RESPONSIBLE SOURCING TOOL

Commodity Report: Lithium (2025)

Lithium is reportedly produced with forced labor (FL) and/or child labor (CL) in the following countries:[1]

- China (FL)
- Zimbabwe (CL)

Top ten countries that export lithium carbonate worldwide:[2]

1. Chile
2. Argentina
3. South Korea
4. Netherlands
5. China
6. Germany
7. United States
8. United Kingdom
9. Bolivia
10. France

Top ten countries that export lithium oxide and hydroxide worldwide:

1. China
2. Chile
3. United States
4. South Korea
5. Netherlands
6. Australia
7. Japan
8. Russia
9. United Kingdom
10. France

[1] This list is based solely on findings from the *U.S. Department of State's 2025 Trafficking in Persons Report* and the U.S. Department of Labor's 2024 *List of Goods Produced by Child Labor and Forced Labor*.

[2] International Trade Center. Trade Map. (ITC Calculations based on UNCOMTRADE Statistics).

Where is lithium reportedly produced with forced labor and/or child labor?

According to the U.S. Department of State's *2025 Trafficking in Persons Report*, lithium is listed as being produced with forced labor in China.[3] According to the U.S. Department of Labor's 2024 *List of Goods Produced by Child Labor and Forced Labor*, lithium is produced with child labor in Zimbabwe.[4] China is listed as a Tier 3 country by the U.S. Department of State's *2025 Trafficking in Persons Report* and Zimbabwe is listed as a Tier 2 Watch List country.[5]

What does human trafficking and/or child labor in lithium production look like?

This section includes countries with publicly available research and reporting on forced labor and child labor, in addition to the countries listed in the above-mentioned government reports.

Lithium is predominantly produced by three countries, Australia, Chile, and China; lithium from these three countries accounted for over 90 percent of lithium produced globally in 2022. Other countries (e.g. Brazil, Portugal, South Africa, Zimbabwe) engage in lithium production, but on a smaller scale. Reserves of lithium have been identified in several other countries in Africa as well, namely Namibia, Ghana, and the Democratic Republic of the Congo (DRC)[6] as well as Nigeria,[7] Mali, and Ethiopia.[8] Zimbabwe is currently the only of these countries with active industrial-scale lithium mines,[9] and projects in other countries are primarily in exploratory or developmental stages.[10] In both Zimbabwe and other countries across Africa, thousands of miners have flocked to informal mining sites where they

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[3] U.S. Department of State. *2025 Trafficking in Persons Repor*t. 2025.

[4] U.S. Department of Labor. *List of Goods Produced by Child Labor or Forced Labor*. 2024.

[5] For the *2025 Trafficking in Person Report*'s tier ranking methodology, see "A Guide to the Tiers."

[6] Robertson, Colin. "A Rush for Lithium in Africa Risks Fueling Corruption and Failing Citizens." *Global Witness*, 14 Nov 2023.

"A Vision for a Sustainable Battery Value Chain in 2030: Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation." World Economic Forum, Sept 2019.

[7] Fisayo-Bambi, Jerry and Ruth Wright. "Child Labour: Nigeria's Lithium Mines Reveal the Dark Side of Our Electric Future." Euro News, 13 Dec 2024.

[8] Robertson, Colin. "A Rush for Lithium in Africa Risks Fueling Corruption and Failing Citizens." *Global Witness*, 14 Nov 2023.

[9] Surma, Katie. "Corruption and Rights Abuses Are Flourishing in Lithium Mining Across Africa, a New Report Finds." *Inside Climate News*, 15 Nov 2023.

[10] Boafo, James et al. "The Race for Critical Minerals in Africa: A Blessing or Another Resource Curse?" Resources Policy Vol 93, June 2024.

use shovels and picks to retrieve chunks of lithium ore that they sell to traders for export and processing abroad.[11]

There is growing global demand for lithium as it is a key component of lithium ion batteries; lithium ion batteries power electric vehicles, a range of electronics, and store energy from renewable energy sources like sun and wind. Increasing demand for lithium has led to the exploration and development of additional lithium extraction operations in countries around the world; the nature of these developments can lead to potentially exploitative situations and dangerous conditions as they get up and running, raising the risk of child labor, forced labor, and other labor and human rights harms.

