Belgian Science Policy Office

Statistics in Brief

The economic importance of the ESA funded Belgian space economy

Teirlinck, Peter

Support in data collection: Bruylant, Anneleen

No. 8

2025

Highlights

- Belgium's ESA contribution rose to €284M in 2025
- In the period 2021-2024, 110 firms, 18 research institutes, and research teams at all universities benefitted from ESA funding
- ESA-backed employment reached 4,016 FTE employment, of which 2,257 R&D jobs
- Space turnover in the private sector hit €713.5 M in 2024, a multiplier near six on ESA funding

Boulevard Simon Bolivar 30/7 - 1000 BRUSSELS, BELGIUM

Introduction

The space economy is defined as “the full range of activities and the use of resources that create and provide value and benefits to human beings in the course of exploring, understanding, managing, and utilizing space. The space economy goes well beyond the space manufacturing sector, also comprising the increasingly pervasive impacts of space-derived products, services, and knowledge on economies and societies” (OECD, 2020, p.5)[1].

Space activities are important from several perspectives. Firstly, from a business and knowledge standpoint, they contribute to a knowledge-based society and generate economic returns on investment. Secondly, they inspire and stimulate interest in science more broadly. Third, space activities play an essential role for the planet and for society, being key to addressing climate change and to managing risks and crises. Finally, and as a specific challenge for Europe, independent access to space is crucial for safeguarding and strengthening European strategic autonomy in e.g., cybersecurity and Earth observation, and for the commercial sustainability of the European space industry (ESA, 2025)[2]. Moreover, the European space and defence industries are increasingly integrated, with space assets like navigation (Galileo), Earth observation (Copernicus), and satellite communication providing critical support for defence operations[3].

In Belgium, space policy is a federal responsibility. Belgium does not have its own national space agency, and nearly 90% of annual federal public funding for space activities is channelled into international programmes under the European Space Agency (ESA). The Belgian Science Policy Office (BELSPO), through its "Space Research and Applications" department is responsible for monitoring Belgium’s financial contributions to ESA. The Special Law on the Reform of the Institutions (1980, Art 6bis, §2, 3rd bullet) designates space research in an international context as an exclusive federal competence. In addition to the ESA contribution (the remaining 10% of the budget), the department also manages contributions to other intergovernmental organizations and bilateral agreements, and leads specific national space R&D programmes, primarily in the field of Earth observation. It is also responsible for monitoring European Union space activities and programmes.

The European Space Agency (ESA) was founded in 1975 to promote cooperation among European nations in space research and technology. ESA operates under the “geo-retour” principle, whereby contributions made by a Member State — after deduction of management costs (approximately 15%) — are returned directly to that Member State’s companies and research teams through competitive calls and tenders.

Belgium has chosen to develop its space activities largely within the European framework. Since ESA’s establishment, it has maintained a high and stable contribution – exceeding 5% of total Member State contributions. Belgium consistently ranks fifth or sixth in terms of annual contributions, generally just ahead of or behind Spain and behind the major ESA member states: Germany, France, Italy and the UK.

[1] OECD, 2020, Measuring the Economic Impact of the Space Sector - Key Indicators and options to improve data. OECD, Paris.

[2] ESA, 2025. The Economic Impact of Subscriptions at Ministerial Council 2022 by ESA Member States, Associate Members, and Canada. ESA CM22 Economic Impact Report. Oxford Economics. https://space-economy.esa.int/article/285/esa-cm22-economic-impact-report

[3] https://defence-industry-space.ec.europa.eu/eu-defence-industry/european-defence-fund-edf-official-webpage-european-commission_en

Belgium's annual contribution has increased in recent years from around €190 million in 2015 to approximately €284 million in 2025, broadly mirroring the growth in ESA's overall budget, which rose from €3,340 million to €4,892 million (Member State contributions, excluding those form the European Commission).

This report focuses on monitoring the economic significance of ESA-funded beneficiaries in Belgium. It serves as an interim evaluation and review of the decisions taken at the ESA Council at Ministerial Level held in Paris in November 2022 (CM22) and as a preparatory input for CM25, which takes place in Bremen, Germany, on November 26-27, 2025, to determine funding priorities for coming years.

