

IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)  
Sustainable Approaches and Impact of Space Transportation Solutions on Earth + Space Environment  
and on General Safety (2-D2.9)

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KEYNOTE: TOWARD SUSTAINABLE SPACE EXPLORATION: ESA'S COMMITMENT TO  
ECO-DESIGN AND ENVIRONMENTAL RESPONSIBILITY

**Abstract**

As space exploration advances, it is imperative to consider the environmental and social impacts of our activities. This paper discusses the European Space Agency's (ESA) proactive stance in fostering sustainability and social responsibility in the space sector, including space transportation solutions. ESA's Strategy 2040 emphasises its dedication to supporting global sustainability frameworks such as the Paris Agreement and the European Green Deal.

A cornerstone of ESA's sustainability efforts is the ESA Green Agenda (EGA), which includes key actions and projects along two overarching objectives to guide environmentally responsible practices across the organisation: - Setting concrete greenhouse gas emissions reduction targets, integrating eco-design principles and life cycle thinking to ensure a responsible management of its activities; - Increasing the contribution of its projects to the sustainable development of society, with tangible measures to assess space programs societal benefits.

In this presentation, which could be the keynote of the technical session, Andrea Vena, ESA Chief Climate and Sustainability Officer, delves into ESA's ambition to position the European space sector as a global leader in space sustainability. A key area is the development of a framework focussing on eco-design, aiming at: - Identifying critical environmental impacts along the space system's life cycle; - Minimising impacts with the implementation of mitigation solutions at an early stage of the project.

By sharing ESA's experiences and initiatives, this presentation aims to provide an overview of the European context, opening the floor to other more technical presentations showcasing tangible strategies and solutions towards responsible space exploration. This aligns with ESA's objective to foster collaboration and innovation within the global space ecosystem towards space sustainability.