

SYMPOSIUM ON THE NEW SPACE RACE

DOMESTIC LEGAL CONDITIONS FOR SPACE ACTIVITIES IN ASIA

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This essay compares the national space legislation of China, Japan, and the Republic of Korea (ROK), outlining the reasons behind the legislation and then explaining what it authorizes, the jurisdiction it asserts, and the conditions it imposes on nongovernmental space activities. The essay also compares the compensation available to victims in case of damages and governmental indemnification payments to protect victims and the space launch industry in Japan and the ROK. Differences in industry policies and dates of enactment help to account for variations among these states. However, the comparative analysis suggests that the domestic legal conditions across Asia's three spacefaring nations are similar to those found worldwide.

The essay focuses on China, Japan, and the ROK because they are Asia's most advanced space powers, equipped with their own launch sites, launch vehicles, and domestic satellites. India draws a lot of policy attention, but I exclude it from the analysis because India does not yet have national acts or ministerial licensing measures.¹ I also exclude the Democratic People's Republic of Korea (DPRK). While technologically capable, the DPRK has been prohibited from engaging in "any launch using ballistic missile technology" since 2009, when the UN Security Council adopted Resolution 1874 in the wake of the DPRK's second nuclear test. Considering the various sanctions that are in place, the DPRK probably also cannot lawfully procure the launch of its satellites from a foreign launch provider.²

National Space Legislation: The Current Situation

As of December 2018, approximately twenty states have adopted independent national space laws to authorize and continuously supervise the space activities of nongovernmental entities. These states, along with the corresponding dates of their laws, are Norway (1969), Sweden (1982), the United States (1984), the United Kingdom (1986), South Africa (1993), Russia (1993), Ukraine (1996), Australia (1998), the ROK (2005), Belgium (2005), Canada (2005), The Netherlands (2007), Germany (2007), France (2008), Nigeria (2010), Austria (2012), Kazakhstan (2012), Indonesia (2013), Denmark (2016), Japan (2016), New Zealand (2017), and Luxembourg

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¹ India is currently in the process of drafting a national law. See Dept. of Space, Indian Space Research Organisation, [Seeking Comments on Draft "Space Activities Bill, 2017" from the Stake Holders / Public – Regarding](#) (Nov. 21, 2017).

² See [S.C. Res. 1718](#) (Oct. 14, 2006); [S.C. Res. 1874](#) (June 12, 2009); [S.C. Res. 2087](#) (Jan. 22, 2013); [S.C. Res. 2094](#) (Mar. 7, 2013); [S.C. Res. 2270](#) (Mar. 2, 2016); [S.C. Res. 2321](#) (Nov. 30, 2016); [S.C. Res. 2356](#) (June 2, 2017); [S.C. Res. 2371](#) (Aug. 5, 2017); [S.C. Res. 2375](#) (Sept. 11, 2017); [S.C. Res. 2397](#) (Dec. 22, 2017).

(2017).³ While not a full-fledged law, China's Interim Measures on the Administration of Licenses for Civil Space Launch Projects (Chinese Licensing Measures) came out in 2002 and is comparable to the national space acts in terms of its provisions on private launch licenses.⁴

The scope of the license or permission required for private actors differs across these states, but a majority of the acts explicitly require a license or permission to launch a rocket and operate or control space objects (usually satellites) in outer space. "Space object" is a standard term used in the UN treaties on outer space, referring to any artificial objects (such as launch vehicles, satellites, and their parts and components) put into outer space after being manufactured on Earth. The term arguably includes "space debris" as well.⁵

Why National Space Legislation?

States have adopted national legislation on space activities for several reasons. The first and most important stimulus is the Outer Space Treaty (OST),⁶ to which all spacefaring nations are parties. The OST obligates a state party to ensure that its nongovernmental entities will abide by international law, including the provisions of the OST itself. Unlike customary international law, which imposes responsibility on a state only for internationally wrongful acts carried out by its government or nongovernmental entities that share a special nexus with the government,⁷ the OST provides that a state is directly and internationally responsible for its nongovernmental space activities. This has spurred states to be vigilant about private space activities, including by enacting space activities acts with licensing and supervision provisions that regulate these activities.

States have adopted laws for several other reasons as well. Because the launch of a space vehicle or satellite is still a highly dangerous activity, states require laws to impose strict standards to ensure public safety and health. In the event of accident and injury, states need the laws to ensure that innocent victims are appropriately compensated and that operators maintain third-party liability (TPL) insurance. Finally, states have enacted national laws to promote space business. Government support can be particularly important in relation to TPL indemnification payments, which are provided to a private launch provider when damages arising from an accident exceed the insurance coverage. In sum, national space acts are set up to ensure the observance of international space law, the safety of citizens, the protection of victims in case of damages, and the promotion of national space business.