Given the considerable funding involved and the challenges ahead, there is a strong need for regular monitoring and evaluation of publicly funded space activities in Belgium. Since no public data exist at the organisational level, BELSPO collects data on space activities through surveys among ESA funding beneficiaries. The information presented in this report is based on the third such survey, conducted in 2024–2025, covering space activities during the 2021–2024 period. Data were gathered on the domains in which Belgian space organisations are active, the economic relevance of their space activities, and their space R&D efforts.

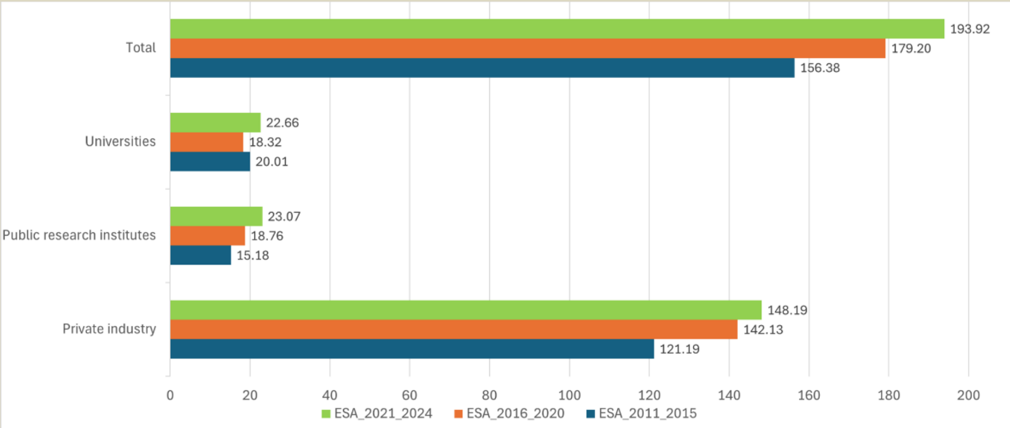
Survey on space activities 2021-2024

After conducting a first survey in 2016 and a second survey in 2021, BELSPO (the Belgian Science Policy Office) carried out a third survey in 2024 to measure, in a harmonised way, the socio-economic importance of space activities in Belgium.
The survey's target population comprised private space actors in Belgium, as well as universities and key (semi-)public research organisations active in space (or space-derived) activities. The focus was on organisations that had received space funding from the European Space Agency (ESA) in the 2021-2024 period. The survey aimed to provide a snapshot of upstream and downstream space activities, as well as space-derived activities (the use of space technology in other sectors) in Belgium in the 2021-2024 period.
Two dedicated surveys were developed: one for private actors and (semi-) public research institutes launched in May 2024. To obtain the required response rate reminders were sent in June and September, followed by telephone follow-up for item and unit non-response between October and December 2024. Another survey was designed to survey universities, which was launched in October 2024 with a reminder sent in January 2025 and telephone follow-up in February – March 2025. The surveys were organized at the legal entity level (VAT number), and excluded activities carried out by parent or subsidiary organizations. For universities the survey was organized at the departmental level.
The response rate to the 2024 survey was 50%. Among the 20 organisations receiving the largest share of ESA funding – accounting for close to 80 % of the total budget – the response rate reached 95%. There is no indication of response bias for organizations outside the top 20. The responses to the survey were verified and supplemented with data from national accounts (BelFirst). For numerical data (space employment and turnover) unit and item non-response were estimated based on results from the previous survey and on a detailed review of information provided in annual reports and on the organisations' websites, cross-referenced with available data on public funding.

