Public Administration of Space Activities in Europe and the People's Republic of China: an Example for Ukraine

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Many countries were involved *in space activities. The three leading spacefaring nations are the United States, the PRC, and the Russian Federation. The People's Republic of China is the second-largest in the world, with a great number of scientific and technological achievements in this field, PRC has the highest rate of development. Ukraine's success is so modest that by 2021 it has been no longer considered a spacefaring nation abroad. However, in 1991 Ukraine was even ahead of the PRC in space research. This requires thorough consideration. Moreover, the conditions for public administration of space activities in the PRC and in one of the stable countries in Europe, the Kingdom of Sweden, should be studied, drawing parallels with Ukraine. The authors have carried out applied analytical research with a view to achieving greater efficiency in the work of the State Space Agency of Ukraine by improving public administration. The empirical scientific method is applied, that is, research and generalization for implementation in practice. The authors conclude that cooperation with the PRC in the field of space and missile activities should be continued, adapting the targeted provisions of Ukrainian legislation and the PRC to that end, taking into account the need to adapt European Union legislation to the legal framework of Ukraine.*

Keywords: public administration, space activities, State Space Agency of Ukraine, China National Space Administration, CNSA, Swedish National Space Agency, SNSA, aerospace industry

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Introduction

Many countries were involved in space activities. By 2021, China was the fastest-growing country in missile and space activities. The specificities of Chinese structures planning, providing management and executing objectives set by the government do not separate the space and missile components (which, however, is also the case in Ukraine, but without mentioning the missile component) that shift to aerospace (for example, the creation of a Chinese counterpart to a reusable orbiter in the form of an aerospace rocket plane of the Space Shuttle type).

A comparison of the achievements of the National China Space Administration and the results of the State Space Agency of Ukraine in 2020 reveals a huge gap in indicators.

The results of China's participation in world aerospace activities are shown by the leading Chinese corporation China Aerospace Science and Technology Corporation (CASC) – in the official release (Blue Book, 2021), the so-called the 2020 Blue Book of China Aerospace Science and Technology.

Selected 2020 indicators should be grouped by the type of activities into:

1. China is the world's second-largest launcher of 114 launch vehicles (1,277 spacecraft launches in the world); in terms of the number and mass of spacecraft launched, China has launched 39 launch vehicles and 89 spacecraft with a total mass of 103,06 tons, an increase of 29.3 percent over the previous year; the Long March rocket (CASC) has become the world's leader, completing 34 missions in 2020; the return of a first-stage vehicle of the rocket Long March 3B (Levenko, 2020) has been tested; private companies are building reusable rockets, such as the launch vehicle of 10-fold use of LinkSpace Aerospace Technology, Group, LV NewLine-1 (NewLine-1, 2021).
2. The Beidou-3 global satellite navigation system has been completed and put into operation.
3. The Mars probe Tianwen-1 has been successfully launched, as well as the lunar mission Chang'e-5, and lunar soil samples have been delivered to Earth; the mission of earth orbit space station is underway with the launch of the Long March 5B rocket – 2021 (2021 China's, 2021).
4. The high-resolution earth remote sensing system has been completed.
5. Chinese Space Shuttle – ShenLong (Divine Dragon) has been tested (Levenko & Pauk, 2020).
6. In international cooperation, the microsatellite ET-SMART-RSS is donated to Ethiopia, the EgyptSat-2 satellite for Egypt is being manufactured, the satellite for Sudan is put into operation, and Ukraine receives Chinese high-resolution satellite data on favourable terms, and much more.

In Ukraine:

1. The enterprises of the State Space Agency of Ukraine were involved in the production and support of the launch of the Antares launch vehicle (USA) and the final-stage engine of the Vega rocket (European Union).
2. The National Space Facilities Control and Testing Centre of the State Space Agency of Ukraine have received, processed data from Chinese satellites and transmitted information to State structures, as well as has registered all space objects in Earth orbit and all earthquakes in the world.

In addition, that was all in 2020. It should be noted that the first Egyptian satellite was created and manufactured in Ukraine. Moreover, recently, satellites were launched into orbit by Ukrainian launch vehicles in international cooperation.

