The Portuguese Space Act: An Innovative Framework for Space Activities

Magda Cocco* & Helena Correia Mendonça

This article examines Portugal's legal and regulatory framework for space activities, including on authorization, pre-qualification, registration, liability and insurance. It analyses the choices made at both the national and regional levels, including in light of the country's international obligations under the UN Space Treaties and the evolution of the space sector in matters such as small satellites, constellations of satellites, suborbital flights and space mining. It notes that the legal framework is business-friendly but that there are issues that require further clarification, a goal that will no doubt be achieved once launches from the future Azores spaceport begin.

Keywords: National Space Act, Regional Space Act, small satellites, constellation of satellites, Azores spaceport

1 INTRODUCTION

Portugal has been taking important steps in the space sector in recent years. It approved the Space Strategy in 2018 ('Portugal Space 2030'[1]), became part of the European Space Surveillance and Tracking programme (EUSST[2]); launched the Atlantic International Research Centre (the AIR Centre[3]); launched the Azores

* Magda Cocco is the partner responsible for the ICT practice area and for the Aviation, Space & Defence sector of Portuguese law firm Vieira de Almeida (VdA). Helena Correia Mendonça is a principal consultant of the Space sector and the ICT practice area of VdA. Both have assisted the Portuguese Government in the drafting of the Portuguese National Space Law. Please note that the viewpoints in this article are made in a personal capacity and do not necessarily reflect the position of the Portuguese State, unless otherwise expressly indicated. Email: cgs@vda.pt.

1 Resolution of the Council of Ministers No. 30/2018 of 12 Mar. 2018.

2 The participation of Portugal in the EUSST is addressed in Resolution of the Council of Ministers No. 116/2017 of 24 Aug. 2017, which created, under the Ministry of Defence, a temporary body called the Space Surveillance and Tracking Project Group (GPSST). The GPSST was originally set up for one year, but Resolution of the Council of Ministers No. 113/2018 of 31 Aug. 2018 extended its mandate until 31 Dec. 2018. The process for acquisition, installation, operation and exploitation of the national SST system was launched under a public tender published in the Official Journal on 5 Apr. 2019 (Public Tender No. 029/DGRDN/2019 – Procedure Announcement No. 3545/2019) and has already been concluded with the selection of one contractor.

3 The AIR Centre is an intergovernmental initiative that aims to explore the Atlantic region in a sustainable way. The AIR Centre has eight founding members covering three continents (Portugal, Brazil, Spain, Angola, Cape Verde, Nigeria, Uruguay and São Tomé e Príncipe), with Portugal, Spain, Brazil and South Africa currently leading the implementation through their participation in the

Cocco, Magda & Mendonça, Helena Correia. 'The Portuguese Space Act: An Innovative Framework for Space Activities'. *Air & Space Law* 45, no. 2 (2020): 157–200.

International Satellite Launch Programme[4]; and approved its own National Space Act[5] and Regional Space Act.[6] In addition, it reinforced its contribution to the European Space Agency (ESA), appointed a national space authority (the Space Authority) and set up a space agency (Portugal Space[7]).

Portugal also became a party to the UN Registration Convention[8] in 2018[9] and to the Liability Convention[10] in 2019.[11] It had previously acceded to the Outer Space Treaty[12] and the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space.[13]

The present article analyses the Portuguese Space legal framework, namely the National Space Act and the Regulation on access and exercise of space activities issued by the Space Authority, as well as the Regional Space Act and the Regulation on licensing of space activities[14] issued by the Azores.

2 THE PORTUGUESE SPACE ACT

2.1 Purposes of the Space Act

The Space Act was approved, as seen, within a broader framework of investment in outer space by Portugal. It aimed not only at reflecting the provisions of the UN

Centre's Executive Committee. The United Kingdom, Argentina and India are observers. Several research and technology organizations are also part of the initiative.

4 The Azores International Satellite Launch Programme (ISLP) is the national initiative for the establishment of a spaceport in the Azores. The process for setting up the spaceport is under way and a formal open tender was launched in Mar. 2019 – tender for the construction, operation and exploitation of a spaceport enabling a new generation of launch services, located on the island of Santa Maria, Azores (Procedure Announcement No. 3074/2019 as published in the national Official Journal).

5 Decree-Law No. 16/2019 of 22 Jan. 2019.

6 Regional Legislative Decree No. 9/2019/A.

7 Portugal Space was set up in Mar. 2019 under the Resolution of the Council of Ministers No. 55/2019. It is a private non-profit association comprised only of members from the public sector.

8 Convention on Registration of Objects Launched into Outer Space, 14 Jan. 1975, 1023 U.N.T.S. 15, 28 U.S.T. 695, T.I.A.S. No. 8480, 14 I.L.M. 43.

9 By means of Decree 24/2018 of 4 Oct. The Convention became binding for Portugal from 2 Nov. 2018, in accordance with Notice No. 143/2018 of 28 Nov. 2018.

10 Convention on the International Liability for Damage Caused by Space Objects, 29 Mar. 1972, 961 U.N.T.S. 187, 24 U.S.T. 2389, T.I.A.S. No 7762.

11 By means of Decree 14/2019 of 16 Apr. 2019.

12 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, 27 Jan. 1967, 610 U.N.T.S. 205, 18 U.S.T. 2410, T.I.A.S. No. 6347, 6 I.L.M. 386 (entered into force on 10 Oct. 1967).

13 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 22 Apr. 1968, 672 U.N.T.S. 119, 19 U.S.T. 7570, T.I.A.S. No. 6599, 7 I.L.M. 151.

14 The Regulation on access and exercise of space activities issued by the Space Authority is Regulation no. 697/2019 of 5 September. The Regulation on licensing of space activities issued by the Azores is Regional Implementing Decree no. 6/2020/A.

Space Treaties,[15] but also to promote private space activity.[16] Indeed, the first article of the Act expressly indicates that the Act establishes the framework for the access to and exercise of space activities in order to:

(1) Regulate the performance of space activities subject to the responsibility, authorization and supervision of the Portuguese Republic, in accordance with its international commitments;
(2) Facilitate and promote access to and the performance of space activities to any operators established in Portugal and from the Portuguese territory;
(3) Ensure that space activities comply with international principles of use of outer space, notably peaceful use;
(4) Protect the political and strategic interests of the Portuguese Republic and ensure that private space activities do not conflict with those interests.

In this respect, we recall that, under the Outer Space Treaty, non-governmental entities' activities in space require authorization and continuing supervision by the appropriate State (Article VI).[17] Resolution of the United Nations General Assembly No. 59/115, of 10 December 2004, recommends that States performing space activities enact national laws authorizing and setting forth supervision of space activities of non-governmental entities falling under their jurisdiction. In turn, Resolution No. 68/74, of 11 December 2013, contains recommendations on national legislation for the peaceful use of outer space.[18] Consequently, the approval of national laws on space activities is good practice in line with international guidelines.

---

[15] On the importance of approving national space laws to 'preserve the aims and principles established by the existing legal framework of public international law', Irmgard Marboe, *National Space Law*, in *Handbook of Space Law* 128 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015 [*Marboe National*]). *See also* A. Kerrest, *The Need to Implement the Outer Space Treaty Through National Law in the Light of the Current and Foreseeable Space Activity*, in *Proceedings of the International Institute of Space Law* 2010, 2011, at 551–559.

[16] On the benefits of attracting private space activities, *see* D. Linden, *The Impact of National Space Legislation on Private Space Undertakings: Regulatory Competition vs. Harmonization*, 8(1) J. Sci. Pol'y & Governance 2 (2016).

[17] However, 'Article VI does not necessarily demand the enactment of a specific national space act but the state must have at its disposal legal mechanisms to authorize and supervise non-governmental space activities'. Hence, Art. VI of the Outer Space Treaty represents the most important legal basis for national space legislation. *Marboe National, supra* n. 15, at 132. On the discussion of whether the Outer Space Treaty imposes on States the obligation to approve national laws *see also* J. Hermida, *Legal Basis for a National Space Legislation*, Kluwer Academic Publishers 28–32 (2004).

[18] The International Law Association also approved the Sofia Guidelines for a Model Law on National Space Legislation, Resolution No. 6/2012. For the explanatory note, *see* UNCOPUOS, *Information on the Activities of International Intergovernmental and Non-governmental Organizations Relating to Space law*, UN Doc A/AC.105/C.2/2013/CRP.6, Legal Subcommittee of UNCOPUOS, 52nd Session (26 Mar. 2013).

In addition, the Space Act aims to afford clarity, reliability and legal safety and thus contribute to promote private activity and investment in the sector. Moreover, the Act also aims at protecting the country's strategic interests, through the State's knowledge and monitoring of private activity to the extent required for that purpose.

One of the focus areas of the Act is small space objects, with the Act containing measures aiming at facilitating their licensing, once again with a view to promoting private activity and opening the market to new entrants.[19]

2.2 Scope of application

The scope of application of the Portuguese Space Act is three-fold:

- With regard to the material scope of application, the Act applies to space activities;
- With regard to the territorial scope of application, the Act applies to space activities performed in national territory, which includes the maritime area and the airspace under Portuguese jurisdiction or sovereignty, on board Portuguese vessels and aircraft or in facilities under Portuguese jurisdiction or sovereignty, irrespective of the nationality of the operator; and
- With regard to the personal scope of application, the Act applies to Portuguese operators or operators established in the national territory for space activities performed outside Portugal.

2.2[a] *Material Scope of Application*

The material scope of application of the Act are space activities, which cover space operations and launch sites operations.

'Space operation' is defined in the Act as any operation of the following types:

(1) 'Launch and/or return operation', which means the activity whereby space objects are intended to be sent or launched into space, notably to be placed in or beyond orbit, and the return of space objects to the Earth's surface. The Act clarifies that, if applicable, the launch operation begins when it becomes irreversible and ends with separation of the launcher and the object to be placed in space; and

[19] Indeed, 'There is growing demand for easing the regulation of small satellites and government recognition of the need for lighter regulation and different treatment'. Sa'id Mosteshar and Irmgard Marboe, *Authorisation of Small Satellites under National Space Legislation*, in Irmgard Marboe, Small Satellites, *Regulatory Challenges and Chances* 135 (Leiden: Brill Nijhoff 2016, [*Mosteshar Marboe*]).

(2) 'Command and control operation', which means the activity consisting in exercising effective control over a space object, which, if applicable, begins with the separation of the launcher and the object destined to space and ends on the earlier of: (a) performance of the last deorbiting manoeuvres and passivation activities; (b) loss of control of the space object; (c) moment when the return to Earth begins or complete disintegration of the space object in the atmosphere occurs.

A 'space object' is defined as:

(1) An object launched or intended to be launched into space, notably in or beyond earth's orbit;
(2) Any vehicle intended to launch an object set out in the provision in (1) above or to return it, even if it is operated without such object, notably for development or validation purposes, hereinafter referred to as launcher;
(3) Any component of the space objects set out in (1) and (2) above.

A 'launch site operation' means the management, administration or direction of a launch site, whereby a 'launch site' means any fixed or mobile facility intended for the launch or return of space objects, including all equipment of that same facility required for launches and/or returns.

Several aspects are worth noting with respect to the material scope of application of the Act.

Firstly, the Act applies, as usual, to the launch of space objects to outer space.[20] There is no definition of launch or outer space, however. The discussion of what 'launch' means, and its closer link to vertical rocket launches, are well known. It so happens, however, that the definition of 'launch and/or return operation' also mentions 'sending' objects to outer space, even though the definition of 'space object' does not repeat the word 'sending' and uses only the expression 'launch'. In addition, one must recall that the Act was approved within the scope of a larger investment in space by Portugal, which includes the Azores spaceport. And despite the fact that the spaceport is focused on the vertical launch of small satellites, the Satellite Launch Programme[21] also indicates that the use of air-based launching solutions may be considered, as there are airport facilities that could be used. What

[20] Despite the wording of the Outer Space Treaty, which speaks of 'activities in outer space'. 'When the OST speaks of "activities in outer space", it is questionable whether only activities *completely* taking place *in* outer space are mentioned'. Michael Gerhard and Isabelle Reutzel, *Law Related to Space Transportation and Spaceports*, in *Routledge Handbook of Space Law* 280 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017, [*Gerhard*]). Indeed, national space laws, when regulating space activities, apply to the launch of space objects.