Lithium can be produced through either salar (salt flat) brine extraction or hard rock/open pit mineral ore mining (see the **Lithium Supply Chain and Production** section below for more information on these two extraction processes), depending on the type of lithium reserve in a particular geographic location. Labor and human rights risks have been documented in association with both types of extraction, but the nature of risk looks different in different locations.

It has been reported that in **Zimbabwe**, hundreds of children work in artisanal and small-scale (ASM)[12] lithium mines located in the Midlands, Manicaland, and Mashonaland East provinces. At the mine sites, children use hammers and chisels to break mined rock into smaller material that is sold to formal lithium companies and help their parents, who also work in the mines, to carry mined lithium ore.[13] Child labor in informal artisanal, and often illegal, lithium mining has also been reported in **Nigeria**, where children reportedly sift through and break up mined rocks to extract lithium fragments for sale.[14]

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[11] Surma, Katie. "Corruption and Rights Abuses Are Flourishing in Lithium Mining Across Africa, a New Report Finds." *Inside Climate News*, 15 Nov 2023.

[12] Artisanal and small-scale mining (ASM) refers to a largely informal economic sector that includes workers around the world who use basic tools to extract a wide range of minerals and metals from the earth. ASM activities are usually informal and may be illegal or unregulated; however, when ASM is properly managed, it provides an important source of livelihood for individuals and communities. ASM is usually conducted by individuals or small groups of people, although it may include larger partnerships or cooperatives. ASM is defined based on the type of equipment used, level of formality, depth of the work, size of the surface area, volumes produced, and other criteria.

[13] U.S. Department of Labor. *List of Goods Produced by Child Labor or Forced Labor*. 2024.

[14] Fisayo-Bambi, Jerry and Ruth Wright. "Child Labour: Nigeria's Lithium Mines Reveal the Dark Side of Our Electric Future." Euro News, 13 Dec 2024.

Mining of lithium, both informal artisanal mining and formal mining, is typically dangerous. Although global demand for lithium has created job opportunities at industrial mines in **Zimbabwe**, union leaders have reported deteriorating labor standards, precarious working conditions, and "a total disregard for health and safety issues" associated with lithium mining.[15] An artisanal lithium mine collapsed in Zimbabwe that injured eight and killed one miner.[16] In **Nigeria**, where most of the lithium mines are unlicensed, small-scale, and illegal, miners use chisels and hammers to break through rocks and then descend into the earth to extract lithium ores. To establish new mining sites, dynamite is used to blast open the ground. Some miners also dig in abandoned but viable mines where walls are unstable and can suffocate miners if they collapse.[17]

An investigation of emerging lithium mining sites in Zimbabwe, Namibia and the DRC conducted by Global Witness found evidence that growing demand for lithium "risks fueling corruption, and a range of other environmental, social, and governance (ESG) problems."[18] While these factors and the occupational risks associated with lithium extraction more broadly do not constitute forced labor or human trafficking, per se, they can increase the risk of exploitation as jobs that rely heavily on low-skilled labor and that involve a high level of occupational health and safety hazards have a higher risk of forced labor.

In **China**, researchers have documented a connection between state-imposed forced labor in the **Xinjiang Uyghur Autonomous Region (XUAR)** and lithium production.[19] The XUAR is a significant domestic source of lithium for China.[20] It has been reported that the southern part of the region is being

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[15] "Lithium Extraction Deepens Labour Woes." Centre for Natural Resource Governance. 2024.

[16] Robertson, Colin. "A Rush for Lithium in Africa Risks Fueling Corruption and Failing Citizens." *Global Witness*, 14 Nov 2023.

