

China's deep-sea mission to mine the wealth beneath the ocean floor

Resource-hungry China is stepping up activity in one of the final frontiers of mineral wealth – the remote seabeds lying kilometres beneath the Indian and Pacific oceans.

The world's largest consumer and importer of minerals and metals is now studying the core technologies of seabed mining in the Indian Ocean, according to Tao Chunhui, one of the country's leading oceanographers and a researcher at the State Oceanic Administration.

Vast sulphide deposits on the 3,000 metre deep seabed might contribute to China's metal supplies in the long term as it tried to narrow the technological gap with other maritime powers, said Tao, who was chief scientist of a number of China's Indian Ocean expeditions.

[Rush for resources drives China's 'three-deep' science quest](#)

The volcanically formed hydrothermal sulphides on the seabed contain copper, zinc and precious metals including gold and silver. They are formed in hot underground springs seeping through cracks in the seabed.

Tao said that to prepare for the future exploitation of seabed minerals, Chinese scientists are developing techniques to mine the ocean floor, extract minerals and bring them to the surface without damaging the environment.

"When we will actually be able to do it depends on commodity prices as well as the state of the technology," he said. "Our focus now is to figure out where the minerals are."

Unlike some of its contentious claims in the South China and East China

seas, Beijing's seabed mining activities have been carried with the full blessing and involvement of other countries under exploration contracts awarded by the International Seabed Authority (ISA), an intergovernmental organisation established by the UN Convention on the Law of the Sea (Unclos) to regulate deep-sea mining.

It was the international arbitration tribunal of Unclos that earlier this year rejected China's historic claims to the South China Sea in a case raised by the Philippines.

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China has been exploring sulphide deposits in the Indian Ocean since it was awarded a contract in 2011 by the International Seabed Authority, an intergovernmental organisation established under Unclos to regulate deep-sea mining.

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Tao Chunhui, oceanographer

The 15-year contract allows Beijing to prospect for seabed sulphides across a 10,000 sq km area in the Southwest Indian Ridge just south of Madagascar.

Tao said the next expedition would take place in November, by which time China's unmanned submersible Qianlong would have been upgraded.

Beijing depends increasingly on imported metals and minerals to meet its growing demand for commodities. State-owned companies have been snapping up mining projects across Africa, Latin America and Asia.

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China is world's main importer of metals, growing from less than 10 per cent

of global share in 2002 to 46 per cent in 2014, according to the International Monetary Fund.

To secure its supply of resources, the Ministry of Land and Resources vowed in a strategic plan released last month to boost “deep-underground, deep-sky and deep-sea” capabilities in the coming five years.

The plan’s tasks include developing a submersible that can dive to 11,000 metres by 2020. This is slightly more than the deepest known point in the seabed, the Challenger Deep in the Mariana Trench near Guam.

Besides the Indian Ocean, China is also looking for seabed minerals in two areas in the western and northeastern Pacific.

Tao said these exploration projects had become drivers of the country’s deep-sea technology. He has taken the Jiaolong submersible, China’s first manned deep submersible, to a depth of 3km in the Indian Ocean. The vessel reached 7km on a subsequent mission in the Pacific.

Two domestically produced submersibles have also been deployed to the Indian Ocean.

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Tao Chunhui, oceanographer

“China has made huge progress in deep-sea technology,” Tao said. “We went from importing and copying to making our own innovations.”

But some key components, such as high-accuracy sensors, are still imported. The country also relies on some foreign-made equipment to analyse samples from the ocean.

Meanwhile, China’s advances in deep-sea research have made some

countries anxious that Beijing's motives are not entirely economic.

China's lack of transparency and inflated claims about its research shows that it wants to conduct more operations under the garb of technological achievements and discovery of mineral resources

Pankaj Jha, Indian Council of World Affairs

Pankaj Jha, director of research at the Indian Council of World Affairs, a government-funded think tank, said it would be years before China could start mining in the Indian Ocean, but its long-term presence there was a concern for India.

"China's lack of transparency and inflated claims about its research shows that it wants to conduct more operations under the garb of technological achievements and discovery of mineral resources," Jha said.

"The long deployments of research vessels and on-board deep-sea diving equipment will certainly raise suspicions about China's intentions."