

European-Russian Space Cooperation in 2030: From Commercial Partnerships to Common Exploration Programmes?

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Space utilisation and space activities in general reflect the terrestrial balance of powers. As it was the case during the Cold War, these factors still show the political, economic, scientific and financial capacities of a state or organisation because they require significant funding and efficiency in strategic and technological execution. Related to missile and defence issues since the end of the Second World War, space technologies are part of the so-called “strategic technologies” and give the government that masters them an advantage and great political weight on the international stage, making space activities an important factor in international relations. Nowadays they have a huge economic impact on diverse activities as they give access to advanced telecommunication capabilities and a large set of vital data and information. The current economic crisis makes decision makers aware of the economic and social dimension of the use of space. In the past few years, the economic crisis has led some governments to cut their space budget. At the same time, some countries and organisations have refocused their space policies and strategies for the period until 2030 on space applications, which are easier to justify to the public than exploration programmes. Cuts in public funding and the huge costs for long term and complex programmes highlight the necessity of international cooperation in space activities. International space cooperation will be the subject of this Perspective, more precisely European-Russian cooperation in the 2030 timeframe.

1. Introduction

The last two years highlighted important achievements in different areas. In October 2011, Roscosmos, the European Space Agency (ESA) and the French space agency (CNES) launched a Russian Soyuz rocket from the European spaceport in French Guiana after years of preparation. Since then four successful launches took place, carrying important payloads like the first satellites of the Galileo constellation and Pleiades. Also last November, Roscosmos and ESA signed an agreement on Solar System exploration based on the ExoMars mission, the JUICE mission (JUperiter ICy moons Explorer) and robotic missions to the moon¹. The agreement

finally made Russia a full partner in the ExoMars mission following months of struggle for funding in Europe after the United States decided to abandon its participation in the mission in February 2012 and Roscosmos expressed its interest in the project since the fall of 2011. The question that arises from this is whether Europe and Russia will truly engage in common exploration missions by 2020-2030? The aim of this ESPI Perspective is to analyse the cooperation background and the challenges Europe and Russia have to face in order to establish a solid commercial and scientific cooperation by 2030.

¹ MENNESSIER Marc, « L'Europe et la Russie signent un accord spatial », *Le Figaro*, 21/11/2012. <http://www.lefigaro.fr/sciences/2012/11/20/01008->

[20121120ARTFIG00716-l-europe-et-la-russie-signent-un-accord-spatial.php](http://www.espi.org/20121120ARTFIG00716-l-europe-et-la-russie-signent-un-accord-spatial.php)

2. Space Cooperation Framework

Europe (EU, ESA and national governments) and Russia are respectively the second and third space power in terms of budget: 6 bn. euro in Europe and 2 bn. euro in Russia in 2012². In the Lisbon Treaty in 2009 the European Union was given a space policy mandate, which, however, must be exercised in coordination with the space policies equally defined by ESA and the European states. In Russia, the Federal Space Agency Roscosmos and the influential Academy of Science are the main stakeholders of Russian space policy since the Russian government initiated a programme of modernisation for its space sector. Of course, each entity has its own winning cards: Russia inherited the experience and the many space facilities of the Soviet Union, and since the retirement of the American space shuttles, it is the only nation capable of sending a human crew to the ISS, which gives the country a considerable advantage over other space powers. Furthermore, it shows a strong will of independence through the construction of a new spaceport in Vostochny. The use of the Baikonour cosmodrome costs Russia \$ 165 M a year and it could be instrumented in case of tensions with Kazakhstan³. Europe, especially ESA, has a successful series of launchers, and experience in complex scientific missions. European space industry remains competitive with leaders like EADS Astrium, Thales Alenia Space or Arianespace, the latter of which represented 50% of the launcher market in 2011⁴.