1. Population of ESA funded space actors in Belgium

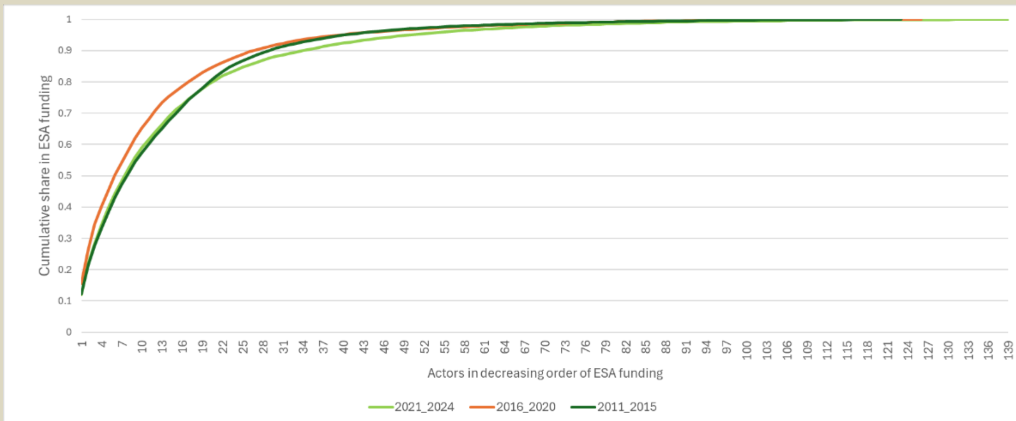
In the period 2021-2024, 139 actors (110 private enterprises[4], 18 research institutes, and 11 universities) benefitted from ESA funding. The average annual ESA contribution amounted to nearly €194 million (compared to €179 million in the period 2016-2020 and €156 million in 2011-2015). Of this total, €148.2 million was allocated to the private industry, €23.1 million to (semi-) public research institutes, and €22.7 million to universities. Compared with the period 2011-2015, budgets for universities rose by 13%, while those for the private sector and public research institutes increased by 23% and 52% respectively.

Figure 1: ESA support (in millions of euro) by period and actor type



ESA budgets are highly concentrated. The top five beneficiaries (four private companies and one university) account for 39.8% of the total budget, the top ten for 58.8%; and the top twenty for 79%. Among the top twenty largest ESA beneficiaries, there are fourteen private companies, three research institutes, and three universities. Following an increase in concentration during the 2016-2020 period to 84.2%, the share held by the top twenty beneficiaries has since fallen back to the level observed in 2011-2015.

Figure 2: Concentration of ESA budgets



In the period 2021-2024, 45 organisations received ESA funding for the first time. These new beneficiaries accounted for 3.5% of the total ESA budget. Fifteen of those organisations were less than five years old in 2024, eight were between five and ten years old.

[4] Note: Counted at group level in Belgium. 8 of these actors represented 26 separate legal entities (proper VAT number).

2. Engagement in upstream – downstream – space-derived activities

A commonly made distinction in space activities is the one between upstream, downstream, and space-derived activities. **Upstream space activities** include hardware and software products and service providers that permit launching and operating systems in space (including R&D, design, production, integration, and testing). These activities are further divided in a space segment, a transportation segment, a ground segment, satellite operators, launch services, and other upstream activities. **Downstream space activities** include hardware and software producers and service providers, which require the use of space systems and/or data for applications used on Earth. These activities include all commercial activities based on the use of data provided by space infrastructures, such as services in broadcasting, communication, navigation or Earth observation. These activities are further divided in hardware and other products, services, software, and other downstream activities. **Space-derived activities** refer to the use of space technology in other industries and include all productive, administrative or general operations relating to the production of goods and services having a substantial space component. Products or services utilizing space technology may include spin-offs or technology transfers from the space sector, which use space technology but do not depend on it (low incorporated quantities of "space" components). [5]

Upstream, downstream, and space-derived activities are not mutually exclusive. Of the top 20 private ESA beneficiaries, 95% are active in upstream space activities, almost one in three engage in downstream space activities, and two in five participate in space-derived activities. Private ESA beneficiaries outside the top 20 are comparatively less involved in upstream activities (54%) and more in downstream activities (52%), with approximately 30% engaging in space-derived activities. Research institutes and universities show a strong and more balanced engagement in upstream and downstream activities, whereas universities report being less involved in space-derived activities.

Of the organizations involved in upstream space activities over two-thirds operate in the space segment. Nearly half of the top 20 private ESA beneficiaries are involved in the ground segment, while non-top 20 private beneficiaries are relatively more present in downstream service activities.

Table 1: Engagement in upstream, downstream and space-derived activities, by type of actor