[21] *Supra* n. 4.

is more, given the technological advances in this respect, it would make little sense to apply the Act only to vertical rocket launches as that would go against the desired technological neutrality of laws and regulations. Note, in addition, that the Act, in the definition of 'launch and/or return operation', indicates that such operation '*begins when it becomes irreversible and ends with separation of the launcher and the object to be placed in space*', '*if applicable*', meaning that other forms of sending an object into space are also comprised in the Act. A concept of 'launch' that covers both horizontal and vertical launches/take-offs is hence the one that needs to be considered in this respect. Indeed, the Portuguese legislator, when drafting the Act, expressly discussed this topic and aimed, with the word 'sending' in the definition of 'launch and/or return operation', to avoid any discussions that could possibly arise in this respect and make it clear that whatever the means of sending an object to outer space, the Act would apply.[22]

'Outer space' is also not defined in the Act, which was also an intentional decision by the legislator aimed at guaranteeing more flexibility in this respect considering possible needs or evolutions in this scope. There is no binding definition of outer space and where it starts[23] and hence the approach of Portugal in this respect will very much depend on how the Space Authority will deal with this issue in practice. The central point in this respect relates, clearly, to the application of the Act to sub-orbital flights.[24] Note that the Act applies whenever an object is launched or intended to be launched into outer space, '*notably in or beyond earth's*

---

[22] Arguing that 'the most sensible and comprehensive approach would be to rise above any technological variations and to simply consider any object (attempted to be) brought into outer space by that token "launched"', Frans von der Dunk, *Legal Aspects of Private Manned Spaceflight*, in *Handbook of Space Law* 679 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA, 2015 [*von der Dunk Spaceflight*]).

[23] There are two main approaches in this scope: the 'spatialist' and the 'functionalist' approach. According to the spatialist approach, 'a physical demarcation line between air space and outer space must be set. The Von Kármán line at 100 km above sea level was accepted by the International Aeronautical Federation as a boundary between air space and outer space. The functionalist approach takes into consideration the purpose of a vehicle in flight and its activity: it shall be crucial whether the vehicle is built to operate from Earth to outer space or to fly in airspace. This approach gained more substantial support in the 1970s due to the rapid development of technology. […] the functionalist approach has been endorsed by some of the major space-faring nations such as the United States (US)'. Note, however, that the functionalist approach may present serious shortcomings in the light of technological evolution where vehicles are able to operate both in air and in outer space. *See*, in this respect, Stephan Hobe & Kuan-Wei Chen, *Legal Status of Outer Space and Celestial Bodies*, in *Routledge Handbook of Space Law* 28 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017 [*Hobe*]). Also in this respect, *see* Mark J. Sundahl, *Legal Status of Spacecraft*, in *Routledge Handbook of Space Law* 54 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017 [*Sundahl*]), noting that 'If a customary international law on this issue were to come into being, the evidence suggests that it will define the boundary of outer space as (or near) the von Kármán line'. 'Nonetheless, there is likely not sufficient state practice (or other evidence of customary law) at this point to clearly support an assertion that customary international law exists regarding the boundary of air space and outer space'.

[24] Which is not necessarily space tourism. Indeed, sub-orbital flights would include also those of space objects. *See von der Dunk Spaceflight, supra* n. 22, at 667.

orbit'. This expression seems to show that the Portuguese legislator acknowledged that there is 'outer space' even 'below' orbit or even when the object does not make an orbit around Earth.[25] This also seems expressly acknowledged in the definition of 'command and control operator', which mentions the command and control of space objects that are in outer space, '*even if only temporarily or in transit*'. However, the lack of express reference to suborbital flights could be interpreted as giving some leeway to the Space Authority to decide how to address this issue, including in coordination with the Portuguese Aviation Authority, especially in case of horizontal take-offs.

'Space object' is defined in the Act, with the Portuguese legislator having made an intentional effort to provide a definition that would be clear and self-explanatory, thus avoiding the pitfalls of the definition provided in the UN Space Treaties. A 'space object' covers the object launched or intended to be launched to outer space, meaning that even if the object does not reach outer space (for example, in case of accident), the Act would still apply. The Act does not make a distinction between small satellites and others in the definition of 'space object', despite the issues that have arisen in other countries as to whether non-manoeuvrable objects would be covered by national space laws.[26] Indeed, it would be clear, from the beginning, that the Space Act would apply to small satellites, as the Act was drafted within the scope of a larger space framework in Portugal that covers the Azores spaceport, a spaceport that is intended to launch small satellites. In any case, the Act clarified, in the definition of 'command and control operator', that non-manoeuvrable objects would still be covered, as it indicates who shall be considered the command and control operator when the space object cannot be controlled or guided.

A 'space object' also includes the transportation means, which the Act, for simplicity purposes, designates as 'launcher'. Once again, this is a legal definition (not a technical one) and, given the approach of the Act in guaranteeing technological neutrality, it seems clear that a 'vehicle' that is not, from a technical point of view, a rocket vertical launcher, would still be covered by the definition to the

---

[25] *Ibid.*, at 668–669. This author notes that '"Sub-orbital" is a technical/operational criterion of not achieving a full orbit around the earth, but has often been perceived, as a consequence of "sub" meaning "below", as a "geographical", "spatial" one, as synonymous with "not reaching outer space"'. Detailing this aspect, 'In practice it is often, consciously or unconsciously, equated to remaining *below* a certain altitude (that of "an orbit") – or, by contrast (and rather confusingly), *above* a certain altitude (namely as being in outer space)'. The author notes that some countries (such as South Africa) have created a dichotomy between 'sub-orbital' and 'outer space', a view different from the Portuguese one.

[26] Indeed, 'One of the most notable differences between small satellites and traditional satellites is the lack of propellant systems on board the former'. Neta Palkovitz, *Small Satellites: Innovative Activities, Traditional Laws, and the Industry Perspective*, in *Small Satellites: Regulatory Challenges and Chances* 49 (Irmgard Marboe ed., Leiden: Brill Nijhoff 2016 [*Palkovitz*]). *See also*, in this respect, referring to the cases of Belgium and the Netherlands, Frans von der Dunk, *Liability for Damage Caused by Small Satellites – A Non-issue?*, in *Small Satellites: Regulatory Challenges and Chances* 168–169 (Irmgard Marboe ed., Leiden: Brill Nijhoff 2016, [*von der Dunk small satellites*]).

extent it is destined to launch (or send) an object to outer space.[27] Any component part of the space object is also a space object. This wording is aligned with the definition of 'space object' in the UN Space Treaties – which also covers component parts.

Secondly, the Act applies to the return of space objects. This covers both the return of reusable launchers, as well as the return of satellites or other space objects. The Act does not define 'return' and thus one might wonder if the Act would apply to the return of space objects that are not manoeuvrable or of debris. Note that, in the definition of 'command and control operator', the Act addresses the issue of space objects that cannot be controlled and guided, as above indicated, but does this only for the 'command and control operation', not for the 'return operation'. In any case, the option of the legislator shall not be seen as a clear indication that 'return' requires controlling the object – indeed, the clarification on the definition of 'command and control operator' was needed because 'command and control' is defined as 'effective control over a space object', something that does not exist in non-manoeuvrable space objects. Given the requirements (below analysed in more detail) relating to minimization of space debris and the need, for the license applicant, to submit a safety plan also for return, in accordance with the Space Authority Regulation (which also expressly refers to 'non-controlled return' of the launcher[28]), one may conclude that, at least, the operator shall adopt a set of measures for safe return, even if the object itself cannot be controlled – meaning that 'return' would also cover this situation.

With regard to the re-entry of debris into the Earth's atmosphere, the issue seems to relate with knowing if 'debris' can be considered 'components' of a space object – and, hence, also a 'space object'. This view has been taken already at the international level.[29] A literal interpretation could thus point to the 'return' of

---

[27] This means that transport vehicles that are 'aircraft' in accordance with the Chicago Convention on International Civil Aviation would also be covered by the Space Act. We note, in this respect, that the issue at stake relates with the technical features of the vehicle and less with the 'place' (air or outer space) where the vehicle operates or intends to operate. However, because horizontal take-offs were first used for sub-orbital flights, the discussion started with sub-orbital flights. We recall, in this respect, that, in Europe, 'EASA at first intended to develop an appropriately specific certification regime for the craft to engage in sub-orbital flights (at least to the extent that these qualify as "aircraft") and, once that regime would be sufficiently developed, start addressing attendant safety issues such as those related to crew and passenger licensing and certification, but those efforts currently have been put on hold'. *von der Dunk Spaceflight*, *supra* n. 22, at 675.

[28] Regulation no. 697/2019 of 5 Sept., *supra* n. 14.

[29] Lotta Viikari, *Environmental Aspects of Space Activities*, in *Handbook of Space Law* 736 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015 [*Viikari*]). 'The European Space Agency took the position as early as 1988 that space debris can be regarded as a "component part" of a space object; *see* Report of the ESA Space Debris Working Group, 1988, 67. […] In the same vein, the 2004 European Code of Conduct for Space Debris Mitigation defines space debris as any non-functional man-made space object "including fragments and elements thereof"; European Code of Conduct for Space Debris Mitigation, Issue 1.0, 28 June 2004'.

debris to be covered by the Space Act. The definition of 'launch and/or return operation' could also be seen as pointing in this direction: indeed, the launch operation is the 'activity whereby space objects are intended to be sent or launched into space', but the return operation is not the activity whereby objects are intended to be returned from space: the return operation is simply 'the return of space objects to the Earth's surface'.

A different issue is, of course, the uncontrolled re-entry of space objects, which is something outside the control of operators. Indeed, one thing is the lack of control over the space object but the acknowledgment of the conditions of its return to Earth, another thing is the lack of control over the arrival of the space object to Earth. A sensible interpretation of the Act would subject the return of space objects (even if not manoeuvrable or not functional) to the Act, but not the re-entry of space objects except with relation to the conditions that the space operation shall meet for addressing environmental/debris matters.

Thirdly, the Act applies to 'command and control operations'. Command and control mean the effective control over a space object, but an operator that launches or exploits a non-manoeuvrable space object is, in this circumstance, the command and control operator, as notified to the Space Authority. The Act once again resorts to the typical situation of vertical launches to clarify when a command and control operation starts and ends, but elucidates, once again, that such indication shall be read only 'if applicable'. Thus, in vertical launches with a transportation vehicle, the moments of launch, operation and return are fully clear. This clarification is very useful to make it clear that 'command and control' are of the space object in space and not of the transportation vehicle. Hence, the distinction between the 'object in space' and the 'transportation vehicle' is very relevant: the 'transportation vehicle' is subject to 'launch' and possibly 'return'; the 'object in space' is subject to 'launch' as well as to 'command and control' (even if not manoeuvrable, as seen) and possibly 'return'. This view fits perfectly with the launching and operation of satellites, which was indeed the situation the Portuguese legislation had in mind when drafting the Act. But, given that the clarifications provided in the Act are only operative 'if applicable', the Act also applies to other less typical cases. For instance, the Act is written in enough broad terms to cover point-to-point transportation that resorts to outer space or to space vehicles that will remain, for a certain period, in space. The issue is whether, in addition to 'launch and/or return', such operations are also 'command and control operations'. Given that the command and control operator is the one that controls objects that are in outer space, 'even if only temporarily or in transit', and that 'command and control' is the control over a space object, it seems that, in cases where the vehicle is used with purposes beyond the transportation of objects to be sent to space, the transportation vehicle could be subject also to 'command and

control'. In any case, one will have to wait and see how the Space Authority will deal with such cases, given that the Space Act gives flexibility to address this issue in other manners, an option that was well chosen by the legislator as it allows adapting the application of the Act to the evolution of space activities.

Finally, the Act also applies to 'launch site operations'. Even though 'the management, administration or direction of a launch site' is not a space activity – differently, it is a ground activity – the inclusion in the Act of this type of activities brings a novelty that will facilitate the performance of space operations under the Act, as we will see below.

The Act does not apply to space activities performed within the scope of national defence activities, with a view to protecting strategic, security or defence interests of the Portuguese Republic.[30] Hence, space activities carried out by public entities are also subject to the Act, even though its main purpose relates with private activity. The exclusion of space activities carried out within the scope of national defence activities seeks to ensure the confidentiality of activities that are sensitive to the defence of the State, while at the same time ensuring that they are not covered by the Act whenever required for strategic, security or defence purposes of the Portuguese State. The wording reflects the recognition of the key role played by space technologies and products in defence activities: by allowing their exclusion, it is acknowledged that they could present certain specificities that make application of a legal framework underpinned by publicity of space operations carried out by operators inadequate. Given the dual-use nature of space technology and of many space operations (for instance, a satellite could be used both for civilian and defence purposes), the exact means of how this will be ensured could perhaps require coordination between the Space Authority and Portuguese defence authorities.

