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The new European Union space policy in order to maintain Europe's position among space leaders

Piotr KOLCZYŃSKI*

Abstract

This paper analyzes the current EU space strategy and confronts it with nowadays global challenges in the space sector. The ultimate aim of it is to recommend a well-adjusted space policy for the European Commission for assuring effective and sustainable exploration and use of outer space for the benefit of all EU members. In order to craft the most efficient space policy, the uniqueness of Europe's space sector is studied. This paper argues that the EU space policy has to focus on guaranteeing European autonomy in access and use of outer space. It also aims to extensively analyze the challenges and opportunities related to dynamic development of private space sector's activities. It emphasizes the significance of symbiotic cooperation between public institutions and private companies with regard to mutual benefits. The paper concludes that it is a right time for the European Union to build a bold and prospective space policy.

Keywords: European space policy, space law, European autonomy, ESA and EU, Private space sector

Introduction

In the heart of space activities lays cooperation. It is a critical element for successful use and exploration of Outer Space in two main aspects. On the one hand joining capacities of different actors is necessary because of unprecedented financial requirements conjoined with exceptional risk which characterize space endeavors. And on the other hand, shared vision of exploitation of Outer Space and common goals elaborated on the international forum among all actors engaged in space operations is essential to ensure sustainable development in that domain as well as protection of Earth's and Outer Space's environments. It is especially characteristic for the European continent where states weakened by the World Wars were not capable of undertaken space ventures individually by their own. Therefore, seeking cooperation with one another, they were keen to establish intergovernmental bodies to govern their objectives the most efficiently.

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Nowadays, the European landscape of space activities changes as number of countries involved in space missions increase and we are on the brink of space commercialization as more and more private companies undertake their own space ventures (Genta, 2014, p.1). As the result, the number and scope of possible activities in outer space are still growing along with technological and scientific development. These changes have to find their echo in prospective European space policy for the years to come. To draw the most efficient path to European space future, understanding Europe's past and current space governance is of the essence.

1. The structure of European Space Governance

This willingness to cooperate resulted in creation multiple intergovernmental institutions which nowadays – after many modification – constitute the framework of European space governance. The multiplication of actors at different levels engaged in space activities makes European situation very unique. There are two main conductors of European space policy: European Union (EU) represented by the European Commission (EC) and the European Space Agency (ESA).

The coexistence in the field of outer space activities of ESA and the EC presents a challenge for elaboration of consistent and holistic space policy for the whole European community. The purposes staying behind their establishment and their main features differ. The European Union enjoys great legislative machinery and political influence possessing superior power in this realm to ESA which is more equipped with technical and operational expertise. Nevertheless, in practice, competences and tasks of the respective institutions are often overlapping and far from clear delineation. Being autonomous and independent from each other, none of them can impose its vision and no hierarchy of their positions and roles in relation to conduct European outer space activities exists (von der Dunk, 2003, p.83). Notwithstanding this, recognizing the importance of working together to reach common objectives, EU and ESA reinforces their cooperation in joint programmes as Galileo or Copernicus. The legal basis for this cooperation is provided by the Framework Agreement¹ (2003) and since then, their shared goals for the European future in space led to several other mutual commitments. In 2007 the 'European Space Policy'² adopted by the 'Space Council' of ESA and EU ministers seeks to increase coordination of their programmes and to organize their roles relating to outer space activities. More recently in December 2016 ESA and EC signed a Joint

¹ Framework Agreement between the European Community and the European Space Agency, Brussels, done November 25, 2003, entered into force May 28, 2004; OJ L 261/64 (2004).

² Resolution on the European Space Policy; ESA Director General's Proposal for the European Space Policy, ESA BR-269. (2007).

EU/ESA Statement³ listing a number of common goals and emphasizing their intention to reinforce further cooperation.

Along with these two main platforms on which European space policy is deliberated there are intergovernmental organizations the scope of interest of which is more limited like the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)⁴ or the European Defence Agency (EDA)⁵.

And one cannot forget about the individual States which naturally play a key role in functioning of the European space sector. It should be remembered, that these are the sovereign European countries which constitute and form both institutions and it is eventually up to them how the future of Europe will look like. There can be seen two aspects of this remark. Firstly, as the Member States lead the functioning of ESA and EU they must ensure that the potential conflicts of interests and competences will be minimalized. Particularly, in view of the fact that among 28 EU Member States and 22 ESA members, 20 belongs to both organizations, a symbiotic cooperation in a leadership of the European space policy has to be seen by the European States as crucial to assure proper development of their space sectors.