[17] Adebayo, Taiwo. "In Nigeria's Lithium Boom, Many Mines are Illegal and Children do Much of the Work." AP News, 12 Dec 2024.

[18] Robertson, Colin. "A Rush for Lithium in Africa Risks Fueling Corruption and Failing Citizens." *Global Witness*, 14 Nov 2023.

[19] "Asleep at the Wheel: Car Companies' Complicity in Forced Labor in China." Human Rights Watch, 1 Feb 2024.

"Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region." Sheffield Hallam University, December 2022.

[20] "Driving Force: Automotive Supply Chains and Forced Labor in the Uyghur Region." Sheffield Hallam University, December 2022.

actively developed as a center for lithium extraction through the continued establishment of mines and processing facilities.[21]

In the XUAR, state-sponsored labor transfer programs are widely used in a variety of industries. While the government claims that these programs are law-abiding, voluntary, and intended to alleviate poverty, there is strong evidence that they function through coercion and threat; analysis of the labor transfer programs has revealed that they are mechanisms for the compulsory labor of ethnic and religious minority workers who are held in, or recently released from, internment camps for re-education purposes.[22] Rural workers are also compelled to take manufacturing jobs, often in industrial areas, far from their homes.[23]

An investigation into mining licenses and Chinese corporate data found that most mining operations in the XUAR, including of lithium, are run by locally based subsidiaries owned by large companies headquartered both inside and outside of the XUAR. Many of these companies are state-owned enterprises, including "those owned by the XUAR government and those owned by the Xinjiang Production and Construction Corps, a paramilitary corporate conglomerate that forms a parallel government in the region."[24] According to the U.S. Department of State, the Xinjiang Production and Construction Corps "subject some Xinjiang residents to forced labor – often through ostensible poverty alleviation labor transfer programs – in mineral mining and extraction, including…lithium mining and extraction."[25]

It has been observed that state-owned companies in the region are more likely to align closely with and implement the government's assimilation and labor transfer programs that target minorities such as the Uyghurs and other Turkic peoples."[26] According to the U.S. Department of Labor, the following

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[21] "Fractured Veins: The World's Reliance on Minerals from the Uyghur Region." C4ADS, 2023.

[22] Murphy, Laura T. and Nyrola Elima. "In Broad Daylight Uyghur Forced Labour in the Solar Supply Chain." Sheffield Hallam University, 2021.

[23] Murphy, Laura T. and Nyrola Elima. "In Broad Daylight Uyghur Forced Labour in the Solar Supply Chain." Sheffield Hallam University, 2021.

[24] "Fractured Veins: The World's Reliance on Minerals from the Uyghur Region." C4ADS, 2023.

[25] U.S. Department of State. *2025 Trafficking in Persons Report: China*. 2025..

[26] "Fractured Veins: The World's Reliance on Minerals from the Uyghur Region." C4ADS, 2023.

indicators of forced labor have been identified in association with the labor transfer programs in the XUAR and other provinces, across a variety of sectors including electronics, solar energy, and the automotive sector:[27]

- Intimidation and threats
- Abuse of vulnerability
- Restriction of movement
- Abuse of isolation
- Involuntary excessive overtime
- Lack of access to identity documents
- Abusive working conditions

Lithium extraction also poses threats to ecosystems and indigenous populations more broadly. The various processes used to extract lithium can lead to soil degradation, water shortages, water contamination, and loss of biodiversity.[28] It has been reported that lithium mines are established on lands that hold sacred value to indigenous communities without their approval,[29] in ways that are damaging to their communities,[30] and in violation of their rights.[31] While these rights violations do not constitute forced labor or human trafficking, the degradation of local ecosystems and indigenous ways of life – including traditional forms of livelihood – can enhance individuals' vulnerability to labor exploitation.

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[27] "Shining a Light on Exploitation in the Solar Supply Chain." U.S. Department of Labor.

[28] Anderson, Kara. "The Harmful Effects of our Lithium Batteries." *Greenly*, 23 Jul 2024.

