

THE SPACE LAW  
REVIEW

Editor  
Joanne Wheeler MBE

THE LAWREVIEWS

THE SPACE LAW  
REVIEW

Reproduced with permission from Law Business Research Ltd  
This article was first published in December 2019  
For further information please contact [Nick.Barette@thelawreviews.co.uk](mailto:Nick.Barette@thelawreviews.co.uk)

**Editor**  
Joanne Wheeler MBE

THE LAWREVIEWS

PUBLISHER

Tom Barnes

SENIOR BUSINESS DEVELOPMENT MANAGER

Nick Barette

BUSINESS DEVELOPMENT MANAGER

Joel Woods

SENIOR ACCOUNT MANAGERS

Pere Aspinall, Jack Bagnall

ACCOUNT MANAGERS

Olivia Budd, Katie Hodgetts, Reece Whelan

PRODUCT MARKETING EXECUTIVE

Rebecca Mogridge

RESEARCH LEAD

Kieran Hansen

EDITORIAL COORDINATOR

Gavin Jordan

PRODUCTION AND OPERATIONS DIRECTOR

Adam Myers

PRODUCTION EDITOR

Tessa Brummitt

SUBEDITOR

Anne Borthwick

CHIEF EXECUTIVE OFFICER

Nick Brailey

Published in the United Kingdom  
by Law Business Research Ltd, London  
Meridian House, 34-35 Farringdon Street, London, EC4A 4HL, UK  
© 2019 Law Business Research Ltd  
[www.TheLawReviews.co.uk](http://www.TheLawReviews.co.uk)

No photocopying: copyright licences do not apply.

The information provided in this publication is general and may not apply in a specific situation, nor does it necessarily represent the views of authors' firms or their clients. Legal advice should always be sought before taking any legal action based on the information provided. The publishers accept no responsibility for any acts or omissions contained herein. Although the information provided was accurate as at November 2019, be advised that this is a developing area.

Enquiries concerning reproduction should be sent to Law Business Research, at the address above.

Enquiries concerning editorial content should be directed  
to the Publisher – [tom.barnes@lbresearch.com](mailto:tom.barnes@lbresearch.com)

ISBN 978-1-912228-79-9

Printed in Great Britain by  
Encompass Print Solutions, Derbyshire  
Tel: 0844 2480 112

# ACKNOWLEDGEMENTS

The publisher acknowledges and thanks the following for their assistance throughout the preparation of this book:

ALDEN LEGAL LIMITED

ARENDETT & MEDERNACH

BIRD & BIRD

GVW GRAF VON WESTPHALEN

HUDSON GAVIN MARTIN

MORI HAMADA & MATSUMOTO

SHERMAN & HOWARD LLC

VIEIRA DE ALMEIDA

# CONTENTS

PREFACE.....	v
<i>Joanne Wheeler MBE</i>	
Chapter 1 EUROPE.....	1
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 2 INTERNATIONAL TELECOMMUNICATION UNION.....	7
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 3 INTERNATIONAL TREATIES .....	12
<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 4 AUSTRALIA.....	21
<i>Thomas Jones and Tom Macken</i>	
Chapter 5 GERMANY.....	36
<i>Grace Nacimiento</i>	
Chapter 6 JAPAN .....	47
<i>Hiroko Yotsumoto and Daiki Ishikawa</i>	
Chapter 7 LUXEMBOURG.....	57
<i>Bob Calmes, Laurent Schummer, Blazej Gladysz and Geoffroy Leclercq</i>	
Chapter 8 NEW ZEALAND.....	66
<i>Simon Martin</i>	
Chapter 9 PORTUGAL.....	78
<i>Magda Cocco, Helena Correia Mendonça and Cristina Melo Miranda</i>	

## Contents

---

Chapter 10	UNITED KINGDOM .....	90
	<i>Joanne Wheeler MBE and Vicky Jeong</i>	
Chapter 11	UNITED STATES .....	100
	<i>Milton 'Skip' Smith</i>	
Appendix 1	ABOUT THE AUTHORS.....	115
Appendix 2	CONTRIBUTORS' CONTACT DETAILS.....	121

# PREFACE

I am honoured to introduce the first edition of *The Space Law Review*.

