

28 March 2022

English only

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**Committee on the Peaceful  
Uses of Outer Space  
Legal Subcommittee  
Sixty-first session  
Vienna, 28 March–8 April 2022  
Item 6 of the provisional agenda\*  
Status and application of the five United Nations  
treaties on outer space**

**Overview and final summary by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space on the responses from member States and permanent observers of the Committee to the Set of questions provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, taking into account the UNISPACE+50 process, provided by the Chair and contained in the Report of the Legal Subcommittee on its fifty-sixth session, document A/AC.105/1122 (Annex I, Appendix I), and the Report of the Legal Subcommittee on its sixtieth session, document A/AC.105/1243 (Annex I, Appendix I)**

## **I. Introduction**

1. As a conclusion of the work during the sixtieth session of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space (“the Committee”), the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space (“the Working Group”) agreed that “the Chair of the Working Group, in close consultation with the Secretariat, should present a summary of responses received over the years to the sets of questions as contained in appendices I and II to the present report, to be presented in a conference room paper to the Subcommittee at its sixty-first session, in 2022” (see Report of the Chair of the Working Group, as annexed to the Report of the Legal Subcommittee on its sixtieth session (“report of the Working Group”), document A/AC.105/1243, Annex I, para. 12).

2. The Working Group agreed that States members and permanent observers of the Committee should continue to be invited to provide comments and responses to the Set of questions provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, taking into account the UNISPACE+50 process (“set of questions”). The set of questions was attached to the report of the Working Group as an appendix, contained in the Report of the Legal Subcommittee on its fifty-sixth



session, document A/AC.105/1122, Annex I, Appendix I, and the Report of the Legal Subcommittee on its sixtieth session, document A/AC.105/1243, Annex I, Appendix I. The Working Group furthermore agreed that any replies received would be made available in conference room papers (see report of the Working Group, document A/AC.105/1243, Annex I, para. 11).

3. In its report, the Working Group also reaffirmed that in relation to the questionnaire and the set of questions as contained in Appendices I and II to the report of the Working Group, the issue of large constellations and megaconstellations should continue to receive specific consideration in the responses to both sets of questions (see report of the Working Group, document A/AC.105/1243, Annex I, para. 13). See in this regard document A/AC.105/C.2/L.322 entitled Registration of large constellations and megaconstellations, Background paper by the Secretariat, which is before the Working Group during the sixty-first session of the Legal Subcommittee.

4. The Working Group has received written contributions under the consideration of the above-mentioned set of questions, which are contained in documents A/AC.105/C.2/2017/CRP.6 and A/AC.105/C.2/2017/CRP.17 submitted during the fifty-sixth session of the Legal Subcommittee in 2017 by Austria, Germany, and Greece; documents A/AC.105/C.2/2018/CRP.12 and A/AC.105/C.2/2018/CRP.16 submitted during the fifty-seventh session of the Legal Subcommittee in 2018 by Czech Republic and Indonesia; documents A/AC.105/C.2/2019/CRP.11 and A/AC.105/C.2/2019/CRP.18 submitted during the fifty-eighth session of the Legal Subcommittee in 2019 by Pakistan, United Arab Emirates, Secure World Foundation (permanent observer), and Armenia; and document A/AC.105/C.2/2021/CRP.23 submitted during the sixtieth session of the Legal Subcommittee in 2021 by Chile, Finland, Germany, Morocco, Nicaragua, the Philippines, and the European Southern Observatory (permanent observer).

5. The following are the sets of responses received to the set of questions to date:

(a) Responses to the set of questions

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|------|--------------------------|---|
| i.   | A/AC.105/C.2/2017/CRP.6  | Austria, Germany  |
| ii.  | A/AC.105/C.2/2017/CRP.17 | Greece  |
| iii. | A/AC.105/C.2/2018/CRP.12 | Czech Republic  |
| iv.  | A/AC.105/C.2/2018/CRP.16 | Indonesia   |
| v.   | A/AC.105/C.2/2019/CRP.11 | Pakistan, United Arab Emirates,<br>Secure World Foundation  |
| vi.  | A/AC.105/C.2/2019/CRP.18 | Armenia   |
| vii. | A/AC.105/C.2/2021/CRP.23 | Chile, Finland, Germany, Morocco,<br>Nicaragua, the Philippines, European<br>Southern Observatory |

6. Before considering the substance of those contributions by member States and observers of the Committee, it should be recalled that:

(a) The set of questions addressed by the Chair to the Working Group does not affect in any way the mandate of the Working Group as defined by the Committee. Member States and observers may address any points or questions within the scope of that mandate, even though they are not related to this set of questions;

(b) The synthesis to be provided by the Chair is not meant to be an abstract or a summary of the replies provided by the member States and observers. It is therefore advised to refer to the text of the written contributions or to the record of oral statements to get acquaintance with the views expressed by member States and observers;

(c) The exercise undertaken by the Working Group with this set of questions is not meant to remain a theoretical review of space law issues. It aims at determining to which extent current issues with regard to space activities and international cooperation in outer space either may be tackled under the provisions of the existing treaties or require further development of those provisions through appropriate complementary instruments or

constructive interpretation, or even require further development in the existing corpus juris. This being said, it should be also recalled that the Working Group has no mandate to propose any revision or authoritative interpretation of the existing United Nations treaties on outer space. It may only highlight possible shortcomings, uncertainties, ambiguities and draw attention from the States parties thereon, and provide compilation of the issues raised by States participating in the set of questions.

7. The present document is structured as follows:
  - I. Introduction;
  - II. Set of questions provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, taking into account the UNISPACE+50 process, provided by the Chair and contained in the Report of the Legal Subcommittee on its fifty-sixth session, document A/AC.105/1122 (Annex I, Appendix I), and the Report of the Legal Subcommittee, document A/AC.105/1243 (Annex I, Appendix I);
  - III. Synthesis of views presented on the set of questions.

## **II. Set of questions provided by the Chair of the Working Group on the Status and Application of the Five United Nations Treaties on Outer Space, taking into account the UNISPACE+50 process, provided by the Chair and contained in the Report of the Legal Subcommittee on its fifty-sixth session, document A/AC.105/1122 (Annex I, Appendix I), and the Report of the Legal Subcommittee on its sixtieth session, document A/AC.105/1243 (Annex I, Appendix I)**

### **1. The legal regime of outer space and global space governance**

1.1 What is the main impact on the application and implementation of the five United Nations treaties on outer space of additional principles, resolutions and guidelines governing outer space activities?

1.2 Are such non-legally binding instruments sufficiently complementing the legally binding treaties for the application and implementation of rights and obligations under the legal regime of outer space? Is there a need for additional actions to be taken?

1.3 What are the perspectives for the further development of the five United Nations treaties on outer space?

### **2. United Nations treaties on outer space and provisions related to the Moon and other celestial bodies**

2.1 Do the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) constitute a sufficient legal framework for the use and exploration of the Moon and other celestial bodies or are there legal gaps in the treaties (the Outer Space Treaty and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement))?

2.2 What are the benefits of being a party to the Moon Agreement?

2.3 Which principles or provisions of the Moon Agreement should be clarified or amended in order to allow for wider adherence to it by States?

### **3. International responsibility and liability**

3.1 Could the notion of “fault”, as featured in articles III and IV of the Convention on International Liability for Damage Caused by Space Objects (Liability Convention), be used for sanctioning non-compliance by a State with the resolutions related to space activities

adopted by the General Assembly or its subsidiary bodies, such as Assembly resolution 47/68, on the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, and the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space? In other words, could non-compliance with resolutions adopted by the General Assembly or with instruments adopted by its subsidiary bodies related to space activities be considered to constitute “fault” within the meaning of articles III and IV of the Liability Convention?

3.2 Could the notion of “damage”, as featured in article I of the Liability Convention, be used to cover loss resulting from a manoeuvre performed by an operational space object in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee?

3.3 Are there specific aspects related to the implementation of international responsibility, as provided for in article VI of the Outer Space Treaty, in connection with General Assembly resolution 41/65, on the Principles Relating to Remote Sensing of the Earth from Outer Space?

3.4 Is there a need for traffic rules in outer space as a prerequisite to a fault-based liability regime?

#### **4. Registration of space objects**

4.1 Is there a legal basis to be found in the existing international legal framework applicable to space activities and space objects, in particular the provisions of the Outer Space Treaty and the Convention on Registration of Objects Launched into Outer Space (Registration Convention), which would allow the transfer of the registration of a space object from one State to another during its operation in orbit?

4.2 How could a transfer of activities or ownership involving a space object during its operation in orbit from a company of the State of registry to a company of a foreign State be handled in compliance with the existing international legal framework applicable to space activities and space objects?

4.3 What jurisdiction and control are exercised, as provided for in article VIII of the Outer Space Treaty, over a space object registered by an international intergovernmental organization in accordance with the provisions of the Registration Convention?

4.4 Does the concept of megaconstellations raise legal and/or practical questions, and is there a need to react with an adapted form of registration?

4.5 Is there a possibility, in compliance with the existing international legal framework, based on the existing registration practices, of introducing a registration “on behalf” of a State of a launch service customer, based on its prior consent? Would this be an alternative tool to react to megaconstellations and other challenges in registration?

#### **5. International customary law in outer space**

5. Are there any provisions in the five United Nations treaties on outer space that could be considered to form part of international customary law and, if yes, which ones? Could you explain the legal and/or factual elements on which your answer is based?

