

The Promoting Space Sustainability Project:

awareness-raising and
capacity-building
related to the implementation
of the LTS Guidelines

Event #3

Summary Report

National Regulators &
Policymakers

March 15, 2021



The Promoting Space Sustainability

Project: awareness-raising and capacity-building related to the implementation of the LTS Guidelines

Global investment in and dependency on space activities are increasing rapidly. Such trends underline the need to ensure space activities are sustainable over the long-term. As the United Nations' dedicated space entity, the Office for Outer Space Affairs of the United Nations Secretariat (UNOOSA) sits at the crossroads of the global space community and is well placed to bring together both private and public stakeholders on the subject. The Promoting Space Sustainability Project: awareness-raising and capacity-building related to the implementation of the LTS Guidelines seeks to raise global awareness of the importance of space sustainability and to foster related capacity-building services for emerging space-faring nations.

The Project is made possible thanks to the generous support of the United Kingdom and is delivered in the context of the landmark [Guidelines for the Long-term Sustainability Outer Space Activities](#) of the Committee on the Peaceful Uses of Outer Space (LTS Guidelines), whose adoption by the Committee in 2019 was welcomed with appreciation by the United Nations General Assembly.

The Virtual Event Series

In its first phase, the Project arranged a series of virtual events, aimed at facilitating peer-to-peer dialogue and an exchange of experiences implementing the [Guidelines for the Long-term Sustainability Outer Space Activities](#) of the Committee. Split across two sessions, each event focused on a particular sector of the global space community. Participants shared their experiences and examples of sustainable space activities. The first event focused on the commercial space sector, the second on space agency operators, and the third event on national regulators and policymakers. The events provided a platform to share operational space sustainability case studies outlining actions taken to implement the [Guidelines for the Long-term Sustainability Outer Space Activities](#) of the Committee, as well as lessons learned. The case studies and presentation slides submitted in connection with the events are made publicly available on [UNOOSA's website](#), further supporting awareness-raising and related capacity-building on this critical topic for the global space sector.



The cover picture of the Summary Report represents Earth viewed from the lunar lander ascent stage of the Apollo 11 Mission in 1969. Credit: NASA

Event #3

National regulators & Policymakers

The third event of the series introduced the experiences of national regulators and policymakers who illustrated examples of sustainable space practices in their field. Such examples were mapped into the context of relevant areas covered by the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee. Each session ended with an open, informal Question and Answer period focusing on the case studies.

Speakers for this event included:

- **Mr. Atsuhiko Fujishige**, Director at National Space Policy Secretariat, Cabinet Office of Japan
- **Ms. Jiang Hui**, Division Director for International Cooperation at System Engineering Department of China National Space Administration
- **Ms. Alessandra Di Cecco**, Astronomer, SSA/SST Office at the Italian Space Agency (ASI)
- **Ms. Aica Palce**, Lawyer, Office of the Director General at the Philippine Space Agency
- **Ms. Val Sim**, Director, Legal Services at the Ministry of Business, Innovation and Employment of New Zealand
- **Ms. Aisha Jagirani**, Director General, External Relations and Legal Affairs Department at the Asia-Pacific Space Cooperation Organization (APSCO)
- **Ms. Diane Howard**, Chief Counsel for Space Commerce at the U.S. Department of Commerce
- **Mr. Paul Liias**, Head of Space Section at the Ministry of Economic Affairs and Communications for Estonia
- **Mr. Jan Grosser**, Product Assurance and Safety Engineer at the German Aerospace Center (DLR)
- **Mr. Linden Sydney Petzer**, Councillor at the South African Council for Space Affairs (SACSA)
- **Ms. Joanne Wheeler**, Managing Partner at Alden Legal (UK)

Opening remarks

This event was opened with remarks by **Ms. Simonetta Di Pippo**, Director of the United Nations Office for Outer Space Affairs and **Mr. Colin Macleod** Head of UK Space Regulation.

Morning Session

1. Mr. Atsuhiko Fujishige, Director at National Space Policy Secretariat, Cabinet Office of Japan

The first speaker of the morning session, Mr. Fujishige, gave an overview of Japan's practices in the space field to support the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee. Mr. Fujishige expressed in relation to **Guidelines A**, Policy and regulatory framework for space activities, that Japan has already established a comprehensive regulatory framework to supervise national space activities, in particular the Space Activities Act 2016.

