Chambers AND PARTNERS

CHAMBERS GLOBAL PRACTICE GUIDES

# Space Law 2024

Definitive global law guides offering comparative analysis from top-ranked lawyers

**Germany: Law & Practice and Trends & Developments**

Andreas Lenz, Thomas Jansen and Henrik Lay
HEUKING

# GERMANY


## Law and Practice

**Contributed by:**
Andreas Lenz, Thomas Jansen and Henrik Lay
**HEUKING**

## Contents

1. Global Trends p.5
1.1 The "NewSpace" and Space Tech Economy p.5

2. Existing Legal and Regulatory Framework p.6
2.1 Characteristics of the Space Industry p.6
2.2 Legal System and Sources of Space Law and Regulation p.7
2.3 Role of the State in Space Law and Regulations p.7
2.4 Role of the State in the Licensing Process for Space Activities p.8
2.5 Role of the State in Co-ordinating the Use of Radio Frequencies and Orbital Slots p.9
2.6 Role of the State in the Launching Process p.10
2.7 Commitment to International Treaties and Multilateral Discussions p.10
2.8 Insurance and State Measures on Liability for Damages p.11

3. Rules Applicable to Space Operators' Activities p.12
3.1 General Rules on Space Activities p.12
3.2 Principles of Non-interference and Prevention of Harmful Interference p.13
3.3 Operators' Responsibilities p.14

4. Ownership of Extraterrestrial Resources p.15
4.1 Nature of Space Resource Rights p.15
4.2 Granting of Rights to Space Resources p.15

5. Environmental Protection and Impact on Climate Change p.15
5.1 Environmental Protection in Space p.15
5.2 Climate Change and Space Activities p.15

6. Taxation of Space Activities p.16
6.1 Tax System for Space Activities p.16
6.2 Tax Incentives for Space Investors p.16
6.3 Taxation on Sale or Transfer of Space Assets p.17

7. Investment and Financing in Space Activities p.17
7.1 Impact of "NewSpace" p.17
7.2 Finance Sources for Space Activities p.18
7.3 Attracting Investment for Space Activities p.18
7.4 Foreign Investment in Space Activities p.19
7.5 Role of Securities Markets in Space Financing p.19

**HEUKING** is an independent, German, full-service law firm with more than 400 professionals and consistently ranks in top tiers of its fields of expertise. Operating in an international context, HEUKING co-operates with leading international advisors. Clients of HEUKING are national and international technology champions, investment stakeholders, institutions and government bodies. With over two decades of experience in advising space stakeholders, HEUKING has renowned expertise in technology-driven projects and plays a prominent role as an advisor for investments and start-ups. HEUKING has consolidated its space related experience and expertise into one integrated focus-group "NewSpace & SpaceTech", providing advice to space stakeholders in the areas including technology, data and space-enabled services; venture capital, M&A, financing and crypto-assets; satellites and telecommunications /ITU; public sector and procurement; FDI, merger control and regulators; compliance and policy developments; EU and international programmes, public funding; and risk management, liability and insurance.

## Authors

**Andreas Lenz** is a partner based in HEUKING's Cologne office and a member of the firm's Corporate/M&A practice group. Andreas has 25 years of experience as a M&A and transaction lawyer, mostly in the area of private equity and investment. He advises German and international clients in transaction and investment-related matters, with a strong focus on providing strategic guidance. Andreas co-chairs the focus group "NewSpace & SpaceTech" and has been involved in legislative and policy-related developments in the space sector for many years. Andreas is a frequent speaker and author on space-related topics.

**Thomas Jansen** is a partner based in HEUKING's Munich office and a member of the firm's IP, Media and Technology practice group. Thomas has over 25 years of experience as a technology transactions lawyer. He advises German and international corporate clients across diverse industries on all kinds of technology-related matters, with a focus on providing strategic guidance in the creation, acquisition, use and commercial exploitation of technology. He also counsels clients on the intellectual property aspects of mergers, acquisitions and financings. Thomas co-chairs the focus group "NewSpace & SpaceTech" and has been advising clients on space-related issues for many years. Thomas is a frequent speaker and author on technology-related topics.

**Henrik Lay** is a partner based in HEUKING's Hamburg office and a member of the firm's tax practice group. Henrik is qualified as tax advisor and certified tax lawyer. He has over 15 years of experience as a transactional tax lawyer, mostly in the area of private equity, venture capital and real estate. He regularly advises institutional and strategic investors on domestic and international tax matters.

## HEUKING

Magnusstraße 13
50672 Cologne
Germany

Tel: +49 221 2052 325
Fax: +49 221 2052 1
Email: a.lenz@heuking.de
Web: www.heuking.de

# 1. Global Trends

## 1.1 The "NewSpace" and Space Tech Economy

### Legal Framework for Space

The overall picture regarding space activities in and beyond Germany is characterised by:

- the advance of the "NewSpace" economy;
- the increasing competition in the field of launchers, satellites and regarding the race to the Moon;
- a general realisation of the importance of space applications for both, climate (monitoring) and strategic autonomy; and
- an intensifying debate regarding safety, resilience and sustainability questions.

The NewSpace economy is still largely reliant on state and institutional ultimate end users. However, reports from renowned analysts suggest that at least the data-based and satellite-based economy is to a large degree self-sustaining. In addition, European and German national institutions are trying to push the commercialisation of space tech in various sectors through targeted programmes to facilitate the development of a self-sustaining economy.

The international legal framework can, from an EU perspective, be described as follows.

- The traditional areas of international law, where the United Nations Committee on the Peaceful Uses of Outer Space (UN-COUPOS) initiative tries to facilitate an international legal framework regarding topics such as safety, utilisation of space resources, fair participation and sustainability.
- Multinational agreements, particularly the Artemis Accords, which appear to overtake at least some of the international laws in terms of acceptance by signing – the Artemis Accords set forth principles for co-operative civil exploration and face criticism for – allegedly – contravening the Outer Space Treaty (OST) in terms of appropriation of space resources. Germany, although it signed the Artemis Accords on 14 September 2023, issued a statement at the same time affirming that it would nevertheless adhere to international law.
- National space laws, the number of which is increasing. Germany still has no national general space law. While a German space law is reportedly in the making, it cannot be predicted whether a draft will come out during the reign of the current German legislative body, which will end in 2025.
- The 2023 announced EU Space Law (EUSL), which was stalled in April 2024 at the last minute. It has now been announced that a draft EUSL will be subject to legislation procedures in 2025. The EUSL aims to enhance the safety, resilience, and sustainability of space operations. However, critiques question the EU's authority to enact a harmonised legal framework.

### Key Trends

In addition, the following are key trends for the German space sector:

- further technological developments regarding all areas related to technology for space situation awareness, space traffic management, Earth monitoring and space data security as well as regarding launchers, satellites, re-entry methods and space infrastructure;
- increasing competition between launch service providers due to the number of (micro-) launchers coming on-line within the next three years across the EU and worldwide, expected to result in price falls and increasing

launch flexibility and – as a result – the start of a consolidation process in the launcher market within the next five years;
- further development of spacetech in the areas of health, agritech and foodtech as well as material sciences;
- the increasing influence of space-specific regulation at both German and EU level in the areas of sustainability, safety and resilience, partly countering the foregoing; and
- tighter connections between space operators in the defence/dual use sector due to the need for security/defence autonomy.

