



European Space Policy: A time for decisions

REPORT ON THE CHALLENGES AND PROSPECTS FOR EUROPEAN SPACE POLICY

By Catherine Procaccia and Bruno Sido, French Senators

There is no question that European space policy has been successful. Europe has become a leading space power, at an affordable cost, and independent access to space has been ensured. This is a result of bold choices made in the past, but the situation could change.

In 2020, the European space policy needs to tackle new challenges. Internationally, there is growing competition, as can be seen in the emergence of new government and private stakeholders. Internally, space activities have changed the way they work because of a new stakeholder who has emerged on the scene: the European Union.

*Space policy is typically conducted over the long term. **Therefore, Europe needs to make decisions now so that it can maintain its leading position over the next ten years and beyond.** Ahead of the meeting of the ministers responsible for space activities of the Member States of the European Space Agency (ESA), the OPECST report sets out the main challenges and opportunities for European space policy.*

More needs to be done

The three major public policy makers of European space policy are the Member States—particularly France, the first European country to develop space policy—, the European Space Agency (ESA), created in 1975, and the European Union, given power over space matters in the Lisbon Treaty in 2009. This multilayered governing structure was built over time along with Europe. **Although the fact that there are many different space policy makers might be an advantage, it may also make it difficult to set clear objectives and appropriately target resources.** In this context, space policy governance needs to be clarified:

- France should:
 - Reintroduce space in the title of the ministry responsible for promoting its use to the general public, and submit space policy planning to the Parliament regularly, after the OPECST has issued an opinion,
 - Get manufacturers involved in decision-making, with the creation of a consultation structure for the government and industry.

- Europe should:
 - Streamline ESA operating rules in order to maintain the competitiveness of European industry, take action to move the rule on ‘geographical return’ towards a rule of ‘fair contribution’ of every State on the basis of the involvement of its industry in projects;
 - Establish a genuine EU space programme, with a more comprehensive set of objectives and clearer governance principles.

The European Union should:

- Recognise ESA as its space agency (without changing, however, the way the Agency works as an intergovernmental structure) and use, as appropriate, the expertise of national space agencies;
- Apply a ‘European preference’ principle in the space sector, which means recognising that it is vital to safeguard independent access to space for Europe;
- Ensure long-term financing of its space programmes, starting with integrating the Global Monitoring for Environment and Security (GMES) programme into the Multiannual Financial Framework, without compromising other budget lines of its space policy.

A competitive market

The space sector is changing rapidly with the emergence of new public and private stakeholders. Although it is dominated by institutional demand, the market is driven by commercial demand, mainly in the telecommunications sector. The space sector is a niche at a macroeconomic level (€6.3 billion in revenue and 35,000 jobs in Europe). But it gives rise to a growing stream of applications: the applications value/infrastructure value ratio is about 20; beyond that, the scope of socio-economic benefits of space activities cannot be calculated (meteorology, navigation-localisation-synchronisation).

European public space budgets are much lower than those of the United States: while Americans spend an annual \$48 billion on space, Europeans spend about €6.5 billion, which is approximately six times less. The United States has invested significantly in future potential competitors of Europe (Space X). Also, fewer government military orders have prompted American manufacturers in the satellite sector to move increasingly towards commercial markets.

Moreover, Russia has revitalised its space activity and has invested massive amounts in a new range of launchers. Emerging countries, especially extremely populated ones like China and India, are counting on this sector to boost their development and to make an impact on the international scene.

In this context, it is crucial to help European industry to remain competitive and:

- Pursue support for the European telecommunications satellite industry provided by core programmes in line with the “Future Investment Programme”, promoting targeted spending to improve competitiveness (very high-speed, new-generation platforms for example);
- Reduce Europe’s technological dependence by developing economically profitable industries in key sectors including hardened microelectronic components.

Space: an essential ambition for Europe

- **First, Europe needs launchers that are adapted to commercial and industrial markets if it is to maintain independent access to space;** at the same time, it needs to reduce the government funds it invests in commercialising its launchers (currently €120 billion per annum).

Arianespace currently markets a range of three complementary launchers: Ariane 5, Soyuz and Vega. While Ariane 5 is present to a small degree on the institutional market (ATV and military satellite launches), it is oversized for this market because the size of governmental satellites tends to decrease over time. For the launch of its institutional missions, Europe uses the Soyuz launch system at the Guiana Space Centre or Baikonur (Starsem) and at times other Russian launchers (Rockot, Dnepr). On the commercial market, the main competitor of Ariane 5 is the Russian launcher Proton, which has remained competitive despite its high failure rate. The American Space X recently made an impressive entry into the market winning several contracts for telecommunications satellite launches. China, India, Brazil and Russia are developing other potentially competitive launchers. Generally speaking, satellite operators make choices that encourage more competition so that prices drop.

Yet this growing competition is occurring in a market that is expected to remain stable (20 to 25 telecommunications satellites are ordered per annum).

In this context, two launcher projects, originally designed to be complementary, have gradually started to compete against one another: a current launcher that is becoming more powerful (Ariane 5ME) and a new-generation launcher (Ariane 6). With Ariane 6, it is possible to move from a dual launch to a single launch (mono-satellite) and therefore increase production rates. When a launcher conducts fewer than five launches a year, its financial viability may be questioned. Yet Ariane 5 is getting close to this number since five to seven launches per year are scheduled for the future.

The key feature of the PPH version of this new-generation launcher could be solid propellant, a technology that is reliable and cheap, and would benefit from standardisation.

In order to safeguard long-term European access to space, it is important to:

- Develop as soon as possible a new-generation launcher, with a restartable upper stage, focused on cost reduction to make it competitive on the market;
 - Present, by 2014 at the latest, a comprehensive development project for this new-generation launcher (configuration, industrial commitments, deadlines, costs);
 - And then take a definitive decision about Ariane 5 ME to stop financing two projects that compete with one another.
- **Second, with regard to European space defence policy, European cooperation should be revitalized** to promote the pooling of resources rather than their duplication.

European space policy: an essential ambition for the world

Europe must help provide answers to questions being asked to all the space powers.

- **First, the sustainability of space activities is threatened** by the increasing amount of debris and the ensuing risks of collision. An estimated 20,000 objects over 10 cm are in orbit around the Earth (15,000 of them are catalogued). The amount of debris is obviously increasing, due to chain reactions. Although Europe has space surveillance means, it has nevertheless remained extremely dependent upon information provided by the United States, which has the most extensive and most effectively distributed space surveillance network in the world.

The three main thrusts for action should be to:

- Promote higher standards of conduct than the existing ones;
 - Put in place a comprehensive European space monitoring system combining and supplementing the existing resources; this means addressing foreseeable obsolescence issues of the French radar space tracking system, GRAVES, and setting up additional sensors to improve identification of the nature of the objects and their projected paths;
 - Develop research on innovative technological solutions to clean up debris;
 - Establish a price for orbital positions and/or frequencies in order to fund research on ways to eliminate debris.
- **Second, Europe must remain a leader in the area of Earth observation** and implement both the infrastructure and the services required to take the lead in assessing global change. It is crucial to ensure the continuity of observation data production from the time the missions are initially devised.
 - **Lastly, Europe should continue to participate in the International Space Station in an innovative way** as it is doing at this time, providing the Automated Transfer Vehicles (ATVs). With regard to exploration, it should promote robotic missions fulfilling scientific and cost effective innovation objectives, as much as possible within the framework of international cooperation efforts.