Degradation is evident.

However, what about other countries that are not world leaders? For example, in Sweden, a space launch facility for sounding rockets has been operating since the 1960s, space institutions and space industries operate (Gutman, 2019). Rymdstyrelsen (Swedish National Space Agency, SNSA) is responsible for space research, funding distribution, development of new technologies and implementation of Earth remote sensing technologies in Sweden. The space strategy has been adopted. Sweden is a member of the European Space Agency (ESA). In 1961, Sweden launched its first rocket into space.

For more than 50 years, in Sweden, the Esrange Space Center has been operating where sounding rockets have been launched since 1968 (as of December 2019, 570 sounding research rockets, 60 of them Swedish, have been launched) (Levenko, 2019) and satellite information is received.

According to an analysis, the State of affairs in Sweden was relatively stable in this space activity until 2018, when the government first presented a strategy for the development of space research.

Moreover, no funding was provided. It had been announced in late 2020: the government had allocated about €9 million for the construction of infrastructure on the Esrange for the serial launch of small satellites over a three-year period. It was stressed that satellites would be civilian in nature and not linked to the Ministry of Defence and would not spy on other countries. Thus, the industry has shifted from stable development to the space race, where Sweden competes with other European countries, primarily Norway and its Andøya Space neighbouring Esrange and Scotland.

It is reasonable to assume that Sweden's decision was, among other factors, spurred with news that a few months earlier, in the summer of 2020, three countries (the United Arab Emirates, China, and the United States) had launched their probes on Mars within days of each other. However, the timing of the launch was due to very different planetary reasons, namely the proximity of Earth to Mars two months later.

Therefore, the State of affairs is as follows:

1. Development of space activities (the PRC).
2. Stability in space activities (Sweden).
3. Degradation of space activities (Ukraine).

However, it should be considered that by the time of the independence of Ukraine (1991) in the first years of its existence, Ukraine and the PRC had almost equal indicators, and Ukraine even surpassed China in its achievements. Both countries were almost equal then. Since 1991, the PRC has undergone transformations aimed at the intensive development of the space-based civilian component of military space science and industry. Subsequently, China has shifted to the dual-use industry, where the civilian sector has been provided with military technology already developed.

Therefore, the impact of various factors as prerequisites that have developed in Ukraine regarding public administration of space activities should be considered. In particular, our task is to study the legal (legislative) framework for space activities of the State Space Agency in Ukraine and to find imperfections by comparison with the actively developing management

of the China National Space Administration (CNSA) and with the stability under the Swedish National Space Agency (SNSA, Rymdstyrelsen).

The theoretical and methodological basis of the research is the works of Ukrainian legal scholars Valentyn Halunko and Serhii Didenko (Halunko & Didenko, 2019), Larysa Soroka (Soroka, 2020; Soroka, 2021), as well as researchers from other countries, such as Leonid Gudoshnikov (Gudoshnikov, 2012), Pavel Troshchinskii (Troshchinskii, 2011; Troshchinskii, 2016), Irina Prokopenkova (Prokopenkova, 2016), Vasilii Kashin (Kashin, 2015), Xueguang Zhou (Zhou, 2017), Chenjie Lee (Lee, 2013).

In addition to the works by scientists of different branches, the authors analyse the legal and regulatory framework in the space activities of Ukraine,[1] the People's Republic of China,[2] the European Union and the Kingdom of Sweden,[3] the results of the work of the Subcommission on Space Cooperation and the Commission on Cooperation between the Government of Ukraine and the Government of the People's Republic of China[4], as well as the results of own long-standing practical experience in this field (1966-2021).

The studies compare information for three countries (the PRC, Sweden, Ukraine) by the following categories:

1. Management structure.
2. Laws.
3. By-laws.
4. Programmes.
5. Systems for controlling programme performance and applying the inevitability of liability.

Management structure

The structure of the sector and its subordination are determined by the State authority that forms policy on space and missile activities and the central executive State authority, which ensures policy implementation into practice.