Please refer to the Germany Trends & Developments chapter of this guide for further discussion.

## 2. Existing Legal and Regulatory Framework

### 2.1 Characteristics of the Space Industry

The German space industry has a long history and is known for its capacity for engineering, base research capabilities and technological leadership. Between 2016 and 2020, Germany was ranked fifth world-wide with respect to issuing space-related patent applications, accounting for around 8% of applications globally.

According to data from the German Aerospace Industry Association (*Bundesverband der Deutschen Luft- und Raumfahrtindustrie e.V.*, BDLI), German space-related commercial revenues totalled EUR2.6 billion in 2022. The number of students beginning air and space technology degrees at German technical universities is also noticeable increasing.

Germany's research institutions for Space and Germany's space businesses are known for their focus on base research as well as the development and manufacture of components, and complete systems for general space applications such as navigation, earth observation, meteorology, and communications as well as for propulsion technology. The German space industry is one of the most important partners for the development and operation of the European satellite navigation system Galileo. In addition, the German space industry is significantly involved in the development and production of components for the European Earth observation system Copernicus and several of the Sentinel satellites used for this purpose have been integrated by German manufacturers. The German space industry is a partner in the development and operation of the European MetOp and Meteosat weather satellites. It is also a key partner in Alphasat, currently the largest and most powerful telecommunications satellite of the European Space Agency (ESA). In addition, German corporations are involved in the development and production of parts for the Artemis mission and are partners in one of the successors of the International Space Station (ISS).

Besides established companies, the German space industry consists also of a growing number of small and medium-sized enterprises as well as a prolific start-up scene with – in 2023 – the highest number of such endeavours in the EU. These start-ups are often connected to technical universities.

The German government, through the German Space Agency *(Deutsches Zentrum für Luft und Raumfahrt,* DLR) supports research and commercialisation. Furthermore, German federal states (*Bundesländer*) have their own space-related grants and programmes. In addition, universities facilitate research projects. Finally, there are four ESA Business Incubation Cen-

tres already active in Germany and a number of further acceleration and incubation centres. The landscape for incubation and acceleration is wide and dense.

Regarding launch systems, 2024 has already seen a successful test-start by one of the three bigger German launching start-ups and is expected to see test starts from two German competitors in 2024. There are also plans to establish a mobile launch system in the North Sea so that Germany will, in future, possibly have access to certain orbits from within its exclusive economic zone.

## 2.2 Legal System and Sources of Space Law and Regulation

### Legislation

The German legal system is based on civil law. Germany currently does not have its own designated "Space Law", although one has been announced in the German federal government's National Space Strategies (*Raumfahrtstrategien der Bundesregierung*) in 2023. However, there is currently no clear view on the timing. The applicable regulations on Space Projects are therefore scattered throughout non-space-specific national laws and international law.

In the absence of any consolidated national space legislation, the regulatory landscape in Germany is patchy:

- spacecrafts, rockets, and similar objects are considered aircraft according to Article 1 paragraph 2 sentence 2 of the German Air Traffic Act (*Luftverkehrsgesetz*, LuftVG) as long as they are in airspace;
- the use of frequencies and orbital slots for operating satellites is regulated in the Telecommunications Act (*Telekommunikationsgesetz*, TKG);
- with respect to data security in satellite communication, the Satellite Data Security Act (*Satellitendatensicherheitsgesetz*) and the Satellite Data Security Regulation (*Satellitendatensicherheitsverordnung*) are applicable; and
- enterprises that produce goods or technologies intended for use in space flight or for use in space infrastructure systems are subject to the Foreign Trade Regulation (*Außenwirtschaftsverordnung*, AWV), which may require a permission for foreign investments in these companies.

In addition, the planned EUSL (see **1.1 The "NewSpace" and Space Tech Economy**), with its impact on Germany, is expected in 2025.

### Case Law

Case law as such plays no role in Germany. The higher and supreme court's judgements are not binding on lower courts, although they are usually followed.

## 2.3 Role of the State in Space Law and Regulations

Germany acts as a regulator with respect to the assignment and licencing of orbits and frequencies, aviation law, rules governing the use of satellite data, the implementation of ratified international laws and treaties and the further specific and generally applicable legislation.

Germany is a participant in space activities through its memberships in the ESA, of which Germany is one of the founding members and the biggest funding contributor in 2024, and through its participation in the European Union Agency for the Space Program. ESA astronauts are trained partly in Germany and German astronauts have visited the Russian space station MIR and the ISS. Germany actively participates

in space exploration (Mars Express and Rosetta Missions) and the Artemis programme.

The German state facilitates space activities by means of funding the ESA and the DLR and through its National Programme for Space and Innovation (*Nationales Programm für Weltraum und Innovation*, NPWI), which is managed by the DLR. In addition, Germany is a facilitator of international collaboration. Finally, Germany provides infrastructure support for space launches, satellite operations, and research activities and hosts ground stations for communication with satellites in orbit.

### Government Agencies Regulating Space

Space activities fall within the overall responsibility of the Federal Ministry for Economic Affairs and Climate Action (*Bundesministerium für Wirtschaft und Klimaschutz*, BMWK), where the federal government co-ordinator of German aerospace policy is based. The BMWK acts through the DLR.

The DLR is the acting space agency of Germany. The DLR is responsible for preparing German space planning, for implementing German space programmes, as well as representing German space interests in the international area. To achieve these goals, the DLR develops and manages, among others, the NPWI, co-ordinates technology and space-related projects and independently performs functions in the administration of government-funded subsidies.

The DLR employs around 11,000 individuals. It has 55 different institutes and subsidiaries and numerous other test and operating facilities at a total of 30 locations in Germany and four foreign offices. The DLR's budget for its own research and development work and for operational tasks amounts to an aggregate of more than EUR1.37 billion euros per financial year (all figures are from 2022).

## 2.4 Role of the State in the Licensing Process for Space Activities

In Germany there is no comprehensive general space law governing space activities. This absence means there is no overall and binding licensing process or system of supervision in place for space activities in general.

The DLR attempts to gather and relay necessary information to the United Nations Office for Outer Space Affairs (UNOOSA), but the above-mentioned legislative gap creates legal uncertainties in various areas.

For certain very specific space activities, however, there are established authorisation frameworks.

- The operation of advanced space-based earth remote sensing satellites requires authorisation from the Federal Office for Economic Affairs and Export Control (BAFA) under Section 3 of the Act on Satellite Data Security Act (SatDSiG).
- The use of frequencies and orbital slots for satellites must be authorised by the *Bundesnetzagentur* (BNetzA) as per the TKG (further described in **2.5 Role of the State in Co-ordinating the Use of Radio Frequencies and Orbital Slots**).
- The LuftVG classifies spacecraft, rockets, and similar objects as aircraft when traversing airspace. Such vehicles are subject to LuftVG regulations and must only take off and land at approved airfields, overseen by the German Aviation Administration (LBA). Although registering space objects with the LBA is voluntary, it is highly recommended in prac-

tice because registered objects are typically granted permission to use German airspace.

