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**Committee on the Peaceful  
Uses of Outer Space**  
**Scientific and Technical Subcommittee**  
**Fifty-first session**  
Vienna, 10-21 February 2014  
**Long-term sustainability of outer space activities**

## **Working report of expert group A: Sustainable Space Utilization Supporting Sustainable Development on Earth**

### **Summary**

Space activities play a vital role in supporting sustainable development on Earth. They are essential for the achievement of the Millennium Development Goals and for the success of the post-2015 development agenda process. The proposed draft guidelines presented here are designed to improve the long-term sustainability of outer space activities in the context of the contribution of space systems to the support of sustainable development on Earth and to disaster management, and to ensure that the benefits of outer space activities are enjoyed by all nations. They are directed to all space actors, namely, States, international organizations, national and international non-governmental organizations and private sector entities.

### **I. Introduction**

1. The United Nations Committee on the Peaceful Uses of Outer Space (the Committee) at its fifty-fourth session adopted the terms of reference and methods of work of the Working Group on the Long-term Sustainability of Outer Space Activities (Working Group) of the Scientific and Technical Subcommittee, contained in the annex II to the report of that session. According to those terms of reference, the topics for examination by the Working Group were clustered into four groups:

- (a) Sustainable space utilization supporting sustainable development on Earth;
- (b) Space debris, space operations and tools to support collaborative space situational awareness;

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- (c) Space weather;
  - (d) Regulatory regimes and guidance for actors in the space arena.
2. The Working Group agreed that the proposed clustering could be considered as a basis for the establishment of four expert groups. Expert group A was established to consider and propose draft guidelines on sustainable space utilization supporting sustainable development on Earth. Its activity was focused on the link between sustainable development on Earth and sustainable utilization of the space environment, and on the question of ensuring equitable access to outer space activities for human development. Furthermore it considered ways to improve international cooperation in the peaceful use of outer space, in particular regarding early warning of potential disasters and support for management of disaster-related activities. The expert group considered the broad outline of topics contained in the terms of reference and methods of work of the Working Group (A/66/20, annex II, para. 14 (a)) and identified for detailed consideration the topics listed in section IV of the document A/AC.105/C.1/L.324. Expert group A met several times on the margins of the sessions of the Scientific and Technical Subcommittee and the Committee in Vienna and held also informal coordination meetings on the margins of the International Astronautical Congress (IAC) in Naples in October, 2012 and in Beijing in October, 2013.

### **Proposed draft guidelines**

3. The main objective of the proposed draft guidelines is to create a framework for the enhancement of national and international practices pertaining to achieving the long-term sustainability of outer space activities. They should be voluntary and not legally binding and consistent with existing international legal frameworks for outer space activities.
4. The proposed draft guidelines of expert group A can be divided into three groups. The first group includes a guideline (A.1) addressing the specific requirements of space-based Earth observation systems and space-based services regarding the use of the electromagnetic spectrum. These systems and services are very important to support sustainable development on Earth. The second guideline (A.2) in this group is focused on the need to promote institutional and public awareness of space activities and applications, which is also crucial for sustainable development. Both guidelines provide guidance for all space actors, but primarily to Governments and relevant international intergovernmental organizations authorizing or conducting space activities.
5. The following three guidelines (A.3, A.4 and A.5) address specifically the promotion of international cooperation in capacity-building, data availability and processing, transfer of technology, without affecting intellectual property rights, and in assisting countries to gather the human resources and achieve the technical and legal capabilities and standards compatible with the relevant regulatory frameworks. These guidelines are particularly important to support the growing interest of many countries to establish national capacities for outer space activities taking into account the long-term sustainability of those activities. They are addressed to all space actors and their implementation is considered a necessary step towards preserving the long-term sustainability of outer space activities.

6. The third group of guidelines addresses questions directly related to sustainability. The first (A.6) regards the need to promote the development of studies and other initiatives for the sustainable use of outer space, including celestial bodies. This is a relatively new topic that will have increasing relevance and visibility in the future. The final guideline (A.7) reflects the requirement of coherence by emphasizing the need to promote and support sustainable space technologies, processes and services. Both guidelines are addressed to all actors in the space arena.

