Committee on the Peaceful Uses of Outer Space
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The Space Security Index

• Provides objective and fact-based research to promote *transparency and confidence* in space activities

• Supports the development of *policy* to ensure secure access to space for all
“The secure and sustainable access to and use of space, and freedom from space-based threats”
Space Security Themes

• **Theme 1:** Condition of the space environment
• **Theme 2:** Access to and use of space by various actors
• **Theme 3:** Security of space systems
• **Theme 4:** Outer space policies and governance
Theme 1: Condition of the space environment

• **Indicator 1.1**: Orbital debris

• **Indicator 1.2**: Radio frequency (RF) spectrum and orbital positions

• **Indicator 1.3**: Near-Earth Objects

• **Indicator 1.4**: Space situational awareness
Condition of the Space Environment

- Key challenge: Indiscriminate threat posed by space debris to spacecraft of all nations
- Difficulties inherent in Active Debris Removal
- Awareness of the space debris problem has increased considerably
- Greater willingness to share space situational awareness data through international partnerships
Theme 2: Access to and use of space by various actors

- **Indicator 2.1:** Space-based global utilities
- **Indicator 2.2:** Priorities and funding levels in civil space programs
- **Indicator 2.3:** International cooperation in space activities
- **Indicator 2.4:** Growth in commercial space industry
- **Indicator 2.5:** Public-private collaboration on space activities
- **Indicator 2.6:** Space-based military systems
Number and diversity of space actors

- **Access** to outer space is growing
- **New space actors** emerging
- Barriers to entry are sharply decreasing

➢ **But**: Limited resources (e.g. orbital slots, RF spectrum)
Access to and use of space by various actors

- Limited nature of some space resources will pose governance challenges to ensure equitable access for newcomers
- International cooperation assists in the transfer of expertise and technology for the access to, and use of space, by emerging space actors
- A healthy space industry can lead to decreasing costs for space access and use, and may increase the accessibility of space technology for a wider range of space actors
- Military space sector has been an important driver in the advancement of capabilities to access and use space, but may be source of friction
Theme 3: Security of space systems

- **Indicator 3.1:** Vulnerability of satellite communications, broadcast links, and ground stations
- **Indicator 3.2:** Protection of satellites against direct threats
- **Indicator 3.3:** Capacity to rebuild space systems and integrate smaller satellites into space operations
- **Indicator 3.4:** Earth-based capabilities to attack satellites
- **Indicator 3.5:** Space-based negation enabling capabilities
Offensive/Defensive space capabilities are NOT ONLY related to systems in orbit.

They include the entire structure of space and terrestrial systems:
- Orbiting satellites
- Ground stations
- Data and communications links
The dynamics of space systems protection and negation are closely related and, under some conditions, protective measures can motivate adversaries to develop the capabilities to overcome them.

While no hostile anti-satellite (ASAT) attacks have been carried out, recent incidents testify to the availability and effectiveness of ground-based systems to destroy satellites.
In the past decade alone:

• ground-based anti-satellite weapons (ASATs) have been tested,

• several communications satellites have been deliberately jammed;

• missile defense systems have been used as ASATs;

• precursor technologies that would allow space-to-space offensive capabilities have been developed
Theme 4: Outer space policies and governance

- **Indicator 4.1**: National space policies and laws
- **Indicator 4.2**: Multilateral forums for space governance
- **Indicator 4.3**: Other initiatives
Outer space policies and governance

Laws, Policies, and Doctrines

Existing normative architecture for space activities is \emph{insufficient}

Different Approaches:

• National vs. Multilateral
• Legally- vs. politically-binding

➢ Not necessarily mutually exclusive
Outer space policies and governance

Key proposals:

• Int’l Code of Conduct for Outer Space Activities

• PPWT

• Canada’s proposed pledges not to:
  a. Place weapons in space,
  b. Test or use weapons on satellites so as to damage or destroy them, and
  c. Use satellites themselves as weapons.
International space actors have been unable to reach consensus on the exact nature of a space security regime and issues to be covered by an updated normative regime for outer space.

Current alternatives for consideration include both legally binding treaties (such as PPWT) and politically binding norms of behavior (such as ICoC).

Establishment of GGE on TCBMs and LTSSA Working Group widely seen as positive developments.

Deadlock at CD continues.