## 2.5 Role of the State in Co-ordinating the Use of Radio Frequencies and Orbital Slots

### Radio Frequencies

The use of frequencies is regulated by the TKG. Individuals or entities residing in Germany or having their registered office therein, who want to use frequencies through space objects are subject to the obligations arising from the Constitution and Convention of the International Telecommunication Union (ITU). The Federal Network Agency (*Bundesnetzagentur,* BNetzA) is responsible for allocating and managing radio frequencies and orbits and co-ordination with the ITU regarding applications from Germany. This includes satellite communications, Earth observation, and navigation systems.

### Frequency and Orbital Slot Allocation

The BNetzA carries out the registration, co-ordination, and notification of satellite systems with the ITU upon request and transfers the resulting rights to use frequencies and orbits to the applicant.

The transfer of usage rights requires that frequencies and orbits are available for use, that there is compatibility with other frequency uses and other registrations of satellite systems and that public or third-party interests are not impaired.

The details of the application process are regulated in the Administrative Regulations for the Registration, Coordination and Notification of Satellite Systems (*Verwaltungsvorschrift für die Anmeldung, Koordinierung und Notifizierung von Satellitensystemen im deutschen Namen und für die Übertragung der Orbit- und Frequenznutzungsrechte*, VVSatSys).

The required procedures include inter alia:

- a submission by the space operator to BNetzA, requesting a filing to the ITU and the initiation of co-ordination proceedings;
- the space operator providing proof regarding availability of funds (for costs of ITU proceedings) and of qualified staff for required assistance;
- provision of further information, including a business and technical plan regarding the use of the allocated orbits and frequencies, also setting out an explanation regarding use and avoidance of infringements; and
- a binding statement regarding compliance with ITU rules.

### Conflict Resolution in Cases of Interference

Space operators must apply to the BNetzA for radio frequency use and orbits as outlined above. The BNetzA registers, co-ordinates, and notifies the ITU of the systems and plans, and assigns the corresponding orbit and frequency usage rights to the applicant.

Moreover, the BNetzA monitors frequency utilisation, as stated in Section 103, paragraph 1 of the TKG. To maintain effective frequency regulation, the BNetzA has the authority to issue orders that restrict or stop the operation of devices if necessary.

The decisions of the BNetzA on the assignment of frequency and orbit rights or on restrictions are issued by way of administrative acts, including decisions on infringements.

## 2.6 Role of the State in the Launching Process

Germany currently lacks a dedicated rocket launch site, largely due to its relatively short and densely populated coastline. Launching rockets over the ocean minimises the risk to human populations and infrastructure. In the event of a failure or explosion during the launch, debris is more likely to fall into the sea, reducing the potential for casualties and damage. Therefore, current plans include launching rockets from a floating platform in the North Sea. Test launches are scheduled for 2024. This offshore site is managed by the German Offshore Space Alliance (GOSA) and represents a significant step in the commercial development of Germany's launch capabilities.

The role of the state in launching space assets has largely been as a legislator (through the applicability of the LuftVG and applicable other general laws, such as the TKG and the Satellite Data Security Act. Further, through its ground stations and through services provided by the DLR and by grants and permits, the role of Germany is also that of a facilitator.

Finally, the German state is also a user of launch services in the sense that, for instance, satellites of the German armed forces, are procured and launched with services from private actors (and in the future potentially with the help of German micro launchers), as are satellites and satellite components for research and meteorological and climate-monitoring missions.

## 2.7 Commitment to International Treaties and Multilateral Discussions

### Space Treaties to Which Germany Is a Party

Germany is a party to the four principal UN space treaties: the OST, the so-called Rescue Agreement (ratified 17 February 1972), the Liability Convention (ratified 18 December 1975), and the Registration Convention (16 October 1979). Germany is not a party to the Moon Agreement.

In addition, Germany is party to the following international treaties and agreements:

- the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (1964);
- the Agreement Relating to the International Telecommunications Satellite Organization (INTELSAT) (1973);
- the Convention on the International Mobile Satellite Organization (1979);
- the Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite (1979);
- the Convention for the Establishment of a European Space Agency (1980);
- the Convention Establishing the European Telecommunications Satellite Organization (EUTELSAT) (1985);
- the Convention for the Establishment of a European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) (1986);
- the Constitution and Convention of the International Telecommunication Union (1994);
- the International Space Station Intergovernmental Agreement (1998);
- the Cape Town Convention (signed, but not ratified) and Space Protocol (signed, but not yet in force since not ratified by enough countries); and
- the Artemis Accords (signed by Germany on 14 September 2023).

### Committee on the Peaceful Uses of Outer Space

Germany is a member of the Committee on the Peaceful Uses of Outer Space (COPUOS). Germany contributes expertise, shares best practic-

es, and collaborates to address key issues such as space debris mitigation and space observation and exploration.

### International Law and Private Liability

According to Article 25 of the German Constitution (*Grundgesetz*, GG), the general rules of international law shall be an integral part of federal law, shall take precedence over other laws and directly create rights and duties for the inhabitants of the federal territory. For certain international treaties, Article 59 paragraph 2 sentence 1 of the GG requires the participation of the Bundesrat and Bundestag in the form of a "treaty law" prior to ratification by Germany. International treaties have been ratified (or not ratified) as outlined above.

In the absence of a national space law, there is no particular legislation addressing the question of liability or the role of private stakeholders in general.

The UN Space Debris Mitigation Guidelines are applicable to Germany, but there is no implementation into national law and so the guidelines are not legally binding. In the absence of a liability regime, the German state will therefore be fully liable in accordance with Article VII of the Outer Space Treaty without clear path for reimbursement from the space operator.

### Due Regard

Germany has not adopted a national space law that would define and implement in detail – beyond general obligations from international law – the principle of due regard from international treaties such as the OST and the Liability Convention (1972), to which Germany is a party.

## 2.8 Insurance and State Measures on Liability for Damages

Besides the – to a certain extent – applicable LuftVG. and general applicable law, Germany has no specific space-related laws or legal instruments regarding prevention or indemnification of damage specifically caused by space activities. There are also no specific mandatory insurance requirements for space operators under German law.

However, if space objects are airborne and are therefore considered aircraft under the LuftVG, liability insurance to cover liability for damages due to the death, bodily harm or damage to the health of an individual not carried in the aircraft and the destruction or damage to an item not carried in the aircraft is mandatory according to Section 2 of the Air Traffic Act.

### Scope of Coverage and Liability Caps

While there is no specific law dedicated to insurance for space activities, space operators must adhere to general insurance principles outlined in relevant legislation and will in general require:

- first-party asset insurance, covering transfer to launch, launch, vehicle flight, (limited) in-orbit-time (depending on space asset) and commissioning; and
- third-party liability insurance, covering launch liability, in orbit and de-orbit liability, all as resulting from space activities.

Typical exclusions are the results from war, anti-object devices, wilful acts (including interference) and unlawful seizure or control. Third-party liability and loss of revenue are, in certain cases, also excluded, depending on the space asset and insurer in question.

The Space Liability Convention, to which Germany is a party, does not provide for a maximum liability limit. Further, Germany, in the absence of a general national law, does not provide for liability thresholds. As a result, provisions in contractual agreements are the main source of liability thresholds and caps between the parties to such agreements.

### Risks and Premiums

The insurance market for space activities is an international one led by only a few insurers (including reinsurers) and international insurance brokers. The insurance market is particular difficult for new space operators with as yet unproven technologies, leading to restrictions on the availability of insurance.