#### **6. Proposal for other questions**

7. Please suggest additional questions that could be inserted into the set of questions above to meet the objective of the UNISPACE+50 thematic priority on the legal regime of outer space and global space governance.

### **III. Synthesis of views presented on the set of questions**

#### **General Remarks**

8. The view was expressed that the five United Nations treaties on outer space constituted an appropriate and primary legal regulation of space activities; furthermore, any efforts

aimed at strengthening the rule of law in outer space were supported. It was expressed that international legal framework should continuously be discussed and strengthened to reflect the emergence of new actors as well as technological developments and new activities, with a view to consolidate international cooperation and safeguard the interests of all States.

### **On the legal regime of outer space and global space governance**

9. The view was expressed that the complementary relation of the United Nations treaties on outer space codifying long-term principles and more flexible non-legally binding instruments such as resolutions and guidelines, which were more suited to react to current developments in outer space activities, had to be emphasized. It was noted that the 2007 Registration Practice resolution represented an excellent example in this regard, having been negotiated and adopted to answer the significant setback of registration practice during the nineties of the last century. It was further expressed that contemporary new challenges such as defining a space resources regime, megaconstellations, and the transfer of activities or ownership involving a space object during its operation in orbit from a company of the State of registry to a company of a foreign State, could be addressed adequately by non-legally binding instruments. It was noted that as far as subjects such as space traffic management were concerned, the negotiation of a new binding United Nations treaty could be considered. It was highlighted that the universalization of the United Nations treaties on outer space was of utmost importance and that furthermore, from an institutional perspective, the Legal Subcommittee had to remain the prime intergovernmental platform for the development of space law, and regarding its organizational framework, that the established and well-proven structure of the Office for Outer Space Affairs should be strengthened as focal point.

10. The view was expressed that against the backdrop of the last of the United Nations treaties on outer space being adopted in 1979, in general, soft law instruments particularized and complemented the five treaties. It was added that for instance, the Space Debris Mitigation Guidelines of the Committee could be regarded, to a certain extent, as specifying the scope of application of articles I and IX of the Outer Space Treaty. It was noted that in addition, the agreement of States on legally non-binding instruments could contribute to the development and strengthening of international cooperation in the field; however, in the case of space law, the persistence of the international community to adopt 'principles', 'guidelines', 'practices', and 'codes of conduct' adversely affected the progressive development of space law, while in other areas of international cooperation, the continued engagement with soft legal tools could effectively encourage States to further strengthen the existing conventional arsenal.

*On the question: 1.1 What is the main impact on the application and implementation of the five United Nations treaties on outer space of additional principles, resolutions and guidelines governing outer space activities?*

11. Several States expressed the view that the additional principles, resolutions and guidelines governing outer space activities were an important tool to adapt the regime designed by the five United Nations treaties on outer space to current technological developments and resulting legal issues.

12. Some States expressed the view that national implementation of these instruments was an effective way to ensure compliance and establish a minimum standard, which was important for all States including emerging space-faring nations.

13. The view was expressed that additional principles, resolutions and guidelines could specify and concretize the provisions contained in the existing United Nations space treaties. It was added that therefore, while non-binding, these additional international instruments could give guidance to space actors with regard to the interpretation, application and implementation of the five United Nations treaties on outer space.

14. The view was expressed that the additional principles, resolutions and guidelines could serve as a useful tool for space actors regarding specific behaviour in outer space that was in general terms set forth in the existing United Nations treaties on outer space. It was emphasized that despite them being non-binding instruments, they could address current circumstances and needs in a flexible manner.

15. The view was expressed that the main impact and the most important application and implementation of the five United Nations treaties on outer space and additional space principles, resolutions and guidelines governing outer space was to ensure the peaceful use of outer space. It was moreover expressed that further elaboration and addition on principles, resolutions guidelines regarding outer space could be needed to provide further clarification of the implementation in practice of the provisions of the existing United Nations treaties on outer space.

16. The view was expressed that additional principles, resolutions, and guidelines governing outer space activities could have a positive impact on the understanding of terms and concepts in the existing United Nations treaties on outer space.

17. The view was expressed that through joining the United Nations treaties on outer space, an opportunity would be provided to realize satellite communication, space exploration, radio-navigation, and Earth research satellite services, which had the potential to contribute to the scientific and strategic development of the country and to expand existing telecommunication services.

18. The view was expressed that the principles and guidelines had been elaborated in coherence with the provisions of the United Nations treaties on outer space, being complementary for their application at present and allowing the adaptation of the treaties to the current context and operative technological development.

19. The view was expressed that the United Nations treaties on outer space were the cornerstone of international space law and created the basis of an international framework for the regulation of space activities together with resolutions and other instruments adopted by the General Assembly and the Committee. It was emphasized that having binding guidance at the international level for the conduct of space activities brought predictability and created conditions for tackling global problems, and that the non-legally binding instruments could support the underlying objectives of promoting international co-operation in the space sector and enhance the peaceful nature of and responsible behaviour in the conduct of space activities. It was expressed that a fragmentation of the international regulation of space activities could be avoided and overcome through furthering a comprehensive rule-based international regime, and legal certainty created could promote the industry. It was also noted that the non-legally binding instruments, consisting of various different documents with differing contents and characteristics, could help the international community to address some of the challenges that came along with technological development by providing a concretized way forward to the evolving space sector. It was furthermore added that an effective implementation of non-legally binding instruments was crucial especially with a view to orbital space debris mitigation, and that non-binding instruments were seen as the currently best way ahead for regulating the sustainable use and safe conduct of outer space activities. It was recognized that one of the most significant impacts of non-legally binding instruments is attained through effective implementation at national and international level. In this regard, it was noted with appreciation that requirements for space debris mitigation appeared to have become a recurring theme in recent national space laws and that this showed the willingness of States to adhere to respective non-legally binding instruments and the principles contained therein, such as the Space Debris Mitigation Guidelines of the Committee, relevant guidelines and standards by the Inter-Agency Space Debris Coordination Committee (IADC), and standards developed by the International Organization for Standardization (ISO).

20. The view was expressed that the principles, resolutions and guidelines governing outer space activities should be coordinated with the application of the principles set out in the five United Nations treaties, as those treaties constituted the overarching framework. It was furthermore expressed that given the dynamism and development of space activities, specific regulations were essential, as well issues such as access for developing countries to scientific research, environmental protection and gender equality which needed to be addressed.

21. The view was expressed that the additional principles, resolutions, and guidelines governing outer space activities aimed to supplement the five United Nations treaties in their operation and application and provided a benchmark of minimum standards for the

consideration of emergent space-faring nations, while national implementation of these instruments remained a pressing issue.

22. The view was expressed that the development of the five United Nations treaties on outer space could not be achieved by revising the treaties, and that therefore, non-binding instruments could define and implement the international regime designed by the five treaties. Moreover, it was noted that the development of non-binding instruments also contributed to maintaining the political commitment necessary to advance international law and policymaking. It was emphasized that greater transparency and international collaboration were necessary in order to ensure that the treaty obligations effectively contributed to the peaceful and sustainable exploration and use of outer space. While national legislation could contribute to developing these features, it was essential to outline mechanisms capable of enforcing non-compliance at the national and international levels.

*On the questions: 1.2 Are such non-legally binding instruments sufficiently complementing the legally binding treaties for the application and implementation of rights and obligations under the legal regime of outer space? Is there a need for additional actions to be taken?*

23. Several States expressed the view that non-legally binding instruments facilitated the application of the treaties and were better suited than legally binding instruments to react to current developments in outer space activities.

24. Some States expressed the view that non-legally binding instruments did not comprehensively complement the five United Nations treaties on outer space or left room for improvement in this regard, and that additional actions or mechanisms were necessary in order to update them.

25. The view was expressed that while binding instruments would give more certainty to space actors with regard to rights and obligations under the legal regime of outer space, the non-binding principles, resolutions and guidelines appeared to be a practically feasible and implementable solution to complement the treaties, specifying their content and facilitating their application.

26. The view was expressed that while non-legally binding documents were practical in their nature, they were not complementing the legally binding treaties per se as they could not stipulate new legal rights and obligations. It was added, however, that non-legally binding documents facilitated the application of the treaties and were more suited to react to current developments in outer space activities.

27. The view was expressed that non-legally binding instruments were a way to fill the gaps of the existing legally binding treaties on outer space. It was noted that non-legally binding instruments should be kept updated as a living document and States could consider to transform them into a legally binding instrument, when it proved to be appropriate as a guide and regulation in practice.

28. The view was expressed that non-legally binding instruments, which complement the legally binding treaties, could be viewed as a non-authoritative commentary to the treaties which could reflect growing issues and ambiguities discovered subsequent to the creation of the initial legally binding instruments. It was expressed that non-legally binding instruments could serve as flexible and responsive governance regimes through incorporating the views of the scientific and commercial community in the development and iteration of these norms, and in so doing, could even bolster the continuing adherence to existing legally binding norms. Questions were raised in regard of legal subjects possibly finding it difficult to distinguish between behaviour required by the existing legally binding norms, and behaviour being merely encouraged (or discouraged, as the case could be) by these non-legally binding instruments, and whether non-legally binding instruments might forestall the creation of subsequent legally binding instruments. Furthermore, it was expressed that it could be difficult to make the distinction between norms for space activities that could best be addressed through legally binding instruments and norms that could best be tackled through non-legally binding instruments or national law.

