ICCR CLIMATE CRISIS ISSUE BRIEF ONE

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The Importance and Risks of Transition Minerals in BUILDING A JUST TRANSITION

CONTENTS

INTERFAITH CENTER ON CORPORATE RESPONSIBILITY

OVERVIEW

AS WE DECARBONIZE THE ECONOMY to respond to the climate crisis, ICCR's Just Transition Program aims to address the social impacts on workers and communities that accompany the transition to renewable energy. We engage with companies on adoption of a just transition framework, explaining how failure to address social issues can impact their businesses, and encouraging meaningful stakeholder engagement with affected parties.

The transition to carbon-neutral economies will require a vast quantity of minerals. In essence, we must shift from a fossil fuel-intensive economy to one based on minerals, which are needed to harness and store the energy in natural systems. Due to their importance in new technologies, economic development, and even national security, these resources have been called "critical minerals" or "strategic minerals." In this document, we will use the designation, "transition minerals" as we focus on their use in the urgent transformation towards decarbonized energy systems.

Transition minerals encompass a wide range of elements such as copper, lithium, cobalt, nickel, and manganese. Barring technology changes, lithium will be in high demand because of its use in lithium-ion batteries both for electric vehicles (EVs) and for energy storage, which account for 80% of its use. Lithium is a non-metallic mineral that has historically been exploited and used in relatively small quantities compared to other minerals, until the recent projections of unprecedented growth.[1]

Lithium extraction is heavily concentrated in a few countries, most notably in Australia and Chile, which represent about 77% of total global production. Current known reserves are distributed across many countries, including Bolivia, Argentina, the United States, and China. While extraction is not as well developed in these countries, each has numerous projects in different planning stages.

Currently, we are witnessing the emergence of a truly global race for exploitation and refinement of lithium for the products that require this non-metallic mineral. This explains the active role of governments in promoting its extraction[2] and the rise of social and environmental conflicts[3] in exploitation areas. Lithium extraction is taking place in and near Indigenous territories,[4] and the various extraction techniques used can cause severe environmental impacts. Water over-consumption is a serious problem in many areas. The most respected forecasts suggest that total lithium demand will increase significantly in the coming decades, as much as 26-fold by 2050. This prediction explains the rapid increase in production in recent years, as well as the growth in exploration activities[5] which nearly doubled in 2022. Due to the environmental impacts of lithium mining, there is also a growing interest in improving the extractive technologies and practices used by companies.

1 IEA "The Role of Critical Minerals in Clean Energy Transitions – Analysis - IEA," May 1, 2021. https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions

2 IEA. "Introducing the Critical Minerals Policy Tracker – Analysis - IEA," November 1, 2022. https://www.iea.org/reports/introducing-the-critical-minerals-policy-tracker.

3 Business & Human Rights Resource Centre. "Transition Minerals Tracker - Business & Human Rights Resource Centre," n.d. https://www.business-humanrights.org/en/from-us/transition-minerals-tracker/

4 Oxfam. "Recharging Community Consent: Mining Companies, Battery Minerals, and the Battle to Break From the Past," September 22, 2023. https://www.oxfamamerica.org/explore/research-publications/recharging-community-consent/.

5 IEA. "Key Market Trends – Critical Minerals Market Review 2023 – Analysis - IEA," n.d. https://www.iea.org/reports/critical-minerals-market-review-2023/key-market-trends.

This brief aims to provide a concise fact sheet to help guide ICCR investors' decisions regarding their investments and engagements on lithium mining, and focuses on its environmental and social impacts, particularly on Indigenous communities. A subsequent brief will examine lithium's uses, supply chain and potential for a circular economy.