Risks are assessed based on technical factors and commercial/external factors, such as mission criteria, technical complexity, launch vehicle and technical history, redundancy, margins and single point failures, as well as on insured sum, loss criteria and the general market conditions.

It is a specific feature of the space insurance market that each insurer assesses the specific risks based on its own due diligence and data, which suggests inefficiencies in terms of the cost of a typical insurance policy involving a consortium of insurers.

## 3. Rules Applicable to Space Operators' Activities

### 3.1 General Rules on Space Activities

#### Limitations on Space Activities

The launch of a space object will require the permission of the local aviation authority, since the LuftVG requires the compulsory use of airfields for any "aircraft", a category which also includes space vehicles, and the establishment of an airfield requires a permit.

Apart from that, general law with its restrictions and requirements applies. There are not yet any laws specifically restricting activities in areas such as healthcare and life sciences, agri-food, mobility, the environment or energy. For instance, remote treatment (telemedicine) is not generally excluded, but the discussions around this topic have not yet focussed on space. These topics are seen as areas where the commercialisation of space technology has a huge potential. For example, when it comes to crop monitoring, precision farming techniques, and environmental monitoring, accuracy of navigation and autonomous vehicles, safety of maritime transport, environmental monitoring and pharmaceutical developments in space.

#### Data Processing

In Germany, the Act on Satellite Data Security (SatDSiG) was implemented on 1 December 2007. This legislation aims to ensure that earth observation data from high-quality German satellites does not compromise the national security of Germany or its allies. According to the SatDSiG, supplemented by the Satellite Data Security Ordinance (SatDSiV), if a space-based remote sensing system (usually a satellite equipped with remote sensing sensors) is classified as a high-quality system, both the satellite operator and the data supplier must each obtain approval from the German authorities. The Federal Office for Economic Affairs and Export Control (BAFA) serves as the competent authority for granting these approvals. The technical criteria determining which satellites are subject to the SatDSiG are outlined in the SatDSiV. Furthermore, the SatDSiG also governs data providers wishing to distribute earth observation data, requiring them to obtain a licence.

Presently, the SatDSiG's scope is relatively narrow, affecting only two German satellites, both operated by the DLR. Additionally, the regulation applies to two German data providers: the DLR's data centre for scientific data use, and Airbus DS Geo GmbH, which has commercial rights to the data.

### Cybersecurity

Neither the EU nor Germany have regulations on cybersecurity that specifically relate to space activities. However, there are several general cybersecurity rules that apply to companies active in the space sector and to some products used in space applications.

The NIS 2 Directive (Directive (EU) 2022/2555) aims to achieve a high level of cybersecurity across the EU. It does not apply directly but must be implemented into national law by the member states. The NIS 2 Directive assigns entities to different categories of importance; the more important or critical the entity, the more obligations must be met.

Another relevant cybersecurity regulation at EU level is the Cyber Resilience Act (CRA). It affects entities that bring products or software with a digital component to the EU market. The products must then undergo a conformity assessment. The higher the risk category of the product the higher are the requirements that must be met.

In Germany, cybersecurity is primarily regulated in the Act on the Federal Office for Information Security (BSIG). In addition, the Federal Office for Information Security (BSI) has published guidelines on cybersecurity to minimise the risk of non-compliance with IT regulations. Published BSI Standards include requirements and recommendations for securing company data and systems, as well as a guide for implementing high IT security and data protection standards. Information security is thus, in general, achieved through a combination of the BSI Standards for establishing an information security management system and the implementation of the IT basic protection modules from the *IT-Grundschutz Kompendium*. These basic protection modules form the basis for the international ISO 27001 certification. The standard outlines the requirements for assessing and treating information security risks; addressing controls related to the security of data; and ensuring the confidentiality, integrity, and availability of information. Organisations certified under ISO 27001 demonstrate their commitment to robust information security practices and regulatory compliance.

## 3.2 Principles of Non-interference and Prevention of Harmful Interference

Since Germany has no general space law yet, "non-interference" and "harmful interference" are dealt with on the basis of the OST, other applicable international law and on the basis of various sector-specific laws, in particular the TKG as discussed in **2.5 Role of the State in Co-ordinating the Use of Radio Frequencies and Orbital Slots**.

Germany provides for a space objects register as part of the general aircraft register (*Luftfahrzeugrolle der Bundesrepublik Deutschland – Band R: Raumfahrzeuge*), which is administrated by the German Aviation Authority (*Luftfahrtbundesamt*, LBA). Commercial space operators can, but are not obliged to, register their objects with the LBA or to disclose any information with respect to their space objects.

Further, Germany, as a member of both the EU and the ESA, is engaged in various EU and ESA measurers, including those pertaining to:

- the ESA Zero Debris Charter (zero debris initiative); and
- ESA Clearspace-1 (removal of space debris).

Space situational awareness (SSA) and space traffic management (STM) are currently the focus of German and European discussions. German space operators participate in SSA initiatives to monitor space objects, including sharing orbital data and informing on and issuing collision avoidance manoeuvres. Germany also coordinates with international partners in the realm of STM.

## 3.3 Operators' Responsibilities

Due to the lack of a specific German space law, space operators' duties and obligations are based on general laws and the principles foreseen in international treaties and multinational agreements if and to the extent applicable in Germany.

### ESG

Germany has no Space specific ESG guidelines (yet). The overall German ESG landscape, however, applies to space activities, introducing ESG guidelines and environmental obligations.

German environmental laws generally apply regarding the impact of any kind of activities on Earth. In particular the German Emission Control Act (*Bundesimmissionsschutzverordnung*, BImSchV) and other general legislation applies regarding launches, re-entry and in general regarding the environmental impact of the activities.

German entities are, to differing degrees and depending on their size and legal form, expected (but not legally bound) to follow guidelines under the general Corporate Governance Standards (*Deutscher Corporate Governance Kodex,* CGK). This includes in a wider sense also transparency and conduct.

German national industry initiatives aim to foster environmental goals, in particular the German Space Strategy commitments to sustainability and responsibility, various specific industry initiatives and (for instance) the (self-commitment) of the DLR regarding sustainable behaviour.

### Space Debris and Areas of Special Interest

There is no binding space-specific national regulation regarding environmental impact. However, besides the aforementioned principles, German entities are expected (but not bound) to follow best practice by adhering to ISO Standards (ISO 24113 – Space Debris Mitigation Systems).

There is no specific law regarding areas of special interest. Protection is provided by participation in international treaties and multinational agreements such as the OST and the Artemis Accords.

### Intellectual Property and Space

There are no specific intellectual property rules targeting Space as such in Germany. As a rule, the general German and EU IP protection laws apply also to all space activities; however, their application and enforcement regarding certain space-related question is difficult and not yet fully clarified.

Outer space, including celestial bodies such as the Moon and Mars, is considered a domain beyond national appropriation as per the OST. This means that no country can claim sovereignty over outer space or celestial bodies, leading to the question of the extrajudicial nature of IP rights in space.

Given the challenges of enforcing IP rights in space, many space-related projects use contractual agreements to manage IP. These agreements can specify ownership, usage rights, and dispute resolution mechanisms for IP created or used in space activities between the parties. They are not capable, however, of establishing objective rights. Nonetheless, organisations such as the ESA work within frameworks that respect the IP laws of participating countries. In practice, IP protection for space activities is typically managed through a combination of national/regional IP registrations, international treaties, and contractual agreements among collaborating entities.

