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Space Law 2024

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Portugal: Law & Practice and Trends & Developments

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PORTUGAL

Law and Practice

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Vieira de Almeida & Associados is an international corporate law firm with more than 350 lawyers, and the first Portuguese law firm with a dedicated space sector practice. It also has presence in Angola, Cabo Verde, Equatorial Guinea, Guinea-Bissau, Mozambique, Sao Tome and Principe and Timor-Leste. VdA has been involved in some of the most relevant space projects in Portugal and has advised in the development of national space policies, in the drafting of guidelines for space laws and the set up of space governance structures, and in international space projects with the EU and ESA. VdA also advises space companies, including on space compliance matters, such as space licensing and registration. The firm publishes a quarterly Space Brief with analysis of the most recent topics with impact in the space sector. VdA is a member of the International Astronautical Federation (IAF) and of the International Institute of Space Law (IISL).

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1. Global Trends

1.1 The "NewSpace" and Space Tech Economy

The United Nations Space Treaties are the main international legal instruments applicable to space activities. They cover the Outer Space Treaty, the Rescue and Return Agreement, the Liability Convention, the Registration Convention and the Moon Agreement.

In addition to international treaties, international space law has a number of sources which include what is known as "soft law", consisting notably of UN resolutions pertaining to the exploration and use of outer space, as well as other resolutions and codes of conduct and guidelines. These instruments, though non-legally binding, have quasi-legal effects. In space law, soft law is very important, as nowadays treaty-making has lost ground towards creating soft law instruments.

In addition to the above, the ITU Constitution, Convention and Radio Regulations address topics relating to spectrum and orbital slots, which are matters relevant for the space sector.

The EU space legal framework is also worth mentioning – notably the EU Space Programme Regulation (Regulation (EU) 2021/696), the Union Secure Connectivity Programme Regulation (Regulation (EU) 2023/588) and the envisaged EU Space Law (EUSL) on safety, resilience and sustainability of space activities.

The principles and rules of international space law have been reflected in national law by the national Space Act in 2019 (Decree-Law 16/2019), recently amended in 2024. The Space Act aims, among other purposes, to respond to the provisions of the Outer Space Treaty under which activities of non-governmental entities in outer space shall require authorisation and continuing supervision by the appropriate State Party to the Treaty, and that State Parties are internationally liable for damages caused by a space object (a point further developed in the Liability Convention). Though international space law is not fully fit for the current new space sector marked by the privatisation and commercialisation of space activities, the national framework already contains provisions aimed to facilitate recent trends in space, including small satellites, constellations of satellites and operation of space ports. Yet, no national rules exist for other topics yet, such as suborbital flights, space mining or space tourism. For more details on the national space legal framework, see 2.4 Role of the State in the Licensing Process for Space Activities, 2.6 Role of the State in the Launching Process and 2.8 Insurance and State Measures on Liability for Damages.

The topics of spectrum are reflected in national law in the Electronic Communications Law (Law 16/2022) and the framework on radioelectric licensing (Decree-Law 151-A/2000). In addition, the national frequency allocation plan contains information relating to spectrum allocation. For more details, see 2.5 Role of the State in Coordinating the Use of Radio Frequencies and Orbital Slots.

Finally, the envisaged EUSL is expected to impact the national legal framework. However, at the time of writing, a draft has not been made available yet. As such, the potential impact of the EUSL on the national legal framework, especially with regards to potential amendments to the national Space Act, is yet to be determined.

In addition to the legal framework specifically dedicated to space activities, the space sec-

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tor is naturally also subject to a set of other relevant provisions, including on cybersecurity, sustainability, data access and sharing, personal data, cloud and platforms, contracts, consumer protection, intellectual property, artificial intelligence, imports and exports, among others. All these topics are increasingly relevant in the new space economy characterised by high technological development and downstream valueadded services and products.

2. Existing Legal and Regulatory Framework

2.1 Characteristics of the Space Industry

The Portuguese space industry is composed mostly by small and medium-sized companies particularly geared towards aerospace engineering (systems, materials, among others). This make-up is rooted also in the sector's historical genesis as an R&D sector, fostered mostly by Portugal's membership of the European Space Agency (ESA).

Nowadays, with the surge of New Space, the Portuguese space industry (or ecosystem) has seen a significant growth, taking on board not only the development of new services and products using space data, services and/or systems, but also upstream activities.

The country's investment in the sector has heavily contributed to these developments, notably through:

• the creation of a national legal framework for space activities since 2019, with the set-up of a Space Authority (currently, ANACOM, the communications regulator) tasked with licensing and supervising space activities, and the set-up of a Space Agency (Portugal Space) tasked with fostering the development of the Portuguese space sector;

- the expansion of the country's role within ESA's projects (eg, the implementation of satellite tracking stations in the country);
- the country's betting on the development of its own space assets (among others, the development, production and launch by a private consortium helmed by Portuguese companies of Earth observation (EO) satellite constellations under the European Union's (EU) funded Recovery and Resilience Plan for Portugal, including notably the Atlantic Constellation, and the EO data platform Digital Planet; and
- the acquisition, by GeoSat, in 2021, of two EO satellites, as a result of which GeoSat has become one of the biggest EO satellite operators in Europe and the first Portuguese company to own EO satellites.

The development of launch centres and services in Portugal is further expected as a result of the recent 2024 amendment to the national Space Act establishing a framework for the licensing of space ports. This advancement follows a first tender process for the construction and operation of a space port in the Azores initiated in 2020 that was unsuccessful.

It is further expected that developments at the EU's level (or fostered through the EU's policies and programmes), in connection with its overall strategy for space and the space sector, will also contribute to the overall expansion of Portugal's space industry.

A more detailed view of the country's space industry (and overall ecosystem) is available in the country's space catalogue, published by the Portuguese Space Agency (available <u>here</u>).

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2.2 Legal System and Sources of Space Law and Regulation

The Portuguese space legal system, which is based on civil law, comprises three main legal frameworks.

- The national Space Act, Decree-Law 16/2019, as amended by Decree-Law 20/2024 and rectified by Rectification Declaration 19/2024/1.
- The Space Regulation, Regulation 697/2019.
- The Insurance Order, Order 279/2023.

The Space Act contains the provisions for the launching and return, and the command and control, of space objects. Recent amendments integrated in the law the licensing of the operation of launch centres.

The Space Regulation contains the detailed provisions for obtaining a licence and pre-qualification for space operations. Amendments to the Space Regulation are required to align it with the recent amendments to the Space Act. At the time of writing, amendments have not been done yet.

The Insurance Order establishes the conditions for the civil liability insurance and the limits for the right of redress of the state in case of damages causes by a space operation pursued by a licensee.

The Autonomous Region of the Azores also approved a space legal framework:

- Regional Legislative Decree 9/2019/A as amended by Regional Legislative Decree 24/2021/A – Azores Regional Space Act; and
- Regional Implementing Decree 6/2020/A Azores Space Regulation.

However, this regional framework seems to no longer apply in light of Decree-Law 20/2024 (which amended the Space Act). Indeed, this Decree-Law repealed Article 27 of the Space Act - which established, among other aspects, that the licensing procedures for space activities related to activities developed in the Autonomous Regions of the Azores and Madeira would be defined by regional legislative decree. In addition, the Decree-Law indicates, in its preamble, that "the license for launch and/or return and of command and control, this is, for accessing and using outer space, have a national scope, thus allowing its holder to perform the licensed activities from any place of the national territory, and waiving other legal titles for the same purpose".

2.3 Role of the State in Space Law and Regulations

The Portuguese state acts as a facilitator, participant and regulator of space activities through the following main entities.

· Portugal Space, the Portuguese space agency, was set up in March 2019 under Resolution of the Council of Ministers 55/2019. It is a private, non-profit association comprising only members from the public sector. The first members were the Foundation for Science and Technology; the National Agency for Innovation; the General-Directorate for National Defence Resources, designated by the Ministry of Defence; and the regional government of the Azores, designated by the Autonomous Region of the Azores. In December 2019, the Autonomous Region of Madeira joined as an observer. Portugal Space may integrate other public entities whose activity relates to its purposes. Portugal Space is responsible for executing the Portuguese Space Policy (Portugal Space 2030) and for

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developing the national space sector. The space agency also serves as an ESA hub.

As a result of the recent 2024 amendments to the Space Act, the space agency now has a relevant intervention in the process for issuing space licences: with relation to space operations (launch and/or return, and command and control), the space agency shall issue a prior opinion relating to their licensing, and shall further, in certain circumstances, be notified of the performance of licensed space operations. With relation to launch centres, the space agency is responsible for directing the process of prior approval, by the government, of licences for the operation of launch centres, and for issuing its opinion in this scope.