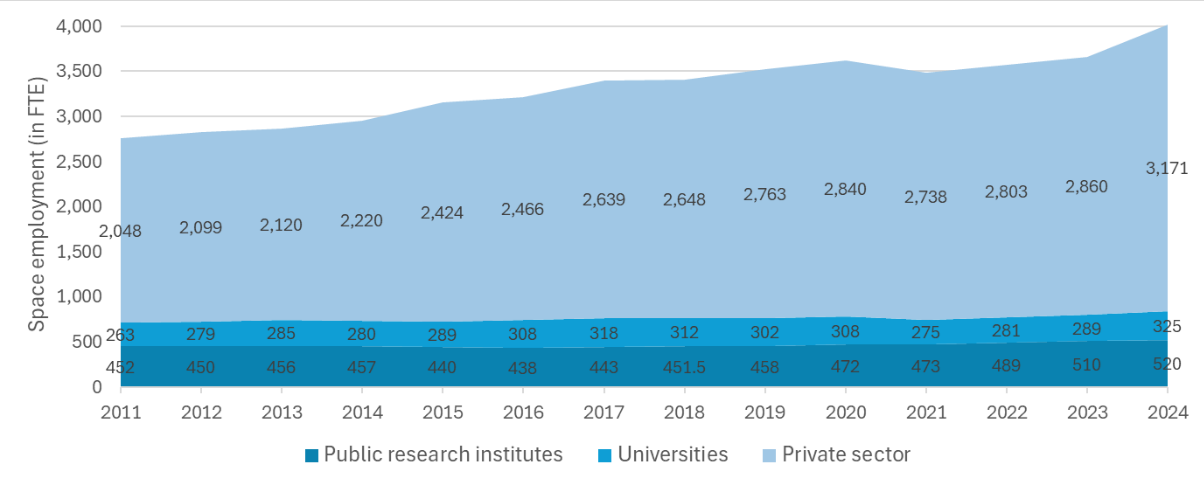
	All Private	Top 20 Private	Non-top 20 Private	Research Institutes	Universities
Upstream	**63%**	**95%**	**54%**	**88%**	**78%**
Space segment	43%	68%	67%	69%	67%
Transportation segment	23%	37%	15%	7%	0%
Ground segment	23%	47%	9%	43%	29%
Satellite operators	21%	32%	15%	36%	29%
Launch services	12%	16%	9%	7%	0%
Other upstream	29%	37%	24%	29%	57%
Downstream	**48%**	**30%**	**52%**	**69%**	**56%**
Hardware other products	38%	16%	34%	64%	60%
Services	62%	26%	50%	45%	100%
Software	28%	16%	22%	36%	80%
Other downstream	28%	16%	22%	0%	40%
Space-derived	**30%**	**40%**	**28%**	**31%**	**22%**

[5] OECD, 2020, Measuring the Economic Impact of the Space Sector - Key Indicators and options to improve data. OECD, Paris.

3. Space employment

Total space employment in 2024 in Belgium reaches 4,016 full-time equivalents (FTEs). Following a decline in the period 2020-2021 (coinciding with the Covid-19 pandemic), the space industry gradually recovered in terms of space employment, with particularly strong growth observed in 2024. Private space actors employed 3,171 FTE space employees in the year 2024, while public sector space employment amounted to 845 FTE jobs.

Figure 3: Employment (FTE) in space activities in ESA-financed actors



A recent study by Oxford Economics for ESA (2025) [6] revealed that, in 2022, 1,200 FTE jobs in the Belgian private space industry were directly supported by ESA contracts. This represents nearly 43% of total space employment in ESA-financed enterprises.

A breakdown of space employment by upstream, downstream, and space-derived activities shows that the majority of private space employment is in upstream space activities (83%). The same holds for universities (77%), whereas 49% of space employment at research institutes is concentrated in downstream space activities. Space-derived activities account for approximately 7% in the private sector[7] and over 10% at universities.

Table 2: Space employment by type of actor and activity

	Upstream	Downstream	Space-derived
Private sector	83%	10%	7%
Public research institutes	45%	49%	6%
Universities	77%	12%	11%