## 4. Ownership of Extraterrestrial Resources

### 4.1 Nature of Space Resource Rights

In Germany, there are currently no national space-specific regulations dealing with property rights in outer space or with respect to extraterrestrial resources. Any obligations and rights in that regard are only discussed on the basis of the ratified international law, in particular the OST and the Artemis Accords.

Germany has, in the process of signing the Artemis Accords, confirmed that it will follow international law but has not further clarified its position beyond this.

### 4.2 Granting of Rights to Space Resources

There is no granting authority for resource rights in outer space in Germany and no national law concerning space resources.

## 5. Environmental Protection and Impact on Climate Change

### 5.1 Environmental Protection in Space

Germany has currently no space-specific framework for sustainability. The German Space Strategy, however, outlines commitments to responsible exploration and adherence to international guidelines, ensuring spacecraft design and operations consider environmental impacts.

Germany has not defined any protected zones in outer space, although it follows the international treaties and is a party to the Artemis Accords.

There are no government or legislative initiatives regarding critical space minerals. In recent years, however, the EU and Germany have shown interest in critical space minerals. In particular, the EU Space Strategy highlights the importance of securing access to critical raw materials.

At the national level, Germany has been actively involved in discussions regarding space mineral exploitation and has conducted research on potential lunar resource utilisation.

### 5.2 Climate Change and Space Activities

#### Climate Change and Space

The main current national initiative addressing climate change in relation to space activities is the German Space Strategy (2023). The German Space Strategy highlights the importance of space activities for the monitoring of the effects of climate change and the implementation of suitable counter measures.

Germany aims to be a leading location for the development and execution of innovative earth monitoring. In particular, the German Space Strategy describes the importance of space activities for questions of climate change as one

of the main fields of action for Germany, describing the monitoring and emission measurement in co-operation with the UN Environmental Program (UNEP) and the on-going support of the COPERNICUS programme as key projects.

### Sustainable Development Initiatives and Space

The German Space Strategy emphasises sustainable space exploration and the responsible use of space resources. Initiatives focus on reducing the environmental impact of space activities, promoting co-operation, and supporting research into related space technologies, in particular through earth monitoring.

Moreover, both the EU and Germany are actively involved in international collaborations addressing sustainability in space. Efforts include participation in UNEP and adherence to international guidelines for space debris mitigation and environmental protection.

## 6. Taxation of Space Activities

### 6.1 Tax System for Space Activities

There are no specific tax regulations for space activities. Therefore, the general rules apply.

The jurisdiction of German law does not extend outer space. It remains unclear at the margins, however, where outer space begins. In this respect, both the so-called *"Kármán line"* at a height of approximately 100-110 km as well as the flight altitude achievable with conventional aircraft could be used as a basis. However, there are no international agreements or conventions in place which would bind Germany on this point. Apparently, neither the courts nor the tax authorities have yet commented on this demarcation question.

Therefore, deliveries (for example of a satellite) or other services in space are generally not subject to German VAT, while sales in German airspace may be.

For income tax purposes, according to general rules, all income earned is subject to German (corporate) income taxation. For an Individual, this is the case if it has its place of residence or habitual residence in Germany. For a company, this is the case if it has its management or its registered office in Germany. Income that was not earned in Germany is also considered and includes income earned in outer space (for details see **6.3 Taxation on Sale or Transfer of Space Assets**).

Provided that a Double Taxation Agreement (DTA) modelled on the OECD Model Tax Convention applies, companies that have their management in a foreign treaty state are generally exempt from German (corporate) income taxation. This should also not be different to the extent any flight vehicles transit German airspace. The LuftVG qualifies spacecraft, rockets and similar missiles as aircrafts as long as they are in airspace. This also includes unmanned aerial vehicles, including their control stations, which are not operated for the purposes of sport or leisure activities. Therefore, all of these vehicles should also qualify as aircraft for the purpose of an applicable DTA.

### 6.2 Tax Incentives for Space Investors

There are no space-specific tax incentives for investors in Germany. However, taxpayers are entitled to claim the research allowance (*Forschungszulage*) pursuant to the Research Allowance Act (FZulG), to the extent that they are not exempt from taxation.

Eligibility requires the realisation of a favoured research and development project. R&D projects are eligible if they fall into one or more of the categories of basic research, industrial research or experimental development.

The amount of the research allowance is based on the eligible expenditure and equals (currently) 25–35% of the eligible expense. The eligible expenses for R&D projects carried out in-house include the gross wages for employees, insofar as they are employed in a subsidised R&D project, as well as eligible own expenses.

The research allowance applies to an assessment basis of up to EUR15 million. If an R&D project is carried out as contract research by a third party, up to 70% of the agreed remuneration may qualify as eligible expenditure.

### 6.3 Taxation on Sale or Transfer of Space Assets

The sale or transfer of space assets is generally subject to VAT at a rate of 19%. In principle, a company can deduct the VAT charged on inputs from the VAT payable on outputs. However, as mentioned in **6.1 Tax System for Space Activities**, the sale and transfer of assets may be outside the scope of German VAT if carried out in outer space.

All profits realised by a German company are also subject to German corporate income tax at the rate of 15.83% (corporate income tax of 15% plus 5.5% solidarity surcharge thereon). Additionally, trade tax may apply at a rate of approximately 9% to 20%, depending on which municipality levies the tax. Again, this is dependent on the sale and transfer being deemed to have been carried out outside of German airspace, a clear definition of which does not exist yet.

## 7. Investment and Financing in Space Activities

### 7.1 Impact of "NewSpace"

#### NewSpace

In the past few years, the German NewSpace sector has developed a diverse landscape that extends beyond the production of launchers and satellites.

According to a study conducted in 2020, the 92 dedicated NewSpace companies then in existence had more than 2,900 employees between them and, as early as 2018, estimated aggregate revenue of EUR873 million. The number of start-ups in the space sector (or adjacent deep tech sectors with ties to space) has significantly risen since then and is currently estimated to be above 1,000. Most of them are clustered around the renowned German technical universities.

There are several initiatives underway in Germany aiming to connect the activities of established companies, medium-sized providers, start-ups and State institutions together. Start-up hubs set up at universities and the various existing programmes and activities of the DLR, ESA and other agencies support the rapid growth of the German start-up scene.

Established German space economy players continue to have their internationally recognised technological focus primarily on the development and manufacture of systems and components as well as the provision of satellite services. However, companies that develop new technologies and offer logistics services, including micro-launchers for small satellites, an entirely new generation of satellites and related components, as well as a variety of new solutions for collecting and transmitting data in

and from space and analysing such data, are increasingly coming to the fore.

### VC and Fundraising

Since 2018, German space tech business start-ups have witnessed a notable spike in equity investments through venture capital, angel, and corporate investors. According to the study referenced above, the cumulative VC investment amount for the top deals in 2020 totalled EUR308 million. Financial backers active in the German NewSpace sector include top-tier funds and smaller VCs, corporate venture capitalists, and angel investors.

VC and family office backing is the most important third-party liquidity source for German space start-ups. Due to the technological quality of German technical universities and the technological level of start-ups around these universities, there is a steady and – against the overall trend – good level of interest from VC funds in German space start-ups. Financing rounds for German space startups made up two of the three highest valuations in EU in 2023.

