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**Committee on the Peaceful
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Legal Subcommittee
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Item 5 of the provisional agenda*
Status and application of the five United Nations
treaties on outer space**

**Questionnaire on the application of international law to
small satellite activities**

Note by the Secretariat

At its sixty-first session, in 2022, the Working Group of the Legal Subcommittee on the Status and Application of the Five United Nations Treaties of Outer Space agreed ([A/AC.105/1260](#), annex I, para.8) that States members and permanent observers of the Committee should continue to be invited to provide comments and responses to the “Questionnaire on the application of international law to small satellite activities” ([A/AC.105/1260](#), annex I, appendix II).

The present conference room paper contains replies received from Algeria, Bolivia (Plurinational State of), Japan, and the International Society for Photogrammetry and Remote Sensing (ISPRS) to the questionnaire.

* [A/AC.105/C.2/L.323](#).



Algeria

[Original: French]
[Received on 29 December 2022]

Questionnaire on the application of international law to small-satellite activities

1. Overview of small-satellite activities

1.1 Are small satellites serving the needs of your society? Has your country determined whether small satellites could serve an identified technological or development need?

Algeria considers space technologies and applications to play an important role in supporting sustainable development in various fields. Accordingly, since the 1980s, it has established centres of scientific excellence to conduct research on such technologies and their use. In 2002, it established a space agency whose work includes establishing space-based systems for Earth observation and using the images obtained by those systems in agriculture, cadastral mapping, land use, infrastructure, land-use planning, environmental monitoring and natural disaster management.

1.2 Is your country involved in small-satellite activities such as designing, manufacturing, launching and operating? If so, please list projects, as appropriate. If not, are there future plans to do so?

The mastery of space knowledge, science and technology is strongly encouraged in Algeria, and the engineers of the Algerian Space Agency participate actively in the various activities referred to, from subsystem production to the construction of Earth observation satellites.

As part of the national space programme, which is implemented by the Algerian Space Agency, several small-satellite space systems have been created under cooperation agreements with leading institutions:

- The Alsat-1 satellite, which was launched in 2002 as a result of fruitful cooperation with the United Kingdom and has made it possible to train an initial group of engineers in areas relating to the design, development and testing of small satellites;
- The two-satellite Alsat-2 constellation, consisting of Alsat-2A, which was launched in 2010, and Alsat-2B, launched in 2016, with the more active involvement of Algerian engineers, who were able to build the Alsat-2B satellite in Algeria;
- The Alsat-1B satellite, launched in 2016;
- The Alsat-1N nanosatellite, launched in 2016 for the purposes of scientific experiments.

1.3 Which kind of entity in your country is carrying out small-satellite activities?

According to the provisions of Act No. 19-06, which was promulgated in Algeria on 17 July 2019, space activities are carried out exclusively by the State. Such activities are conducted by the Algerian Space Agency on behalf of the State.

1.4 Is there a focal point in your country responsible for coordinating small-satellite activities as part of your national space activities?

The above-mentioned Act designates the Algerian Space Agency (www.asal.dz) as the body responsible for designing and implementing, on behalf of the Government of Algeria, national policy on the promotion and development of space activities.

The Agency directs all programmes relating to space activities and implements those programmes in partnership with the sectors involved in scientific research and technological development, as required.

1.5 Are small-satellite activities carried out in the framework of international cooperation agreements? If so, what type of provisions specific to small-satellite activities are included in such cooperation agreements?

Cognizant of the contribution of space technologies – in particular, satellite capabilities – to the country’s sustainable development, Algeria pays particular attention to capacity-building in relation to the design, development, integration and testing of small satellites using the country’s existing technological infrastructure.

Until such time as the conditions enabling the achievement of that goal are in place, Algeria has developed a number of small satellites, registered in its name, through contracts and agreements with foreign operators and manufacturers. Those contracts, which are related, in particular, to cooperation in academic training and the transfer of expertise, are largely commercial in nature.

In the future, Algeria plans to implement cooperation agreements relating to the design, development, production and operation of small satellites. In those agreements, the rights and responsibilities of each party and arrangements with respect to risk-sharing and shared ownership of intellectual property resulting from such activities will need to be defined.

