EU space policy: Industry, security and defence

Autonomous space capabilities play a key role for in enhancing situational awareness, response to complex crises (natural disasters), management of natural resources (water, forests), delivery of services (health, energy, transport, communication, weather forecasting), and national security. With an increasing number of countries gaining access to outer space, the European Commission adopted a 'Space Strategy for Europe' in October 2016.

European space industry

The space industry covers the manufacturing of space systems such as satellites and launchers (upstream activities) and the development of applications and services provided by space infrastructure in three main areas: telecommunications, navigation, and earth observation (downstream activities). Technological breakthroughs are transforming traditional upstream activities by providing cheaper and easier access to space, and challenging established business models ('NewSpace' movement). At the same time, the increasing capacity to acquire, share and use space-borne data creates abundant opportunities for downstream activities in areas such as transport, energy, climate change, migration and defence and security.

Key characteristics and issues of the European space industry

The upstream space industry is characterised by the existence of captive markets in which institutional demand plays a key role. However, compared with the other main industrial space-faring powers (USA, Russia, China, India and Japan), the European space industry stands out through its relatively small budget, its dependency on commercial sales, fragmented institutional market, and weak synergies between defence and civil sectors. Moreover, a 2016 Parliament study concluded that the downstream space market is highly fragmented and constrained by policy barriers, governance difficulties, technical issues and a lack of skills.

EU as space actor

EU competence in space was established in 2009 by the Lisbon Treaty (Article 189 TFEU). In 2011, the European Commission published the first plan for an EU space strategy whose implementation requires efficient cooperation between the EU, the European Space Agency (ESA) and their Member States. The EU space industrial policy adopted by the Commission in February 2013 stressed the need to achieve technological non-dependence and security of supply, and maintain independent access to space in Europe. It requested the establishment of a European launcher policy and of a less fragmented EU framework for space regulation, standards and markets. Fostering research to ensure non-dependence for critical technologies was seen as a priority. This initiative was welcomed by the Parliament and Council.

Flagship programmes: Galileo and Copernicus

Galileo, the European global satellite navigation system, is expected to start operating by the end of 2016 and to reach its full operational capacity in 2019. The European Earth Observation Programme, Copernicus, developed in cooperation with ESA, comprises satellites and in-situ infrastructure to monitor land, the marine environment and the atmosphere. Both programmes are funded by the EU: €7 billion for Galileo and €4.3 billion for Copernicus, in addition to €1.3 billion for space research under Horizon 2020 for 2014-2020.

Space policy and international security

Over the past two decades, the number of states interested in tapping into societal, economic and security-linked opportunities provided by space technology, and that have developed some degree of space capability to that end, has increased significantly. At the moment, nine countries (USA, Russia, France, China, Japan, India, Israel, Iran, and South Korea) possess the launching capability and over 60 states and other entities are space-faring actors (almost double compared to 2010). Such a rapid growth in countries with an interest in space has resulted in discussion over the long-term sustainability of outer space activities and the need for a revised legal framework that would provide guidelines for states' behaviour in space.

EN

Space sustainability

The UN Committee on the Peaceful Uses of Outer Space (COPUOS) defines sustainability as the conduct of space activities in a peaceful and balanced way that preserves and protects the outer space environment taking into account the needs of future generations. The concept was born of the conviction that crowding of the earth orbits (i.e. deploying earth-observation systems, communication satellites and position, navigation and timing (PNT) systems) and increasing quantities of debris in space – resulting from accidents (e.g. Iridium-Cosmos satellites collision in 2009) or intentional actions (like the Chinese anti-satellite missile test in 2007) – can have long-term implications for the whole international community. According to existing estimates, there are currently over 700 000 dangerous debris objects in earth orbit with the potential to damage or destroy operational satellites.

Uses of space for national security

Space-based capabilities and services play an increasingly critical role in security and defence posture and as such are both an asset and a potential source of vulnerability. Satellite reconnaissance is the key function allowing states to gather information about military build-up worldwide (reinforcing verification of the implementation of arms-control regimes), strengthening significantly their situational awareness (predicting weather conditions, imagery intelligence, measurement and signature intelligence or signals intelligence). Enhanced security of satellite communications makes them invaluable at the highest political and military levels, as well as for tactical communication between military units in the field. Development of precision-guided munitions, missile warning and launch detection, and space-based missile defence systems are other examples of space-enabled defence capabilities. Due to the importance of space capabilities as a 'force multiplier', there is an increasing risk of them becoming targets for other states. During a conflict, disabling satellite capabilities of another actor (e.g. through a cyber-attack or jamming) can provide an important tactical advantage. Repressive regimes, too, can use space capabilities to disrupt television and (satellite-provided) internet for censorship, notably through jamming technologies. Consequently, the issue gained importance in the context of the Common Security and Defence Policy, in particular with regard to space-based communication, situational awareness, and navigation and earth-observation capabilities.

'Rules of the road' for peace in space

With increasing potential for a conflict in the space domain, the international community has been focused on the status of international agreements relating to activities in outer space, the right to self-defence in space, and the need for reducing the risk of misperceptions and conflict. The 1967 Outer Space Treaty constitutes the cornerstone of the existing international order. Ahead of the 50th anniversary of the Treaty, work is under way on review mechanisms for cooperation in the peaceful exploration and use of outer space. Building on the United Nations (UN) General Assembly Resolutions 61/75 (2006) and 62/43 (2003) on Transparency and Confidence-Building Measures (TCBMs) in Outer Space Activities, since 2008 the EU has been leading efforts towards adoption of an International Code of Conduct for Outer Space Activities. In 2011, the UN Secretary-General Ban Ki-moon established the Group of Governmental Experts (GGE) on TCBMs in Outer Space. The GGE delivered its final report in July 2013.

A renewed European space strategy

The 'Space Strategy for Europe' was adopted by the Commission on 26 October 2016. It focuses on four strategic goals: maximising the benefits of space for society and the economy; fostering a globally competitive and innovative European space sector; reinforcing Europe's autonomy in accessing and using space; and strengthening Europe's role as a global actor and promoting international cooperation. The new strategy highlights the role of space services in strengthening the capacity to tackle growing security challenges and the importance of resilient satellite communication services for governmental and institutional security users.

In June 2016, the European Parliament adopted two resolutions on space. The first, on space capabilities for European security and defence, highlights a key role of space-based capabilities, and calls on the EU to ensure European 'non-dependence' for access to space and critical space technologies. To that end, the resolution calls on the Commission, in collaboration with ESA and the Member States, to coordinate, share and develop planned space projects and European markets, support launch infrastructure, and promote R&D, including through the instrument of public-private partnerships. The second, on space market uptake, focuses on the support to be provided by the EU so that the data produced by Galileo and Copernicus are used to create services and applications that maximise the socioeconomic benefits of EU space programmes.

This publication updates an 'at a glance' note from June 2016.