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EU Space policy: an underestimated success

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EU INTEGRATION INVOLVES THE SPACE SECTOR: A SUCCESSFUL STORY MOSTLY UNKNOWN TO EU CITIZENS

When we talk about EU integration and successful EU policies, we are usually referring to Erasmus, the CAP, and the Single Market. Indeed, we refer too little to the EU Space policy, which is the only one that enjoys a truly European infrastructure[1].

It was in 2009, with the Treaty of Lisbon, that the space policy became one that is European since it is shared between Member States. Article 189 of the Treaty on the Functioning of the European Union (TFEU) states: *"To promote scientific and technical progress, industrial competitiveness and the implementation of its policies, the Union shall draw up a European space policy."* Since then, the EU flagship programmes, [Galileo](#) and [Copernicus](#), have been launched, representing a true European success. 2021 will mark the anniversary of the adoption of the first comprehensive European Space Programme, a regulation to which I have dedicated the last three and a half years as Rapporteur for the European Parliament. However, despite the success of the European space policy, this sector, which counts for almost 10% of the EU's GDP, is still unknown to many European citizens. An example that effectively explains this lack of knowledge is represented by the satellite navigation system, Galileo. Despite it being the most accurate navigation system in the world, used today by one billion devices at global level, most European citizens do not even know of its existence, using the name of its American competitor when they refer to it.

as is the case for many other European success stories, but this is not the only explanation. In the following text, I will try to explain the complexity of the [space policy](#), but also the potential behind this underestimated success.

COMPLEX GOVERNANCE AND A REVISED BUDGET: TWO LIMITS OF THE EU'S SPACE POLICY

When assessing the possible limits of the European space policy, its governance and financial contribution were among the most discussed questions during negotiations for the 2021-2027 Space Programme.

As happens in other sectors, the European Union also struggles to speak with a single voice for space, a factor that does not help at European or international level.

This cacophony is caused by several things. Traditionally, space policy is a national matter, and Member States still own some competences in this field, as established in Article 189 of the Treaty. Furthermore, due to this policy's national nature, the kind of approach adopted by the Member States in this sector varies and differ a lot. An example of this is the comparison between the French and German space policies, the first being linked to defence, the second which is more civilian in nature.

To complicate this scenario, at European level there are three main actors responsible for the governance of the space sector: the European Commission, [EUSPA](#) and [ESA](#). The Commission, and in particular the new [DG Defis](#), created at the

[1] This text has been originally published in [The Schuman Report on Europe, State of the Union 2021](#)

This lack of knowledge is clearly to blame on a lack of communication on the part of the EU's institutions,

beginning of this legislature, plays a double role, since it has initiated the legislative process, by drafting the proposal for a EU Space Programme, and it is also in charge of implementing it; the EUSPA (former GSA) is the EU's decentralised agency in charge of the Space Programme. Last but not least, the ESA, European Space Agency, which is an international organisation created in 1975, today comprising 22 members, who are not always EU countries, such as Switzerland, Norway and UK.

In light of the numerous actors involved in the EU space policy, for the legislators it has been fundamental to rethink governance in a way to ensure the smooth-functioning of all of the Programme's components. As Rapporteur, I have always supported clear and stable governance, based on a clear separation of roles and tasks between the institutional players involved. The governance of the space sector has to be based on solid cooperation between the European Commission and the EUSPA, and an international organisation with a longstanding experience in the field, such as the ESA. This cooperation, which forms the core of the governance of the space sector, can only be effective and work well if the separation of powers and tasks can be guaranteed. In this regard, the ongoing trilateral negotiations between the above-mentioned actors for the Financial Framework Partnership Agreement were pivotal and the European Parliament carefully monitored the respect of the governance structure designed by the co-legislators.

