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EU-India Cooperation on Space and Security

by Isabelle Sourbès-Verger

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ABSTRACT

As far as security is concerned, space definitely stands out as a critical emerging issue. Space is considered part of the "Sector Policy Cooperation" in the Agenda 2020 endorsed at the latest EU-India Summit on 30 March 2016, but is not included within the Security section even if it may contribute to some of those objectives. Setting aside the national dimension in defence matters, space cooperation represents an optimal choice for the EU-India Security Dialogue, especially considering global security issues such as climate change, natural disasters, the environment, water management, migrant flows, piracy and terrorism. This paper provides insight into the role and place of cooperation in Indian and EU space policies. It then examines the main opportunities for developing space cooperation towards security on Earth. This raises the issue of security in space while taking into account natural and human threats as a new challenge for the EU-India Dialogue. An analysis of current opportunities will provide policy recommendations in order to initiate a deeper dialogue on this increasingly important dimension of EU-India cooperation.

European Union | India | Space | Satellites | Security | Cooperation | Earth observation | Space Situational Awareness | International Code of Conduct

keywords

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by Isabelle Sourbès-Verger*

Introduction

Space technology is a full-fledged element of the Strategic Partnership[1] concluded at the fifth EU-India Summit held in November 2004.[2] It is specifically mentioned in the first section entitled "Economic Sectoral Dialogues and Co-operation" in the initiatives supported by the Joint EU-India Action Plan.[3] Ranked sixth in the 2005 Plan, it ranked ninth three years later in the 2008 Revised Plan.[4] It is considered as part of the "Sector Policy Cooperation" in the Agenda 2020 endorsed at the latest EU-India Summit on 30 March 2016,[5] but is not included within the Security section even if it may contribute to the achievement of some of those objectives. This positioning could be viewed as unexpected and merits examination. Indeed, space technology plays an increasingly decisive role in life today, as well as in the world economy, and both the EU and India are currently developing ambitious space programmes for Earth observation (EO), communication and navigation.

[1] European Commission, *An EU-India Strategic Partnership* (COM/2004/430), 16 June 2004, http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52004DC0430.

[2] Council of the European Union, *Fifth India-EU Summit* (14431/04 Presse 315), The Hague, 8 November 2004, http://europa.eu/rapid/press-release_PRES-04-315_en.htm.

[3] Council of the European Union, *The India-EU Strategic Partnership Joint Action Plan* (11984/05 Presse 223), 7 September 2005, http://europa.eu/rapid/press-release_PRES-05-223_en.htm.

[4] Council of the European Union, *Global Partners for Global Challenges: The EU-India Joint Action Plan (JAP)*, 29 September 2008, http://europa.eu/rapid/press-release_PRES-08-277_en.htm.

[5] EU-India Agenda for Action-2020, 30 March 2016, http://www.consilium.europa.eu/en/meetings/international-summit/2016/03/20160330-agenda-action-eu-india_pdf.

* Isabelle Sourbès-Verger is Director of Research at the Centre Alexandre Koyré, Paris. The author wishes to thank Martin Sarret (Research Assistant) and Raymond Ghirardi (Cartography). This paper is based on academic research and interviews with officials and experts.

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As far as security is concerned, space definitely stands out as a critical emerging issue. It is widely recognized that satellites are essential tools to foster development, to monitor natural resources, and to address disaster preparedness and mitigation. They are also crucial to support communication, to master advanced technologies and even to nurture innovation. To a large extent, they are a matter of priority because of the need for stability and the safeguarding of national interests.

At the political level, space programmes are a key feature of the national and international image of any State. From this point of view, the contribution of space to security is crucial. Setting aside the merely national dimension in defence matters – a complex issue on the EU side due to the sovereignty of Member States – space cooperation represents an optimal choice for the EU-India Security Dialogue, especially considering global security issues such as climate change, natural disasters, the environment, water management, but also migrant flows, piracy and terrorism.

Moreover, as India and Europe are increasingly dependent on space assets, security in space has become a growing concern owing to natural and human threats: micrometeorites, debris, space weather and even weaponization. With regard to the latter issue, it should be noted that both Europe and India put particular emphasis on preservation of the peaceful uses of space. This could lead to the opening of a new discussion area for mutual benefit.

It is true that India and Europe have strong experience in cooperation on space matters through the Indian Space Research Organization (ISRO), the European Space Agency (ESA) and many national Member States' space agencies. Their primary expertise lies in research and technology-related issues and their intervention is requested for well-defined programmes. However, it would be appropriate to take into account their experience at the level of the EU-India Dialogue.

This paper provides an insight into the role and place of cooperation according to Indian and EU space policies (section 1). Then, it examines the main opportunities for developing space cooperation towards security on Earth (section 2). This raises the issue of security in space as a new challenge for the EU-India Dialogue (section 3). An analysis of opportunities and challenges in the current context favourable to cooperation will follow (section 4). Political recommendations form the final part of the paper.

1. The prominent role of cooperation in building the space capabilities of India and Europe

From the 1980s onwards, Europe and India have enjoyed the status of space powers. Both of them have acquired space capabilities through cooperation, which remains a key element of their space strategies, unlike other countries such as China.