With regard to the PRC: the CPC Central Committee – the Chairman of the PRC – the National People's Congress of the PRC with the participation of the People's Political Consultative Conference – the State Council of the PRC – the Ministry of Industry and

[1] The Constitution of Ukraine (as amended by Law No. 27-IX of 03 September 2019, no. 38, Art. 160); Laws of Ukraine (National Space Legislation. Available online: https://www.nkau.gov.ua/en/space-law) and regulatory documents of the Cabinet of Ministers of Ukraine (incl. the Regulation on the State Space Agency, approved by the Resolution of the Cabinet of Ministers of Ukraine No. 281 of 14 May 2015 as amended on 7 September 2020 No. 819. Available online: https://www.nkau.gov.ua/ua/dka-ukrainy/polozhennia-pro-dka; programs and concepts for the development of the space industry in Ukraine (incl. National target-oriented science and technology space program of Ukraine for 2013-2017, approved by the Law of Ukraine of September 5, 2013 № 439-VII. Available online: https://www.nkau.gov.ua/en/activity/programs/776-national-target-oriented-science-and-technology-space-program-of-ukraine-for-2013-2017

[2] Constitution of the People's Republic of China, as amended on 11 March 2018. Available online: http://www.gov.cn/guoqing/2018-03/22/content_5276318.htm; Standard of China Space. Available online: http://www.cnsa.gov.cn/english/n6465684/n6465689/index.html; White Paper

[3] Strategy and policy documents. Available online: https://www.rymdstyrelsen.se/en/about-us/strategy-and-policy-documents)

[4] The fourth meeting of the Commission on cooperation between the Governments of Ukraine and the PRC held. Available online: https://www.nkau.gov.ua/ua/news/khronika-podii/1642-vidbulosia-chetverte-zasidannia-komisii-zi-spivrobitnytstva-mizh-uriadamy-ukrainy-ta-knr

Information Technology under the supervision of the Central Military Commission of the PRC – the State Administration for Science, Technology and Industry for National Defense – the China National Space Administration (CNSA) with CNSA subordinate organizations, such as the Centre for Space Law and the China Institute of Space Law – provincial governments – metropolitan governments.

Of particular note is the role of the China Institute of Space Law, founded in December 1997. It includes the former Ministry of Aerospace Industry, the Ministry of Foreign Affairs, the former Commission of Science and Technology (now the Ministry of Science and Technology), the former Commission of Science, Technology and Industry for National Defense (now the General Armaments Department), and the Chinese Academy of Sciences. The unit was initiated and established as a national academic organization that includes relevant national departments and research institutes in space law, space science and technology and applied institutes, as well as experts and scientists in space law.

Research and production academies are transferred from the CNSA. The China Aerospace Science and Technology Corporation (CASC) is a key one that includes a large number of other academies, institutes, factories, landfills and launch sites, involving a company of foreign economic activities to ensure international cooperation. "The China Aerospace Science and Technology Corporation is the main contractor for the Chinese space programme. It is state-owned and has many subordinate entities that design, develop, and manufacture a range of spacecraft, launch vehicles, strategic and tactical missile systems, and ground equipment" (China, 2021). It is under the management of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC).

With regard to Ukraine: the Supreme Council of Ukraine – the President of Ukraine – the Cabinet of Ministers of Ukraine – the Vice Prime Minister, the Minister of Strategic Industries of Ukraine of the Ministry for Strategic Industries of Ukraine – the Department of Aviation and Space Policy Development – the State Space Agency of Ukraine and its three subordinate organizations, three research institutes, ten engineering and production enterprises. This structure existed at the time of this writing (State, 2021).

With regard to Sweden: the King of Sweden – the House of Bernadotte – Riksdag of the Estates – Prime Minister of Sweden – the Government of Sweden – the Ministry of Education and Research – the Swedish National Space Agency (SNSA) (Swedish, 2021) and its units.

The SNSA has no industrial facilities.

Rymdbolaget (the Swedish Space Corporation SSC), which is under the management of the Swedish Ministry of Industry, manages space research and use in Sweden. The SAAB Corporation plays a leading role in this work among private firms, involving 53 institutions and companies.

The SSC operates the Esrange Space Center (Gutman, 2019). In addition to the Esrange, the SSC has ground stations in Chile and Australia.