Secondly, despite being the Member States of one (or even both) of these organizations, European nations remain independent – as it was argued before – and they are able to perform their own national space policies outside the framework of institutions' activities. In consequence, one cannot lose sight of the fact, that each of them has its own particular needs and priorities depending on their motivations and rationales for public engagement in space. They depend on the financial capabilities or are the consequence of geopolitical, economical or geographical environment. It results in many differences among their space strategies. As science and exploration are valuable for all States, smaller ones are generally less interested in areas of energy and environment, which are the interests of richer ones. Out of many technological domains contributed by space activities and economical motivators, the most common ones are the boost of industrial competitiveness and foster of international cooperation (Sagath *et al.*, 2018, pp. 117-118). But the governance of their space programmes differs from the smaller States where space-related activities are usually assigned to respective ministries, responsibility of which suits best national space goals, to space-faring nations which establish space agencies for conducting their various space operations. The European countries

³ ESA, *Joint Statement on shared vision and goals for the future of Europe in space by the EU and ESA*, 2016.

⁴ EUMETSAT was established by way of the Convention for the Establishment of a European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), Geneva, done 24 May 1983, entered into force 19 June 1986; as amended 14 July 1994, entered into force 27 July 1994; UKTS 1999 No. 32; Cm. 1067; Cmnd. 9483.

⁵ European Defence Agency is an agency of the European Union that promotes and facilitates integration between member states within the EU's Common Security and Defence Policy (CSDP); zob. retrieved from <http://eur-lex.europa.eu/legal-content/EN/AUTO/?uri=CELEX:32004E0551>

also differ from the point of view of strategy and policy formation as typically the bigger ones have them well-established and dedicated, while in the case of the smaller States, they are integrated in a broader innovation strategy, or even some of them do not have their space objectives established in any public document or accessible publication (Sagath, *et al.*, 2015, pp. 360-365).

Understanding this diversity of European States interests and needs in engagement in space-related activities is crucial for building successful and satisfactory common European space strategy for all Member States of ESA and EU.

2. The role of the EU in shaping European space policy

Established in 1993 by Maastricht Treaty⁶, European Union composed today of 28 Member States⁷ holds the strategic position on international scene representing European political and economic interests. In the realm of space strategy, the European Union (EU) is represented by the European Commission (EC). The European Commission recognizing the increasing value of space sector for the European policy and economy, supervise the comprehensive development of joint space-related activities and uniformity of Member States' space programmes.

The current source of EU competence regarding space activities can be found in the Treaty of Lisbon⁸ which came in force in 2009. By restricting the extent of EU's capability to establish the European space programme, the 'space competence' is the expression of 'shared competences' concept. It means that

'the Union and the Member States may legislate and adopt legally binding acts in that area. The Member States shall exercise their competence to the extent that the Union has not exercised its competence. The Member States shall exercise their competence again to the extent that the Union has decided to cease exercising its competence'. (Treaty on the Functioning of the European Union, 2007, Art. 2(2))

As according to the art 4(3) 'the exercise of that competence [by the Union] shall not result in Member States being prevented from exercising theirs' (Treaty on the Functioning of the European Union, 2007, Art. 4(3)), therefore, some argues that more accurate definition of this relation would be a

⁶ the Treaty on European Union, Maastricht, done 7 February 1992, entered into force 1 November 1993 31 ILM 247 (1992); OJ C 191/1 (1992).

⁷ European Union, *Countries*, 2017, retrieved from https://europa.eu/european-union/about-eu/countries_en

⁸ Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, Lisbon, done December 13, 2007, entered into force December 1, 2009; OJ C 306/1 (2007).

'parallel competence' as it leaves Member States authority to implement their own domestic legislation in the realm (von der Dunk, 2015, p. 257). And indeed, one can see consequences of such EU's competences limitation in practice by the example that while seven out of 28 EU Member States have national space legislations regarding a licensing regime of private space activities, the possibility for the Union to adopt a comprehensive EU law in this particular context is seriously limited (von der Dunk, 2017, p.82).