It seems appropriate to be writing this introduction in 2019, the 50th anniversary of the first human landing on the Moon on 20 July 1969 as part of NASA's Apollo 11 lunar mission. This anniversary has further raised awareness of the value of space activities, whether from a scientific perspective, in a commercial context or simply to inspire the next generations.

I am hugely appreciative of the time and dedication of the lawyers who have contributed to this first edition, and more importantly for embracing space law as a practice area. The importance of *The Space Law Review* will grow each year as the value of space activities increases, further applications of satellite technology are brought into use and the commercial revenues from the industry are recognised. Lawyers will be required to understand the international treaties, how they are enforced and applied in national law and apply such laws, regulations and policies, potentially creatively, to new technologies and business models.

The economic benefits from the space sector are beginning to be recognised by states. The global space economy is expected to be worth £40 billion by 2030. The productivity of the space sector tends to be much larger than national averages.

New and innovative technologies increasingly derive from private commercial activities rather than the more traditional government-funded missions. States are responsible for national activities in outer space and therefore seek to supervise and authorise such activities through national legislation and licensing mechanisms.

New technology such as CubeSats, constellations of thousands of satellites, in-orbit servicing, high-resolution Earth observation data and new small-launcher technology are testing regulatory and insurance frameworks, and offer challenges to regulators that must work very closely with industry, using ideally anticipatory and outcome-focused regulation, to govern such activities. We are seeing new insurance models and financial security concepts being considered by regulators in the granting of launch and operations licences.

Efficient national regulation, which enables innovation effectively, is an increasingly important source of competitive advantage globally. We are witnessing more regulatory forum shopping than ever before in the space industry.

Regulators are required to achieve a balance between:

- a* managing government risk and liability, compliance with international obligations, safety, security and the sustainable use of and access to space; and
- b* encouraging commercialisation, innovation and growth, the benefits to society of new technology and attractiveness to foreign investment.

What is being recognised is that effective national regulation is an enabler to new and innovative satellite technology and the ability to raise finance.

On a personal note, this industry has been my passion for over 27 years. In that time, it has evolved from government-led telecommunications cooperatives to a competitive commercial innovative market, with applications that I would not have imagined in my lifetime. We are now seeing a paradigm shift in technology and opportunities in an industry that is growing with drive and determination; lawyers and regulators need to fully engage with the industry to keep up with it. It is a fascinating industry to engage with.

I thank my professor of space law, the lawyers and clients who supported me over the years, and most of all the contributors again, and hope that readers enjoy this edition and recognise the unique value that the international space industry can bring us on Earth.

**Joanne Wheeler MBE**

Alden Legal Limited

London

November 2019

# JAPAN

*Hiroko Yotsumoto and Daiki Ishikawa<sup>1</sup>*

## I INTRODUCTION TO THE NATIONAL LEGAL, REGULATORY AND POLICY FRAMEWORK

For over half a century, Japan has made intense efforts in the realm of space development, largely under the auspices of government initiatives. Japan became an original member of the Outer Space Treaty in 1967<sup>2</sup> and acceded to the following UN treaties on outer space in 1983: the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space; the Convention on International Liability for Damage Caused by Space Objects; and the Convention on Registration of Objects Launched into Outer Space. It concluded these treaties without implementing any domestic legislation.

Throughout this period, Japan sought to develop a launch vehicle using only domestic technology, and successfully launched its first domestic rocket, the H-II, in 1994. The H-IIA, an improved model of the H-II in terms of reliability and cost-efficiency, is Japan's current core rocket. The H-IIA and H-IIB<sup>3</sup> rockets have recorded consecutive successful launches since 2005.

Japan has achieved success not only in the development of launch vehicles, but also in space exploration, such as with the Hayabusa Project, which attempted the first-ever return mission to collect samples from an asteroid, and the IKAROS Project, a small solar-powered sail spacecraft technology demonstration mission to explore a new solar electric sail technique.

While making progress in space activities, Japan has been relatively slow to implement domestic space legislation compared to other leading spacefaring countries. It enacted the Basic Space Law<sup>4</sup> in 2008, creating a basic framework for space development and utilisation, and in 2016 enacted the Act on Launching of Spacecraft, etc. and Control of Spacecraft (the Space Activities Act),<sup>5</sup> which establishes general rules for the launch and control of satellites.

