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Korea on track to become aerospace powerhouse

Mars landing by 2045
is achievable: experts

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The year 2022 was a meaningful time for the history of Korea's space development as the country succeeded in launching its first-ever locally-developed space rocket, the Nuri, in June and settling the Danuri lunar orbiter in the moon's orbit in December.

Korea recently announced its vision to join countries advanced in space development by landing on the moon in 2032 and Mars by 2045.

Industry experts said that the nation's space development goal could be achieved faster if strong national support is provided.

They gave positive responses to the government's big picture of sending a spacecraft to Mars by 2045, although Korea currently lags behind the countries that lead the space industry, and called for detailed steps to implement the goal.

While space exploration may appear to have very little immediate impact on the lives of average citi-



President Yoon Suk-yeol reveals Korea's space development road map at the JW Marriott Hotel Seoul, Nov. 28. Korea Times photo by Seo Jae-yeon

zens, experts said such research will lead to results that can be transferred to the private sector and become an important springboard for the country's economic development.

"The plan to send a spacecraft to Mars by 2045 will be fully achievable. It is a project that we must do someday and I understand that the government has drawn up a big picture. The nation should focus on making plans to achieve this goal. With the strong drive, we can reach Mars faster than

New Year special

we planned," Han Jae-hung, a professor of the Department of Aerospace Engineering at the Korea Advanced Institute of Science and Technology (KAIST), told The Korea Times.

But the professor said Korea has a lot of work to do before achieving that goal.

"Korea has yet to carry out a manned spaceflight. This mission seems simple, but there are so many new things to prepare. At the moment, the country doesn't even have an astronaut training center. There is no basic research on what health problems astronauts have if they fly in space for a long time, so the nation has to take steps to achieve these goals," Han added.

President Yoon Suk-yeol said on Nov. 28 that Korea will take a leap forward as a space power through by developing within five years an engine for a space launch vehicle that could fly to the moon. Korea aims to send a space ship to the moon by 2032 and start resource mining there. It also aims to land on Mars by 2045.

On Dec. 21, the National Space

Committee designated three regions — Daejeon Metropolitan City, South Jeolla Province and South Gyeong-sang Province — as space clusters to carry out its goal.

Lee Sung-hee, CEO and founder of local space industry startup Contec, also said Korea's vision of advancing into space is a goal that can be achieved through step-by-step preparations.

"In February, 2021, the United Arab Emirates (UAE) succeeded in entering Mars' orbit and is planning to explore Venus before 2030. As the UAE case shows, the nation's strong policy drive is very important in the space industry. By combining the country's strong drive to set up a space agency with a systematic approach to establish a sustainable policy direction, Korea's moon landing and Mars exploration goals could be a reality," Lee told The Korea Times.

Lee, a former researcher at the Korea Aerospace Research Institute (KARI), established Contec in 2015. Contec operates ground stations for satellites. In 2019, the company established a ground station on Jeju Island for the first time among Asia-based companies.

See powerhouse on page 16

from page 1 Powerhouse

Nurturing downstream space industries is key

The experts elaborated that the space business is largely categorized into upstream businesses, such as satellite and space launch vehicles, and downstream businesses, such as collecting and applying data from space.

Under the government's vision of advancing into space, research results will be transferred to the private sector, and various space-related industries will be developed through private companies, which will become a new axis of the economy.

The Organization for Economic Cooperation and Development (OECD) lists the following areas as recipients of socioeconomic benefits from space investment: environmental management, transportation and urban planning, science, climate monitoring, telecommunications, defense and security and energy.

Citigroup also recently estimated that space-related industries will grow in size to around \$1 trillion by 2040, which is why Korea should expand its investments in space development.

"Many people think of satellites or rockets as representative industries in the space business, but the area where business actually takes place is in downstream areas such as utiliz-

ing data. The market that utilizes satellite data accounts for 90 percent of the private sector in the space industry," the Contec CEO said.

"Satellite operators including Contec are photographing the earth by placing satellites in low orbit. Images taken from space cover a large area compared to those taken from drones, which play an important role in remote exploration and geographic information systems. These satellite images had been mainly used for military purposes, but they are now being applied to various industries such as urban management, port industry and agriculture," Lee added.

"Telecommunications, GPS and navigation systems are the benefits that we can directly gain from space

development. It is not all about the space economy that we launch our own satellites into space. If private companies process data from satellites and create new values, those are also part of the space economy," the KAIST professor said.

Lee said that what is tentatively being called Korea's space agency needs a diplomatic function so that the country's space industry will be able to cooperate with other powerhouse countries in space development.

Korea is currently preparing to launch such an agency that will coordinate with space-related tasks by coming up with related laws by early 2023. The science ministry said the country launched a space agency establishment promotion team

comprised of officials from the science ministry and other government branches, such as the industry ministry and the land ministry.

"When comparing Korea's capability with other space powerhouse countries such as the U.S., it is clear that Korea cannot keep up with them in every aspect. Therefore, the space agency, which will be established soon, focuses on cooperating with those leading countries, Han said.

"There should be experts who can use their diplomatic skills in the space agency. This might be one of the expectations of the agency. Government officials in overseas space-related agencies take part in academic conferences to listen to professional opinions and interact

with them in the space sector, which is hard to imagine in Korea's public officers. The space agency should be an organization that conducts space diplomacy," he said.

"The International Space Station has been cooperated on by many countries including European nations. There, participating countries are conducting various activities such as trying to develop new drugs or carrying out biotechnological experiments, but we are not joining this. Can we build our own space station? No. So we have to communicate with them and seek cooperation. There is a high expectation that we can actively work together with those countries when the space agency is launched," Han added.