2.1 Compared Approach of Russian and European Space Policies

Europe's space governance is changing. Interested in the success of ESA, the EU entered into a framework-agreement with ESA in 2003, thereby i.a. creating a Space Council. The agreement confirmed the roles of each organisation – the EU focusing on space applications helping to implement its own policy (like GMES and Galileo), with ESA helping the Union in practical phases through its competences and experience, ESA remaining in charge of space exploration, scientific missions and other application related activities. In 2007 a first European Space Policy coordinated the efforts of the EU, of ESA and of their member-states, and defined the space policy as a strategic

tool with a civil and a military dimension. In Russia, after the crisis of the 1990s and dramatic cuts in space budgets, Russian leaders are interested in space as an instrument of strategy and sovereignty in addition to the clear utilitarian value. A change of focus occurred in 2005 when state leaders refocused their attention on strategic sectors – among them, space activities. The GLONASS programme was declared to be a priority and a new ambitious space policy was launched with the adoption of two programmes, the Federal Space Programme 2006 - 2015 and the Federal Target Programme on the Development of Russia's cosmodromes 2006 - 2015. These are aimed at modernising the Plesetsk facilities⁵. The main action yet to be undertaken, however, is the translation of the 'Strategy for Development of the Space Industry up to 2015', into reality. More specifically, this entails a new structure of the sector through a horizontal and vertical integration into holdings structured around some of Russia's big companies as champions of different areas of the space activities⁶. Furthermore some of these companies have to change their status to stock companies to ensure the transparency of their finance process⁷. This reform, supervised by Vladimir Popovkin, the head of Roscosmos, is still in progress.

In the context of European and Russian strategies, it seems that the major motivations are quite similar and socio-economic in nature. According to European estimations, the return on investment is huge: in 2010, for 6 M euro invested in space activities and technologies, there was a return of 120 M euro in the European economy⁸, and in 2009 about 69,000 jobs directly or indirectly relied on space technologies⁹. The EU communication 'Towards a space strategy for the European Union that benefits its citizens' puts forward the social, commercial and economic outcomes of the flagship programmes Galileo and GMES in terms of access to information, employment, competitiveness and position in the space applications market. It also suggests an appropriate industrial policy aimed at spurring research and development of new technologies in this area. Russia also emphasizes this dimension in the new strategy of March 2012 aiming to have

² SOURBÈS-VERGER Isabelle, « Russie, Japon, Chine, Inde : quelles politiques spatiales en 2012 ? », dans : *Géoéconomie*, Printemps 2012, N°61, p. 64.

³ ARISTOV Mikhaïl, « Russlands Kosmodrome », *Stimme Russlands*, 12/04/2012. http://german.ruvr.ru/2012_04_12/71495285/

⁴ Arianespace official website: <http://www.arianespace.com/index/index.asp>

⁵ MATHIEU Charlotte, *Assessing Russia's Space Cooperation with China and India. Opportunities and Challenges for Europe*, ESPI Report 12, June 2008, p. 15.

⁶ NARDON Laurence, *La restructuration de l'industrie spatiale russe*, Note de l'IFRI, April 2007, p. 10-15.

⁷ NARDON Laurence, op. cit., p. 8-9.

⁸ D'ESCATHA Yannick, « La place du CNES dans le paysage international », dans : *Géoéconomie*, Printemps 2012, N°61, p. 32.

⁹ Consortium C-Space, *Understanding the European Space Policy*, Fondation pour la Recherche Stratégique, 2011, p. 20.

10% of the space market by 2020, and space capacities able to meet 95% of its own needs by 2030¹⁰. The sheer size of Russia's territory makes space applications necessary for security, transport and resources management. These elements are the priority of this new strategy, including continuation of space sector reform. Concerning exploration, it still doesn't benefit from Union lever in Europe, in spite of several successes of ESA in the ISS involvement (ATV, Columbus). Although it is mentioned in the strategy, it mainly remains Agency's area. The agency currently implements ambitious missions in its Aurora programme - *ExoMars* being part hereof - and a mission to Jovian moons. Similarly, exploration plays an important role in Russia's strategy. Despite the loss of Phobos-Grunt probe in November 2011, Mars and the Moon are at the centre of attention. Furthermore, it is important to note that Vladimir Putin, after the success of Mars500 mission in cooperation with Europe, recently called European and American ISS partners with the request to join their efforts by implementing a common manned-exploration mission simulation on board of the station¹¹.

