of a joint € 1.68 billion ExoMars mission between Europe and Russia to land a life-seeking rover on Mars is "very unlikely" to go as planned [9].
- The situation is forcing the ESA to seek an alternative launcher, prompting the Agency to launch a rapid industrial study to identify available mission options. ESA has also decided to suspend cooperation in future Russian lunar missions.
- Po Roscosmos' cancellation of the Union's launches from the Guiana Space Center, which affected the launch of institutional satellites, as well as its refusal to launch some European commercial satellites [8].
- Impact on European launchers: as Vega and Vega-C use Ukrainian-made engines, the destruction of Ukrainian plants (e.g. South) and limited stocks of Vega engines could affect the production and future launch speed of both missiles.

In addition to the direct impact on space, programs long-term serious consequences for the space sector as a whole, can be, anticipated. Deteriorating International Relations affecting future cooperation, International trade and multilateral negotiations on current space issues such as space motion control or arms control in space.

Ties between the space parties in Russia and Europe were, severed, as Russia began the war on Ukraine, with uncertain long-term consequences.

The war has brought strategic challenges to the forefront of the political agenda that Europe must urgently address. First, the current situation that has developed emphasizes the vulnerability of the EU, which is caused by Europe's dependence on the Russian Federation. In addition to raw materials, the space sector has turned out to be one of a small number of industrial areas where Europe mainly depends on Russian capabilities, where the advantage that the Russian Federation has used in order to respond to the implemented European sanctions. The war reflects the limits of European strategic autonomy and at the same time exerts pressure on Europe to intensively implement appropriate measures.

Of particular concern is the area of access to space, as serious problems have arisen as a, result, of the sudden closure of the Union on Kura and the use of European launchers for Russian parts and components.

There are certain difficulties with the timely delivery of even the most sensitive satellites into orbit due to dependence on Russia, which is a symbolic and operational blow to Europe.

Indeed, the completion of the ESPI BRIEFS Union, the Union for the Cours and the launch of the European Space Sec-tor launcher have already led to the shutdown of five institutional satellites, including two Galileo spacecraft, and a French military satellite with all security and protection programs.

The current situation also calls for an increased strengthening of European security and defence and is expected to further accelerate and catalyze current efforts in this sector, which will be further enhanced following the adoption of the Strategic Compass.

The instrument, which forms the basis for the EU's future actions in the field of security and defence, includes chapters on space and highlights Europe's current efforts, as well as the need for their further development, including through the development of new capabilities and technologies. In addition to these long-awaited achievements, statements about the need for further integration of space with security and defence were also included in the Declaration adopted by European leaders during their meeting regarding Russia's full-scale invasion of Ukraine held in Versailles in March.

We believe that probably in the coming months, the security and defence dimension of the EU Space Program will be strengthened, in accordance with the intentions expressed in the European Commission's communication on its contribution to European defence, published in February.

For example, there have been reports of improved military use of Copernicus, including the creation of a special service comparable to the Galileo PRS. Similarly, the proposed EU Secure Connection Initiative will be, used, *inter alia*, to monitor, manage crises, and connect and protect critical infrastructure.

The reaction of Europe remains unknown in the event of an attack on one of its satellites, as well as the nature of the operators that could benefit from such measures at this time. The last issue to be, addressed is to increase resilience, as cyberattacks on (critical) infrastructure and satellites have identified Europe's weaknesses in this area.

The Strategic Compass was announced and published in 2023 the European Space Security and Defense Strategy, which will be an important step for the EU and its member states in order to express their own position on current issues and form a corresponding action plan. Therefore, the focus should be on governance issues: The Strategy should clarify the processes and responsibilities that should be applied to ensure the protection and sustainability of European space assets in times of crisis. Indeed, confusion between national and EU levels composes confusion and inefficiency that will need to be, addressed.

Although the Commission plans to expand the existing Galileo threat response mechanism to systems and services covered by different elements of the EU Space Program, this intention remains to be, reaffirmed by the Member States.