[29] "US: Lithium Mine Permit Violates Indigenous Peoples' Rights." Human Rights Watch, 6 February 2025.

[30] Dunlap, Alexander and Mariana Riquito. "Social Warfare for Lithium Extraction? Open-pit Lithium Mining, Counterinsurgency Tactics and Enforcing Green Extractivism in Northern Portugal." *Energy Research & Social Science*, Vol 95 Jan 2023.

Wedemier-Allan, Asha. "Shouldering the Burden of Renewable Energy: Lithium Mining in Chile's Indigenous Communities." *University of Miami Inter-American Law Review, vol 55 No 1, Dec 2023.*

[31] Blair, James et al. Exhausted: How We can Stop Lithium Mining from Depleting Water Resources, Draining Wetlands, and Harming Communities in South America." Natural Resources Defense Council, 2022.

"Responsible Mining in the Lithium Triangle." Canning House, October 2022.

Lithium Supply Chain and Production:

Lithium is an alkali metal that is highly reactive.[32] It is not found in nature in its pure elemental form, because it is so reactive, but lithium is abundant within other compounds and salts.[33] Lithium extraction – a set of chemical processes that isolates lithium and converts it to a stable, saleable form – can occur in different ways, depending on the source of the lithium. There are two primary sources for lithium around the world: 1) underground, liquid brine deposits and 2) mineral ore deposits. Lithium is extracted from liquid brine reservoirs located beneath salt flats (called salars) through salar brine extraction; it is extracted from mineral ore deposits through traditional mineral ore mining.[34]

Salar Brine Extraction

The primary mode of lithium production involves extraction from underground liquid brine reservoirs. Most of these reservoirs are located in southwestern South America and China. The specific process of extracting lithium is called lithium brine recovery. The first step involves drilling down to access the underground brine deposits. The brine is then pumped to the surface and distributed into evaporation ponds. It can take months to years for the liquid water in the brine to be removed through solar evaporation. During this process, other metals may be extracted while waiting for the lithium to reach an optimal concentration. When it reaches optimal concentration, it is pumped to a lithium recovery facility. This process typically includes the following steps, although there can be variation and the type of reagent applied is determined by the desired final product:[35]

- pretreatment (filtration to remove contaminants)
- chemical treatment (application of chemical solvents and reagents to isolate desired products and byproducts)
- filtration (filtering the brine to separate precipitated solids)

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[32] "Information on Alkali Metals." Stanford Environmental Health & Safety.

[33] "What is Lithium Extraction and How Does it Work?" SAMCO.

[34] "What is Lithium Extraction and How Does it Work?" SAMCO.

[35] "What is Lithium Extraction and How Does it Work?" SAMCO.

- saleable lithium production (treating the brine with a reagent, filtering the brine, and then drying it)

Salar brine extraction requires large volumes of water. The United Nations Development Programme has noted that salar brine extraction operations are associated with a risk of contaminating local water basins.[36]

Lithium-rich brine can also be found in geothermal and oil field brines as well as ocean water.[37]

Liquid brine reservoirs are predominantly located in what is called the "Lithium Triangle," a geographic region in the Atacama Desert spanning Argentina, Bolivia, and Chile. It is estimated that the Lithium Triangle contains approximately 56 percent of the world's known lithium.[38] Lithium brine reservoirs are also found in China.[39]

Hard Rock/Spodumene Lithium Extraction

Hard rock mining is more expensive than salar brine extraction, but the concentration of lithium is greater in mineral ore deposits.[40]

Of the 100 minerals that contain lithium, five are actively mined for lithium production: **spodumene** (the most common) and **lepidolite**, **petalite**, **amblygonite**, and **eucryptite**. The process of extracting lithium from hard rock mineral sources varies depending on the specific mineral being mined. Overall, the mineral material must be mined/removed from the earth (typically through open-pit mining). Heavy machinery is often used for this process, although in artisanal mining it is done by hand. The mineral material is then heated (a process known as calcination) and pulverized; this turns spodumene into the

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[36] Ellerbeck, Stefan. "Lithium: Here's Why Latin America is Key to The Global Energy Transition." World Economic Forum, 10 Jan 2023.