- ANACOM (the communications regulator) is, temporarily, under the national Space Act, the entity competent for issuing licences and supervising space activities.
- The General-Directorate for National Defence Resources is the body responsible for managing the national SST programme and is the designated national entity in the EU SST. In this respect, a Space Surveillance and Tracking Project Group (GPSST) was set up as a temporary body for implementing national SST capabilities by Resolution of the Council of Ministers 116/2017, which addressed the participation of Portugal in the EU SST. The GPSST was originally set up for one year, but the Resolution of the Council of Ministers 113/2018 of 31 August extended its mandate until 31 December 2018. Since this date, and in accordance with this Resolution, the General-Directorate for National Defence Resources has been responsible for managing the national SST programme and will continue to do so until a new governance model is defined.

At ministerial level, and without prejudice to defence and SST matters, the competent Secretary of State for space is the Secretary of State for Science, which is, at the time of writing, within the Ministry of Education, Science and Innovation.

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

Space operations are subject to authorisation and may further benefit from pre-qualification. They are also subject to supervision. Registration of space objects shall further be done.

Authorisation

Space operations performed in national territory, as well as space operations performed abroad by Portuguese operators or established in Portugal, are subject to licence issued by the Space Authority.

Space operations are the following.

- Launch and/or return operations the activity whereby space objects are intended to be sent or launched into space (below, to or beyond orbit), and the return of space objects in orbit to the Earth's surface. The launch and/or return operator performs launch and/ or return operations.
- Command and control operations the activity consisting of exercising control over a space object in outer space, whether temporarily or in transit. Where the space object cannot be controlled or guided, the command and control operation will be deemed to be the hiring of the launch or the exploitation of the space object, as notified to the Space Authority. The command and control operator performs command and/or control operations of space objects.

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There are three types of licences:

- individual licence, applicable to a single space operation;
- blanket licence, applicable to a series of space operations of the same type or to a series of space operations of different type, performed by the same operator; and
- joint licence, applicable to space operations of the same or different type, performed by more than one operator, situation in which the licence is granted to only one of the operators involved in the operations at stake.

The joint licence can further be "integrated" (where the licence covers one launch and/ or return operation of the launcher and one or more launches of space objects in that launcher, and can further cover the command and control of such objects) and "multiple" (where the licence covers a series of launch and/or return operations of the launcher(s) and one or more launches of space objects in that launcher, and can further cover the command and control of such objects).

The variety of types of licences aims to grant flexibility to space operators, allowing them to choose how best to license their space operations.

Licences are subject to the procedure defined by the Space Authority in the Space Regulation and the decision to grant a licence or not shall be issued within 90 days.

A special licensing framework, which may consist in shorter deadlines or streamlined procedures, may be established by the Space Authority, notably when:

- the applicant is a public entity or an international organisation acting under international agreements concluded with the Portuguese Republic;
- the intended space operation is performed exclusively for scientific, research and development, educational or training purposes, or consists in experimental activities with demonstrable low risk for the Earth's surface, airspace and outer space, including for public health and safety of people and assets; and
- the space operation is performed outside national territory by Portuguese operators or established in Portugal.

In practice, the Space Regulation did not establish a special procedure, simply indicating that the applicant may request to the Space Authority the application of a simplified procedure and the Authority will decide within ten days, notifying the applicant of the reduced timelines or simplified procedures that will apply.

The Space Act also addresses circumstances whereby a licence for space operations has been obtained in another country. First, and in general, the special licensing procedure referred to above can be established for cases where the applicant secured authorisation for the performance of the space activity from another state whose legal framework ensures compliance with applicable international obligations. Second, space operations performed abroad may be exempted from mandatory licensing if the operator is able to demonstrate to the Space Authority's satisfaction that it secured the proper authorisations and that it abides by the law of a state with which Portugal has an agreement in place to ensure compliance with its international obligations.

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Pre-qualification

The Space Act created a specific approach under which space operators may apply to pre-qualification issued by the Space Authority, aimed at attesting:

- that the launch and/or return operator and the command and control operator have the technical, economic and financial capacity for the space activities they intend to perform;
- regarding the launch and/or return operator and the command and control operator, the features and specifications of the respective space object; and
- regarding the command and control operator, the systems and processes implemented for command and control.

The pre-qualification streamlines the process for obtaining a licence, given that it waives the submission of the information set out in the pre-qualification certificate in the licensing procedure. In accordance with the Space Regulation, the pre-qualification certificate is issued or refused within 60 days (which can be extended for additional 60 days in cases of high complexity).

Supervision

Supervision of space activities is done by the Space Authority, without prejudice to the inspection powers of other competent entities.

Operators are subject to obligations relating to the Space Authority's supervision and inspection powers, including the following:

 allowing and facilitating free access to the facilities and their annexes, as well as to their devices and instruments;

- providing all information and assistance required for the performance of the supervision and inspection; and
- maintaining in their facilities in Portugal a duly organised and updated file containing all relevant documents and records relating to the space activities they perform and to the licensing and pre-qualification procedures.

The Space Act also contains a set of provisions for incident and accident reporting, which include the obligation by operators to notify incidents occurred in their premises or in the scope of their space activity, as well as any manoeuvre, malfunction or anomaly of the space object, or other circumstances arising from or in connection with the space activity that may result in an incident or serious accident.

Infringements of the Space Act are administrative offences that may lead to the application of penalties of between EUR250 and EUR44,891.81, depending on whether the operator is a natural or a corporate person and the gravity of the offence. There are also ancillary penalties, consisting of the prohibition to perform space activities for a certain period of time and the suspension of licences.

Registration

The Space Act establishes that space objects for which Portugal is the launching state are subject to registration with the Space Authority, in accordance with Portugal's international commitments. The elements to be registered broadly correspond to those of the Registration Convention.

In addition, the Space Act also provides that the following must be registered with the Space Authority:

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- space objects whose launch, return or command and control are licensed in Portugal

 the respective operator shall promote the registration;
- the transfer of ownership of any space objects whose launch, return or command and control is licensed under the Space Act – the transferor shall promote the registration;
- the end of the useful life of a space object whose operation and control is licensed in Portugal – the command and control operator shall promote registration; and
- any incident or serious accident suffered by the space object – the respective operator shall promote the registration.

The Space Regulation provides further details on registration, noting that the submission of information for registration by the operator shall be done in two days from launching or from the occurrences indicated above.

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

The national framework applicable to spectrum is established in the Electronic Communications Law (Law 16/2022) and the framework on radioelectric licensing (Decree-Law 151-A/2000). In addition, the national frequency allocation plan contains information relating to spectrum allocation.

Despite the above, Portugal does not have a specific procedure for receiving requests and assisting in the ITU process for assignment of radio frequencies and orbital slots. In accordance with latest information, a specific framework for the assignment of the pre-allocated orbital slots under ITU Regulations 30, 30A and 30B (under which Portugal has two pre-allotted

orbital slots: -37.00 and -10.60) is being developed.

In any case, ANACOM, the communications regulator - which is the entity competent for radio frequencies and orbital slots - has a set of competences to manage and co-ordinate frequency allocations to avoid interferences, both at national and European levels. Notably, ANACOM is responsible for creating a specific regulatory framework for use of spectrum (which shall include the protection against harmful interference) and for co-operating with other EU member states with a view to co-ordinating the use of harmonised radio spectrum for electronic communications networks and services. As the use of radio frequencies for electronic communication networks and services depends on the attribution of a right of way, ANACOM is entitled to revoke it (or to impose changes) in case of non-compliance with the applicable obligations, which includes the obligation to adopt the technical and operational conditions necessary for the non-production of harmful interference and the protection of public health against electromagnetic fields.

2.6 Role of the State in the Launching Process

Portugal approved, under Decree-Law 20/2024, which amended the national Space Act, a specific framework for the operation of launch centres. This specific framework comprises three main topics: authorisation, pre-qualification and supervision.

Authorisation

In accordance with the Space Act, the operation of launch centres in Portugal is subject to licensing from the Space Authority.

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Prior approval is required from the members of the government responsible for the areas of defence, the sea, when the launch centre is deployed in the national maritime space, and science and technology. The aim is to ensure that national interests are respected. When the launch centre is to be installed in the Autonomous Regions of Madeira or Azores, they shall be heard and issue a binding opinion.

The Space Authority must decide on whether to issue the licence within 240 days. Licences have a maximum initial term of 15 years, with possibility of renewal.