In 1990, a private entity named Rocket Systems Corporation (RSC) was incorporated in Japan under the leadership of the government for the purpose of promoting commercial launch services using launch vehicles developed by the National Space Development Agency of Japan (NASDA; now the Japan Aerospace Exploration Agency (JAXA)) with the joint investment of Japanese space-related companies. In 1996, the RSC received 30 orders,

---

1 Hiroko Yotsumoto is a partner and Daiki Ishikawa is a counsel at Mori Hamada & Matsumoto.

2 The official name of the treaty is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

3 H-IIB is a derivative rocket of H-IIA that is capable of providing greater launch capacity. The main purpose of H-IIB is to transport cargo to the International Space Station.

4 Law No. 43 of 2008.

5 Law No. 76 of 2016.

including options for launching satellites, from two major US satellite manufacturers. The contracts were conditional on the RSC establishing a public compensation scheme for third-party damages. In response, a mandatory insurance scheme covering liabilities associated with the launch of the satellites and any third-party liability of NASDA was introduced under the law for the establishment of NASDA,<sup>6</sup> rather than seeking to incorporate these provisions in a new space law. At the time, NASDA was the only entity with the ability to launch large-scale rockets, and this simple approach to legislating against liabilities proved adequate. However, the Japanese government expected that progress in the commercialisation of space-related activities would necessitate the establishment of a new space law and, almost 20 years later, the Space Activities Law was implemented.

Owing to a series of factors, such as delays in the development of the H-IIA, the cancellation of all orders received by the RSC, and the shrinkage<sup>7</sup> of the commercial satellite market, commercialisation did not progress as quickly as initially envisioned in Japan, which dampened any sense of urgency in the implementation of space legislation. During this period, launch opportunities were almost exclusively available to the public sector. Other than the space agency, access to space activities was limited to long-established space manufacturers, known as 'Old Space' companies, such as Mitsubishi Heavy Industries, Ltd (MHI), IHI Aerospace Co, Ltd, Mitsubishi Electric Corporation and NEC Corporation.

The enactment of the Basic Space Law in 2008 was a significant turning point in the history of Japan's space development. It was the first national law making general provisions for space development and use in Japan. Unusually, it was the result of a non-partisan legislative effort.

From the early stages of space development, the government has restricted national space activities to peaceful purposes, long interpreted to mean non-military activities. As a consequence, prior to 2008, Japan maintained a national policy prohibiting the use of space for national defence, and Japanese space projects had been chiefly focused on research and development. However, in recognition of the global development of the space industry and its international circumstances, it was imperative for Japan to urgently expand its space activities. These developments resulted in a change in government policy to accept a wider range of space usage, including for defence, leading to the creation of the Basic Space Law. Under this Law, importance is given to the promotion of civilian uses of space, the strengthening of the Japanese space industry and its international competitiveness, and the assurance of space security.

Upon the enactment of the Basic Space Law, a structure for government oversight of space activities was created, with the establishment of the Strategic Headquarters for National Space Policy (the Headquarters) within the Cabinet, headed by the Prime Minister and with the participation of all Cabinet Ministers, as the highest decision-making body for national space policy. In 2013, the Headquarters published the Basic Plan on Space Policy,<sup>8</sup> which is considered the master plan for government-sponsored space activities for the next decade.

---

6 The official name of the law is the Act on the National Space Development Agency of Japan (Law No. 50 of 1969).

7 Owing to the failures of the H-II's launch of flight 5 in 1998 and flight 8 in 1999, the RSC lost all the launch orders it had received, leading to the deterioration of its business and its ultimate dissolution in 2006.

8 Revised in 2016.

Further, in 2012, the National Space Policy Secretariat was created within the Cabinet Office, serving as the secretariat of the Headquarters and also playing the role of coordinator of space policies and space-related activities planned and implemented by various ministries. The Committee on National Space Policy was also formed in 2012 within the Cabinet Office as an adviser to the Headquarters, consisting of members from industry, academia and other experts.

These policy changes and government restructuring led to the enactment of the Space Activities Act in 2016, which is expected to promote the Japanese space industry (see Section II).