In terms of **Guidelines B**, Safety of space operations, it was indicated by Mr. Fujishige that Japan has incorporated some elements of safety of space operations into binding domestic regulations. Within this category of guidelines, the speaker focused on the current status of space traffic management (STM) rulemaking. As Mr. Fujishige explained regarding Japan's STM legislation process, the country first seeks domestic regulations to find good practices, then it explores the potential essence of STM rules to promote further discussion. Furthermore, the regulators monitor preceding foreign norms as well to find good practices in the international sphere. In accordance with the previous approaches, the Government of Japan Task Force on Space Debris has adopted the action plan, "Course of Action 2020", concerning STM and mitigation of space debris. Within this document, Japan explores prospective elements of ideal STM rules, develops a strategy, and formulates a mid/long-term action plan to tackle the issue by the end of 2021. The action plan details Japan's Voluntary and Preceding Efforts on Debris Mitigation, more specifically on current and future government-owned low-Earth orbit (LEO) satellites, and On-orbit servicing (OOS) rules. The Course of Action also demands from the government-owned satellites to de-orbit and to make every effort possible to thoroughly mitigate orbital debris. Mr. Fujishige also detailed potential negative effects of OOS servicing, by noting that OOS service satellite might interfere with the operation of other spacecrafts when in service, and also it could make collision avoidance more difficult. Moreover, Mr. Fujishige added, a failure of OOS operation could create huge amounts of debris, threatening orbital flight safety. Therefore, early, open notification on the safety of a prospective OOS activity is necessary to share with the space community. In fact, the Course of Action 2020 document stipulates that the criteria of prior assessment related to the OOS operator's 'good will' and operational safety is aimed to be created before the end of fiscal year of 2022 in Japan. It is the goal of Japan that the explicit criteria will constitute good OOS practices, and they will promote international rulemaking of OOS.

With respect to **Guidelines C**, International cooperation, capacity-building and awareness, it was stated that there have been various opportunities to promote international cooperation and to raise public awareness on space sustainability, such as NSPS annual symposium, JAXA's space debris workshop, or the UNOOSA-joint "KiboCUBE" programme.

Finally, **Guidelines D**, Scientific and technical research and development, were demonstrated through Japan's CRD2 (commercial removal of debris demonstration) project.

Mr. Fujishige's presentation in the event recording starts [here](#).

2. Ms. Jiang Hui, Division Director for International Cooperation at System Engineering Department of China National Space Administration

In her presentation, Ms. Hui reminded her listeners that adoption of the Guidelines for the Long-term Sustainability Outer Space Activities of the Committees was an indeed important milestone and consensus reached by the international community for the sake of long-term space sustainability. Ms. Hui also highlighted that continued efforts and dialogues are necessary related to the long-terms sustainability of outer space to efficiently respond to global trends and new challenges that the space community is facing.

It was explained during the intervention that China believes that implementation of the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee should be based on the actual development of space technology and application under the framework of a given country's domestic law. In that context, In China, objectives regarding sustainable space activities have been materializing in different workstreams, such as in the acceleration of legislative work of space law; in the registration of space objects; or in the strengthening of regulation of commercial space activities by means of enhancing the launch license and the satellite export approval. Such activities can be linked with **Guidelines A**, Policy and regulatory framework for space activities.

Other activities, like space debris management was put into scrutiny by Ms. Hui, under **Guideline B**, Safety of Space Operations. Accordingly, Ms. Hui explained that CNSA has stipulated space debris control and management requirements for spacecraft development in China through the space debris mitigation and protection regulations. It is therefore necessary that post-mission mitigation and de-orbiting models are implemented on the space crafts and that relevant requirements are considered in the engineering development process. As a good example, Ms. Hui detailed that the Long March rocket family in China has been treated with post-mission passivation disposal.

Guidelines for the Long-term Sustainability Outer Space Activities of the Committee C, International cooperation, capacity-building and awareness, was also mentioned during the presentation, stating that China supports international cooperation and capability building in space. For example, the country has taken part in the Inter-Agency Space Debris Coordination Committee (IADC) discussions. In addition, trainings and education have been in the forefront of China in the space field through the Regional Center for Space Science and Technology Education in the Asia-Pacific China since its establishment in 2014. The main education and training fields that are provided at the Regional Center involve space law and policy, satellite communications, global navigation satellite system, etc. During these courses, according to Ms. Hui, the Regional Center also puts emphasis on the use of space applications to support sustainable development in space.