The Space Authority shall approve, in a regulation, the proceedings for granting the licence. At the time of writing, the regulation has not been approved yet.

Pre-qualification

The Space Act provides that the launch site operator may pre-qualify that it has the technical, economic and financial capacity for the activity it intends to perform. This pre-qualification aims to streamline the process for obtaining a licence for space operations.

Supervision

Operators are subject to obligations relating to the Space Authority's supervision and inspection powers. For further details, see 2.4 Role of the State in the Licensing Process for Space Activities.

2.7 Commitment to International Treaties and Multilateral Discussions

Portugal became a party to the UN Registration Convention in 2018 and to the Liability Convention in 2019. It had previously acceded to the Outer Space Treaty and the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space. It is also a signatory to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water; the Convention Relating to the Distribution of Programme-Carrying Signals Transmitted by Satellite; and the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.

Portugal is also a member of the Committee on the Peaceful Uses of Outer Space (COPU-OS), where is has been quite active. It has, for instance, co-organised with the UN, in 2024, the Management and Sustainability of Outer Space Activities Conference, where the Lisbon Declaration on Outer Space was presented, which identifies key points for a sustainable space future.

The principles and rules of the UN Space Treaties, especially when it comes to responsibility and liability, are reflected in national law. For instance, the national Space Act provides that space operators are liable for damages caused in the performance of the space activity, as follows:

- strict liability for damages caused by the space object to the surface of the Earth or to aircraft in flight; and
- liability in the event of fault in other cases, with caps being applicable in certain cases (for more details, see 2.8 Insurance and State Measures on Liability for Damages).

Other relevant principles and rules of international Space Law, including those on sustainability (such as the ones arising from the UN Guidelines for the Long-Term Sustainability of Outer Space – LST), are also reflected in national law – the recent 2024 amendment to the Space Act expressly mentions that the legal framework

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aims, among other objectives, to ensure that space activities are sustainable in accordance with applicable international principles, whilst debris minimisation is a condition of licence issuance (for more details, see **5.1 Environmental Protection in Space**).

2.8 Insurance and State Measures on Liability for Damages

Portuguese rules on insurance of, and liability for damages arising from, space activities follow the country's commitments as a party to the Outer Space Treaty and the Liability Convention, and account for key international concerns on the safety of space operations.

When licensing space activities, the Space Authority is required to assess the safety of those activities, notably by confirming that the envisaged activity:

- adequately safeguards potential damages to the Earth's surface, airspace and the outer space (for space operations) and the safety of the launch and/or return operations (for space ports);
- ensures that space debris are minimised to the maximum extent possible; and
- is compatible with applicable public safety rules, including those relating to public health and safety of persons and assets.

In respect of liability for damages, liability of space activities' operators is on a fault basis, except for damages caused on the Earth's surface or to aircraft in flight by a space object (strict liability). If the Portuguese Republic is held liable, pursuant to its international commitments, for any damages caused by a space object, the state has a right of recourse against the operator which is responsible for that space object, capped at the amounts defined by the Insurance Order. The cap corresponds to the total amount of the insured capital applicable to the licensed space operation that caused the damage. The cap will not apply in certain cases, including in the event of liability for damage due to wilful misconduct or gross negligence, or if the operator fails to comply with its licensing obligations. The liability regime of the national Space Act is, of course, without prejudice to other liability regimes that are provided for under Portuguese general law (eg, in connection with environmental matters or the use of hazardous materials).

Space activities licensed under the Space Act must be insured. In particular, a civil liability insurance covering both fault-based and nofault based liability (as previously described) arising from the space activities being carried out is a condition for the issuance (and nonrevocation) of the relevant licence, and failure to do so carries additionally a fine that can top EUR44,891.81.

 Minimum insured capital – currently, the minimum insured capital is determined based on the mass of the space object, with different thresholds corresponding to different amounts of insured capital. For example, a space object with a mass equal to or less than 50 kg (minimum threshold) requires a minimum insured capital of EUR2 million, whereas a space object with a mass exceeding 500 kg (maximum threshold) requires a minimum insured capital of EUR60 million. The insured capital can also be calculated based on the maximum probable damage (as calculated by the Space Authority), if lower than the minimum insured capital required in accordance with those thresholds.

If the relevant space activities are licensed under a blanket licence, the minimum insured capital

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shall correspond to the sum of 70% of the minimum insured capital required for each of the activities benefiting from such licence. However, if the relevant space activities are licensed under a joint licence, no such reduction applies.

Note that the Insurance Order has not, at the time of writing, been revised in light of the 2024 amendment of the national Space Act, which introduced a licensing regime for space ports and amended the types of licences for space operations. With respect to space ports, though the Space Act mentions that licensed operators shall be insured (thus seemingly also including space port operators), the Insurance Order only seems to contain conditions for space operations.

- Policy exclusions and deductibles the insurance policy exclusions are indicated in the Insurance Order. Among others, those include claims for criminal, administrative, or disciplinary liability and claims that may expose the insurer to sanctions or restrictions. Damages caused to specific individuals or groups related with the policy holder may also be excluded. In any case, the policy may provide for a deductible of up to 10% of the insured capital, which the insurer can claim solely from the policy holder.
- Time barring of policy the insurance policy must ensure that the same covers claims for compensation submitted up to two years after its termination, provided that they are not covered by another valid subsequent insurance contract.

The requirement to be insured may be waived entirely (or the minimum insurance requirements reduced) by the Space Authority for:

- the launch, return, command and control operations of small space objects (currently defined by the Space Authority as launchers with the ability to launch a payload with a total mass of up to 50 kg, or space objects subject to command and control with a mass equal to or less than 50 kg);
- space operations carried out solely for scientific, R&D or educational and training purposes;
- space operations that carry out small risks only (as duly evidenced); or
- space activities in respect of which the operator has delivered another acceptable financial collateral that is accepted by the Space Authority.

There exists, thus, a strong concern in having leeway to ensure that procuring (and putting in place) an insurance is not detrimental to the development of the sector, in particular as regards R&D activities which are still core for several Portuguese industry players.

3. Rules Applicable to Space Operators' Activities

3.1 General Rules on Space Activities

The general rules on space activities established in the national Space Act, the Space Regulation and the Insurance Order apply to all space operations and to space ports (with the particularities seen in **2.8 Insurance and State Measures on Liability for Damages** relating to insurance and the fact that the Space Regulation only covers, at the time of writing, space operations), regardless of the purpose of the space operation or the features of the space port. These rules include provisions for licensing of space activities (including conditions for licence termination), pre-qualification, registration of

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space objects, transfer of space objects, liability, insurance, participation of incidents and accidents, supervision and consequences in case of breach. An important point in this respect relates with the conditions for issuing a licence, which includes, among others, compliance with public safety rules and debris minimisation. These concerns correspond broadly to what the envisaged EU Space Law (EUSL) will address, ie, safety and sustainability. However, resilience, including cyber resilience, a point to be addressed in the EUSL, is not expressly mentioned in the Portuguese legal framework for space. Yet, it is important to recall that the NIS 2 Directive (Directive (EU) 2022/2555 concerning measures for a high common level of security of network and information systems across the Union) and the CER Directive (Directive (EU) 2022/2557 on the resilience of critical entities) apply for the first time to the space sector, ie, to operators of ground-based infrastructure, owned, managed and operated by member states or by private parties, that support the provision of spacebased services.

Portugal does not have specific legal frameworks for Earth Observation, suborbital flights, space mining or space tourism. Yet, with relation to suborbital flights, the development of a legal framework in this respect was announced in a September 2023 event to celebrate the 30 years of the Portuguese first satellite (PoSAT-1). Though the national Space Act can be interpreted to include suborbital flights of space objects, a dedicated set of rules would be welcome to bring more clarity to the requirements and obligations that apply to these types of flights.

3.2 Principles of Non-interference and Prevention of Harmful Interference

The Portuguese space legal framework establishes a set of conditions for issuing a licence that aim to ensure non-interference with other space activities.

For space operations, the space operation shall be compatible with applicable public safety rules, including those relating to public health and the safety of persons and assets. What is more, other authorisations necessary for the space operation shall have been issued by the corresponding competent entities (eg, for use of airspace). The Space Regulation densifies a set of items that shall be complied with by an applicant for a licence. These include, for the launch and among others:

- the expected date and place of launch;
- planned nominal flight, including the point of flight at which the carried space object is no longer under the control of the licensee;
- the various flight stages and associated manoeuvres;
- air corridors to be used and information about the re-entry of stages;
- for the command and control of the space object in space, information to be provided by the applicant includes, among others, orbital parameters including nodal period, inclination, apogee and perigee (whether for parking, transfer or final orbit purposes) or trajectory; and
- type of command and control operations foreseeable over the operational life of the space object.

