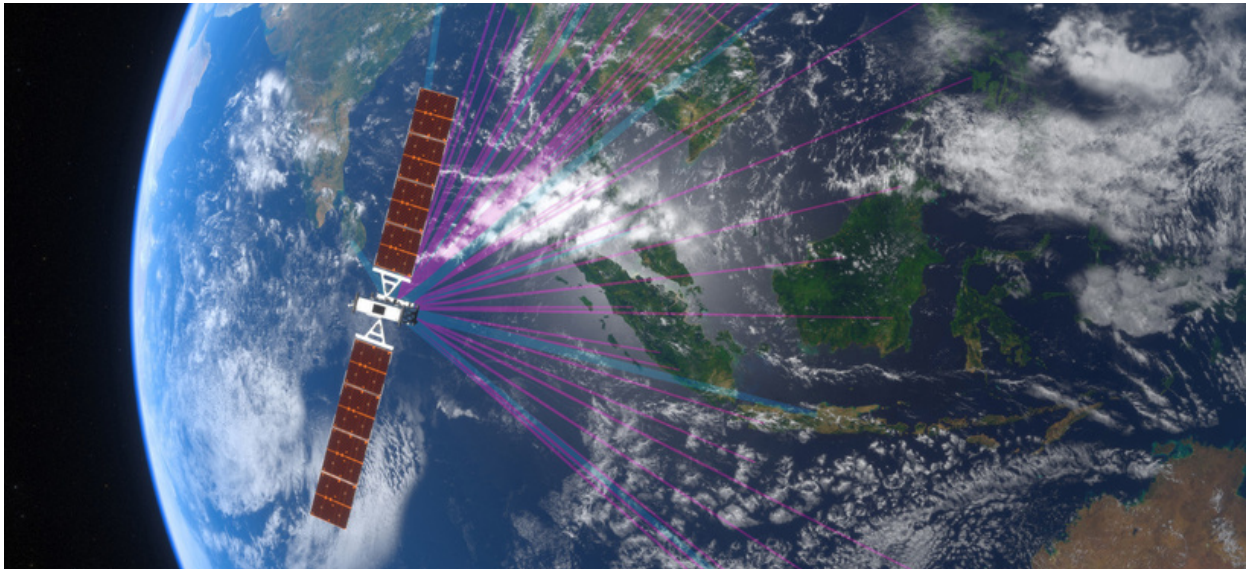


Space economy is the future, but can Indonesia realize it?



Terabit-level capacity and fibre-equivalent latency on upcoming satellite networks make them well-suited to digitally connect vast, archipelagic countries like Indonesia

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The space economy is arising and transforming concurrently with the expansion and profound transformation of the space sector and the continued incorporation of space into society and the economy. The space industry is not only a growth sector in its own right, but also a crucial growth enabler for other industries.

Space-for-earth applications rely heavily on satellite technology in space. Utilizing satellite-based internet services that can reach the most outlying areas facilitates the equitable distribution and affordability of internet access for all. Due to underdeveloped or rural areas, establishing a terrestrial network can be difficult or costly.

By employing satellite-based internet service technology, people in rural and remote areas will enjoy equal internet access provided to those in urban areas. Satellite technology can also help develop the agricultural sector. Space-based remote sensors collect images, data on weather patterns, and electromagnetic wave measurements, all of which can be utilized for agricultural purposes.

According to McKinsey's annual digital farmer adoption survey, nearly 29 percent of row-crop farmers and almost 50 percent of specialty-crop farmers

rely on or intend to begin using such data. Farmers will realize the greatest benefit from satellite sensors when they are able to increase, if not multiply, crop yields.

On top of internet services and farming, satellite technology is badly needed in the mining industry. Satellites can ease the work of mining companies, especially if they operate in remote areas. The mining industry can use satellite imagery to generate emission maps, track shipments along the supply chain and locate mineral-rich areas. A big part of the business depends on how well satellite technology can send a strong signal uninterrupted.

Mini satellites in Low Earth Orbit (LEO) are the best way to meet these needs. Placing a mini satellite in LEO will reduce the cost of launching a satellite because it is small and weighs less than 1,000 kilograms.

The Indonesian government's masterplan to build a spaceport in Indonesia shall provide an excellent opportunity to create economic value from space activities. The cost of launching satellites by the state or private companies will be reduced. There will be no need to launch satellites on foreign soils.

Given Indonesia's location in the equator, it is advantageous for those wishing to launch rockets and place satellites in Earth orbit, particularly in geostationary orbit. Future launch from Indonesia requires less fuel which will generate an effect on launch costs. This geographical advantage is definitely an asset which could generate substantial additional revenue for the nation, and politically puts Indonesia as a space-faring country.

Obviously, Indonesia's economic potential in space activities must be accompanied by effective space-related regulations. Law No. 21/2013 provides the government legally-binding outer space regulations. However, these regulations are still of a general nature and require a number of implementing regulations to govern specific matters.

In accordance with the mandate of the Indonesian Space Law, implementing regulations are necessary for provisions pertaining to the commercialization of space, including the spaceport development plan.

Despite the Indonesian Space Law having been in effect for nearly a decade, the government has yet to finalize implementing regulations for these two issues. This must be resolved immediately if Indonesia is serious about making outer space a revenue center and the driver of the economy in the future.

Apart from the Space Law, Presidential Regulation No. 45/2017 serves as a master plan in providing a national guideline for space activities. The regulation contains Indonesia's short, medium and long-term plans for space activities. Several short-term plans in the master plan, including the determination of the spaceport's location in Indonesia, have not been implemented to date. Even though the Indonesian government has justification to conduct space activities, it must be improved in terms of realization.

It will be necessary in the future to increase the state budget for space activities. As a result of the integration of the National Institute of Aeronautics and Space (Lapan) into the National Research and Innovation Agency (BRIN), the responsibilities and authorities associated with national space activities are currently held by BRIN via the Aviation and Space Research Organization (ORPA).

The state budget allocated nearly Rp 6.4 trillion (US\$416 million) for BRIN in 2023, up from Rp 5.78 trillion last year. Nonetheless, it should be noted that the budget must be divided among the various research organizations that fall under BRIN's auspices, including ORPA. The government has to increase the budget for space activities to generate substantial profits.

In the end, the government must commit to all of these initiatives to realize a space-based economy in the future. Accelerating the drafting of a legal framework for this sector is imperative.

Unless the government manages to clear all the hurdles, the aim to obtain great benefits from future space activities will materialize. It becomes even more important for Indonesia to firmly position itself as a space-faring country in the era of space exploration, the first ASEAN member country to do so.

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