At the same time, ESA's ongoing security efforts must also fit into these recent conditions and complement initiatives taken at the national and EU levels. Because of these conditions, a crisis has arisen that is forcing Europe to think about space politically.

It was established that due to these conditions, European efforts in space were concentrated mainly on civil and commercial activities with a strong emphasis on international trade and cooperation. Europeans thus kept space affairs fairly isolated from geopolitical events, prioritizing the progress and benefits associated with policy and program collaboration.

This situation contrasts sharply with this approach. Overall, the convergence of unrelated factors is challenging certain historical positions of Europe in space: from the emergence of the "New Space" economy and its implications for space business to the current crisis, which marks another milestone that prompts European stakeholders to rethink their way of "Thinking" and "Doing" space at the international level. In fact, European decision-makers have demonstrated a willingness to use space as a geopolitical tool, meaning that space is seen, as a domain, like any other.

Thus, interdependencies in the space sector can be, used by States to promote and pressure their own strategic interests. This way of thinking, which has been, ingrained in the thinking of most other space powers for years, is still not the main one in Europe.

However, such developments may affect the formation of future European International cooperation in space, in particular on the methods and nature of its ultimate reliance on non-European sources of supply in an increasingly uncertain space environment [8].

In Ukraine, the impact of worldwide patterns has gotten to be recognizable, such as Geopolitical occasions (political and military struggle with Russia and the occupation of Ukrainian regions), natural emergencies, vitality issues, and the accessibility of a viable advancement procedure.

The EU's Innovation Development Strategy (Europe-20 Strategy) focuses on composing smart, sustainable and inclusive growth that fosters innovation, knowledge, education and the digital society. Programs of development in scientific and technical countries of the world also moved in this heading with changing degrees of victory.

Subsequently, the key focuses in building a procedure for the advancement of Ukraine's Space Industry ought to be the errands set out within the UNESCO Report and choices that include:

- 1) recognizable proof of dangers and distinctive scenarios for the advancement of logical and mechanical improvement of Ukraine;
- 2) distinguishing proof of promising markets for products and markets for their consumption;
- 3) distinguishing proof of zones and methodologies that have the most noteworthy effect on science and innovation, give long-term prospects for the improvement of the Space Industry of Ukraine and the development of society;
- 4) determination of priority areas of research.

Be that as it may, modern advances will permit you to compose totally advanced items and administrations, trade structures ought to not be anxious to go past the ancient trade models. The issues of astronautic advancement, arranging of

its movement, ideal structure, reason, recommendations for cooperation and financing in Ukraine have been over and over considered and examined at gatherings, conferences and government gatherings [10].

Agreeing to the Law of Ukraine "On Scientific and Scientific-Technical Activity",

Article 48 states that monetary bolster of Scientific and Scientific-Technical Activity in Ukraine is, provided by State and local budgets, institutions, organizations and enterprises, foreign customers, grants, and other sources not precluded by law. "At the same time, the state embraces to supply budget subsidizing for logical and scientific-technical exercises in the amount of at least 1.7 percent of the gross domestic product of Ukraine" [11].

The Space Industry of Ukraine is a vital component of the national economy of Ukraine, because it is the motor of numerous imaginative changes in other segments of the economy and advances the advancement of social, financial, political and natural circles of society.

The undertakings of the department, their items and administrations advance auxiliary changes in the industry, financial changes in the execution of the approach of "new industrialization" in Ukraine, the most principles of which within the advanced sense are to extend the competitiveness of the national economy in accordance with "Industry 4.0".

These changes are, primarily aimed at the digitalization of generation, a tall degree of internationalization of assets and economic relations, and the fast pace of creation and commercialization of innovations.

In specific, the need steps towards "New Industrialization" and improvement of "Industry 4.0" are to supply conditions for cutting edge and innovative modernization of existing generation offices for in-depth handling of Ukrainian raw materials (particularly metallurgical items, wood, agricultural crude materials), which can significantly increase production costs and merchandise exports of Ukraine [12].

The investigation of measurable information and reports of the State Tax Administration on the financing of scientific and specialized exercises within the Space Industry uncovered a, reasonably, steady trend of changes within the add up to fetched of this industry.