For the operation of space ports, the location intended for the launch centre, its installation, as well as its infrastructure and operation, shall ensure the safety of the launch and/or return operations and be compatible with applicable public safety rules, including those relating to public health and the safety of persons and assets. As with space operations, other neces-

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sary authorisations shall have been issued by the corresponding competent entities. Further densification of these provisions is to be done by the Space Authority in regulation, which, at the time of writing, has not been approved yet.

The above provisions are without prejudice to non-interference rules arising from the communications framework (see 2.5 Role of the State in Co-ordinating the Use of Radio Frequencies and Orbital Slots).

3.3 Operators' Responsibilities

Licensed space operators are subject to a set of obligations under the national space framework.

- Launch/return and command and control operators are under the obligation to:
 - (a) comply with and abide by international principles for the use of space, notably pursuant to the space treaties binding on the Portuguese Republic, including with relation to peaceful use, safety and minimisation of space debris;
 - (b) register the space objects they launch or control, identifying the respective owner;
 - (c) take out and maintain mandatory civil liability insurance;
 - (d) duly foresee and safeguard any damages to Earth or to space, directly or indirectly, in accordance with the applicable national and international obligations; and
 - (e) comply with all legal and regulatory provisions in force, as well as with the conditions set out in the relevant licence.

They shall further, notably, report in a timely manner the occurrence of incidents and accidents, as well as keep a record of all occurrences of their activity, namely incidents and accidents, and respective investigation, mitigation or correction measures; and submit a report to the Space Authority upon completion of each licensed space operation with the description of space activities carried out, mentioning any failures, warnings or risks identified.

 In turn, the operator of a launch centre shall abide by all legal provisions in force, as well as the conditions established in the licence.
 Further densification of these obligations is to be expected to be done by the Space Authority in regulation, which, at the time of writing, has not been approved yet.

A relevant point in this respect relates with compliance with ESG objectives by the space sector. In this matter, the rules applicable in Portugal derive from European Union law on ESG, with no dedicated rules or guidelines for the space sector. However, it should be noted that several activities comprised within the space operations life-cycle may be eligible under the EU Taxonomy framework (such as, for instance, data processing, hosting and related activities, the provision of IT/OT data-driven solutions, the manufacture of electric and electronic equipment, and the provision of services such as preparation for re-use of end-of-life products, including spacecraft and related machinery, where spacecraft includes, in accordance with NACE Rev 2, launch vehicles, satellites, planetary probes, orbital stations and shuttles). This therefore determines the application of several reporting obligations under the aforementioned framework

4. Ownership of Extraterrestrial Resources

4.1 Nature of Space Resource Rights

Portugal does not have a specific regime for space mining or space resources and is not a party to the Moon Agreement. As a State Party

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to the Outer Space Treaty, it is, however, bound by the principle of non-appropriation of outer space and celestial bodies. Though the detailed interpretation of this principle by the Portuguese state and how it would apply to space mining and resources is not reflected in the national legal framework, the Lisbon Declaration on Outer Space, of May 2024, presented at the Management and Sustainability of Space Activities Conference organised by UNOOSA and the Portuguese space agency, contains a statement on space resources. Notably, it indicates that COPUOS retain a principal role as the appropriate forum to reach consensus on the use of outer space that may lead to internationally recognised governance regimes for space resources, including through the development of voluntary, non-legally binding principles and guidelines. This may point to the vision that an international framework or guidelines, instead of a national legal framework on space resources, would be the preferred course of action in the country. Though this cannot be seen as a clear conclusion of the Lisbon Declaration, or of any decision by the state in this respect, it is worth noting that there have not been discussions around the potential approval of a legal regime on space resources in Portugal at the time of writing.

4.2 Granting of Rights to Space Resources

Portugal does not have a specific regime for space mining or space resources.

5. Environmental Protection and Impact on Climate Change

5.1 Environmental Protection in Space

The sustainability of space activities is one of the central topics of the Portuguese space legal

framework, with the recent 2024 amendment to the Space Act expressly indicating that one of its objectives is ensuring that space activities are sustainable, in accordance with applicable international principles.

In this scope, the Space Act establishes, as a condition for obtaining a licence for space operations and as obligations of the licensee, that (i) the space operation shall duly safeguard damages to the Earth's surface, airspace and outer space, and (ii) the space operation shall ensure the minimisation of space to the maximum extent possible. The licence can foresee additional conditions, including on environmental matters. Those requirements are also reflected in the conditions for the licence for the operation of a launch centre, which, in addition, expressly indicate that the location intended for the launch centre, its installation, its infrastructures and operations, shall ensure environmental protection and waste management.

In accordance with the Space Regulation, the applicant shall submit a plan with elements attesting to the fact that the space operation under consideration guarantees the mitigation of space debris to the greatest possible extent. The space debris mitigation plan may refer to international best practices and principles, especially those provided for in the ISO 24113:2011 standard (Space systems - Space debris mitigation requirements), in the "IADC Space Debris Mitigation Guidelines" and in the "Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space". In addition, a safety plan shall also be submitted which, among other aspects, must show that the space operation is compatible with applicable environmental rules. The Space Regulation further details the information that the safety plan shall contain, including, among others:

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- for the launch and/or return, the identification of the geographic area and risks for the environment resulting from falling elements of the space object on the Earth's surface and atmosphere and debris of products of atmospheric and extra-atmospheric combustion; and
- for the command and control operation, the risks deriving from orbital space debris caused by the space object, intentional destruction of the space object in orbit, including in case of re-entry in the atmosphere, deorbiting manoeuvres and passivation activities.

The authors note that the provisions on the Space Regulation apply only to space operations, and not to the operation of launch centres, as the Space Regulation does not, at the time of writing, reflect this topic.

Apart from the provisions for environmental protection foreseen in specific space legislation, it should be highlighted that the implementation of projects for the development of space activities may also be subject to specific licensing procedures and provisions under the general environmental legal regimes, for instance, to:

- the environmental impact assessment legal framework, established by Decree-Law 151-B/2013, as amended;
- the waste management legal framework, established by Decree-Law 102-D/2020, as amended, and the specific waste streams legal framework, established by Decree-Law 152-D/2017, as amended; and
- the environmental liability legal framework, established by Decree-Law No 147/2008, as amended.

Apart from the aforementioned general environmental legal framework that may be applicable, it is also worth noting that specific environmental principles such as prevention and precaution principles shall be considered whenever developing space activities.

Lastly, depending on the specific activity carried out, other environmental legal provisions may be applicable, notably those concerning matters of air emissions, water quality, chemicals and hazardous substances, and soil contamination.

A last brief note to refer to the recent Critical Raw Materials Regulation (Regulation (EU) 2024/1252). Among other aspects, the Regulation requires each member state to draw up a national programme for general exploration targeted at critical raw materials, and to increase their circularity. This, however, does not cover space minerals.

In accordance with the Regulation, States shall further identify the large companies that manufacture strategic technologies using strategic raw materials operating on their territory. These companies are subject to a set of obligations, including the requirement to carry out a risk assessment of their raw materials supply chain of strategic raw materials. Rocket launchers and satellites are expressly mentioned therein. The Act also makes express reference to the role of critical raw materials in the space sector. Indeed, the needs of the space sector in this regard are one of the driving forces behind the Act. In addition, the Regulation contains provisions relating to the declaration of the environmental footprint of critical raw materials (that shall be made available by those who place on the market such materials) and provisions for the recognition, by the European Commission, of certification schemes related to the sustainability of critical

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raw materials (though there is no requirement for the stakeholders to resort only to certified critical raw materials).

5.2 Climate Change and Space Activities Portugal has been committed to achieving the Sustainable Development Goals since their adoption in 2015, as well as responding to the EU climate ambitions including as arising from the European Climate Law (Regulation (EU) 2021/1119) and the EU Strategy on Adaptation to Climate Change. It is worth noting that these instruments acknowledge the role of space data to achieve their goals. In this scope, the Portuguese Framework Law on Climate (Law 98/2021), as well as the National Strategy for Adaptation to Climate Change, the National Action Programme for Climate Change Adaptation and the Strategic Framework for Climate Policy, highlight the importance of accurate information and monitoring systems, an area where space data and services can play a central role. Likewise, space data and services can give a relevant contribution to achieving the objectives of the national Roadmap for Carbon Neutrality.