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By the 1960s, European countries had established the foundation for cooperation agreements aimed to back up national programmes. Their newly designed framework includes two dimensions. On one side, the European Space Research Organization (ESRO), built upon the European Organization for Nuclear Research (CERN) model, is tasked with promoting scientific research and satellite development. On the other, the European Launcher Development Organization (ELDO)'s goal is to develop a launcher built with British, French, Italian and German contributions. The creation of a common space agency was only decided in 1973. The European Space Agency was charged with promoting R&D in the use of space for peaceful purposes – which essentially constitutes the ESRO's scientific programme – and to steer optional launcher development programmes. Thus, ESA Member States have independent launchers – Ariane and Vega – and can participate in joint European programmes while pursuing their own cooperation programmes within and outside of Europe. The European model of governance in space matters has proven to be efficient over the course of 50 years, with each State building its own partnerships depending on how much it is willing to invest. In the process, States consider the stakes in terms of industrial policy as the number of awarded industrial contracts depends on their financial contribution. Such a model could be a source of inspiration for EU-Indian cooperation and the implementation of dedicated programmes, jointly developed in areas where pooling resources is of prime importance, such as global monitoring.

Cooperation is also an overarching element of the building of India's space capabilities as its potential value was identified at an early stage as necessary for the development of the country based on the "leapfrog principle," whereby the country is catching up economically by skipping inferior technologies through the promotion of high tech industries. The Indian government advocated the construction of an international launch base in Thumba, for the purpose of acquiring the basics of space technology at the Thumba Equatorial Rocket Launching Station (TERLS) under the aegis of the UN and UNESCO while allowing the international community to conduct experiments with sounding rockets to study the terrestrial environment.[6] This was an essential step for India to acquire hands-on experience with launch activity. This interaction enabled ISRO to include launcher technology in its range of capabilities. Similarly, the principle of cooperation is a characteristic feature of India's approach to satellite technology. In the Cold War context, India's non-aligned status allowed the multiplication of partnerships with Russia, the US and other European countries, including France, depending on its needs and the circumstances. In a parallel process, its willingness to get involved in international institutions – UN, UNESCO – allowed the country to gain experience in a kind of cooperation that is not solely based on national interests. The maps below (Figures 1 and 2) give an overview of the diversity of cooperation conducted in space by India and Europe. As we can see, European-Indian cooperation is far from being exclusive but remains visible in numerous

[6] TERLS's strategic position in regard to the magnetic equator allowed particularly interesting experiments for the study of the Earth's magnetic field.

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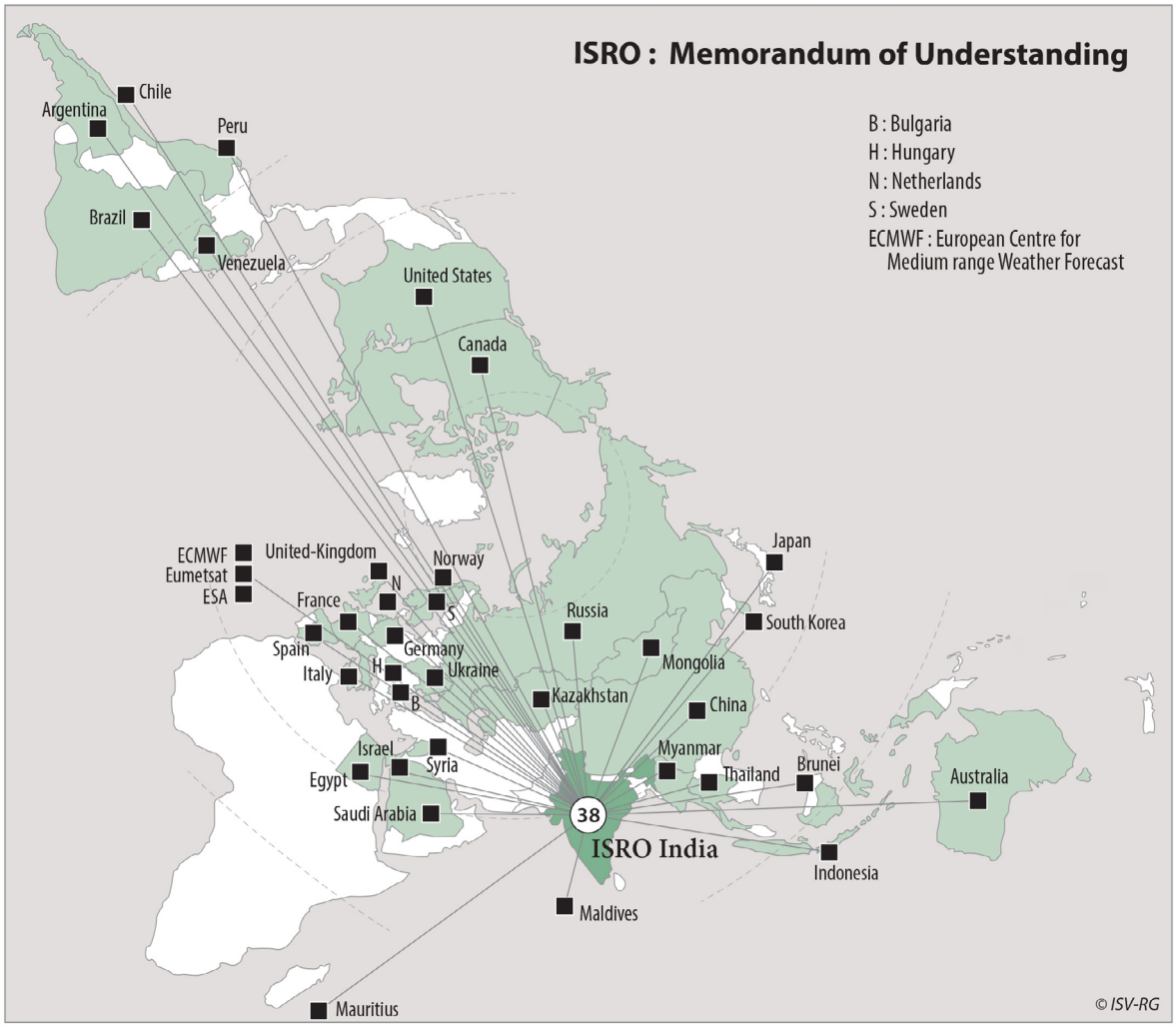
programmes and includes several space-sector actors at the European level.