Ms. Hui's presentation in the event recording starts [here](#).

3. Ms. Alessandra Di Cecco, Astronomer, SSA/SST Office at the Italian Space Agency (ASI)

In her intervention, Ms. Cecco first summarized the historical background of the Italian Space Agency (ASI), stating that ASI implements the National Space Policy coordinated by an ad-hoc Inter-ministerial Committee under the Prime Minister's Office of Italy.

Ms. Cecco showcased the policy and regulatory framework of ASI's space sustainability activities by highlighting **Guideline A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities; **Guideline A.4**, Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites, and **Guideline A.5**, Enhance the practice of registering space objects. On that note, the speaker emphasized that as a member of the European Cooperation for Space Standardization, ASI supports the application of standards of the Consultative Committee for Space Data Systems (CCSDS) and the International Organization for Standardization (ISO), related to **Guideline A.2**. Additionally, Italy holds its own National Register for launched space objects since 2014 (the Register is under reorganization to modernize the Italian registration procedure) and notifies UNOOSA per launched space objects. Furthermore, Ms. Cecco pointed out that Italy has an efficient use of the radio frequency, which is regulated by the Minister of Economic Development, and follows ITU regulations. ASI also strongly supports information sharing on space debris.

In terms of Guidelines for the Long-term Sustainability Outer Space Activities of the Committee, section on safety of space operations and international cooperation, **Guideline B.1**, Provide updated contact information and share information on space

objects and orbital events; **Guideline B.2**, Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects; **Guideline B.3**, Promote the collection, sharing and dissemination of space debris monitoring information; **Guideline B.6**, Share operational space weather data and forecasts; **Guideline B.7**, Develop space weather models and tools and collect established practices on the mitigation of space weather effects; **Guideline B.9**, Take measures to address risks associated with the uncontrolled re-entry of space objects; **Guideline C.1**, Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities ; **Guideline C.2**, Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange; and **Guideline C.4**, Raise awareness of space activities were highlighted during the presentation. Ms. Cecco called the attention to ASI information sharing practices and its support of the activity on space debris. In that context, ASI is a member of various international organizations, in particular, the European Space Surveillance and Tracking Consortium (EU SST), the Inter-Agency Space Debris Coordination Committee (IADC), and ESA's Space Safety Programme (S2P). The role of the EU SST was emphasized by the Astronomer, and the Consortium's three main services, related to uncontrolled reentry of space objects, on-orbit fragmentation events, and collision avoidance services. ASI also supports national scientific research for data analysis development of space-based and ground-based instruments as well as theoretical research to improve the space weather activities.

As a particular activity, Ms. Cecco emphasized ASI has an agreement with the National Institute for Astrophysics (INAF) through which ASI promotes data collection of space debris relevant to **Guideline B.3**, Promote the collection, sharing and dissemination of space debris monitoring information. Additional national research institutes and universities are involved in the research of the topic, which helps ASI to collect, analyze and disseminate relevant data. In terms of data collection, SPADE (SPACE Debris) optical telescope was introduced, which is located at the Matera Space Geodesy Center of ASI, and it collects data to provide orbital solution of LEO objects. Furthermore, radar sensors used by ASI to observe space debris were touched upon. As for data analysis and comparison, break-up model simulations, re-entry data analysis and theoretical models, laboratory spectroscopic measurements, and orbital simulation and evolution of space debris population were mentioned.

Ms. Cecco argued in terms of **Guideline C.3**, Promote and support capacity-building, that Italian scientists are involved in international committees, such as COSPAR Committee on Space Debris, or the International Astronautical Federation (IAF) Committee on STM that are also relevant to international cooperation. Moreover, ASI supports academic seminars and educational outreach activities on space debris.

Ms. Di Cecco's presentation in the event recording starts [here](#).

4. Ms. Aica Palce, Lawyer, Office of the Director General at the Philippine Space Agency

Ms. Palce introduced the Philippine Space Agency (PhilSA), established in 2019 under the “Philippine Space Act”. PhilSA plans, develops, and promotes the national space policy programme in line with the Philippine Space Policy. Through the Philippine Space Act, the Philippine Space Council (PSC), chaired by the President of the Philippines, was also established, which serves as the principal advisory body to the coordination and integration of policies, programmes and resources affecting space science and technology applications. PhilSA’s Director General also serves as the Presidential Adviser on Space Matters and Secretariat to the PSC.