The Act also does not expressly address mining asteroids or other celestial bodies, an activity some countries, notably the US and Luxembourg, have addressed in their national laws. The Act does not prohibit any such activity, as the Act was construed to be applicable to all space operations regardless of their purpose. Hence, the launch or command of a space object in space aimed at mining asteroids would still, in principle, be subject to the Act. The issue is, of course, whether the Portuguese State, confronted with a request for authorizing a

[30] On the issue of the military uses of outer space, especially the difference between 'military uses' and 'aggressive uses' or the weaponization of outer space, Fabio Tronchetti, *Legal Aspects of the Military Uses of Outer Space*, in *Handbook of Space Law* 333 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015). This author notes that 'Although a minority of legal scholars deem such a militarization of outer space to be in violation of space law rules, the overwhelming majority of experts consider it to be consistent with the legal regime governing activities in outer space. State practice also confirms the legality of this type of military use of outer space'. *See also* Soucek, Alexander, I *Space Law Essentials* 23 (Vienna 2015).

space activity with this purpose, would allow it or not, an approach that would very much depend on how it would interpret the UN Space Treaties,[31] especially the principle of Article II of the Outer Space Treaty, which prohibits '*national appropriation by claim of sovereignty, by means of use or occupation, or by any other means*'.

2.2[b] *Territorial Scope of Application*

The Act applies to space activities performed in national territory, which includes the maritime area and the airspace under Portuguese jurisdiction or sovereignty, on board Portuguese vessels and aircraft or in facilities under Portuguese jurisdiction or sovereignty,[32] irrespective of the nationality of the operator.

The application of the Act to activities in Portugal follows the usual approach of applying national space laws to activities taking place in national territory, and thus any such activities, even if carried out by foreigners, will be subject to the Act.

2.2[c] *Personal Scope of Application*

The Act also applies to space activities performed outside the national territory by Portuguese operators or operators established in the national territory. The Act clarifies that are deemed established in Portuguese territory operators with residence in the national territory pursuant to the provisions of the Personal Income Tax Code or the Corporate Income Tax Code, for natural or corporate persons

---

[31] The law of treaties applies when it comes to interpreting the Space Treaties. Even though the Vienna Convention on the Law of Treaties (VCLT) came into force after the Outer Space Treaty, it is considered to be applicable in all matters of treaty application and interpretation as a matter of customary international law. Treaty interpretation requires first a consideration of the ordinary meaning of the words, second a consideration of the preparatory documents, or *travaux préparatoires*, in order to determine the intended meaning during negotiations, and finally an interpretation harmonious with the rest of the terms of the treaty (Art. 31 VCLT). Cassandra Steer, *Sources and Law-Making Processes Relating to Space Activities*, in *Routledge Handbook of Space Law* 13 (Ram S. Jakhu and Paul Stephen Dempsey eds, UK, New York, Routledge 2017 [*Steer*]).

[32] This wording is very relevant, as it has been argued that a 'facility from where a space object may be launched' (which is one of the criteria to determine a launching State under the Registration and Liability Conventions) does not include private facilities. Peter van Fenema, *Legal Aspects of Launch Services and Space Transportation*, in *Handbook of Space Law* 398 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015 [*van Fenema*]). This author refers to sea- and air-based launches in international territory and considers that they cannot be seen as facilities of a State: for instance, a private oil rig. The author adds that it is 'highly debatable whether a privately-owned aircraft registered in the United States may be called a US *state* facility', at 401. Note however that the Portuguese Act applies in Portuguese territory, 'including' 'on board Portuguese vessels and aircraft or in facilities under Portuguese jurisdiction or sovereignty' (Art. 2, n. 1, a) of the Act), which can be seen as an indication that the Portuguese legislator considered such vessels and aircraft also Portuguese territory.

respectively. Note that operators ('launch and/or return operator', 'command and control operator' and 'launch site operator') can be either natural or corporate persons.

The Portuguese legislator has thus considered that space activities taking place abroad by Portuguese persons should also be subject to the Act, thus interpreting the notions of Article VI of the Outer Space Treaty relating to 'national activities' and the 'appropriate State' as covering also any such activities. Hence, the Portuguese State has considered itself 'responsible' for the activities of Portuguese operators abroad.

In this scope, note that there are several views on what 'national activities' and 'appropriate state' mean. A school of thought argues that 'national activities in outer space' correspond only to those where a State also qualifies as a liable State. Some view the 'responsible State' as the 'state of registry' because, according to Article VIII of the Outer Space Treaty, this state retains 'jurisdiction and control' over the space object.[33] Another school of thought argues, differently, that 'national activities' equate with those over which a State 'is entitled to exercise some form of generally accepted jurisdiction',[34] thus covering both the territorial and the personal scopes of application.

The Portuguese legislator took this last option, which offers a number of advantages, notably it affords the Portuguese State greater control over and knowledge of space activities conducted by Portuguese entities. Note, in addition, that Resolution of the United Nations General Assembly No. 59/115, of 10 December 2004 recommends that States performing space activities enact national laws authorizing and setting forth supervision of space activities of non-governmental entities falling *under their jurisdiction*, which would cover both territorial and personal jurisdiction.[35]

However, the legislator has also acknowledged that this personal scope of application could create burdens to operators that would be also subject to national laws of the territories where the space activity would take place. Indeed, in such cases, the operator would be subject to more than one law and would have to

---

[33] *See*, on this matter, *Marboe National, supra* n. 15, at 133. This author notes that equating 'responsible state' and 'liable state' is not appropriate, because '"once a launching State, always a launching State". This is particularly problematic when space objects are bought and sold in orbit on a regular basis, as is the case today. This was not envisaged at the time of the formulation of the Outer Space Treaty. It follows that the rigid concept of the "launching State" should not be used to interpret the much more flexible concept of the "appropriate State"'.

[34] Frans von der Dunk, *International Space Law*, in *Handbook of Space Law* 54 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015 [*von der Dunk International*]).

[35] *Marboe National, supra* n. 15, at 134. 'Under general international law, there are two generally accepted ways of exercising jurisdiction over an activity: territorial jurisdiction and personal jurisdiction. This means that the activity can be regulated by a state if it takes place on its territory or if it is carried out by a person possessing its nationality'.

comply with procedures and obligations in several states.[36] As a result, the Act establishes that space activities taking place abroad are not subject to mandatory licensing if the operator is able to demonstrate to the Space Authority's satisfaction that it secured the proper authorizations and that it abides by the law of a State with which the Portuguese Republic has an agreement in place to ensure the compliance of its international commitments. Note that the Act does not say that such activities are not subject to the Act, but only that they are not subject to licensing. This means that one can interpret this provision as allowing the Space Authority to continue to supervise the activities of such operators (note that the supervision article of the Act does not limit the supervision powers of the Space Authority to 'licensed operators' and mentions only 'operators'), even though the agreement concluded by Portugal with the other State could, in theory, foresee the possibility of the Portuguese Authority exercising its supervision rights before the relevant foreign authority (instead of, or in addition to, performing supervision activities directly before the operator), in an attempt to reduce burdens to operators.

2.3 License and pre-qualification

Space operations are subject to licensing. In addition, both space operations and launch site operations can be subject to pre-qualification.

2.3[a] *License*

With relation to licensing, the Act foresees 2 (two) types of licenses: (1) the individual license, which is applicable to each type of space operation and issued to the relevant operator and (2) the blanket license, which is applicable to a series of space operations of the same type and issued to the relevant operator.

We recall that there are 2 (two) types of space operations: 'launch and/or return' and 'command and control'. Both types of licenses are issued for each type of operation and each operation relates with space objects, which include not only the payload, but also the launcher (once again, in typical space operations). Hence, for instance, the launch of a satellite by operator A on the launcher of operator B would require operator A to obtain an individual license for the launch and an individual license for the command and control of the satellite, and operator B to obtain an

[36] The UN 'Recommendations on national legislation relevant to the peaceful exploration and use of outer space' (UNGA Res 68/74, 2013), para. 2, addresses this point, by stating that 'if another State is exercising jurisdiction with respect to such activities, the State should consider forbearing from duplicative requirements and avoid unnecessary burdens'.

individual license for the launch of the launcher (in both cases, return could also be foreseen).[37] Individual licenses are applicable to one single operation (i.e. one launch of one space object, the command and control of one space object).

The Act thus requires a license for each individual space object. The Act thus also covers space activities that do not translate into placing satellites in orbit or probes in space (for instance, launcher tests, use of launchers to send resources to space stations, among other things), thereby ensuring greater technological neutrality of the Act and its applicability to several types of space activities.

In order to respond to the advent of constellations of satellites, the Act further created blanket licenses, which allow operators to obtain a single license for several space operations of the same type. Hence, for instance, in the case of the launch of hundred satellites by operator A on launchers of operator B throughout a predetermined period of time, Operator A could, instead of obtaining hundred individual licenses, obtain one blanket license for the launch of the hundred satellites, and one blanket license for the command and control of the hundred satellites. And Operator B could also obtain a blanket license for the hundred launches of the launcher(s). For the Space Authority to be able to supervise such space operations, the Act indicates that the operator holding a blanket license shall notify beforehand the space operations licensed to the Space Authority at least three days prior to the date scheduled for their execution. Indeed, while, in the case of individual licenses, information about the details of the operation (e.g. date of launch), could be readily available for the operator in the process of licensing, in the case of a blanket license such details might be defined later on: for instance, the operator may know that it intends to launch N satellites within a period of five years, but only later on will it know the exact dates and details of launch. Hence, it needs to notify the Space Authority of such details of the space operations.

The above licenses apply to operations of the same type performed by an operator. The Act, however, acknowledges that operations of the same type but pursued by different entities, as well as operations of different type, could also benefit from single licenses. It has thus established that '*Space operations of the same type or of different type that comprise one or more launch and/or return operations and the corresponding operations of command and control of space objects launched can be licensed jointly, even if performed by more than one operator*'. This allows, for instance, that Operator A above obtains a single license for launch and for command & control of one (joint individual license) or more (joint blanket license) satellites. It also allows either Operator A or Operator B to obtain a single license for the launch of both the satellite(s) and the launcher(s) (vertical licensing), and of the command &

[37] As we will see below, however, the Space Authority Regulation, *supra* n. 14, seems to adopt a different approach in this respect.

control. Presumably, operators will be interested in the launcher operator obtaining the launch license for all space objects (both launcher and payload) and the payload operator obtaining the command and control license. In the cases where the operator obtains the license also for space objects of another operator, it is obtaining the license not only for itself but also on behalf of the other operators, as expressly indicated in the Act.

The Act contains the conditions for obtaining a license. They include provisions on the technical, economic and financial capacity of the operator; security; environment; debris and insurance, as well as the requirement that '*All other authorizations and certificates required for the purpose of the space operation have been issued by the relevant entities*'. Note that, despite the fact that it seems that the applicant would need to have already any such other authorizations and certificates, the Act clarifies that, for purposes of securing such other required authorizations, the following procedure applies: (1) for individual licenses, the information and documentation necessary for the other authorizations must be submitted to the Space Authority together with the information and documentation to obtain a license for space operations; (2) for blanket licenses, and if so directed by the Space Authority, the information and documentation necessary for the other authorizations must be submitted prior to each operation, and operators may not perform the space operation without those authorizations. This means that the applicant does not need to have already all other authorizations or certificates: it suffices that the required information to obtain such authorizations is submitted to the Space Authority. This wording responds to the purpose, by the Portuguese legislator, of construing the Space Authority as a one-stop-shop, meaning that the applicant would be able to direct all requests for all needed authorizations directly to the Space Authority, instead of having to go through the procedures of all other competent authorities. It is expected that this will help facilitate the performance of space operations subject to the Act and decrease the burdens to the operator.

Any such other authorizations may relate, for instance, with environmental issues, occupation of air space/air corridors and assignment of orbital slots. Note that Portugal does not have a formal procedure for assignment of orbital slots.

When it comes to blanket licenses, note that such information is to be submitted prior to each operation. Indeed, a blanket license authorizes various operations – and other entities' authorizations may need to be issued on a case-by-case basis, i.e. for each individual operation. Consequently, although the Space Authority may already have granted a blanket authorization, the operator may be required to procure other authorizations for each single operation. In light of the above, in that case the operator must submit the information and documentation required to that end to the Space Authority.

Note that the Act also foresees the possibility of the Space Authority establishing a special licensing framework, which may consist in shorter deadlines or streamlined procedures (which could be, for instance, simplification of the documentation to be submitted), if:

- The applicant is a public entity or an international organization 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 activities with experimental purposes with demonstrable low risk for the Earth's surface, airspace and outer space, including for public health and citizens' physical safety;
- The applicant has secured an authorization for the performance of the space activity from another State whose legal framework ensures compliance with applicable international commitments.

This possibility aims, again, to reduce burdens to operators, facilitate the licensing procedure and promote R&D. The Act, thus, expressly acknowledges the different playing field that operators may be in. Indeed, a start-up or small and medium-sized enterprise (SME), or a research institution, may be less able to comply with high demanding requirements than an established major space operator. The purpose of opening the market to all interested operators and promoting private activity has guided the drafting of the Act and this purpose is also reflected in the provisions on licensing. Public entities and international organizations[38] may also benefit from a more expedited procedure. This wording aimed at allowing more flexibility taking into consideration some other initiatives of the Portuguese State, notably the AIR Centre and the Portuguese Space Agency. Note however that the Space Agency was incorporated as a private entity, raising doubts if it can benefit from a more expedited licensing procedure when performing commercial activities (though it could still benefit from such expedited procedure in accordance with the other criteria of the Act).