Figure 1 | Map of India space cooperation



Europe and India have a longstanding history of cooperation between space agencies, at the bilateral level, notably with France and the French National Space Agency (Centre national des études spatiales, CNES)[7] which is one of the oldest partners of ISRO, but also with ESA and the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). However, the only direct interrelationship between Europe and India concerns the Galileo programme, where cooperation does not seem to be working so well.

[7] Ajey Lele, "Space Collaboration between India and France: Towards a New Era", in *Asie.Visions*, No. 78 (September 2015), https://www.ifri.org/en/node/10311.

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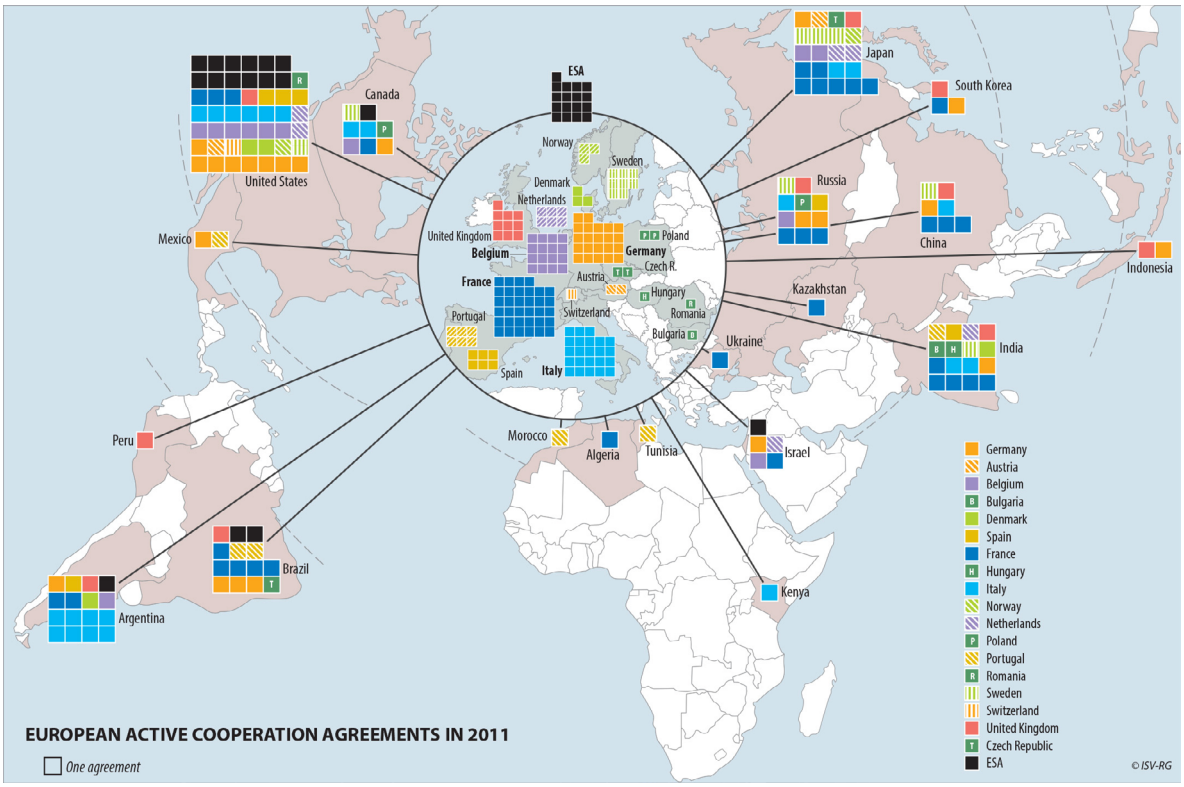
Figure 2 | European worldwide space cooperation



This issue brings us back to the characteristics of the EU-India partnership and its limitations. Whereas diplomatic channels were established at the beginning of the 1960s and formalized in the 1994 Cooperation Agreement, they essentially dealt with business and development issues. Since the first bilateral summit held in Lisbon in 2000, diplomatic relations between the parties progressively developed through regular political dialogue, economic exchanges, annual summits and regular ministerial, senior official and expert-level meetings. The implementation of the Strategic Partnership in 2004, the Joint Action Plan in 2005 and the Country Strategy Paper for EU-India relations 2007-2013[8] display India's willingness to interweave economic relations with political and strategic considerations. In these documents, there is a wide range of topics to be observed, including trade and investment, science and technology, economic and development cooperation, and security. Space capabilities can be put to use for most of these areas, and yet they are not mentioned. This might stem from the belief that space programmes' technicality ought to be directly handled by national agencies or ESA and not be taken into consideration at the EU level, possibly for lack of suitable community powers.