Several initiatives have further been put in place to support sustainable development and climate action cross-cutting several sectors. Though none of the initiatives currently in place is specifically tailored for space activities, the involvement of the space sector may assume a relevant role, notably to support entities implementing projects in environmental fields. For instance, Earth observation data plays a relevant role to support sustainable forest management, including monitoring land use changes and managing forest health, therefore ensuring compliance with environmental regulations and certifications to maintain sustainable practices. Additionally, from a public standpoint, space services, and, in specific, Earth observation, are also at the cornerstone of the development of the activities of several Portuguese governmental authorities for the protection of the environment, combat of climate change and promotion of sustainable development. Concretely, space data is used by entities such as the Portuguese Ministry of Environment and Energy, the Portuguese Environment Agency (APA, I.P.) or the Institute for the Conservation of Nature and Forests (ICNF, I.P.) in the performance of their duties, such as on climate monitoring and action, biodiversity conservation and management of rural fires.

6. Taxation of Space Activities

6.1 Tax System for Space Activities

The tax system for space activities is currently not well defined or harmonised at the international level. There are no specific, common or multilateral tax rules or conventions that address the taxation of space activities.

In Portugal, the national Space Act establishes that fees and levies that may be charged by the relevant Space Authority to operators conducting space activities may be defined by Decree-Law, with a view to promoting the economic and financial sustainability of the activities of the Space Authority. A specific fee regime was also provided in the Azores space framework, which, however, seems to have been repealed (see 2.2 Legal System and Sources of Space Law and Regulation). At the time of writing, no fees are applied by the Space Authority.

Beyond the economic and financial regime for space activities outlined in the national Space Act, Portugal's approach to taxing space activi-

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ties does not deviate from its standard taxation system. Instead of imposing specific taxes for space activities, Portugal applies its conventional tax regime, which encompasses a broad spectrum of taxes, including those on corporate and individual income, value added tax (VAT), property tax, stamp duty, and other applicable taxes. Consequently, space activities within Portugal are subject to the same tax obligations as any other economic activity under the prevailing tax laws, depending on the nature and location of the activities and the entities involved.

Some other aspects of the Portuguese tax system may be relevant for space activities, such as the definition of tax residence or the taxation of foreign source income. Moreover, Portugal has a network of tax treaties with more than 70 countries aiming to avoid double taxation and providing for reduced withholding rates on dividends, interest and royalties paid between residents of the contracting states. However, treaties might not cover certain types of income or transactions related to space activities. Additionally, Portugal has rules implementing EU regulations on the control of exports of dual-use items, which may affect the sale or transfer of space items to other countries.

6.2 Tax Incentives for Space Investors

Portugal offers a range of tax incentives for investors in general, which may also apply to space investors, depending on the nature and characteristics of their activities and projects. Some of these incentives are the following.

 The regime of tax benefits for productive investments grants corporate income tax credits (10% to 25% of the relevant applications), exemptions from other taxes such as stamp duty, property transfer tax, municipal property tax, and simplifications of customs procedures. This is subject to acceptance by the competent bodies, for projects that meet certain requirements and contribute to the economic development of the country. The measure also allows for additional increases, depending on the location of the project, the creation of jobs, the contribution to innovation, technology, environment, and other strategic sectors, and the exceptional relevance of the project for the national economy. However, some limitations exist, such as the minimum financial contribution of the promoters (at least 25% of the eligible costs) or non-cumulation with other tax benefits of the same nature, automatic or contractual.

- The regime of tax benefits for research and development grants a deduction from the corporate income tax payable, under certain conditions, of expenses with research and development, in the following percentages:
 - (a) 32.5% of the expenses incurred in the period;
 - (b) 50% of the increase in expenses in the period compared to the average of the previous two periods, up to the limit of EUR1.5 million; and
 - (c) an increase of 15%, in the case of micro, small or medium-sized enterprises that do not benefit from the incremental rate of 50% because they have not yet completed two periods of activity.

The measure is not applicable to R&D expenses that have been subject to state financial support on a non-repayable basis. The measure is also not cumulative, with respect to the same expenses, with tax benefits of the same nature, including contractual ones.

• The patent box regime incentivises R&D by offering tax deductions for income from certain IP rights, including patents and software

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copyrights. Companies can deduct from their taxable profit an amount tied to income from IP rights usage or temporary transfer, provided the IP is commercially used and the income is clearly recorded. The deduction is 85% of the IP income, adjusted by the ratio of qualifying R&D costs to total R&D expenses. Qualifying costs are those directly linked to R&D, excluding financial and certain real estate-related expenses. The regime also allows a 30% increase in qualifying expenses, with a cap, to boost investment in IP development and enhance innovation in the economy.

- The tax regime for amortisations and depreciations allows deductions of the costs of acquisition or production of tangible or intangible fixed assets used in the activity, according to different methods and rates.
- The participation exemption regime offers an exemption for companies deriving dividends or capital gains from certain types of equity investments. To qualify for the exemption, a company must hold at least a 10% stake in another entity for a minimum of one year, not based in a black-listed jurisdiction, not primarily involved in real estate in Portugal. The exemption applies to entities in the EU, the EEA and in countries with a tax treaty with Portugal, provided they are subject to a minimum level of taxation. The regime is designed to encourage investment and prevent double taxation, but it does not apply if the primary purpose of the arrangement is to gain a tax advantage without genuine economic substance.
- The tax regime for the scientific patronage grants deductions from taxable income for donations to entities engaged in scientific activities. Donations to public entities are considered at 130% of their value, while donations to private entities are considered at 120%. The deduction is limited to 0.8%

of the company's turnover. In-kind donations are valued at the fiscal value of the goods at the time of donation, minus any depreciations or provisions accepted for tax purposes. The benefit is subject to European rules on de minimis aid and cannot exceed the de minimis threshold. Entities receiving donations must obtain prior recognition from the Ministers of Finance and Education and Science, confirming their eligibility for scientific patronage and the scientific interest of their activities or actions.

- The tax incentive for scientific research and innovation aims to attract and retain gualified professionals engaging in teaching, research, or innovation activities that are relevant for the national economy. This measure offers a special 20% personal income tax rate on the net income from categories A and B (employment and self-employment) earned from these activities, for taxpayers who become tax residents in Portugal and have not been tax residents for any of the five previous years. The incentive is valid for ten consecutive years from the year of registration as a tax resident, and the taxpayer can choose to aggregate the income for tax purposes. To benefit from the incentive each year, the taxpayer must remain a tax resident in Portugal and continue to earn income from one of the specified activities.
- The Golden Visa regime grants a residence permit to foreign investors who make certain types of investments in Portugal, such as investing in research and development (eg, transferring capital to a public or private institution of scientific research or creating at least ten jobs in a qualifying company).
- The tax incentive for the acquisition of shares in start-ups aims to encourage investment in start-ups that are recognised as such under the legal regime in force. This measure

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reduces the taxable income from the sale or transfer of shares or similar rights in startups by 50%, as long as the investor holds the shares for at least one year. The incentive is not cumulative with other tax benefits and does not apply to investors who own more than 20% of the start-up. The incentive also requires a written confirmation from the startup that it met the conditions for being recognised as such at the time the shares were acquired. The startup is liable for the tax due if the conditions were not met.

6.3 Taxation on Sale or Transfer of Space Assets

Space-related activities and transactions, namely with relation to assets in outer space, are not explicitly within the scope of Portuguese taxes; however, the general principles of taxation may apply to sales, transfers, and other supplies of space assets in outer space, as well as to the income derived from these activities. Moreover, it is important to note that the taxation of space-related activities is also influenced by international agreements and EU law. Portugal adheres to treaties and EU directives and regulations that may impact the taxation of spacerelated activities, though they are not adapted to the specificities of some of such activities and despite the lack of clarity and consensus on how to define and allocate taxing rights over them. Therefore, taxation of space-related activities relating to space assets in outer space is subject to complexity, and potential double-taxation or non-taxation, depending on the circumstances and jurisdictions involved.

For income tax purposes, Portugal generally taxes the worldwide income of its tax residents, while non-residents are taxed on their Portuguese-sourced income. If a Portuguese resident individual or a corporate entity earns income from space assets, this income would typically be subject to Portuguese income tax, unless an exemption or relief applies. The complexity arises from determining the source of the income and the application of any relevant tax treaties that may exist between Portugal and other countries when assets are in outer space.