(Alleged) challenges often criticised by VC investors regarding the German VC landscape and possibly hindering a better "ranking" for VC interest in Europe include the lack of dedicated national space legislation (leading to uncertainties), the relative complexity of general compliance and the lack of clear goals of the German Space Strategy.

## 7.2 Finance Sources for Space Activities

Space activities in Germany are publicly as well as privately funded.

The German State supports the space industry through several initiatives, for instance, the NPWI. Funding through the NPWI is available for companies, universities, and non-university research institutions. In addition, the state supports space enterprises via the DLR Project Management Agency. In 2023, the DLR Project Management Agency administrated a funding volume of around EUR2 billion, for more than 14,500 funding projects.

Space businesses in Germany are also privately funded. The total sum of equity investments in German NewSpace companies from 2019 to 2021 amounted to EUR881 million. Most of the private investments comes from VC funding (including angel investments) and from family offices. Private investors in Germany are mostly overall tech investors or specialised air, space and defence investors, with a rising tendency of sector-agnostic investors participating.

An alternative way of financing, often discussed, could be the use of crypto-assets. Usage cases could be:

- as security (instead of usual shares) – this creates the possibility of crowdfunding for seed stages, allowing worldwide participation and tapping into a new and wider source of investors;
- for digitised assets such as tangible fixed assets/products, IP or parts of any such assets or future outcomes; and
- for digital assets as such (stable coins, asset backed tokens, cryptocurrency) – this could tap into the interest of enthusiastic supporters as well as into professional or institutional investors.

## 7.3 Attracting Investment for Space Activities

Technological quality, industry experience, a strong and well-educated workforce as well as political stability and a perceived attractive

German and EU market are assets that attract investment in space activities in Germany.

The investment in space activities is seen as part of the deep tech investment landscape, with a view to being part of advanced technological enterprises with potentially multiple profit effects. Macro effects such as the current discussion around security autonomy, the obvious importance of space data for climate change, and the apparent race to return to the Moon provide additional confidence that the space sector will develop sustainably and that interest is not just hype.

### 7.4 Foreign Investment in Space Activities

In Germany, foreign investments in domestic companies are regulated by the state under the Foreign Trade and Payments Act (AWG) and the Foreign Trade and Payments Regulation (AWV). The Federal Ministry for Economic Affairs and Climate Action (BMWK) is empowered to scrutinise acquisitions and investments by foreign entities. There are two primary methods of screening: cross-sectoral and sector-specific.

Cross-sectoral screening applies to acquisitions and investments in German companies by non-EU investors, regardless of the industry sectors involved. This screening has thresholds set at 10% and 20% for particularly security-sensitive areas and 25% for other areas in terms of controlled voting rights. Although not all foreign investments undergo automatic scrutiny, there is a mandatory reporting requirement for areas such as satellite operations and companies engaged in aerospace goods or technologies. A specific approval by the BMWK is required in these cases.

Sector-specific screening targets companies involved in military technology manufacturing, sales, or usage. It also includes investments from EU member states exceeding a 10% voting rights threshold. Transactions may be restricted or prohibited if they threaten Germany's essential security interests. For instance, in December 2020, the BMWK blocked the acquisition of German firm IMST GmbH by the China Aerospace Science and Industry Corporation. The BMWK cited concerns over losing technological sovereignty, noting IMST's 25-year involvement in commercial radio technology as a factor in its decision.

### 7.5 Role of Securities Markets in Space Financing

Most small and medium-sized companies in the NewSpace sector are not listed on the stock exchanges in Germany.

The forgoing is also true for debt security market instruments such as bonds. This appears to be an omission since the ability to provide for a listed investment may open the door for investors that are obliged to invest in listed securities.

In addition, further pursuit of, for instance, the Cape Town Protocol on Space Assets or similar initiatives with the aim of allowing a standard of collateral for space assets to establish itself or the development of the tokenisation market for space assets (see **7.2 Finance Sources for Space Activities**) could add a further way of structuring third-party financing.

# Trends and Developments

**Contributed by:**
Andreas Lenz and Thomas Jansen
**HEUKING**

**HEUKING** is an independent, German, full-service law firm with more than 400 professionals and consistently ranks in top tiers of its fields of expertise. Operating in an international context, HEUKING co-operates with leading international advisors. Clients of HEUKING are national and international technology champions, investment stakeholders, institutions and government bodies. With over two decades of experience in advising space stakeholders, HEUKING has renowned expertise in technology-driven projects and plays a prominent role as an advisor for investments and start-ups. HEUKING has consolidated its space related experience and expertise into one integrated focus-group "NewSpace & SpaceTech", providing advice to space stakeholders in the areas including technology, data and space-enabled services; venture capital, M&A, financing and crypto-assets; satellites and telecommunications /ITU; public sector and procurement; FDI, merger control and regulators; compliance and policy developments; EU and international programmes, public funding; and risk management, liability and insurance.

## Authors

**Andreas Lenz** is a partner based in HEUKING's Cologne office and a member of the firm's Corporate/M&A practice group. Andreas has 25 years of experience as a M&A and transaction lawyer, mostly in the area of private equity and investment. He advises German and international clients in transaction and investment-related matters, with a strong focus on providing strategic guidance. Andreas co-chairs the focus group "NewSpace & SpaceTech" and has been involved in legislative and policy-related developments in the space sector for many years. Andreas is a frequent speaker and author on space-related topics.

**Thomas Jansen** is a partner based in HEUKING's Munich office and a member of the firm's IP, Media and Technology practice group. Thomas has over 25 years of experience as a technology transactions lawyer. He advises German and international corporate clients across diverse industries on all kinds of technology-related matters, with a focus on providing strategic guidance in the creation, acquisition, use and commercial exploitation of technology. He also counsels clients on the intellectual property aspects of mergers, acquisitions and financings. Thomas co-chairs the focus group "NewSpace & SpaceTech" and has been advising clients on space-related issues for many years. Thomas is a frequent speaker and author on technology-related topics.

**Contributed by:** Andreas Lenz and Thomas Jansen, **HEUKING**

HEUKING

Magnusstraße 13
50672 Cologne
Germany

Tel: +49 221 2052 325
Fax: +49 221 2052 1
Email: a.lenz@heuking.de
Web: www.heuking.de

## Introduction

What can be expected in terms of future trends from a field often in itself seen as mere science fiction? The view that the space sector represents science but without the fiction is reinforced by the involvement in the search for future space developments by serious, leading EU politicians such as Thierry Breton and Ursula von der Leyen, as well as by the involvement of organisations such as the European Space Agency (ESA) and other renowned institutions. With many governments developing strategies and publishing roadmaps to open space for the EU and Europe or just for their respective state, this article outlines the anticipated near-future trends in the space sector.

## Continuation of Macro Factors

The most notable development in the space sector in the past decade has been the arrival of private stakeholders and the emergence of the "NewSpace" economy. This economy is, as of yet, significantly driven by so-called "downstream" technologies, consisting of data obtained in space and to be analysed and utilised for matters on earth. Space-data utilisation, as well as businesses enabled by this, is to be expected to grow further with the number of space objects obtaining data and with increasing capabilities to actually analyse and utilise this data for business in the wider field of digitalisation.

The primary reasons for states and institutions to continue investing substantial funds into the space sector and of the private sector to see more and more of a future market in space are not just the advancements in technology but also the following macro factors.

