

# California Battery Directive Supply Chain Due Diligence Proposal

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## California Battery Directive

### Supply Chain Due Diligence Proposal

The EU Battery Directive (2006/66/EC), adopted in March 2022, regulates the manufacturing and disposal of batteries and accumulators in the European Union to protect human health and the environment from hazardous substances such as mercury and cadmium. With \$9 billion being invested in the Governor's budget in zero emission vehicles (ZEV) technology deployment, without any conditions regarding sourcing the Earth's rare minerals from corrupt countries with severe human rights abuses and flagrant environmental destruction. CARB needs to adopt a California Battery Directive (See Attachment A) following the EU Battery Directive to compliment the recently adopted Scoping Plan Update 2022 that accelerates the electrification of the transportation sector with few conditions other than not exacerbating harm to disproportionately impacted communities. Mining rare earth minerals from around the world is severely exacerbating harm disproportionately on impacted communities.

**CARB needs to adopt a Supply Chain Due Diligence policy to address this environmental injustice.**

#### **Regulation (EU) No 2019/1020 – March 2022**

##### **Article 39**

*As of [12 months after the entry into force of the Regulation] the economic operator that places rechargeable industrial batteries and electric-vehicle batteries with internal storage and a capacity above 2 kWh on the market shall comply with the supply chain due diligence obligations set out in paragraphs 2 to 5 of this Article and shall keep documentation demonstrating its respective compliance with those obligations, including the results of the third-party verification carried out by notified bodies.*

Governments must investigate human rights abuses and environmental harm perpetrated by businesses on their own initiative as well as on reports by third parties. They should provide clear avenues for seeking justice for the victims to ensure access to remedy. Home state governments of companies accused of human rights or environmental harms at overseas operations must remove barriers to remedy for foreign victims. Responsible mineral sourcing is a major issue on the global sustainability agenda. Spurred by "conflict minerals," debates about the ethics of mineral supply chains now encompass a broad set of concerns including child labor, corruption, environmental degradation, and a green transition away from fossil fuels. Creation of responsible sourcing projects, blockchain traceability, and importantly the realization that downstream brand



companies need to be involved all the way back up to the mines supplying their materials. CARB needs to address this issue and do their responsible due diligence as part of their aggressive deployment of electrification of the transportation sector in California.

The European Commission adopted a single Regulation in March 2022 covering the entire life cycle of batteries, with a focus on responsible mineral sourcing, setting out:

- Sustainability and safety requirements, such as carbon footprint rules, minimum recycled content, performance and durability criteria, and safety parameters.
- Labelling and information requirements, such as the storing of information on sustainability, and data on the state of health and expected battery lifetime.
- End-of-life management provisions, such as requirements regarding extended producer responsibility, the organization of and targets for collection of waste batteries, recycling efficiency and materials recovery.
- Obligations for economic operators regarding the enforcement of product requirements and due diligence schemes.
- Electronic systems for the exchange of information and the creation of the battery passport.

As part of the EU Green Deal and building on the Strategic Action Plan on Batteries, the European Batteries Directive (Directive 2006/66/EC on batteries and accumulators' main objectives are: (1) to strengthen the functioning of the internal market by ensuring a level playing field through a common set of rules; (2) to promote a circular economy; and (3) to reduce environmental and social impacts throughout all stages of the battery lifecycle.

The Regulation will establish requirements for sustainability, safety, and labelling of batteries as well as requirements for end-of-life management. The due diligence obligations adopt the risk-based due diligence found in the "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas" and require that supply chain due diligence policies address the most prevalent social and environmental risk categories (e.g., human rights and environment) as mentioned in Article 39. Responsible sourcing is integral to many firms' corporate social responsibility and constitutes the backbone of due diligence and subsequent engagement with communities along the supply chain (with a frequent focus on communities around extraction sites). As defined by the Organization for Economic Co-operation and Development (OECD) (2018, 15), due diligence "is the process enterprises should carry out to identify, prevent, mitigate and account for how they address these actual and potential adverse impacts in their own operations, their supply chain and other business relationships."