EC space strategy features comprehensive spectrum of space applications. It includes space research which is supported by EU funds under the Horizon 2020 framework programme for research and innovation. EC recognizes also that space activities constitute a powerful diplomatic tool and therefore can create a platform for international cooperation in many areas like development of space infrastructure, defense and security aspects. Such value of space sector is observed as well by the European Parliament which has often called for a greater EC intervention in the international aspects of space⁹. To achieve the best possible, result the Commission closely cooperate with the EP and the Council to discuss and support its strategy as well as to guarantee its effective implementation.

3. The features of European space market

In order to craft the most efficient European space policy, the uniqueness of Europe's landscape of space-related operations should be emphasized. Europe is one of the leading actors in the field of outer space activities. Its space industry maintaining a world class technological level is strong and competitive. Europe's space programmes focuses on fostering new service, enhances European leadership and creates business opportunities employing over 230.000 people (European Commission, 2016, pp.1-2).

The turnover of the European space industry in 2016 amounted to 8.247 billion euro. When looking at the development of European space sectors, there was a 9.4% overall increase in turnover in 2016, with the most growth coming from satellite applications increasing by 12.5%, launcher developments and production increasing by 11.1%. It should be also noticed that European space sector relays heavily on its regional market as 76.4% of final sales on the space market came from European customers. The European space companies are major players on the international level. A communications satellite service provider Intosat has an annually revenue exceeded 2 billion euro in

⁹ in December 2013, it called 'on the Commission and the Member States to work towards global governance for space' (resolution P7_TA-PROV(2013)0534, 10 December 2013).

2016, similarly as another communications satellite owner and operator providing video and data connectivity worldwide SES.

Arianespace, a company established by some of the ESA members which is responsible for manufacturing and operating European launch systems had reported revenue at 1.4 billion euro and Eutelsat which provide satellite coverage over the entire European continent and is the world's third largest satellite operator has the annual revenue around 1.5 billion euro (Al-Ekabi, 2017, pp.46-49).

However, at the same time Europe lacks a continuous public demand on significant level in space services which usually constitutes a basis in space-faring nations allowing stabilization and fostering competitiveness (ASD-Eurospace, 2016, pp.3-6). European institutional space investments are about three times lower than in the USA and four times lower than in Russia. Similar weakness is visible in R&D sector, budget on which represents 10% of sales turnover in Europe, meanwhile in USA it is 25%. European space domestic market is significantly smaller than these of other space powers.

Moreover, while turnover in commercial satellites appears to be increasing, the turnover generated by operational launchers and parts decreased in 2016 relative to the other segments. There could be also noted structural weaknesses in European space sector as military and security are much more limited than in other space-faring nations.

4. The new European space strategy

Taking into consideration above-mentioned circumstances, to be able to develop space industry the most efficiently, enhance European capabilities in space operations and guarantee Europe to maintain its position among worlds space leaders, the European space policy should stress issues discussed below.

Europe's space strategy has to underline the importance of maintaining European political autonomy which is a precondition for strategic independence, understood as "the capacity to take strategic decisions and to execute them so as safeguard a number of vital interests" (Wouters, *et al.*, 2015, p.52). It is essential for strengthening Europe's sovereignty and wealth as well as protection of European States interests. Besides, advanced independent development affects reliability of Europe as an important and strategic partner for other space-faring nations.

To enable autonomy in various fields of space applications, first and foremost, an independent access to space has to be assured. For that purpose, Arianespace, a multinational company with its headquarters in France was established in 1980. It was formed on the basis of successful development of operational launchers by ESA and currently is supported by almost half of ESA Member States

(Arianespace, 2017). However today, Europe's well-established position as a leader in launch services is endangered. As new private American actors (as SpaceX or Blue Origin) and national ones as China or India emerge, the launch market become more and more sophisticated and competitive. With new technology used in next generation of rockets allowing for reduce of the costs of launch, it is much harder to win clients over (Salt, 2017, pp.31-32).