2.2 Structure of the Cooperation

European - Eastern Bloc cooperation started during the Cold War, on a bilateral basis – with France and East Germany – and had a strong political dimension and impact on the media. After the fall of the Soviet Union, ESA and Russia signed a Framework agreement and several international joint ventures were created in the 1990s, such as Starsem. Still, ever since the 1960s, cooperation focused on scientific missions and manned space flight (*Saliout*, *EuroMir*) and showed that Russia and Europe could cooperate successfully. Both also remain partners in the ISS, and Russia participated in the development of the ATV docking system, which was produced by ESA¹². Recently ESA and Russia participated in the Mars 500 project, an endeavour well known by the general public.

Space cooperation is also meant to be part of EU-Russia relations, and is integrated in areas like industry, modernisation and science. For the EU, cooperation is formulated in terms of competitiveness, access to new markets for European technologies and services¹³, and

sharing of costs and risks. There is also an explicit political dimension: ensuring EU influence through the establishment of interoperability between Galileo and GLONASS, and EU visibility in the definition of international space rules through its involvement in global initiatives. On the Russian side, cooperation with the EU is part of the strategy since 2006 and it should help to gain access to new technologies of relevance for space. In turn, this should help completing the modernisation of the space sector and refocus the attention partially away from conveying astronauts to the ISS¹⁴. Among the documents giving its shape to the cooperation, the '*Road Map on four common spaces*' (2005) integrates space cooperation among other horizontal policy issues (e.g. transport, environment) in common economic space, and the EU-Russia Dialogue on Space Cooperation (2006) signed in Brussels by the European Commission, Roscosmos and ESA confirms the different areas of cooperation – coordination of space applications for the EU, transport, exploration, access to space and ISS¹⁵. ESA and the 7th Framework Programme for Research and Development (FP7) have defined the implementation of different initiatives. In 2010, Russia participated in 36 FP7 projects related to space¹⁶.

3. Challenges

Although both Russia and Europe have some winning cards to remain major actors in space activities, there are still challenges inherent to both entities themselves and to space activities.

3.1 Challenges in Europe and Russia

A good example to illustrate the challenges Europe is currently facing is the case of GMES, in which the difficulties to define the respective roles of European Commission, Parliament and ESA have resulted in a perception of broader governance issues. Per definition, GMES is an EU flagship programme and therefore, in accordance with the Lisbon Treaty, has to be funded by the Union. But at the end of 2011, the Commission announced the exclusion of the programme from

¹⁰ RIA Novosti, « Russia Drafts New Space Exploration Strategy », <http://en.rian.ru/russia/20120313/172134725.html>

¹¹ RIA Novosti, « ISS : un tremplin vers la Lune et Mars (Poutine) », 07/04/2012. <http://fr.rian.ru/science/20110407/189099857.html>

¹² MATHIEU Charlotte, op. cit., p. 29.

¹³ COM (2008) 561 final – COMMUNICATION – COMMISSION WORKING DOCUMENT. EUROPEAN SPACE

POLICY PROGRESS REPORT, 9th November 2008, Bruxelles, p. 14-18.

¹⁴ MATHIEU Charlotte, *Assessing Russia's Space Cooperation with China and India. Opportunities and Challenges for Europe*, ESPI Report 12, Juin 2008, p. 30.

¹⁵ RUSSIA – FINAL VERSION OF THE ROAD MAP ON THE COMMON ECONOMIC SPACE AGREED AT THE EU-RUSSIA SUMMIT ON 10 MAY, 24th May 2005, Bruxelles; « Terms of Reference – EU-Russia Dialogue on Space Cooperation », ESA, 10th March 2006, Bruxelles.

¹⁶ See European Commission official website on space policy: http://ec.europa.eu/enterprise/policies/space/index_en.htm

the draft MFF 2014-2020¹⁷. In spite of a resolution voted by the European Parliament in favour of the programme, the Union has difficulties to engage financially after 2014, arguing that budgets are too small for such missions. This has an impact on the relations with ESA. The Agency has invested 2 bn. euro of the 3 bn. invested in the programme until now. Currently, it cannot procure new satellites without guarantee of funding. In addition, the agency fears even more costs due to delays¹⁸.