[8] European Commission, *India Country Strategy Paper 2007-2013*, March 2008, https://eeas.europa.eu/india/csp/07_13_en.pdf.

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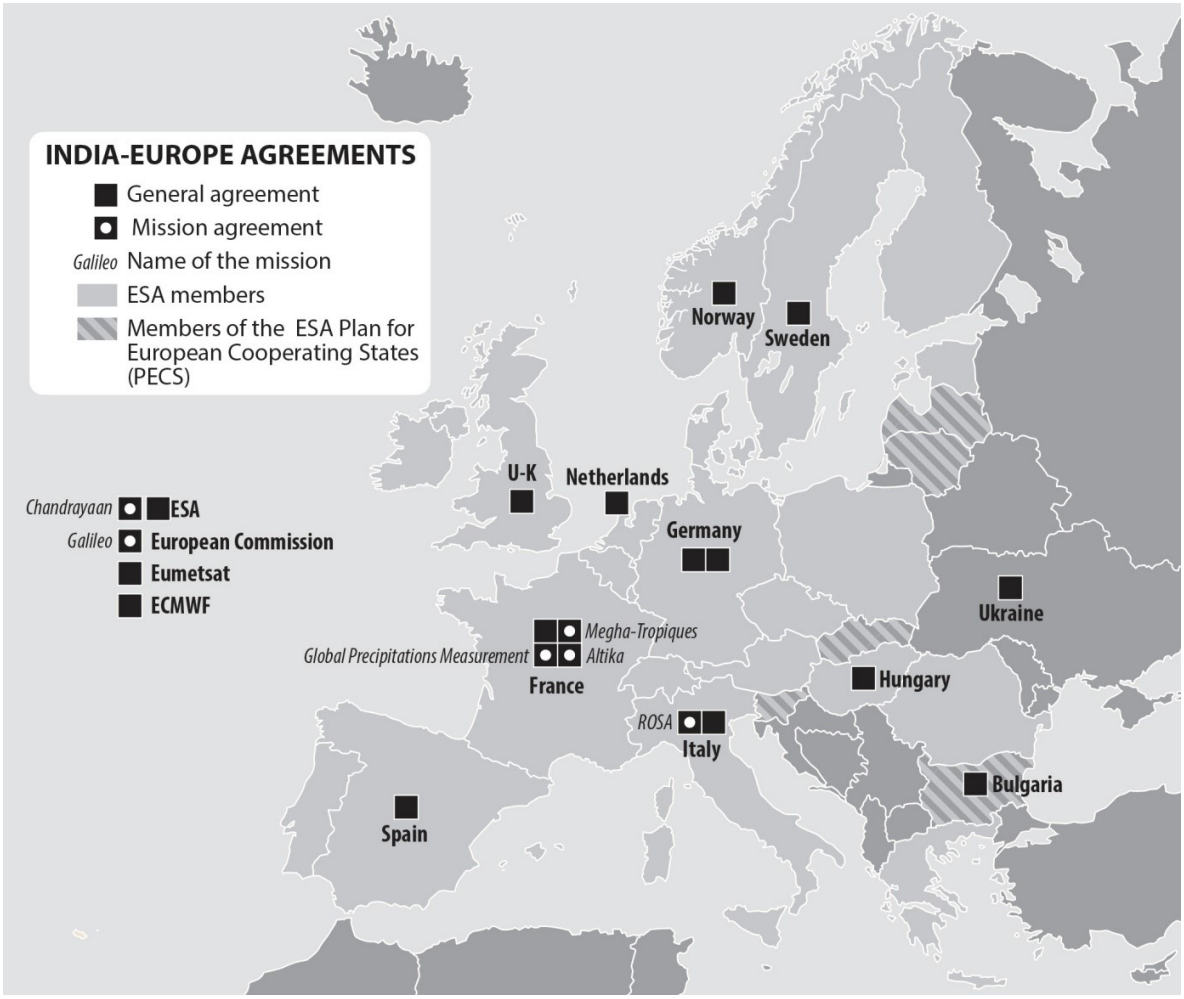
In fact, the capabilities of space systems could be better integrated in EU-India relations with an approach that includes the main challenges identified in the EU-India Dialogue.

Figure 3 | Current cooperation agreements between European partners and India



2. The use of satellites to enhance national and international security

The European Security Strategy Policy published in 2013[9] acknowledges the need for an international order that is more multilateral and a greater involvement of new emerging powers such as India. Furthermore, Europe, for reasons due to its singular political structure, has to rely on its soft power capability.[10] In

[9] European Council, *A Secure Europe in a Better World. European Security Strategy*, 12 December 2013, https://www.consilium.europa.eu/uedocs/cmsUpload/78367.pdf.

[10] Annegret Bendiek and Christian Wagner, "Prospects and Challenges of EU-India Security

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parallel, since the Lisbon Treaty, Europe has more agency in space matters. The communication "Towards a Space Strategy for the EU" adopted in 2011[11] makes it clear that European Space Policy should be considered as "a response to the social, economic and strategic challenges that we [Europe] face."[12]

This approach is compliant with the Indian government's approach that always has sought to promote space as a means to bring India back into the concert of nations as envisaged by Vikram Sarabhai, the father of the Indian space programme. This vision is shared by senior officials and chairmen at ISRO: "But we are convinced that if we are to play a meaningful role nationally, and in the community of nations, we must be second to none in the application of advanced technologies to the real problems of man and society."[13] This political alignment is all the more important to take into consideration as India is seriously considering the development of systems not only for civil but also military uses,[14] which marks a strategic shift from the initial Indian space programme that did not include the military dimension.