On normal, roughly UAH 1.5 Billion (in 2015 costs) has been going through every year over the final 20 long times from all (budgetary and extra-budgetary) sources of financing for space science and innovation exercises.

Additionally, the greatest esteem of add-up to costs came in 2004 (over UAH 2 billion in 2015 costs), and the least – in 2018 (over UAH 798 million in 2015 costs [13; 14]. Steady changes are also taking place in the structure of sources of financing for space activities in Ukraine (Table 1).

Table 1. Structure of sources of financing of the space industry of Ukraine (% of the total amount of financing). (Source: [15; 16])

Source of costs	Years								
	2001	2003	2006	2009	2011	2013	2015	2017	2019
Budget funds,%	30.36	39.88	22.73	20.09	14.06	11.03	13.33	13.09	4.37
Foreign receipts,%	42.48	37.63	43.19	62.31	66.81	70.16	71.72	67.71	59.20
Others,%	–	–	–	–	–	–	–	–	–

The analysis of the table indicates the insignificant participation of the state budget in the implementation of innovative measures in modern industrial enterprises of Ukraine. For a long time, Ukrainian companies actually determined and financed their innovative activities themselves. These trends are reflected in the indicators of the effectiveness of the implementation of innovations in practice, the competitiveness of Ukrainian manufacturers and the quality of life of the entire population.

Since 2003, the share of state funding for space activities has been steadily declining, reaching almost 40% in 2003 and declining to about 4% in 2019, i.e. by an order of magnitude. The decrease in the share of state financial support for the space industry was offset by an increase in the share of foreign revenues, as well as funds from other extra-budgetary sources, including own funds of organizations and loans [15; 16].

As can be seen in the indicated Table 1, the state financing of the space sphere was unreasonably reduced every year, and foreign revenues in the form of investments in the space sphere increased. We believe that state funding should also be at an appropriate level, and in combination with foreign investments, the researched area will reach an appropriate level of activity.

In addition, according to the National Targeted Scientific and Technical Space Program of Ukraine (hereinafter – ZKPU) for 2013-2017, there should have been significant strategic developments in the development of space equipment for space observation of small objects on the Earth's surface (mainly to effectively address national security and defence) and the creation of promising rocket engines. In fact, the useful effect of using the results of the projects "Lybid", "Cyclone-4" and "Sich-2" is completely absent by the end of 2020:

- space communication systems "Lybid" and CRC "Cyclone-4" are not currently created, mainly for political reasons;
- space system "Sich-2" since September 2012 is not used for its intended purpose because the spacecraft MS-2-8 failed due to the failure of foreign high-tech components, which were purchased at the lowest price.

As required by the ZKPU for 2013-2017, no strategic developments were created for the manufacture of high-tech equipment and promising rocket engines due to the failure to provide the necessary funding (for the period from 2013 to 2017, less than 15% of the planned ZKPU for 2013– 2017).

According to expert estimates, the expected revenues to the state budget in the period from 2021 to 2025 from the practical use of the results of the LCPU 2008-2012 and 2013-2017 could be 3.0-3.5 times higher than the expected useful effect of the implementation of the ZKPU 2021-2025. During 2018-2020, the space industry was given insufficient attention by the state. Due to the absence of the National Targeted Scientific and Technical Space Program of Ukraine and the general strategy for the development of space activities, the process of creating space technologies, developing RCTs, research, etc. has been slowed down. Space technology, which will be created in the process of implementing the ZKPU for 2021-2025, has a dual purpose.

The full range of available space information is used to make effective decisions in the areas of public administration, national security and defence. According to the ZKPU for 2021 - 2025 the launch of the spacecraft (Kompsat-3A) for the observation of the Earth of medium spatial resolution in 2021, spacecraft of high spatial resolution - in 2023-2024 and spacecraft of ultra-high spatial resolution - in 2024. Technical and economic indicators of space-rocket systems and components of RN, which will be manufactured in Ukraine in the period from 2021 to 2025, are given in Table 2 [18].