- Strategic security needs – the growing necessity for space-enabled capabilities for observation and action, especially during times of increasing global tensions.
- Environmental monitoring – the crucial role of space technology in tracking environmental changes and climate change impacts.
- Digitalisation and data services – the reliance on space technology for implementing digital and data-based services and business applications.
- Competitive space race – the international competition to secure advantageous positions in space and on the Moon.

These macro factors foster ongoing finance from states and institutions and as a result, new ideas and business models, attracting increasing interest from private stakeholders, despite the sector's current lack of economic self-sustaina-

bility in many areas. Consequently, profit-driven investors can expect at least some sustainable government and institutional demand.

Additional reasons to focus on space include technological advancements and economic opportunities, particularly in the fields of agritech, foodtech, health, tourism, material science, energy, and data processing. Many programmes, on both a national and international level (for instance ESA BSGN and EU Cassini) pursue the development of initiatives in these areas for a variety of reasons. While none of these areas is yet a stand-alone prime driver, each contributes to funding and interest as space-enabled technologies and by providing for market demand in many other space-related areas. This situation may evolve as space infrastructure expands beyond current levels and in-space production and re-entry technologies become more accessible. These areas, furthered extensively by various ESA and EU programmes are worth watching, given the ongoing successful initiatives at both national (German) and international level.

### Technology Trends

Data and satellites will become even more central to the development and interests of both the public sector and private stakeholders. All of the previously defined macro factors rely heavily on these technologies. The sheer number of planned space objects in low earth orbit (LEO) connected with these macro trends is astonishing and will accelerate the following technology trends.

- Satellite, sensor, and communication technology – increased focus on the development and production of these technologies.
- Launching technology – particularly for LEO, but also for medium earth orbit (MEO), geostationary orbit (GEO), and beyond.
- Re-entry and re-usage technology – essential for sustainability and space debris management.
- Ground station infrastructure – critical for communication and sensor data to make use of the many space objects.
- Resilience technology – ensuring the durability and reliability of space systems.
- Space services and infrastructure – including water, fuel, repair, and staff transport.
- Space debris avoidance and space situational awareness (SSA)/space traffic management (STM) technology – a major focus for politics, legislation, and financing.

It is clear why the steady development of satellite, sensor, and communication technologies will remain a focus in light of these macro factors.

The numerous planned space objects will require many more launching systems and launches than are currently available. It can be expected that the number of capable launching systems (in particular for LEO) will increase significantly until the end of 2027. More than ten individual launching companies in Europe alone will take their first test flights in 2024, in addition to Ariane 6 and Vega becoming “functional”. In the US, several heavy-lift vehicles have recently completed successful tests, with many more test launches from small launching companies expected by the end of 2025. India, Japan, and China, to just name a few, are also continuously testing, with over 30 individual launch companies. Overall, the number of LEO-capable launching systems is expected to increase significantly, with over 300 LEO launches per year anticipated by 2027. This would more than triple

the world's current satellite deployment capabilities, considering the capabilities of the heavy lifters in the United States and Ariane 6 in other parts of the world.

This progress depends on the simultaneous acceleration of the development of ground stations, launching ports, communications facilities, and sensor technology. Both Germany and the EU/ESA have intensified their facilitation efforts significantly in recent months, as private financing interest has increased. Development and financing are therefore expected to grow in relation to the launcher technology.

Given that space debris avoidance and sustainability are already important items on the agenda of most spacefaring nations and institutions, the importance of reliable re-entry and re-usage technology will naturally increase. The latter is, again, a focus area at least in Europe, as a recent speech by, for instance, Thierry Breton indicates. In addition, due to a combination of sustainability and safety targets and the increase of space objects, it is likely that technology in the areas of space services and space infrastructure will make a meaningful entry into the market. The aim will be to provide – for instance – refuelling, repair and similar services, extending the lifetime of space objects.

Further but already visible areas of technological development are moon landing technology and (although their actual application in space is still a little further into the future) in-situ resource utilisation technologies. The application of space technologies in agritech, foodtech, health and life sciences, energy production, as well as large-scale pharmaceutical, seed, or smart material production in space seems increasingly close. Experiments in space and on the International Space Station (ISS) have been ongoing for years, and a small economy around micro-labs and transfers to the ISS already exists within an economic niche environment.

### Consolidation

The availability of technologies such as satellites and launch systems, which are currently in short supply, is expected to increase significantly in the coming years, particularly from 2027 onwards, due to the growing number of companies involved in development and production.

Disruptive effects are already evident in the market for MEO and GEO satellites, which face significant competition from LEO satellites and new data communication capabilities.

It is also anticipated that not all of the companies currently developing and testing launch systems will survive the efficiency-driven pricing pressures. Furthermore, some will face significant competition from companies supported by government security, defence, and dual-use contracts. Therefore, consolidation of the market is likely, possibly even before demand matches the capabilities in satellites, communication, and launch systems.

### Space Debris and Space Safety

As previously discussed, space debris is a major focus in space politics, legislation, and funding, both private and public. The demand for launching satellites and other space objects is expected to surge, potentially more than doubling the number of functional satellites in the next three to five years. This increase will exponentially raise the risk of new space debris, adding to the approximately 30,000 existing objects of significant size. Consequently, the importance of preventing new debris and managing existing debris has been recognised at the German and EU/ESA levels.

Two main strategies are expected to address this issue: one for managing the debris that already exists and one to limit the quantity of future debris.

*Managing existing space debris*

The focus will be on monitoring, STM, and SSA technologies. The challenges are not only technological but also political and legislative. Both the EU and ESA have acknowledged the need for a co-ordinated approach, involving the facilitation and procurement of necessary technology and data sharing ("Space Data Space"). As part of the upcoming European Space Law (EUSL), expected by 2025, adequate legislation will be developed and implemented over the next three years. Harmonisation and enforcement of these laws as well as finding the right balance with the aim of not overburdening the developing space economy will be the most challenging aspects.

*Preventing future space debris*

The focus will also be on technology and legislation. Re-entry and safety-by-design technologies will be accelerated. For example, designing space objects to allow for in-orbit refuelling or repair, with the first service providers hopefully becoming functional by 2027. The challenges here also lie in politics and legislation. Establishing standards for permits for space activities, allocating orbits and frequencies, and setting requirements for financing and insurance will be critical. Harmonising these laws and ensuring their enforcement will be complex.

Legislative approaches will aim to bind not only EU and ESA member state stakeholders but also any company offering services within or to stakeholders in the EU and ESA Europe.

## Resilience and Sustainability

In addition to space safety (ie, anti-debris measures), resilience and sustainability remain core pillars of the EUSL and are expected to be addressed when the law is passed in 2025.

Resilience requirements in both digital and non-digital sectors are influenced by the NIS-2 and CER directives, which are yet to be implemented into German law and from similar legislation specifically aimed at space. It would be surprising if the expected EUSL draft does not use similar mechanisms as a basis for resilience goals in the space sector.

Furthermore, sustainability in space aligns with the broader European Green Deal. Companies in the space industry are already subject to general EU sustainability regulations. However, the data on the environmental impact of space activities on Earth is still insufficiently researched in some areas, making it difficult to implement specific measures by binding regulation.