Article 39 of the EU Battery Directive (Attachment B) requires that due diligence policies shall be established for rechargeable industrial batteries and electric vehicles batteries placed on the single market. The Commission is empowered to review the list of substances and risk categories concerned by this obligation. The Regulation should prevent and reduce adverse impacts of



batteries on the environment and ensure a safe and sustainable battery value chain for all batteries, considering, for instance, the carbon footprint of battery manufacturing, ethical sourcing of raw materials and security of supply, and facilitating reuse, repurposing and recycling. It should seek to improve the environmental performance of batteries and of the activities of all economic operators involved in the life cycle of batteries, e.g. producers, distributors and end-users and, in particular, those operators directly involved in the treatment and recycling of waste batteries. Such measures should ensure a transition to a circular economy and the long-term competitiveness of the Union and should contribute to the efficient functioning of the internal market, while taking into account a high level of protection of the environment. This Regulation should also minimize the negative effects of the generation and management of batteries waste on human health and the environment and it should aim at reducing the use of resources, and favor the practical application of the waste hierarchy.

Some electric cars are not, currently, as ethically “clean” as manufacturers would have us believe. In 2017, Amnesty International’s research has shown that cobalt mined by children and adults in extremely hazardous conditions could be entering the supply chains of some of the world’s largest carmakers. A key component of the rechargeable lithium-ion batteries on which electric cars run is cobalt. More than half of the world’s cobalt comes from the Democratic Republic of Congo (DRC). Despite its mineral riches, the DRC is one of the poorest countries in the world and has suffered from decades of war and corrupt leaders. With so few formal jobs in the country, hundreds of thousands of Congolese men, women and children, have been driven to dig their own mines to earn their livelihoods.

Government officials told us that 20% of the cobalt exported from the DRC comes from these so-called “artisanal” miners. The true figure is likely higher. The artisanal mines produce cheaper cobalt than industrial mines (partly because people are paid so little and are unregulated) and as demand has grown, we have heard of new mine sites being developed across the region. What this means is that a huge amount of global cobalt supplies comes from these mines. While we do not know where most of it ends up, it is reasonable to assume that it is entering the supply chains of the handful of companies which dominate the car battery market. Working with a Congolese NGO, Afrewatch, Amnesty International found children as young as seven in the mining areas. None of the adult or child miners we saw wore facemasks that could prevent them from inhaling cobalt dust, which could lead to potentially fatal lung disease. Mines collapse frequently, burying people underground. No one knows the exact figure, but UNICEF estimates that 40,000 children work in mining across the south of the DRC where cobalt is found.

Many credible organizations have documented serious human rights violations linked to the extraction of the minerals used in lithium-ion ZEV batteries which have been provided to CARB’s Environmental Justice Advisory Committee (EJAC) since March 2022 at their in-person meeting and was filed in their docket ( Bibliography in Attachment C) . Forced child labor for mining cobalt in the Democratic Republic of Congo remains unchecked. Many articles have been published about the assault of producing these bloody batteries on some of the poorest regions in the world. The European Parliament adopted a ZEV Battery Directive on March 10, 2022, where



battery-makers will face an assessment of their supply chains to ensure any environmental or human rights abuses are identified and mitigated. Carbon emissions caused by ZEV battery production will need to be disclosed along with a responsible end-of-life recycling solution. CARB should promote a California Battery Directive such as this to provide truth-in-advertising about ZEV emissions. We cannot mine our way out of climate change by digging up the rare Earth while we focus on mining landfills of their organic waste.

CARB and the Environmental Justice Advisory Committee have been complicit in anointing ZEVs as the panacea in a future faraway world, while ignoring the human rights violations and the environmental degradation of mining today. CARB will be endorsing leakage of GHGs out of the country and not considering credible European Parliament ZEV lifecycle analyses with their \$8.9 billion ZEV investment. CARB would rather encourage diesel for decades until ZEVs are commercially viable, rather than incentivize carbon negative RNG use that can bend the climate curve before it's too late. CARB and EJAC should be demanding environmental justice for all.