The Scope of Authorization

The Chinese Licensing Measures and the Japanese Space Activities Act (SAA)⁸ provide licensing schemes for the launch of rockets and the operation of spacecraft such as satellites. In this regard, the laws are similar to the

³ 3 COLOGNE COMMENTARY ON SPACE LAW 503–46 (Stephan Hobe et al. eds., 2015); [NATIONAL SPACE LEGISLATION: A COMPARATIVE AND EVALUATIVE ANALYSIS](#) (Annette Froehlich & Vincent Seffinga eds., 2018).

⁴ Comm'n for Sci., Tech. & Indus. For Nat'l Def., [Interim Measures on the Administration of Licenses for Civil Space Launch Projects](#) (2002) [hereinafter Chinese Licensing Measures]; see also YUN ZHAO, [NATIONAL SPACE LAW IN CHINA](#) 39, 58–62 (2015).

⁵ "Space object" is defined rather unclearly in the Convention on International Liability for Damage Caused by Space Objects and the Convention on Registration of Objects Launched into Outer Space. See [Convention on International Liability for Damage Caused by Space Objects](#) art. I(d), Mar. 29, 1972, 24 U.S.T. 2389, 961 UNTS 187; [Convention on Registration of Objects Launched into Outer Space](#) art. I(b), Jan. 14, 1975, 28 U.S.T. 695, 1023 UNTS 15.

⁶ [Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies](#) art. VIII, Jan. 27, 1967, 18 U.S.T. 2410, 610 UNTS 205.

⁷ Int'l Law Comm'n, [Rep. on the Work of its Fifty-Third Session, Draft Articles on Responsibility of States for Internationally Wrongful Acts](#) arts. 4–11, U.N. Doc. A/56/10, at 2–3 (2001).

⁸ Act No. 76 of 2016 (Japan) [hereinafter SAA].

others mentioned above.⁹ In contrast, Korea's Space Development Promotion Act¹⁰ requires a license only for the launch of a rocket that orbits around the Earth or beyond. This means that a private person does not need a license to operate a satellite.¹¹ Norway has adopted a similar approach. Yet even without license requirements, private actors are not entirely free to operate satellites without government supervision under the Korean Act.¹²

In terms of the activities they authorize, the laws of China, Japan, and the ROK are noteworthy in other respects as well. Each excludes the launch of a suborbital space vehicle or sounding rocket¹³ from its authorization system,¹⁴ and thus exempts suborbital space tourism. In addition, the three laws are silent on the authorization conditions for private human space launch into Earth's orbit and beyond. The Japanese SAA has been interpreted to mean that such activity is prohibited because the technology to place a human space vehicle into Earth's orbit is not currently in the hands of either private persons or the Japanese government. I think it is fair to interpret the silence in the Korean Act in the same way. It is expected, however, that Japan will amend the SAA once space technology makes human space flight safer and the government is able to prescribe standards for launch permission.¹⁵ As for China, a ministerial-level regulation titled "Administrative Measures for the Registration of Objects Launched into Outer Space" (2001) envisions the registration of "artificial satellite[s], crewed spacecraft, space probe[s], space station[s], launch vehicle[s] and parts thereof," but seems to refer only to governmental activity.¹⁶ It remains unclear whether private on-orbit human activity is banned in China, although one might infer that such an important decision requires a full-fledged national act instead of a ministerial regulation.

The Scope of National Jurisdiction

Concerning the scope of national jurisdiction, the Korean Act is the most expansive. It asserts jurisdiction extra-territorially by requiring a license to launch a rocket that is owned by the Korean government or a Korean national, even when a foreign national intends to conduct the launch outside of Korea.¹⁷ For its part, the Chinese Licensing Measures "shall apply to all the space objects launched in the territory of China, and the space objects jointly launched abroad by China and other States."¹⁸ This is a standard assertion of authority, reflecting a combination of territorial and personal jurisdiction.

In contrast, the Japanese SAA is unique in that it strictly limits national jurisdiction to Japanese territory. The law provides that a person who intends to launch a space vehicle onto which a satellite or satellites are loaded must obtain permission from the Prime Minister only when "using a launch site located in Japan or on board a vessel or

⁹ Neither the Chinese Licensing Measures nor the Japanese SAA defines "space activities" in a way that is consistent with the national acts of Austria, France, Kazakhstan, the Netherlands, Russia, South Africa, Sweden, and Ukraine. The scope of the required national authorization does not necessarily correspond with the contents of defined space activity.