Indeed, for a long time India's position on military space came in line with the 1967 Outer Space Treaty which promoted the use of space for peaceful purposes.[15] The definition of "peaceful" itself was a continuing source of debate for 20 years, as several countries considered that the wording completely excluded military satellites, while others considered it did not include humanitarian military missions, as "peaceful," according to them, was to not be interpreted as "civilian" but as the opposite of "offensive."

India's political shift can be understood by the general acceptance of the presence of military satellites as force multipliers but without direct offensive capability. For instance, the US has the biggest fleet of military satellites, followed by Russia and an increasing number of European countries such as France, Germany, the UK, Italy and Spain but also China.[16]

Cooperation", in Shazia Aziz Wülbers (ed.), *India-EU Relations. A Critique*, New Delhi, Academic Foundation in association with EuroIndia Centre, La Rochelle, 2008, p. 167.

[11] Adopted by Council of the European Union on 31 May 2011, https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/intm/122342.pdf.

[12] European Commission, *Towards a Space Strategy for the European Union That Benefits Its Citizens* (COM/2011/152), 4 April 2011, http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:52011DC0152.

[13] Vikram Sarabhai quoted in P.V. Manoranjan Rao, "No Ambiguity of Purpose: The Indian Space Programme", in P.V. Manoranjan Rao (ed.), *50 Years of Space. A Global Perspective*, Hyderabad, Universities Press Pvt Ltd, 2007, p. 215.

[14] Rajeswari Pillai Rajagopalan and Arvind K. John, "A New Frontier: Boosting India's Military Presence in Outer Space", in *ORF Occasional Papers*, No. 50 (January 2014), http://www.orfonline.org/research/a-new-frontier-boosting-indias-military-presence-in-outer-space.

[15] Rajeswari Pillai Rajagopalan, "India's Changing Policy on Space Militarization: the impact of China's ASAT Test", in *India Review*, Vol 10, No. 4 (October-December 2011), p. 354-378.

[16] Isabelle Sourbès-Verger, "Strategic Space, a Variable-Geometry Concept", in Ajey Lele and Gunjan Singh (eds.), *Space Security and Global Cooperation*, New Delhi, Academic Foundation in association with the Institute for Defence Studies and Analyses, 2009, p. 61-74.

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India's new stance[17] is compliant with the upgrading of its capabilities and explains the increasingly prominent role accorded to space assets by the military and intelligence. ISRO itself acknowledged that its effort to build the high-resolution Technology Experiment Satellite (TES) programme in record time was motivated by the need to meet operational requirements of military forces during the Kargil conflict against Pakistan in 1999.[18] In the same vein, the telecommunications satellite launched in 2013 was meant to be put to use by the army.[19]

When it comes to the military use of space, the EU sits on the fence as well. The EU is in charge, with ESA – whose position on the civilian nature of such programmes has also shifted since the mid-2000s for pragmatic reasons – of the management of the two "dual-use" programmes, namely the Galileo constellation of navigation satellites and the Copernicus constellation of EO satellites.

Europe's military strategy essentially consists of bi- or multilateral cooperation mechanisms set up by Member States to share data related to national sovereignty, generated by military systems. The beginning of the 2000s saw an emphasis on maximization of satellite data programming, along with an effort to make national systems complementary for the sake of efficiency, through the establishment of an operational framework on the notion of common operational needs (known by its French acronym BOC, "Besoins opérationnels communs"). At the European level the Torrejón Satellite Centre – created in 1991 under the auspices of the Western European Union – became the European Union Satellite Centre (SatCen), an Agency of the Council of European Union in 2001.[20] It is considered an essential asset for the strengthening of the Common Foreign and Security Policy, especially for crisis monitoring and conflict prevention, as it provides products and services resulting from the exploitation of data including satellite imagery.[21]

An international conference on space security and cooperation was held in 2007 on the initiative of two institutes: the Institute for Defence Studies and Analysis (IDSA, New Delhi) and the Centre for Defence and International Security Studies (UK). It was also a first step in bringing together European and Indian academics and experts on the issue.[22] The opening address was given by A.P.J. Abdul Kalam,

[17] Ajey Lele, "Indian Armed Forces and Space Technology", in *India Review*, Vol 10, No. 4 (October-December 2011), p. 379-393.

[18] P.S. Goel, "Operational Satellite of ISRO", in P.V. Manoranjan Rao (ed.), *From Fishing Hamlet to Red Planet. India's Space Journey*, Noida, HarperCollins India, 2015, http://www.isro.gov.in/node/3122.

[19] GSAT-7 was launched for the Indian Navy in August 2013.

[20] Council Joint Action 2001/555/CFSP of 20 July 2001 repealed by Council Decision 2014/401/CFSP of 26 June 2014, http://eur-lex.europa.eu/legal-content/en/TXT/?uri=celex:32014D0401.

[21] Jean-Pierre Darnis, Anna Veclani and Valérie Miranda, *Space and Security: The Use of Space in the Context of the CSDP*, Brussels, European Parliament, November 2011, http://www.europarl.europa.eu/thinktank/it/document.html?reference=IPOL-SEDE_ET(2011)433834.

[22] The conference, entitled "Space Security: Scope and Prospects for Global Cooperation", took place in New Delhi on 13-14 November 2007.

