

THE SPACE RACE AND INDIA'S MOON LANDING

Rosendo Fraga

Director of CARI's Foreign Relations and Armed Forces Committee

The arrival of India on the Moon updates the geopolitical value of the space race. The United States and China lead the way, making space an area of contention between the two powers such as technology, trade and the military. The slowdown in this competition occurred half a century ago, when the United States and the USSR suspended their efforts in this field, due to the lack of economic prospects given the large sums of money it required. This changed in the 21st century. In Obama's second term, the US Congress passed a law recognizing the property right that US citizens and their companies exercise in outer space. The Trump government created the fifth military force, the Aerospace Force, to secure and protect US interests in space. The schedule is close. NASA (the United States space agency) plans to put four astronauts on the Moon on the Artemis II mission by the end of 2024. Around 2030 it would reach Mars. Between both dates the permanent human presence on the Moon would begin. China, for its part, is five years behind or more than the US space plan, but it has been discounting the advantage. After the Russian accident on its last lunar mission, it can be said that the Asian power is second in this race. A permanent human presence on Mars is something that NASA envisioned in the late 1930s. But the completion of nuclear fusion could cut the duration of space travel in half and accelerate the pace of the space race.

With the arrival of India on the Moon in the "Chandrayaan-3" mission, this country is the fourth to reach the Earth's satellite. It did so after the failure of the previous mission, in 2019. It landed on the so-called South Pole of the Moon, where there are important water resources, largely frozen, which are vital for the permanent human presence, which is expected in this new stage of the space race. Water is not only vital for human life, but also as a coolant and fuel. India's success is reinforced by analyzing the low resources it uses compared to other powers. Its space agency, called ISRO, which was founded in 1960, invests far fewer resources. In 2023, the Indian space program has allocated one thousand six hundred and sixty million dollars, but 25% of this figure was not spent. NASA, for its part, has a budget of 25 billion dollars this year, which implies an increase of one thousand three hundred million with respect to the

previous year (the same amount that India spent in total in that period). Testing will begin in October for India's first manned space mission, which will take place between 2024 and 2025. India's space plan calls for unmanned missions to orbit Venus and then Mars. Also take its first astronaut to the Moon in the middle of the century, around 2050. By that time, Elon Musk, the world's richest man and owner of the most important private space company, Space X, hopes to already have a permanent settlement in Mars.

Caught up in the war in Ukraine, Russia unsuccessfully tried to resume the space race with the Luna-25 mission. It was going to be the first to reach the lunar South Pole, a few days before India. It was the first Russian mission to the Moon in forty-seven years. Reaching the Earth's satellite again made political sense, and it was to take place exactly a year and a half after the invasion of Ukraine began. But the spacecraft crashed while trying to land on the moon. It should be noted that Russia, together with China, had the project of establishing a human settlement on the Moon in the next decade, an objective that is now being questioned. In early August, NASA administrator Bill Nelson said that this association was meaningless, as Beijing had a clear advantage over Moscow in this field. The Russian invasion of Ukraine created a situation that led to the suspension of space cooperation between Russia and Europe. This situation made French Guiana in the north of South America the new launch base for European space missions. It should be noted that, in December 2022, the European Vega C commercial rocket disintegrated in midair after launch. Binational and multinational associations for space missions coexist with national ones. The one in Europe with Russia was one of the most relevant, but it was suspended due to the war in Ukraine in 2022. Israel and the United Arab Emirates seek their space in this race, although without fully achieving it.

Japan is the third largest economy in the world and seeks to increase its role in the space race. By investment, the Japanese space program is one of the largest in the world. Its first attempt to reach the Moon failed in November 2022. This mission consisted of landing a mini-probe aboard the US mission Artemis I. In April, a private Japanese company called Ispace also failed to land its Hakuto-R module. But the Japanese aerospace exploration agency (Jaxa) is making a new attempt with a more precise technology, called SLIM (Smart Lander for Investigating the Moon). The module, which carries an XRISM satellite for imaging and X-ray spectroscopy, will land within a hundred meters of a specific

target, a shorter distance than usual, which is measured in kilometers. This mission has included a collaboration between Jaxa, NASA and the European Space Agency (ESA). From a geopolitical perspective, Japan has shunned associations with China and Russia, opting instead for NASA and ESA. Japan is projected as the fifth country in the space race. This implies that of the four countries that follow the United States, three are Asian (China, India and Japan) and the remaining Eurasian (Russia). The Artemis II mission, which will take astronauts to the Moon at the end of 2024, incorporates for the first time a woman and an African-American, assuming the values of diversity, since until now the astronauts were all white and men. But from a nationality standpoint, three will be American and one Canadian.

In conclusion: the space race is dominated by the strategic struggle between the United States and China, with a significant advantage of the former. But India has become the fourth country in this race, landing its own mission on the Moon. Weeks ago, Russia tried to resume its leading role in this field, but failed in its attempt to land on the moon days before India, when its module crashed. Finally, Japan, which is the third largest economy in the world and carries out its space program with significant partnerships with US and European agencies, is on its way to being the fifth country in this field.