[38] Note that international organizations may also be directly subject to certain UN Space Treaties. Indeed, the Liability Convention and the Registration Convention may apply to international organizations if they accept the terms of these Treaties by declaration (Art. XXII s. 1 of the Liability Convention and Art. VII of the Registration Convention). ESA and EUTELSAT have made such declarations with respect to the Liability Convention, and ESA, EUTELSAT and EUMETSAT have made declarations with respect to the Registration Convention. *Steer, supra* n. 31, at 7. Also, Frans von der Dunk, *European Space Law*, in *Handbook of Space Law* 223–225, 236, 237 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015).

The license is to be issued within ninety days as of receipt of a complete application. This deadline seeks to ensure greater swiftness and attract space activities to the country.

The license is granted (1) in case of individual licenses, for the period of time corresponding to the licensed operation and (2) for blanket licenses, for a specified number of operations or for a certain period of time after their issue. Hence, for instance, an individual license for a launch would cover that launch only and a license for the command and control should, in principle, last for the timeframe that the space object in space is being operated.[39] The blanket licenses can be issued for a certain number of operations (e.g. five launches) or for a time period (e.g. an undetermined number of launches in a period of one year).

The license can also terminate, by expiry, relinquishment or cancellation (cancellation being applicable when the operator breaches its obligations or for reasons relating to security). In either case, in the event of termination of the license based on any of the above reasons, the Space Authority may:

(1) Order the operator to take, at its expense, the measures required to ensure the temporary continuation or the safe termination of the space operation, and to curtail the risk of damages;
(2) Transfer the performance of the space operation to another interested operator with a view to ensuring the continuity of the operation or take, at the expense of the operator whose license terminated, such actions as may be required to deorbit or destroy the space object. Note that the Act, thus, allows the Space Authority, itself, to take such actions to deorbit or destroy the space object, which, it seems, may include the Space Authority doing it itself or placing such actions over a selected entity.

2.3[b] *Pre-qualification*

The Act creates a novel instrument which is the pre-qualification.

The pre-qualification is a voluntary mechanism whereby operators may obtain an attestation that certain elements meet certain requirements. The purpose of the pre-qualification is to streamline and facilitate the process of obtaining a license, given that applicants are waived from submitting information that has been pre-qualified. The pre-qualification attests: (1) that the launch site operator, the launch and/or return operator and the command and control operator have the technical,

[39] Note however that the Space Authority Regulation, *supra* n. 14, seemingly establishes a maximum duration for the licenses, which can however be extended.

economic and financial capacity for the space operations they intend to perform; (2) regarding the launch site operator, that the systems and processes implemented comply with applicable law and satisfy the requirements set out in the technical regulation approved by the Space Authority; (3) regarding the launch and/or return operator and the command and control operator, the features and specifications of the respective space object; (4) regarding the command and control operator, the systems and processes implemented at the command and control centre.

By way of example, a satellite operator wishing to launch a satellite by using an already certified launch site and launcher under a pre-qualification procedure need not submit detailed information for the relevant site and launcher, but it will be enough to state the site and launcher used, the relevant pre-qualification and the elements that are pre-qualified and thus need not to be submitted.[40] In turn, if it is launching a satellite that is the same as another satellite already certified, it also need not submit detailed information on the relevant satellite. In addition, if the operator itself is already certified, it is also released of the obligation to submit detailed information on itself. This way, both the information and documentation to be submitted for space operations shall only be information on non-certified items.

The pre-qualification, thus, also applies to the launch site operator and to the launch site operations. Hence, whilst launch site operations are not subject to licensing, they can benefit from the pre-qualification procedure. The option taken by the Portuguese legislator is well explained in the framework of the Azores spaceport and the investment being made in outer space. Indeed, unlike other countries that have opted to foresee, in their national space laws, the licensing of spaceports, the Portuguese Act opted to exclude this matter from the scope of the licensing as the establishment and operation of spaceports is to be seen, in Portugal, as subject to concession. This approach was considered to allow for greater flexibility considering the needs and interests relating with spaceports that may come to be identified.[41]

---

[40] Space Authority Regulation, *supra* n. 14.

[41] A Report by the UK House of Commons, Science and Technology Committee, The Draft Spaceflight Bill, Fourteenth Report of Session 2016–17, of 29 Apr. 2017, seemed also to note that the lack of clarity regarding potential launch operators raised questions as to whether the British option to subject spaceports to licensing would prove successful. It stated '*The Government is right to avoid a "build it and they will come" approach to establishing spaceports. Nevertheless, the current lack of clarity regarding potential launch operators raises questions as to whether the apparent "legislate and they will come" approach underpinning the draft Bill will prove successful*'.

2.4 Environment and space debris

One of the most important points in the Act relates with safeguarding the environment and minimizing space debris. The Act makes several references to this point, including by:

- Indicating that the license is only granted if the Space Authority is satisfied that, among other points, the '*space operation ensures the minimization of space debris as much as possible, in accordance with international principles and commitments*'. In addition, '*the license may stipulate other requirements […], including in connection with environmental matters, subject to the operator's express agreement, without which the license shall not be granted*'.
- Indicating that the license holder has the duty to 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, security and minimization of space debris.[42]
- Indicating that the licensee is also under the obligation to duly foresee and safeguard any damages to Earth or to space, directly or indirectly, in accordance with the applicable national and international obligations.

The protection of the environment is a central point in all investment being made by Portugal in outer space: notably, the spaceport project also places great emphasis in that the spaceport and the launchers using it adopt sound environmental technology and processes.

This is even more important considering the focus of Portuguese investments in outer space in the field of small satellites, given that, often, their non-manoeuvrability may increase the risks of debris.[43]

The Act does not make express reference to the international guidelines on debris, nor to the environmental provisions of Article IX of the Outer Space

---

[42] Compliance with these rules by private operators is of utmost importance given the privatization of space activities. Indeed, 'it is a fundamental rule that private actors are not subject to international law *per se*, so it will fall on states to enact domestic regulations that require private actors to comply with international law'. *Sundahl, supra* n. 23, at 47.

[43] *See*, in this respect, *Mosteshar Marboe, supra* n. 19, at 134–135. 'Less precise orbital fidelity increases the risk of conjunctions, as the satellite has limited capability to make avoidance manoeuvres with reasonable certainty of reducing the possibility of a conjunction. This makes small satellites more prone to the creation of debris. However, depending on the orbit, small satellites have a shorter orbital life than those of larger satellites with a mass of over 1000 kg, thereby mitigating the risk of conjunction and resulting debris creation to some degree'. In addition, 'Another risk is the possibility of explosion, causing fragmentation of the small satellite. Small satellites may carry fuel in addition to electric storage batteries, which can be more readily affected by temperature and radiation'.

Treaty[44] or to other international provisions in this respect,[45] including provisions on the long-term sustainability of outer space.[46] Nevertheless, it does note that minimization of space debris shall be made in accordance with international principles and that the UN Space Treaties principles shall be complied with by the licensee. The Space Authority Regulation[47] details this point by noting that such principles include the Inter-Agency Space Debris Coordination Committee (IADC)[48] and UN Debris Mitigation Guidelines,[49] as well as the ISO standards.[50] This approach gives flexibility to operators, but it must be noted that these provisions, especially the IADC and the UN Guidelines, though similar, are not all the same.[51] For instance, the IADC Guidelines are in some respects more detailed.[52] As such, minimum guidelines would have been advisable, not only for operators, but also to guarantee that the Space Authority would have, for all operators, a minimum set of information. The requirement that the operators would have to implement measures also to arrange the removal of space debris[53] would also be relevant, something only the IADC Guidelines address in more detail.[54]

---

44 'Article IX of the Outer Space Treaty is the basis for environmental protection of outer space'. *Hobe, supra* n. 23, at 35. *See also*, in this respect, *Viikari*, *supra* n. 29, at 717–768.

45 In this respect, there are general principles of international environmental law which have been considered applicable to space activities. For example, the 'polluter pays' principle, and the precautionary principle with respect to preventive measures (*see*, notably, the 1992 Rio Declaration on Environment and Development; and the 1992 United Nations Framework Convention on Climate Change). This 'principle determines that, when probable dangerous, irreversible, or catastrophic events are identified, but scientific evaluation of the potential damage is not sufficiently certain, the need to prevent such potential effects shall inform all decisions made or technologies implemented. This principle will become more relevant as problems of space debris increase, mining extra-terrestrial resources becomes viable, and in the case of attempting to prevent collision with a near-Earth asteroid'. *Steer, supra* n. 31, at 15.

46 In this respect, see the Guidelines for the long-term sustainability of outer space activities of the Committee on Peaceful Uses of Outer Space, A/74/20, Annex 2, 2019.

47 *Supra* n. 14.

48 IADC Space Debris Mitigation Guidelines, IADC Action Item number 22.4, 2007.

49 United Nations, 'Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space' (A/AC.105/890 Annex iv, 2007), hereafter COPUOS SDM Guidelines.

50 International Organization for Standardization, 'Space systems – Space Debris Mitigation Requirements' (ISO 24113, 2011), hereafter ISO SDM Standard. Other international guidelines are however not mentioned, such as the 'European Code of Conduct for Space Debris Mitigation' (Issue 1.0, 2004) or the International Telecommunication Union, 'Environmental Protection of the Geostationary satellite Orbit' (Recommendation ITU-R S.1003-2, 2010).

51 *See*, in this respect, Cordula Steinkogler, *Small Satellites and Space Debris Mitigation*, in *Small Satellites: Regulatory Challenges and Chances* 214–226 (Irmgard Marboe ed., Leiden: Brill Nijhoff 2016, [*Steinkogler*]).

52 *Viikari, supra* n. 29, at 750.

53 *Ibid*., at 759.

54 'While the UNCOPUOS guidelines use the general term "remove", which is not further specified, in the IADC guidelines the more precise term "de-orbiting" is used and defined as "intentional changing of orbit for re-entry of a spacecraft or orbital stage into the Earth's atmosphere to eliminate the hazard it poses to other spacecraft and orbital stages, by applying a retarding force, usually via a propulsion system". The IADC guidelines furthermore propose "retrieval" as a disposal option. This option is not

Nevertheless, given the importance placed on small satellites, it needs to be noted that not all international guidelines can be fully complied with when it comes to non-manoeuvrable small space objects,[55] reason why a certain level of flexibility is appropriate. For instance, to prevent in-orbit collisions, the IADC and the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) Guidelines recommend the performance of collision avoidance manoeuvres. In any case, a balance needs to be reached to guarantee the sustainability of space activities. On the other hand, certain demanding requirements could also assist small satellite's operators to obtain lower insurance premiums.[56]

There is thus an express recognition of the importance to prevent and minimize the growing number of space debris, as they may hinder space activities in the future, especially in the most crowded orbits.

2.5 Registration and transfer of space objects

The Space Act establishes that '*space objects for which the Portuguese Republic is the launching State are subject to registration by and with the Space Authority, in accordance with the international commitments of the Portuguese Republic*'. The information to be submitted by operators corresponds by and large to the provisions in Article IV of the Registration Convention. In addition, identification of the launch operator responsible for the launch, identification of the owner and control operator responsible for command and control of the space object, and frequency allocation number are required, in order to ensure more detailed information without jeopardizing the simplicity of the registration process.

Furthermore, the Act also requires the registration of the following:

(1) Objects whose launch, return or command and control are performed by operators licensed in Portugal, including their technical features and specifications, in which case the respective licensed operator is responsible for promoting registration[57];

---

explicitly mentioned in the UNCOPUOS guidelines and it is unclear whether the broad term "removal" also encompasses the active retrieval of spacecraft from orbit in this context'. *Steinkogler, supra* n. 51, at 221.

55 *Mosteshar Marboe, supra* n. 19, at 144. 'Such strict rules on the avoidance of space debris might not be easy to comply with by small satellites. They require sophisticated technical know-how and substantial financial means which are not always present in small satellite projects'.

56 *Ibid.*, at 152, noting that specific benefits for small satellites could include 'Tighter de-orbiting requirements that would assist in lowering of insurance premiums'.

57 One issue that could be asked relates to know whether space objects of licensed activities that do not reach outer space (for instance, an aborted launch) would still have to be registered.

(2) Transfer of ownership of any space objects whose launch, return or command and control is carried out by operators licensed, in which case the respective transferor is responsible for promoting registration;
(3) The end of the useful life of a space object operated and controlled by a command and control operator licensed in Portugal, in which case the respective command and control operator is responsible for promoting registration;
(4) Any incident or serious accident suffered by the space object, in which case the respective operator is responsible for promoting registration.

Indeed, the Portuguese legislator recognized that there are cases where the Act applies but Portugal might not be the registering country under international law. As a result, the Act extended the scope of application of the registration obligation for Portugal to have better control over activities falling under its jurisdiction.