Ms. Pale also elaborated on the key development areas and strategic directions of PhilSA in her presentation that are, national security and development; space R&D; space education and awareness; international cooperation; space industry and capacity building; and hazard management & climate studies.

In connection with **Guidelines C**, International cooperation, capacity-building and awareness, Ms. Pale highlighted that since the agency’s creation, PhilSA has been taking part in numerous space cooperation initiatives within the United Nations framework, but also through bilateral cooperation, as PhilSA is mandated under the Philippines Space Act to cooperate with space agencies of other countries in the peaceful use and development of space. In addition, it was noted that PhilSA is mandated to maintain a national registry of space objects in accordance with the United Nations Convention on Registration of Objects Launched into Outer Space (Registration Convention) related to Guideline **A.5**, Enhance the practice of registering space objects, although, Ms. Pale stated that the archipelagic country hasn’t signed, nor ratified the Convention yet. As far as the status of other UN space treaties related to the Philippines – the OST, Rescue Agreement, and the Liability Convention are signed, the Moon Agreement is signed and ratified by the Philippines, according to Ms. Pale. Currently, the speaker informed her listeners, PhilSA is in the process of coordinating and consulting to request for advisory input with relevant government agencies and stakeholders towards the ratification of all the United Nations space treaties.

Ms. Palce’s presentation in the event recording starts [here](#).

5. Ms. Val Sim, Director, Legal Services at the Ministry of Business, Innovation and Employment of New Zealand

Ms. Sim focused on one recent initiative that New Zealand has undertaken in its implementation of **Guideline A.3**, Supervise national space activities. According to Ms. Sim, New Zealand became a launching state in 2017 when Rocket Lab, a commercial launching company launched its first successful payload from the Mahia Peninsula on the east coast of New Zealand. Since then, Rocket Lab has had a numerous successful launch and the private public partnership became the catalyst for New Zealand's space law, "The Outer Space and High-altitude Activities Act", established in 2017. It was further explained that the new law provides a licensing regime for activities from New Zealand or by New Zealanders overseas and in enacting the law, New Zealand had three principal purposes, first to facilitate the development of the industry in New Zealand, second to implement its international obligations (including the obligations posed by the international space treaties), third to manage risks arising from space activities. The latter purpose was highlighted by the Director, as it includes the risks to the long-term sustainability of the space environment, and it is part of the licensing regime. As an example, Ms. Sim introduced the requirement of orbital debris mitigation, mandatory in New Zealand, and the Minister must refuse to grant license if orbital debris is not minimized.

Ms. Sim continued, The New Zealand regime is flexible, which offers considerable scope to implement the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee. Without the need for further legislation i.e., the authority can impose conditions on space activities which ensure that operations are consistent with the need to preserve long-term sustainability.

Since 2017, it was argued that 97 satellites have been launched from New Zealand (until March 2021) which were mix of commercial, governmental academic research and non-profit satellites. Through, The Outer Space and High-altitude Activities Act, New Zealand's ministry has been able to exercise some control over the operation of the satellites, for example, it could be centrally ensured that orbital debris is managed, as the relevant authority could require reporting about the deorbited satellites, or when incidents happened. However, the New Zealand government wanted to make sure that they can monitor the satellites operation in a more efficient way, on a real-time basis, within the parameters of launch permit.

New Zealand therefore partnered with a US-based commercial radar tracking services for objects in low Earth orbit, called LeoLabs. Since it was an experimental programme, at first a pilot was used to demonstrate the technology. As a result, LeoLabs developed the Space Regulatory and Sustainability Platform, which allows the New Zealand government to monitor real-time satellites that is launched from New Zealand right from the governmental staff's desk. In addition, through the LeoLabs radar network the authority can set regulatory limits for specific objects and receive automated alerts, when an object is outside any of the prescribed parameters of its permit. Finally, it allows the authority to record object behavior, so over time they can build a New Zealand space

object catalogue, including objects as small as 2cm, that can be linked with **Guideline B.3**, Promote the collection, sharing and dissemination of space debris monitoring information. Ms. Sim argued, States should ensure that space objects that a country launches operate in a way that they intended to and ensure that there is ongoing compliance with relevant national and international regulatory framework requirements, policies and processes.