And indeed, insufficient deployment of new technology in Arianespace future launcher can seriously threaten viability of the company and subsequently whole European independent access to space (Sauzay, 2017, pp.79-82). As the concept of reusability is being on the course to revolutionize space launches as it allows save up to 30% of the launch cost thanks to recovery of parts of a rocket (as in the case of SpaceX, which brings back on the Earth the whole first stage – engines and tanks – which represents around 70% of a rocket costs) and increase frequency of launches (Quora, 2017), Ariane 6 will be fully expendable which could affect its competitiveness. To prevent it from happen, two reusable engines are currently developed in Europe – Prometheus which would be used in Ariane 6 and even more advanced Adeline (Guillermard, 2017, p.27).

In that place, it is crucial to underline the significance of enhancing promotion of and support for commercial space launch services which will boost innovation development and in consequence will reduce costs. Instead of the US launch market, there still are not many private companies willing to undertake launch operations in Europe what is on the one hand a result of much smaller market and consequently fewer potential clients but on the other hand also because of lack of proper policy towards such investments. EU should firstly concentrate on making contracts with private companies for developing required technology or delivering specific services. It should happen with financial contribution from both sides and under necessary level of supervision of public institutions in order to ensure anticipated results. Moreover, when possible, the governments should purchase already existing private services instead of building their own systems for public space missions.

Along with ensured autonomous access to space, Europe can benefit from independent space applications. In three the most important sectors of space application a deliberated and prospective strategy are already carried out and should further developed in years to come (Densing, *et al.*, 2015, pp.127-129). The first of such is Earth observation which provides capability to meet the challenges as disaster management or monitoring environmental pollution. It also helps in strengthen safety and security in increasing menace from terrorism and modern types of warfare, as well as monitoring natural changes and migrations. To not to be obliged to rely on other nations systems in such strategic matters EU and ESA combines their efforts to establish the programme of Global Monitoring for Environment and Security (GMES, currently Copernicus) which aims at achieving autonomous, high quality Earth observation capacity. Another sector of space application is satellite navigation. It is

dominated by US and Russian systems, but lately also China, Japan and India invest in their own regional satellite navigation services. In Europe, Galileo programme meets the need for independent system under civil control perfectly. The constellation of 30 satellites is planned to be completed by 2020 (European Commission, 2016, p.8). It will provide precise positioning signals and will help Europe manage road, earth and sea traffic, as well as it will enable for Europe to cooperate on a new level, for example connecting Galileo and USA's GPS system. In the field of satellite communication (Densing *et al.*, 2015, pp.131-132), the oldest and best-known area of space application, indispensable for modern world, with great commercial market, Europe cannot stay behind. Being aware of the strategic values that it poses, ESA is developing European Data Relay Satellite (ESRS) system which will provide fast and reliable telecommunications network ensuring European nations independence in transforming their own data.

To properly protect its space assets Europe has to be able to monitor space weather and gather real-time, precise information about human made or natural near-Earth space objects orbiting in outer space. Current European Space Situational Awareness (SSA) programme is undertaken by ESA as an optional with financial participation of 19 Member States (ESA, 2017, website). With international cooperation, Europe has to develop and operate system which will ensure space objects security and will allow Europe to be a partner, instead of a customer for other space-faring nations (Kaiser, 2015, p.6). This issue is also vital in the context of still increasing amount of space debris. The American Surveillance Network which is the main organ worldwide responsible for tracking and cataloging space debris reports that there are around 23.000 elements in outer space. This number of fragments of space objects constitute the 7.500 tons of artificial matter orbiting around the Earth (ESA, website). European nations through their actions within the framework of EU should be foreground actors on the international arena in ensuring robust and comprehensive regulations concerning space debris mitigation. Another closely related to the issue of SSA is space traffic management. In the lack of a competent intergovernmental specialized organization or agency, on the cusp of space commercialization and enhanced use of outer space, the 'rules of the road' applicable to outer space operations are necessary and European States should take its unified stand also in that case.

It should be emphasized here, that Europe does not need independence in every space-related field. In science and technology, or deep space explorations and manned spaceflights the cooperation and interdependence is the most desirable way by which they should be undertaken (Simpson *et al.*, 2016, pp. 23-25). But even then, it is crucial to guarantee European scientists state-of-the-art tools and systems to enable them to be a par with the rest of international colleagues.

As was noted above, a weak public demand of Europe's nations leads European market to a unique situation. The European space industry – unlike other space powers – highly relies on the

commercial business. As many as 64% of the European space industrial output is devoted to commercial markets, leaving only 36% to local institutional activities. In USA, contrary, this number are 60 to 40% for advantage of institutional market (ASD-Eurospace, 2016, pp.3-6). This close connection with private sector emphasizes the significance of cooperation between public and private actors within the framework of European space strategy.