29. The view was expressed that non-legally binding instruments were sufficient and that no additional actions were required.

30. The view was expressed that considering the spirit of complementarity of the instruments in question, codification of new instruments would not be necessary immediately; however, it was seen as more effective to have new treaties that allow to lift these matters currently regulated in non-binding instruments to a category of greater relevance and as component of the corpus iuris spatialis.

31. The view was expressed that space governance through non-legally binding instruments involved, in parallel with the international processes, national and international implementation of such instruments, which benefitted from exchange of experiences and best practices regarding such implementation. It was emphasized that continuous dialogue in a multilateral forum such as the Committee provided an optimal possibility for fruitful and effective international cooperation and information-sharing in order to ensure that the application of the United Nations treaties on outer space was secured as unified as possible. In this context, the creation and work of the Working Group on the long-term sustainability of outer space activities of the Scientific and Technical Subcommittee was mentioned, which could contribute to a unified interpretation of the LTS-Guidelines and enhance coherence in the regulation of space activities by providing a dedicated mechanism for information-sharing and cooperation at international level, and through its link to the Legal Subcommittee, inter alia in accordance with the UNISPACE +50 Thematic Priority 2, could help overcome issues of normative uncertainty and fragmentation in international space governance.

32. The view was expressed that non-legally binding instruments did not comprehensively complement the legal regime governing outer space, and therefore, additional actions were necessary in order to update those instruments reflecting current trends as well as possible technological and other developments.

33. The view was expressed that non-legally binding instruments, as they currently stood, had room for improvement in order to better complement the legally binding treaties for the applications and implementation of rights and obligations under the legal regime of outer space. It was suggested that follow-up procedures such as provisions on transparency, reporting, periodic reviews, mechanisms that require national action plans over time, and sanctions for non-compliance could be added as enforcement mechanisms to ensure compliance with these regulations.

*On the question: 1.3 What are the perspectives for the further development of the five United Nations treaties on outer space?*

34. Several States expressed the view that an amendment of the existing United Nations treaties on outer space or the creation of new legally binding treaties on the subject matter were unlikely or difficult.

35. However, several States expressed the view that non-legally binding instruments could in the long term be transformed into legally binding instruments.

36. Additionally, some States expressed the view that through the application of non-legally binding instruments, customary international law could evolve.

37. The view was expressed that currently, an amendment of the existing United Nations treaties on outer space seemed difficult and that additionally, new negotiations to amend or revise the treaties could bear the risk of weakening the rights and obligations contained therein. However, it was noted that non-binding instruments could in the longer term form the basis for development of legally binding international treaties as well as national space legislation, and through fostering a uniform practice based on non-legally binding instruments, customary international law could evolve.

38. The view was expressed that it seemed unlikely that a new treaty on outer space or any amendments to the existing treaties would be negotiated in the near future. It was noted, however, that with the rapid advancement of technology and with growing availability of space activities, States might be pushed increasingly by practical concerns to strengthen their efforts and reach an agreement on specific issues.

39. The view was expressed that it was almost impossible to add to or amend the five United Nations treaties on outer space. However, it was noted that some of the provisions in

the treaties had become customary law. It was expressed that some new space actors and new activities were not currently regulated under the United Nations treaties and that furthermore, the implementation of the current regulation needed elaboration or adjustment.

40. As an example, the geostationary orbit was mentioned as a limited natural resource, and it was emphasized that newcomers, developing countries, and the geographic situation had to be taken into account through non-legally binding instruments.

41. The view was expressed that currently, it looked like there was negligible interest in the development and promulgation of new binding international legal instruments, and that many States were developing domestic regulatory frameworks. It was added that to date, no amendments were offered by any of the States parties under the provisions for amendment of the United Nations treaties on outer space. It was noted that when reasoning by historic developments, it seemed likely that any subsequent treaties on outer space would follow suit to expanding upon basic provisions of the Outer Space Treaty through the creation of new, focused treaties rather than amending the Outer Space Treaty or other treaties, and without attempting large, all-encompassing treaties on a wide range of topics. It was expressed that the current atmosphere of norm-creation leaned towards non-binding instruments and that such non-binding norms should eventually lead towards subsequent binding law, especially in areas of serious concern to States, unless they were best left in non-binding form, so as to permit their more rapid revision and updating by all stakeholders in the activity.

42. The view was expressed that joining the treaties would provide the opportunity to expand cooperation frameworks and participate in scientific research.

43. The view was expressed that the codification of new legally binding instruments that would allow the regulation of new dynamics in outer space, including the manifestation of conflict and its mechanisms for peaceful resolution, was envisaged.

44. The view was expressed that issues such as technological development and the NewSpace reality required States to adapt their processes and regulatory frameworks to ensure compliance with their treaty obligations, while considering national requirements and interests. It was expressed that the principles in the Outer Space Treaty continued to form the basis for current and future regulation of space activities and that continuous dialogue in a multilateral forum provided the best possibility for international cooperation, coordination and information-sharing, which was supporting a common interpretation of the current international regime and the peaceful exploration and use of outer space.

45. The view was expressed that the five United Nations treaties on outer space, as the overarching framework, should be developed through specific regulations, without prejudice to the role of International Telecommunication Union (ITU). It was noted that as a first step, basic concepts such as suborbital travel, outer space, airspace, and the character and utilization of the geostationary orbit should be clearly defined.

46. The view was expressed that while it was recognized that it was difficult to amend the provisions of the United Nations treaties on outer space, further development had to be made on follow-up procedures and mechanisms to fully and effectively implement those treaties. It was suggested to develop concrete frameworks operationalizing the application of space law principles on space debris mitigation, long term sustainability of outer space activities, and space traffic management among others.

#### **On the United Nations treaties on outer space and provisions related to the Moon and other celestial bodies**

47. The view was expressed that the United Nations treaties on outer space and provisions related to the Moon and other celestial bodies, especially under the Moon Agreement, were connected with the item on possible legal models for activities in exploration, exploitation and utilization of space resources. It was noted that the exploration, exploitation and utilization of space resources had to be differentiated. It was furthermore expressed that while in principle, realistic and feasible activities exploiting the resources of outer space should not be opposed, long-term sustainability of outer space activities should be a prerequisite for any activities in outer space. It was emphasized that it was the task of States to formulate adequate international rules concerning space mining and commercialization of

space activities, while taking into account the investments made by States or non-governmental entities. It was added that this approach would lead to legal certainty for possible investors, while any unilateral approach had to be avoided. It was noted that the Moon Agreement did not formulate a detailed regime concerning the exploitation of celestial bodies but a procedure for international coordination in this respect, which should be further elaborated in detail, irrespective of the Moon Agreement itself.

*On the question: 2.1 Do the provisions of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) constitute a sufficient legal framework for the use and exploration of the Moon and other celestial bodies or are there legal gaps in the treaties (the Outer Space Treaty and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Moon Agreement))?*

48. Several States expressed the view that the Outer Space Treaty provided the basic framework for international space law and its principles, including for the exploration and exploitation of the Moon and other celestial bodies. Those States further expressed the view that more detailed regulation had to be developed.

49. Some States expressed the view that the Outer Space Treaty contained a legal gap with regard to space resources activities.

50. The view was expressed that the provisions of the Outer Space Treaty were rather general as regards the use and exploration of the Moon and other celestial bodies and that there was a need to develop those principles in more detail. It was emphasized that this was particularly important in light of the growing interest among space-faring nations to engage in new projects and missions aimed at exploring and using the Moon and other celestial bodies including their resources.

51. The view was expressed that the Outer Space Treaty set forth basic legal principles that were undoubtedly applicable to all activities in outer space, including the use and exploration of the Moon and other celestial bodies. It was noted that both the Outer Space Treaty as well as the Moon Agreement provided for general frameworks and would benefit from more detailed regulation, but that with a view to the fast development of new technologies, it might be a possibility to apply in good faith the established principles in order to carry out space activities in a peaceful and safe manner.

52. The view was expressed that the Outer Space Treaty provided the basic framework for international space law and its principles, including for the exploration and exploitation of the Moon and other celestial bodies. It was added that a more detailed set of laws and regulations were needed as a guidance for daily application and to resolve any difference in interpretation. As it was noted that especially States which possessed the technological capabilities for the exploration and use of the Moon and other celestial bodies had not (yet) ratified the Moon Agreement, there was a need for State parties to the Outer Space Treaty to compile detailed guidelines elaborating the principles of the Moon Agreement and to transform it into a set of applicable rules.

53. The view was expressed that article II of the Outer Space Treaty did not contain a prohibition regarding resource exploitation of the Moon and other celestial bodies but that said provision contained a 'legal gap' and that an advanced and lasting exploration of outer space required the harnessing and use of resources found on celestial bodies. It was concluded that the current lack of clarity as to the limits of the freedom to use space resources, and its intersection with the corresponding rights of other States in outer space (as reflected in the 'due regard' principle of article IX of the Outer Space Treaty), pointed toward further norm-making activity, which would be best done within the Committee, possibly with reference to the preliminary work undertaken by the Hague International Space Resources Governance Working Group.