Thus, whilst the first registration seems to correspond to the one required by the Registration Convention – meaning that such registration would only apply when Portugal registers the object in the UN – (henceforth 'national UN registration'), the second registration seems to concern only the national registry (henceforth 'national only registration').[58]

In order to know if Portugal is the registering State in the UN for purposes of the 'national UN registration', one would have to assess when Portugal is the 'launching State'.

The Act does not expressly address in which circumstances the Portuguese State considers itself the 'launching State', as there have been discussions whether a State is a 'launching State' even if it is not involved in the space activity – i.e. for exclusively private activities.

We recall, in this respect, that the UN Registration Convention establishes that there can be four launching States: the State that launches, the State that procured the launch, the State from whose territory a space object is launched and the State from whose facilities the space object is launched.[59] The first criterium

[58] In this case, because the Portuguese Act contains both a registration under the UN Registration Convention, and this additional registration, in order for Portugal to know if it should make the notification for the international registration on the basis of the operator's registration, this operator should inform the Space Authority under which framework it would be submitting the registration (in those cases, naturally, where they can be overlapping). If it would be under the registration required by the international commitments of the Portuguese Republic, then the Portuguese State would follow up with the international registration. Otherwise, the operator should indicate to the Space Authority which country would be registering the space object in the international registry. However, as it will be seen below, the Space Authority Regulation, *supra* n. 14, did not address this topic.

[59] On the importance of the several launching States involved in a space operation agreeing on who registers the space object, given that only one of the launching States is entitled to register the space object in the international register, *see Gerhard, supra* n. 20, at 285. *See also* the UN Resolution 62/101,

raises little doubt as to its application to private activities.[60] The remainder have been discussed, with some arguing that there needs to be State involvement in the space operation, such so that exclusive private activities by nationals of a country would not lead to that country being considered the 'launching State'.[61] Additional views, focused on small satellites, have also argued that, because small satellites often piggy-back on the launching of other satellites, only the State that procured the launch of the primary payload would be 'procuring' the launch.[62]

The Space Act already clarified that space operations performed in facilities under Portuguese jurisdiction are considered performed in Portuguese territory, as seen above. The issue is hence if the concept of the State that launches or procures the launch shall extend to pure private activities performed by Portuguese entities, and thus if such objects can be registered under the 'UN national registration' or should be registered under the 'national only registration'.[63] The Space Act does not address this issue. Indeed, even if the scope of application of the Act covers both territorial and personal jurisdiction, this shall not necessarily be seen as an indication with relation to the 'national UN registration', because a State can consider itself responsible for licensing and supervising space activities performed in the territory and by nationals, but nevertheless not consider itself as the launching State.

The practice of the Space Authority may bring more clarity in this respect. In any case, we note that, when it comes to the 'national UN registration' and given the reference to the international commitments of the Portuguese Republic, it can be argued that only space objects subject to registration under the UN Registration Convention would have to be registered under such 'national UN registration'. Hence, this registration would only apply to objects launched into an Earth orbit or beyond, and as a result a transportation vehicle to outer space without itself entering orbit,[64] or a sub-orbital flight,[65] would not have to be registered under

---

adopted in 2007, on Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects, A/RES/62/101.

60 *See*, in this respect, *von der Dunk International, supra* n. 34, at 83.

61 *See*, in this respect, *Marboe National, supra* n. 15, at 136–137. *See also* Tanja Masson-Zwaan, *Registration of Small Satellites and the Case of the Netherlands*, in *Small Satellites*: *Regulatory Challenges and Chances* 190 (Irmgard Marboe ed., Leiden: Brill Nijhoff 2016 [*Masson-Zwaan*]), who notes that the Netherlands does not consider itself as 'procuring the launch' if it is not involved in the space operation.

62 *See*, on this issue, Palkovitz, *supra* n. 26, at 55–56. 'If the primary payload is not on board the launch vehicle, there is no launch'. However, see also, with relation to the registration of small satellites, the Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites developed by the United Nations Office for Outer Space Affairs together with the ITU in 2015, A/AC.105/C.2/2015/CRP.17.

63 In which case, notably, the Portuguese State could notify the UN of space objects registered as the 'responsible State' (and not as the launching State) under Art. XI of the Outer Space Treaty. This seems to be the option taken by the Netherlands. *Masson-Zwaan, supra* n. 61, at 177, 190.

64 *Gerhard, supra* n. 20, at 281.

65 Arguing that 'With sub-orbital vehicles presumably soon hopping in and out of the lower realms of outer space on an increasingly frequent basis and next perhaps for increasing stretches of time, it might

the 'national UN registration'. In any case, it seems that such cases would still have to be registered, at least under the 'national only registration'.

Another important aspect is the fact that the Act also requires registration relating to the end of the useful life of a space object and to incident or serious accident suffered by the space object. This is a clear acknowledgment of the central role that environmental issues, especially debris mitigation, have in the Act.

2.6 Transfer of licenses and of space objects

The transfer of the license is subject to authorization by the Space Authority, which can only be approved if all legal requirements for its issue are met. This means that the license cannot be transferred, for instance, to a person that would not be subject to the Act (e.g. if the license is granted to a Portuguese space operator launching and controlling a space object abroad, and it is intended to be transferred to a foreigner). In such a case, the operator shall relinquish the license. Setting forth the transferability of the license has the advantage of streamlining the space sector as it enables new operators to undertake the operation of space objects and their launch (which is important, especially in the case of blanket licenses).

However, when it comes to joint licenses that cover space operations performed also by other entities (and in which one entity obtained the license on behalf of others – for instance, the launch operator A is the holder of the launch license not just for the launcher but also for the satellite of operator B), the exact configuration of the transfer of the license will need to be addressed. In this case, several options are possible, for instance, the whole license is transferred with the consent of the operator benefiting also from that license (operator B), or only the part of the license issued on behalf of the transferor is transferred to a third party, with the part of the license issued on behalf of operator B to be transferred to this operator's name.[66]

In addition, the transfer of ownership of space objects whose launch, return or command and control is carried out by licensed operators shall be notified to the Space Authority. It should be stressed that transfer of ownership of space objects does not necessarily have to be accompanied by transfer of the license, to the extent that the operator exploiting the launchers or operating the satellites (i.e. the licensed operator) is not the owner (a point that the registration provisions of the

---

well be appropriate to actually apply the Registration Convention to such flights', *von der Dunk International, supra* n. 34, at 97. The same author argues, also, that 'upon closer view it appears that this formal limitation was mainly intended to exclude one-off sounding rocket launches and deep space probes, (semi-)failed launches and launches of intercontinental ballistic missiles, and should not be seen as making it principally impossible to register sub-orbital vehicles under the Registration Convention's terms.', *von der Dunk Spaceflight, supra* n. 22, at 681.

[66] This situation, however, was not addressed in the Space Authority Regulation, *supra* n. 14.

Act make clear, by indicating that both the owner and the command and control operator shall be registered).[67] Naturally, if the transfer of ownership of the space object is also accompanied by transfer of the party responsible for the space operation, the license also needs to be transferred, in accordance with the provisions of the Act on this matter.

This distinction between ownership and license is relevant. Indeed, a point that needs to be mentioned in this respect concerns Article VIII of the Outer Space Treaty, which indicates that 'jurisdiction and control' of a space object is retained by the State of registry, even if the ownership of the object or its actual control are transferred. Scholarship has recognized that, in such a case, the transferee State should be the one granted jurisdiction.[68] Some options have been suggested to overcome this limitation of international law, such as that the transferor State may require the transferee State to accept jurisdiction over the space object[69] or require it to register the space object if it is a launching State.[70] Some authors have also noted that States could enter into bilateral agreements providing for a complete transfer of all international obligations (responsibility, liability, registration, etc.) to the new State.[71]

In the case of the Portuguese Space Act, however, transfer of license can only occur when the conditions for its issue have been met, meaning that Portugal would have to remain the responsible State for the new licensee under either the territorial or the personal scope of application of the Act. Absent these conditions, the license cannot be transferred, as said, but shall be relinquished. As such, in the case of Portugal, the issue of 'responsibility' does not come into play with relation to transfer of licenses. The same can be said, in general, of 'jurisdiction'. Indeed, because the license can only be transferred to operators that are subject to the Space Act, if the license is a launch license, Portugal can continue to be the launch

---

67 This option taken by the Portuguese legislator mitigates the negative impacts of subjecting the transfer of the space object itself to authorization. Indeed, such an option would create an unnecessary burden over private operators, as it could block transfers and jeopardize the sale of second-hand satellites.

68 Indeed, 'it no longer makes sense for the original state of registry to retain jurisdiction and control once this satellite has been transferred to another state'. *Sundahl, supra* n. 23, at 45.

69 With this view, *ibid*., at 45: 'One solution to the problem of jurisdiction remaining with the state of registry following a transfer is to have the state of registry enter into an agreement with the transferee state granting the latter jurisdiction over the satellite. Such agreements are expressly permitted under Art. II of the Registration Convention in order to transfer jurisdiction between launching states, but there is nothing preventing a non-launching state from accepting jurisdiction under such an agreement'.

70 Also, *ibid*., at 46: 'Another way of transferring "jurisdiction and control" to the transferee state is for the original state of registry to deregister the space object by removing it from its domestic registry. Although such "de-registration" is not mentioned in the space treaties, there is nothing in the treaties that prohibits such practice. This de-registration is followed by the registration of the object by the transferee state, which would result in the jurisdiction and control being attached to the new state of registry'.

71 Armel Kerrest & Caroline Thro, *Liability for Damage Caused by Space Activities*, in *Routledge Handbook of Space Law* 72 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017 [*Kerrest Thro*]).

State and thus can continue to be the registering State with jurisdiction over the space object.[72] If it concerns a license of command and control and the criteria for Portugal to be a launching State are not met, then Portugal is not the launching State, did not register the space object and never had jurisdiction over it.

2.7 Liability and insurance

The Portuguese Space Act contains provisions on liability and insurance, which are broadly in line with the UN Liability Convention.

2.7[a] *Liability*

The Act indicates that:

> *Without prejudice to other legally applicable liability regimes, operators are liable for damages caused in the performance of the space activity, as follows:*
>
> *a) Strict liability for damages caused by the space object to the surface of the Earth or to aircraft in flight; and*
>
> b) *Liability in the event of fault for damages falling outside the scope of subparagraph a) above.*

Several aspects are worth mentioning. Firstly, the Act directly establishes the type of liability that falls upon operators for their space activity, thus expressly acknowledging that space operators can be directly liable before victims, regardless of who the victims are – which means that the limitation of the Liability Convention where nationals or the participants in space activities would be excluded from its scope, does not apply under Portuguese law. Hence, victims can, expressly under Portuguese law, act against operators for damages suffered. This would, of course, already, result from the general provisions of the Portuguese Civil Code relating to extra-contractual liability which foresee that who, with wilful misconduct or negligence, illicitly violates the right of another or any legal provisions destined to protect third parties' interests, is under the obligation to compensate the injured person for the damages arising from such violation (Article 583.1). In addition, the Civil Code also establishes that who causes damages to a third party in the performance of a dangerous activity, shall repair such damages, except if it shows that it has used all required diligence to prevent such damages (Article 493.2). Despite the provisions of the Civil Code, the Portuguese legislator did well in expressly addressing this subject in the Space Act, not the least to foresee strict liability for damages caused on Earth and allow fault liability in other cases, a

[72] It seems, however, only or especially to the extent that Portugal accepts being the launching State for purely private activities (equating 'responsibility' with 'launching'), an option that, as said, we consider the most correct one.

conclusion that might have not resulted as clear with the mere application of the Civil Code.

Secondly, liability arises from 'space activities', but, in the case of strict liability, is limited to damages caused by 'space objects'.

This is a difference from the UN Liability Convention, where, both in absolute and in fault liability, the damage needs to be caused by a space object.[73]

With relation to 'space activities', two aspects need to be addressed. The first aspect relates to the fact that 'space activities', as defined in the Act, do not cover deployment of services resorting to space objects (such as telecommunications or broadcasting). Hence, damages arising from such activities (including from the signal) seem to be excluded from its scope.[74] Once again, liability can arise from other legal regimes, including under the Civil Code and from contracts, as applicable. The second aspect to note is that 'space activities' also cover, in the Act, the operation of launch sites. Hence, a launch site operator could also be liable under these provisions. It is important to note, however, the following:

- Strict liability only applies when the damage is caused by a space object and it is a 'space operation' with the space object that can trigger such type of liability. Indeed, whilst a space object being assembled or transported on Earth to the launch site could in theory cause damages (e.g. an accident of the road vehicle transporting the satellite), these were not the cases that were in mind in the UN Liability Convention, and hence, it seems that they were also not the cases foreseen by the Portuguese legislator when it replicated the wording of the UN Liability Convention. As a result, a sensible interpretation would exclude a launch site operator from strict liability for damages caused by space objects under the Space Act, given that the launch site operator manages and administers the spaceport, does not effectively launch or command/control a space object. Naturally, liability of such operator under other legal provisions could still apply;

- The conclusion is not much different in the case of fault liability. Indeed, despite the fact that that the Space Act, unlike the Liability Convention, does not limit these damages to those caused by space objects (but

[73] 'This difference can be regarded as an extension of the duty to reimburse, not merely in cases of liability under Art. VII (and the respective provisions of the Liability Convention) but also in cases of responsibility under Art. VI of the Outer Space Treaty, where the state has to pay compensation'. *Marboe National, supra* n. 15, at 154.