One of the most challenging questions surrounding resilience and sustainability is how these can be achieved within the EU's existing powers in the space realm. The approach will likely differ for resilience on the one hand and sustainability on the other. Without delving into the details of Article 198 of the Treaty on the Functioning of the European Union (TFEU), harmonisation regarding resilience seems necessary and unavoidable. However, harmonisation is specifically excluded by Article 189, paragraph 2 of the TFEU, and Article 4, paragraph 3 of the TFEU. Nevertheless, EU competencies, including for space, may arise, as it is argued by some, from Article 114 (in conjunction with Article 26) of the TFEU, which obliges the establishment and maintenance of the EU's internal market.

Conversely, the – as of yet – current lack of comprehensive data on the effects of space activities both on Earth and in space challenges the necessity and suitability of detailed, binding regulations for various sub-areas (eg, standards for the entire value chain, effects of re-entry on the atmosphere or maritime regions, standards for rocket engines and manufacturing materials). Therefore, it is expected that the approach to sustainability legislation will be more flexible, possibly staggered and build on soft law (eg, EU labelling for best practices). We expect that for the next three years, soft law will likely form at least a part of any legislative initiatives around sustainability issues as they relate to space.

### EU Space Law and Europe's Changing Approach

Significant new legislation, some of it groundbreaking, is expected to be introduced in the near future.

In Germany, a first German Space Law is awaited, and allegedly being worked on, without (as of June 2024) a timing being given.

At the EU level, the publication of and subsequent vote on the long-awaited draft EUSL is expected in 2025. The major challenges will involve harmonising safety and resilience issues and ensuring adequate economic protection measures for private space stakeholders, particularly SMEs. While it appears to be very likely that resilience measures (comparable to the NIS-2 and CER directives) will be proposed to be implemented as binding directives, the issues surrounding safety and the necessary measures are more complex. Safety requirements should also be binding; however, these necessitate a comprehensive plan that includes STM and SSA measures, which will only be fully effective if accepted internationally. Therefore, certain safety principles will be codified in binding law, while it may be the case that other aspects may be governed by guidance and soft law for a certain period. The sustainability provisions of the EUSL may primarily be regulated by soft law in the near term. Additionally, it is expected and even promised that adequate economic protection measures will be implemented to safeguard the space economy, particularly for SMEs.

From an international perspective, the EUSL will likely protect the EU space sector and apply to all enterprises providing services within the EU, not just EU stakeholders.

Countries with existing national space laws will need to reassess and possibly amend their legislation in light of the EUSL. Countries that, like Germany, do not have a national space law by mid-2025, should aim to develop a plan for national legislation before the EUSL discussions begin, to be a meaningful part of the discussion.

In summary, beyond the general questions of necessity and proportionality, any European-level legislation will be evaluated by stakeholders based on the following criteria.

- Avoidance of additional costs and bureaucratic burdens, focusing on balanced policies that protect a developing economy and foster innovative technology rather than inflexible micro-management.
- Support, incentivisation, and alternative policy forms to allow room for flexible technological development.
- Serious economic cushioning of additional burdens arising indirectly along the entire value chain at all affected levels.
- Gradual implementation of binding regulations, allowing time for necessary clarification

of facts in some areas and for technological progress.
- Size thresholds for those affected, to protect regulation-sensitive SMEs, start-ups, and scale-ups.
- Extension to services from third countries to compensate for any competitive disadvantages within the EU.

### Overall Politics/ESA Geo-Return

At the national level, Germany is expected to introduce its first national space law, aligning with the space laws of other countries within the next few years. This law will likely address:

- registration and conditions for space activities;
- liability, recourse, and limitation of liability for damages and insurance requirements;
- safety aspects;
- data, cybersecurity, and resilience aspects;
- environmental protection and sustainability requirements;
- ownership and registration of space objects;
- IP protection for inventions or know-how acquired in space;
- foreign investments, export control, and sanctions regulations;
- ownership and utilisation rights to materials and space bodies, including related extraction and transfer rights;
- law enforcement; and
- alignment with general German and EU laws.

Due to the major factors outlined above, the draft EUSL and any other international treaty or binding space law will be of strategic significance, not only for industrial policy but also for security autonomy. All affected countries will consider the EUSL from the perspective of maintaining their own national capabilities.

While maintaining national capabilities is understandable and necessary, it may conflict with the need to join forces at least on an EU level, leading to targeted allocation of funds to specific projects and providers. This has already sparked a new (and this time possibly serious) discussion on the "ESA Geo-Return" principle. Some view this Geo-Return as a restriction on space ambitions and of efficiency, while others see it as a guarantee that the existing provider situation will not be cemented at the expense of SMEs and new players. Whatever the outcome, the Geo-Return principle will face serious scrutiny from 2025 onwards, possibly requiring the EU and ESA to negotiate a new deal on project and fund allocation among member countries, and hereby modifying the current application of Geo-Return.

### The Economic Environment and Other Factors

An increase in available funds, grants, and subsidies at both the national and European levels (Germany, ESA and EU) is forecast. This expectation is based on the continuing macro factors and trends outlined above. Public funding will increasingly be used to sponsor private investors, alongside purely private investors, outside the scope of European or national investment banks.

A significant concern for both SMEs and investors is insurance. The market has experienced several challenging years, with major players exiting the business and rising prices. Given the technical complexity and innovative nature of many assets requiring insurance, reluctance to provide comprehensive coverage for very new technologies is understandable. However, innovation and investment are hindered if insurance is unavailable. This issue is currently being discussed among stakeholders in the wider

insurance industry and at the ESA/EU level. A consultation regarding the need for insurance as a pre-condition for space activities has already taken place in the UK.

Several ideas are being considered, including the following.

- A centralised historical database or due diligence system to avoid overlap and additional costs in syndicated insurance arrangements. However, significant changes are not expected, even if insurers or brokers prove to be open to this idea.
- Implementation of a sidecar structure funded by ESA, EU, or national institutions. This would allow insurance providers to offload part of the risk without transferring equivalent insurance fees.

The latter proposal would not only affect insurance costs. While insurance costs may not hinder insurable projects, institutional players financing a project could facilitate its execution by assuming a significant share of the insurance risk, like assuming financing risk. This could also be tied to a "best practice" commitment from space stakeholders, ensuring that only projects adhering to these practices would be eligible to use this sidecar arrangement.

Regardless of the solution, there is a need for outside measures to maintain sufficient "appetite" for complex new technologies in the insurance market.

## Summary

In summary, the following major trends are expected to continue at least until 2027:

- downstream services as biggest area of private investment;
- continuation of major factors, particularly security and strategic space capabilities;
- stronger connection and importance of dual-use projects and technology;
- significant development in technology related to satellites, data, and launchers (and all supporting technology);
- focus on safety and resilience in line with EU and national institutional goals;
- introduction of EU Space Law and German Space Law;
- greater alignment of EU politics, ESA strategy, and national strategies, with a particular discussion of the current ESA Geo-Return mechanism; and
- review and enhancement of the current insurance structure with additional mechanisms.

## CHAMBERS GLOBAL PRACTICE GUIDES

Chambers Global Practice Guides bring you up-to-date, expert legal commentary on the main practice areas from around the globe. Focusing on the practical legal issues affecting businesses, the guides enable readers to compare legislation and procedure and read trend forecasts from legal experts from across key jurisdictions.

To find out more information about how we select contributors, email Katie.Burrington@chambers.com