Another important limit to the EU's ambitions in the space sector is set by the budget allocated to the Space Programme. As a matter of fact, despite the significant sum of [14.8 billion €](#) allocated to this sector for the period 2021-2027 - more than the budget in the previous MFF - this budget is the smallest at international level and does not reflect properly the ambition of the EU and its leadership at global level. Traditionally the US is the takes the lead in the space sector, with an annual budget of 22.6 billion dollars (for 2020) allocated to NASA, while in 2019 the ESA managed to garner 14.4 billion euro for projects over 3 years.

Furthermore, new space nations are emerging, China in particular. In January 2019, China's the Chang'e-4 spacecraft made a successful soft landing on the far side of the Moon, while it hopes for a first human mission to the Moon in 2036.

An ambitious budget at EU level is key, not only to allow our Union to play a role at global level but also to promote and ensure EU strategic autonomy and the competitiveness of our industry. Europe should invest in research and innovation to boost European technologies and preserve Europe's leadership, competitiveness, sustainability and autonomy in this strategic domain in the future.

This is turning into an issue of major importance in a context where traditional space powers remain highly active, the competitiveness of the European space sector being increasingly challenged by new players, disruptive industrial organisations and business models frequently supported by national institutional entities (New Space economy).

THE POTENTIAL OF THE DOWNSTREAM SPACE SECTOR, A FUNDAMENTAL RESOURCE FOR THE FUTURE OF EU ECONOMY

Despite the difficulties encountered at legal and political level, space related business is very promising and demonstrates great potential for the European economy. Space technologies offer us a wide variety of services that can provide valuable information in most fields, from precision agriculture to crisis management.

Precision agriculture

Space technologies included in the management cycle of farms can effectively support various local agronomic activities and help them to be more sustainable from an environmental point of view. However, the services that can be provided require the involvement of a thematic supply chain that covers various needs, therefore spatial, aircraft, drone and *in situ* data must hold dialogue with the various local agronomic expertise.

The analysis derived from satellite data in fact contributes to the “geo-referenced”, dynamic knowledge of different productive realities, right down to the single cultivated parcel.

Valid support is also given via frequent updates; in addition to the presence and health of annual or seasonal crops, administrative variations in the various parcels or real conditions of the soil can be obtained. In-depth studies on the state of crops can now be carried out every 5 days using the open satellite data of Copernicus Sentinel, precisely identifying the areas with different growth rates or vegetation. The satellite data, interpreted by the agronomist or an expert farmer, generate prescription maps, essential for a targeted and optimal use of fertilizers, pesticides and irrigation, thereby avoiding waste, reducing soil and water pollution and, in the fight against climate change, reducing the carbon footprint of the farms that adopt them.

All of this data sent from space integrated via information in the field, spatialized weather data (temperature, rain, humidity and wind) and historical data on the production of the different plots also help prioritize the times and areas of collection and, through agronomic models, forecasting estimates on crop yields.

The challenge is to enable the use of this type of technology even by the smallest farms, firstly by explaining and demonstrating the opportunities that are available through local consultancy services, but also by thinking about aggregation demand mechanisms or the role of associations in this sense. From these points of view, some European regions in Italy and Spain are at the forefront, since they are experimenting with the applications of the FaST project, the first to focus on operational support to precision agriculture for individual farms.

Infrastructure and critical assets

Space technologies offer us a wide variety of services that can provide valuable information for the planning and monitoring of critical infrastructures

and assets, to guide interventions and reduce to a minimum the dispatch of teams in the field, as well as to enable the planning of efficient maintenance by enriching a territory’s virtual model with movement data.

Through the interferometric analysis based on radar spatial data, millimetre-sized deformations in structures, buildings or ground displacements due to seasonality (thermal deformations) can be measured. These can predict more important phenomena, such as landslides. The subjects of these analyses can be, for example, dams, aqueducts, gas pipelines, as well as bridges and, in general, infrastructures in areas with a high risk of landslides.