[74] *See*, in this respect, Cécile Gaubert, *Insurance in the Context of Space Activities*, in *Handbook of Space Law* 915 (Frans von der Dunk & Fabio Tronchetti eds, Edward Elgar Publishing, UK, USA 2015 [*Gaubert*]). Note that the French Law on Space Operations explicitly excludes from its scope any damage that is the consequence of the signal use of a space object. Art. 1(1), Law on Space Operations (Loi relative aux opérations spatiales), Loi n° 2008–518 du 3 juin 2008.

extends to damages caused by all 'space activities', thus seemingly including the operation of launch sites), the fact is that these are damages caused in outer space, where a launch site operator is not present. As a result, fault liability, in this case also, seems to be able to be caused only by launch/return and command & control operators. Naturally, once again, launch site operators can be liable under other legal provisions.

With relation to 'space objects', the issue at stake is whether a damage caused by software or data is included, or, in other words, if a 'space object' covers only the physical elements of the object or also includes its intangible elements. This issue has been discussed at the international level, with most scholars being of the opinion that only damages caused by a tangible space object would be included.[75] In accordance with this view, the object causing the damage needs to have material and physical properties, as only such an object can be registered under the Registration Convention. These arguments are mostly made to expressly exclude damage caused by signals from the Liability Convention,[76] something already excluded under the Portuguese Act as liability only arises for operators with relation to space activities, as seen. However, the Portuguese Act does not address expressly whether damages caused by software or data of the satellite are covered. A view under which damages caused by such intangible elements would be included seems to be acceptable.[77]

The Act also does not expressly address whether damage caused by debris would be covered. No clarification would however be needed: indeed, given the relevance the Act gives to environmental protection and debris minimization, as well as the concept of 'space object',[78] it seems clear that damages caused by debris

---

[75] *See*, for instance, Lesley J Smith & Armel Kerrest, *The 1972 Convention on International Liability for Damages Caused by Space Objects (LIAB)*, in *Cologne Commentary on Space Law* vol 2, at 83 (Stephan Hobe et al. eds, Koln: Heymanns 2009), arguing that there has to be a physical damage caused by a physical space object.

[76] *Kerrest Thro, supra* n. 71, at 65, expressly noting that 'Nowadays, there appears to be a specific need for a special liability regime for harmful interferences'.

[77] This view argues that an object cannot be seen only as comprising the physical elements of such object, in other words, the hardware. In accordance with this view, an object includes both physical and logical elements and, therefore, both should be considered a part of the object. Moreover, it is argued that where data resides in an object (as this concept has been traditionally understood in connection with the physical world), that data should be seen as part of the object as well. Hence, both physical and non-physical elements, including data, would be considered part of the concept of 'object'. In addition, the qualification of 'data' as an object itself would also not seem inappropriate in the current intangible world, taking into consideration the impacts damage to data may have. It is thus considered, in this view, that, in today's digital world, an object could no longer be considered only a material 'thing' but be considered as comprising a complex set of combined elements. Helena Correia Mendonça, Magda Cocco & Juliana Macedo Scavuzzi dos Santos, *International Laws Regulating Satellite Communications and Their Intentional Disruption in Times of Peace and Conflict*, XL Annals Air & Space L. 130 (2015).

[78] Also, *von der Dunk small satellites, supra* n. 26, at 161–162. 'Even "space debris", the ultimate in non-controllable, non-guidable objects in outer space, has by now been generally accepted to qualify as "space objects" for the purpose of the Liability Convention'.

would be covered.[79] Likewise, the damage caused by small space objects, even if not manoeuvrable, is obviously covered.[80] Nevertheless, non-manoeuvrable space objects may raise the issue of how to assess 'fault' lacking the possibility of manoeuvring the space object.[81]

The Act does not define 'damages'. It is sensible that the definition of damages of the UN Liability Convention is taken into consideration in this respect. In any case, given that this is a Portuguese law, it makes sense that the Portuguese civil law provisions and the scholarship on damages be the ones to be taken into attention when addressing the concept of damages, fault[82] and the causality link (see in this regard Article 563 of the Civil Code). This has a relevant impact as most scholars consider that the definition of 'damage' in the Liability Convention only includes physical damage, thus excluding intangible damages relevant within the private sector.[83] The Act also does not contain time limits for the operators' liability (unlike, for instance, French law, which sets forth that the operator's liability ceases whenever it has performed all its legal obligations and those arising under the license, or once one year has elapsed as from expiry of the authorization (save in the event that the damages were caused wilfully), in which case the French State shall then be liable for any damages occurring after that period).[84] In any case, it seems that the general civil law provisions on this matter would continue to apply.

The Act did not limit the operators' liability (if the victim has acted directly against the operator and not against the State, given the provision on the right of redress of the State analysed below). Although this option was considered as it could boost private activities in Portugal, it was thought that it would create a risk that the victim would be unable to be fully compensated. The possibility of the State, in this case, bearing the remainder of the amount due to the victim was also excluded as it could be seen as State aid.

---

79 *Viikari, supra* n. 29, at 736.

80 *von der Dunk small satellites, supra* n. 26, at 162. 'It would not make sense therefore to allow for escaping from liability for damage caused by small satellites – contrary to "space debris" the result of a conscious action – merely because of their lack of guidance or control after separation from the launch vehicle'.

81 *See Steinkogler, supra* n. 51, at 231–232.

82 Whether there is 'fault' when the damage is caused by debris would require an assessment of whether the obligations of debris minimization had been complied with.

83 Indeed, 'the definition of "damage" as the basis for liability claims under the Liability Convention was only concerned with physical damage, not harm such as interference with operations and loss of revenues, which, commercially speaking, could be at least as important'. *von der Dunk International, supra* n. 34, at 48. As the same author notes, however, given the possibility to also resort to Art. VI of the Liability Convention as a means to obtain compensation (see below on this issue), and that this Article does not place limits on the type of compensable damage, this course of action could allow obtaining compensation for more damages than those foreseen under the Liability Convention. *Ibid.*, at 52.

84 Law on Space Operations (Loi relative aux opérations spatiales), Loi n° 2008-518 du 3 juin 2008, *supra* n. 74.

The Act also addresses the right of redress, by the Portuguese State, against operators. It states that:

> *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, under [the Act], is responsible for that space object, capped at the amounts defined by order of the members of the Government responsible for finance and science and technology.*

The cap does not apply if the operator's liability is for intentional misconduct or gross negligence, or if the operator breaches the obligation to obtain a license or register the space object, or if it breaches its obligations under the license. The cap aims at promoting private activities, by assuring that the operators do not have to bear the full amount of the liability that would be due under the redress.[85] The cap is to be defined by Order, and it is hoped that such Order takes into due consideration the differences between space operations, notably their risk, the mass of the space objects (thus reflecting the issue of small satellites also in this scope) and the operators (especially start-ups and R&D institutions).[86]

Once again, the Act does not address the issue of whether the Portuguese State considers itself the launching State – and, hence, internationally liable – in all cases where the activity is carried out by a private entity, due to the fact that there can be four launching States[87] and due to the discussions on the concept of 'launching State' for purely private activities.[88]

---

[85] In this case, competition issues relating to state aid do not seem to arise, because, absent the Act, the State would bear the full amount of the liability with no right of redress to the operator. Hence, by having the right of redress, even if capped, the State is not putting the operator in a better position that it would be before.

[86] Often the cap corresponds to the amount covered by insurance. *Kerrest Thro, supra* n. 71, at 70. 'It is thus common for States to require, while granting authorization to the commercial entity for the concerned activity, subscription of an insurance up to the legal ceiling'.

[87] This means that more than one State may be liable, in which case they are joint and severally liable, in accordance with Art. V of the Liability Convention. 'Therefore, the Liability Convention encourages launching States to "conclude agreements regarding the apportioning among themselves of the financial obligation" by leaving any risk-sharing duty to the launching States. As launching States seemed not very keen for signing these agreements, the UN Resolution on the application of the concept of "launching State" pointed out again the high importance of the necessity of signing the agreements on the sharing of risks and financial obligations. In reality, a launching State might not have full control over the respective space activity during the whole process (launch and life in orbit) in case of a joint launch'. *Kerrest Thro, supra* n. 71, at 61.

[88] Taking the view that there needs to be State involvement for a State to be considered a launching State, *van Fenema, supra* n. 32, at 398. With the opposite view, *Kerrest Thro, supra* n. 71, at 62. These authors argue that such a view 'goes against the aims, purposes and the spirit of the Liability Convention, and, more specifically, are in contradiction with the context of its Art. VI that foresees that States are responsible for "national activities" including public and private operators. It does not reflect the practice of the space-faring States which assume liability also for exclusively private commercial activities. This can be seen in their practice of registration of space object according to the Registration Convention and in the usual provisions of domestic legislation concerning private activities in outer space'.

The issue is whether a 'responsible' State under both the personal and territorial criteria (such as Portugal) shall be the 'liable' State under both criteria as well.[89] As seen above, 'responsibility' and 'liability' are different concepts, and a State may consider itself to be responsible for authorizing and supervising activities of its nationals abroad (a view more aligned with the UN approach, notably the United Nations General Assembly Resolution No. 59/115, of 10 December 2004, as well as a view that would avoid potential situations where no country would be supervising a fully private space activity, as such would not be conform with the Outer Space Treaties[90]), but nevertheless consider that such supervision does not necessarily lead to international liability in case of damages.[91]

However, we note that some authors are very clear in stating that a view where States are not liable for exclusively private activities goes 'against the aims, purposes and the spirit of the Liability Convention'.[92]

It is not the purpose of this article to discuss this issue, but only to assess if the Portuguese legislator took an option in this respect in the Act. Notably, if the fact that the Portuguese Act applies also to activities performed by nationals abroad meant that the Portuguese State adopted a view whereby it accepted international liability in accordance with both the territorial and the personal criteria of liability.[93] Given that 'responsibility' and 'liability' are different concepts, the option taken by the Portuguese legislator shall not be seen as a decision with relation to the issue of liability. Not the least because the Act expressly addresses the liability of private operators instead of only addressing the right of redress of the State (an option taken by many space laws), meaning that, whatever the views that the State may take in this respect, victims may always obtain compensation directly from the relevant operators. The approach that the Space Authority will take with relation to the registration of space objects, as above analysed, may bring important input on how the State will view this matter.

---

89 On the differentiation between responsibility and liability in space law, *see* F von der Dunk, *Liability Versus Responsibility in Space Law: A Misconception or Misconstruction?*, in *Space and Telecommunications Law Program Faculty Publications*, Paper 21 (1992). Seemingly construing liability as existing in the 'responsible' States, *see Kerrest Thro, supra* n. 71, at 66: 'A conformed interpretation would require to take into account Art. VI of the Outer Space Treaty, stating that States are responsible for national activities. It is the logical consequence that the launching State is liable for any damage caused by the space activity of one of his nationals, and not only for his State's agents'.

90 *von der Dunk International, supra* n. 34, at 46.

91 Meaning that states would be 'ready to accept (an overall) responsibility for the space activity, but not (potentially absolute) liability for damage caused by the space object'. *Marboe National, supra* n. 15, at 137.

92 *Kerrest Thro, supra* n. 71, at 62. Differently, *van Fenema, supra* n. 32, at 398.

93 When it comes to the criterium relating to the 'facility from where the space object is launched', the Portuguese Act applies in Portuguese territory, 'including' 'on board Portuguese vessels and aircraft or in facilities under Portuguese jurisdiction or sovereignty' (Art. 2, n. 1, a) of the Act. As indicated above, this wording can be seen as an indication that the Portuguese legislator considered such vessels and aircraft also Portuguese territory.

Nevertheless, it is important to note that, even if the State is not internationally liable, it can be nevertheless internationally responsible and be bound to pay compensation for the activity carried out by a private,[94] given that it accepted (or, better yet, to the extent it has the duty) to license and supervise nationals performing space activities abroad.[95] In this scope, in addition to Article VI of the Outer Space Treaty, States may also, for instance, trigger State responsibility under the Draft Articles on State Responsibility,[96] require the unlawful conduct to cease,[97] and obtain restitution, compensation or satisfaction.[98,99]

A final note to briefly mention that the Space Act did not address the issue of cross-waivers of liability. In order to mitigate the liability of any participant to a space operation, the parties to a contract may agree on limits of liability or exemptions of liability. They may also agree on a 'hold-harmless' clause, which is a clause by which one party agrees to hold the other free from the responsibility for any liability or damage that might arise out of the transaction involved.[100] However, such agreements, unless required by law,[101] are voluntary, though a

---

94 *See*, with relation to this issue, *von der Dunk International, supra* n. 34, at 51–52, arguing that 'there is no principled reason why the more general concept of state responsibility could not be used also for obtaining compensation for damage in cases where the liability concept may not offer a particular relief'.