2. Licensing and authorization

2. Do you have a legal or regulatory framework to supervise any aspect of small-satellite activities in your country? If so, are they general acts or specific rules?

Act No. 19-06 of 17 July 2019 on space activities establishes general rules relating to the conduct of such activities, including small-satellite activities, in accordance with the principles governing the peaceful use of outer space for sustainable development and the well-being of communities, the safety of persons and property and the protection of public health and the environment for sustainable national socioeconomic development.

Under the Act, a single regime is applied to the study, design, manufacture, development, launch, flight or guidance, control and return of space objects, including small satellites.

Given that space activities are carried out by the Algerian Space Agency and thus fall under the exclusive control of the State, licences and authorizations do not come into question.

3. Responsibility and liability

3.1 Are there new challenges for responsibility and liability in view of small-satellite activities?

The question of responsibility and liability presents ambiguities and imprecisions with respect to the space activities of States. Those ambiguities and imprecisions are linked to the fact that the notion of “fault” has not been defined.

The establishment of regulations governing that matter in respect of existing activities would be a stepping stone to the regulation of small-satellite activities, which fall within the scope of the United Nations Programme on Space Applications.

4. Launching State and liability

The proliferation of non-governmental small satellite activities, in particular, brings about legal issues e.g. the notion of a launching State or determining an appropriate State of registry, which are insufficiently regulated internationally to maintain the rule of law in outer space.

4.1 Since small satellites are not always deployed into orbit with dedicated rockets as in the case of larger satellites, there is a need for clarification in the understanding of the definition of “launch”. When a launch of a small satellite

requires two steps — first, launching from a site to an orbit and, second, deploying the small satellite to another orbit — in your view, would the first step be regarded as the “launch” within the meaning of the United Nations treaties on outer space?

According to the Convention on International Liability for Damage Caused by Space Objects, the term “launching” includes attempted launching. On that basis, any activity that serves to put an object into space is considered a launch.

According to domestic law, specifically Act No. 19-06 of 17 July 2019 on space activities, any operation aimed at placing or attempting to place a space object in orbit or on any other trajectory in outer space, beginning with the intentional ignition of the launch vehicle’s engines and ending when the object is separated from the vehicle, is also considered a launch.

4.2 Do you think that the current international regulatory regime is sufficient to regulate operators of small satellites or that there should be a new or different international regulatory approach to address operations of small satellites?

The current regulatory regime is at a crossroads in terms of the establishment of an adequate legal framework for the management of space activities.

Effective means of balancing the interests of all space actors must therefore be identified, regardless of the space activity carried out and the size of the space object concerned, in order to be able to manage the risks that such activities pose.

5. Registration

5. Does your country have a practice of registering small satellites? If so, does your country have a practice of updating the status of small satellites? Is there any legislation or regulation in your country that requires non-governmental entities to submit to the Government information for the purpose of registration, including updating of the status of small satellites they operate?

Algerian small satellites are registered in accordance with the provisions of articles II and IV of the Registration Convention and articles 9 to 12 of Act No. 19-06 of 17 July 2019 on space activities.

A national registry of space objects has been established pursuant to that Act. The procedures for registration in the registry are set out in an executive decree that is currently in the process of being approved.

The national registry is maintained by the Algerian Space Agency. Each time a satellite is launched, the Agency, which directs and implements programmes relating to space activities on behalf of the State, registers the satellite in the national registry and furnishes to the Secretary-General of the United Nations, through the diplomatic channel, information concerning the space object carried on its registry, in accordance with the provisions of article IV of the Convention on Registration of Objects Launched into Outer Space.

Where additional information is available concerning the object in question, ASAL is required to update the original data by providing the Secretary-General of the United Nations with that additional information, through the same procedure, in accordance with article IV, paragraph 2, of the Registration Convention.

The Act also establishes the exclusive control of the State over space activities, which are accordingly carried out by the Algerian Space Agency as a governmental entity.

Bolivia (Plurinational State of)

[Original: Spanish]
[Received on 29 December 2022]

1. Overview of small-satellite activities

1.1 Are small satellites serving the needs of your society? Has your country determined whether small satellites could serve an identified technological or development need?

In Bolivia, there are currently no last-mile services provided by small satellites in the telecommunications sector.