[37] "What is Lithium Extraction and How Does it Work?" SAMCO.

[38] "A Vision for a Sustainable Battery Value Chain in 2030: Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation." World Economic Forum, Sept 2019.

[39] Azevedo, Marcelo et al. "Lithium and Cobalt: A tale of Two Commodities." McKinsey & Company, June 2018.

[40] "What is Lithium Extraction and How Does it Work?" SAMCO.

"A Vision for a Sustainable Battery Value Chain in 2030: Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation." World Economic Forum, Sept 2019.

more reactive beta-spodumene. The pulverized material is then mixed with chemical reactants (such as sulfuric acid). It is then heated again, filtered and treated to remove impurities. This results in purified forms of lithium that are then further converted into such commonly sold forms as lithium hydroxide, lithium chloride, lithium bromide, butyl lithium, and lithium carbonate. Each form can be used for a variety of purposes ranging from batteries to pharmaceuticals. **Lithium carbonate** and **lithium hydroxide** are the two most commonly used lithium compounds in battery production.

Most open-pit mining for lithium occurs in Australia, with smaller mining operations in Brazil, Portugal, and South Africa. Lithium mining also takes place in China, and in January 2025 it was reported that extensive spodumene-type lithium reserves were discovered in Tibet and Xinjiang, China.[41] Lithium reserves have also been identified in North America and Finland, but they are not extensively mined at this time.[42] Lithium processing does not always occur in the same geographic area where it is extracted. For example, most raw material mined in Australia is processed into lithium carbonate and lithium hydroxide in China.[43]

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[41] "China Has World's Second Largest Lithium Reserves After New Xinjiang-Tibet Discoveries." *Tibetan Review*, 8 Jan 2025.

S, Saptakee. "China's Massive Lithium Discovery Elevates It to Second in Global Reserves." Carbon Credits, 10 Jan 2025.

[42] "A Vision for a Sustainable Battery Value Chain in 2030: Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation." World Economic Forum, Sept 2019.

[43] Kramer, David. "Fears of a Lithium Supply Crunch May be Overblown." Physics Today, Vol 74 issue. 5 May 2021.

How consumers are linked to human trafficking and/or child labor in lithium production:

Top ten countries that import lithium carbonate:[44]

1. China
2. South Korea
3. Japan
4. United States
5. Netherlands
6. Germany
7. United Kingdom
8. France
9. Belgium
10. Italy

Top ten countries that import lithium oxide and hydroxide:[45]

1. South Korea
2. Japan
3. China
4. Sweden
5. Poland
6. India
7. Netherlands
8. United States
9. United Kingdom
10. France

Lithium can be used for a variety of purposes ranging from batteries to pharmaceuticals, ceramics, and glass[46] however most lithium mined is for battery-related purposes.[47] Lithium is a key component of lithium batteries; lithium batteries use lithium ions as the charge carriers between the anode (positive) and cathode (negative) ends of the battery.[48] Lithium batteries can be recharged multiple times, making them well-suited for a wide range of consumer electronic devices. They are also used to store energy

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[44] International Trade Center (ITC Calculations based on UNCOMTRADE Statistics).

[45] International Trade Center (ITC Calculations based on UNCOMTRADE Statistics).

[46] Boafo, James et al. "The Race for Critical Minerals in Africa: A Blessing or Another Resource Curse?" Resources Policy Vol 93, June 2024.

[47] "A Vision for a Sustainable Battery Value Chain in 2030: Unlocking the Full Potential to Power Sustainable Development and Climate Change Mitigation." World Economic Forum, Sept 2019.