## II REGULATION IN PRACTICE

The Space Activities Act was enacted in 2016 as a comprehensive law regulating two main space activities – launch and satellite<sup>9</sup> operations. It sets out licensing requirements for those activities as well as special liability rules for damages arising from them.

### i Licences required for space activities

Under the Space Activities Act, any person wishing to launch a satellite from Japan requires a licence from the government. Additionally, any satellite operator operating from Japan must obtain a separate licence. In reviewing these applications, the government evaluates technical aspects of the rockets and satellites as well as their purpose and use from various perspectives, including public safety and internationally agreed principles under space treaties. Details of the licence requirements for those activities are explained below. No special dispute resolution rules have been promulgated with respect to these licences. Accordingly, any appeal against the decisions relating to the grant of licences will be processed in accordance with general procedural rules under the Administrative Complaint Act of Japan.

#### *Permission to launch*

As noted above, any person who plans to launch a satellite from a launching facility located in the territory of Japan<sup>10</sup> must obtain permission for each launch from the Prime Minister of Japan.<sup>11</sup> No permission is required for any launch from outside the territory of Japan (which may instead be subject to the licensing regime of the appropriate country). In addition, the launch of a rocket that does not carry a satellite is not considered to be the launch of a satellite and thus, for example, the test launch of a rocket that does not carry a payload does not require permission. Moreover, given the definition of ‘satellite’, the suborbital flight of a rocket that is not intended to deploy any space object into orbit or above is also outside the scope of the Space Activities Act.

In principle, permission for launch activity is given on a case-by-case basis. Typically, however, the same model of rocket is used multiple times over several years and it would be both onerous and inefficient if information regarding the design of the same model was

---

9 Under the Space Activities Act, a satellite is broadly defined as an artificial object to be deployed into orbit around the Earth or placed on an outer space object. Therefore, the Act covers a broad range of activities that involve any space object utilised in outer space.

10 More precisely, launches from a launch facility loaded on a vessel or aircraft registered in Japan are also subject to the permission requirement under the Space Activities Act.

11 Art. 4.1 of the Space Activities Act.

required to be evaluated with every application. Therefore, the Prime Minister has the power to certify a model of rocket upon request and the applicant for launch permission is not required to provide for governmental review any detailed information regarding the design of the certified rocket model.<sup>12</sup> Likewise, detailed information regarding the launch facility is not required for review if the launch facility has already been certified by the Prime Minister.<sup>13</sup>

The criteria for launch permission are as follows. First, the design of the rocket will be reviewed from the perspective of safety on the periphery of the flight path and the launch facility. As mentioned above, the process for the evaluation of the design will be simplified if a certified rocket model is used. Secondly, the launch facility is reviewed from the perspective of safety. For example, it must be equipped with radio equipment enabling the launch operator to identify the location of the rocket, and send commands to the rocket to discontinue the flight if it deviates from the scheduled flight path. Again, the evaluation of the launch facility may be simplified if the applicant is using a launch facility that has already been certified by the government. Thirdly, the government reviews the launch plan to ensure that it contains sufficient safety measures, and the applicant must show that it has sufficient capacity to implement the plan. Lastly, the purpose and use of satellites to be carried by the rocket must be in line with the fundamental principles of the Basic Space Law,<sup>14</sup> and must not infringe on the treaties related to the development and use of outer space or the notion of public safety.

### ***Permission to control satellites***

Any person who plans to control and operate a satellite using a control facility (a satellite operating centre) located in the territory of Japan must obtain permission for each satellite.<sup>15</sup> Similar to the regulation of launch activities, the Space Activities Act applies the principle of territorial jurisdiction to the regulation of satellite control; namely, only satellites controlled or operated from Japan are regulated, and satellite control from outside Japan is outside the scope of the Space Activities Act, regardless of whether it is conducted by a Japanese citizen or entity. Where a satellite is controlled by multiple control facilities located in more than one jurisdiction, permission is required if the main control function is located in Japan. There is no advance certification system for the design of satellites or control facilities.