It seems that the new space competences of the EU have made decision-making more complex than it was, and that EU space policy reflects the absence of a common vision in security and defence in the Union. Space activities suffer because of a lack in common engagement from the different member-states of the EU, and the military part remains weak. Exploration is, in practical terms, left to ESA despite high ambition of the EU in this domain of international relations relevance. The reason might be that the cost of an exploration programme is more difficult to justify because of the financial crisis. The EU space strategy does however reflect the importance of the engagement in space activities and has a political dimension¹⁹. One structural issue hampering EU/ESA cooperation is that the EU promotes WTO like open competition as a basis for procurements, whereas ESA relies on the system of "juste retour" to ensure the contributors a return on investments. These existing different conceptions make the funding of space missions and the implementation of space industrial policies difficult.²⁰

On the Russian side, in spite of a strong political will, the sector remains deeply marked by the crisis of the 1990s, when the funds devoted to space activities and industries were drastically cut. Moreover, between the end of 2010 and the summer 2012, Russia suffered from several

space failures. The most noticeable ones were the crash of the *Express* cargo in August 2011, as it threatened the supply of the ISS and endangered crew return to Earth, and the loss of *Phobos-Grunt* a few months later. The fact that some of these failures were the result of human mistakes added to the worry²¹. The failures led ultimately to the appointment of Vladimir Popovkin as the head of Roscosmos.

Despite a dramatic space budget increase of 11,5% between 2010 and 2011, Russian satellites remain less reliable than the European and American ones, and generally do not meet the needs of the global market²². In turn, this has negative impacts on cooperation – France, for instance, had material onboard the lost *Phobos-Grunt* probe. There are different causes of the suboptimal performance. Firstly, Russia still suffers from the crisis of the 1990s after the end of the USSR and the cuts in funding by the Russian government. International partnerships initiated at that time allowed maintaining the activities of Russian space industry but they didn't lead to the desired technology transfers required for modernisation. Russian space stakeholders mainly had attention for the survival of the sector. For this purpose, Russia sold its cheap and reliable launchers and as a result international customers could benefit from the Soviet expertise in this area, but no real innovation occurred in Russian space technologies. Moreover, the management and organisation remains deeply marked by the Soviet work-culture, and technicians and engineers rarely have access to the conclusions of inquiries after failures, so most of time they have no specific clues as to how to solve the occurring problems²³. Also, space actors themselves tend to resist reorganisations of their sector. Finally, the human factor is important.

¹⁷ COMMUNICATION DE LA COMMISSION AU PARLEMENT EUROPÉEN, AU CONSEIL, AU COMITÉ ÉCONOMIQUE ET SOCIAL EUROPÉEN ET AU COMITÉ DES RÉGIONS, concernant la conclusion d'un accord intergouvernemental pour la mise en œuvre du programme européen de surveillance de la Terre (GMES) de 2014 à 2020, le 11 mai 2012, Bruxelles.

¹⁸ DE SELDING Peter, « ESA, European Commission Near GMES Funding Rubicon », *Space News*, 20/02/2012. <http://www.spacenews.com/civil/200220-esa-european-commission-near-gmes-funding-rubicon.html>

¹⁹ COM(2011) 152 final – COMMUNICATION DE LA COMMISSION AU PARLEMENT EUROPÉEN, AU CONSEIL, AU COMITÉ ÉCONOMIQUE ET SOCIAL EUROPÉEN ET AU COMITÉ DES RÉGIONS. VERS UNE STRATEGIE SPATIALE DE L'UNION EUROPEENNE AU SERVICE DU CITOYEN, le 4 avril 2011, Bruxelles, p. 8-9.