Table 2. Production of space-rocket systems and RN components in the period from 2021 to 2025. (Source: [18])

Name TRC	Amount of financing by year, mln. UAH.					Amount of financing by year, mln. UAH
	2021	2022	2023	2024	2025	
SRC middle class "Cyclone-4M"	-	2 005.00	2 120.00	1 186.00	-	5 311.00
SRC light class naval base	40,00	1 000.00	2 200.00	1 560.00	-	4 800.00
SRC light class "Cyclone-1"	-	523.00	930.00	1 025.00	1 500.00	3 978.00
Aerospace missile system with ultralight launch vehicle class	-	357.00	870.00	665.00	583.00	2 475.00
Components of launch vehicles Antares and Vega	705,70	636.00	650.40	600.10	570.30	3 162.50
SRC heavy class "Zenith-7H"	-	1 705.00	2 392.50	2 069.38	2 220.63	8 387.51

The analysis of the table appears the immaterial support of the state budget within the usage of incentive measures in present-day mechanical ventures in Ukraine. For a long time, Ukrainian companies have really determined and financed their innovation activities.

These trends are, reflected in the indicators of the effectiveness of innovation in practice, the competitiveness of Ukrainian makers and the quality of life of the complete populace.

Administration of the Space Industry of Ukraine is, endowed to the State Space Organization of Ukraine, which is dependable for the advancement and legitimization of the National Focused on Logical and Specialized Space Programs of Ukraine. The most headings of the National Focused on Logical and Specialized Space Program of Ukraine for 2013-2018 were:

- 1) presentation of farther detecting of the Earth from space (in 2018 it was financed by 56.23%);
- 2) enhancement of space media transmission and route frameworks (100% were financed in 2018);
- 3) conducting space exercises within the interface of national security and defence;
- 4) conducting logical space inquire about (financed by 98.97% in 2018);

5) extending of universal participation (in 2018 it was financed by 18%).

Assignments "Creation of Space Complexes" and "Ensuring Industrial and Technological Development" at the cost of the state budget in 2018 were, not supported. Features of financing of the Space Industry of Ukraine are, presented in Table 3 [16, 12].

Table 3. Financing the tasks of the National Targeted Scientific and Technical Space Program of Ukraine for 2013-2018. (Source: [16, 12])

Year	State budget, UAH million				
	Provided by the program	Actually funded	In% to the expected	Paid taxes and fees	
				In general	Without SE "SPA" PCP"
2013	98.7	25.3	26	743.6	621.7
2014	228.5	67.9	30	711.0	577.0
2015	333.0	30.3	9	1 077.7	946.3
2016	223.6	176.3	79	1 041.3	888.2
2017	225.2	80.1	35	1 159.7	1 029.4
2018	-	130.4	-	1 154.3	1 154.3

The data in Table 3 show the chronic failure of the State to meet its obligations to enterprises in the Space Industry, and hence the disappearance of opportunities to gain competitive advantage in time and scale of production due to lack of financial security and current space. Due to this position of the State, it is troublesome to make a proactive development strategy.

Among the foremost vital errands performed in 2019, the Head of the State Space Agency of Ukraine singled out the direction of "Implementation of Space Activities in the interests of national security and defence", which is completely supported within, the sum of 78 500.0 thousand UAH

Debts from instalments to the budget as of September 30, 2020 sum to UAH 197.4 Million. Compared to January 1, 2020, the obligation to the budget (obligation) has quadrupled. Devaluation of settled resources by undertakings of the industry on 30.09.2020 is 93%. The normal number of full-time representatives in all endeavours of the space industry for 9 months of 2020 was 13 896 individuals (financially dynamic endeavours – 13 864 individuals). Compared to the comparing information final year, it diminished by 1646 individuals (or 10.6%) [16].

