



SDD Space Security Working Group: Growing into a Multilateral Forum to Discuss Space Security

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The Pitfalls of the Science and Technology-Oriented Military Discourse

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Hosted since 2022 by the Ministry of National Defense of the Republic of Korea on the occasion of the Seoul Defense Dialogue, the Space Security Working Group has been attended by more than 200 high level experts from government, industry, and academia from over 40 countries annually. SSWG has been addressing the challenges that the international community is facing in the field of space security and discuss various measures to overcome them. SSWG will soon become a multilateral forum for international collaboration to build a safer and more sustainable space security environment through commercial space, and as a practical opportunity to strengthen strategic partnerships.

Space Environment: Congested, Contested, and Competitive

Today, the international space community has been focusing on discussions about “the safety, security and sustainability of space activities”, which has been put on the agenda of almost all of space-related multilateral platforms, including the United Nations, since the 2000s. This comes from a rapid increase in the number of spacefaring nations and space objects in particular, including satellites, and an exponential increase in space debris. According to the European Space Agency, about 23,770 satellites have been

placed into Earth orbit since the start of the Space Age in 1957 through October 2025, resulting in the generation of a huge amount of space debris.

- ESA: Space debris by the numbers¹⁾ -

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|---|---------------------------------|
| ■ Number of rocket launches since the start of the Space Age in 1957 | About 7070 (excluding failures) |
| ■ Number of satellites these rocket launches have placed into Earth orbit | About 23770 |

1) https://www.esa.int/Space_Safety/Space_Debris/Space_debris_by_the_numbers

| | |
|--|------------------------|
| ■ Number of these still in space | About 15860 |
| ■ Number of these still functioning | About 12900 |
| ■ Number of space objects regularly tracked by Space Surveillance Networks and maintained in their catalogue | About 43510 |
| ■ Estimated number of break-ups, explosions, collisions, or anomalous events resulting in fragmentation | More than 650 |
| ■ Total mass of all space objects in Earth orbit | More than 15100 tonnes |
| ■ Not all objects are tracked and catalogued. The number of objects estimated is based on statistical models to be in orbit | |
| <ul style="list-style-type: none"> • 54000 space objects greater than 10 cm (including approx. 9300 active payloads) • 1.2 million space debris objects from greater than 1 cm to 10 cm • 140 million space debris objects from greater than 1 mm to 1 cm | |

According to the UN, the number of spacefaring nations has reached over 90 states as of now.²⁾ Therefore, outer space has become congested, contested, and competitive, and consequently, many nations consider outer space as a strategic area.

There is no internationally and generally accepted definition of space security. A publication by the United Nations Institute for Disarmament Research describes space security as “measures designed to prevent deliberate harms to a space system, including its component parts, from intended or intentional threats undertaken by another actor.”³⁾ But this definition is narrowly worded. A definition of space security depends on the perception of each nation. For instance, space security is also understood to refer to the utilization of outer space for national security purposes, including military activities. Therefore, space security is usually understood to include both of the above concepts. For this reason, space security discussions fall under the purview of the United Nations disarmament bodies, including the Conference on Disarmament, First Committee, and the Disarmament Commission. Since disarmament-related issues involve sharp conflicts of interest between nations, the consequence is that such discussions at the United Nations progress quite slowly. To overcome these difficulties, states and international governmental and non-governmental organizations have been discussing space security at the international and regional level through various forums. However, there has been no forum in the Asian region to deal with this issue on an ongoing basis. Therefore, there has been a growing need for a platform in the Asian region where this issue can be discussed consistently.

ROK Defense Space Strategy

Since 2015, the Republic of Korea has been carrying out a reconnaissance satellite project called the “425 Project”, which consists of one EO/IR satellite and four Synthetic Aperture Radar satellites. Starting with the launch of the

2) The United Nations, Our Common Agenda Policy Brief 7, For All Humanity - the Future of Outer Space Governance, May 2023, p. 9.

3) UNIDIR, A Lexicon for Outer Space Security, 2023, p.40.

first SAR satellite in April 2024, a total of four satellites have been successfully launched so far. The final satellite is scheduled to launch in early November 2025. In addition, since 2022, Korea has been working on a project to develop ultra-small satellites with various purposes, such as security, communication, disaster response, and so on. In particular, the main mission of the project is to collect information around the Korean Peninsula. Also, being a regional satellite navigation system, the Korean Positioning System is under development with the aim of building it by 2035.

Considering the increase in space assets for defense purposes, in February 2023, the Republic of Korea Ministry of National Defense published 「Defense Space Strategy」 which is the top-level document among defense documents relating to space. The strategy sets a strategic objective of securing long-term sustainable space activities in the space domain, and to advance the ability of space operations on the basis of jointness. In that connection, it is especially noteworthy that the expression “long-term sustainable space activities in the space domain” was used, taking into account the congested, contested, and competitive space environment. In other words, this demonstrates that the Strategy is in line with international trends surrounding space security.