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former President of India and a very distinguished space scientist. The question he addressed was quite simple: "Can space cooperation lead to space security?" and his concluding remarks advocated the introduction of a World Space Vision for 2050 steered by a World Space Council to lay the foundations for a fairer planet.[23]

From a down-to-earth perspective it is worth mentioning that the introduction of reconnaissance satellites is pivotal to understanding international security on arms control and the signature of the SALT and ABM agreements in 1972 and 1978. The idea of leveraging space technology as a tool for international stabilization led several European countries and Canada to seek the international community's support at a time when only the US and the former USSR had such capabilities.[24] The problematic nature of the issue was still being debated at the beginning of the 1990s when the US was the last country to have a permanent global monitoring system – Russia's spending cuts having put an end to its programmes.[25] The improvement in image sensors and the wide commercial distribution of satellite imagery marked the dawn of a new era with the creation of Spotimage in France, commercializing Spot imagery (10 m) from 1985 onwards, the 1995 launch of India's first civilian satellite, the IRS-1C, with a resolution lower than 5 m and last but not least, the creation of American private companies with satellites offering metric resolution in 2000.

While the world is facing a growing number of security issues identified in the Joint Agenda 2020 (see section 4), the multiplication of EO systems of increasing performance and the enhancement of Europe's and India's own competencies should allow the promotion of an effective cooperation scheme in which political mechanisms, abiding by the principle of sovereignty, would complete each other's capabilities and would allow both countries to benefit from a network of multi-sensor systems offering a tremendous flow of images and reduced delays in data delivery.

3. Space security challenges, a new topic for the EU-India partnership

As mentioned above, satellites are instrumental for improving natural resource management, enabling national and international infrastructure and contributing in a decisive way to technological, scientific, strategic and even soft power

[23] A.P.J. Abdul Kalam, "Can Space Cooperation Lead to Space Security?", in Ajey Lele and Gunjan Singh (eds.), *Space Security and Global Cooperation*, New Delhi, Academic Foundation in association with the Institute for Defence Studies and Analyses, 2009, p. 21-28.

[24] See the unsuccessful French ISMA, Canadian PAXSAT A&B, Swedish Tellus proposals made at the UN in the 1978-1981 period.

[25] Isabelle Sourbès, "Overhead Imagery for Arms Control and Disarmament Purposes: a European Perspective", in Steven Mataija and J. Marshall Beier (eds.), *Multilateral Verification and the Post-Gulf Environment. Learning from the UNSCOM Experience*, Toronto, York Centre for International and Strategic Studies, 1992, p. 187-198.

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capabilities. Their upkeep is thus a key concern and priority. However, satellites are not only subject to natural threats (meteorites, space weather effects[26]) but also human threats such as space debris generated by launch activity and anti-satellite technology (ASAT). The number of European and Indian satellites is already high. Moreover, this trend is on the increase. India announced the launch of 20 satellites within the next two years. For its part, with the launch into orbit of the Galileo and Copernicus constellations, the EU will own the largest number of European satellites. Therefore, security in space is a topic of growing interest for both India and the EU, and the ability to monitor the space environment has become crucial. Indeed, space surveillance (also known as Space Situational Awareness, SSA) is a true political and technical issue. It is meant to protect space assets from risk of in-orbit collision and curb emerging threats stemming from the weaponization of space.

On the diplomatic side, the EU tried to deal with the issue by proposing a draft International Code of Conduct (ICoC) meant to frame a global effort for space security. From the European perspective, the ICoC initiative was a turning point as it expressed a position that was common to all the players, some of which having only recently begun to take interest in the question. This approach promoted the "rules of the road in space" for greater transparency, and a more concrete regulation through the Technical and Scientific subcommittee of the Committee on Peaceful Uses of Outer Space (COPUOS). The idea was to offer an alternative to the Treaty on Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force Against Outer Space Objects (PPWT), submitted to COPUOS by Russia and China and which the United States firmly opposed, by considering a broader perspective on security centred on topics less controversial than space weapons, such as debris.[27]

The contents of the Code were unrestrictive as it only required respecting existing treaties and principles, implementing measures aimed at minimizing the risk of collision and interference with other objects or space activities as well as the creation of new debris, refusing actions that could endanger or destroy objects in space and accepting transparency and confidence measures (TCBM) such as launch notifications, base visits, etc. This proposal raised criticism by India and other countries on several accounts: it did not clearly forbid space attacks, although the right to self-defence was explicitly mentioned, it did not express a common approach on the aim of space activities, and it had no restrictive dimension. It shared a certain number of flaws with the Hague Code of Conduct (HCoC),[28] mainly the risk that future activities by new entrants be limited, for instance.

[26] The effect of space radiation on satellites varies depending on the period and solar wind, hence the necessity of better understanding the phenomenon to forecast its fluctuations.

[27] Gerard Brachet, "The Security of Space Activities", in *Non-Proliferation Papers*, No. 51 (July 2016), https://www.sipri.org/node/3705.

[28] HCoC is a non-binding proposal to limit missile proliferation. For more information, see the official website: http://www.hcoc.at.