DISCUSSION

In reality, it shows noteworthy issues with the usage of assignments within the Space Industry, as well as issues of administration of unmistakable and intangible components of the industry framework. Ukraine has a dynamic Universal position within the global space showcase and could be a part of worldwide organizations planning space activities, namely:

- The UN Committee on Peaceful Uses of Space (COPUOS),
- The World Space Research Committee (COSPAR),
- The Interagency Committee on Space Debris (IADS),
- World Satellite Research Organization (CEOS),
- International Astronautical Federation (IAF).

Reciprocal Worldwide understandings on cooperation have been signed with Space agencies and departments of Kazakhstan, The United States, Brazil, Argentina, India, China, Israel, Turkey, The European Union, and the Russian Federation (however, they are now broken). Ukrainian space companies have set up associations with the world's driving aero-space companies: "Sea Launch", "Boeing", "Lockheed Martin", EADS, "Daza", "FiatAvia", and RSC "Energy".

Multilateral and co-operation understandings have been concluded with Universal organizations and Telecommunication companies "Panamsat", "Intelsat", "Intersputnik", "Evtalsat", "Inmarsat", and "Evmetsat".

Amid a long time of Ukraine's freedom, favourable Worldwide lawful conditions have been, composed for space ventures and teach to enter the world market.

The support of Ukrainian endeavours in universal commercial space ventures is extending. The foremost noteworthy of them is "Sea Launch", "Ground Launch", "Dnieper", and "Cyclone-4". The key component of the component of logical and technological advancement of nations is science-intensive generation and advancement. As it were those nations that implement the strategy of innovative development, achieve significant socio-economic success and leadership in the world economy.

For the maintainable advancement of society and the Space Industry, it is vital to undertake to guarantee a full generation cycle of civilian and protection space products.

In modern conditions, this is very difficult, so financial support for existing capacity in these areas requires the combination of public and private capital for optimal allocation of resources and results [12, 18, 19].

In 2021, Volodymyr Zelenskyi, President of Ukraine, stated, during a meeting on the development of the Space Industry, held at the National Center for Control and Testing of Space Facilities (NCCTSF). Today, despite all challenges domestic designers continue, to design and launch satellites, manned spacecraft, and orbital stations, and Ukraine is one of the thirteen (13) countries of the respected "Club of Space Powers".

The President stressed that we must not only remember the achievements of, previous generations but also develop the industry today, because, in a full-scale war, the Space Industry is a key element of national security and defence of Ukraine.

"Ukraine must restore its leadership and the status of a leading aerospace State", Volodymyr Zelensky said. Thus, the financing of the space industry at the state level in the postwar period is, defined as part of the country's recovery plan [17].

Accordingly, the country has grandiose prospects for the development of the space sphere, for which significant funding is expected, for which appropriate long-term plans for the post-war development of the country are required.

CONCLUSIONS

Based on the study it can be, concluded that the financing of the Space Industry at the State level in the Post War period is, defined, as part of the country's recovery plan and is becoming increasingly important due to these conditions.

The importance of space industry development and consistent public policy focused on obtaining a qualitatively new result in this field, which would meet the state and trends of world society and generally accepted international and European standards in space.

An important factor in ensuring the country's National Security is the Space Industry, which contributes to the scientific solution of a number of technical, social and economic issues, and plays a significant role in ensuring innovative development and gaining international prestige.

The key tools for the development of the space industry are government support and increased funding for this industry, which contributes to the development of space technology.

It is proposed to introduce the following elements into the country's recovery plan in terms of financing the space industry: ensure the consistent creation of an effective space monitoring system in the interests of fulfilling the tasks of security, sustainable development, nature management, agricultural monitoring, and Ukraine's international obligations; implementation of space technologies in the service market; introduction of private-public partnership; ensure the development of the coordinate-time system and navigation support of Ukraine and ensure the use of information services of the European navigation satellite system EGNOS/Galileo on the territory of Ukraine; creation of a space observation system as a component of the international GEOSS, EuroGEOSS and COPERNICUS systems; creation of a fusion station of low-orbit satellite broadband Internet access systems; to introduce the creation of rocket and space technology, which will be aimed at the development of the most developed areas of the space industry of Ukraine, the increase of both export and defence potential, involves the promotion of innovations, breakthrough developments and the organization of production, etc. It is also necessary to develop fundamental and applied space research and to develop legal, scientific-methodical and information support for all proposed measures, which are oriented towards the introduction of a modern model of managing space activities, which involves the development of new approaches to strategic and tactical planning, support for international cooperation measures, promotion of exit to international markets.