¹⁰ [Act No. 7538](#) (2005) (S. Kor.) [hereinafter Korean Act].

¹¹ Yoon Lee, *A Review of the Space Development Promotion Act of the Republic of Korea*, 33 J. SPACE L. 123, 156 (2007).

¹² The Korean Act requires preliminary registration of a satellite not later than 180 days before the anticipated date of launch. [Korean Act](#), *supra* note 10, art. 8(1). The Minister of Science, ICT and Future Planning may demand the rectification and supplementation of third-party liability insurance prepared by the satellite operator after reviewing this registration. *Id.*, arts. 8(1) & 8(4).

¹³ A "sounding rocket" is a rocket designed to perform scientific experiments during its suborbital flight.

¹⁴ [Chinese Licensing Measures](#), *supra* note 4, art. 2 (2002); SAA, *supra* note 8, art. 2 (ii)–(iii); [Korean Act](#), *supra* note 10, art. 2(3).

¹⁵ Nat'l Comm. on Space Pol'y, [Minutes of the 4th legal subcommittee of the Section of Space Industry and Science and Technology Bases](#) 1–3 (June 23, 2015) (Japan).

¹⁶ For an unofficial English translation, see *Chinese Law: Registration, Launching and Licensing Space Objects*, 33 J. SPACE L. 437, 438–40 (2007).

¹⁷ [Korean Act](#), *supra* note 10, art. 11(1)(b).

¹⁸ [Chinese Licensing Measures](#), *supra* note 4, art. 3.

aircraft with Japanese nationality.”¹⁹ Additionally, “a person who intends to implement the control of spacecraft using a spacecraft control facility located in Japan must obtain a license from the Prime Minister for each of the spacecraft.”²⁰ Thus, a Japanese company launching its rocket or controlling its satellite from a facility outside Japan need not apply for permission or a license from the Japanese government. Similar provisions are found in Belgian and Dutch law, but Japan’s SAA is the most strictly territorial in that even Belgian and Dutch law assert personal jurisdiction in some cases.²¹

The Japanese approach carries both potential benefits and risk. On one hand, strictly territorial jurisdiction will help to avoid double-licensing requirements for Japanese companies, given that a foreign government will often authorize and supervise the launch and operation of space objects in and from its territory irrespective of the nationality of those involved. The SAA also limits uncertainty regarding the actual exercise of enforcement jurisdiction over the activities of Japanese entities overseas. Thus, the law facilitates space business. On the other hand, Japanese actors might encounter regulatory voids in seeking to conduct space activities abroad, given the nonexistence of national acts and other governmental administration in many states. This means Japan may not fulfill its unique responsibility under the OST. To avoid this problem, more states will need to enact space activities legislation in accordance with UN General Assembly Resolution 68/74, which contains recommended standards for this type of reform.²²

Conditions on Licensing and Permission

The Chinese, Japanese, and Korean laws also impose conditions on the licensing of rocket launches and satellite operations. In the Chinese case, the Commission of Science, Technology, and Industry for National Defense reviews the launch plan submitted by the applicant, who must be the general project contractor or, if the contractor is not in China, the final owner of the satellite. Both Chinese and foreign nationals can be applicants. To obtain a license, the applicant must observe Chinese laws and maintain national secrets, and must not endanger national security or “cause irremediable danger to public health, safety, or properties by the project,” among other conditions.²³ The emphasis here is on the protection of national secrets and national security. Detailed TPL provisions are not found in the Licensing Measures, but there seems to be an implied requirement of financial capacity to provide compensation in the event of an accident.²⁴

The Japanese SAA contains more detailed conditions. The law states that a launch permission will be given when the Prime Minister is satisfied with the launch vehicle safety standard, the type-specific site safety standard, and the launch plan, as well as the purposes and methods of use of the spacecraft. Even once an applicant is given a launch permission, the person concerned—the so-called “launch operator”—cannot implement the launch without making appropriate financial guarantees.²⁵ A license to control the spacecraft²⁶ is granted only when the Prime Minister determines that the purposes and methods of use of the spacecraft comport with UN treaties on outer

¹⁹ SAA, *supra* note 8, art. 4.

²⁰ *Id.*, art. 20.

²¹ [Law of 17 Sept. 2005 on the Activities of Launching, Flight Operation or Guidance of Space Objects](#) art. 2(2) (Belg.); [Law Incorporating Rules Concerning Space Activities and the Establishment of a Registry of Space Objects](#) art. 2(2) (Neth.).