LITHIUM MINING PROCESSES AND ENVIRONMENTAL IMPACTS

Lithium is extracted through either hard rock or brine mining. Hard rock mining is more traditional and uses heavy machinery to break up rock. This process is common in Australia, the largest lithium-producing country. The other common technology, salt brine mining, involves extracting lithium-rich brine from underground reservoirs and evaporating the brine to extract the mineral. This technology is used in the so-called South American Lithium Triangle, which encompasses the north of Chile and Argentina, and the southern region of Bolivia. The Lithium Triangle contains a series of enclosed basins, formed by rainwater runoff from the surrounding Andes. This water flows into lakes, wetlands, salt flats, and the underground water table. Many of these basins are hydrologically linked below ground, so lowering the water table in one place may lower it in others, according to Marcelo Sticco,[6] a hydrogeologist at the University of Buenos Aires. The results of a 2022 study by the Royal Society[7] suggest that continued increases in lithium mining and declines in surface water could endanger two species of flamingos that are native to the region.

Lithium mining has significant environmental impacts on water, air, and soil quality. The extraction process uses large amounts of water, which is an already scarce resource in the arid Lithium Triangle regions and disturbs the delicate biodiversity of desert wetland ecosystems. Lithium extraction requires a vast amount of water to be evaporated, resulting in enormous quantities of water being lost every year and putting underground freshwater reserves in danger of salinization from contact with brine. Sodium hydroxide and sulfuric acid, which are used in lithium extraction, further pollute the ecosystem and contribute to the release of carbon dioxide and other greenhouse gases. A 2019 study[8] shows that 40% of the total climate impact caused by the production of lithium-ion batteries comes from the mining process itself.

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[6] Yale E360. "Why The Rush to Mine Lithium Could Dry up the High Andes," n.d. https://e360.yale.edu/features/lithium-mining-water-andes-argentina.

[7] Gutiérrez, Jorge S., Johnnie N. Moore, J. Patrick Donnelly, Cristina Dorador, Juan G. Navedo, and Nathan R. Senner. "Climate Change and Lithium Mining Influence Flamingo Abundance in the Lithium Triangle." Proceedings - Royal Society. Biological Sciences/Proceedings - Royal Society. Biological Sciences 289, no. 1970 (March 9, 2022). https://doi.org/10.1098/rspb.2021.2388.

[8] Dai, Qiang, Jarod C. Kelly, Linda Gaines, and Michael Wang. "Life Cycle Analysis of Lithium-Ion Batteries for Automotive Applications." Batteries 5, no. 2 (June 1, 2019): 48. https://doi.org/10.3390/batteries5020048.

Due to these impacts on often water-stressed areas, there is a growing interest in replacing traditional salt brine evaporation with a new technology, called direct lithium extraction (DLE). This involves pumping brine to the surface and directly removing the lithium before the brine is reinjected deep underground into the underground reservoir, supposedly reducing water consumption. It is worth mentioning that this technique has not been attempted at scale, and there are some doubts about its effectiveness in decreasing water use.[9]

IMPACT OF LITHIUM MINING ON INDIGENOUS PEOPLES

According to the American Solar Energy Society,[10] over 80% of global lithium supplies are in lands that belong or are important to Indigenous peoples. A lithium clay mining development project in Thacker Pass, Nevada, has been strongly opposed by several Native American tribes as it would destroy a site sacred to the tribes. They contend they were not adequately consulted[11] by the Bureau of Land Management and filed suit against the project, to no avail. A case study[12] on Indigenous land rights and the lithium rush in Queensland, Australia found that 71 mining exploration permits have been granted on the Cape York Peninsula, where much of the land is classified as Aboriginal "freehold" land. This designation allows for exploration without affording traditional landowners decision-making rights regarding the issuance of permits on these lands.

Similar problems persist in the Lithium Triangle. Local communities use freshwater to raise llamas, produce crops such as peas and potatoes, and harvest artisanal salt. Elena Rivera Cardoso, president of the Indigenous Colla community of the Copiapó commune in northern Chile, explains:[13] "We used to have a river before that now doesn't exist. There isn't a drop of water. And not only here in Copiapó but in all of Chile, there are rivers and lakes that have disappeared—all because a company has a lot more right to water than we do as human beings or citizens of Chile." Francis Mandoca,[14] the head of the environmental unit of the Atacama Indigenous Council in Chile, said that despite branding the lithium mines as "sustainable" energy sources, they are far from it, as they harm one area to benefit another.