A preliminary analysis suggests that in the three cases under consideration fairly well-developed governance structures exist, although they are fundamentally different. In these countries, the very management structure of space and missile activities is required, and that is enough.

In the PRC and Sweden's research institutes, space facilities and industries (corporations) are not subordinate to space agencies. Therefore, the government organization, determining policy on space and missile activities by preparing programmes, and the implementers of these programmes are different. Initially, in Ukraine, industrial enterprises were under the

management of the ministries of the Cabinet of Ministers, while research institutes belonged to the National Academy of Sciences of Ukraine.

Laws

The legislation of the three countries is reviewed.

Sweden is guided by European Union laws with regard to the European Space Agency. These laws are known because Ukraine has signed the Association with the European Union, so about 50 of these laws and regulatory documents are already available on the website of the State Space Agency of Ukraine. All of them are not adapted in Ukraine. Therefore, Swedish legal stability is not even in the equation.

This can be considered as a deficiency in the management of space and missile activities in Ukraine: there is no adjustment of European Union legislation to the legislation of Ukraine.

A further comparison is made between the PRC and Ukraine.

General trends are identified in the structure of PRC and Ukrainian legislation:

1. The Constitutions are adopted (of Ukraine as revised in 2004, of the PRC as revised in 2018).
2. In both countries, about 90 laws are used that can be classified as "space law."
3. Ukraine adopted the Law 'On Space Activities' (1996), the PRC debates that a law on space activities in China is required (Chinese, 2011); since 2000, the Chinese Society of Space Law has prepared research reports on topics such as "Legislative research of the Space Law of the People's Republic of China," "Legislative research of Space Management Rules," and "Comparative research of Space Law in the main countries of the world." The results of these studies will be used in the preparation of new law; the Institute of Space Law of the Harbin Institute of Technology (Hu, 2017) is also involved in the preparation of the Law on space activities in China.
4. Activities are carried out within the framework of the Decrees of the President of Ukraine and the Chairman of the PRC, the Resolutions of the Supreme Council of Ukraine and the National People's Congress.
5. All-Union State Standard and a certain number of National Standards of Ukraine are used in accordance with international agreements in Ukraine, while the PRC uses about 1460 national standards to provide space and missile activities.

Both countries take into account the requirements of national security and defense legislation.

Some differences can be attributed to national specificities:

1. The main programme document in Ukraine is the National target-oriented science and technology space programme of Ukraine for 2013-2017 without reference to the State planning programmes; in China, the programmes are in the form of so-called White Papers within the framework of each PRC five-year development plan, "Programme 126" operates for the development of the dual-use economy, "National medium and long-term programme of scientific and technological development (2006-2020)" was in force in the period under review.
2. The use of the governmental legal regulations does not involve local law-making in Ukraine; in the PRC, among thousands of legislative acts, a large number are adopted by provincial governments and urban agglomerations.

The legal and regulatory frameworks of Ukraine and the PRC for space and missile activities are similar. A significant difference is that the lack of regions' participation in space activities, space policy and its results remain State affairs, following the example of the USSR, and do not take into account the political and economic changes in Ukraine after 1991.

It is obvious that in quantitative estimations, the difference is insignificant. Therefore the quality of the Law of Ukraine "On Space Activities" (in the latest revision with changes no. 912-IX of 17 September 2020) is analysed.

The analysis reveals that in declaring the main political objective (the law defines the main political areas of public administration to space activities: "promotion of social, economic and scientific progress of the State, increase of well-being of citizens"), its articles are not perfect, and the objective contradicts and the requirements of the Articles of the Law:

1. International agreements (Art. 9) have introduced restrictions on space activities in Ukraine without regard to the interests of Ukraine.
2. The rights of commercial and private entities are expanded. Still, authorization for international negotiations and the signing of contracts is required. The possibility of prohibiting non-State ownership is established – which is inadmissible in commercial activities, and an administrative court may only order prohibition (Art. 11), contrary to Art. 18, which proclaims the equality of all forms of ownership in international activities.
3. Moreover, the law does not clearly define the time frame for the adoption of space programmes, which has led to the fact that Ukraine has not had the one from 2017 until 2021 (Art. 7 of the Law).