VAT in Portugal is applied to the supply of goods and services within the country, as well as to imports, unless an exemption or relief applies. Supplies of space assets would be subject to VAT if deemed to be supplied within the country or imported into it; otherwise, they would be outside the scope of Portuguese VAT. The taxation of services related to space assets would also be subject to VAT if these services are deemed to be supplied in Portugal. The VAT place of supply rules are thus crucial in determining whether a supply is outside or within the scope of VAT and, in the latter case, whether it is chargeable and at what rate.

In addition to the above, the transfer of space assets can impact national security due to their dual-use nature. Portugal has executed EU regulations for controlling the export of dualuse items. The export control regime requires prior export authorisation for eligible controlled products. The regime also applies to intangible technology transfers that could be used in the production of weapons of mass destruction. The export authorisation may be specific, global, union general, or national general, depending on the type and destination of the items. The validity of the export authorisation may vary from six months to four years, depending on the type of authorisation. Exporters must keep detailed records of exports, including descriptions, quantities, and end-use information. Non-compliance with the export control rules can result in criminal and administrative liability, including imprison-

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ment, fines, loss of goods, and prohibition on requesting licences or certificates. Possible impacts of export control rules on the sale and transfer of space assets and items may include:

- delays or denials in obtaining export authorisation, depending on the nature and destination of the items, the end-use and end-user, and the availability of licences or certificates;
- increased costs and administrative burdens for exporters, due to the need to comply with the export control requirements, such as filling out forms, providing documents, and keeping records;
- restrictions or prohibitions on exporting certain items or to certain countries, depending on the EU or national regulations, the international export control regimes, and the foreign policy objectives;
- risks of penalties or sanctions for non-compliance, such as imprisonment, fines, loss of goods, and prohibition on requesting licences or certificates; and
- challenges in co-ordinating with the competent authorities, especially in cases of unclear or ambiguous classification of items or data, or conflicting or overlapping regulations.

7. Investment and Financing in Space Activities

7.1 Impact of "NewSpace"

Portugal is a somewhat new entrant to the Space sector, with New Space pushing the sector's recent boost in the country. More to the point, it is noteworthy that New Space's focus on the development of services, products and systems leveraging space assets and data allows for the evolution of new business models, with a different risk profile that are usually more attractive/ accessible to non-public investors. Indeed, Portugal has seen private funding be directed in recent years to companies that are in the space sector, even if space activities are quite marginal to their business case. With the increase of New Space outfits, the authors are now witnessing a timid interest from private players (notably, venture capital) in Portuguese outfits that have space activities as their core, even on a pre-seed phase. However, public funding still is (and is expected to remain) the key funding source for Space activities in Portugal.

7.2 Finance Sources for Space Activities Space activities in Portugal are still mainly financed through public funding.

Indeed, key dedicated funding for Space activities derives from the following.

- The contributions that Portugal makes as a member state to ESA, under the geographical return principle (whereby amounts contributed by the member states are used by the organisation to contract outfits in those member states to carry out the development of assets, services and/or systems for ESA, roughly speaking) – in 2022 Portugal committed to fund ESA in almost EUR115 million within the next five years.
- Portugal's (EU funded) Recovery and Resilience Plan, in the context of which a key agenda concerning the space sector was awarded with more than EUR137 million (non-reimbursable) to transform the specialisation profile of the Portuguese space sector, with new innovative, exportable and more technologically complex products and services, leveraging the entire value chain. This funding, which is granted on a co-funding logic, will require the mobilisation of relevant private funds into the Portuguese space sector.

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At a much lower scale, the yearly budget of the Portuguese space agency (estimated to total around EUR9.25 million until 2027) has also been earmarked in part to fund the development of R&D space activities in the country. Also, and as an example, Portugal Ventures, a venture capital arm of the *Banco Português de Fomento* (part of the public business sector) has partnered with ESA's business incubator in Portugal (ESA BIC Portugal) to provide funding to the companies that will be incubated there.

Additionally, non-dedicated funding has been enjoyed by Portuguese companies in the space sector. Mostly consisting of public subsidies, in particular through EU structural funds and other EU programmes, but also through other public backed financing (eg, through public guarantees), non-dedicated public funding has been relevant in the funding of space activities and the space sector in Portugal.

7.3 Attracting Investment for Space Activities

Since 2019, the Portuguese state has been concerned with creating a competitive space sector in the country, being mindful of the significant benefits the sector can bring to the development of the country's economy. That goal has been, for instance, behind the manner in which space activities are regulated in the country (eg, promoting flexible licensing models and processes, assuming liability that would otherwise rest with operators, approving rules that will enable the Space Authority discretion in the implementation of national space regulations to accommodate interests of key projects and investors in the sector), as well as the creation of a Space Agency mandated to promote business and investment in the sector. Additionally, the state increased its (indirect) spending with the sector (notably, by increasing its contributions to ESA).

More recently, with the approval of space-related projects in the context of the country's Recovery and Resilience Plan, which operates on a cofunding basis, the country is aiming to increase private funding of the sector. While the public funding parcel is significant, it is expected that the success of those projects will increase sponsors' and investors' willingness (and expertise) to invest in the space sector.

Tax incentives also play a relevant role in attracting space activities to the country (see 6.2 Tax Incentives for Space Investors).

7.4 Foreign Investment in Space Activities

Foreign investment in space activities in Portugal is yet not subject to dedicated rules. However, it could still be caught under the Portuguese FDI Act (enacted by Decree-Law 138/2014 of 15 September 2014) and, accordingly, an acquisition of (direct or indirect) control over undertakings or assets could be blocked by the Portuguese Council of Ministers if:

- control is acquired by entities from non-EEA States;
- control is acquired over strategic assets (ie, the main infrastructure and assets allocated to national defence and security or to the provision of essential services in the domains of energy, transportation and communications); and
- the operation is considered to entail a plausible and sufficiently serious risk to national security or to Portugal's security of supply in essential services.

However, it is noteworthy that changes at EU level will clearly bring space activities into the scope of foreign investment screening at national level.

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The authors refer, in particular, to the proposal for a Regulation of the European Parliament and of the Council on the screening of foregoing investment in the EU, which was published on 24 January 2024 and is currently under discussion (COM (2024) 23 final). Notably, this proposal requires that all member states screen foreign investments:

- in companies that participate in projects or programmes of EU interest (including, without limitation, the EU Space Programme and Horizon Europe, which are important funding sources for space activities in Portugal); and
- in companies active (including through ownership, use, production or supply) in areas of particular security or public order interests of the EU, which include (among others) dual-use items subject to export controls, dedicated space-focused technologies, ranging from component to system level, space surveillance and Earth observation technologies, space positioning, navigation and timing (PNT), secure communications including Low Earth Orbit (LEO) connectivity, and propulsion technologies, including hypersonics and components for military use.

On a separate point, it is noteworthy the role that the Foreign Subsidies Regulation (enact-

ed by Regulation (EU) 2022/2560, already in force) may play on imposing limitations on foreign investment in space activities that is done through financial contributions to those companies. Indeed, under said Regulation, the European Commission is allowed to investigate and impose commitments or redressive measures whenever it finds that a foreign financial contribution which distorts the internal market is being made to an undertaking engaging in an economic activity in the EU.

7.5 Role of Securities Markets in Space Financing

Given the low prevalence of private funding of space activities in Portugal and the make-up of the sector consisting mostly of small and medium-sized companies, the securities markets do not play a direct role in space financing in Portugal. This is, in fact, a characteristic of the country, where the size of the commercial outfits or the nature of their shareholding structure (with clear controlling/majority shareholders) is not favourable to the development of a widespread securities market in Portugal. As such, and albeit there is strong (theoretical) potential for funding through the securities market, the maturity level of the Portuguese outfits with space activities in their core does not yet render the securities market as a real, viable funding avenue to them.

Trends and Developments

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Promoting the Space Sector Through the Development of Space Policies and Laws and a Unified Approach to Space Operations Portugal has taken substantial policy, legal and institutional steps in recent years aimed at the development of its space sector.

In 2018, Portugal approved its Space Strategy – Portugal Space 2030 – by Resolution of the Council of Ministers 30/2018. The Space Strategy contains three axes: the first relates to the exploration of space data and signals through space services and applications or as enabled by space technologies. The second relates to the development, construction and operation of space equipment, systems, infrastructures and services for space data generation, with an emphasis on mini-, micro- and nano-satellites. The third axis addresses the development of national capability and skills in the space sector through scientific research, innovation, education and scientific culture.

A National Defence Strategy for Space 2020– 2030 was also presented in October 2021. It addresses topics such as broadening access to space; promoting research, development and innovation; and developing capabilities in space. This Strategy also refers to the need for setting up a governance structure to ensure due co-ordination of space military matters with the Portuguese space agency and other relevant bodies.