The criteria for permission to be granted for satellite control focuses not only on public safety and compliance with the basic principles of domestic and international laws, but also closely on preventing the contamination of outer space and the Earth. First, the government reviews the purpose and use of the satellite to determine whether they are in line with the fundamental principles of the Basic Space Law,<sup>16</sup> the treaties related to the development and use of outer space, and the notion of public safety. Secondly, the structure of the satellite must conform to standards separately promulgated by the government to prevent any harmful contamination of outer space and to ensure public safety. The main concern regarding

---

12 A similar privilege may be given to rockets that are certified by a foreign government designated by the Prime Minister of Japan, even if the model of rocket is not certified in Japan. Art. 6(1), Art 4.2(2) of the Space Activities Act.

13 Art. 16.1 of the Space Activities Act.

14 Such principles include (1) the peaceful use of outer space, (2) the enhancement of people's lives, (3) the promotion of industrial development, (4) the growth of human society, (5) international cooperation, and (6) consideration for the environment. Art. 2 to 7 of the Basic Space Law.

15 Art. 20 of the Space Activities Act.

16 See fn. 14.

harmful contamination of outer space is the generation of space debris arising from the satellite during and after its lifetime, which means the satellite must be structured in a way that prevents the release of fragments. It must also be structured with the aim of avoiding jeopardising public safety during and after its life, and to prevent the contamination of the Earth's environment or that of other celestial bodies. Thirdly, the satellite control plan must include measures to prevent any harmful contamination of outer space as well as end-of-life measures (as described below), and the applicant must show it has sufficient capacity to implement the plan.

End-of-life measures are required to be described in the control plan and implemented at the end of the satellite's operation. In principle, these measures must be any of the following: (1) de-orbiting and re-entry to Earth, with public safety at landing ensured; (2) deploying the satellite into 'graveyard orbit'; or (3) deploying the satellite into the orbit of another celestial body or allowing the satellite to fall into the celestial body. However, if any of the measures set forth in points (1) to (3) cannot be taken because of financial, technical or other constraints,<sup>17</sup> then (4) cessation of control of the satellite after taking measures to prevent malfunction and explosion may be acceptable.

### ***Radio station licence***

A satellite operator must go through the process of international frequency coordination with the International Telecommunication Union in collaboration with the Ministry of Internal Affairs and Communications to be able to use radio frequency spectrum. At the same time, the satellite operator must obtain a domestic licence under the Radio Act<sup>18</sup> to use the same frequency for each individual satellite and control facility. Owing to the scarcity of available frequencies, a domestic radio licence may only be granted to Japanese nationals or Japanese legal entities.

### **ii Special liability rules for space activities**

The Space Activities Act established special civil liability rules for third-party damages caused by space activities. In establishing those rules, the lawmakers considered the necessity of protecting the public from inherently dangerous space activities, the extreme difficulty of victims being able to prove the negligence of a space operator that caused harm, and the principles applied to international liabilities under the Convention on International Liability for Damage Caused by Space Objects. In addition to these special liability rules, the Space Activities Act requires persons who launch a rocket to take financial measures to secure the payment of damages arising from the launch (typically, by purchasing space liability insurance and entering into a compensation agreement with the government).

### ***Liability caused by launch activities***

The Space Activities Act provides for a set of special liability rules for damage suffered by third parties caused by falls, collisions and the explosion of rockets after commencement of the launch operation. The rationale behind these special rules includes the following: the victim's ease in seeking compensation; the desirability of concentrating compensation obligations in

---

17 The typical satellite controller who may be eligible for this option is an individual in a university or scientific research institution who operates small satellites for scientific purposes.

18 Law No. 131 of 1950.

a single party that is required to purchase liability insurance; that suppliers of rocket parts will be encouraged to participate in the launch process because they will be released from the risk of significant liabilities; and, additionally, the desirability of promoting the international competitiveness of Japanese launch service providers.