The Law does not cover all modern tasks, such as remote sensing of the Earth, the basis of a modern space programme in Ukraine, which must be used by State organizations and in the economy of Ukraine. At present, such use is not regulated: information obtained through the use of budgetary resources is public property that can hardly be transferred or sold to anyone. The need to adopt the additional law of Ukraine, "On State Regulation of Remote Sensing of the Earth," was urgent 10 years ago, a draft was prepared, but in Ukraine's traditions, the adoption of the law would automatically require the creation of a new Ukrainian agency to manage remote sensing of the Earth.

In 2021, this became possible: the State Space Agency no longer functions as a ministry and is subordinate to the relevant ministry, where additional agencies can be established if necessary. The main drawback of the Law of Ukraine "On Space Activities" until 2021 was that the same legal entity formed national policy on space and missile activities in the form of programmes. The same legal entity was the executive of programmes. Therefore, the law avoided liability for non-performance or poor performance of programmes and did not define the liability of officials for the absence of a programme as such.

By-laws

State bodies adopt legal regulations with a view to streamlining public administration on specific issues.

In Ukraine, even at the legislative level, regional authority structures are not involved in space and missile activities.

In Sweden, for example, the northern regions of Norrbotten and Västerbotten have great expectations of the forthcoming modernization of space infrastructure, on which they have been in dialogue with the government for many years. There has already been a dramatic increase in the number of jobs and the relocation of new professionals from other regions and from abroad.

In order to speed up these processes, Aerospace Cluster Sweden has already been formed, and it includes major companies such as AIT, Brogren Industries, Carmenta, Finepart, Kyocera, Quintus, Spacemetric, and International exchange conferences are being carried out. Municipal leaders plan hundreds of new jobs, including due to start-ups by students of the Space Faculty neighbouring Kiruna Spaceport, graduating next year and starting their careers in Swedish space development. In addition, new experts will be required to handle the increasing amount of data from satellites. Thereof processing centre should also be located close to the Spaceport.

For Ukraine, regional law-making is an example.

The State Council of the PRC gave the right to regional governments to legislate on the solution of the main political problem of regional development with the growth of socio-economic indicators. A good example is the signing of such acts to attract foreign investment: sometimes legal regulations even in some ways contradict PRC laws (the formation and adoption of a new law in China can take decades) because they take into account local specificities and time factors.

The positive results of local administration in space and missile activities can be seen in the case of Shandong Province, located on the Shandong Peninsula in part of the urban agglomerations of Yantai and Qingdao.

The socio-economic situation in the province is reflected in the 13 five-year reports and the 14-year target set in the February 2021 Report (Li, 2021).

Over five years, the province's industrial development is characterized by a 30.2% increase in regional GDP; the value of products of high-tech industries amounted to 45.1% of the total value of industrial production above specified, which is 12.6% more than in 2015. Now there are more than fourteen thousand high-tech enterprises, which is 3.5 times more than in 2015. In addition, 102 new listing companies, then reaching 334, and 8 companies with a market value of more than 100 billion yuan were registered.

2.516 million poor people in 8,654 villages below the provincial standard were lifted out of poverty. The average disposable income per capita per year reached 32,886 yuan, twice as high as in 2010. The average subsistence level in urban and rural areas rose by 55 percent and 98 percent, respectively.

High-speed railways and expressways opened to traffic on overpasses reached 2,110 km and 7,473 km, respectively.

The time to start a business in the province has been reduced from 20 to one day. As a result, a total of 10,000 businesses with foreign capital have been established.

The construction of 'Green Intellectual Industrial City of Shandong' and other major projects have been started.

Taxes and fees have been cut by 185 billion yuan.

A total of 7,514 provincial, local legal acts have been reviewed and enacted to ensure compliance with the 13 five-year plans.

This information is followed by the development of the local space and missile industry in the province.

Greater Shanghai stands out as one of China's most important science and technology centres. Its future competitor, the city of Qingdao, is developing intensively. The nearby Yantai has long since become a centre for designing and manufacturing satellites with the necessary components.

