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Statement Item 15: Space exploration and innovation

Honourable Chair, Distinguished Delegates,

Italy stands proudly at the forefront of space exploration and innovation, driven by a long-standing commitment to scientific excellence, technological advancement, a robust industrial ecosystem, and international cooperation. Since the launch of the first Italian satellite- San Marco 1- in 1964, Italy has consistently contributed to the development of cutting-edge space technologies and has played a pivotal role in numerous landmark missions that have expanded our understanding of the universe. I would also like to recall the Italian active and enduring participation to the International Space Station with the Multi-Purpose Logistics Modules Leonardo, Raffaello and Donatello. Italy also positions itself at the forefront of logistic modules' construction, with undisputed leadership in the quality of building modules—an expertise and excellence that is widely recognized internationally.

The Italian efforts in space exploration aims at consolidating the national leadership in this field, while enhancing its role as ESA Member State and promoting international partnerships for complex exploration missions, paying attention to international ones as the NASA Moon to Mars Strategy in terms of Science, Innovation and scientific challenges.

As a matter of fact, over the past 50 years, Italy has forged a robust and enduring international collaboration in the field of space exploration. By signing the Artemis Accords as one of the first European countries, alongside the United Kingdom and Luxembourg, we laid a solid foundation for the involvement of our national industry in the Artemis Programme. It is a significant milestone for Italy to be among the nations committed to establishing a stable and lasting presence on the Moon, looking to Mars.

Moon exploration represents a priority for Italy since it allows us to develop permanent infrastructures both orbiting and on Moon surface. It worth recalling that Italy is one of the few countries of the Artemis Accords, along with the United States and Japan, to have a robust lunar exploration programme. I would like to briefly mention our future contribution to the Artemis Programme:

- The Lunar Surface Habitation Module - Multi-Purpose Habitation Module (MPHM). This will be one of the first elements placed on the lunar surface, alongside the U.S. rover, enabling

human operations from the early stages of exploration and providing vital support for astronauts.

- The deployment of a demonstration receiver of GPS and Galileo signals from Earth on the lunar surface. The Lunar GNSS Receiver Experiment (LuGRE) instrument is designed to demonstrate the feasibility of using these signals for navigation, positioning, and timing on the Moon. This instrument is set to launch in 2024 aboard a private lander (CLPS) under NASA's guidance.
- The development of key elements of the cis-lunar Gateway (HALO) and collaboration with ESA on elements of I-HAB, including the European Service Module and Moonlight.

A dedicated technical presentation will present this project and approach more in details.

The Italian Space Agency is actively involved in exploration activities, with a current focus on the Moon in this decade, while also looking ahead to missions directed towards Mars and asteroids in the future.

We understand that many challenges need yet to be tackled, but we are confident that advancements in technologies for in-situ resources extraction and utilization will overcome these obstacles. Such technologies could be pivotal for obtain construction materials or oxygen and water to be used either as supplies and propellants. Specifically, ASI is collaborating with partners to develop a mission aimed at validating the effectiveness of a carbothermal process for oxygen extraction from lunar regolith on the Moon's surface. The laboratory success has led to the proposal of a pilot plant for validation in the lunar environment called ORACLE. The ASI plans to allocate a slot on a commercial lunar lander to showcase an ISRU process. In this way, we would support the Artemis program with an Italian ISRU demonstrator for the oxygen extraction.

Furthermore, ASI collaborates with CSA, NASA and JAXA on the International Mars Ice Mapper (I-MIM) concept mission, aimed to identify the location and extent of water-ice reserves for potential scientific discoveries and meeting human needs on the Martian surface. At the same time, ASI funds two proposals for concept missions focused on advanced robotic exploration on Near Earth Asteroids for ISRU purpose, specifically targeting the extraction of useful resources from NEAs.

We would like to reaffirm that Italy is also deeply committed to the peaceful use of outer space and the principles of the Outer Space Treaty. We advocate for the sustainable and responsible exploration of space, recognizing that the preservation of the space environment is essential for the benefit of all humanity. In this regard, we support international frameworks that ensure space activities are conducted in a manner that is safe, secure, and sustainable.

As we look to the future, let us reaffirm our collective dedication to advancing space exploration and innovation through collaboration, shared knowledge, and mutual respect. We also hope to move forward with regulating lunar exploration. The institutional missions and the space race initiated by private actors, as well as the remainings of recent failed missions, are contaminating the lunar environment and impacting on the site landings with potential consequences on the future of the moon exploration. We, then, reaffirm the need to define a common framework open to everyone to define the rules to develop sustainable lunar activities.

Thank you for your attention.