Below are several video links about Blood Batteries with a bibliography of pertinent documents provided in Attachment C

### **Video Links**

Gravitas Plus: Blood The dark side of Electric Vehicles

<https://www.facebook.com/WIONews/videos/gravitas-plus-blood-the-dark-side-of-electric-vehicles/1027921464749591/>

Blood Batteries in E-Vehicles? Explained in less than 5 mins

<https://www.youtube.com/watch?v=QHk5ZjqUexI>

Blood Batteries; They are just getting started

<https://www.youtube.com/watch?v=4XyVFz8KgfA>



## Attachment A

### California ZEV Battery Directive

The proposed California ZEV Battery Directive would follow the work of the European Union (EU) Battery Directive that was adopted in March 2022. The EU Battery Directive includes adopted new regulations setting sustainability requirements for batteries to be placed on the European market, comprising of: responsible sourcing of raw materials, hazardous substances, third-party verified carbon footprint, mandatory level of recycled content and durability, reusability and recyclability conditions; establishing objectives and measures to improve the collection, treatment, and recycling of used ZEV batteries and ensure materials recovery, establishing information and labelling requirements for both economic operators and end-users, modifying requirements for the implementation of extended producer responsibilities (EPR) obligations.

The proposed California ZEV Battery Directive would have three major components following the EU Battery Directive: (1) Sourcing, (2) Third-party verified Lifecycle Assessment of the carbon intensity, and (3) End-of-Life Recycling.

#### **Sourcing:**

##### **Sustainability, safety, labeling and information requirements for batteries**

- Batteries shall not present a risk to human health, to safety, to property, or to the environment

##### **Obligation for economic operators that place electrical vehicle batteries on the market establish supply chain due diligence**

- Establish and operate a system of controls and transparency over supply chain, including chain of custody or traceability system or identification of upstream actors in the supply chain. This is called Supply Chain Due Diligence.

Sourcing essential minerals like cobalt, nickel, and lithium come directly from child labor – primarily from the Democratic Republic of the Congo where 70 percent of the world’s lithium is mined (Backhaus 2021; UNCTAD 2020). Other unethical mining practices have been found in China, Chile, and Argentina, to name a few (UNCTAD 2020). An estimated 15-30% of the DRC’s cobalt output is generated through artisanal mining, where adults and an estimated 40,000 children work up to 12-hour days in abusive work environments, exposed to hazardous conditions, and the risk of mine collapses (Baumann- Pauly, 2020). Artisanal miners have little to no protective gear or tools, nor safety measures at mining sites, all while earning less than \$2 per day. Additionally, Indonesia is the largest producer of nickel, but strip mining for nickel leads to deforestation of tropical rainforests that are home to native people, act as crucial carbon sinks, and provide habitat for endangered species (Abood et al., 2015; Supriatna et al.,



2020; U.S. Geological Survey, 2021). After strip mining, the soil is depleted of nutrients, posing a significant challenge to rehabilitation efforts (Van der Ent et al., 2013). Child labor, strip mining, soil depletion, and mine collapses do not scream “clean energy.”

## **Carbon footprint**

Third-party verified Lifecycle Assessment of the carbon intensity of ZEV batteries

- A carbon footprint declaration with a lifecycle analysis with an independent third-party verification statement

The term “Zero Emission Vehicle” is greenwashing – ZEVs are not zero emissions but have a carbon intensity of 62 to 90 (gCO<sub>2</sub>e/MJ) on a life-cycle basis, when combining the electrical energy required to charge the battery and the manufacturing process of the battery. CARB’s existing emissions factor to produce the electricity to charge the battery is 24.39 (gCO<sub>2</sub>e/MJ). The range of emissions from battery manufacturing alone based upon European Studies, have a carbon intensity of 38.13 – 66.26 (gCO<sub>2</sub>e/MJ) depending on the type of ZEV battery.

