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CO2-based Mining Technology for Sustainable Environment

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alt="Ilmuwan tengah mengembangkan teknologi penambangan yang ramah lingkungan dan rendah emisi." data-recalc-dims="1"/>

Scientists are developing mining technologies that are environmentally friendly and low in emissions.
(Evgeny_V/Shutterstock)

Nationalgeographic.co.id—A team of scientists at the Bureau of Economic Geology at The University of Texas at Austin announced they have developed a new technology (<https://www.world-today-news.com/category/technology/>) that is more environmentally friendly. This new technology (<https://www.world-today-news.com/category/technology/>) uses CO₂ (Carbon Dioxide) to access important minerals.

According to the researchers, the technology (<https://www.world-today-news.com/category/technology/>) aims to reduce the amount of energy needed to access essential minerals that are vital to modern energy technologies. Such processes can usually produce significant greenhouse gases.

Shifting the world (<https://www.world-today-news.com/category/world/>)'s energy to low-carbon technologies and sources will require most of the lithium, nickel, cobalt and other essential minerals present in low concentrations in the earth's crust.

Mining these elements requires a lot of energy and creates waste, which can negatively impact the environment and emit significant amounts of greenhouse gases such as carbon dioxide.

Carbon dioxide, which is a by-product of mining, ultimately contributes to climate change and global warming.

This research could turn those emissions into tools by using CO₂ to weaken rocks containing critical minerals, reducing the amount of energy required for mining.

photo"> photo/2023/03/27/5jpg-20230327124543.jpg?resize=360%2C240&ssl=1" alt="Mineral kritis seperti litium, nikel, kobalt adalah kunci transisi energi." data-recalc-dims="1"/>

Critical minerals such as lithium, nickel, cobalt are key to energy transitions. (University of Texas)

The ultimate goal is to significantly reduce the emissions generated during mining by storing them safely in the rock, and potentially even making mining carbon negative.

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This CO2 storage is possible because of the way ultrabasic rocks, which usually contain important minerals, react with carbon.

CO2 reacts chemically with rock to mechanically break down its structure, making minerals easier and less energy intensive to mine.

The reaction also partially turns the rock into limestone, introducing carbon dioxide into the mineral structure and storing it permanently.

“The mining process creates a lot of CO2 as a by-product,” says Estibalitz Ukar, research scientist in the Bureau of Geological Economics at UT’s Jackson School of Geosciences.

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