The Yantai Government's website highlights a significant event: information about the space development of the Haiyan County seaside city, which is part of Yantai.

On 22 April 2020, the construction of the 'Eastern Aerospace Port' industry project (e.g., for the launch of locally produced commercial launch vehicles from offshore platforms) and the signing ceremony for 10 major space projects (Jones, 2020) began in the city of Haiyan. Four space investment sites are being established: National Special High-Tech Satellite Science and Technology Park Project (supported by the Industrial Park for Satellite Data Utilization in Qingdao), the National Special Satellite Demonstration Town, Oriental Aerospace Port (Haiyang), Industrial Park Development Co., Ltd. The PRC Aerospace Industry Office operates in Haiyan.

In Yantay, Shandong Longkou/Assembly & Test Center manufacture rocket engines (NewLine-1, 2021) for LinkSpace Aerospace Technology Group, a private aerospace company.

Together with other space and missile organizations and companies of Yantai, all of this merges into Yantai Aerospace. And this is a municipal initiative. The process is managed by the Office of the Shandong Provincial Commission for Integrated Military and Civilian Development as well as the CCP municipal local committee. The very complex system of management and control of the space and missile industry in the PRC is justified by the achievement of high results. The local regional level demonstrates the same.

Programmes

The main document of the State Space Agency of Ukraine is analysed in the latest version (National target-oriented science and technology space programme of Ukraine for 2013-2017) (Levenko & Drozdenko, 2021) in comparison with the 2016-2020 White Paper of the PRC (White Paper, 2016). Both programmes declare similar goals, but the size of Ukraine and the PRC is not commensurate, including in terms of projected revenues from space activities.

First of all, this is determined by the principle of programme construction: in the PRC, it is part of China's five-year plan of social and economic development. In Ukraine, it is the departmental document of the Space Agency.

Differences in planning result in different programme outcomes.

Analysis of Ukraine's space programme shows that up to 2015, it has been successfully carried out (launches of launch vehicles with the participation of Ukraine, cooperation with the European Space Agency, cooperation with Brazil, the Russian Federation, the United States of America, etc.) But since 2015, the funding has been reduced, and personnel changes have been made in the agency's management (seven times the head changed). The Ukrainian remote sensing satellite and other Ukrainian satellites, the communication satellite, have not been launched. The main political thesis, "promotion of social, economic and scientific progress of the State, increase of well-being of citizens" has not been defined in the programme clearly and has not been implemented.

The Blue Book of the PRC as the programme was implemented in China. The report on its implementation was presented in 2021 to the National People's Congress of the PRC. In the national tasks of the PRC, this thesis, identical to the Ukrainian one, has been fulfilled.

Moreover – China has officially recognized the eradication of poverty in the country and huge scientific and technological achievements that rank second in the world in space and missile technologies.

The Swedish National Space Agency participates in the programmes of the European Space Agency. The Strategy for Swedish space activities was presented by the government in 2018 for the first time in more than half a century of Swedish space history (2019 New Edition). It expressed the intention to adapt space exploration legislation to the current needs of the space industry. The Outer Space Law of 1983, which has been in force so far, is largely obsolete, as nowadays, there is a need to attract private capital for space research on a larger scale and as soon as possible. The relevant legislation of other European countries should be taken into account and cases of adverse effects on the Swedish space competitive capacity should be reflected in the new law. The possibility of commercial space flights should also be considered and approved by law. Furthermore, measures are envisaged to modernize the Esrange Space Centre in order to make it a European launch site, to create Swedish satellites, to participate in European programmes on remote sensing of Earth and the introduction of Earth remote sensing data for practical use, with the creation of a data archive in the Norrbotten region [6]. In addition, national security and defence should be ensured. The programme is approved by the Parliament (the Riksdag) and is executed under its control.

Responsibility

As mentioned above, even at the level of the city of Yanta, control of space projects is exercised not only by the State authorities but also by the CPC and the Provincial Office for Integrated Military and Civilian Development. Therefore, the implementation not only of the White Paper's plans, but also of other State programmes, such as "Program 126" development of the dual-use economy, "National medium- and long-term program of scientific and technological development (2006-2020)," is monitored.