## **Recycling**

### **Extended Producer Responsibility**

- Producer of batteries shall have EPR for batteries made available to the market to ensure the attainment of waste management obligations

### **End-of-Life Information**

- EPR organizations need to present information on end-of-life programs

The Lithium-ion Car Battery Recycling Advisory Group has concluded its work for which it was established and completed its final policy recommendations to the Legislature in its Lithium-ion Car Battery Recycling Advisory Group Final Report. The final policy recommendations posted on May 9, 2022, have been sent to the Legislature as required by AB 2832. These recommendations should be part of CARB’s regulatory process regarding ZEV deployment. Plus, the components of the European Battery Directive need to be incorporated into all ZEV policies and regulations, including: extended producer responsibility, where “producer of batteries shall have EPR for batteries made available to the market to ensure the attainment of waste management obligations,” end of life information where, “EPR organizations need to present information on end-of-life programs,” and to “prioritize the adoption of EU regulations when considering any regulations for ZEV technology.” We need an end-of-life cycle analysis for ZEV battery manufacturing to ensure transparency and efficacy, especially when the core components of the batteries are mined through unethical labor practices.





## Attachment B

### REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending

Regulation (EU) No 2019/1020

(Text with EEA relevance)

{SEC(2020) 420 final} - {SWD(2020) 334 final} - {SWD(2020) 335 final}

#### Article 39

*Obligation for economic operators that place rechargeable industrial batteries and electric- vehicle batteries with internal storage and a capacity above 2 kWh on the market to establish supply chain due diligence policies*

1. As of [12 months after the entry into force of the Regulation] the economic operator that places rechargeable industrial batteries and electric-vehicle batteries with internal storage and a capacity above 2 kWh on the market shall comply with the supply chain due diligence obligations set out in paragraphs 2 to 5 of this Article and shall keep documentation demonstrating its respective compliance with those obligations, including the results of the third-party verification carried out by notified bodies.
2. The economic operator referred to in paragraph 1 shall
  - (a) adopt, and clearly communicate to suppliers and the public, a company policy for the supply chain of raw materials indicated in Annex X, point 1;
  - (b) incorporate in its supply chain policy standards consistent with the standards set out in the model supply chain policy in Annex II to the OECD Due Diligence Guidance;
  - (c) structure its respective internal management systems to support supply chain due diligence by assigning responsibility to senior management to oversee the



supply chain due diligence process as well as maintain records of those systems for a minimum of five years;

- (d) establish and operate a system of controls and transparency over the supply chain, including a chain of custody or traceability system or the identification of upstream actors in the supply chain.

Such a system shall be supported by documentation that provides the following information:

- (i) description of the raw material, including its trade name and type;
- (ii) name and address of the supplier that supplied the raw material present in the batteries to the economic operator that places on the market the batteries containing the raw material in question;
- (iii) country of origin of the raw material and the market transactions from the raw material's extraction to the immediate supplier to the economic operator;
- (iv) quantities of the raw material present in the battery placed on the market, expressed in percentage or weight.

The requirements set out in the current point (d) may be implemented through participation in industry-led schemes.

- (e) incorporate its supply chain policy into contracts and agreements with suppliers, including their risk management measures;
- (f) establish a grievance mechanism as an early-warning risk-awareness system or provide such mechanism through collaborative arrangements with other economic operators or organizations, or by facilitating recourse to an external expert or body, such as an ombudsman.

3. The economic operator referred to in paragraph 1 shall

- (a) identify and assess the adverse impacts associated to the risk categories listed in Annex X, point 2, in its supply chain on the basis of the information provided pursuant to paragraph 2 against the standards of their supply chain policy;
- (b) implement a strategy to respond to the identified risks designed so as to prevent or mitigate adverse impacts by:
  - (i) reporting findings of the supply chain risk assessment to senior management designated for that purpose;

- (ii) adopting risk management measures consistent with Annex II to the OECD Due Diligence Guidance, considering their ability to influence, and where necessary take steps to exert pressure on suppliers who can most effectively prevent or mitigate the identified risk;
- (iii) implementing the risk management plan, monitoring and tracking performance of risk mitigation efforts, reporting back to senior management designated for this purpose and considering suspending or discontinuing engagement with a supplier after failed attempts at mitigation, based on relevant contractual arrangements in line with the second subparagraph to paragraph 2 above;
- (iv) undertaking additional fact and risk assessments for risks requiring mitigation, or after a change of circumstances.