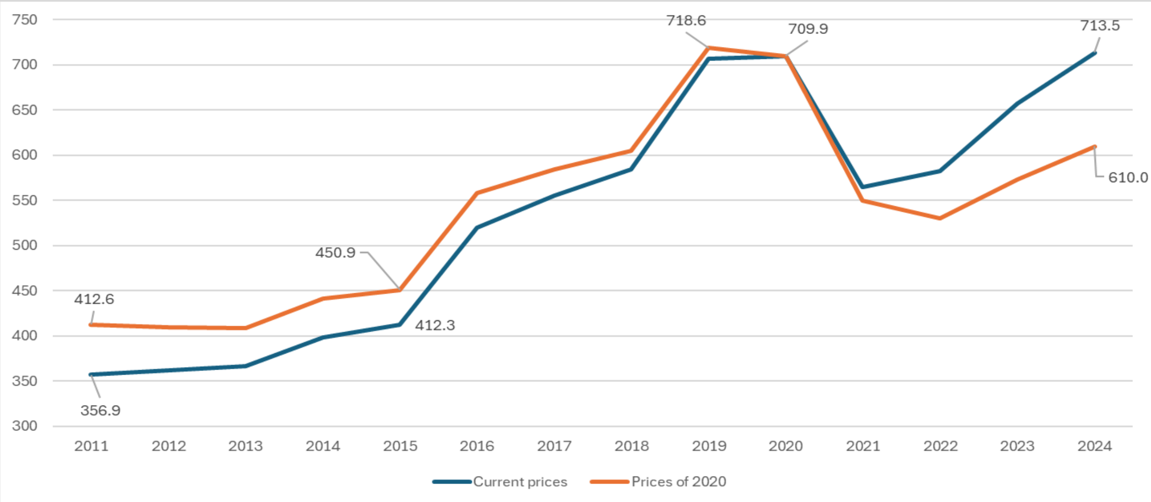
[6] ESA, 2025. The Economic Impact of Subscriptions at Ministerial Council 2022 by ESA Member States, Associate Members, and Canada. ESA CM22 Economic Impact Report. Oxford Economics. https://space-economy.esa.int/article/285/esa-cm22-economic-impact-report

[7] In the survey 2016-2020 private space derived FTE employment equalled 19%. The drop to 7% in the period 2021-2024 mainly is due to one large space company changing from being classified as majority space-derived to majority upstream space activities.

4. Space turnover – private actors

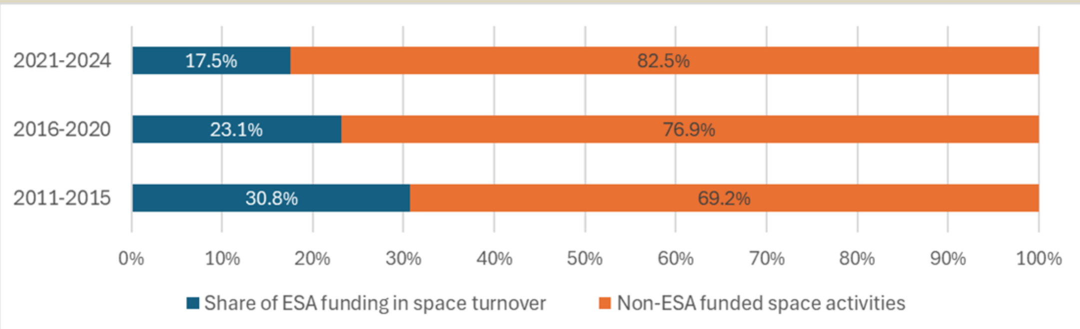
In line with space employment, a decline in space turnover for private actors occurred during the COVID19 period (2021 and 2022), followed by an increase in the subsequent years. However, after a sharp rise in the period 2015-2019, space turnover had already stabilized in 2019-2020 (pre-COVID19). By 2024, space turnover in the private sector reached €713.5 million, roughly double the turnover in 2011. After adjusting for inflation and expressed in 2020 prices, space turnover in 2024 is approximately €100 million lower than in 2020. This indicates that the Belgian space industry remains under pressure, as reflected in the European Space Act[8].

Figure 4: Turnover of space activities in the private sector (in millions of euro), at current prices and in 2020 prices



In line with the evolution over the past decade, the share of ESA funding in total space turnover further declined in the period 2021-2024, reaching 17.5%. Consequently, for every euro of turnover generated by ESA funding, an additional 5 euros of space turnover were produced (multiplier of 6).

Figure 5: Share of ESA funding in space turnover in the private sector



[8] The **EU Space Act** is a legislative initiative by the European Commission that introduces a harmonized framework for space activities across the Union. The proposal, launched on 25 June 2025, aims to ensure safety, resilience, and environmental sustainability, while boosting the competitiveness of the EU space sector (https://defence-industry-space.ec.europa.eu/eu-space-act_en).