Lastly, three key lessons learnt from the private partnership were highlighted by Ms. Sim, that are, partnering with industry offers new opportunities to find innovative solutions to sustainability issues; pilot projects are an effective tool to demonstrate new technologies and practices; and that such tools can form the building blocks of space traffic management.

Ms. Sim's presentation in the event recording starts [here](#).

6. Ms. Aisha Jagirani, Director General, External Relations and Legal Affairs Department at the Asia-Pacific Space Cooperation Organization (APSCO)

Ms. Jagirani introduced APSCO as a non-profit, international, intergovernmental organization with eight Member States (Bangladesh, China, Iran, Mongolia, Pakistan, Peru, Thailand, and Turkey). Ms. Jagirani outlined the Long-term Sustainability of Outer Space goals of APSCO, such as APSCO Vision 2030, APSCO's Strategic Objectives, Development Plan of the Organization's Cooperative Activities, Education and Training activities, and related APSCO projects. When Focusing on the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee, Ms. Jagirani highlighted **Guideline C.1**, Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities; **Guideline C.3**, Promote and support capacity-building; **Guideline C.4** Raise awareness of space activities; and **D.1**, Promote and support research into and the development of ways to support sustainable exploration and use of outer space, relevant to APSCO's activities. In terms of international cooperation, Ms. Jagirani informed the listeners that APSCO and UNOOSA have a cooperation on capacity building in national legislation for APSCO Member States.

Guidelines A, Policy and regulatory framework for space activities, were also emphasized and stated that APSCO supports its Member States to Develop Legal Mechanisms to Address Long-term Sustainability of Outer Space. More specifically, Ms. Jagirani discussed the important role of **Guideline A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities and the implementation of international standards, especially in the perspective of an international intergovernmental organization.

As a lesson learned, the speaker emphasized the need for more open and direct discussions and information sharing practices, especially related to space debris

mitigation. In conclusion, Ms. Jagirani expressed that APSCO is open for international collaborations to build a more sustainable outer space.

Ms. Jagirani's presentation in the event recording starts [here](#).

Questions and Answers

In the morning Q&A session, **Mr. Fujishige** reflected on the important relationship between the Japanese central government, JAXA and the private space sector, especially when addressing space sustainability.

Ms. Hui also commented on the on-going responsibility of CNSA in raising awareness, and educating engineers through workshops i.e., on space debris mitigation and its management. At the same time, the importance of regulation related to licensing was emphasized as another key factor to incentivize engineers to design and operate the satellites responsively.

Ms. Cecco provided her insights on information sharing practices, mechanism related to space surveillance and tracking between ASI and Italy's private space sector, civil society and academia. Ms. Cecco emphasized therefore, that Italy leads two initiatives related to the European Space Surveillance and Tracking framework, related to re-entry and to the fragmentation analysis. In that regard, ASI collaborates with the National Institute of Astrophysics, which provides the radar sensor, and its data for SST, then the data is sent to the operational center of Italy, which then is shared among the European SST member states through a common European database.

Ms. Sim explained since New Zealand is a small country, it is easier for them to get to know space industry participants better and faster.

Ms. Jagirani emphasized that APSCO as an international organization channels its Member States priorities in terms of activities they would like to be focusing on. In that regard, space sustainability has been accepted as an important subject of APSCO's Vision Plan, and even sub-topics were identified that are, space weather, space debris mitigation, SSA, STM, active debris removal, researching on and finding ways to develop new debris removal techniques. Ms. Jagirani also shared that APSCO plans to establish a space debris monitoring center and data-sharing centers in the future.

The Q&A session of the morning event recording starts [here](#)

Afternoon Session

1. Ms. Diane Howard, Chief Counsel for Space Commerce at the U.S. Department of Commerce

Ms. Howard summarized the advocacy and regulatory roles of the U.S. Department of Commerce (DOC) in the space sector. In terms of advocacy, the Office of Space Commerce within DOC fosters the conditions of economic growth and technological advancement of the US space industry, and internally advocates for industry in Executive Branch policy deliberations. Concerning regulation, according to Ms. Howard, the US Department of Commerce licenses operation of U.S. private remote sensing space systems, and it coordinates regulatory policy within other US Government agencies (such as the Federal Communication Commission - FCC, the Department of Transportation - DOT, NASA and the Department of State).