5. New policy towards private space sector

The privatization and commercialization of outer space is on its way and we are on the brink of economic boom in space-related activities. Private companies do not anymore limit themselves to traditional sectors as remote sensing or direct broadcasting. Their ideas are revolutionary and rich entrepreneurs which stay behind them are willing to invest lots of money in bold endeavors like space tourism, space hotels or asteroid mining. A potential of outer space for commercial market is huge and even though it is still uncertain and risky, the number of new ventures increase.

The advantages of this trend are plural. The fundamental difference which benefits private companies over public agencies is a one of policy nature. While public agencies are directly dependent on state's administration with its changing powers, influences and lobbies, the national policies can change every few years after each election and with it a strategy as well as budget on space programmes. In such environment, keeping permanent priorities can be very difficult. Whilst, private investors, based on market situation and commercial demand develop their strategy independently being in a better position to maintain long term engagements and stable goals (Genta, 2014, p. 2).

However, decision to invest in space business is not easy as the exceptional risk accompanying space endeavors goes hand in hand with necessity of unprecedentedly high investments. Eventually, when somebody decide to take up a task, there are multiple challenges ahead concerning remarkably sophisticated science and technology, designing, building and operating state-of-the-art space machines. But potential risk and uncertainty does not end there. Success in achieving envisaged goals, or even in accessing market or raising investment capital profoundly relies on political and regulatory decisions. Very often, it is not a technological or financial complication what is stopping entrepreneurs from undertaking a determined venture but a lack of certainty and assurance that such investment will be duly, legally protected (Christiensen, 2016, pp. 38-39).

The current and future model of handling space-related activities by European States directly translate to opportunities for private investors. The way they perceive private entities and the role they assign them as well as the mechanisms they establish to work together and to award contracts

define development of European private space sector. Public programmes constitute a major part of consumption of space services and even in a such unique environment as mentioned before European space market represents with high reliance on non-public activities, it rests decisive for governments to on the one hand enable the flourish of private ventures by preparing reliable, stable political and legal basis guarantying protection for private investments and on the other hand to become a principal customer of all kinds of private space services. To ensure the latter, close work and transparent communication is essential. By understanding the needs and goals of its partners, both sectors can benefit from a symbiotic relationship.

What happens on the scene of space activities already do not go unnoticed by European actors. For example, ESA with its 'Space 4.0' strategy (ESA, 2016) acknowledges the evolution of space sector. It emphasizes the importance of interaction between governments, private sector, society and politics to maintain competitiveness of its programmes. 'Space 4.0' includes also full integration of European economy and industry (analogously baptized as 'Industry 4.0'). Moreover, ESA expresses its interest in a close collaboration with private sector in the context of space exploration plans. By the 'call for ideas' initiative (ESA, 2015) it offers opportunity for private companies to become a strategic partner with the realization of European exploration ideas for mutual benefits.

Similarly, on the national level one can also find strategies adjusted to the changed space scenery. For example, CNES (French national space agency) introduce new methods in respect of expanding global competition and commercialization of outer space activities (Le Gall, 2017, pp. 45-46). It still focuses on innovation and development of space systems but its approach has changed from the 'top down' concept to the 'bottom-up' policy in which potential users are firstly asked about their needs and as a consequence of their answers, the development of adequate systems starts.

With no underemphasizing abovementioned adjustments, there is still a need for a further, robust, unified and preferably European-level actions in order to fully take advantage of emerging private space sector.

Therefore, to enable a rise of private initiatives European governments have to review their space regime and establish, amend or just clarify regulations applicable to space-related activities. While being aware of a possible threat which possess insufficient regulation, public law-makers have to also keep in mind that light-touch approach is crucial to enable expansion of private ventures. Regulatory policies have to be implemented progressively with the realization that too early action carries certain risks and some level of flexibility is necessary in order to achieve the rollout of private investments.

Procedures of licensing, payload reviews, wide variety of controls and inspections carried out prior to launch will have to be reexamined and modernized to be able to manage increased number

of operations. Application and decision-making processes should be transparent, consistent and equal across those willing to undertake space operations. On the same time, European legislator should keep off vague and ambiguous provisions trying to regulate a broad spectrum of activities in one fell swoop and instead establish particular regimes for specific cases when required.