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A second version published in March 2014 took the feedback into consideration. It clarified the aim of the initiative: to guarantee the "security, safety and sustainability of space activities,"[29] making an explicit reference to prevention of an arms race. However, the procedure being conducted outside the UN framework remained a problem. The new consultation that opened in 2016 finally resulted in an admission of failure and a return to discussions within the UN in accordance with India's stance. If the legitimacy of the EU to undertake such an initiative unilaterally may be questioned, it could offer a starting point for a new proposal made jointly with India. At least, this option can be discussed as part of the disarmament and non-proliferation part of the EU-India Dialogue (see section 4).

This political approach has an inherently technical component. The development of Space Situational Awareness (SSA) is a key issue for independent information on any kind of potential threat.[30] At present, the United States Space Surveillance Network is able to track more than 19,000 objects, and Russia is improving its system although on a smaller scale, while China is developing its own surveillance network. In Europe, some national capabilities exist and the process of developing a common network is in motion both in ESA[31] and in the EU, with the aim of being recognized as a full player on the field of space surveillance. India has begun to consider the acquisition of such a system,[32] as well as the pooling of systems with Europe, whose geographical position is advantageous in terms of complementarity.

4. Opportunities and challenges for EU-India cooperation

The Joint Statement issued at the end of the 13th EU-India Summit includes several points about security cooperation issues.[33] Although space is not mentioned, it deserves consideration on many levels. The EU-India Agenda for Action 2020 released at the same meeting explicitly includes space as an area of cooperation in the section entitled "Global issues/sector policy cooperation." However, space technology is not identified as a tool to meet several objectives.

[29] Ajey Lele, "Deliberating the Space Code of Conduct", in Ajey Lele (ed.), *Decoding the International Code of Conduct for Outer Space Activities*, New Delhi, Pentagon Security International in association with Institute for Defence Studies and Analyses, 2012, p. 20, http://www.idsa.in/node/10440.

[30] European SSA focuses on three main areas: space weather (SWE), near-Earth objects (NEO) and Space Surveillance and Tracking (SST). Its aim is to give Europe an independent capability to watch for objects and natural phenomena that could harm satellites in orbit.

[31] Heiner Klinkrad et al., "Europe's Eyes on the Skies. The Proposal for a European Space Surveillance System", in *ESA Bulletin*, No. 133 (February 2008), p. 42-48, http://www.esa.int/esapub/bulletin/bulletin133/bul133f_klinkrad.pdf.

[32] ISRO is already using the Multi-Object Tracking Radar (MOTR) to detect debris.

[33] European Council, *EU-India Summit: Joint Statement, Agenda for Action and Joint Declarations*, 30 March 2016, http://europa.eu/!kq76NY.

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Opportunities for space cooperation should be seriously considered and were in fact identified in regard to the points put forward in these policies, but they do not intersect throughout the documents. They can be divided into two categories according if they are directly or indirectly related to security issues.

Opportunities directly related to security issues *stricto sensu*:

- contribution to the establishment of security cooperation: use of EO system, setting up a collaborative network of space surveillance;
- crisis management: data exchange for almost real-time information;
- international security in international fora: collaboration on issues related to the weaponization of space.

Opportunities related to global security issues at the core of the Agenda for Action 2020:

- climate: introduction of programmes based on EUMETSAT's cooperation model and of scientific projects focusing on research and innovation;
- environment: pooling of satellite optic and radar imagery;
- sustainable development: use of remote sensing and telecommunications satellites for better natural resource and major risk management.

Other dimensions of security considered in broader terms should also be included, such as:

- business opportunities in the defence industry: ensuring the continuity of cooperation programmes in satellite manufacturing but also development of joint ventures in the start-up sector;[34]
- digital: development of telecommunications satellites following a classical model or the Space 2.0 philosophy of constellations of small satellites;
- foreign policy aimed at reaching stability in South Asia and Africa: collaboration in joint programmes of remote sensing technical training, coordination of imagery systems or telecom bandwidths for distance learning or telemedicine, as India initially did for the country's first programmes of this kind, such as the Satellite Instructional Television Experiment (SITE);[35]
- migration:[36] control and localization by the Automatic Identification System (AIS) for digital radio.

Moreover, it is useful to raise the sensitive issue of technology transfer inherent to dual-use systems, an area in which Europe is largely bound to US decisions. This is an important discussion to be having and particular emphasis must be put on solutions with a multilateral approach rendered possible by the improvement of

[34] Such as suggested by Narayan Prasad. See "Small Satellites for India's Security: A Techno-Entrepreneurial View", in *ORF Occasional Papers*, No. 81 (January 2016), http://www.orfonline.org/research/small-satellites-for-indias-security-a-techno-entrepreneurial-view.

[35] SITE was an experimental satellite communications project launched in India in 1975, designed jointly by NASA and ISRO.

[36] In the framework of the Common Agenda on Migration and Mobility (CAMM) between the EU and India.

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US-India relations and the continuity of the transatlantic dialogue on the European side.

In the same vein of sensitive issues, space surveillance programme known as Space Situational Awareness is not politically neutral. Europe is facing the reluctance of Member States to develop a collaborative satellite and space debris tracking system. Thus, we can envisage the creation of a space weather (SWE) monitoring system as a first step, which is a predominantly scientific project, and a near-Earth objects (NEO) monitoring system which deals with a global threat.

Indeed, if we consider the question of EU-India space cooperation from a broader perspective, an extensive review of the Joint Statement and the Agenda for Action shows that space opportunities tend to be overlooked in other strictly civilian domains whereas collaborative work is formally envisaged in pharmaceuticals and biotechnologies. Space opportunities – often referred to as a full-fledged element of the Agenda for Action – are reduced to Earth observation, without any mention of the Copernicus global monitoring programme for environment and security,[37] and the Galileo navigation system programme.