1.2 Is your country involved in small-satellite activities such as designing, manufacturing, launching and operating? If so, please list projects, as appropriate. If not, are there future plans to do so?

Bolivia is not yet involved in any small-satellite activities. There are no plans to carry out such activities in the future.

1.3 Which kind of entity in your country is carrying out small-satellite activities?

Bolivia does not have an entity that carries out small-satellite activities. However, the Bolivian Space Agency is the entity responsible for all the country's space activities, which are aimed primarily at the commercialization and use of the Bolivian satellite TKSAT-1. Transport and Telecommunications Authority regulates the use of the electromagnetic spectrum for telecommunications services, and its responsibilities include regulating the provision of those services through satellites.

1.4 Is there a focal point in your country responsible for coordinating small-satellite activities as part of your national space activities?

The Bolivian Space Agency coordinates all of the country's space activities.

1.5 Are small-satellite activities carried out in the framework of international cooperation agreements? If so, what type of provisions specific to small-satellite activities are included in such cooperation agreements?

Bolivia is not currently involved in any small-satellite activities.

2. Licensing and authorization

2. Do you have a legal or regulatory framework to supervise any aspect of small-satellite activities in your country? If so, are they general acts or specific rules?

Ministerial Decision No. 145 of the Ministry of Public Works, Services and Housing, of 13 August 2020, establishes the regulatory framework for registration in Bolivia and the provision of telecommunication services in the country through non-geostationary satellites.

3. Responsibility and liability

3.1 Are there new challenges for responsibility and liability in view of small-satellite activities?

Bolivia does not yet have any experience with respect to small-satellite activities.

3.2 How are liability and insurance requirements enforced on an operator in your country, for a small satellite under your country's responsibility, in the event that "damage" occurs on the surface of Earth, to air craft in flight or to another space object in orbit?

None of the telecommunications operators in Bolivia has used small satellites to date.

4. Launching State and liability

4.1 Since small satellites are not always deployed into orbit with dedicated rockets as in the case of larger satellites, there is a need for clarification in the understanding of the definition of “launch”. When a launch of a small satellite requires two steps — first, launching from a site to an orbit and, second, deploying the small satellite to another orbit — in your view, would the first step be regarded as the “launch” within the meaning of the United Nations treaties on outer space?

Bolivia has not launched any small satellites to date.

4.2 Do you think that the current international regulatory regime is sufficient to regulate operators of small satellites or that there should be a new or different international regulatory approach to address operations of small satellites?

Countries that have experience in the operation of small satellites and the provision of services using such satellites should be able to share their experience, good practices and current regulations so that the possibility of adapting that experience and those practices and regulations to countries that do not yet have legislation governing the operation of such satellites can be studied.

5. Registration

5. Does your country have a practice of registering small satellites? If so, does your country have a practice of updating the status of small satellites? Is there any legislation or regulation in your country that requires non-governmental entities to submit to the Government information for the purpose of registration, including updating of the status of small satellites they operate?

Ministerial Decision No. 145 of the Ministry of Public Works, Services and Housing establishes the regulatory framework for the registration of non-geostationary satellites providing telecommunications services in the country.

Japan

[Original: English]
[Received on 16 March 2023]

1. Overview of small-satellite activities

1.1 Are small satellites serving the needs of your society? Has your country determined whether small satellites could serve an identified technological or development need?

Based on the Basic Plan on Space Policy of Japan, small satellites are expected to bring various types of innovation in the field of space, such as an increase in remote sensing observation through the utilization of small satellite constellations. However, Japan also recognizes the growing risks to the sustainable and stable use of outer space related to small satellite activities such as the congestion of space orbits.

1.2 Is your country involved in small-satellite activities such as designing, manufacturing, launching and operating? If so, please list projects, as appropriate. If not, are there future plans to do so?

Japan is involved in small-satellite activities. Some examples of its projects are as follows:

- (1) United Nations/Japan Cooperation Programme on CubeSat Deployment from the International Space Station (ISS) Japanese Experiment Module (Kibo) "KiboCUBE" implemented by UNOOSA and JAXA

(2) United Nations/Japan Long-term Fellowship Programme "Post-graduate study on Nano-Satellite Technologies (PNST)" by UNOOSA and the Kyushu Institute of Technology

(3) "Joint Global Multi Nation BIRDS Satellite Project" by the Kyushu Institute of Technology.