54. The view was expressed that the Outer Space Treaty constituted a sufficient framework.

55. The view was expressed that the Outer Space Treaty did not, due to its date of codification, contain provisions regulating the use of mineral or natural resources on celestial

bodies. It was noted that the extraction of natural resources initially was of scientific interest and now had become a commercial activity, which was not regulated in the Treaty and thus creating a ‘legal loophole’ in this regard.

56. The view was expressed that the United Nations treaties on outer space constituted the cornerstone of international space law, and the essential importance of the Outer Space Treaty in providing fundamental principles to guide all space activities in order to ensure peaceful exploration and use of outer space was underscored. It was noted that, however, recent developments with regard to space resource activities showed that the relationship between freedom of use, as set out in article I of the Outer Space Treaty, and the principle of non-appropriation, as set forth in article II, was not clear, which could entail both legal and practical problems. It was noted that the Outer Space Treaty and the Moon Agreement allowed the use of celestial bodies, but provided no provisions that would clearly determine, for example, the magnitude, extent, duration or terms of use in such a manner that ensured activities on celestial bodies materializing free from conflicts and harmful interference paying due regard to the space freedoms and corresponding interests of others. It was emphasized that it was a good sign that the issue of exploration, exploitation and utilization of space resources had been deliberated in the Legal Subcommittee as a single item for discussion, and there were further activities in this regard. It was concluded that advancing the development of a common understanding and clear rules at the international level could alleviate uncertainty and create predictability, which was needed for the development of space activities, including space resource activities.

57. The view was expressed that the five United Nations treaties on outer space formed the constitutional basis for present and future space activities and that the principles enshrined in them were to be safeguarded and continued to provide the legal framework for the exploration and use of the Moon and other celestial bodies. It was noted that therefore, particularly activities related to the exploration, exploitation and utilization of space resources were to take place in accordance with and governed by international law. It was expressed that an international legal regime for the exploration, exploitation and utilization of space resources was the most appropriate means for ensuring that space resource activities were conducted in conformity with the principles and rules of international space law and therefore, the development of a specific international regime in this regard was supported based on internationally agreed rules and standards. It was emphasized that such international regime should take into account the efforts of countries contributing to the exploration, exploitation and utilization of celestial bodies and ensure that all countries irrespective of their degree of economic or scientific development would benefit from these activities, without taking away the investment incentives for public and private space flight. It was furthermore added that the long-term sustainability and environmental compatibility of such activities had to be taken into account and the primary and competent forum for such deliberations was the Committee.

58. The view was expressed that the Outer Space Treaty established general provisions for the use and exploration of the Moon and other celestial bodies; however, it did not provide a more precise regulation of certain specific issues. It was concluded that given the ever-changing nature of such activities, it was necessary to elaborate on the principles established in the Outer Space Treaty.

59. The view was expressed that now that space was becoming accessible to not only the government sector but also the private industry, the provisions of the Outer Space Treaty could be further improved. In this regard, the deliberations around the definition of peaceful purposes in the Outer Space Treaty, the definition of the term ‘astronaut’, and the low ratification rate of the Moon Agreement, while constituting a sufficient legal framework for the use and exploration of the Moon and other celestial bodies, were referenced.

*On the question: 2.2 What are the benefits of being a party to the Moon Agreement?*

Several States expressed the view that the benefits of being a party to the Moon Agreement were its facilitation of international scientific collaboration and cooperation.

60. The view was expressed that the Joint statement on the benefits of adherence to the Moon Agreement by States parties (document A/AC.105/C.2/L.272) was still of relevance;

in particular it was mentioned that the Moon Agreement facilitated international scientific cooperation, contributed to the protection the life and health of persons on the Moon and other celestial bodies as well as protection for vehicles, installations and equipment of States parties.

61. The view was expressed that with eighteen States parties and four signatories to the Moon Agreement, 9% of States accepted the rights and obligations under the Moon Agreement, with no major space-faring nation having joined the Agreement. It was noted that the Moon Agreement had limited impact and relevance and the nature of its provisions was uncertain. It was added that it could be argued that the contents of the Moon Agreement and related discussions contributed to distractions which were not assisting the further development of space activities.

62. The view was expressed that the Moon Agreement provided the opportunity to freely implement scientific research on the Moon as well as to engage in activities of exploration and use of the Moon on its surface; more specifically, landing space objects on the Moon and launching them from the Moon, deploying crews, space apparatus, equipment, stations and objects.

63. The view was expressed that the Moon Agreement allowed States to increase the basis of trust and transparency regarding their intentions and good faith in the development of space exploration programs and defusing international conflict.

64. The view was expressed that the benefits of the Moon Agreement were mainly the collaboration between States in terms of humanitarian, scientific, safety-related and legal activities.

65. The view was expressed that the following provisions of the Moon Agreement were beneficial: articles 4.1, 5.1, 5.3, 6.2, 7.3, 11.2, and 14.1:

(1) The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development (article 4.1);

(2) States parties shall inform the public and the international scientific community of the results of each mission (article 5.1);

(3) In carrying out activities under the Moon Agreement, States parties shall promptly inform the public and the international scientific community, of any phenomena they discover in outer space, including the Moon, which could endanger human life or health, as well as of any indication of organic life (article 5.3);

(4) In carrying out scientific investigations, the States parties shall have the right to collect on and remove from the moon samples of its mineral and other substances. States parties shall have regard to the desirability of making a portion of such samples available to other interested States parties for scientific investigation (article 6.2);

(5) States parties shall report to other States parties concerning areas of the Moon having special scientific interest in order that, without prejudice to the rights of other States parties, consideration may be given to the designation of such areas as international scientific preserves for which special protective arrangements are to be agreed upon in consultation with the competent bodies of the United Nations (article 7.3);

(6) The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means (article 11.2); and

(7) States parties shall bear international responsibility for national activities on the Moon, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions in the Moon Agreement (article 14.1).

*On the question: 2.3 Which principles or provisions of the Moon Agreement should be clarified or amended in order to allow for wider adherence to it by States?*

66. Several States expressed the view that a clarification of article 11 of the Moon Agreement could contribute to more States ratifying the Agreement or adhering to it, which

would benefit activities in the exploration and use of outer space aiming at utilization of space resources.

67. The view was expressed that in particular, article 11 of the Moon Agreement appeared to be hindering the adherence to the Agreement. It was expressed that it could be of merit to discuss further how the provisions of article 11 of the Moon Agreement could be implemented without discouraging the exploitation of natural resources on the Moon.

68. The view was expressed that a clarification of article 11 of the Moon Agreement could benefit the activities in the exploration and use of outer space aiming at utilization of space resources.

69. The view was expressed that article 11 of the Moon Agreement, containing the principle of common heritage of mankind, could be further elaborated and that an international authority could be set up in charge of regulating exploitation on the Moon and other celestial bodies, similar to the International Sea-Bed Authority but under article 11 of the Agreement.

70. The view was expressed that article 11.1 of the Moon Agreement referring to ‘common heritage of mankind’ did not offer a practical or attractive path forward for the progress and development of space activities, as space law regarding benefit-sharing was different from other areas of international law. It was noted that the provision due to its troublesome conception, held space resources, including resources on the Moon and all other celestial bodies, as property of all humankind and not available for celestial resource use.

71. The view was expressed that no amendments were currently required.

72. The view was expressed that three principles were of relevance regarding the provisions of the Moon Agreement which should be clarified or amended in order to allow for wider adherence to it by States. The principle of scientific use of natural resources of the lunar surface and subsoil: it was expressed that considering the environmental impact and the effects of resource extraction on Earth, resource extraction on celestial bodies, including the Moon, should be prohibited for commercial purposes; if not possible, a priority of terrestrial resources over celestial ones should be established. The principle of peaceful use of lunar activities and prohibition of placement of nuclear weapons or weapons of mass destruction: it was expressed that it had to be clarified, in light of technological developments, which types of weapons fell under the prohibition to be placed on the lunar surface. It was added that in this regard, the option should be added to develop a complementary protocol regarding the control of weapons in outer space on the surface of celestial bodies, including the Moon. The principle of sustainability in lunar activity: it was expressed that it was necessary to establish effective control mechanisms regarding lunar activities regarding their environmental consequences. It was added that this was necessary since States parties to the Agreement were not in a position to effectively audit the situation on the lunar surface and there were no effective guarantees of the preservation of the Moon for future generations.

73. The view was expressed that none of the principles or provisions in the Moon Agreement needed to be clarified or amended.

74. The view was expressed that the Moon Agreement intended an equitable and coordinated management of celestial resources among its State parties, and that this could also be a factor dissuading major spacefaring nations from becoming a party to the Agreement. It was noted that the provisions on resource treatment gathered from the Moon and other celestial bodies remained insufficient and that while article 11 of the Moon Agreement stated that States parties hereby undertook to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the Moon, this remained yet to be done.

#### **On international responsibility and liability**

75. The view was expressed that a sophisticated space traffic management with definite rules of conduct was a prerequisite for a fault-based liability regime.

*On the questions: 3.1 Could the notion of “fault”, as featured in articles III and IV of the Convention on International Liability for Damage Caused by Space Objects (Liability Convention), be used for sanctioning non-compliance by a State with the resolutions related to space activities adopted by the General Assembly or its subsidiary bodies, such as Assembly resolution 47/68, on the Principles Relevant to the Use of Nuclear Power Sources in Outer Space, and the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space? In other words, could non-compliance with resolutions adopted by the General Assembly or with instruments adopted by its subsidiary bodies related to space activities be considered to constitute “fault” within the meaning of articles III and IV of the Liability Convention?*

76. Some States expressed the view that General Assembly resolutions were relevant in establishing the notion of ‘fault’ within the meaning of articles III and IV of the Liability Convention, referring to a standard of care and due diligence for negligence.