²⁰ RIA Novosti, « Phobos Grunt : 60% des puces inadaptées à une utilisation spatiale », RIA Novosti, 31/01/2012 consulté le 01/08/2012, disponible sur : <http://fr.rian.ru/science/20120131/193209763.html>

²¹ « JUICE : prochaine grande mission scientifique de l'Europe », *ESA Portal – Luxembourg*, 02/05/2012. http://www.esa.int/esaCP/SEMFM6QWJ1H_Luxembourg_0.html

²² BROCARD Marlène, « Coopération spatiale franco-russe : 'Les biscuits secs ont remplacé le caviar' », *Aujourd'hui la Russie*, 09/11/2011. <http://russie.aujourdhuilemonde.com/cooperation-spatiale-franco-russe-«les-biscuits-secs-ont-remplace-le-caviar»>

²³ BOGDANOV Konstantin, « Les 20 ans de l'agence spatiale russe Roskosmos : un anniversaire morose », *RIA Novosti*, 27/02/2012: <http://fr.rian.ru/discussion/20120227/193523475.html> ;

Ilia Kramnik refers to « Kaganovitch princple », named after a Soviet Commissar in Stalin time, who used to say that « each incident has a first name and a surname ». However the author reminds that such punishments occurred at the beginning of the space programme from the 1940's to the 1960's. KRAMNIK Ilia, « L'industrie spatiale russe à la croisée des chemins », *La Russie d'aujourd'hui*, 09/02/2012.: http://larussiedaujourd'hui.fr/articles/2012/02/09/lindustrie_spatiale_russe_a_la_croisee_des_chemins_14189.html

The Russian space sector lacks staff between 30-50 years of age, which means most experienced technicians, engineers and researchers approaching retirement cannot pass down their knowledge to younger generations. In addition, the low salaries do not appeal to young graduates who are keener to use their skills in a more lucrative way²⁴.

Space actors complain about the lack of consistency in government space strategy, that still contains huge prestigious exploration programmes, even shortly after the loss of *Phobos-Grunt*²⁵.

3.2 Challenges of Space activities

Not only do space activities demand huge financial means and involve high risks, they also represent a market and this implies an element of competition. Europe and Russia, although they share a cooperation history, also are potential competitors. One of the reasons for the delays affecting the negotiations regarding the installation of Soyuz in French Guiana was the fear that the Russian launcher could represent a serious competitor for Ariane 5. Although EADS Astrium, Thales Alenia Space and Arianespace are leaders in their area, it is important to consider that the internal institutional market of Europe is relatively limited in size, and that these companies rely on the commercial market for more than 50% of their turn-over. Thus in 2011, Arianespace retained a market share of 50%²⁶ and it has not witnessed any launch failures in the past ten years. Russia's commercial market share on the other hand, balances between 7-10% in satellite production, and it launches 40% of payloads²⁷.

Ariane 5, however, is the most expensive launcher with a "price for reliability" - according to Jean-Yves LeGall, CEO of Arianespace - of \$ 100 – 150 M per launch, whereas the American private society SpaceX could offer \$ 60 M launches. Another problem of Ariane 5 is its

multiple payload capacity, which forces payloads and customers to wait until proper loading. Lighter, single payload launchers could become serious competitors, especially given that the United States and China protect their domestic space market by a much higher number of institutional and military orders²⁸. Competition exists in the satellite sector too, and EADS Astrium and Thales Alenia Space have to face American companies and low-cost producers from emerging countries. Indeed, competition is fierce also inside Europe. The Galileo case shows it: the European Commission selected the German company OBH System, and signed a 560 M euro contract in January 2010, and a 250 M euro two years later, although, according to Astrium management, the Commission had given to understand that two companies could be in charge of the constellation²⁹. European satellite manufacturers are deeply worried because the institutional market might decline as a side effect of the financial crisis and decrease in government expenditure³⁰.

As far as Russia is concerned, the crisis had repercussions on the quality of its material capital, including its satellites constellations. What's more, Russia is late in the development of key technologies and it could take ten to thirty years to make up for the lag in development³¹, making it difficult for Russia to remain competitive in cutting-edge space technology. In addition, several small launchers e.g. Kosmos 3M Dniepr - which compete with the European Vega launcher - are cheaper, but only because they are recovered from of old Soviet missiles. This means their availability relies on a finite stock that will be exhausted, and this is already the case of Kosmos 3M³². In terms of market structure, Russia mainly relies on launches for foreign partners and industries: in 2011, 60% of commercial launches took place at Russian cosmodromes³³. Because of this reliance upon launches, however, Russia