1.3 Which kind of entity in your country is carrying out small-satellite activities?

In Japan, there are various players in the field of small-satellite activities, including our space agency, academia, and industry.

1.4 Is there a focal point in your country responsible for coordinating small-satellite activities as part of your national space activities?

There is no specific focal point.

1.5 Are small-satellite activities carried out in the framework of international cooperation agreements? If so, what type of provisions specific to small-satellite activities are included in such cooperation agreements?

One example of international cooperation related to small-satellite activities is the KiboCUBE programme, which is implemented by UNOOSA and JAXA. The cooperative arrangement of the KiboCUBE programme was formulated in September 2015 between UNOOSA and JAXA. This programme provides educational or research institutions of developing countries with opportunities to deploy CubeSats from the ISS/Kibo, which they develop, manufacture and operate.

After the selection process of KiboCUBE, the selected entity needs to formulate an arrangement with JAXA consistent with the terms and conditions agreed between UNOOSA and JAXA.

Based upon this arrangement between a selected entity and JAXA, the selected entity is required to:

- (1) Comply with any relevant treaties, including the Outer Space Treaty, Registration Convention, Liability Convention, etc., if the state in which the selected entity is located ratified these treaties.
- (2) Comply with any relevant United Nations General Assembly (UNGA) Resolutions relating to peaceful uses of outer space, including:
 - UNGA Resolution 1962 (XVIII) "Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space", as of 13th December 1963
 - UNGA Resolution 1721 (XVI) as of 20th December 1961, etc.
- (3) Take necessary measures to register the space object and furnish information to the United Nations Secretary-General, in accordance with the Registration Convention if ratified, or in accordance with UNGA Resolution 1721 (XVI).
- (4) Bear responsibility for any loss or damage caused elsewhere by the CubeSat after deployment from Kibo, and exclude JAXA and the Government of Japan from any claims arising from such loss or damage.
- (5) Abide by JAXA's safety assurance requirements specified in "JEM Payload Accommodation Handbook", including the JAXA Space Debris Mitigation Standard, etc.
- (6) Comply with the UNOOSA document "Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites".

2. Licensing and authorization

2. Do you have a legal or regulatory framework to supervise any aspect of small-satellite activities in your country? If so, are they general acts or specific rules?

A person or entity which intends to launch and operate a small satellite needs to obtain a license in accordance with Act on Launching of Spacecraft, etc. and Control of Spacecraft. A person or entity which intends to use high resolution satellite remote sensing instruments or handle remote sensing data from a small satellite needs to obtain a license and certification in accordance with Act on Ensuring Appropriate Handling of Satellite Remote Sensing Data.

3. Responsibility and liability

3.1 Are there new challenges for responsibility and liability in view of small-satellite activities?

Japan recognizes the growing risks to the sustainable and stable use of outer space related to small satellite activities such as the congestion of space orbits.

3.2 How are liability and insurance requirements enforced on an operator in your country, for a small satellite under your country's responsibility, in the event that "damage" occurs on the surface of Earth, to air craft in flight or to another space object in orbit?

The compensation scheme for damage to a third party is defined in Act on Launching of Spacecraft, etc. and Control of Spacecraft.

4. Launching State and liability

4.1 Since small satellites are not always deployed into orbit with dedicated rockets as in the case of larger satellites, there is a need for clarification in the understanding of the definition of "launch". When a launch of a small satellite requires two steps — first, launching from a site to an orbit and, second, deploying the small satellite to another orbit — in your view, would the first step be regarded as the "launch" within the meaning of the United Nations treaties on outer space?

Japan has deployed a number of small satellites from the ISS/Kibo module, and JAXA concludes a contract with the person or entity that intends to launch and deploy such small satellites. In this contract, the responsibility of registering the space object and for any loss or damage caused by the small satellite after its deployment is imposed on the person or entity that intends to launch and deploy the small satellite.

4.2 Do you think that the current international regulatory regime is sufficient to regulate operators of small satellites or that there should be a new or different international regulatory approach to address operations of small satellites?

Japan is managing the launch and deployment of small satellites within the current regulatory framework.