77. Some States expressed the view that General Assembly resolutions were not applicable as a standard of care and due diligence when establishing ‘fault’ within the meaning of articles III and IV of the Liability Convention.

78. The view was expressed that since ‘fault’ was not defined in the Liability Convention, it had to be interpreted on the basis of article 31 of the Vienna Convention on the Law of Treaties. It was added that the term ‘fault’ had to be interpreted “in good faith in accordance with the ordinary meaning” to be given to the term in its context and in the light of the Convention’s object and purpose. It was added that the difference between article II of the Liability Convention providing ‘absolute liability’ for damage on Earth or to aircraft in flight and article III requiring ‘fault’ reflected a difference in the position of victims: while persons and property on Earth or in airspace not involved in outer space activities deserved the highest protection, space actors amongst themselves should be judged by their employment of care and due diligence. It was noted that international principles and guidelines, such as those contained in General Assembly resolutions on outer space and the Space Debris Mitigation Guidelines of the Committee could be regarded as representing good practice and a recognized standard of care and due diligence for activities in outer space, to be respected by actors in outer space in order to prevent a presumption of negligence. It was concluded that the above mentioned principles and guidelines were relevant for establishing ‘fault’ under the Liability Convention.

79. The view was expressed that principles adopted by the General Assembly were not legally binding and could not give rise to claims under the Liability Convention on their own; however, in some cases they could be seen as a supporting argument in establishing negligence. It was expressed that to the extent that the principles reflected customary international law, non-compliance could amount to an internationally wrongful act and the articles on Responsibility of States for Internationally Wrongful Acts would apply.

80. The view was expressed that non-compliance with the resolution on the Principles Relevant to the Use of Nuclear Power Sources in Outer Space should be determined on a case-by-case basis and that there was a possibility that their breach could be considered to constitute fault within the meaning of articles III and IV of the Liability Convention. It was expressed that further discussion on technical and practical aspects of this matter was needed.

81. The view was expressed non-compliance with resolutions adopted by the General Assembly or with instruments adopted by its subsidiary bodies related to space activities could not be considered to constitute ‘fault’ within the meaning of articles III and IV of the Liability Convention, as these provisions established liability for fault resulting in physical damage; being a situation which resulted in a compensatory duty, but which was not illegal under the language of the Convention. It was expressed that this liability regime provided no test or criteria for non-compliance or non-observance of a State’s international obligation. It was furthermore expressed that a more robust and flexible regime could be found under general international law related to internationally wrongful acts where neither fault nor physical damage was required, merely that the act was attributable to the State and that the act constituted a breach of that State’s international obligations. Additionally, the available

remedies resulting from an internationally wrongful act were broader, including the continuing duty of performance, cessation and non-repetition, and of reparation.

82. The view was expressed that the notion of ‘fault’ could also be used for the mentioned cases.

83. The view was expressed that ‘fault’ as contained in articles III and IV of the Liability Convention based on non-compliance or a purposeful violation of the agreed principles and producing damage or loss to another State party to the Convention, could be extended to the Moon Agreement, at least regarding the principles that were clearly established by the international community and that in fifty years had not produced claims. It was added that the consideration was based on two determining factors: firstly, the presumption of awareness and knowledge of the provisions of the Convention by a State party at the moment of ratifying or signing the Convention and secondly, the creation of customary international law. It was expressed that a second legal meaning of the term ‘fault’ as contained in articles III and IV of the Liability Convention referred to negligence for actions on the Moon and needed to take into account the intent, as there were no complementary protocols available which fully evaluated diligent action regarding lunar activities. It was added that an example was provided by lunar mining and the question of how a mining activity was measured in terms of not negligently leading to a modification of the lunar environment.

84. The view was expressed that the notion of ‘fault’ was correct on the basis of articles III and IV of the Liability Convention.

85. The view was expressed that non-compliance with resolutions adopted by the General Assembly or with instruments adopted by its subsidiary bodies related to space activities should not be considered to constitute ‘fault’ within the meaning of articles III and IV of the Liability Convention.

*On the question: 3.2 Could the notion of “damage”, as featured in article I of the Liability Convention, be used to cover loss resulting from a manoeuvre performed by an operational space object in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee?*

86. Some States expressed the view that the notion of damage as featured in article I of the Liability Convention included economic loss resulting from a manoeuvre performed by an operational space object in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee.

87. Some States were of the view that this was not the case.

88. Some States expressed the additional view that this issue would benefit from further discussions.

89. The view was expressed that article I of the Liability Convention defined ‘damage’, inter alia, as “loss of or damage to property” and that it could be argued that any costs relating to a collision avoidance manoeuvre could qualify as ‘damage’ under the Liability Convention as the term ‘property’ was not limited to physical property. It was added that under this proposition, the issues of liability and compensation became relevant, and that ‘damage’ did not refer to the physical qualities of property but to its commercial value; meaning that it included mere economic loss. It was expressed that regarding the calculation of the compensation amount payable to the victim, article XII of the Liability Convention stated that it would be determined “in accordance with international law and the principles of justice and equity, in order to provide such reparation in respect of the damage as will restore the person, natural or juridical, [...] to the condition which would have existed if the damage had not occurred”. It was added that this included a claim for lost profits. It was concluded that for the above-mentioned reasons, the loss resulting from a manoeuvre performed by an operational space object to avoid collision with a space object or space debris not complying with the Guidelines relating to the Mitigation of Space Debris of the Committee (provided that this amounts to fault in the specific circumstances of the case) represented damage under the Liability Convention which had to be compensated; this was additionally supported by the principle of mitigating damage as a general principle of article

38 of the Statute of the International Court of Justice. The view was expressed that there was a need for further discussions of the notion of ‘damage’ in the Working Group.

90. The view was expressed that in accordance with the obligation to mitigate damage, it seemed imperative that a space object performed a manoeuvre in order to avoid collision with another space object or space debris, due to the loss in case of a collision possibly being higher than the loss caused by the manoeuvre. It was added that the notion of ‘damage’, as contained in article I of the Liability Convention, seemed to be limited in scope and aimed only at the results of a physical collision with a space object; therefore, it appeared that a simple economic loss caused by a collision avoidance manoeuvre was not covered. The view was further expressed that there would be benefit from further discussions of this issue in the Working Group.

91. The view was expressed that in the context of space objects and space debris, the notion of fault and damage in outer space activities needed to be analysed from technical and satellite operational aspects; technical criteria were considered important to determine whether a certain ‘fault’ generated a certain ‘damage’.

92. The view was expressed that the notion of ‘damage’, as featured in article I of the Liability Convention, could not be used to cover loss resulting from a manoeuvre performed by an operational space object in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee. It was added that the notion of damage under the Liability Convention was meant to encompass a set of physical effects; consequently, non-physical losses such as loss of operational capacity or related unrealized capabilities, so long as their effects were entirely non-physical, fell outside the definition of damage under the Liability Convention. It was expressed that the regime under the Liability Convention was meant to address the forgoing list of physical effects and should not be repurposed or expanded for other situations in contravention of the Convention’s intentional structure of compensation of physical damage.

93. The view was expressed that the notion of ‘damage’ could also be used for the case of covering loss resulting from a manoeuvre performed by an operational space object in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee.

94. The view was expressed that the notion of ‘damage’ could not be fully used in the above-mentioned case, as the Space Debris Mitigation Guidelines were non-binding and thus not mandatory for States parties to the Liability Convention.

95. The view was expressed that where damage was caused as defined in article I of the Liability Convention, that damage was attributable in accordance with the terms of the Convention.

96. The view was expressed that damage could include loss resulting from a manoeuvre performed in order to avoid collision with a space object or space debris not complying with the Space Debris Mitigation Guidelines of the Committee. It was noted that under article I of the Liability Convention, damage referred to the loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations. It was expressed that it did not qualify what the cause of the damage was, as long as there was damage under the circumstances mentioned in the Liability Convention and that regardless of the circumstances of the case, when loss as defined in article I of the Liability Convention had occurred, it had to be considered as ‘damage’.

*On the question: 3.3 Are there specific aspects related to the implementation of international responsibility, as provided for in article VI of the Outer Space Treaty, in connection with General Assembly resolution 41/65, on the Principles Relating to Remote Sensing of the Earth from Outer Space?*

97. Several States expressed the view that principle XIV of the Remote Sensing Principles constituted a conformation of article VI of the Outer Space Treaty.