²² [G.A. Res. 68/74](#) (Dec. 11, 2013).

²³ [Chinese Licensing Measures](#), *supra* note 4, art. 5(c).

²⁴ *Id.*, arts. 4–5.

²⁵ SAA, *supra* note 8, arts. 6–9.

²⁶ This is usually a satellite, but in theory other types of objects are also included. A Moon rover, for example, would likely count. SAA, *supra* note 8, art. 2 (ii).

space and basic principles of Japan's Space Basic Act.²⁷ And the configuration and mechanism of the spacecraft must comply with space debris mitigation measures specified by Cabinet Office Order and related regulations.²⁸ These criteria correspond with space debris mitigation guidelines of the UN Committee on the Peaceful Uses of Outer Space²⁹ and the Inter-Agency Space Debris Coordination Committee.³⁰ The SAA establishes a precedent in that it sets forth detailed space debris mitigation measures. No other act has criteria and regulations that are as clear, detailed, or strict.

The Korean Space Act requires an appropriate purpose for using a launch vehicle, safety management, and the financial ability to bear, for example, liability insurance against a space accident. This Act does not specify detailed provisions, which will be provided for in a different law, discussed in the next section.

TPL and Governmental Indemnification

Korea enacted a Space Liability Act (KSLA) in 2007³¹ to provide detailed measures on TPL. Both the KSLA and the Japanese SAA channel liability to the launch operator and provide that damage caused by the fall of a space object shall be compensated based on non-fault liability.³² France has adopted a similar approach in the French Space Operations Act.

The KSLA and SAA also provide for governmental indemnification payments up to a certain maximum amount when the damages caused by the fall of a launch vehicle to Earth exceed the coverage of TPL insurance. The precise amount of the maximum, however, is not specified in either act. When it comes to governmental indemnification, the French Space Operations Act is the strongest to date in that it does not impose a ceiling on the amount of the indemnity payment. In the case of the United States, the ceiling is US\$1.5 billion, with inflation adjusted after January 1, 1989.³³ This shows that the details differ depending on the legal culture and industry policy, but it can be safely said that the advanced spacefaring nations have prepared governmental compensation schemes to provide full compensation to victims while also aiming to protect the space industry. In this respect, there is more global uniformity than regional difference.

NewSpace Activities and National Space Acts

Due to its broad definition of "spacecraft," the Japanese SAA applies to newly developing activities including active debris removal (ADR), on-orbit servicing (OOS), and resource exploration and exploitation on celestial bodies. However, detailed regulations on licensing and supervision for each activity in the new space age cannot be fully designed and implemented at present, especially in relation to the exploitation of space resources.³⁴ As a result, another act will most certainly be needed in the future. Of the three Asian states, China is technologically the most capable of engaging in emerging space activities, but China will not urgently need a national space activities act unless purely private companies try to engage in those activities. Governmental supervision will be secured

²⁷ [Act No. 43 of 2008](#) (Japan).

²⁸ SAA, *supra* note 8, art. 22 (i)–(iv).

²⁹ UN Office for Outer Space Affairs, [Space Debris Mitigation Guidelines of the Cmte. on the Peaceful Uses of Outer Space](#) (2007).

³⁰ Inter-Agency Space Debris Coordination Comm., [IADC Space Debris Mitigation Guidelines, rev. 1](#) (Sept. 2007).

³¹ Act No. 8714 (2007), *as amended by* Act No. 8852 (2008) (S. Kor.).

³² As a result, liability does not attach to manufacturers for damage caused by space objects, either in the KSLA or the SAA.

³³ [51 U.S.C. § 50915\(a\)\(1\)\(B\)](#).

³⁴ *See* Brian R. Israel, [Space Resources in the Evolutionary Course of Space Lawmaking](#), 113 AJIL UNBOUND 114 (2019).

under the current regulatory regime. In case of Korea, a new law to license and supervise NewSpace³⁵ activities is likely to be enacted once private actors start engaging in ADR or OOS.

Conclusion

This essay has compared the national space laws of China, Japan, and the ROK. A straightforward comparison is difficult, as the political-economic conditions, especially in the case of China, as well as the dates of enactment, are different. However, the laws of these three states are basically in line with those of other spacefaring nations. In this field of law, regional idiosyncrasies seem much less conspicuous than practical similarity, and this similarity may eventually help to generate even greater harmonization of national legislation. This is exactly what the UN General Assembly intended in adopting Resolution 68/74.

³⁵ “NewSpace” refers to a movement started around 2005 by new companies and ventures to develop space transportation systems and engage in new types of space activities independently from the government.