When discussing **Guideline A.1**, Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, Ms. Howard underlined that the United States regulatory framework for space activities (since the creation of the first domestic space law in 1958) is extensive and the United States Federal Regulations are periodically updated to reflect evolution of commercial space activities and new capabilities (i.e., FCC rulemaking on “Mitigation of Orbital Debris in the New Space Age”; Department of Trade’s updated “streamlined launch and reentry license requirements” in 2021, or DOC’s updated licensing of remote sensing systems in 2020).

In accordance with **Guideline A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities, directs regulators to consider number of elements when developing, revising or amending national regulatory frameworks related to space sustainability. In that context, **Guideline A.2** was set to be reflected in the work of DOC, as the entity uses existing international technical standards, including those published by the national standardization bodies, by the International Organization for Standardization (ISO), and by the Consultative Committee for Space Data Systems (CCDS). According to Ms. Howard, when the U.S considers using standards in space regulations, it seeks to: increase the quality and effectiveness of the US rulemaking

process; to consider inputs of all interested parties; and to minimize burdens on industry and the public. The importance of transparency, regulatory analyses based on science and data, strong support from the federal government for the use of regulatory best practices, and accountability of government agencies were also considered priorities to use standards in U.S. regulation.

Ms. Howard's presentation in the event recording starts [here](#).

2. **Mr. Paul Liias, Head of Space Section at the Ministry of Economic Affairs and Communications for Estonia**

Mr. Paul Liias presented an emerging space nation, Estonia's history in the space domain with a focus on a new national space policy programme, started in 2020. The same year, the work on the creation of a national space law with the aim to develop an e-service for satellite registration and operation has started in Estonia. Joining to the Convention on Registration of Objects Launched into Outer Space and to the Convention on International Liability for Damage Caused by Space Objects was also listed as an important purpose of Estonia. Such prospects can be linked with Guideline **A.1**, Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, and **Guideline A.5**, Enhance the practice of registering space objects.

Furthermore, Mr. Liias discussed in his intervention that since 2015, when Estonia became a European Space Agency (ESA) Member State, the Baltic country has put even more emphasis on its space applications with the help of ESA. Nevertheless, it was noted that Estonian citizens have been used to digital services for a long time, for example 99% of State services are online, which gives a perspective how the country can use such knowledge in the space field safely, such as in its prospective space traffic management (STM) system. According to Mr. Liias, it is Estonia's goal to make satellite registration easier and enable streamlined communication among all parties through the e-service. More specifically Estonia is interested in leading the digitalization of global STM. For that reason, according to Mr. Liias, Estonia has established a space traffic management (STM) & e-governance working group with the aim to promote cooperation between the government, the industry and R&D institutions, and to create related activities and programmes. It was also projected that the Estonian government is keen to enable e-service for STM and to connect it with the country's national space law.

Mr. Liias' presentation in the event recording starts [here](#).

3. Mr. Jan Grosser, Product Assurance and Safety Engineer at the German Aerospace Center (DLR)

In his presentation Mr. Grosser explained, DLR is the largest research institution in Germany with more than 9000 employees. The National Space Agency of Germany is an independent branch within DLR, situated in Bonn. The main task of the National Space Agency is to prepare German space planning and to represent German space interests in various international fora (especially at ESA) and it also decides on specific grants and contracts related to the German space sector. The work of the National Space Agency is supervised by the Federal Ministry of Commerce and Energy.