98. The view was expressed that principle XIV of General Assembly resolution 41/65 confirmed article VI of the Outer Space Treaty by stating that “States operating remote

sensing satellites shall bear international responsibility for their activities and assure that such activities are conducted in accordance with these principles and the norms of international law, irrespective of whether such activities are carried out by governmental or non-governmental entities or through international organizations to which such States are parties". The view was further expressed that principle XIV was different from article VI of the Outer Space Treaty, as the latter referred to "national activities in outer space" and determined State's responsibility for them but did not define what a "national activity" was. It was added that subsequent State practice had shown that States considered both governmental and non-governmental activities in outer space as "national activities"; the main reason being that article VI explicitly provided for international responsibility for both governmental and non-governmental space activities. It was further added that in contrast, principle XIV only referred to international responsibility of States for "their activities"; leaving the question whether the term included both governmental and non-governmental space activities. It was expressed that a grammatical interpretation would lead to the conclusion that non-governmental activities were not covered, as they were not "their", i.e. the States' activities; but that the second part of principle XIV confirmed the responsibility of States to assure that such activities were conducted in accordance with the principles on remote sensing as adopted by the General Assembly and the norms of international law, "whether such activities are carried out by governmental and non-governmental entities". It was concluded that there was a need to address to what extent the different wording of the two provisions could have concrete consequences in practice.

99. The view was expressed that article VI of the Outer Space Treaty clearly defined that States were responsible for national activities in outer space, and that the General Assembly resolution on the Principles Relating to Remote Sensing of the Earth from Outer Space confirmed the applicability of article VI of the Outer Space Treaty in relation to international responsibility.

100. The view was expressed that the implementation of international responsibility as provided for in article VI of the Outer Space Treaty was only regulating national space activities. It was expressed that it was important to acknowledge the rights of the sensed State and the possibility to present a claim if there had been a misuse of the data and information obtained from remote sensing.

101. The view was expressed that a hierarchical relationship existed between the two instruments, with the Outer Space Treaty being binding treaty law and the Remote Sensing Principles sitting adjacent as subsequent commentary specific to remote sensing. It was added that the Remote Sensing Principles gave some indication as to what behaviour constituted a State's observance (or non-observance) of its international obligation that its national activities in outer space were carried out in conformity with the Outer Space Treaty (and, if applicable, other relevant treaties). It was expressed that a cautious starting position for analysis would be that activities in outer space, whether governmental or non-governmental in nature, should conform with the Remote Sensing Principles – albeit with the caveat that these principles were merely principles in nature, and therefore gave uncertain normative signals, and with the additional important caveat that the principles were non-legally binding and therefore compliance was not legally compulsory. It was suggested that an examination of customary State practice in regard to this matter could reveal richer and more detailed results.

102. The view was expressed that principle XIV of resolution 41/65 was consistent with the provisions of article VI of the Outer Space Treaty insofar as the State party was responsible for the activities of non-governmental entities in outer space.

103. The view was expressed that principle XIV of the Remote Sensing Principles paraphrased article VI of the Outer Space Treaty with respect to remote sensing activities. It was added that under the Outer Space Treaty, any national activity in outer space, whether such activities were carried on by governmental agencies or by non-governmental entities, should be the international responsibility of the State Party; meaning that any damage or liability arising from any national activity pursuant to the Remote Sensing Principles had to be borne by the State party. It was further added that the thrust of principle XIV was to

extend this responsibility to the State in terms of being compliant with the principles as well as the remote sensing activities that may not be regarded as space activities.

*On the question: 3.4 Is there a need for traffic rules in outer space as a prerequisite to a fault-based liability regime?*

104. Several States expressed the view that traffic rules in outer space could be a prerequisite to a fault-based liability regime or facilitate its practical application.

105. The view was expressed that a system of space traffic management rules could facilitate the practical application of the fault-based liability regime by defining a standard of care and due diligence for activities in outer space, against which the behaviour of space actors could be assessed to establish fault.

The view was expressed that traffic rules in outer space would ease activities in outer space as such and could guide the behaviour of States when a liability situation arose.

106. The view was expressed that a prerequisite of a fault-based liability regime could be counter-productive due to the difficulty for the parties (including third parties) to prove the liability of the other parties. It was added that the definition of damage for space activities should also cover both physical damage and non-physical damage such as harmful and unlawful interference, as well as loss of service, for which liability had not been regulated.

107. The view was expressed that under article VI of the Outer Space Treaty, each State party was responsible for the authorization and continuing supervision of its national space activities, including those of private sector entities; which was traditionally implemented through pre-launch licencing. It was expressed that as space activities developed, there could be a need for more comprehensive oversight of specific types of space activities, such as those involving humans, or over activities in particularly congested orbits, but that there was no consensus yet as to which activities could need such additional oversight nor the rules that should be applied. It was expressed that at this early stage, the focus should be on establishing the prerequisites for Space Traffic Management (STM), including improving the quality and accessibility of Space Situational Awareness (SSA) data to monitor space activities and the space environment, developing best practices and norms of behaviour for space activities, as well as efforts to share SSA data when possible. It was added that developing the capabilities for accurate situational awareness underlay the attributive needs of other portions of the space treaties: currently, absolute attribution for anomalies on orbit was largely impossible, and moreover, States should be encouraged to examine their national oversight mechanisms and begin internal discussions on how best to align administrative, regulatory, and policy roles and responsibilities to enable a future space traffic management regime.

108. The view was expressed that adopting traffic rules could be a prerequisite to set a fault-based liability regime.

109. The view was expressed that rather than a space 'traffic' rule, it was necessary to regulate orbit conditions, as the notion of 'traffic' implied requests for access and displacement in orbits – a situation that could affect the sovereignty of the same operations if this control were executed by a State. It was expressed that facing this, it was more effective to have protocols for the use of Earth orbits, aimed at guaranteeing operational safety, information exchange, and objective measurement of behaviours that could potentially incur damage.

110. The view was expressed that indeed, such rules were necessary for the determination of liability in each case.

111. The view was expressed that while efforts of other space actors in space traffic management were recognized, there seemed to be no need for traffic rules in outer space as a prerequisite of a fault-based liability regime as of this moment. It was clarified that considering that there were a lot of uncertainties and uncontrollable factors in outer space, drafting and imposing traffic rules was possibly not effective in this regard. It was added that the Liability Convention in defining 'damage' seemed to provide a sufficient basis for a fault-based liability regime, in that anything causing loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or

juridical, or property of international intergovernmental organizations, was deemed to be at fault.

### **On registration of space objects**

112. The view was expressed that registration practice had to react to current challenges and that the adaptation of registration practice to new developments such as megaconstellations had to be implemented by consensus. It was suggested that there could be a discussion about the possibility of registering the constellation as a whole but that the clear assignment of jurisdiction and control and the registration by launching States had to remain the basic elements of registration practice.

*On the question: 4.1 Is there a legal basis to be found in the existing international legal framework applicable to space activities and space objects, in particular the provisions of the Outer Space Treaty and the Convention on Registration of Objects Launched into Outer Space (Registration Convention), which would allow the transfer of the registration of a space object from one State to another during its operation in orbit?*

113. Several States expressed the view that there was a difference in situation if the space object in question was transferred to one or more of its launching States or to one or more non-launching States.

114. In case the space object in orbit was transferred to a launching State, some States expressed the view that articles VIII and XI of the Outer Space Treaty and article II of the Registration Convention were general in wording and did not prohibit such transfer, which was seen as a possibility to use those provisions as legal basis for the in-orbit transfer of space objects.

115. The view was expressed that the legal basis for registration of space objects could be found in articles VIII and XI of the Outer Space Treaty. It was added that these provisions were rather general and neither prescribed nor prohibited the transfer of space activities and the corresponding change of registration. It was further expressed that the Registration Convention provided in article II that “the launching State shall register the space object by means of an entry in an appropriate registry which it shall maintain” and that only one State should be the State of registry in relation to a space object when there were two or more launching States. It was concluded that it was unproblematic to change the State of registry when the transfer of space activities took place between two or more launching States. It was furthermore expressed that whether the change of State of registry was possible also when the other State was not a launching State in relation to the space object, was still an open question. It was submitted that an interpretation of the provisions of the Registration Convention which would allow and promote the change of the State of registry in case of transfer of space activities would be favoured, as the wording of the Registration Convention did not preclude such interpretation. The suggestion was made to explore whether the rule of treaty interpretation codified in article 31(3)(b) of the Vienna Convention on the Law of Treaties could be applied, according to which “any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation” had to be taken into account for the purpose of the interpretation of a treaty, together with its context.

116. The view was expressed that the Registration Convention did not foresee nor forbid the transfer of registration of a space object from one State to another during its operation in orbit, but that it could possibly be inferred from article II of the Registration Convention that among launching States such transfer was possible. It was further expressed that, in case of a transfer from a launching State to a non-launching State, such transfer did not seem allowed as only launching States could register a space object.

117. The view was expressed that registration as regulated in articles VIII and XI of the Outer Space Treaty and article II of the Registration Convention was very general and needed to further regulate any transfer of ownership between States.

118. The view was expressed that 1998 Intergovernmental Agreement between the Government of Canada, the member countries of the European Space Agency, Japan, Russia and the United States regarding Cooperation on the Civil International Space Station

provided a suitable example and that its article VI on “Ownership of elements and equipment” established that “the associates, through their respective cooperation agencies, shall be the owners of the elements that they respectively supply [...]. The transfer of ownership in orbit of the elements or of the equipment that is inside or on the space station is allowed [...]; the transfer to another associate must be previously notified to the other associates [...]. When the transfer is made to a non-associate or to a private entity under the jurisdiction of a non-associate, it will require the prior consent of the others associates”. It was added that in this sense, the objects which the Treaty addressed were in their essence space objects.

119. The view was expressed that there was no legal basis for the transfer of ownership of a space object during its operation in orbit.

