



*Promoting Cooperative Solutions for Space Sustainability*

# **Space Debris and Sustainability Challenges: An International NGO Perspective**

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# The Importance of Space Sustainability

- **Space sustainability** can be defined as:
  - **Ensuring that all humanity can continue to use outer space for peaceful purposes and socioeconomic benefit**
  - Growing number of space actors overcrowding some orbits
  - Actions by one actor can negatively affect all
- Goal: **stable, predictable space environment**
  - Will allow us to enjoy continued benefits from use of and access to space
- **Key elements** are:
  - Fostering **international cooperation**, strengthening **stability**, and promoting **responsible actions** to help prevent mishaps, misperceptions, and mistrust



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# Space Debris and Sustainability

- ***Space debris poses a significant threat*** to the long-term sustainability of the space environment
  - A few ***recent critical events have undone progress*** made toward mitigating space debris
  - Debris-on-debris collisions will begin to increase the space debris population at certain orbits regardless of mitigation activities
  - ***International community must work on technical, legal, policy, and operational concepts to allow for active debris removal***



- Rendezvous and proximity operations (**RPO**) will become more important
  - While these activities hold great promise, they also raise many questions
- SWF will be working to examine the challenges posed by RPO, specifically on-orbit servicing (**OOS**)
  - Work to cooperate on international dialogue the **operational, safety, legal, and policy challenges** posed by it
  - This will be done via a series of private workshops and public conferences held in the United States, Europe, Asia, and elsewhere

# Collaborative SSA (1)

- Space Situational Awareness (**SSA**) is a foundational part of ensuring the long-term sustainability of space activities
  - Growing need for non-military uses of SSA
  - Important for all space actors to have a basic level of SSA data and resource tools
  - Should have **multiple and independent sources of data**, as well as **data-sharing and collaboration mechanisms**
- Secure World Foundation has developed an online database of global SSA sensors, available at <http://globalSSAsensors.org>
  - Encourage all states with SSA capabilities to share public information on their capabilities
  - Technical, policy issues to sharing data, but not insurmountable ones

## Collaborative SSA (2)

- The United States has greatly improved the conjunction assessment services it provides through its **SSA Sharing Program**
  - Encourage states with SSA capabilities to work with operators to improve the data provided through this program
- Creation of the Space Data Association (**SDA**) has helped with sharing data for satellite operations amongst certain companies
  - This **controlled, reliable, and efficient sharing of data** is critical to the safety and integrity of satellite operations
  - States that have SSA capabilities should work with the SDA to find the way to integrate and fuse owner/operator data for the benefit of all

# Case Study on Space Sustainability: India

- **Changing nature** of its program from inherently **civil in nature** to one that has more emphasis on and interest in **military aspects**
  - Using its missile defense program as a technology demonstrator for an anti-satellite (ASAT) capability
  - Satellites are increasingly including national security missions
- Can see this change through **acquisition decisions and guidance documents** by the Defence Research and Development Organization (DRDO)
- India's decisions on its space program can have ripple effects throughout Asia
  - Part of a **competition in Asia for space capabilities**

# Case Study on Space Sustainability: China

- In January 2007, used an SC-19 missile to *deliberately destroy* one of its aging weather satellites, Feng Yun-1C
  - In January 2010, held a “missile defense” test, using the same interceptor but a different target and at a much lower altitude
  - International norm coalescing now of how to do a *“responsible” ASAT test?*
- Released *a white paper* in December 2011 on its space program and plans
  - Similar to earlier white papers
  - Spells out space priorities, including improved Earth Observation capabilities, researching human lunar landing
  - “Emphasizing regional space cooperation in the Asia-Pacific area, and supporting other regional space cooperation around the world”





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# International Approaches

- UN Committee on Peaceful Uses of Outer Space (**COPUOS**)
- UN **Group of Government Experts** on Space TCBMs
- Proposed **Code of Conduct** for Outer Space Activities
- Important to remember that **while space is a vacuum, the politics of space do not occur in one**



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# Contact Information

**Questions?**

**Thanks!**

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