Cultural heritage management

With space technologies, analyses to support the understanding of the state of health of our cultural and historical assets are made possible via the collation of information regarding the presence of alterations that could damage them, analysis of the environment in which they are found that could compromise their fruition but also damage them. Furthermore, as these technologies are completely remote, there is no risk of damaging the property with invasive installations, while providing fundamental data to determine the possible need for safeguarding or restoration.

By integrating satellite analysis into high-resolution 3D models, it is then possible to measure, control and provide detailed information which is useful for activities related to the conservation of cultural heritage. Finally, by integrating these various analyses, models showing developments in the degradation or damage of assets due to environmental phenomena caused by climate change can be generated.

Downstream Space as a tool in the EU Green Deal

Earth observation technologies help us to generate analyses of the quality of the environment and derive information to support sustainable planning,

enabling the achievement of the goals set by the European Green Deal.

Our cities can benefit from satellite technologies for a more efficient management of environmental resources thanks to services such as the detection of water leaks from aqueducts. The identification of building or environmental abuses and the ensuing restoration can prevent critical situations related to hydrogeological instability.

Satellite interferometry provides a picture of the alterations in progress that can be linked to structural criticalities of buildings, providing valuable information for a timely intervention and in perspective contributing to the building's life.

All of this information is certainly necessary to identify the most appropriate land management measures in a context of ongoing climate change.

Despite these important applications, the great potential offered by "downstream space" is still unknown and undefined. In fact, when assessing space manufacturing industry downstream space is not even taken into account in this classification, mainly due to the fact that its boundaries are not well defined. Therefore, aggregate figures regarding this segment of the market are still missing.

The problem is that this lack of organisation can be easily reflected in a lack of awareness: a player that is not even aware of being part of a supply chain can miss the opportunities offered by the market itself (and in this case by the Space Programme).

For this reason, recognising and actively promoting the potential of the downstream aspect of space has been one of the legislators' key priorities with the [new regulation](#) focusing strongly on this issue. The role of European institutions has been to promote open participation for start-ups, new entrants, small and medium-sized enterprises, and other economic operators, both in the upstream as well as in the downstream market.

At present there is no coherent European strategy to boost downstream space, and so co-legislators should work closely on a new proposal on space market uptake, since the last Parliament resolution

on this topic dates back to 2015. Over the past five years not only has the first comprehensive regulation of the space sector been built, with new components and a new budget, but the international environment has also changed, becoming increasingly open to the Space economy, with new private players and numerous services and applications in various sectors. This report would be key for the promotion of industrial competitiveness in a sector estimated to employ over 230.000 employees (43.000 in the upstream sector) generating 46 to 54€ Billion per year, representing 10% of the EU's GDP.

However, the legal framework will be insufficient if it is not supported by specific measures that aim to tackle this problem. One possible measure able to streamline the management and guarantee the full exploitation of the downstream sector could be the creation of a working and steering group, involving representatives of the institutions and of industry under the supervision of EUSPA in order to set up a targeted roadmap.

A CHANGE OF PACE THAT PUTS EU SPACE POLICY AT THE FOREFRONT OF EU RECOVERY

Despite all of these intrinsic limits and potential of the space industry, it is evident that a change of pace has taken place over the past few years. On 28th May 2019, for the first time in eight years, the Competitiveness Council gathered in a joint meeting with ESA member states. The aim was to create, or to revive, a "joint space council": a joint meeting at ministerial level between the Competitiveness Council and the ESA council on an annual basis. On that very occasion, it was reiterated that space policy is crucial for the EU and ESA and that coordination between these two organisations must be strengthened. At the same time, the new Von der Leyen Commission has set up a specific directorate dedicated to space and defence within the broader Directorate-General for the Internal Market - entrusted to French Commissioner Thierry Breton. In the meantime, the EU has adopted the Space Programme with an increased budget, new components (Govsatcom and SSA) and a new

governance, while recently Commissioner Breton launched a study to create a secure space-based connectivity system.

All of these elements seem to prove that the space sector is far from being underestimated and, on the contrary, space will be at the forefront of the European Union's economic recovery.

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