Mr. Grosser also expressed that the foundation of every governmental space project in Germany is the German Space Strategy, which although is a more than decade-old document, it defines the overarching principles for DLR's work in the space field. Among the Strategy's principles, Mr. Grosser emphasized that sustainable space activities are also listed. Mr. Grosser further explained that the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee and Germany's Space Sustainability Strategy are not directly applicable to DLR's space projects, rather they are implemented through the organization's so-called Project Assurance and Safety Requirements. Accordingly, first the General Requirement Catalogue (which is the database comprising all the requirements in place) is used based on various popular international standards (i.e., NASA, ISO, etc.). After the Catalogue, a computer-based enabling or tailoring tool, fed with parameters dedicated to a specific project (i.e., a LEO satellite, or an experiment in ISS, etc.) decides on the input parameters. Afterwards, the requirements from the Catalogue are applied, which results in the "Project-Specific PA Requirements". Mr. Grosser informed his listeners that the Project-Specific PA Requirement has a designated chapter related to space sustainability (since 2009), which is DLR's "Space Debris Mitigation Requirements," derived from both the United Nations Space Debris Mitigation Guidelines and the IADC Guidelines, along with ISO Standards. Such activities can be linked to **Guideline A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities. Some of the mitigation measures according to the DLR's Space Debris Mitigation Requirements are, limiting the generation of debris; limiting the probability of impact; limiting the consequence of impact; depleting onboard energy sources after completion of mission; limiting orbital lifetime; limiting human casualty risk; and protection of the Earth's environment, airspace, seafaring and property from reentering space objects. With respect to the above activities, **Guideline B.8**, Design and operation of space objects regardless of their physical and operational characteristics, and **Guideline B.9**, Take measures to address risks associated with the uncontrolled re-entry of space objects, were highlighted. Additional rules and summary documents (i.e., SDM Declaration, SDMAR-1 to SDMAR-5, End of Mission Plan) help DLR engineers and

operators to not only implement but also monitor the compliance methods, referring to Guideline **A.3**, Supervise national space activities.

Guideline **B.4**, Perform conjunction assessment during all orbital phases of controlled flight, of the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee was also touched upon by Mr. Grosser, when he explained DLR's 'EnMAP Disposal and Collision Avoidance' operation.

In relation to Guideline **B.9**, Take measures to address risks associated with the uncontrolled re-entry of space objects, EnMAP Re-Entry and Casualty Risk Analysis was illustrated by the scientist. Mr. Grosser added, that the EnMAP EO mission is a good example for balancing mission objectives and changing space sustainability needs.

Mr. Gossler's presentation in the event recording starts [here](#).

4. Mr. Linden Sydney Petzer, Councilor at the South African Council for Space Affairs (SACSA)

According to Mr. Petzer, there are five main governmental bodies in South Africa, dealing with space topics, these are the Department of Trade, Industry & Competition, responsible for National Space Policy; the Department of Science & Innovation, which decides on the National Space Strategy; the Department of Communications & Digital Technologies, the lead Department for Satellite Communications; the South African Council for Space Affairs (SACSA), responsible for the regulation and licensing of national space activities; and the South African National Space Agency (SANSA), dealing with the implementation of the national strategy for the Government Departments.

Mr. Petzer pointed out that space affairs in South Africa (SA) are governed by the Space Affairs Act 1993, which also mandates the Minister to develop the National Space Policy to be followed by the Republic. The National Space Policy encourages all SA stakeholders to be responsible users of the space environment according to international regulations. As Mr. Petzer stressed, SA has a strong connection and interest in the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee.

It was also stated that South Africa is currently developing a new legislation to replace the Space Affairs Act of 1993, which will take into consideration the provisions of Guidelines **A.1**, Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities, **A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities; and **A.3**, Supervise national space activities. Furthermore, **Guideline A.4**, was emphasized by the space policy expert, by stating, Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites. South Africa actively participates in ITU World Radiocommunication Conferences. **Guideline A.5**, Enhance the practice of registering space objects, was also highlighted, describing

SACSA's National Register of Space Objects, and also declaring that all South African space objects are registered pursuant to the Registration Convention. Last but not least, Mr. Petzer indicated that **Guideline C.4**, Raise awareness of space activities, is also relevant to SA as SACSA holds workshops with the government, academia and the private industry on international treaties & obligations.

Mr. Petzer's presentation in the event recording starts [here](#).

5. Ms. Joanne Wheeler, Managing Partner at Alden Legal (UK)

Throughout her presentation, Ms. Wheeler argued that in a changing orbital environment, there is no substitute to a multi-stakeholder approach and a level playing field dedicated to sustainability in space, therefore, the Guidelines for the Long-term Sustainability Outer Space Activities of the Committee are crucial today.

Ms. Wheeler emphasized that – in her experience – the national regulatory and policy framework should ensure the sustainable use of space. Moreover, it is important to anticipate technology and regulatory change, encourage commercial growth, and stimulate innovation and research, which activities can be lined with **Guideline A.2**, Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities. It was also expressed that transparency and reasonable as well as proportionate global and national space policies are necessary to reduce investment risks and to encourage international and multistakeholder collaboration. Ms. Wheeler also emphasized the need for supervision of private commercial space activities by States, related to **Guideline A.3**, Supervise national space activities.

