FOREIGN AND SECURITY POLICY 03.07.2024 | Celina Thadewaldt

# Full force to the Moon!

## Europe must take the lead in space exploration and assert its authority in shaping the future space regulatory framework amid global challenges

What comes to mind when thinking of a race to the Moon is the space race during the Cold War and the Moon landing 55 years ago. But space exploration is much more than history! According to the report 'Revolution in Space: Europe's Mission for Space Exploration', space is currently undergoing a revolution comparable to the growth of the internet 20 years ago. This will affect all areas, from climate change to industry, security and geopolitical strategies.

While space exploration began with the dominance of the old powers – the US and the Soviet Union – the actors have diversified considerably. Among them India, which became the first nation to soft-land on the Moon's south pole last year with its Chandrayaan-3 mission, resulting in crucial mineral discoveries.

A key driver of all these new missions is scientific curiosity, fueled by discoveries on the Moon, such as water and helium-3, which could potentially power the entire Earth if research advances sufficiently. Breakthroughs in technology and rapid progress in development have also spurred countries to seek a global power status through space competition. Many want to mine resources there and then use them on Earth, with NASA's Artemis programme aiming to do so by the end of 2025.

Meanwhile, numerous satellites are being launched to serve humanity by observing and monitoring our planet. For example, the EarthCARE mission, launched last month, will collect valuable data on the behaviour of clouds and aerosols as the climate changes.

## From fiction to reality

The commercial frontier of space is expanding, with a 50 per cent increase in commercial launch activity led by private space tech

companies like Elon Musk's SpaceX. This demonstrates not only increased interest coupled with visionary purpose and commitment, but also more innovative opportunities driven by competition and collaboration between these companies.

Our collective fascination with space has been reinvigorated by private investment, technological advances and flourishing public intrigue. Space tourism, once the realm of science fiction, is now becoming a reality as wealthy individuals can pay to experience orbit, most recently with Virgin Galactic.

While spending money on short entertainment trips through space may sound unnecessary, the high level of investment in and development of the space industry offers significant benefits to society. For instance, Sentinel data quickly detected ground shifts in central Italy after the 2016 earthquake, enabling a quick response. The data has also been used in Finland to monitor forest regeneration, leading to substantial savings and revenue. 'In fact, every euro invested in space can generate from 10 to 100 euros in return and is therefore fully worthwhile', says Mindaugas Maciulevičius, rapporteur of the EESC opinion.

The new space missions foster technological advances such as improved telecommunications, navigation and medical equipment, fostering international cooperation and democratisation as well as yielding critical data for addressing climate change and resource management on Earth. The satellite network enhances global connectivity and intelligence capabilities.

As the International Space Station (ISS) shows, the high cost of space missions requires international cooperation. New cooperative space efforts by the US, with its Artemis programme, and organisations like the International Astronautic Federation (IAF) and the International Space Exploration Coordination Group (ISECG) include global space agencies such as the European Space Agency (ESA), China National Space Administration (CNSA), Russia's Space Agency Roscosmos and NASA. In 2017, the Moon Village Association (MVA) was founded as the first international NGO to promote cooperation for existing or planned space missions.

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However, the need for international cooperation becomes even clearer when considering space law. There is a dramatic lack of legally enforceable international agreements. New private actors and global start-ups are emerging and starting to operate in space,

leading to multiple risks. There are around 17 000 satellites in Earth orbit and about 6 500 rocket launches since the beginning of the space age, resulting in more than 9 500 tons of space debris.

Existing treaties, like the 1967 UN's Outer Space Treaty, are often interpreted differently. For instance, in 2015, President Barack Obama interpreted the treaty treaty to mean that, although no claims can be made to the territory of other planets, resources will become the property of the state after successful mining. This highlights the need for more comprehensive legislation. Other laws, such as the 1979 Moon Treaty, do not include the US and Russia, and the 2020 ARTEMIS Accords exclude Russia and China. We need a common norm that applies to all space actors for the safety and sustainability of this revolution.

## Navigating the legal cosmos

The question remains: What are the chances of all countries agreeing to enforce a law? For example, ESA wants to install solar panels on the Moon as part of the SOLARIS project. Who would have to agree for them to proceed? Before we reach the point where states have set up entire camps on other planets, the legal conditions must be debated and agreed upon.

The US effort to establish a standard Moon time appears to be the start of a debate on conditions in space. It seems ironic, however, at a time when the UN cannot even agree on an updated law to prevent an arms race in space. With a standard time but no global space weapons regulation, it seems that the destructive behaviour we see across time zones on Earth could easily be repeated in space.

So far, ESA's intentions have been limited mainly to observation and green monitoring, such as the 'Green Dossier'. However, according to ESA Director General Josef Aschbacher, Europe has realised that it is time to take a leading role in meeting the challenges of the rapidly evolving space frontier. The last Space Summit in 2023 focused on strengthening Europe's ambitions in space. Inspired by the success of NASA's collaboration with private companies such as SpaceX, ESA aims to start competing and collaborating with private developers, with the goal of sending a crew to the ISS by 2028.

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The European Union's Space Strategy aims for an EU Space Act by the end of this year. And rightfully so, because there is no time to wait.

*beginning of the race to Mars and as we move closer to the expansion of society into space, Europe must have a say when it comes to writing the rules.*

Now is the time to speak out, to examine the opportunities and risks of this ongoing space revolution and to set an example. Europe needs to invest more in space programmes to compete with the international community and to avoid getting left behind.

Europe needs to develop its capabilities, as it is still dependent on the major space powers and needs to be a beneficial partner in future collaborations as the space race continues. It is said that the race to the Moon is only the beginning of the race to Mars and as we move closer to the expansion of society into space, Europe must have a say when it comes to writing the rules.

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