Policy Priorities for Addressing Space Sustainability Challenges

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Space is critical infrastructure for the world

- Poverty mapping
- Disease mapping
- Infrastructure planning
- Protecting cultural heritage sites
- Illegal fishing
- Human rights monitoring
- Democracy and governance
Space Sustainability Challenges

- Lots more stuff happening in space
  - Growing number & diversity of space actors (governments and commercial companies)
  - Growing number & diversity of space activities
- Negative externalities could have widespread impacts for everyone
- Very few hard “rules” about what is and isn’t allowed

*How can we ensure space is usable for future generations and users??*
Emergence of large constellations

<table>
<thead>
<tr>
<th>Constellation</th>
<th>Total Sats</th>
<th>Altitude (km)</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starlink G1</td>
<td>4,408</td>
<td>550 – 560</td>
<td>US</td>
</tr>
<tr>
<td>OneWeb</td>
<td>6,372</td>
<td>1,200</td>
<td>UK</td>
</tr>
<tr>
<td>Starlink G2</td>
<td>30,000</td>
<td>340 – 614</td>
<td>US</td>
</tr>
<tr>
<td>Kuiper</td>
<td>7,774</td>
<td>590 – 650</td>
<td>US</td>
</tr>
<tr>
<td>GW</td>
<td>12,992</td>
<td>590 - 1145</td>
<td>China</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>327,320</td>
<td>550 – 630</td>
<td>Rwanda</td>
</tr>
<tr>
<td>LightSpeed</td>
<td>1,969</td>
<td>1,015 – 1,325</td>
<td>Canada</td>
</tr>
</tbody>
</table>

Source: ESA (2022)  
Source: Jonathan McDowell (2021)
Adding to already congested domain

Source: SpaceX FCC Filing
Policy Priorities

• Moving from orbital debris mitigation to space environmental management
  • More holistic view of the space environment and all the natural & human activities/factors
  • Is there a limit to the **carrying capacity** of different orbital regimes?

• Putting orbital debris remediation/removal into practice
  • **States** need to clean up their historical mess
  • Incentivize creation of suite of capabilities any country or company can leverage to clean up future messes
Policy Priorities (cont)

- Working towards a global space traffic management regime
  - National level regulations and oversight
  - International coordination on standards
  - Data sharing between governments, satellite operators, and commercial SSA providers

- Developing a governance framework for lunar activities
  - Putting the principles of the Outer Space Treaty into practice
  - Extraction and use of space resources
  - Coordination and deconfliction of activities
Thank you!

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