95 *Hobe, supra* n. 23, at 38.

96 International Law Commission, D*raft Articles on Responsibility of States for Internationally Wrongful Acts*, GA Resolution 56/83 (2002), UN Doc A/RES/56/83 of 28 Jan. 2002. *See*, in this respect, *Steer*, *supra* n. 31, at 14. This author notes that 'The International Law Commission, a UN body of experts mandated to codify and progressively develop international law, has developed the Draft Articles on State Responsibility, which were adopted by the UN General Assembly. States have been reticent to finalize this draft as a treaty, however it has nonetheless gained status as an authoritative instrument, as it has been cited in numerous judicial decisions and important international law treatises; in fact, in 2015 the ICJ stated that these Draft Articles have now gained the status of customary law' (*Application of the Convention on the Prevention and Punishment of the Crime of Genocide* (*Croatia v. Serbia*), Judgment 3 Feb. 2015, para. 128).

97 *Ibid.*, Art. 30.

98 *Ibid.*, Arts 34–37.

99 Note, in this respect, that the ILC also adopted the 'Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising Out of Hazardous Activities' in 2006 – Report of the International Law Commission on the work of the fifty-eight session, *Official Records of the General Assembly, Sixty-first Session, Supplement No. 10 (A/61/10)*. These principles aim to ensure prompt and adequate compensation to victims of transboundary damage and to preserve and protect the environment (Principle 3). This regime is without prejudice to the Draft Articles, *supra* n. 96, and, although at the time they were drafted, space activities might not have been at the forefront of ILC's thought, the Commission stated that 'transboundary damages' could involve other possibilities that may not be readily contemplated. In addition, the ILC states that 'transboundary damage' refers to damage 'caused in the territory or in other places outside the territory but under the jurisdiction or control of which the hazardous activities are carried out'. *See* Report of the International Law Commission on the work of the fifty-eight session, *Yearbook of the International Law Commission* (2006), vol. II, Part Two (Document A/61/10), at 60, 70. Similarly, there is a set of Draft Articles on Responsibility of International Organizations (*ILC Draft Articles on the Responsibility of International Organizations 2011*, II Y.B. Int'l L. Commission, Part Two (2011)).

100 *Gaubert, supra* n. 74, at 921.

101 French law, *supra* n. 74, 'provides that waivers of recourse are mandatory between the participants in a space operation or in the manufacturing of a space object, for any damage caused between them, unless

standard contractual practice in the space sector. As per Portuguese law, it seems that any such agreements would have to be within the limitations arising from the Civil Code, notably exclusions or limitations of liability are not in principle acceptable in case of intentional misconduct or gross negligence.

2.7[b] *Insurance*

The Act places upon licensed operators the obligation to '*take out civil liability insurance, with a minimum capital to be defined by Order […]*'. Hence, both types of operations (launch/return, command/control) require insurance.[102] Indeed, though generally launch operations carry the bigger risk, satellites in orbit may also cause substantial damage and exclusion of insurance in those instances could hamper compensation of the victim or the Portuguese State under the right of redress.[103]

The minimum capital to be defined may either be a fixed amount (as some states have done)[104] or not – for instance, a calculation method taking in consideration the type of operator, activity and risk, or different amounts taking into consideration the same criteria. The first option risks hindering private activity especially for new entrants.

The Act, however, indicates that the Order may waive the insurance obligation or reduce the insured amount in the following circumstances:

---

there is a specific provision to the contrary in the contract relating to the satellite manufacturing or unless the exception of wilful misconduct applies'. *Ibid.*, at 923.

[102] 'For some laws, the liability may be imposed on the launch operator only and not on the in-space operator (such as the US Commercial Space Launch Act) whilst for some others, the liability will lay with all space operators (such as is the case with the Dutch, UK and French laws)'. *Gaubert, supra* n. 74, at 914. Note that the Space Act also requires insurance for return. Some other countries have also addressed this. 'The FAA can require that third-party liability insurance will be maintained for on-orbit and re-entry under the original launch licence'. *Ibid.*, at 917.

[103] Note that, in addition to this mandatory liability insurance, 'Key coverages on the satellite will include (1) pre-launch insurance [up to the time of "intentional ignition" of the satellite], (2) launch and initial operations insurance [at the moment of intentional ignition, until the satellite has separated from the launch vehicle] and (3) in-orbit insurance. […] A satellite operator must ensure that insurance coverage in connection with ground coverage during prelaunch, attachment of launch-risk coverage and a terminated ignition or pad abort event are seamless, since the satellite operator bears the risk of an uninsured loss arising from gaps in coverage. As a result, it is critical that the project contracts and policy language regarding the terms "intentional ignition", "total loss" and "partial loss" are aligned, otherwise there could be a gap in coverage'. Henry R. Hertzfeld & Alexis M. Sáinz, *Commercial Satellite Programs*, in *Routledge Handbook of Space Law* 342 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017 [*Hertzfeld*]). Hence, 'there are two types of space insurance: one covering first-party property insurance and the other dealing with third-party liability insurance. The first one is a "launch and in-orbit" insurance that protects the owner or operator of the impacted satellite in the event of loss or damage to the satellite during launch or in-orbit operation. The second is designed to address third-party liability [for space operation]'. *Gaubert, supra* n. 74, at 910.

[104] *Ibid.*, at 914.

(1) Operations of launch, return, command and control of space objects of small dimensions, as defined by the Space Authority;
(2) Space operations conducted exclusively for scientific, research and development or educational and training purposes;
(3) If the operator submits another financial guarantee as permitted under the relevant Order and that is accepted by the Space Authority;
(4) Operations that demonstrably entail reduced risks, as defined by the Space Authority.

These circumstances aim, once again, at promoting private activity and acknowledge the fact that the private space sector is increasingly comprised of entities that are small or medium companies, or R&D institutions, and that space activities are increasingly diverse – and, hence, insurance should be adapted to the different circumstances in order to avoid closing the market to new entrants and new activities – as taking out insurance could prove economically prohibitive in those cases.

Note also that the Act indicates that '*The license is granted if the Space Authority is satisfied that: […] the applicant carries mandatory civil liability insurance*' and that the license holder has the duty to '*Take out and maintain mandatory civil liability insurance*'. These two wordings seem to show that the applicant is not under the obligation to already have insurance as a pre-condition to request the license, but it shall have the insurance as a condition to obtain the license.

The conditions of the insurance are to be defined by Order, which could, naturally, contain provisions, for instance, on the State being a direct beneficiary.[105]

2.8 Breach and sanctions

The Act sanctions breaches of the Act as a misdemeanour punished with fines, which may range from Euro 250 to around Euro 45 000 in accordance with the seriousness of the breach and whether the breach has been committed by an individual or legal person. There are also additional penalties in certain circumstances, which consist in

[105] 'Launch liability insurance usually addresses damage, harm or death in space, in airspace or on the ground, and will name the launch services provider as the named insured. Additional insureds typically include the supplier, the satellite operator, lenders and the government of the launching state. Third-party liability insurance is the insurance to protect against any liabilities brought in any jurisdiction for bodily injury to third parties and damage to third-party property incurred anywhere in the World'. *Hertzfeld, supra* n. 103, at 343.

suspension of license, or prohibition to perform space activities for a period between six months and two years. There are no criminal sanctions for breach of the Act.

2.9 Fees

The Act indicates that the economic and financial regime applicable to space activities may be defined by decree-law, which shall promote the economic and financial sustainability of the activity carried out by the Space Authority, notably by means of the collection of fees and levies from the companies and other entities subject to its supervisory powers.

Hence, fees may be defined, and, if they are indeed set up, they should consider the goal of creating the proper balance between promotion of private activity and the sustainability of the Space Authority.

The fee regime is not in place at the time of writing. However, if the State does decide to establish fees for space activities, it could evaluate establishing a levies regime that provides for certain exemptions for the first years, or that establishes different amounts taking into consideration the type and/or place of activity, and the operator's economic capacity, with a view to promote private activities in Portugal, including R&D.

2.10 The regulation and orders

The Space Authority issued the Regulation on Access and Exercise of Space Activities[106] in 2019. The Regulation sets up the procedures for obtaining licenses and pre-qualifications, as well as for registering and transferring ownership of space objects.

The Regulation, according to its preamble, takes into consideration the optimization of resources and the simplification, expediency and efficacy of the procedures for accessing space activities, in order to reduce administrative burdens to companies and facilitate access to space activities by a large number of operators whilst, at the same time, safeguarding the interests of safety, damage prevention and lessening of environmental impact. The Regulation also mentions that the provisions were drafted with some generality with a view to grant more flexibility to companies in their technical and economic plans.

Within this scope, the Regulation has three main chapters, covering licensing, pre-qualification, and registration and transfer of space objects. The procedures are

[106] *Supra* n. 14.

to be executed preferentially through electronic means and a digital platform called 'Space Portal' was created containing information about space activities.

The Regulation is in many aspects clear and straightforward, and the Space Portal contains a set of contents that are very useful for operators. However, the Regulation does seem to raise some issues as relates to its application in the light of the Act. Among other points, we highlight the following:

Firstly, the Regulation does not seem to be fully aligned with the Act regarding who shall obtain a license for 'launch and/or return' and a license for 'command and control'. Indeed, we recall that, under the Act, an operator 'launching' a space object would have to obtain a license for 'launch'. Given that a space object includes, according to the definition of the Act and in traditional space operations, both the launcher and the payload, then, under the Act, both the payload and the launcher operator would have to obtain a license for the launch. However, the Regulation seems to limit the launch license to the launch operator, given that it indicates that (1) the applicant for launch and/or return operations shall submit a description of the launcher whilst (2) the applicant for the command and control operations shall submit a description of the space object (such as the payload).[107] This seems to be also misaligned with the international concept of 'launching' State, which includes not only the launching itself, but also the procurement of the launch. Transposing this concept to national law, this would mean that a private entity procuring a launch (i.e. the payload operator) would also be 'launching'. Indeed, it was also this reasoning that led the Act to create joint licenses, to allow the same type of operation (the 'launch') performed by different operators (the launcher operator and the payload operator) to be licensed jointly (the so-called 'vertical licensing'). As it is, the Regulation calls into question the application of 'joint licenses' in such cases.

And, indeed, the Regulation does seem to adopt an approach with relation to joint licenses that is different from the approach of the Space Act. It indicates that an applicant may require the joint licensing of space operations of different type (thus excluding the joint vertical licensing of operations of the same type, an option envisaged in the Act). What is more, it autonomously indicates that '*the applicant shall indicate if the space operation is contracted on behalf of a third party*' – it is worth noting that the reference to a license being issued on behalf of a third party is made, in the

[107] This understanding seems to be confirmed by the Report of the Public Consultation on the Regulation issued by the Space Authority in July 2019, as it expressly accepted a proposal by one of the comments made within the public consultation to clarify that the scope of the launch license is limited to launchers. Report of the Public Consultation on the Regulation, at 18.

Act, within the scope of 'joint licenses', i.e. joint licenses can be, under the Act, issued to one operator (e.g. Operator A) for operations pursued by different operators (e.g. Operator A and Operator B), meaning that such a license is issued in the name of Operator A, and on behalf of both Operators A and B. Indeed, the Act expressly says that:

> '*the same or different types of space operations that comprise one or more launch and/or return operations, and corresponding command and control operations for the launched space objects, may, even if carried out by more than one operator, be licensed jointly to a single operator, on its own behalf and on behalf of the other operators*' (our underlining).

Though the Space Authority seemed to acknowledge this in the Report of the Public Consultation on the Regulation,[108] it nevertheless kept the wording general.[109]

Other points also seem to raise some doubts. For instance, the safety plan to be presented by the applicant shall be submitted in accordance with the US Federal Aviation Administration (FAA) rules. The Space Authority justified this approach with the fact that these rules are known by the industry and duly tested at the international level, as well as because they are used usually in spaceports like the one to be installed in the Azores.[110] However, this could present a burden to smaller companies and R&D institutions, especially in light of the fact that the Regulation did not create a detailed simplified licensing procedure for the cases foreseen in the Act, as explained below.