Comprehensive control is carried out by State structures vertically, up to the CPC Central Committee.

In Sweden, violations of the Acts of the Parliament are dealt with by the judiciary.

In Ukraine, responsibility for implementing the National target-oriented science and technology space programme of Ukraine is not clearly defined even by the Law "On Space Activities." Internal control is carried out within the State Space Agency of Ukraine. The reports of the head of the Agency are formal and more media-oriented.

Conclusions

State policy on space and missile activities of the reviewed information regarding the PRC and Sweden differs from the one of Ukraine in the form of its provision.

The structure of the State Space Agency for 2020 looked like a mini-military-industrial complex of the USSR, with research institutes and enterprises subordinated to the Agency. Ukraine's State objectives are virtually non-existent in the space programme.

The State Space Agency has no military-industrial mission. In fact, the Agency is a means for the full use of space and missile residues of the USSR branch in modern Ukraine until their complete disposal.

The activities of the State Space Agency are under the control of the Cabinet of Ministers of Ukraine, although the Agency has no clear economic objectives.

Control of other branches of authority with regard to the development of space and missile activity sector, as a tool of development of technologies and science in the State, is formal (the Supreme Council of Ukraine, the President in the parliamentary-presidential country, political parties).

Military and civilian components are clear in space and missile (aerospace by other terminology) industry in the PRC. The CNSA is responsible only for the civilian area with open international cooperation, using advances in military technology and implementing the results of its work in China. The CNSA programme of activities is formally similar to that of the State Space Agency of Ukraine, but it is an integral part of the five-year development plans of the PRC with all the legal liability resulting from this. Control is multi-level: control exercised by the higher executive authority, legislative control, and control exercised by the Party in all branches of government. Therefore, public administration is practically applied in the Chinese-specific socialist legal system.

The study reveals the need for a partial reform of both the activities of the State Space Agency of Ukraine and its legal framework. Government reforms carried out in Ukraine in 2021, make this possible.

1. Recommendations for further research.

The State policy of Ukraine on space activities with the provision of the main mission of "promotion of social, economic and scientific progress of the State, an increase of well-being of citizens" should be determined as a basis, while the space sector structure that mimics in miniature the military-industrial complex of the USSR should be abandoned in the State Space Agency of Ukraine, transferring all industrial, research and development organizations and enterprises to the Ministry for Strategic Industries of Ukraine.

The transfer of the function of State policy-making in the field of space to the Ministry for Strategic Industries of Ukraine requires positive assessment, while the function of the State Space Agency of Ukraine should be a space programme identifying ways of implementing policy and determining the administrative liability of officials for incorrect policy-making and non-performance of the programme.

The tasks of the defense component of space activities should be transferred to the Ministry for Strategic Industries of Ukraine, taking into account the proposals of the Ministry of Defence.

The need for the corporatization of space industries to develop in international cooperation should be assessed.

2. It may be recommended to include the space programme in the development programmes of Ukraine, which will be made in the future by the Supreme Council of Ukraine on a submission from the Cabinet of Ministers, on the basis of proposals by the Ministry for Strategic Industries of Ukraine. This process should be administratively labile for all officials without exception, despite the inviolability of deputies and the Speaker of the Verkhovna Rada, the President, the Cabinet of Ministers, regional administrations, city and district leaders.

3. Following the example of the PRC, regional self-governing entities can be involved in the law-making to implement space programmes with regard to social and economic development at the local level.

4. The control of space policy implementation by the majority political party in the Supreme Council of Ukraine should be regulated at the legislative level.

5. The development of bilateral cooperation with individual EU countries regarding space and missile activities (for example, with Sweden) is considered positive, having adapted European legislation to space and missile activities in Ukraine.

In conclusion, it is recommended to proceed with cooperation with the PRC in space and missile activities, having adapted for this purpose targeted provisions of the legislation of Ukraine and the PRC, taking into account the need to adapt European Union legislation to the legal framework of Ukraine. Therefore, public administration of space activities in Ukraine will be supported by international law and bilateral agreements between States to increase efficiency and achieve the main objective: promotion of social, economic and scientific progress of the State, an increase of well-being of citizens.

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