The special liability rules are as follows:

- a Any person who launches satellites using a launching facility located within the territory of Japan<sup>19</sup> shall be liable for damages to any third party located on the land, in the water or in a flying aircraft.<sup>20</sup> The liability of the launching party is strict and the injured third party does not need to prove negligence.
- b No person other than the launching party shall be liable to any third party for damages, as there is no application of product liability law.<sup>21</sup> Consequently, third-party damages arising from launch activities are concentrated in the launching party.
- c A person who pays damages to a third party may claim a contribution from another person to whom the incident is attributable. However, where that person is a supplier of goods or services for the launch of satellites, that person shall be liable only if the damage is caused by its or its employees' wilful misconduct.<sup>22</sup>

### ***Security measures for third-party liability***

Even if an applicant obtains launch permission from the government, it may not launch a satellite unless it implements measures to secure its liability for any damage caused to third parties by the launch activity and obtains approval from the government. The combination of space liability insurance provided by insurance companies and a supplemental compensation agreement with the government is one of these permitted measures. The launching party first needs to take out liability insurance cover with an insurance company covering the minimum amount of liabilities designated by the government.<sup>23</sup> The government then evaluates the sufficiency of the liability insurance and enters into a supplemental compensation agreement with the launching party to cover damages that are not covered by the liability insurance, up to a combined maximum of 350 billion yen. The supplemental compensation agreement will be provided free of charge.

### ***Liabilities caused by satellite control***

The first of the special liability rules (point (a) above) is also applied to the liability of satellite controllers for damage suffered by third parties owing to crashes and explosions of satellites occurring after separation from rockets. However, unlike the liability rules for damage caused by launch activities, a third party may also seek compensation from any other party to whose activities this damage may be attributable (i.e., the liabilities are not concentrated in the satellite controller), and there are no restrictions on claims for contribution. Further, satellite controllers are not required to take measures to secure third-party liabilities.

---

19 See fn. 10.

20 Art. 35 of the Space Activities Act. Damage to other satellites or other objects located in outer space are not within the scope of these special liability rules.

21 Art. 36 of the Space Activities Act.

22 Art. 38.1 of the Space Activities Act.

23 The required amount of coverage as at July 2019 is 20 billion yen for all types of rockets. Schedule to Art. 9-2 of the Regulation for Enforcement of the Act on Launching Artificial Satellites and Managing Satellites (Cabinet Ordinance No. 50 of 2017).

### III DISTINCTIVE CHARACTERISTICS OF THE NATIONAL FRAMEWORK

#### i Regulations on remote sensing business

Together with the general rules applicable to space activities that were codified under the Space Activities Act, Japan also enacted the Act on Securing Proper Handling of Satellite Remote Sensing Records (the Remote Sensing Act) concerning remote sensing activities, a major area of space activity that has become rapidly commercialised in recent years. While prospects for further growth in the remote sensing industry should be supported, the advancement of remote sensing technologies initiates concern from the perspective of both national and international security. The enactment of the Remote Sensing Act is intended to set clear rules for the use of remote sensing devices and data obtained from these devices, and for the provision and use of related products and services.

Under the Remote Sensing Act, any person who plans to use a ‘satellite remote sensing device’ using radio equipment located in Japan must obtain permission from the Prime Minister of Japan<sup>24</sup> for each device. The satellite remote sensing device is defined to include only remote sensing devices with a level of resolution designated by the government as the level at which potential security concerns arise.<sup>25</sup> Accordingly, remote sensing devices with a low resolution are outside the scope of the Remote Sensing Act. Additionally, permission is required only for remote sensing devices that are controlled from within the territory of Japan, and thus any such device controlled from outside Japan is not regulated under the Remote Sensing Act, even if the remote sensing device has the ability to detect locations in Japan.

To obtain permission, the user of a remote sensing device must implement measures to prevent the unauthorised use of the device and the divulgence of remote sensing data, including the encryption of information exchanged between the remote sensing device and the ground facility. The user must also show that it has sufficient capacity to carry out these measures, and that the use of the remote sensing device is not against principles of international peace or national security.<sup>26</sup>

If the satellite for which permission to use the remote sensing device is granted deploys out of the permitted orbit, the user must cease remote sensing until the satellite returns to the planned orbit.<sup>27</sup> When the user terminates the use of the remote sensing device, it must implement measures to prevent the unauthorised use of the device by completely ceasing the transmission of signals from the device or suspending transmission until a rebooting signal is received.<sup>28</sup>

The Remote Sensing Act also regulates the provision of remote sensing data that are highly sensitive from a security perspective. Satellite remote sensing information may not be provided to any person that has not obtained a licence to handle that information.