An active law-making role is vital not only from the point of view of benefits which it brings to internal market but it is also highly relevant for the European States from the perspective of their international position. Even though the equal access, use and exploration of outer space are the principal guaranteed by the space law regime (Tronchetti, 2013, p. 8), space powers have a greater impact on a development of space law due to their practices as well as interpretations of international treaties and subsequent establishment of corresponding domestic space law (Pace, 2016, pp. 3-4). They shape their regulations around their space policies and industries in the way to be the most efficient for their own interest instead of elaborating them through multilateral negotiations. This regulatory shift from the international to national level in law-making could result in the development of future space law in favor of some States which are more active in standards setting (Danilenko, 2016, p. 181). From the European perspective it is key to take a clear and unified position in this matter in order to regulate the issues for commercial worldwide space market and to assure an adequate protection of space and on-ground environment. At this point, it is also vital to emphasize that it is essential for emerging European space nations to be active in legislation domain also in their own countries (Dennerley, 2016, p. 4). As mentioned above, it matters not only because of the fact that a stable and reliable national law is the basis for a development of private companies in any given country, but also from the point of view of their international position and interest in space activities. If emerging space nations want to play a significant role on the international level and benefit from the principle of equality in space endeavors, they have to adopt similar strategies and legal regimes to these of space-faring nations.

6. Space security and defense

Another vital issue which has to be addressed in the European space strategy is the military space sector. Outer Space constitutes an indispensable sphere in the modern world's challenges and threats.

The concept of use of the universe for defense and security purposes by space powers is well reflected by *the Space Raport 2017* which estimates that military space spending in 2016 were around \$33.000 billion (The Space Foundation, 2017, p. 15). Meanwhile, Euroconsult estimates that around 35% of the \$62.2 billion in global space budgets in 2016 went to military spending, i.e. about \$22.86

billion (The Space Foundation, 2017, p. 15). Also according to the abovementioned Space Report 2017, the United States generated a 66.7% share (\$22.000 billion) of global military space spending in 2016 and non-US global military spending was responsible for remaining 33.3% (\$11.000 billion).

At the same time, equally important as to take advantage of space assets to improve on-ground security is to assure security in space. Crucial space infrastructure has to be appropriately protected as more and more space powers demonstrate their capacity in anti-satellite systems. But the fact that issues connected to security are very sensitive and individual States are cautious in sharing their defence intelligence have resulted in the fact that until recently security capabilities of Europe has been little more than the sum of its national stakes. The significance of dealing this this issue in a sense of symbiotic cooperation among all European players was emphasized by EU which stated that: [s]pace infrastructure is critical infrastructure on which services that are essential to the smooth running of our societies and economies and to our citizens' security depend. It must be protected and that protection is a major issue for the EU which goes far beyond the individual interests of the satellite owners (European Commission, 2011, p. 6).

The total funding for European military space programmes was about \$753.051 million in 2015. France had the highest military budget at \$362.696 million, while the United Kingdom budgeted \$317.860 million, with Germany at \$55.765 million and Italy at \$16.730 million (Al-Ekabi *et al.*, 2018, p. 85).

The most recently, on 30 November 2016, the European Commission released its European Defence Action Plan. It proposed most importantly the creation of European Defense Fund, actions European Defense Fund, actions to support more efficient spending by Member States in joint defense capabilities, strengthen European citizens' security and foster a competitive and innovative industrial base (European Commission, 2016). Moreover, the plan envisages fostering investments in defence supply chains and reinforcing the single market for defence as well as promoting civil and military synergies within EU policies (EESC *et al.*, 2016). European Commission President Jean-Claude Juncker stresses that the purpose of that initiative is to assure the protection of European citizens highlighting that

to guarantee our collective security, we must invest in the common development of technologies and equipment of strategic importance (...). It requires more cooperation between Member States and greater pooling of national resources. If Europe does not take care of its own security, nobody else will do it for us. A strong, competitive and innovative defence industrial base is what will give us strategic autonomy. (European Commission, 2016)