LITHIUM EXPLOITATION IN THE U.S.

Lithium deposits exist across the United States, with particularly large reserves[15] found throughout Arkansas, California, Nevada, North Carolina, and Utah. The Albemarle Corporation Lithium Operation in Silver Peak,

[9] Vera, María L., Walter R. Torres, Claudia I. Galli, Alexandre Chagnes, and Victoria Flexer. "Environmental Impact of Direct Lithium Extraction From Brines." Nature Reviews. Earth & Environment 4, no. 3 (February 23, 2023): 149–65. https://doi.org/10.1038/s43017-022-00387-5.

[10] "Deserts, Water and Lithium: Indigenous Rights in the Energy Transition | American Solar Energy Society," n.d. https://ases.org/lithium/#:~:text=Over%2080%25%20of%20lithium%20supplies,to%20further%20marginalize%20these%20populations.

[11] Sainato, Michael. "'We Were Not Consulted': Native Americans Fight Lithium Mine on Site of 1865 Massacre." The Guardian, October 13, 2023. https://www.theguardian.com/us-news/2023/oct/13/native-americans-1865-massacre-lithium-mine-thacker-pass.

[12] AID "INDIGENOUS LAND RIGHTS & THE LITHIUM RUSH |AID/WATCH | Exposing Bad Aid for Over 30 Years, December 15, 2021. https://aidwatch.org.au/case-studies/indigenous-land-rights-the-lithium-rush/.

[13] "Lithium Mining Is Leaving Chile's Indigenous Communities High and Dry (Literally)," February 7, 2024. https://www.nrdc.org/stories/lithium-mining-leaving-chiles-indigenous-communities-high-and-dry-literally.

[14] Morton, Joseph. "The Most Misunderstood Metal: A Lithium Roundup." Mugglehead Magazine, January 22, 2024. https://mugglehead.com/the-most-misunderstood-metal-a-lithium-roundup/.

[15] Lithium Deposits in the United States | U.S. Geological Survey," n.d. https://www.usgs.gov/data/lithium-deposits-united-states.

Nevada, is currently the only active lithium extraction in the U.S. This project is in the Clayton Valley, an area that has seen a growing interest by mining companies that are fighting over the water rights in the Basin.[16] The Thacker Pass Lithium Mine, mentioned above, is a project of Lithium Nevada, LLC, a subsidiary of Lithium Americas Corp., in a joint venture with General Motors.

In Arkansas, across the Smackover Formation, many companies are interested in developing projects using DLE.[17] These include Albemarle, Standard Lithium and ExxonMobil, who plan to utilize their conventional oil and gas drilling methods to access saltwater.

Major deposits have also been found in Imperial Valley, which has been dubbed Southern California's "Lithium Valley". Three companies, Berkshire Hathaway Energy Renewables Minerals, Controlled Thermal Resources, and EnergySource Minerals, are all in the process of developing lithium extraction projects in the region. According to a report by Earthworks,[18] areas of potential impact to consider include air quality, freshwater consumption, Salton Sea degradation, hazardous waste and materials, and seismic activity.

In North Carolina, Albemarle is planning to re-open an old lithium mine in Kings Mountain.[19] Piedmont Lithium's project in Gaston County[20] has received preliminary mining permits but is facing opposition from local communities.

Finally, Anson Resources is also planning to use DLE in Utah,[21] which has raised concerns from local communities and researchers over the use of the Colorado River.

