South Korea reveals Moon-lander plans

Country's space agency releases images of lunar module and rover ahead of 2020 launch.

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South Korea has unveiled designs for its planned Moon lander, a key part of President Park Geun-hye's pledge to revitalize the country's aerospace industry and space programme.

The uncrewed module — of which a scaled-down mock-up was unveiled to the press on 22 October — will travel on board a Korea Space Launch Vehicle-2 rocket and is designed to carry a lunar rover weighing 10–20 kilograms, which will look for signs of rare minerals on the Moon's surface. A robotic orbiter will also circle above the lunar landscape for more than a year at an altitude of about 100 km.

Fifteen government-funded research institutions, led by the Korea Aerospace Research Institute (KARI) in Daejeon, have agreed to start collaborating in 2014 to develop foundation technologies for the mission next year, the country's Ministry of Science has said.

Since Park took office in February, the mission has been designated a central national objective, with the president bringing forward the launch date from 2025 to 2020 in a bid to accelerate the project. KARI has spent 10 billion Korean won (US\$ 9.3 million) on lunar research since 2010, and an estimated 700 billion won is needed to complete the project by 2020, according to local reports.

NASA support

Challenges faced by the project so far have included the development of propulsion, guidance, navigation and control systems for the rocket. A KARI official told *Nature* that the organisation hopes to make progress in part through cooperation with NASA.

NASA's recent funding difficulties and the effects of the US government shutdown have enhanced the agency's relationship with KARI, says Ju Gwang-Hyeok, director of the group for lunar exploration and research at KARI. "Since we have full support from the government, NASA has expressed a much stronger will to cooperate with us," he says.

Collaboration with NASA will be key for South Korea to develop its capabilities and personnel in the long run, because "a middle-sized power like South Korea cannot expect to carry out a full range of space activities", says space-security expert James Clay Moltz of the

Naval Postgraduate School in Monterey, California. "Operationally, a complex mission with a lunar lander will be a major challenge, but it will help build valuable skills within KARI."

In January, South Korea successfully launched its first space rocket, the Korea Space Launch Vehicle-1 — known as Naro-1 — on its third attempt, a month after the launch of North Korea's long-range Unha-3 rocket and Kwangmyongsong-3 satellite.

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