And indeed, within the space security sector, there is a relevant economic case for greater cooperation between all European countries (Remuss, 2010, p. 12-13). The statistics from recent years reveal the weakness of European investments in security and defence areas. For example, the United States invested more than twice as much as the total spending of EU Member States on defence. Defence budgets in Europe have been shrinking in recent years while China has increased its defence budget by 150% over the past decade. What is more, the lack of cooperation between European States in the field of defence and security costs between €25 billion and €100 billion annually, due to inefficiencies, lack of competition and lack of economies of scale for industry and production (Council of the EU, 2014, p. 85). Around 80% of defence procurement is run on a purely national basis, resulting in duplication of military capabilities. More European activities in defence sector will have a positive spillover effect on the European economy as the European defence industry generates a total turnover of €100 billion per year and 1.4 million highly skilled people are directly or indirectly employed in Europe (European Commission, 2016, pp. 1-3).

All of these shows that symbiotic cooperation between all European actors is of the essence to fully exploit the potential of using outer space for the security and defense purposes. And the fact that – concerning nowadays challenges and threats – the final frontier plays indispensable role in modern world – as it was argued in in several fragments above – demands from the European policy-makers right actions.

Conclusion

Due to cooperation between European actors Europe has become one of the most important players on the scene of space activities. But its situation is unique. The strategy in that realm is developed by different bodies as well as it is influenced by particular policies of individual European States. Without doubt, to be able to effectively confront key challenges symbiotic collaboration with a sense of responsibility is of the essence.

The EU policy-makers also have to recognize the significance of remaining autonomous in access to and operations in outer space. Wise and forward-looking decisions can provide Europe with cheap launch services, large space market and new investors guaranteeing competitiveness of European space industry while remaining a strategic partner for other space-faring nations. Along with that European actors have to recognize the potential of outer space in the context of on-ground security as well as adequately protect their space infrastructure.

It is a right time for building a bold, prospective European space policy. Even though private space market is not free from unpredictability and challenges and even further new and complex

problems would occur in the future, it is worth to seize this opportunity to not to drop off from this New Space Race.

References

- Al-Ekabi, C. (2017), *Space Policies, Issues and Trends in 2016-2017*, ESPI Report 63, September 2017.
- Al-Ekabi, C. (2018), European Space Activities in the Global Context, in: Al-Ekabi C., Ferretti S. (eds.), *Yearbook on Space Policy 2016 Space for Sustainable Development*, Springer International Publishing AG.
- Arianespace (2017), *Company Profile*, 2017, retrieved from <http://www.arianespace.com/company-profile/>
- ASD-EUROSPACE The Space Group in ASD (2016), A space strategy for Europe, Contribution of the European space industry, Position Paper.
- Christensen I. (2016), Building confidence and reducing risk in space resources policy, *ROOM The Space Journal*, Issue 1(7).
- Danilenko G. M. (2016), *International law-making for outer space*, Space Policy.
- Dennerley J. A. (2016), *Emerging space nations and the development of international regulatory regimes*, Space Policy.
- Densing R. and Reinke N. (2015), *The Need for European Independence in Space Applications* in: C. Al-Ekabi (eds.), *European Autonomy in space*, Springer International Publishing Switzerland.
- von der Dunk F. (2017), *The European Union and the Outer Space Treaty: Will the Twain Ever Meet?*, Space, Cyber, and Telecommunications Law Program Faculty Publications.
- von der Dunk F. (2017), Towards one captain on the European spaceship—why the EU should join ESA, Space Policy 19.
- von der Dunk F. (2015), European Space Law, in: von der Dunk F., Tronchetti F. (eds.), *The Handbook on Space Law*, Cheltenham: Edward Elgar.
- European Commission, *Defending Europe The case for greater EU cooperation on security and defence*, Factsheet, retrieved from https://ec.europa.eu/commission/sites/beta-political/files/defending-europe-factsheet_en.pdf
- European Commission, *EU Space Policy*, Factsheet.