If the economic operator referred to in paragraph 1 pursues risk mitigation efforts while continuing trade or temporarily suspending trade, it shall consult with suppliers and with the stakeholders concerned, including local and central government authorities, international or civil society organisations and affected third parties, and agree on a strategy for measurable risk mitigation in the risk management plan.

The economic operator referred to in paragraph 1 shall identify and assess the probability of adverse impacts in the risk categories listed in Annex X, point 2, in its supply chain based on available reports by third-party verification done by a notified body concerning the suppliers in that chain, and, by assessing, as appropriate, its due diligence practices. Those verification reports shall be in accordance with the first subparagraph in paragraph 4. In the absence of such third-party verification reports concerning suppliers, the economic operator referred to in paragraph 1 shall identify and assess the risks in its supply chain as part of its own risk management systems. In such cases, economic operators referred to in paragraph 1 shall carry out third party verifications of its own supply chains due diligence via a notified body in accordance with the first subparagraph in paragraph 4.

The economic operator referred to in paragraph 1 shall report the findings of the risk assessment referred to in the third subparagraph to its senior management designated for that purpose and a response strategy designed to prevent or mitigate adverse impacts shall be implemented.

4. The economic operator referred to in paragraph 1 shall have their supply chain due diligence policies verified by a notified body (“third-party verification”).

The third-party verification by a notified body shall:

- (a) include in its scope all activities, processes and systems used by economic operators to implement their supply chain due diligence requirements in accordance with paragraphs 2, 3 and 5;
  - (b) have as its objective the determination of conformity of the supply chain due diligence practices of economic operators placing batteries on the market with paragraphs 2, 3 and 5;
  - (c) make recommendations to the economic operators that place batteries on the market on how to improve their supply chain due diligence practices;
  - (d) respect the audit principles of independence, competence and accountability, as set out in the OECD Due Diligence Guidance;
5. The economic operator referred to in paragraph 1 shall make available upon request to Member States’ market surveillance authorities the reports of any third-party verification carried out in accordance with paragraph 4 or evidence of compliance with a supply chain due diligence scheme recognised by the Commission in accordance with Article 72.
6. The economic operator referred to in paragraph 1 shall make available to its immediate downstream purchasers all information gained and maintained pursuant to its supply chain due diligence policies with due regard for business confidentiality and other competitive concerns.

The economic operator referred to in paragraph 1 shall on an annual basis, publicly report as widely as possible, including on the internet, on its supply chain due diligence policies. That report shall contain the steps taken by that economic operator to comply with the requirements set out in paragraphs 2 and 3, including findings of significant adverse impacts in the risk categories listed in Annex X, point 2, and how they have been addressed, as well as a summary report of the third-party verifications carried out in accordance with point 4, including the name of the notified body, with due regard for business confidentiality and other competitive concerns.

Where the economic operator referred to in paragraph 1 can reasonably conclude that the raw materials listed in Annex X, point 1, that are present in the battery are derived only from recycled sources, it shall publicly disclose its conclusions in reasonable detail, with due regard for business confidentiality and other competitive concerns.



7. The Commission shall develop guidance as regards the application of the due diligence requirements defined in paragraphs 2 and 3 of this Article, with regard to the social and environmental risks referred to in Annex X, point 2, and particularly in line with the international instruments referred to in Annex X, point 3.
8. The Commission is empowered to adopt delegated acts in accordance with Article 73 to:
  - (a) Amend the lists of raw materials and risk categories in Annex X in view of scientific and technological progress in battery manufacturing and chemistries and amendments to Regulation (EU) 2017/821;
  - (b) amend the obligations on the economic operator referred to in paragraph 1 set out in paragraphs 2 to 4 in view of amendments to Regulation (EU) 2017/821 and changes to the due diligence recommendations set out in Annex I to the OECD Due Diligence Guidance.