In addition, it is worth mentioning that the Autonomous Region of the Azores also presented its Space Strategy in November 2021. The Space Strategy aims to enhance national and European space goals taking into account the specificities of the Azores region, notably its geostrategic location. In this scope, it points to several objectives, including the development of space activities in the region, research and development, and positioning the Azores as an Atlantic hub.

These three policy pillars of the Portuguese approach to space have been reflected, in general, in the institutional and legal approach to space.

Indeed, the Portuguese space agency – Portugal Space – is the entity responsible for executing Portugal Space 2030.

At the military/defence level, the Organic Law on the Organisation of the Armed Forces (Organic Law 2/2021), indicates that EMGFA (General Staff of the Armed Forces - "Estado-Maior General das Forças Armadas") is responsible for planning and directing the military aspects of the national defence space programme. And the Organic Law of the General Staff of the Armed Forces (Decree-Law 19/2022), approved the establishment of the Communications and Information, Cyberspace and Space Centre (CCICE) within the General Staff of the Armed Forces. This Centre enables the joint command and control capacity of the Armed Forces, ensures the exercise of command of military operations in and through cyberspace, and directs the military aspects of the national defence space programme. In addition, the General-Directorate for National Defence Resources (DGRDN) is the body responsible for managing the national Space Surveillance and Tracking (SST) programme and is the designated national entity in the EU SST. Defence also participates in the space agency, in its defence division.

At the regional level, the Autonomous Region of the Azores has been playing a relevant role in space due to its geostrategic location. Not only the headquarters of the space agency are in the Azores, but the Azores also has a Mission

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Structure for Space (EMA-Space), competent for managing and co-ordinating all infrastructure and technical-scientific activities related with space and for ensuring the implementation of the regional space strategy.

The role of the Azores in space matters led this autonomous region to approve a specific legal framework for licensing space operations and to lead the initiative to install a spaceport in the Azores (the Azores International Satellite Launch Programme – ISLP).

The regional legal framework was developed in light of Article 27 of the Space Act, which established, among other aspects, that the licensing procedures for space activities related to activities developed in the Autonomous Regions of the Azores and Madeira would be defined by regional legislative decree. The regional framework applied to licensing, pre-qualification, registration and transfer of space objects relating to activities developed in the Azores (defined as those activities based on both offshore and onshore infrastructures or platforms, including, in this instance, the maritime areas adjoining the archipelago). However, the regional framework replicated, in practice, the provisions of the national Space Act and Regulation (Decree-Law 16/2019, and Regulation 697/2019), thus leading to a duplication of processes that operators would have to comply with to perform space activities in the Azores. For instance, it seemed that operators would have to obtain two licences: one from the national Space Authority and another one from the regional space authority (the EER). Furthermore, because both acts contain fines, operators could in theory be subject to fines twice. This duplication, and the lack of substantial co-ordination mechanisms, placed a heavy burden on operators.

Acknowledging this situation, the recent amendment to the national Space Act - Decree-Law 20/2024 - repealed Article 27 of the Space Act. It also indicates, in its preamble, that "the license for launch and/or return and of command and control, this is, for accessing and using outer space, have a national scope, thus allowing its holder to perform the licensed activities from any place of the national territory, and waiving other legal titles for the same purpose". This seems to point to the regional framework no longer applying, a solution that better fits the goals of the Portuguese State of facilitating space activities in the country. As such, and without prejudice to the Autonomous Regions being notified of the granting of licences for launches and/or returns from their territory, there is now only a single unified approach for space operations in Portugal.

Promoting the Space Sector Through Spaceports and the Space Rider

Spaceports are ever more a key topic for the space sector. Given the technical advances on space vehicles and launching techniques, coupled with the increase in demand for commercial launches, spaceports may soon become a key infrastructure for countries with space interests.

Portugal is no stranger to this trend. Indeed, while initially the country had not opened the set up and operation of spaceports to private initiative, the Portuguese Space Act has now been amended, introducing a licensing regime for the operation of spaceports, acknowledging the private sector interest in setting up and operating private spaceports and the need to have a legal framework that accommodates the country's several layers of government (in particular, at regional level) without putting the burden of them (eg, conflicting decisions and pieces of legislation) on the spaceport's promotor.

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Such licensing regime allows for the set up and operation of any fixed or movable launching and/or landing facilities within the Portuguese territory, all irrespective of the nationality of the operator.

Licences are issued by the Space Authority for a maximum first term of 15 years (which may be renewed), subject to a prior approval from the Portuguese government.

This licence does not substitute the need to obtain all other authorisations that may be necessary to the set up and operation of the spaceport (which are a condition for the issuance of the spaceport licence – eg, building permits, environmental licences, among others); however, the Space Authority will be acting as a one stop shop (fronting the relationship with the national, regional and municipal authorities) for the entity procuring the spaceport licence in connection will all those other licences necessary to set-up and operate the spaceport. Thus, it is expected that the process can be streamlined as much as possible.

A transfer of ownership of the licence must be authorised by the Space Authority, conditional on a prior approval by the Portuguese government.

This is, indeed, a licensing regime more stringent than the one applying generally to space operations, requiring the involvement of the Portuguese government. However, this is understandable given the strategic significance of those infrastructures, but, most importantly, is also an opportunity for promoters, as they will be able to confirm early in the process of the country's interest (or not) in their project. It is expected that, with this change, the country can benefit from its geographical position to attract private players interested in setting up and operating spaceports in the country (including the maritime space under Portugal's jurisdiction).

A special mention to ESA's Space Rider system must also be included, which aims to be a European reusable end-to-end integrated space transportation system for access and return from low orbit.

Portugal, through its Space Agency, has been heavily invested in trying to be designated as (one of the) landing site for the Space Rider system, with a feasibility study currently ongoing in connection with a site in Santa Maria Island in the Azores (one of the six places identified by ESA worldwide as a possible landing location).

With its qualification flight expected to take place in Q3 2025 and commercial operation afterwards, if Portugal is indeed chosen as the landing site, the associated infrastructures will allow for new space businesses linked with the upstream sector (in particular, the ground sector) to be developed in connection therewith, as well as the set-up of a new key business and R&D ecosystem for downstream activities.

Promoting the Space Sector Through New Space Projects

Portugal's Recovery and Resilience Plan (RRP) will be a key driver in the development of the country's space sector in the next years.

In particular, it is noteworthy that one of the projects related to the space sector funded by the RRP (New Space Portugal) will have Portuguese companies manufacturing, owning and operating upstream facilities (notably constellations of

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Earth observation satellites), while committing to the development of a whole new business and R&D ecosystem (in the downstream sector) associated to those upstream facilities and the data they collect.

Involving a significant monetary investment and a myriad of skills and know-how that the country does not currently have, this project is led by a consortium of more than 30 entities with very different backgrounds. This make-up of the consortium is expected to further contribute to the dynamism of the Portuguese space sector, acknowledging that we are dealing with a key sector to the overall economic development of the country, with impact and potential benefits to several other sectors.

To that point, given the broadness of products, services and systems that upstream space activities require (and will continue to require in the future given its nature as an eminently technological sector) and the broadness of products, services and systems that will be developed from or to further leverage space assets (including space data) the authors expect that the Portuguese space market will continue to grow, with relevant opportunities arising therefrom.

As an example, another project funded under the RRP (NeuraSpace) will focus on supporting the development of an existing space traffic management platform leveraging artificial intelligence and machine learning that was created by a Portuguese company.

But, also, the awareness (especially at EU-level) of the possibilities that space assets and technologies can bring to the table to address the challenges that the countries are facing today (eg, on climate change matters, on the energy transition, on the blue and green economies, cybersecurity and infrastructure resilience, among others) allows for initiatives (and funding) being leveraged towards the space sector.

Accordingly, the authors' expectation is that the space sector in Portugal will take all those new opportunities to continue growing and diversifying the products and services provided, further creating new opportunities for investment and growth.

Promoting the Space Sector Through Sector-Specific Legislation

An increased number of laws, notably at EU level, is acknowledging the role that space data, products and services play across sectors.

For instance, the environmental sector is increasingly making reference to space related services (notably Earth Observation (EO) data and services), as a source of reliable and timely information for environmental monitoring, reporting and compliance. This can be seen, for instance, in the European Climate Law (Regulation (EU) 2021/1119), in the EU Strategy on Adaptation to Climate Change, in the EU Zero Action Plan, in the EU Net Zero Industry Act, in the Deforestation Regulation (Regulation (EU) 2023/1115) or in the approach proposed for a voluntary carbon market.