²⁴ In July 2011, salaries of a starting engineer at Roscosmos was about 500-625 euro a month. ZAGREBNOV Eugène, « Pourquoi l'aérospatiale russe cumule les échecs », *Le Figaro*, 26/08/2011. <http://www.lefigaro.fr/societes/2011/08/26/04015-20110826ARTFIG00460-pourquoi-l8216aerospatiale-en-russie-accumule-les-echecs.php>

²⁵ TCHERNOIVANOVA Alina, « La Russie est entrée dans l'ère du réalisme spatial », *RIA Novosti*, 26/08/2011. <http://fr.rian.ru/discussion/20110826/190716540.html>

²⁶ See Arianespace official website : <http://www.arianespace.com>

²⁷ SHIPILOVA Elena, « What role will Russia play in the space century ? » (Interview with Sergei Zhukov, head of the Space Technology at Skolkovo Innovation Center), *Russia Beyond the headlines*, 29/05/2012. http://rbth.ru/articles/2012/05/29/what_role_will_russia_play_in_the_space_century_15741.html

²⁸ Arianespace : 'Les autres parlent, nous lançons !' (Entretien avec Jean-Yves Le Gall) », *Le JDD*, le 04/08/2012. <http://www.lejdd.fr/Societe/Sciences/Actualite/Arianespace-Les-autres-parlent-nous-lancons-539012>

²⁹ HONORÉ Renault, « Galileo : OHB dame une nouvelle fois le pion à EADS Astrium », *Les Echos*, 01/02/2012. <http://archives.lesechos.fr/archives/2012/lesechos.fr/02/01/0201876185654.htm>

³⁰ HONORÉ Renault, « Galileo : OHB dame une nouvelle fois le pion à EADS Astrium », *Les Echos*, 01/02/2012. <http://archives.lesechos.fr/archives/2012/lesechos.fr/02/01/0201876185654.htm>

³¹ According to a source of the French Space Agency, the CNES.

³² MARTA Lucia, « L'avenir de Vega : quel marché et quels défis pour le nouveau lanceur européen ? », *Note N°3/12*, Fondation pour la Recherche Stratégique, 2012, p 5.

³³ BRUGER Frédéric, « La Russie manque-t-elle d'espace ? », *Le Courrier de Russie*, 17/05/2011: <http://www.lecourrierderussie.com/2011/05/17/russie-manque-espace/>

has difficulties increasing its overall space market share, as many economic activities in this sector rely on post launch activities like the providence of data and services. To put this into perspective, it is helpful to have a look at the numbers. According to Sergei Zhukov, head of Skolkovo space cluster, the space technology and services market yearly generates between 300 and 400 bn. U.S. Dollar. One fourth of this turnover is generated by telecommunication services, but in 2011 Russia had a market share of only 1% in this sector³⁴. Furthermore, Russia holds approximately between 7 and 10% of the global satellite production, and between 33 and 40% of payload launches, which generates only 3 bn. U.S. Dollar a year³⁵.

Although Russia is trying to diversify its space activities, it doesn't derive a lot of benefit from its efforts so far, main reasons include competitiveness issues and some recent failures. The Russian government currently hopes to take some advantage of Russian knowledge through the involvement of private and international partnership in the new technopole of Skolkovo, which is currently under construction³⁶. But even if this attempt proves successful, it will take several years to produce results in terms of space industry competitiveness.

3.3 Ambiguous EU-Russia Relations

Last, but not least, space cooperation - with its political dimension - also reflects existing tension in EU-Russian relations.