#### ii Foreign trade regulations

The technologies related to the development of outer space are subject to both export and import control regulations under the Foreign Exchange and Foreign Trade Act of Japan.

24 Art. 4.1 of the Remote Sensing Act.

25 Art. 2(2) of the Remote Sensing Act. For example, the designated resolution of an optical sensor is 2 metres.

26 Art. 6 of the Remote Sensing Act.

27 Art. 9 of the Remote Sensing Act.

28 Art. 15.2 of the Remote Sensing Act.

The government provides a list of regulated products, the export (or the provision of related technologies) of which to prescribed foreign countries or areas requires prior permission. Many of the products listed are relevant to national security and, accordingly, a number of technologies relevant to rockets and satellites are subject to export control regulations.

A prior filing with the government may also be required for the introduction of certain technologies related to the development of outer space by a non-resident of Japan. The requirements for importing technology include any necessary transfer and licensing of intellectual property rights and other manufacturing and processing technologies.

#### **IV CURRENT DEVELOPMENTS**

Like other nations, the government occupies a dominant position in Japan's space activities, and, in collaboration with the government, Old Space companies (see Section I) have engaged in space development and have satisfied public requirements and expectations with the support of government funds. While Old Space companies are still major players, small and medium-sized space ventures (part of 'New Space') are gradually growing their businesses with government backing, and are expected to be active players in the space industry in the near future.

In 2017, the government published its Space Industry Vision 2030, which sets a target of doubling the size of the space industry by the early 2030s, and aims to boost New Space technologies with strong government support. JAXA is increasingly expected to transfer its research and development outcomes to the private sector, and provide private companies with technological support and opportunities to improve their capabilities. Some recent examples of these developments are outlined below.

##### **i Privatisation of launch operations**

While Japan's domestic rocket business has largely depended on national public demand, the government calls for greater emphasis on private-sector demand and the global launch business. Under national policy, in 2007, following NASDA's 13th flight, MHI replaced NASDA (now JAXA) as the operator of H-IIA launch operations, and commenced its own commercial launch services. JAXA grants an exclusive licence to MHI to manufacture and launch the H-IIA. Following the transfer of H-IIA launch operations, MHI also assumed responsibility for H-IIB launch operations from JAXA, following its fourth flight in 2013. JAXA continues to be responsible for the overall safety management of launches, to ensure safety on the ground, in the ocean and during flights, even after the transfer of the launch operations.

Today, JAXA, with satellites to launch, has entered into a launch service agreement with MHI to purchase launch services from it. Although the H-IIA and the H-IIB have enough safe and successful flight records, MHI has been required to obtain approvals for these rockets from the government under the Space Activities Act since 15 November 2018.

Currently, the H-III is under development to be a successor to the H-IIA, aiming at high cost performance and greater competitive strength. Further, the Epsilon rocket, a solid-propellant launch vehicle, has also been developed by JAXA with the objective of allowing a more flexible and efficient response to the expanding launch demands of smaller satellites. The launch operations of these rockets are also intended to be transferred to the private sector to promote commercial launch services by JAXA.

## ii Support for new business creation

The limited availability and high costs associated with the deployment of launch vehicles present hurdles to the participation in on-orbit demonstrations or outer space experiments by space ventures. JAXA promotes projects that make these opportunities to support new business development inexpensive and readily available to the private sector and universities.

JAXA launches small or ultra-small satellites developed by the private sector and universities as 'piggyback satellites'<sup>29</sup> riding free of charge on an Epsilon rocket, and provides them opportunities for on-orbit demonstrations of new element technologies using these small satellites as test beds. Although some restrictions are placed on the choice of timing for a launch, these are invaluable opportunities for space ventures to demonstrate new technologies in on-orbit vacuum environments without bearing launch costs.

JAXA also promotes commercial utilisation of the International Space Station (ISS) and offers services of applied research experiments on 'Kibo', the Japanese Experiment Module of the ISS, to contribute to many new developments related to, among others, drugs, materials and medical equipment, which will generate new businesses and improve the quality of life. In addition to non-proprietary experiments selected through public invitation on a no-fee basis, JAXA provides a paid utilisation framework for carrying out experiments, where the outcomes are proprietary, to encourage the participation of private-sector players and universities.