CONCLUSION

Given the importance to investors of ensuring respect for human rights in their investment portfolios, and particularly respect for the Free, Prior and Informed Consent (FPIC) of Indigenous communities, engagement by investors with lithium mining companies is essential. Effective engagement is especially important given the increasing conflict resulting from a lack of meaningful community engagement by lithium mining companies. Urgency is especially important in those mining projects that rely on intensive water use, since poor practices or improper development could result in permanent damage to ecosystems, endangering the livelihood of Indigenous communities.

[16] Harrison, Derek. "Lithium Companies Fight Over Water in the Arid Great Basin - Inside Climate News." Inside Climate News, April 8, 2024. https://insideclimatenews.org/news/08042024/nevada-great-basin-lithium-fight-over-water/.

[17] Yale E360. "In Rush for Lithium, Miners Turn to the Oil Fields of Arkansas," n.d. https://e360.yale.edu/features/arkansas-direct-lithium-extraction.

[18] McLaughlin, Brendan, and Brendan McLaughlin. "The Environmental and Social Impacts of Lithium Extraction in Imperial Valley." Earthworks, March 29, 2024. https://earthworks.org/resources/lithium-valley/.

[19] Kimball, Spencer. "Lithium Giant Albemarle's Plans to Reopen a Rich Mine in North Carolina Will Take Years to Complete." CNBC, May 3, 2024. https://www.cnbc.com/2024/05/03/albemarle-plans-to-reopen-kings-mountain-lithium-mine-will-take-years.html.

[20] Sorg, Lisa. "Piedmont Lithium Receives Preliminary State Mining Permit, but Production Still Years Away • NC Newsline." NC Newsline, April 18, 2024. https://ncnewsline.com/briefs/piedmont-lithium-receives-state-mining-permit-but-production-still-years-away/.

[21] "Mining Companies Say They Have a Better Way to Get Underground Lithium, but Skepticism Remains - Inside Climate News." Inside Climate News, March 24, 2024. https://insideclimatenews.org/news/24032024/direct-lithium-extraction-green-river-utah/.

GUIDANCE FOR SHAREHOLDER ENGAGEMENT

- Once you have identified target lithium mining companies for engagement, determine the technologies being used and tested in the projects the companies are pursuing and advocate for a deep analysis and disclosure of their environmental impacts and benefits. This can take the form of a request for an Environmental and Social Impact Assessment.
- Ensure the company has a human rights policy and human right due diligence process in place. If it does, propose conducting Human Rights Impacts Assessments to identify and address any actual or potential human rights impacts linked to the lithium mining companies' direct operations and business relationships.
- Assess companies' efforts as part of their human rights due diligence processes to carry out meaningful stakeholder engagement, ensuring that Free, Prior and Informed Consent (FPIC) is respected where Indigenous communities are affected. Promote the design and implementation of effective Collective Benefits Agreements between Indigenous Peoples and mining companies.

POLICY RECOMMENDATIONS

- Promote the creation and strengthening of environmental regulations for lithium mining.
- Advocate with companies to improve water governance systems frameworks, which must respect traditional uses by local communities and protect ecosystems.
- Promote adherence to International Treaties that will enforce respect of Indigenous Peoples' rights. These include the United Nations Declaration on the Rights of Indigenous Peoples, ILO Indigenous and Tribal Peoples Convention N° 169 and the Escazú Agreement (Latin America).

ORGANIZATIONAL RESOURCES

- **Business & Human Rights Resource Centre**
- **Earthworks**
- **First Peoples Worldwide**
- **Jobs to Move America**
- **Oxfam America**
- **Reconciliation and Responsible Investment Initiative (RRII)**
- **RMI**
- **SIRGE Coalition**

KEY DOCUMENTS

- **Investor Brief: Responsible Investment and Indigenous Peoples' Rights in the Energy Transition**, Gabriela Ruiz (SHARE) & Kate R. Finn, (First Peoples Worldwide); RRII, 2023
- **Declaration of Indigenous Peoples' Participants in the Conference on Indigenous Peoples and the Just Transition**, April 12-14, 2024