Furthermore, Ms. Wheeler discussed the importance of **Guideline B.4**, Perform conjunction assessment during all orbital phases of controlled flight; **Guideline B.5**, Develop practical approaches for pre-launch conjunction assessment; as well as **Guideline B.8**, Design and operation of space objects regardless of their physical and operational characteristics; and **Guideline B.9**, Take measures to address risks associated with the uncontrolled re-entry of space objects, and addressed the appropriate technical structures and procedures for planning and conducting space activities. Ms. Wheeler argued that the question, whether the applicant can safely conduct the launch into orbit of the proposed vehicle and associated payload should be analyzed along with operation considerations for liability risk, and for in orbit phase assessment.

Ms. Wheeler's presentation in the event recording starts [here](#).

Questions and Answers

In the Q&A session, **Ms. Howard** explained that DOC engages and interacts with the private sector in various formats. Sometimes it is done through professional organizations, like the Satellite Industry Association, but also other ways, such as, Request for Information, or the so-called Public Comment Period were discussed.

Mr. Liias reflected on the unpopularity of the topic of space sustainability in Estonia, due to the low level of space activities in the country. However, Mr. Liias argued that in the past couple of years, space services and applications have become more apparent, involving the private space industry with more and more ambitious projects. Such tendency does not only bring the topic of space sustainability to the forefront but also encourages Estonia to find ways to promote the subject.

Mr. Grosser commented on the need for a timely orbital information, especially during re–entry of spacecrafts. Recently DLR also established an SSA center which also bilaterally shares data with other countries. In addition, Germany recently joined the EU SST group to foster SSA capabilities of the State. Mr. Grosser also emphasized that not only European but global partnerships are necessary to collect SSA data, as combining such information is essential to cope with the issue worldwide.

Mr. Petzer elaborated on the information sharing practices across the space sector in South Africa. As Mr. Petzer pointed out, the South African space industry is emerging, therefore it is still relatively easy to keep in touch with the private entities. Also, Mr. Petzer indicated that SACSA tries to involve all space sectors through its registry where all organizations involved in space activities are listed. With the help of the registry, the entities can be invited to workshops and other events.

Ms. Wheeler shared her experience related to a European Commission study, researching whether there was forum shopping across Europe for companies looking for launch and operations licensing in 2014. The results from 6-7 years ago indicated that there were not that many “forum shopping” at that time. However, by 2021, from Ms. Wheeler perspective, there are now more and more forum shopping-related activities, as an increasing number of small companies are looking for cheaper and faster launch and licensing conditions and processes. Still, according to Ms. Wheeler, in the last 2 years, there is a slight change as corporate or economic social responsibility has become more popular due to climate change and environmental protection, which affected the space industry as well. Looking ahead, Ms. Wheeler noted, incentivizing small companies and linking them with investment and raising finance may create an interesting dynamic related to space sustainability as well.

The Q&A session of the afternoon event recording starts [here](#)

Summary of interventions

During the morning and afternoon panel sessions, the national regulators and policy makers mostly referred to the role of **Guidelines in Section A**, Policy and regulatory framework for space activities, while also reflecting on how other components, such as the safety of operation or information sharing, can be influenced through various incentives.

Common topics Guidelines for the Long-term Sustainability Outer Space Activities of the Committee during the interventions were space situational awareness (SSA) and space traffic management (STM) activities, standard setting, space object registration, information sharing practices in various fora, and the relationship between the private and public space sector. The importance of international organizations in enhancing conversations and sharing of practices and capabilities was a commonly agreed subject among the speakers. The need for continuous supervision by States and the question of how emerging spacefaring nations and small businesses can contribute to space sustainability were also raised.

It was a commonly shared view that international collaboration is essential when addressing space sustainability challenges. Guidelines for the Long-term Sustainability Outer Space Activities of the Committee Additionally, it was agreed among the presenters that open forums are needed for more data-sharing and the sharing of practices related to space debris mitigation and debris removal. Finally, the concept of a “mutually assured benefit” through the chain or ecosystem of the global space sector was highlighted, as well as the need to encourage space sustainability as a driver of the global space sector. For that, the role of regulators is essential, the speakers agreed, as they must balance sustainability with inspiration for commercialization and innovation.