More broadly, it appears that the whole cooperation scheme, as conceptualized in the EU-India Dialogue, seems to ignore the wide range of opportunities that space technology can offer, not only in science and technology, but also research and innovation. Indeed, this is a constant feature as space technology is 30 percent less present in the projects within the Framework Programme for Research and Technological Development (FP7) as shown by a study conducted by independent experts and published in 2012.[38] Considering that the EU and India have also agreed to intensify their cooperation on research and innovation, their statement highlights the extension of the India-EU Science and Technology Cooperation Agreement until 2020 and the setting up of mechanisms for jointly financing research and innovation projects.

For that reason, the political approach to space cooperation opportunities – on both the EU and the Indian side – should be re-evaluated.

5. Policy recommendations

It is fair to say that space is a topic of interest for both India and Europe but its contribution is underestimated in the EU-India Dialogue despite India's and the EU's programmes and ambitions. Similarly, it is not mentioned in policy documents

[37] Initially called Global Monitoring for Environment and Security (GMES), Copernicus is a EU and ESA initiative.

[38] Elisabetta Basile and Philippe Régnier, *Review of S&T Cooperation Agreement between the European Union and Government of the Republic of India 2007-2011*, Brussels, European Commission, 2012, http://dx.doi.org/10.2777/12336.

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such as the "Highlights of Cooperation Framework between the EU and India."[39]

This can be explained by various factors. First, space policies are key to the safeguarding of national interests and sovereignty. Second, the unique nature of space technologies and their symbolic dimension constitute a powerful tool for foreign policy goals. Third, outer space is increasingly an area of concern for international security.[40] But sovereignty, foreign policy and security policy are topical issues for which EU competencies are sometimes contested.

These weaknesses of the EU have played a well-identified role in disrupting the dialogue with India, and putting particular emphasis on trade agreements as consistent with EU priorities.[41] Moreover, India has doubts over the EU's legitimacy to legislate on foreign and security policy issues given the political dissensions between Member States on various sensitive relevant topics for the EU-India Dialogue such as the recognition of India as a nuclear weapon State. The country prioritizes a bilateral approach to Member States and some few of them in particular, notably France in the space sector.

An additional difficulty is to be mentioned. Space cooperation generally takes place at the level of space agencies. But in Europe, the EU is a relatively recent and still marginal player in space policy compared to ESA and national agencies that have, in comparison, great technical know-how. As far as India is concerned, the role of ISRO is predominant in the policy-making process given its historical weight and its successful endeavours, even though political actors are more willing to get involved.

Negotiations on Galileo, the main EU-India space cooperation programme, have faced major difficulties.[42] They illustrate, on the whole, a rather severe judgement that can be traced in a 2015 report: "The EU-India Strategic Partnership has lost momentum. Bilateral ties are not receiving sufficient priority from both sides. [...] On defence and security matters, India deals with EU Member States directly and has a good framework for cooperation with major European powers."[43]

[39] European External Action Service, *Highlights of Trade and Economic Cooperation between the EU and India*, 17 October 2016, http://europa.eu/!DX93Dq.

[40] See *Space Security Index 2016*, November 2016, http://spacesecurityindex.org.

[41] Shazia Aziz Wülbers (ed.), *India-EU Relations. A Critique*, New Delhi, Academic Foundation in association with EuroIndia Centre, La Rochelle, 2008.

[42] Marika Vicziany, "EU-India Security Issues: Fundamental Incompatibilities", in Pascaline Winand, Marika Vicziany and Poonam Datar, *The European Union and India. Rhetoric or Meaningful Partnership?*, Cheltenham and Northampton, Edward Elgar, 2015, p. 275-315.

[43] Gulshan Sachdeva, *Evaluation of the EU-India Strategic Partnership and the Potential for its Revitalisation*, Brussels, European Parliament, June 2015, p. 1, http://www.europarl.europa.eu/thinktank/en/document.html?reference=EXPO_STU(2015)534987.

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The most recent bilateral EU-India summit aims to show that the Dialogue is entering a new phase with greater ambitions extending to 2020 as planned in the Agenda for Action. As far as space cooperation is concerned, especially when it comes to security, it is highly recommended that the EU and India make room for this specific area in the dialogues that have already been identified.[44]

Conclusion

The achievement of greater international stability is an objective shared by both the EU and India. The idea of global governance by a self-sufficient international institution is unlikely. Nonetheless, India[45] and Europe want to improve their political standing in international affairs. In this context, their space assets can help them both reach their goals. It has to be said that the principle of sovereignty and the difficulty of dealing with security and foreign issues in an institutional body like the EU, as compared to a single State, make the situation more difficult. On top of that, the issues of technology transfer and industrial cooperation complicate the whole situation. But it is crucial to bear in mind that space represents a real opportunity for broadening the dialogue for mutual benefit, and to recognize the value of deepening discussion, including a specific reflexion on a better integration of the competencies and experience of the national space agencies and ESA at the political level.

Updated 30 December 2016

[44] "New dialogues could be initiated on Afghanistan, maritime security, development cooperation, Africa and the Middle East." Ibid., p. 6.

[45] Sunil Khilnani et al., *NonAlignment 2.0. A Foreign and Strategic Policy for India in the Twenty First Century*, New Delhi, Centre for Policy Research, February 2012, http://www.cprindia.org/node/3572.

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