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DIAMONDS IN THE SKY: A SUSTAINABLE APPROACH TO DARK AND QUIET SKIES

Abstract

Real sustainability cannot exist if we do not consider all the variables populating the complex landscapes of the different industries of our era, including the space industry. It is undeniable that satellite mega-constellations have unprecedented potential benefits for humankind. Connecting remote areas, and democratizing access to communication, information, and data, ultimately assist States and decision-makers in the fight against climate change, natural disasters, and other Sustainable Development Goals (SDG) and the UN 2030 Agenda, especially for developing nations. Nonetheless, when it comes to the preservation of our planet, we cannot only look inside and address the internal causes of Earth's wellbeing, but we also need eyes in the sky for planetary protection, from the threats coming from outside.

The loss of science, research time and financial investment of astronomical images that have been affected by satellite trails, are preventing real sustainability in the space sector. Space sustainability (such as but not limited to) the protection of our planet, considers observations coming from outside through satellites, but also from inside with ground-based and space astronomy.

In essence, when it comes to sustainability, we cannot think of satellites versus astronomy as opposing positions, but rather as space-based solutions for the common interest of planetary protection and Earth's environmental challenges. To sustainably achieve the goals and mission of mega-constellations and astronomy, research and development, disruptive technologies and innovation are key. Only through innovation we can revolutionize space applications and activities; and, to drive and foster innovation, a supportive ecosystem enabled by regulations is needed.

Space technology has advanced at a vertiginous rate since the launch of Sputnik I, but circumstances have changed. With new actors in space and growing space applications, there is an urgency for a new regulatory framework that includes new and future space activities. Beyond the traditional multilateral international space treaties, there are other forms of regulation that can be explored. This paper, seeks to establish the basis for a sustainable approach to future regulatory measures for the coexistence of satellite activities, and astronomy on Earth and beyond. Sustainability in terms of Dark and Quiet Skies is not only Earth-bound but will also be the foundation of the future regulations for the Moon's and other celestial bodies' environment.