5. R&D: activities and funding

The space industry is a highly R&D-intensive sector. All ESA funded actors are engaged in R&D, which is a prerequisite for obtaining ESA funding. R&D employment as a share of total space employment in the private sector is estimated at 45% (43% for private top 20 ESA beneficiaries and 67% for non-top 20 beneficiaries[9]), representing 1,427 FTE space R&D jobs in the private sector (45% of 3,171 jobs). This corresponds to nearly 2% of all R&D jobs in the private sector in Belgium. For research institutes and universities this is close to 100%, implying 831 FTE R&D jobs. In total, the ESA-funded space industry in Belgium hosts 2,258 FTE R&D jobs. As ESA funding is primarily R&D focused, it is useful to calculate the amount of ESA commitments per space R&D employee. This approximates €60k for private top 20 ESA beneficiaries and universities, while for non-top 20 beneficiaries it is about €48k.

Table 3: R&D employment as percentage of space employment and ESA commitments per R&D space employee

	R&D employment on space employment	ESA commitments per space R&D employee (euro)
Private Top 20	43%	60,247
Private non-top 20	67%	48,061
Public Research institutes	98%	56,236
Universities	99%	62,016

Zooming in on the sources of R&D funding, on average (unweighted for the amount of funding), nearly half of the upstream R&D in the top 20 private ESA beneficiaries is ESA funded, while for non-top 20 private actors this share is close to two thirds. For public research institutes and universities, these shares are over one third and nearly one fourth, respectively, of upstream R&D. For downstream R&D, approximately one third of the large private beneficiaries' activities and close to half of non-top 20 private beneficiaries and research institutes are ESA funded. European Commission funding is the second most important source for upstream space R&D. For the top 20 private ESA beneficiaries, it represents more than one sixth of upstream R&D funding, over one fifth of downstream R&D funding, and nearly half of the space-derived funding. At universities, European Commission funding accounts for over two thirds of downstream R&D funding. National government (mainly via 10% of the federal Earth observation budget) is a key source of downstream R&D funding for universities and public research institutes. Regional government funding supports over one tenth of upstream R&D at non-top 20 private ESA beneficiaries and plays a significant role in space-derived R&D for large private ESA beneficiaries. Universities and public research institutes also finance a substantial part of their, respectively, upstream space and space-derived R&D through other (non-space dedicated) public funding sources.

Due to high risk and long development times for space R&D, despite the highlighted role of the private market for new space, debt funding remains a less solicited source of funding for non-top 20 ESA beneficiaries. For the top20 ESA

[9] The difference in percentage mainly can explained because non-top 20 beneficiaries' space activities often are restricted to ad-hoc ESA (R&D) projects, whereas space activities are a permanent and main business for the top 20 beneficiaries.

private beneficiaries it is an important source (about one fifth) for downstream R&D. Another key source of funding for non-top 20 ESA private beneficiaries is own funds and revenue (so-called bootstrapping). Venture capital represents a minor source of funding for space R&D, which is somewhat surprising for downstream and space-derived activities, given that these activities typically involve lower development times and risks.

Table 4: Funding sources of space activities – unweighted averages (% of total) for the period 2021-2023

	Upstream				Downstream				Space-derived			
Funding source	Private Top 20	Private Non top 20	Research insitute	University	Private Top 20	Private Non top 20	Research insitute	University	Private Top 20	Private Non top 20	Research insitute	University
ESA	47.3	67.1	34.4	23.1	33.0	46.9	47.7	0.0	8.5	25.1	0.0	40.0
European Commission	17.2	4.9	6.8	0.0	22.5	15.1	16.0	66.7	49.5	22.7	16.7	25.0
National government	4.4	0.4	39.0	16.3	0.0	5.0	28.0	33.3	0.0	1.7	16.7	25.0
Regional government	1.5	11.8	4.0	6.2	0.0	5.8	1.7	0.0	25.0	0.0	0.0	0.0
Other public	2.3	0.0	5.2	54.4	4.5	0.0	6.7	0.0	7.0	2.2	66.7	10.0
Equity	17.8	3.6	10.6	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Debt	5.2	1.4	0.0	0.0	20.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Other	4.4	10.7	0.0	0.0	20.0	25.0	0.0	0.0	10.0	47.5	0.0	0.0
	100	100	100	100	100	100	100	100	100	100	100	100

Note: European Commission funding includes Horizon Framework Programme and funding related to Copernicus (Earth Observation and Monitoring), Galileo (Satellite navigation system), SSA (Space Situational Awareness), EGNOS (European Geostationary Navigation Overly Service), GOVATCOM (Satellite communication for government instances), and IRIS2 (Safeguarded satellite communication system)).