Another aspect that is relevant concerns the level of information the applicant shall submit: the requirements of the Regulation may be burdensome, especially when it comes to information relating to the spaceport from which a space object will be launched (e.g. user manual, ownership registry, organizational structure of the spaceport, identification of key personnel, training programmes for key technical personnel, among others). The submission of such information relating to the spaceport is excluded for spaceports operated by Portuguese public entities or whose exploitation has been awarded, under a concession, in Portugal. This exclusion seems to aim to address the Azores spaceport, but the whole obligation is less than clear. Indeed, it is not clear, under the Regulation, which applicant shall submit the information about the spaceport. The applicant could only be one of two, or both: the one performing 'launch and/or return' operations or the one

---

[108] Report of the Public Consultation on the Regulation, *supra* n. 107, at 15.

[109] The Report of the Public Consultation expressly notes that it is relevant for the Space Authority to know who contracts the service and who is interested in the space activity at stake. *Supra* n. 107, at 14.

[110] *Ibid.*, at 30. Several stakeholders, in the response to the public consultation, criticized the reference to foreign rules, especially to non-EU rules. It is worth noting that the reference that the FAA rules are the ones contained in the call for interest for the Azores spaceport does not seem to be an acceptable argument, because the operators subject to license under Portuguese law may naturally launch from other spaceports.

performing 'command and control operations'. Indeed, it can never be the spaceport operator, given that spaceports are only covered in the Act for pre-qualification purposes – spaceports are not licensed under Portuguese law. The Space Authority clarified that (1) all relevant operators that require a license are under the obligation to submit this information, so that no launches outside spaceports that comply with the Regulation requirements may exist[111] and that (2) the submission of the user manual of the spaceport is an obligation that applies to all operators that are not pre-qualified.[112] It is still not clear if, considering both clarifications, only a launcher operator, or also a payload operator, must submit such information, given that the Regulation excluded payload operators from the license for launch and/or return.

It also indicated that the information relating to the description of the premises of the launching centre shall be submitted but that the '*rule shall be making available such information by means of submitting a certificate of pre-qualification or a concession contract*'[113] (our translation). However, this seems to disregard the fact that many operators subject to the Portuguese Space Act may naturally launch from spaceports abroad that are neither pre-qualified nor subject to a concession by a Portuguese entity.

As a result, and also because the detail of information required may be very burdensome, this may raise the risk that operators subject to the Act will not be able to comply with such obligation when launching from foreign spaceports as the operators of such spaceports may not be willing to provide such detailed information.[114] This may hinder the establishment of operators in Portugal and thus the development of the private sector in the country. Indeed, the requirement to submit such detailed information would make more sense in the chapter of the Regulation relating to pre-qualification, as the information that spaceport operators would have to submit to get pre-qualified (and not as information that applicants for licenses would have to submit).

The Regulation also addresses liability insurance: notably, it defines 'space objects of small dimensions' as (1) with relation to launchers, with a capacity to launch a payload with a total mass up to a maximum of 50 kg and (2) with relation to space objects subject to command and control, with a mass equal of below 50 kg. We note that the choice made by the Regulation is unaligned with interna-

---

111 Report of the Public Consultation on the Regulation, *supra* n. 107, at 35.
112 *Ibid.*, at 38.
113 *Ibid.*, at 22.
114 This concern was expressed by some stakeholders as indicated in the Report of the Public Consultation, *supra* n. 107, at 35–38. The Space Authority, however, kept its position by arguing that it is strictly necessary to obtain such information, notably the user manual, in order to evaluate the technical repute of the spaceport.

tional positions which usually point to higher masses,[115] a point that was noted by some of the respondents in the public consultation to the Regulation.[116] In addition, this choice may impact the possibilities offered by the Act of waiving or reducing the insurance with relation to small space objects of higher mass.[117]

On the other hand, the Regulation did not define '*Operations that demonstrably entail reduced risks*' (as per the Act) but indicates however that the criteria for such qualification will be determined by the Space Authority.

With relation to other authorizations that the applicant shall have, the Space Authority indicated that International Telecommunication Union (ITU) is not one of the competent entities that the Space Authority may contact under the one-stop-shop principle.[118] It seems clear that such entities shall be only national ones (a point clarified in the Regulation). What however is not clarified is if the opening of a procedure before ITU for an orbital slot shall be in place as a condition to obtain a license for command and control relating to satellites to be placed in orbit.

The Regulation also addresses the procedure to assign the license, the criteria to evaluate the license application, the issuance and content of the license, the rights and duties of the license holders, amendments to the license and its duration. The procedure for transferring the license is also addressed.

Two additional notes are worth mentioning with regard to licensing.

Firstly, the Regulation does not create a special licensing procedure for the cases foreseen in the Space Act. Instead, it establishes that it is the applicant that must require a simplified procedure and the Space Authority, within ten days, must communicate the ad hoc specific procedures to be followed. This option, though it may give more flexibility to operators, may create uncertainty for the industry when it comes to the licensing requirements and the process to be taken. This

---

[115] *See*, for instance, in this respect, Yvon Henri, Attila Matas & Juliana Macedo Scavuzzi dos Santos, *Regulation of Telecommunications by Satellites, ITU and Space Services*, in *Routledge Handbook of Space Law* 140 (Ram S. Jakhu & Paul Stephen Dempsey eds, UK, New York, Routledge 2017). 'Satellites that weigh less than ~500 kg are often referred to as small satellites'. *See also* Otto Koudelka, *Micro/Nano/Picosatellite-Activities: Challenges towards Space Education and Utilisation*, in *Small Satellites: Regulatory Challenges and Chances* 7 (Irmgard Marboe ed., Leiden: Brill Nijhoff 2016). This author notes that 'In 2005, the International Academy of Astronautics (IAA) Study Group on "Cost-Effective Earth Observation Missions" proposed a nomenclature, which has since then been widely reflected in academia and practice. The IAA Study Group proposed a simplified subset of small satellites: "minisatellites"<1000 kg, "microsatellites"<100 kg, "nanosatellites"<10 kg, and "picosatellites"<1 kg'. In addition, ITU 'and industry consider satellites with mass of less than 500 kg as "minisatellites", while taking up the other subcategories. There is also the term "femtosatellite" denoting a satellite with a mass of less than 0,1 kg'.

[116] *Supra* n. 107, at 44–46.

[117] With an analysis of insurance for small satellites, *see* Cécile Gaubert, *Do Small Satellites Need Insurance?*, in *Small Satellites: Regulatory Challenges and Chances* 369–383 (Irmgard Marboeed., Leiden: Brill Nijhoff 2016).

[118] Report of the Public Consultation on the Regulation, *supra* n. 107, at 48.

could be especially onerous for small companies or R&D institutions who may be less experienced in such procedures.

There are also no specific procedures for space operations taking place abroad. Given that space operations performed abroad may present less risks for the country, a special procedure for these cases would have been advisable in order to better balance the country's international responsibility and liability with the lessening of risks. However, the Space Authority did show that it was aware of this issue, as the Regulation indicates that, for operations taking place abroad, the submission of information or documentation that is not relevant may be waived. No further clarification is however provided.

The Chapter on pre-qualification is a shorter chapter, containing essentially the procedure for its application and issuance, content and update of information. Notably, the application shall be submitted with the elements contained in the Chapter on licensing, '*as applicable*'.

The Chapter on registration and transfer addresses these two topics. Notably, it is important to note, with relation to registration, that the Regulation does not deal with the issues analysed above and simply lists the information to be contained in the national registry.

The Regulation, as briefly seen, raises some doubts including in the light of its lack of compatibility with the Act in some respects. It is possible that some of the issues at hand may be addressed by specific forms and drafts of licenses and pre-qualification, as the Regulation expressly foresees that the Space Authority may approve and issue such forms and drafts with a view to guarantee the good execution of the Regulation. The Regulation also indicates that the elements for obtaining a license may be developed by regulations or instructions, which may, if and when issued, provide more clarity in some of the less clear or detailed aspects of the Regulation.

Note that two orders still have to be issued, one on liability (for caps) and one on insurance (minimum capital and other minimum requirements, waiver and reduction of insured amounts as permitted by the Space Act). At the date of writing, the orders had not been issued yet.

3 THE AZORES REGIONAL SPACE ACT AND REGULATION

The Azores Regional Space Act was approved by Regional Legislative Decree No. 9/2019/A[119] and regulates space activities taking place in the Azores. Notably, it contains the legal framework for licensing, pre-qualification, registration and transfer of space objects relating to activities developed in the Azores, which are defined as those activities based on both offshore and onshore infrastructures or

[119] *Supra* n. 6.

platforms, including, in this instance, the maritime areas adjoining the archipelago. The Regional Act also regulates the economic and financial regime for these activities.

The Azores Regional Space Act very much duplicates the provisions of the National Space Act, with some new features, such as the following:

(1) It creates a regional space authority (entidade espacial regional, or EER) responsible for the licensing, pre-qualification, registration and transfer of space objects, as well as for the supervision of space activities in the Azores;
(2) It indicates that the procedures for licensing, pre-qualification, registration and transfer of space objects are subject to the prior technical review of the Space Authority;
(3) It indicates that the EER must communicate to the Space Authority all required information so that the Space Authority can comply with the applicable international obligations (especially the ones relating to registration of space objects);
(4) It indicates that the EER and the Space Authority shall cooperate in the above procedures, as well as in the supervision of space activities; and
(5) It introduces a fee for the use of space, the legal framework of which is unclear (notably, there is no clarification of what 'space' refers to in this context) and has no parallel in other jurisdictions.

By replicating the conditions of the Space Act and creating the EER, the Azores Regional Space Act seems to lead to the duplication of processes that private operators will have to comply with for pursuing space activities in the Azores. Indeed, the Act continues to apply to these activities, as, in accordance with it, '*This Decree-Law applies to the Autonomous Regions of the Azores and Madeira, mutatis mutandis […]*'.

As a result, it seems, for instance, that operators performing space operations in the Azores will have to obtain two licenses for space operations: one from the Space Authority and one from the EER. In addition, it seems that the breach of either Act will lead to fines, meaning that operators may be subject to fines twice. The Azores Regional Space Act seems, to some extent, to acknowledge this situation, as it expressly addresses the need for coordination between the Space Authority and the EER. However, as of the time of writing, not much information has been issued on how such coordination and avoidance of duplication will be addressed.

What is more, the Azores Regional Space Act indicates that regional regulations will be approved for the procedures to license, pre-qualify, register

and transfer space objects. The Azores Regulation[120], despite some differences[121], is similar to the Space Authority Regulation and thus raises similar doubts. In addition, it does not expressly address coordination issues with the Space Authority except with relation to pre-qualification, by indicating that requirements for pre-qualification delivered to the Space Authority but relating to space activities to be performed in the Azores shall by analysed and issued by the EER.

The Regional Act also indicates that a regional order on insurance will be issued. This may also create a risk of incompatibilities or duplicated obligations, given that a national order on insurance under the National Space Act is also envisaged, as seen above.

Despite duplicating most of the provisions of the Act, some wordings of the Azores Regional Space Act are placed in a different section or seem to be more similar to prior versions of the Act. This situation further complicates the coordination and interpretation of the Azores Regional Space Act in relation to the Act.

Lastly, it is important to highlight that the Act only indicates that:

> '*The procedures for the licensing of space activities, pre-qualification and registration and transfer of space objects in connection with activities to be developed in the Autonomous Regions of the Azores and Madeira, and the corresponding economic and financial framework, are established by means of a regional legislative decree […]*' (our underlining).

However, the Azores Regional Space Act did not limit itself to regulate such 'procedures'. It went much further, creating a whole new duplicated regime for space activities, which may legitimately lead to the question of whether the Azores is competent to issue such a broad space regime.

4 CONCLUSION

The National Space Act contains a set of innovative solutions for Portuguese and foreign operators in the country. Indeed, the Act was drafted with due attention to the need to respond to the advent of new space activities, including small satellites and constellations of satellites, and aims to create solutions to facilitate these activities. However, some doubts and incompatibilities seem to result from the Space Authority Regulation and, especially, from the Azores Regional Space Act and the corresponding Azores Regulation. What is more, at the time of writing,

---

120 *Supra* n. 14.

121 For instance, there is no reference that the safety plan to be presented by the applicant shall be submitted in accordance with the US FAA rules. Instead, the safety plan shall be presented in accordance with 'the applicable regional, national or international standards and norms'. Another difference is that the user manual of the spaceport does not have to be submitted except if required by the EER.

the complete framework is still under construction: notably, the orders on liability and insurance need to be approved, and the fees for licenses have not yet been determined.

It is expected that such incompatibilities or less clear provisions will be duly tackled in the future, as the clarity and certainty of the legal framework is an essential element for the success of private space activity in the country, an objective expressly aimed for by the Government. A business-friendly legal regime is nevertheless clearly contained in the National Space Act, which, as the stepping stone of the Portuguese space legal framework, can be the reference framework for all developments in this legal area in the country. Together with 'Portugal Space 2030' and the spaceport in the Azores, the Portuguese legal regime is thus paving the way for increasing space activities and furthering the development of the space private sector and of R&D in Portugal.