ESG's next frontier: space

By Grant McDonald

Space has become so cluttered with human-made debris that the media have referred to it as the "filthy frontier."

More than 10,800 tonnes of space junk orbit Earth from abandoned launch vehicle stages, mission-related debris, non-functional spacecraft, and decommissioned weather or communication satellites. When countries launch missiles to blow up their own satellites, further clouds of debris result that can last days, weeks, or years in space before disintegrating in Earth's atmosphere. According to the European Space Agency, about 33,550 pieces have been catalogued and are regularly tracked.[i] Another estimated 130 million debris fragments are too small to be tracked but travel at speeds over 25,000 kph, posing just as much catastrophic risk as larger objects to spaceflight, the International Space Station (ISS), and satellites.

In the defence sector, countries are testing weapons by firing at their defunct satellites, creating significant debris. In 2021, the destruction of Cosmos 1408 alone resulted in about 1,500 trackable items and required the ISS to fire its thrusters to avoid a potential collision with a debris fragment.[ii]

With the space industry expected to exceed US$1 trillion in annual revenue by 2040,[iii] orbital litter will only accumulate, impeding future space missions, interfering with Earth-based stargazing activities of all kinds through invasive light and radio signal pollution, and ultimately endangering the benefits access to space provides.

Earth's orbital space should be treated as a valuable and limited resource that requires careful management and protection.

All participants in the space ecosystem must apply the principles of environmental, social and governance (ESG) to ensure the long-term viability of space exploration and the quality of the orbital space environment.

Space will define the future of national security, but from a geopolitical perspective, the actions of some countries may pose a challenge, as they won't necessarily follow safe and sustainable ESG practices in space.[iv]

Space for Earth

Perhaps too few people realize it, but space has greatly improved our lives.

Satellites provide data on everything from weather patterns, air quality, the climate, and population density to traffic congestion and infrastructure monitoring. The possibilities are virtually limitless from the development of new materials, medicines, life sciences, and technologies to the extraction of minerals from the moon or asteroids. The proliferation of the internet of things and the need for ubiquitous connectivity makes satellite networks increasingly important.

When it comes to battling climate change, space plays a crucial role. The World Economic Forum (WEF) Global Future Council on Space advocates for an 'Earth Operations Centre' (EOC), loosely modelled on space mission control centres. Ideally, each country "serious about contributing to a sustainable future for humanity" could have its own

multidisciplinary research and development EOC, collaborating with colleagues around the world to leverage data, expertise, and capabilities to monitor effects on climate, track the impacts of climate change, and ensure planetary sustainability, WEF's white paper says.

Space for Space

As elaborated on in a new KPMG International report "A galaxy of opportunities", the space industry can expect to be held to a high ESG standard given how hazardous the space environment is in which to operate.

All participants in the space ecosystem must take responsibility for the long-term viability of space exploration as well as the quality of the orbital space environment by identifying, prioritizing, and promoting responsible uses of space resources. This involves assessing the impact of their proposed operations and demonstrating credible space debris mitigation plans.

Companies already in, proposing to enter, or doing business with operators in this sector, must be able to clearly explain how they plan to lessen any potential environmental harms associated with their activities, as well as how their use of space resources will be sustainable for future generations.

Both the private and public sectors, including the space forces established by various defence departments, will need ESG data, metrics, standards, and policies that ensure both responsible management and mitigate operational risk. The other major concern that needs resolution is how to support equitable access to, and use of the space environment and its resources.

To ensure the long-term sustainability of the space environment, WEF launched its Space Sustainability Rating (SSR) system to recognize, reward, and encourage space participants to design and implement sustainable and responsible space missions.[v]

Just as the world came together to deal with climate change, the same co-operative and courageous spirit will be required in commercial space, where the long-term viability will depend entirely on the actions of many stakeholders, including space agencies, commercial entities, research establishments, regulators, and policymakers.

Space agencies will need to share data and resources with private companies, while both will need to collaborate with research institutions and regulators. These stakeholders can form an ecosystem that is greater than the sum of its parts.

This is not the time to go solo.

If humanity has learned nothing from its mistakes as stewards of this planet, the clear and enormous benefits we gain from space today and will continue to gain in the future will vaporize as quickly as the small-fragment debris entering Earth's atmosphere.

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[i] "Space debris by the numbers," The European Space Agency, March 27, 2023

[ii] "Russian weapons test resulted in debris now threatening space station, U.S. says", CBC, Nov. 15, 2021

[iii] "Space: Investing in the Final Frontier," Morgan Stanley, July 24, 2020

[iv] "Space for Net Zero", Global Future Council on Space, World Economic Forum, September 2021

[iv] Space Sustainability Rating, World Economic Forum, June 2021

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