The government supports a number of projects to cultivate the New Space movement, including the 'S-Matching', a platform facilitating the networking of space business entrepreneurs and investors, Space New Economy, 'S-Net', a networking activity to support New Space businesses, and 'S-booster', a contest to award good space business ideas. In addition, government investment banks and funds, such as the Development Bank of Japan and Innovation Network Corporation of Japan, affirmatively invest in New Space businesses.

## iii Attempted new style of project

JAXA is attempting to introduce a new style of project, along the lines of NASA's programmes, such as its Commercial Orbital Transportation Services, to provide new motivation for the private sector and achieve maximum performance. It is also expected to make more efficient use of JAXA's tight budgets and human resources.

Currently, one of the most serious space issues is how to tackle increasing space debris. JAXA intends to demonstrate its technology for the removal of space debris using the private sector's ideas and technological capabilities. As part of this project, JAXA will select a private company as a project partner, to be responsible for the entire project and to formulate a business plan meeting JAXA's requirements, procure and operate a satellite system, carry out an on-orbit demonstration and obtain data. It is expected that the costs of the project will be divided equally between JAXA and the company. In addition to providing technical advice and licensing its intellectual properties, JAXA will only serve as a fund provider to the project by way of milestone payments and will be entitled to use the demonstration data free of charge. The company will be entitled to reserve proprietary rights in the outcomes of the project and will be encouraged to use these outcomes for commercial purposes and for its own proprietary business development.

---

29 A piggyback satellite launch utilises the excessive launch capability of the rocket to launch small satellites.

## **V OUTLOOK AND CONCLUSIONS**

Although the basic legal framework and government structure for expanding space utilisation and developing space industries in Japan has developed, the process leading to this was slower than initially expected. The opportunities now exist to enhance the function and capabilities of Japan's legal and government structure by bringing together true expertise, knowledge and experience sufficient to meet the demands of the space industry and enable the country to compete internationally. Constant review of the space laws is necessary to ensure their functionality and effectiveness, and to avoid impeding the growth of the industry.

## ABOUT THE AUTHORS

### **HIROKO YOTSUMOTO**

*Mori Hamada & Matsumoto*

Hiroko Yotsumoto is a partner at the Tokyo office of Mori Hamada & Matsumoto. She practises primarily in the areas of M&A, corporate law and government relations. She also has expertise in matters related to space development, energy, and science and technology. Prior to joining the firm, she served as a government official at the Science and Technology Agency where she was engaged in national policymaking and legislative activities related to space development. She has advised the Japan Aerospace Exploration Agency and many other governmental agencies on various project matters. She received her LLB from the University of Tokyo in 1991 and her master's degree in public policy from Harvard University in 1995.

### **DAIKI ISHIKAWA**

*Mori Hamada & Matsumoto*

Daiki Ishikawa is a counsel at the Tokyo office of Mori Hamada & Matsumoto. He focuses on cross-border and domestic M&A and intellectual property transactions. He is a leading member of the space law practice group in the firm and also joins external academic groups studying space business law, including the Commercial Space Resources Development Study Group sponsored by Keio University and JAXA from 2016 to 2018. Mr Ishikawa was admitted to the Japanese Bar in 2008. He received his JD from the University of Tokyo Law School in 2007, and his LLM from the University of Chicago Law School in 2014. He also worked at Mitsubishi Corporation (Americas) from 2014 to 2015.

**MORI HAMADA & MATSUMOTO**

16th Floor, Marunouchi Park Building

2-6-1 Marunouchi

Chiyoda-ku

Tokyo 100-8222

Japan

Tel: +81 3 6212 8330

Fax: +81 3 6212 8230

[hiroko.yotsumoto@mhm-global.com](mailto:hiroko.yotsumoto@mhm-global.com)

[daiki.ishikawa@mhm-global.com](mailto:daiki.ishikawa@mhm-global.com)

[mhm\\_info@mhm-global.com](mailto:mhm_info@mhm-global.com)

[www.mhmjapan.com](http://www.mhmjapan.com)

an LBR business

ISBN 978-1-912228-79-9