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MATRIX-BASED RISK MANAGEMENT FRAMEWORK FOR FINANCING OF SPACE ASSETS IN
START-UPS AND DEVELOPING SPACE SECTORS

Abstract

The last decades have seen an unprecedented development of the global commercial space sector, leading to a diversification of the market with access to outer space for providing services both on the ground and in orbit. However, with financing primarily made through venture investments, start-up companies and developing space economies are facing difficulties in gaining access to these sources of funds due to a combination of factors. The first factor is the lack of maturity and an established portfolio of projects, making them unable to compete against big space corporations for funding. The second factor is the relatively high risk of investing in activities in outer space, which reduces the appetite of regulated financial institutions such as banks to take on these large-scale projects. This paper proposes and advocates for the development of a comprehensive matrix-based risk management framework for commercial space that would tackle key areas of risk (operational, financial, reputational, etc.) and would serve as the basis for future guidelines on how to identify, measure and manage it. By gaining a better understanding of the risk factors and mitigation strategies in outer space, regulated financial institutions would be drawn to provide opportunities for access to credit for space projects, and especially in start-ups and developing space economies, through channels such as project finance or asset-based financing. Several instruments, such as the Space Protocol of the Cape Town Convention (2012), have been adopted, which would enable the regulation of domestic and international transactions of space assets. Regulatory mechanisms are a crucial basis on which financial instruments can be defined and, in turn, a comprehensive risk management framework tailored specifically can be implemented. This paper will consider these regulations as a starting point, on which the identification of potential areas of risk and future efforts in implementation and monitoring can be developed. Overall, the development of a complete risk management framework that contemplates the various types of risk associated with activities in outer space would be a step forward in the development of the NewSpace market for space assets: by increasing the confidence in the commercial space sector and, by extension, the risk appetite for investment, diversified channels for access to credit for start-ups and emerging space economies would be created. Additionally, it also contributes to ensuring the long-term sustainability of activities in outer space, by taking into consideration ESG factors in modeling their risk profile.