120. The view was expressed that reading article VIII of the Outer Space Treaty revealed that the intent of the Registration Convention was to allow States, through appropriate agreements, to conclude which State should have jurisdiction and control over the space object after its launch. It was added that the provision did not specifically provide for situations of transfer of registration, however, it could be inferred from the phrase “on whose registry an object launched into outer space is carried” that should such registration be transferred to another State, jurisdiction over the space object would also be transferred to the transferee State.

*On the question: 4.2 How could a transfer of activities or ownership involving a space object during its operation in orbit from a company of the State of registry to a company of a foreign State be handled in compliance with the existing international legal framework applicable to space activities and space objects?*

121. Some States expressed the view that the provisions of the Outer Space Treaty were relevant with regard to such transfer.

122. The view was expressed that the transfer of space activities should be handled in compliance with article VI of the Outer Space Treaty and that it followed that the transfer of space activities needed authorization by the appropriate State party. It was added that several States had included respective provisions in their national space legislations.

123. The view was expressed that current international law did not set forth any norms relating to such transfers; however, when a company of the State of registry intended to transfer activities or ownership of a space object to a company of a foreign State, the respective States could enter into an ad-hoc agreement which would contain provisions on jurisdiction, registration, liability and other matters as they deemed necessary.

124. The view was expressed that the transfer of a space asset was a complex issue, not just concerning international registration, but also other legal and technical issues: the transfer process often required time and the space assets in orbit could have a limited life-time. It was added that therefore it was necessary to draft a precise applicable regulation which guaranteed the rights and obligations of all parties related, going beyond the existing provisions on space assets of the Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets.

125. The view was expressed that a transfer of activities or ownership involving a space object during its operation in orbit should be handled in accordance with the Moon Agreement.

126. The view was expressed that this matter could be dealt with in accordance with General Assembly resolution 62/101 of 17 December 2007, which recommended that, regarding the transfer of a space object in orbit, States should provide any modification to the original information submitted to the Register of the United Nations Secretary-General. It was added that in this regard, it should be specified: the date of transfer of control, the identification of the new owner or entity that would operate the platform, any changes in orbital position (if applicable), and any changes with respect to the mission and function of the platform.

127. The view was expressed that under article II(2) of the Registration Convention, launching States had to decide which of them would register the space object prior to its launch; therefore, transfer was not provided for in the Convention.

128. The view was expressed that the Outer Space Treaty provided the following: (1) State parties to the Treaty shall bear international responsibility for national activities in outer space, whether such activities are carried on by governmental agencies or by non-governmental entities (article VI); (2) State parties to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object (article VIII); and (3) each State party to the Treaty that launches or procures the launching of an object into outer space, and each State party from whose territory or facility an object is launched, is internationally liable for damage (article VII). It was further expressed that following the above provisions, a transfer of activities or ownership of a space object during its operation would mean that: (1) if the transfer of the space object involved non-government entities, the State party would remain internationally responsible for the activity; (2) regardless of the transfer, the State party on whose registry the space object was carried would retain jurisdiction and control over the object; and (3) in the event of transfer of registration of a space object, the State party that launched or procured the launching of the space object into outer space, and the State party from whose territory or facility the space object was launched, would remain internationally liable for any damage caused by it. It was added that taking into consideration the above and the answer provided for the previous question (question 4.1), the transfer of activities or ownership could be implemented by executing appropriate mechanisms between concerned States who were parties to said transfer and these mechanisms should be forwarded to the Office for Outer Space Affairs for their information and proper action.

*On the question: 4.3 What jurisdiction and control are exercised, as provided for in article VIII of the Outer Space Treaty, over a space object registered by an international intergovernmental organization in accordance with the provisions of the Registration Convention?*

129. Some States expressed the view that international intergovernmental organizations were able to exercise jurisdiction and control as provided for in article VIII of the Outer Space Treaty and the Registration Convention.

130. The view was expressed that jurisdiction and control exercised by an international intergovernmental organization should not substantially differ from that exercised by a State; however, the term 'jurisdiction' was not usually applied with regard to international organizations. It was further expressed that the term 'jurisdiction' should be interpreted in accordance with the object and purpose of article VIII of the Outer Space Treaty, namely to identify who had the right to exercise control over a space object, and there was no issue in according such a right to an international organization which according to article XXII of the Registration Convention had declared its acceptance of the rights and obligations under the Convention. It was added that this assumed that any organization which registered a space object had been equipped, by the respective member States, with the necessary competences to effectively control and supervise the space object.

131. The view was expressed that in accordance with article VIII of the Outer Space Treaty, States are primarily responsible for the exercise of jurisdiction and control over a space object and that international intergovernmental organizations could perform actions for which they had a mandate given by their member States. It was further expressed that since international intergovernmental organizations possibly did not become parties to the Outer Space Treaty, it appeared that when an international intergovernmental organization registered a space object, it should ensure that at least one of its member States would exercise jurisdiction and control over the space object.

132. The view was expressed that article VIII of the Outer Space Treaty settled jurisdiction and control of space objects for the launching State, and therefore only the launching State had the right to register the space object. It was added that in practice, there were international organizations that launched their satellites designating one of their State members as the launching State to register the satellite and although this was in accordance with the Registration Convention, it was practically not appropriate. It was suggested that a

further arrangement and regulation should be applied to complete the Registration Convention, especially regarding the provision of international organization ownership, registration and liability.

133. The view was expressed that jurisdiction and control exercised by a space platform registered by an international intergovernmental organization, in accordance with the Registration Convention, reaffirmed the principle of quasi-territorial jurisdiction of international law in space matters in general and supplemented said principle with personal jurisdiction. It was further expressed that in accordance with the Registration Convention, this reality was potentially extendable to any platform being registered, as the concept of jurisdiction and control referred to the legal consequence of exercising jurisdiction and control over a space object, including joint responsibility.

134. The view was expressed that the Registration Convention applied to any international intergovernmental organization engaged in outer space activities if the organization declared its acceptance of the rights and obligations provided for in the Convention and the jurisdiction of the State party indicated in the Register was exercised.

135. The view was expressed that jurisdiction and control over a space object by an international intergovernmental organization could be determined by appropriate agreements concluded among the launching States, as provided for under article II(2) of the Registration Convention. It was added that this was because under article VII of the Registration Convention, references to States should be deemed to apply to any international intergovernmental organization which conducted space activities if the organization declared its acceptance of the rights and obligations provided for in the Convention and if a majority of the States members of the organization were States parties to the Convention and to the Outer Space Treaty.

*On the question: 4.4 Does the concept of megaconstellations raise legal and/or practical questions, and is there a need to react with an adapted form of registration?*

136. Several States expressed the view that megaconstellations raised legal and/or practical questions, related mainly to the challenge they posed for both the outer space environment and the registration practice.

137. The view was expressed that megaconstellations, consisting of several hundred or thousand satellites, would lead to a steep increase in the total number of objects in Earth orbit and could thus present a heightened risk of in-orbit collisions. It was further expressed that a simultaneous re-entry of a large number of satellites, being one of the potential consequences of launching megaconstellations, could pose a challenge to space and air traffic as well as to the safety on the ground. It was added that the provision of additional information with regard to objects launched into outer space, including in particular the change of the functional status of an object as well as the expected date and place of re-entry, could become crucial for the safety and sustainability of space activities.

138. The view was expressed that megaconstellations posed challenges to space traffic and safety of space operations, as the multiplicity of satellites together created greater risk of a collision with other objects both in air space and outer space.

139. The view was expressed that the concept of megaconstellations raised legal, environmental and technical questions, as the number of space objects and space debris in orbit would be significantly increased and presented a collision risk, which would have consequences for security and safety in space and on Earth. It was further expressed that the registration procedure for megaconstellations needed to be adapted both for the United Nations Secretary-General and for ITU.

140. The view was expressed that the concept of megaconstellations did not raise any legal and/or practical questions.

141. The view was expressed that megaconstellations did raise questions, as they, in operational perspective, behaved like a platform of greater dimensions and therefore, it was necessary to address the operational and environmental risks of megaconstellations in an adapted registration modality that reflected the potentialities and responsibilities

of this type of operations of lower economic cost but greater impact to activities in Earth orbits.

142. The view was expressed that the concept of registration of space objects was one of the cornerstones of United Nations space law, originating from General Assembly resolution 1721B (XVI) of 20 December 1961, and that the basic consequence of registration of space objects was a clear allocation of ‘jurisdiction and control’ in outer space, an environment not subject to national appropriation by any means. It was further expressed that the concept was designed with a view to a limited number of space objects deriving from one launch event and therefore, upcoming megaconstellations challenged this concept in legal as well as in practical aspects. It was added that a megaconstellation with hundreds or thousands of satellites was built up and renewed in a sequence of different launch events, which could each have different combinations of launching States; therefore, the responsibility structure was rendered unclear by complexity, and it seemed necessary to identify the overall responsible launching State for the constellation who would be the registering State for each element of the constellation. It was further expressed that the basic principles of the registration system for space objects should stay untouched, which would mean: a) registration undertaken by one of the launching States of the constellation; b) the clear identification of the relevant launching States of the various space objects of the constellation for registration as well as for liability purposes; and c) corresponding national registration. It was suggested to develop a dedicated additional registration practice resolution containing recommendations for the registration of megaconstellations in order to facilitate harmonized registration practices.