- European Commission (2016), *European Defence Action Plan: Towards a European Defence Fund*, Press release Brussels, 30 November 2016, retrieved from http://europa.eu/rapid/press-release_IP-16-4088_en.htm
- European Commission (2016), *Space Strategy for Europe*, Communication from the Commission to the European Parliament.
- European Commission (2016), *State of the Union 2016*, 2016, retrieved from https://ec.europa.eu/commission/state-union-2016_en
- Euroconsult (2017), Government Spending in Space Programs Reaches \$62 Billion in 2016, 30 May 2017, PRWeb 21 Aug. 2017, retrieved from <http://www.prweb.com/releases/2017/05/prweb14377281.htm>
- The European Economic And Social Committee And The Committee Of The Regions (2016), *European Defence Action Plan*, Communication From The Commission To The European Parliament, The European Council, The Council, COM (2016) 950 final of 30 November 2016, Brussels, European Union, retrieved from https://eeas.europa.eu/sites/eeas/files/com_2016_950_fl_communication_rom_commission_to_inst_en_v5_p1_869631.pdf
- ESA, About Space Debris (2015), retrieved from https://www.esa.int/Our_Activities/Operations/Space_Debris/About_space_debris
- ESA, *Call for Ideas Space exploration as a driver for growth and competitiveness*, retrieved from http://m.esa.int/About_Us/Business_with_ESA/Business_Opportunities/Call_for_ideas_Space_exploration_as_a_driver_for_growth_and_competitiveness
- ESA (2016), *Joint Statement on shared vision and goals for the future of Europe in space by the EU and ESA*, retrieved from http://www.esa.int/About_Us/Welcome_to_ESA/Joint_statement_on_shared_vision_and_goals_for_the_future_of_Europe_in_space_by_the_EU_and_ESA#
- ESA (2017), *Space Situational Awareness*, retrieved from https://www.esa.int/Our_Activities/Operations/Space_Situational_Awareness/SSA_Programme_overview
- ESA (2016), *What is space 4.0*, retrieved from http://m.esa.int/About_Us/Ministerial_Council_2016/What_is_space_4.0
- Framework Agreement between the European Community and the European Space Agency (2004), Brussels, done November 25, 2003, entered into force May 28, 2004; OJ L 261/64 (2004).
- Le Gall J.Y. (2017), Astronautics Our space future lies in innovation, *ROOM The Space Journal*, Issue 4(14).
- Genta G. (2014), *Private space exploration: A new way for starting a spacefaring society?*, Acta Astronautica.

- Guillermard V. (2017), Fusee reutilisable: Ariane prepare sa contre-attaque, *Le Figaro* N. 22 814, 15 Decembre.
- Hunter S. K. (2016), *Space Traffic Management Concepts Leveraging Existing Frameworks*, Space Traffic Management Conference, Emerging Dynamics.
- Kaiser S.A. (2015), *Legal and policy aspects of space situational awareness*, Space Policy.
- Pace S. (2016), *Space cooperation among order-building powers*, Space Policy.
- Quora (2017), *How Much Does SpaceX Save By Reusing A Falcon Rocket?*, 2017, retrieved from <https://www.forbes.com/sites/quora/2017/07/21/how-much-does-spacex-save-by-reusing-a-falcon-rocket/#47829a79724d>
- Remuss N. (2010), *Creating a European internal security strategy involving space applications*, Space Policy 26.
- Resolution on the European Space Policy (2007), ESA Director General's Proposal for the European Space Policy, ESA BR-269.
- Sagath D., Papadimitriou A., Adriaensen M. and Giannopapa Ch. (2015), *Priorities in national space strategies and governance of the member states of the European Space Agency*, Acta Astronautica.
- Sagath D., Papadimitriou A., Adriaensen M. and Giannopapa Ch. (2018), *Space strategy and governance of ESA small member states*, Acta Astronautica.
- Sauzay A. (2017), *Espace: l'Europe contre-attaque?*, Note, Institute Montaigne, Decembre.
- Salt D. J. (2017), Reusable air-launch and the space access paradigm, *ROOM The Space Journal*, Issue 3(13).
- Simpson C., Woerner J.D. (2016), Exploration and cooperation at the heart of European space vision, *ROOM The Space Journal*, Issue 1(7).
- The Space Foundation (2017), *The Space Report 2017*.
- Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community (2007), Lisbon, done December 13, 2007, entered into force December 1, 2009; OJ C 306/1.
- Treaty on European Union (1992), Maastricht, done 7 February 1992, entered into force 1 November 1993 31 ILM 247 (1992); OJ C 191/1.
- Tronchetti F. (2013), *Fundamentals of Space Law and Policy*, Springer New York.