7. Expert group A identified four topics for future consideration. These topics are still not mature enough to justify guidelines but are considered sufficiently relevant for further consideration and discussion. The first three topics refer to the sustainability of the exploitation of outer space. Although this is a very important topic, the scientific and technical data and experience is not sufficient to provide a sound basis for recommending a guideline. The fourth topic regards the development of initiatives that would promote the equitable, efficient and rational access to space in support of sustainable development on Earth.

8. Expert group A considers that the guidelines and recommended topics should be reviewed and revised periodically as space activities evolve and more knowledge is gained.

## **II. Proposed guidelines for sustainable space utilization supporting sustainable development on Earth**

9. The following draft guidelines are proposed by expert group A for consideration by the Working Group.

### **Guideline A.1**

**Promote, in accordance with the Radio Regulations and Recommendations of the International Telecommunication Union (ITU) that Member States consider, in their use of the electromagnetic spectrum, the requirements of Earth observation systems and space-based services.**

In their use of the electromagnetic spectrum, States should consider the requirements for space-based Earth observation systems and other space-based systems and services in support of sustainable development on Earth, in accordance with the ITU Radio Regulations and Recommendations.

### **Guideline A.2**

**Promote institutional and public awareness of space activities and applications for sustainable development on Earth, disaster risk reduction, early warning of potential disasters, disaster management, and disaster relief.**

States and international organizations should initiate the voluntary collection of information on public awareness and education tools and programmes aimed at disseminating information on the benefits of space to sustainable development and request the assistance of communications experts from States and the Office for Outer Space Affairs of the United Nations Secretariat to help in the preparation of a

living repository of such information, with a view to facilitating the development and implementation of similar initiatives with consistent messages.

Space actors, including States and international organizations, should promote public awareness of space applications for sustainable development through a joint effort by public institutions, private sector entities and civil society, in particular taking into account the needs of young people and future generations.

In designing space education programmes, States and international organizations should pay special attention to courses on enhancing knowledge and practice on utilizing space applications to achieve sustainable development.

In accordance with the Principles Relating to Remote Sensing of the Earth from Outer Space (General Assembly resolution 41/65, annex) and in response to emergency situations that may affect fundamental social well-being, such as natural disasters and other major harmful incidents and catastrophes, States and international organizations should undertake efforts to make relevant space-based information and data accessible to affected countries, applying the principles of neutrality, impartiality and non-discrimination.

### **Guideline A.3**

**Support and promote international cooperation for capacity-building and data accessibility, on a mutually acceptable basis, through the sharing of data, derived information and associated tools taking into account the needs and interests of developing countries.**

States and international organizations should coordinate international cooperation efforts in space-related capacity-building and data accessibility in order to ensure efficiency on the use of available resources and to the extent it is reasonable and relevant, avoid unnecessary duplication of functions and efforts, taking into account the needs and interests of developing countries.

States and international organizations should promote and support regional and international cooperation to assist countries in assembling human, technical and financial resources and to achieve efficient space-related capacities, enhancing the long-term sustainability of outer space activities and supporting sustainable development on Earth.

States and international organizations should explore new forms of regional and international collaboration, without prejudice to ongoing international collaboration initiatives, to assist countries in implementing at the national level space practices, standards and governance approaches, taking into account the need for the long-term sustainability of space activities and the needs and interests of developing countries.

#### Guideline A.4

**Promote international cooperation on a mutually acceptable basis, to support the growing interest of many countries in establishing national capacities for outer space activities through capacity-building and transfer of technology, without affecting intellectual property rights, and in accordance with non-proliferation norms and principles, taking into account the requirement of long-term sustainability of those activities.**

States and international organizations should consider promoting international technical cooperation to enhance the long-term sustainability of outer space activities and support sustainable development on Earth.

States and international organizations should support current initiatives and consider new forms of regional and international collaboration to promote space capacity-building, taking into account the needs and interests of developing countries and in accordance with national legislation, multilateral commitments, non-proliferation norms and international law.

States and international organizations should promote technology safeguard arrangements that may facilitate space capacity-building, while respecting intellectual property rights, and in accordance with non-proliferation norms and principles, as well as the requirements for long-term sustainability.