143. The view was expressed that the concept raised practical questions and that the form of registration could be adapted according to the uses or purpose of the megaconstellation.

144. The view was expressed that the advent of megaconstellations raised legal and practical issues especially with regard to space debris in orbit. It was further expressed that registration of these objects should be imposed to ensure that proper reporting was done for all satellites forming part of a megaconstellation.

145. The view was expressed that the concept of megaconstellations raised different questions concerning the safety of space activities, the sustainability of the outer space environment, the proliferation and mitigation of space debris, and the potential impacts that these could have on astronomical observations; therefore, enhanced international registration procedures were necessary to accommodate the growing number of space objects and address the ever-increasing associated issues. It was further expressed that the first practical consideration regarding the registration of megaconstellations concerned the fact that these were made up of hundreds or thousands of satellites, which reasonably could not be registered individually. It was added that therefore, it was likely that for these space objects, a form of notification would be used, which provided for the registration of the batches of satellites launched from time to time; even more, the collective registration of several satellites under a single legal entity could be envisaged. It was added that although this represented a practical solution for registration purposes, the need to record the objects launched into orbit in a timely and accurate practice should not be neglected, and that given the critical concerns regarding sustainability, space debris, and potential interference with other space activities, it was essential to implement reliable registration mechanisms that presented precise data relating to launches, in-orbit operations, and end-of-life disposal plans of space objects. It was further expressed with specific reference to the impact that megaconstellations could have on astronomy, that it would be advisable that registering mechanisms were reinforced to allow astronomers to obtain factual information regarding the satellites’ orbits, allowing pre-launch predictions and post-launch confirmation, in order to ensure better coordination between satellite operations and astronomical observations.

*On the questions: 4.5 Is there a possibility, in compliance with the existing international legal framework, based on the existing registration practices, of introducing a registration “on behalf” of a State of a launch service customer, based on its prior consent? Would this be an alternative tool to react to megaconstellations and other challenges in registration?*

146. Some States expressed the view that such registration ‘on behalf’ appeared to constitute a practicable solution, however, there was no clear view on whether the registration regime would allow for this and further study was recommended.

147. The view was expressed that while a registration ‘on behalf’ of a State of a launch service customer could have the practical advantage of making important information concerning a launched object available in a timely manner, it should not be used by States to evade their duty to register space objects launched by them as well as the legal consequences and responsibilities related to registration. It was added that according to article VIII of the Outer Space Treaty, jurisdiction and control over a space object was linked to registration and that registration was relevant for the question of liability for damage caused by space objects. It was emphasized that a clear and transparent registration practice was crucial for the safety and sustainability of space activities. It was further expressed that in case there were two or more launching States, article II of the Registration Convention required them to jointly determine which one of them should register the space object; which provided States with a practicable mechanism to solve the question of registration before the launch of a space object. It was concluded that it was not clear whether a registration ‘on behalf’ of a State of a launch service customer would enhance the clarity, transparency and practical feasibility to the registration process.

148. The view was expressed that although registration of space objects that were part of megaconstellations ‘on behalf’ of a State of a launch service provider seemed practical, it was questionable whether such practice was welcomed. It was added that registration was not only linked to jurisdiction and control over a space object, but also to liability for damage; therefore, the notion of such registration and the possible implications that stemmed from the registration needed to be carefully considered.

149. The view was expressed that a registration ‘on behalf’ of a State of a launch service customer, based on its prior consent, would be in compliance with the existing international legal framework as well as the existing registration practices. It was added that it also constituted a way for megaconstellation satellites to be registered in the future, as these types of satellites could be owned by several parties, such as States, private companies, international organizations, non-governmental organizations, and individuals, and any of these parties could provide prior consent, before the actual registration of each space object in the constellation.

150. The view was expressed that there were no relevant existing practices in the sector.

151. The view was expressed that this was not a practicable solution as the act of registration was a unilateral legal act, the responsibility of which was not transferable by the simple action of a third party. It was further expressed that in order to avoid conflicts regarding the responsibility arising from the act of registration of a space platform, as a result of the increase in operational risk or incurring ‘fault’ in the face of potential damage to third parties, it was preferable to maintain the registration process as a single and non-transferable power of the State.

152. The view was expressed that such a specific scenario required further study.

153. The view was expressed that it was a possibility; however, beforehand, clear rules and guidelines had to be laid down on what constituted ‘prior consent’.

#### **On international customary law in outer space**

*On the questions: 5. Are there any provisions in the five United Nations treaties on outer space that could be considered to form part of international customary law and, if yes, which ones? Could you explain the legal and/or factual elements on which your answer is based?*

154. Several States expressed the view that the general principles contained in the Outer Space Treaty constituted customary international law. Among the articles referred to by more than one State were article I, article II, article III, article VI, and article VIII of the Outer Space Treaty.

155. The view was expressed that the general principles contained in the Outer Space Treaty could be regarded as customary international law, including the freedom of exploration and use of outer space (article I), the principle of non-appropriation (article II), the applicability of public international law to space activities (article III), the non-placement of nuclear weapons or weapons of mass destruction in Earth orbit (article IV), the

international responsibility of states for national space activities and the duty to authorize and supervise non-governmental activities in outer space (article VI), the liability of the launching State for damage caused by its space object (article VII), the duty to register space objects and the jurisdiction and control over a space object by the State of registry (article VIII), as well as the principle of international cooperation (articles IX, XI). It was added that these principles had already been reflected in the unanimously adopted General Assembly resolution 1962 (XVIII). It was expressed that such unanimous approval was an indication of *opinio juris sive necessitatis* when accompanied by concomitant practice and that a large majority of States, including all major space faring nations, had ratified the Outer Space Treaty and conducted their space activities in accordance with the above-mentioned principles. It was further added that an opinion or practice objecting to or dissenting from these principles by States which were not party to the Outer Space Treaty did not seem identifiable.

156. The view was expressed that the general principles of the Outer Space Treaty could be considered as forming part of international customary law due to the wide adherence to it by the international community in the conduct of space activities. It was added that both aspects of customary international law formation, *opinio juris* and State practice, were fulfilled and no dissenting practice of States not party to the Treaty could be identified.

157. The view was expressed that article I (the freedom of exploration and use of outer space) and article II (the principle of non-appropriation) of the Outer Space Treaty were considered customary international law by all States, including the space faring countries that ratified the Treaty.

158. The view was expressed that considering that the five United Nations treaties are the main treaties on the peaceful uses of outer space, it was more expedient to consider them as a whole, directed at the peaceful use of outer space.

159. The view was expressed that there were no elements in the *corpus juris spatialis* that could be considered part of customary international law; the main reason was given as being the low ratification rate of these legal elements on the international community and even on operators not subject to public international law, which had served as an escape route to possible responsibilities on the part of the State.

160. The view was expressed that this issue required a thorough doctrinal analysis of law in view of the diversity of opinions and arguments – and thus the lack of consensus – as to whether international customary law might constitute a source of space law, especially given that technology evolved rapidly and regulations were developed *a posteriori*.

161. The view was expressed that the following provision in the Outer Space Treaty could be considered part of customary international law: the exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind. It was added that following this, the following three elements should be noted:

- (1) States had been consistently exploring and using outer space for the benefit and in the interests of all countries (State practice);
- (2) These acts were carried out of a sense of obligation (*opinio juris*); and
- (3) These acts, so far, had been followed by all States and had not been rejected by any State.

162. The view was expressed that most of the Outer Space Treaty principles had to be considered customary principles of international law; specifically, the following articles could be considered customary international law: (article I) freedom of exploration and use of outer space; (article II) non-appropriation; (article III) applicability of general international law; (article VI) responsibility of States for national activities; and (article VIII) registration of space objects. It was added that to establish customary international law, two elements were required, State practice and *opinio juris*, and that most of the provisions contained in the Outer Space Treaty responded to both elements. It was added that in the first place, these principles derived from the ‘Declaration of Legal Principles Governing the

Activities of States in the Exploration and Use of Outer Space’, General Assembly resolution adopted unanimously in 1963, which constituted the codification of the principles of customary law ‘instantly’ formed during the first decade of space activities and that moreover, no acts contrary to the fundamental principles of the Treaties had been exercised to date.

**On proposals for other questions**

*On the question: 6. Please suggest additional questions that could be inserted into the set of questions above to meet the objective of the UNISPACE+50 thematic priority on the legal regime of outer space and global space governance.*

163. The following questions were suggested for consideration:

(a) It was proposed to include the question of national definition of natural boundaries of outer space.

(b). It was proposed to include the question whether use and usufruct, including sovereignty, of Earth’s orbits should be regulated in a particular way under consideration of the Outer Space Treaty. The view was expressed that the answer should be no, as due to the Outer Space Treaty, outer space was not subject to sovereignty claims.

164. The following questions were suggested for consideration:

(a) It was proposed to include the question of whether there was a legal basis to be found in the existing international legal framework, in particular the provisions of the Outer Space Treaty, which would allow the definition of ground-based astronomical activities as space activities. The question was added additionally whether this would be a useful tool to preserve ground based astronomical observations from the potentially harmful impact of operations conducted in outer space.

(b) It was proposed to include the question of whether there was a possibility, in compliance with the framework established by the five United Nations treaties on outer space, to notify and register ground-based astronomical activities as space activities in order to create an obligation of cooperation and transparency with other stakeholders carrying out space activities.

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