Likewise, some policies and laws applicable to the ocean sector acknowledge the role of space services as well, mostly for monitoring and environmental purposes. This is the case, for instance, of the EU Maritime Security Strategy and its Action Plan; the Commission Decision (EU) 2017/848, of 17 May 2017, concerning monitoring methods on the good environmental status of marine waters; and Directive 2005/35/ EC on ship-source pollution.

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In turn, in the agriculture and forestry sector, the policy and legal instruments also make reference, in some cases, to space services, especially in relation to the Common Agricultural Policy (CAP) and its monitoring and control system (Regulation (EU) 2021/2116, and Commission Implementing Regulation 2022/1173). Likewise, other policies, such as the New EU Forest Strategy for 2030 and the Soil Strategy 2030, acknowledge the role of space services.

The mobility sector is also regulated by policy and legal frameworks that address, in certain cases, the use of satellite services, notably positioning, navigation, and timing (PNT) and satellite communications (SatCom) services. For instance, in the Road segment, some legislation makes express reference to satellite positioning such as for intelligent speed assistance systems (Commission Delegated Regulation (EU) 2021/1958) or for eCall (Regulation (EU) 2015/758, and Commission Delegated Regulation (EU) 2017/79).

However, despite the increased acknowledgement, as seen above (and as also reflected in policy and legislation in other sectors), many of the EU references to satellite services and data rely on the EU Space Programme, whilst other legislation, despite recognising the central role of accurate data, do not expressly refer to satellite services (this is the case, for instance, of the EU's Biodiversity Strategy for 2030 or the EU Marine Strategy Framework Directive - Directive 2008/56/EC). In other cases, though satellite services and products could play a central role in achieving the goals of legislation or ensuring compliance thereof, express references to space services are lacking. This is mostly also the case of Portugal, as can be seen, for instance, in the national Framework Law on Climate (Law 98/2021), in the National Strategy for Adaptation to Climate Change (Resolution of the Council of Ministers 56/2015), in the Roadmap for Climate Neutrality (Resolution of the Council of Ministers 107/2019) or in the framework for voluntary carbon markets (Decree-Law 4/2024). Other policies, however, do make express references to satellite services – for instance, the National Ocean Strategy 2021–2030 (Resolution of the Council of Ministers 68/2021), the Portuguese Common Agricultural Policy Strategic Plan or the National Strategy for Forests.

There is, thus, room for improvement, including at national level, in policy and legislation areas such as air quality, water management, ecosystem conservation, organic farming, pesticide use, mobility monitoring, planning and management, among many others.

Adequate policy and legal frameworks can indeed play a very relevant role in creating awareness, by sector-specific stakeholders, of the existence of space data and services as an important instrument to meet their needs and ensure they comply with legal obligations. At the same time, sector-specific legislation can bring significant opportunities for the space sector, further encouraging and promoting the development of space services and products with different applications in different sectors, that integrate different outputs and that are further able to create opportunities with synergies that several stakeholders can take advantage of.

This approach, together will all other initiatives taken at national level to promote space activities, as seen above, contributes, thus, to further the creation of a comprehensive framework that facilitates and encourages the development of the space sector.

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Promoting the Space Sector Through Cross-Sector Legislation

Recent EU cross-sector legislation can also bring opportunities (and obligations) to the space sector. The authors highlight three main areas in this regard: data sharing, artificial intelligence and resilience.

1. Data sharing

Recent EU laws, notably the Data Governance Act (DGA) (Regulation (EU) 2022/868), and the Data Act (Regulation (EU) 2023/2854), can have a significant impact on the space sector.

- The DGA introduced measures for data sharing and re-use, and established a framework for data intermediation services, as well as data altruism organisations.
 - (a) The provisions on the re-use of certain categories of protected data held by public sector bodies are relevant as such data can include satellite data. These provisions are to be read together with the provisions on re-use of open public data, under Portuguese Law 26/2016 and Law 68/2021 (the EU legislation in this regard in the Open Data Directive Directive (EU) 2019/1024) and the High-Value Datasets Regulation (Commission Implementing Regulation (EU) 2023/138). In this regard, high-value datasets are:
 - (i) available free of charge, except in certain limited conditions;
 - (ii) machine readable;
 - (iii) provided via APIs; and
 - (iv) provided as a bulk download, where relevant.

They are further provided under harmonised reuse conditions. They include Geospatial, Earth Observation and Environment, Meteorological, Mobility and Statistics datasets, among others.

- (a) The provisions on data intermediation services and data altruism organisations can also be relevant for the space sector, notably in light of the increase in the development of satellite data marketplaces and the role satellite data can have for altruistic purposes. In this regard, the dedicated provisions of the Digital Services Act (DSA) (Regulation (EU) 2022/2065) are also applicable, as the DSA sets out obligations for digital service providers, including online platforms, including to ensure transparency and manage illegal content.
- The Data Act contains provisions on, among others, access and re-use of data held by private entities and on data processing services.
 - (a) The provisions on access and re-use include requirements on contractual conditions in B2B non-negotiated contracts, and obligations on B2G data sharing in case of exceptional need, as therein defined. Satellite data providers subject to the Data Act will have to comply with these obligations.
 - (b) The provisions on data processing services (such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS)) aim, notably, to allow businesses to easily switch their data and other digital assets between competing providers of such services, as this is considered a precondition for the development of the data economy.

The above legal framework aims to facilitate data access and sharing. This can bring relevant opportunities for the space sector, as it enables easier access and use of data from several sources and thus facilitates the development of downstream space services and products.

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In addition, the development of the Common European Data Spaces in several sectors such as environment, mobility, health, energy, agriculture, cultural heritage, tourism (as enshrined in the European Strategy for Data), can further benefit from satellite services and data. At the same time, the announced development of the EU Strategy on Space Data Economy as a priority for 2024 may also further bring opportunities in this respect.

2. Artificial intelligence

The AI Act introduces a legal framework for the provision and deployment of AI systems, categorising them based on risk levels, with specific provisions for prohibited practices, high-risk AI systems, as well as for certain AI systems and for general purpose AI (GPAI) models. Without prejudice to specific provisions applicable to such cases, all providers and deployers of AI systems under the AI Act are subject to obligations relating to AI literacy: they shall take measures to ensure, to their best extent, a sufficient level of AI literacy of their staff and other persons dealing with the operation and use of Al systems on their behalf, taking into account their technical knowledge, experience, education and training and the context the AI systems are to be used in, and considering the persons or groups of persons on which the AI systems are to be used. As such, space actors developing or deploying AI systems shall take into consideration this obligation, without prejudice to others the application of which requires a case-by-case assessment.

An important point in this regard is, however, that the AI Act can bring interesting opportunities for space actors. Indeed, with relation to high-risk AI systems, providers and deployers are subject to a set of obligations, including as relates to data used to develop and use the system. For instance, the AI Act establishes requirements for the training, validation and testing data sets, indicating that they shall be relevant, sufficiently representative and, to the best extent possible, free of errors and complete in view of the intended purpose. And deployers shall ensure that input data is relevant and sufficiently representative in view of the intended purpose of the high-risk AI system. This can bring important opportunities for the space sector, as contributors of data for this purpose.

3. Resilience

The envisaged EU Space Law (EUSL) aims to establish common EU rules addressing the safety, resilience and sustainability of space activities and operations. It intends to avoid and remove fragmentation and barriers across the single market caused by the heterogeneity or lack of national space legislations, while ensuring the competitiveness of the European space sector in an international trade context. The EUSL will cover three pillars: safety, resilience and sustainability. With relation to resilience, the EUSL will have to ensure due co-ordination with the NIS 2 Directive (Directive (EU) 2022/2555 concerning measures for a high common level of security of network and information systems across the Union), and the CER Directive (Directive (EU) 2022/2557 on the resilience of critical entities), as these legal acts contain a set of obligations that apply, for the first time, to the space sector, ie, to operators of ground-based infrastructure, owned, managed and operated by member states or by private parties, that support the provision of space-based services.

With special relevance is, however, the fact that the increased focus on resilience brings opportunities for the space sector: for instance, Council Recommendation on a Union-wide coordinated approach to strengthen the resilience

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of critical infrastructure (2023/C 20/01), set out targeted actions at Union and national level to support and enhance the resilience of critical infrastructure in identified key sectors, such as energy, digital infrastructure, transport and space. The Recommendation establishes that the European Commission should foster the use of Union surveillance assets (Copernicus, Galileo and EGNOS) to support member states in the monitoring of critical infrastructure. Once again, though the focus is on the EU Space Programme, opportunities can be explored for the wider space sector.

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