States undertaking, authorizing or intending to undertake or authorize international space activities involving the use of goods (objects, materials, manufactured items, equipment and other products) that are based on technologies whose unauthorized disclosure and onward transfer are prohibited and thus warrant appropriate levels of protection, should ensure that such activities are conducted in accordance with non-proliferation 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 belong. Space activities should be in accordance with responsible standards and practices such as subscription to and implementation of the Hague Code of Conduct against Ballistic Missile Proliferation.

States concerned should provide opportunities to establish stronger legal and administrative regulation relating to such cooperation, in cases where it would be particularly appropriate or even essential in view of the nature of the controlled goods that are exported or imported. States should seek to forge collaborative relationships based on mutual benefits and equal advantages with regard to the consideration and resolution of issues relating to the coordination of procedures for safeguarding controlled products. To maximize the potential benefits of this practice, States are also encouraged to provide, by means of agreements or other arrangements, for the implementation of measures, institutionalized appropriately under their national legislation, to ensure the safety and security of imported controlled goods while they are in the territory of the importing State. In particular, States acting in accordance with the relevant legislation, and on a mutually accepted basis, should enter into consultations to reach agreement in relation to:

(a) Post-sale monitoring and verification to ascertain that controlled items are not at risk of unauthorized use or onward transfer;

(b) Strengthening end-use certification and authentication procedures at the State level;

(c) Providing legal supervision of contracts and contract-based activities in order to effectively facilitate the proper application of agreed measures on end use and to prevent any circumstances in which exported protected goods, when located in the territory of the importing State, could become the subject of disputed jurisdiction or used for illegal purposes;

(d) Ensuring that the relevant State bodies have the power and capacity to monitor the end use of controlled items and to take immediate measures (including the issuing of the relevant orders) where there is a presumption of non-compliance with the arrangements on end use.

#### **Guideline A.5**

**Promote international cooperation to assist countries in gathering human resources and achieving technical and legal capabilities and standards compatible with the relevant regulatory frameworks, especially countries that are beginning to develop their capacities in outer space applications and activities.**

States and international organizations should support current initiatives and promote new forms of regional and international cooperation to assist countries in gathering human and financial resources, and achieving efficient technical capabilities and standards for outer space activities, compatible with long-term sustainability and relevant regulatory frameworks, and to assist emerging space countries in implementing national space regulations, taking into account the need for the long-term sustainability of space activities.

#### **Guideline A.6**

**Promote the development of studies and other initiatives for the sustainable use of outer space, including celestial bodies.**

In the peaceful use and exploration of outer space, including celestial bodies, States should take into account, with reference to the outcome document of the United Nations Conference on Sustainable Development, the three dimensions of sustainable development on Earth: social, economic and environmental.

States should consider adequate safety measures to protect the Earth and the space environment from harmful contamination, taking advantage of existing measures such as best practices and guidelines that may apply to those activities and developing new measures, as appropriate.

#### **Guideline A.7**

**Promote and support the research and development of sustainable space technologies, processes and services.**

States and international organizations need to encourage the promotion of the development of technologies that minimize the environmental impact of manufacturing and launching space assets to enhance long-term sustainability of those activities.

States and international organizations need to promote the development of technologies that maximize the reusability or repurposing of space assets.

States and international organizations could promote the development of space assets that maximize the use of renewable resources.

**Recommended topics for future consideration**

1. The Committee on the Peaceful Uses of Outer Space should consider examining the issue of the exploitation of outer space in the context of sustainable development.
  2. States and international organizations should compile a compendium of measures, practices, standards and other elements conducive to the safe conduct of space activities, including the sustainable exploitation of natural resources in outer space. The compendium should be made freely available and promoted by all space actors, including States and international organizations.
  3. States are encouraged to develop new standards for the avoidance of harmful contamination of outer space to promote the long-term sustainability of outer space including celestial bodies.
  4. The Committee on the Peaceful Uses of Outer Space should work towards the development of initiatives for space benefits and for equitable, efficient and rational access to space to support sustainable development on Earth.
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