To achieve such strategic objectives, the Strategy presents six basic principles, as follows:

- Develop the space strategy, operation concept, and doctrine on the basis of jointness
- Have the ability of early situational awareness, and to respond to space risks and space hazards
- Contribute to national space development, in conjunction with our national space system
- Set up the law and policy, and institutional framework for the development of defense space power
- Expand ROK-US and international space cooperation
- Strengthen civil-public-military space cooperation

The Defense Space Strategy presents four strategic directives for the purpose of achieving the strategic objective and basic principles. One of the four directives concerns national and international cooperation. At the international level, the Ministry of National Defense is required to advance international defense space cooperation and strengthen international cooperation for protecting space assets. These two efforts to be made are directly related to space security. And to make outer space safe and long-term sustainable, international cooperation is needed. For this, the Ministry of National Defense recognized the need for a multilateral platform to discuss various emerging issues on space security.

SDD Space Security Working Group

Since 2012, being a multilateral cooperation platform with ministerial-level representatives of global defense, the Seoul Defense Dialogue, hosted by the Ministry of National Defense

of the Republic of Korea, has contributed to multilateral security cooperation, particularly in the Indo-Pacific, and to peace on the Korean Peninsula. On the occasion of the SDD, the Ministry decided to hold a Space Security Working Group (SSWG) to deal with all issues related to space security by bringing together high-profile defense officials and civilian security experts from both countries and international security organizations.

With the 1st SSWG being held in 2022, the 4th SSWG was hosted in September 2025. SSWG discusses different agendas every year, considering the major issues of space security being discussed internationally that year. The theme of the 1st SSWG was “Space Security for Sustainable Space Activities”. Under the 1967 Space Treaty, the international law governing space activities only prohibits the deployment of weapons of mass destruction in Earth’s orbit, and there is no clear provision to prevent or prohibit competition in space or passive or active threats against the safe operation of space objects. To supplement this, the UN General Assembly adopted the resolution of “reducing space threats through norms, rules, and principles of responsible behavior”. SSWG focused on what behaviors are responsible or irresponsible.

The theme of the 2nd SSWG in 2023 concerned “Ensuring Space Sustainability, Developing Space Security and Defense Space Cooperation”. In 2023, the outer space arms race concerning respective national interests was a major topic of discussion both internationally and regionally. In this regard, the U.S. has pledged not to conduct destructive ‘Direct-Ascent Anti-Satellite missile’ (DA-ASAT) tests, and the Republic of Korea (ROK) subsequently announced that it would join this endeavor. However, this does not solve the fundamental challenge. So, SSWG made efforts to discuss and make substantive efforts to concur on international norms and international law for space security.

The 3rd SSWG in 2024 dealt with “International Cooperation for Enhanced Space Domain Awareness in response to Evolving Space Threats”. This agenda arose from the following background. An exponential rise in space debris generated by destructive DA-ASAT tests and a series of unintended collisions of space objects has been threatening the stable operation of satellites by each nation. Therefore, the ability to identify what the space objects are, and where they operate in, as well as to assess the movement and threat of objects, has become vital strategically. However, not a single nation alone can equip itself with sufficient SDA capabilities because of the extensiveness of outer space, the orbiting nature of space objects, the Earth’s rotation, and the geographical location of a nation. In this regard, a global SDA network transcending civil-military relations and national borders must be developed with a sense of urgency for the sustainable development of all mankind.

The theme of the 4th SSWG was “New Partner for Space Security: Expansion and Evolution of Commercial Space”. Major space powers are actively pursuing measures to safeguard their space interests and enhance related security

capabilities. Among the most notable developments in this context is the rise of commercial space activity and its strategic integration into national security. Leveraging advanced space technologies, rapid innovation cycles, and cost-effective solutions, the commercial space sector is increasingly regarded as a practical complement and, in some cases, a substitute for traditional military-led space capabilities. Governments are aligning with this trend through policies that establish commercial space as an essential component of defense space architectures. These include sustained investment in startups, ensuring a stable global supply chain, and building institutional foundations to strengthen the resilience of space assets. Such efforts aim to reinforce public and private partnerships and ultimately enhance the overall ability to respond to challenges in the space security environment through the integration of commercial capabilities.



Towards the stable growth of SSWG

The Space Security Working Group has been attended by more than 200 experts from government, industry, and academia from over 40 countries annually. In particular, high-level experts from military and industrial sectors from major spacefaring nations (USA, France, India, Germany, UK, etc.) and emerging spacefaring nations (Australia, Poland, etc.), and international organizations (UN, NATO, EU, etc.) participated as presenters and discussants. The 5th SSWG is also scheduled to be held in the second half of 2026, and will address the challenges that the international community is facing in the field of space security and discuss various measures to overcome them.

SSWG will soon become a multilateral forum for international collaboration to build a safer and more sustainable space security environment through commercial space, and as a practical opportunity to strengthen strategic partnerships.

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