Since Vladimir Putin became president in 2000, he has in his declarations repeatedly insisted on Russia's sovereignty and expressed a certain criticism of the EU, distancing his country from Western decisions. The European Union has become only one partner among many others since Russia refocused its foreign policy towards Central Asia and Asia, anticipating the decline of European influence and the increasing political weight of the emerging powers. Russia elaborates its own integration system with different organisations like the Eurasian Economic

³⁴ SHIPILOVA Elena, « What role will Russia play in the space century ? » (Interview with Sergei Zhukov, head of the Space Technology at Skolkovo Innovation Center), *Russia Beyond the headlines*, 29/05/2012: http://rbth.ru/articles/2012/05/29/what_role_will_russia_play_in_the_space_century_15741.html

³⁵ NIKISHENKOV Oleg, « Space agency focuses on business », *The Moscow News*, 02/04/2012: <http://themoscownews.com/business/20120402/189583226.html>

³⁶ FILIPPOVA Tatiana, « Skolkovo : développer le business spatial », *La Voix de la Russie*, 22/08/2011: <http://french.ruvr.ru/2011/08/22/55008867.html>

Community (*Eurasec*)³⁷ and the Shanghai Cooperation Organisation. It cannot be excluded, however, that Russia's partnerships system is also being instrumented by the Kremlin to make EU react and materialise the projects it has with Russia, especially because it is one of EU's strategic partners and part of the EU Neighbourhood policy. Russia has a specific perception of the EU, a certain defiance because of its relations to NATO, its slow decision-making process and its lack of unity concerning its relations to Russia. In fact, Russians somehow perceive the aforementioned internal European challenges as a lack of authority and as over-cautiousness. After analysing policy documents defining the space cooperation framework, it is difficult to prove the Russian perception wrong; these documents look like lists of objectives and implementing working groups, while exploration does not receive the attention it deserves. In fact, after a few years, the goals of cooperation remained nearly the same. Except for the case of the Soyuz launcher in French Guiana – after years of negotiations and work – it remains difficult to track the evolution of the cooperation from a structural perspective. Although European and Russian space companies sign new agreements, EU institutions seem to be hesitant concerning technology transfers in areas Russia need them to overcome its reliance on older technology.

4. Conclusion

European-Russian space cooperation, whether scientific or commercial, is far from new, but in the past decade many traditional space powers had to rethink their space policy and their priorities, taking into an account internal and external challenges, like the emergence of new ambitious actors in different areas of the space activities and their own rivalries. Both Europe and Russia have some winning cards but they cannot solely rely on their existing capacity to remain major space actors or to achieve their ambitions in space exploration.

Europe still has to implement an efficient governance structure for the EU and ESA, while Russia has to modernise its space sector. Both Europe and Russia have to announce clear objectives in terms of industrial policy and innovation to attract investors and talents. Solving their problems could allow them to remain

³⁷ PETROVA Venera, « L'Union européenne, un modèle ambigu pour l'Eurasie », *La Russie d'aujourd'hui*, 12/07/2012. http://larussiedaujourd'hui.fr/articles/2012/07/12/lunion_europeenne_un_modele_ambigu_pour_leurasie_14897.html

competitive on the global market and to ensure their presence in space. They still have to go beyond existing tensions in European-Russian relations, into giving concrete expression to the space projects mentioned in official documents. Furthermore they should work on their commercial cooperation beyond 2020, after the ISS and the eventual installation of Ariane 6 around 2021³⁸. Exploration and manned spaceflight have not to be neglected, as Russia understood in its latest space strategy, and considering the fact that China and India have announced ambitious (human) exploration programmes. Russia's ambition of sending another probe to Mars after the loss of Phobos-Grunt could materialise through its participation in the ExoMars programme. In Europe exploration still does not benefit from community leverage, although it is one of the most successful areas of ESA's missions and contributes to the attractiveness of the European space sector. Why not give it a more significant place in European-Russian cooperation, especially as costs of such missions make cooperation necessary?

To answer the question of the cooperation by 2030, the nature of future opportunities depend on the way Europe and Russia will solve their internal problems, and on the ability to overcome their disagreements. Although commercial cooperation won't stop, such cooperation is not as durable as exploration projects that need many years to be implemented. A successful ExoMars mission could herald a new era in this respect, given the possibility of Russian participation in other interplanetary missions like JUICE. As far as space exploration is concerned, cooperation between Russia and Europe seems promising.

³⁸ MENESSIONER Marc, « Ariane 6 : le développement industriel décolle », *Le Figaro*, 21/12/2012. <http://www.lefigaro.fr/sciences/2012/12/21/01008-20121221ARTFIG00333-ariane-6-le-developpement-industriel-decolle.php>



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