Protection of outcomes of space R&D results in half of the top 20 large private ESA beneficiaries holding patents for their space activities, of which over one third are licensed out. For non-top 20 private actors this share is close to one in five.

Table 5: Patent ownership and licensing among private ESA beneficiaries

	Patent activity	Licensing activity	Licencing out	Licensing in
Private Top 20	50%	56%	38%	31%
Private non top 20	17%	28%	17%	22%
Research Institute	40%	40%	40%	20%
University	33%	67%	67%	67%

Note: percentages are based on reporting by 16 top 20 private firms, 18 non-top 20 private firms, 5 research institutes, 3 universities. Licensing out is the process where a company (the licensor) grants another company (the licensee) the rights to use its technology, products, or intellectual property, often in exchange for fees or royalties. licensing in is when a company obtains a license from another party to use their IP for its own development or products.

6. Main challenges for space actors in Belgium

In the space survey, space actors were asked about the main challenges they face regarding space activities. Human resources, technology and industrialisation, funding and investment, policy and administration, and market access and competitiveness are put forward as main challenge areas.

Table 6: Main challenges reported by type of actor

Challenge Area	Top-20 Private	Smaller Private	Public Research Institutes	Universities
Human resources	Difficulty hiring experienced personnel; Wage competitiveness issues	Shortage of skilled personnel; Stable funding to hire	Need flexible HR rules; Maintain key expertise	Dependence on senior scientists on short-term contracts
Technology & industrialisation	Legacy vs New Space; Industrialisation; Supply chain development; Diversification; Access to space	Rapid electronics evolution; Reliance on industrial components; Dependence on single suppliers	Need support for technology transfer	Gaps in mission funding disrupt research continuity
Funding & investment	ESA delays; Need multi-year funding; Industrialisation support	Venture capital shortage; Weak national incentives	Need stable ESA/BELSPO funding	Short-term funding cycles (2–3 years) hinder long-term planning
Policy & administration	ESA contractual delays; Export rules; Need stronger national investment	Bureaucracy; Heavy documentation; Delayed launch projects	Need clear procedures; More flexible accounting	Administrative burden; Undervaluation of space science
Market access & competitiveness	Expand export markets; Maintain legacy contracts; Adapt to New Space	Conservative market; Low ROI; Difficulty demonstrating heritage	Need visibility & B2B networking	Need access to future satellites for research/education

Summary

- Belgium's annual contribution to the European Space Agency (ESA) rose from around €190 million in 2015 to approximately €284 million in 2025. During the period 2021-2024, the invested amounts were returned (geo-retour system) to 110 enterprises, 18 research institutes and research teams across all universities in Belgium. The €94 million increase compared with 2015 maintains Belgium's stable contribution of about 5% to the overall ESA budget.
- Two-fifths of ESA funding is allocated to five main beneficiaries (four private companies and one university), with substantial (research and development) investments primarily focused on the upstream space and ground segments. Between 2021-2024, 45 organizations received ESA funding for the first time, over half of which were young technology-based start-ups.
- Employment in space activities in ESA-funded organizations in Belgium is estimated at 4,016 full-time equivalent (FTE) jobs, compared with 3,620 in 2020. Private enterprises account for 3,171 of these jobs, public research institutes for 520, and universities for 325. In the private sector, about 45% of these positions are R&D jobs, while in universities and public research institutes almost all are R&D related. The total number of R&D jobs in space activities in the ESA funded Belgian space industry is estimated at 2.258 FTEs, representing close to 2% of total R&D employment in Belgium's private sector.
- Space turnover in the private sector reached €713.5 million in 2024. The multiplier of ESA budgets is close to six (compared with a multiplier of three during 2011-2015). When adjusted to 2020 prices, turnover declined by about €100 million euro over the past four years, highlighting the challenges in establishing a commercially viable space market (in Europe).
- Public funding (more than half of the total budget) and equity (over one-third) are the main sources of financing for upstream and downstream space activities in the private sector.

Further information:
Interested readers can find up-to-date data and analyses on this website: meri.belspo.be

For more details, please contact the author of the article at this email address:
peter.teirlinck@belspo.be

Published by:
Belgian Science Policy Office
Simon Bolivarlaan 30 Avenue Simon Bolivar
1000 Brussels, Belgium
www.belspo.be