5. Registration

5. Does your country have a practice of registering small satellites? If so, does your country have a practice of updating the status of small satellites? Is there any legislation or regulation in your country that requires non-governmental entities to submit to the Government information for the purpose of registration, including updating of the status of small satellites they operate?

In accordance with the Manual Pertaining to the Notification for Registering Space Objects, which was established in November 2018, a person or entity (including non-governmental entities) that intends to launch space objects will submit the information of their space objects to the Government. The information includes updates on the status of small satellites.

6. Space debris mitigation in the context of small-satellite activities

6. How has your country incorporated specific requirements or guidelines into its national regulatory framework to take into account space debris mitigation?

Act on Launching of Spacecraft, etc. and Control of Spacecraft refers to space debris mitigation measures, which are specified in the license requirements for control of spacecraft. Detailed contents are specified in the “Guidelines on License Related to Control of Spacecraft,” which refer to domestic and foreign standards.

International Society for Photogrammetry and Remote Sensing (ISPRS)

[Original: English]

[Received on 9 January 2023]

1. Overview of small-satellite activities

1.1 Are small satellites serving the needs of your society? Has your country determined whether small satellites could serve an identified technological or development need?

Often, small-satellites provide vital contribution to scientific projects and/or research related initiatives. If this is the case, small-satellites contribute to meet the needs of societies. Interestingly, certain countries (i.e. Austria) have taken the following approach: if a satellite pursues activities in the public interest, not only the amount of the mandatory third-party liability insurance to be purchased in order to get a license might be lowered but also, in some circumstances, be entirely waived.

1.2 Is your country involved in small-satellite activities such as designing, manufacturing, launching and operating? If so, please list projects, as appropriate. If not, are there future plans to do so?

The answer varies on a case-by-case basis. Certain countries may not take direct part in the manufacturing and operation of small-satellites and merely perform launching services, while other may be involved in all phases of a small satellite activity, from manufacturing to operation.

1.3 Which kind of entity in your country is carrying out small-satellite activities?

The situation changes depending on the country considered. Generally speaking, in the early days of utilization of small satellites, universities, research centers, non-profit organizations, were mostly involved in carrying out small-satellites activities. Nowadays, the number and kind of entities involved in the use of small-satellites have vastly broaden, as a consequence of the fact that these satellites are used to provide commercially oriented services (i.e. broadband internet services).

1.4 Is there a focal point in your country responsible for coordinating small-satellite activities as part of your national space activities?

The entity responsible may change from country to country. In principle, the licensing authority of space activities may play the role of coordinator of small satellites activities.

1.5 Are small-satellite activities carried out in the framework of international cooperation agreements? If so, what type of provisions specific to small-satellite activities are included in such cooperation agreements?

Often, small-satellites operators based in different countries join forces to collaborate in international projects. In this case, the legal framework governing their activities will be provided by an international cooperation agreement. While the specific elements of each agreement change on a case-by-case basis, each agreement will make

sure that the activities are consistent with fundamental space law principles and do not undermine national security interests and international relations.

2. Licensing and authorization

2. Do you have a legal or regulatory framework to supervise any aspect of small-satellite activities in your country? If so, are they general acts or specific rules?

The launch of small satellites must be authorized under the licensing procedure set forth in domestic space law; indeed, despite their small size, small satellites fall within the definition of ‘space object’, hence their activities need to be properly authorized and controlled to ensure their consistency with international law. Certainly, due to their specific characteristics, the licensing procedure can be accommodated or rendered more flexible. For example, certain countries have lowered the amount of the third-party liability insurance that an applicant must purchase in order to be authorized to launch an object in space, when such an object is a small satellite (Austria and others). Other countries, like Belgium, have included provisions dealing with ‘passive’ satellites, namely satellites that lack autonomous form of propulsion or any means to control them, particularly clauses dealing with the liability of the owner of the small satellite. Other countries, particularly those dealing with large constellations of satellites, require such satellites to possess a minimum level of maneuverability.