[48] Azevedo, Marcelo et al. "Lithium and Cobalt: A tale of Two Commodities." *McKinsey & Company*, June 2018.

generated by renewable sources, like wind and solar. Lithium batteries can be found in a wide range of products from smartphones and electric cars to medical devices. Lithium ion batteries are commonly used in portable electronics (mobile phones, laptops) and to power electric vehicles. Lithium polymer batteries are used to power drones, remote controlled devices, and some portable electronics. Lithium manganese oxide batteries are found in power tools, medical devices, and some electric vehicles.[49]

China is the top producer of lithium-ion batteries and is the top importer of lithium, although efforts are underway to increase domestic lithium production.[50]

Examples of what governments, corporations, and others are doing:

Responsible Lithium Partnership

In 2021, the Responsible Lithium Partnership project was launched. Funded by Mercedes-Benz Group, Badische Anilin-und Sodafabrik (BASF SE), BMW Group, Daimler Truck AG, Fairphone, and Volkswagen Group, the goal of the project is to promote the sustainable use of resources in the Salar de Atacama in Chile, where one of the world's largest lithium reserves is found. The project involves 20 organizations, including representatives from indigenous communities, civil society, academia, and the private and public sectors, and is focused on establishing a common understanding of the current dynamics in the region while also creating a shared vision for the region's future, particularly around the impact of lithium mining on the local ecosystem and local livelihoods.[51]

Tariff Act and Uyghur Forced Labor Prevention Act

Section 307 of the Tarriff Act of 1930, as amended, states that "all goods, wares, articles, and merchandise mined, produced, or manufactured wholly or in part in any foreign country by convict labor and/or forced labor or/and indentured labor under penal sanctions shall not be entitled to entry at any

[49] Anderson, Kara. "The Harmful Effects of our Lithium Batteries." *Greenly*, 23 Jul 2024.

[50] Liu, Siyi and Dominique Patton. "In China's Lithium Hub, Mining Boom Comes at a Cost." *Reuters*, 14 Jun 2023.

[51] "Collaboration to Promote Responsible Handling of Lithium in Chile." Mercedes-Benz Group, April 2024.

of the ports of the United States, and the importation thereof is hereby prohibited….” (19 U.S.C. § 1307).[52]

In 2021, the United States enacted the Uyghur Forced Labor Prevention Act (UFLPA). The UFLPA established a rebuttable presumption (presumed in violation unless evidence shows otherwise) that goods mined, produced, or manufactured wholly or in part in the Xinjiang Uygur Autonomous Region (XUAR) of China, or by an entity on the UFLPA Entity List, are prohibited from U.S. importation under Section 307 of the Tariff Act. U.S. Customs and Border Patrol enforces these acts. Under the UFLPA, an interagency Forced Labor Enforcement Task Force is directed to develop a strategy for “supporting enforcement of the prohibition on the importation of goods into the United States manufactured wholly or in part with forced labor in the People's Republic of China, especially from the XUAR.”[53]

Global Battery Alliance

The Global Battery Alliance (GBA) is a public-private partnership of over 170 businesses, governments, academics, industry actors, international organizations, and non-governmental organizations working to ensure that battery production for green energy purposes protects human rights and promotes health and environmental sustainability. In 2022, the GBA launched the Critical Minerals Advisory Group (CMAG), which provides a platform for private-public engagement on sustainable battery minerals value chains. In 2024, the group called on policymakers to bridge a gap of cooperation in critical battery minerals with harmonized data and transparency.[54]

How can I learn more?

- **Read** about Responsible Mining in the Lithium Triangle.
- **Read** Fractured Veins, a report on the world's reliance on minerals from the Uyghur region.
- **Read** the article "The race for critical minerals in Africa: A blessing or another resource curse?".
- **Read** an article about the harmful effects of lithium batteries.

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[52] "Forced Labor Enforcement." U.S. Customs and Border Protection, 3 Feb 2025.

[53] "Uyghur Forced Labor Prevention Act." U.S. Customs and Border Protection, 4 Feb 2025.

[54] “Our Work: Critical Minerals.” Global Battery Alliance.