In terms of the country's recovery in the space sphere, it is also necessary to strengthen financial support for innovation as the basis for reproducing the human resources potential of knowledge-intensive organizations.

The investigation of Household and Worldwide patterns within the advancement of science and innovation within the Space Industry permits us to draw the taking after conclusions for the arrangement of the methodology for the advancement of the Space Industry in Ukraine. Ukraine, must, centre on an investigation that gives the 'mass' commercial division.

It is essential to reinforce budgetary back for, advancement, as a premise for replicating the human assets of knowledge-intensive organizations a clear instrument for changing an imaginative thought into an inventive item is very important.

The Space Industry administration framework must be changed and needs further investment in tasks related to national security, environment, spacecraft production and launch and communication services in cooperation with International contractors to avoid technological backwardness of the research and industrial complex of the industry.

Encourage inquiry about basic optimization and quality of connected and fundamental space investigation in Ukraine, taking into account the existing potential and openings for International cooperation.

Results of the study can be used to improve the system of public administration and State support for the development of the Space Industry in the context of globalization and integration processes, which will stimulate innovation and technology and address a number of technical, social and economic issues.

The practical significance of the study is that the conclusions and recommendations developed by the author and proposed in the article may be, related to the possibility of using the results for the development of the Space Industry at the state level within the postwar period as part of the recovery plan.

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СУТНІСТЬ ФІНАНСУВАННЯ КОСМІЧНОЇ ГАЛУЗІ В ПОВОЄННИЙ ПЕРІОД ЯК СКЛАДОВА ЧАСТИНА ПЛАНУ ВІДНОВЛЕННЯ КРАЇНИ

У статті досліджується проблематика фінансування космічної галузі (як однієї із найважливіших та пріоритетних сфер технологічного розвитку) на державному рівні в повоєнний період як частини плану відновлення країни задля забезпечення космічної безпеки та оборони. Установлено, що головним суб'єктом європейської космічної сфери є Європейське космічне агентство (ESA). Визначено, що нинішня структура ESA – Space 4.0 – передбачає успіх європейської космічної діяльності в тісному узгодженні з потребами європейських суспільств та економік. Установлено, що, незважаючи на всі перспективи, які пропонує космічна галузь, існують бар'єри, які можуть перешкодити повноцінній участі в космічній економіці. Визначено, що до основних бар'єрів космічної галузі включають високі вимоги до капіталу, технологічний ризик і більш тривалі терміни розробки. Установлено, що ефективним методом подолання цих бар'єрів може бути державно-приватне партнерство, тому уряд має відігравати важливу роль у просуванні інновацій через космічний сектор. Установлено, що війна в Україні, яка розпочалася 24 лютого 2022 року, ще раз нагадує про унікальну цінність і критичну важливість застосування космічного простору для цілей безпеки та оборони, від збирання розвідувальних даних і моніторингу ситуації до забезпечення доступності засобів зв'язку. Визначено, що війна вже має серйозні наслідки для європейського космічного сектора. Установлено, що космічна галузь України є важливою складовою національної економіки України, оскільки виступає рушієм багатьох інноваційних змін в інших галузях економіки та сприяє розвитку соціальної, політичної, економічної й екологічної сфер суспільства. Установлено, що в Україні присутнє хронічне невиконання державою зобов'язань перед підприємствами космічної галузі. Визначено, що в умовах повномасштабної війни космічна галузь – це ключовий елемент національної безпеки та оборони України. Установлено, що фінансування космічної галузі на державному рівні в повоєнний період визначається як частина плану відновлення країни.

Ключові слова: космічна галузь, фінансування, повномасштабна війна, Україна, стимулювання інвестицій, економіка, космічна безпека та оборона

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