3. Responsibility and liability

3.1 Are there new challenges for responsibility and liability in view of small-satellite activities?

A State that authorizes the launch of small-satellites will be internationally responsible and likely liable for their activities. Challenges exist in relation to the characteristics of small-satellites and their number. As to the former, the largest majority of small-satellites are not maneuverable, meaning that their operators cannot perform any maneuver to avoid collision. Regardless of such lack of maneuverability, the launching State of a small-satellite that cause damage, even when the satellite is operated by a private entity, will be internationally liable for such damage. Some States have taken steps to address these problem by either requiring the small-satellite to have communication links on board or to possess a minimum level of operation capability. As to the latter point, when small-satellites are part of a large constellation, there are several regulatory challenges, for example those related to the effective control of the licensed activities, the mitigation of their detrimental impact on the environment, the registration of the satellites and insurance requirements, just to name a few.

3.2 How are liability and insurance requirements enforced on an operator in your country, for a small satellite under your country’s responsibility, in the event that “damage” occurs on the surface of Earth, to air craft in flight or to another space object in orbit?

On a general basis, national space laws require small-satellites’ owners to purchase a third-party liability insurance as a pre-requisite to obtain a license to launch their object/s, in a manner similar to the one that applies to the owners and operators of ‘traditional’ larger satellites. Nevertheless, the amount of such an insurance might be lowered when compared to the one required to launch traditional satellites.

Questions remain in connection with the licensing of large groups of small-satellites, such as in the case of mega-constellations, in particular whether the insurance requirement would address the constellation as a whole or each individual satellite that composes it.

4. Launching State and liability

4.1 Since small satellites are not always deployed into orbit with dedicated rockets as in the case of larger satellites, there is a need for clarification in the understanding of the definition of “launch”. When a launch of a small satellite requires two steps — first, launching from a site to an orbit and, second, deploying the small satellite to another orbit — in your view, would the first step be regarded as the “launch” within the meaning of the United Nations treaties on outer space?

In the example given, the ‘first step’ could be considered as a ‘launch’ because through it small-satellites are launched in outer space, even though at that stage without reaching their final destination and also because without the ‘first step’ the ‘second step’ could not take place. However, it would be advisable for the domestic licensing authority of a small-satellite operation to take these problem into account and shape the license and its requirements.

In the scenario that is given in the question, an additional question to be considered would be the moment from which the rights and obligations of the owners/operators of small-satellites would become relevant, as until the satellites reach their intended orbital locations there is practically very little that they can effectively do in terms of guiding and communicating with their satellites.

4.2 Do you think that the current international regulatory regime is sufficient to regulate operators of small satellites or that there should be a new or different international regulatory approach to address operations of small satellites?

The existing regulatory regime provides the basic principles applicable to all space objects, including, thus, also small-satellites. Certainly, however, such a regime was not designed to take into account the specific characteristics of small-satellites. In order to fill up the gaps that the existing international regulatory regime presents in relation to the regulation of small-satellites activities, States have adapted their domestic space licensing procedures to properly address the regulatory challenges and the issues that the launch and operation of small-satellites present. Considering the different approaches that States have taken at domestic level, it might certainly be beneficial to have a new, and more specific, international regulatory approach to deal with the operations of small-satellites, even though one has to recognize the challenges associated with elaborating and agreeing upon such an approach.

5. Registration

5. Does your country have a practice of registering small satellites? If so, does your country have a practice of updating the status of small satellites? Is there any legislation or regulation in your country that requires non-governmental entities to submit to the Government information for the purpose of registration, including updating of the status of small satellites they operate?

Each country may take a different approach to this problem; practice, however, shows that small-satellites are not an exception in the context of the implementation of the obligation to register objects launched in outer space. This means that when small-satellites operators apply for a license to launch their satellites, they must indicate the expected date and location of the launch and, after the launch has been performed, communicate the relevant information to the licensing authority for insertion of these data in the national registry of space objects.

6. Space debris mitigation in the context of small-satellite activities

6. How has your country incorporated specific requirements or guidelines into its national regulatory framework to take into account space debris mitigation?

Small-satellites operators have to comply with space debris mitigation requirements as part of their space licensing process, even though practical challenges exist when such satellites do not possess any capability to maneuver. For this reason, the

licensing authorities of the countries (i.e. the United States) that are dealing with the operation of mega-constellations of satellites require the operators of such constellations to provide their small-satellites with some minimum capability to maneuver and correct their orbit.