## Attachment C

### Bibliography

Cobalt Following the Footsteps of Lithium in Demand for New Battery Technology. (2018, Jan 23). PR Newswire

<http://proxy.lib.csus.edu/login?url=https://www-proquest-com.proxy.lib.csus.edu/wire-feeds/cobalt-following-footsteps-lithium-demand-new/docview/1989890957/se-2?accountid=10358>

About “65% of the world’s cobalt comes from the Democratic Republic of the Congo,” where they are frequently violating child labor laws and regulations. It is also projected that 75% of lithium-ion batteries will include cobalt, making it higher in demand and less likely that the DRC will stop committing labor laws any time soon. This article also includes what the authors call “potential comparables,” which are a few companies who are researching alternatives to cobalt for the use in batteries- companies including “eCobalt Solutions, Katanga Mining Limited, and Fortune Minerals Limited.”

Sanderson, H. (2019). Congo, child labour and your electric car. FT.Com,

<http://proxy.lib.csus.edu/login?url=https://www-proquest-com.proxy.lib.csus.edu/trade-journals/congo-child-labour-your-electric-car/docview/2252969755/se-2?accountid=10358>

Reports that “China refines 66% of the world’s cobalt” for the use in lithium-ion batteries. Also states how in the Democratic Republic of the Congo, “There are around 200,000 informal copper and cobalt miners,” alluding to children with little to no safety protection, on top of being paid little to nothing working under hazardous conditions.

US Department of Labor- Office of Child Labor. “2020 List of Goods produced by child labor or forced labor”.

[https://www.dol.gov/sites/dolgov/files/ILAB/child\\_labor\\_reports/tda2019/2020\\_TVPRAListOnlineFinal.pdf](https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2019/2020_TVPRAListOnlineFinal.pdf)



U.S. Department of Labor. (2020). Congo, Democratic Republic of the - dol.gov. Bureau of International Labor Affairs. Retrieved March 2022, from [https://www.dol.gov/sites/dolgov/files/ILAB/child\\_labor\\_reports/tda2020/Congo-Democratic-Republic-of-the.pdf](https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2020/Congo-Democratic-Republic-of-the.pdf)

This report is specifically on the Democratic Republic of the Congo and shows statistics including the percentage of children working from ages 5 to 14 (which is 17.4%). The ILAB also reports the DRC's "categorical worst forms of child labor," including "forced mining of gold, tantalum, tin, and tungsten... sometimes as a result of debt bondage" among several other forms of exploitation, ranging from "forced domestic work and human trafficking, use in illicit activities, and forced recruitment or abduction of children." This report also provides the Congo's laws and regulations on child labor, but is lacking certain decrees which are not enforced (p. 4), as well as the specific agencies responsible for child labor law enforcement.

Backhaus R. (2021). Battery Raw Materials - Where from and Where to?. ATZ worldwide, 123(9), 8–13. <https://doi.org/10.1007/s38311-021-0715-5>

States that "the extraction of lithium is currently restricted to Australia, Chile, and Argentina." Additionally, China produces around "50% of the world's synthetic graphite and 70% of the flake graphite, which requires pre-treatment before being used in batteries."

Deberdt, & Billon, P. L. (2021). Conflict minerals and battery materials supply

chains: A mapping review of responsible sourcing initiatives. *The Extractive Industries and Society*, 8(4), 100935–. <https://doi.org/10.1016/j.exis.2021.100935>

This article discusses what the author terms "conflict minerals" (tin, tungsten tantalum and gold) as well as metals and minerals needed for renewable energy technologies in a "transition to a low carbon economy" (cobalt, graphite, lithium, manganese and nickel). Also, the "blood diamond campaign" led to "two UN Security Council resolutions requiring certification for diamond exports from Angola" (Deberdt). These UN resolutions include Angola, Sierra Leone, and Zimbabwe to provide mineral traceability.



Although diamonds are not necessarily a main component in batteries for electric vehicles, this knowledge can lead to a norm around requiring certain certifications for minerals and who mined them.

Dummett, M. (2021, October 11). The Dark Side of electric cars: Exploitative Labor Practices.

Amnesty International. Retrieved March 2022, from

<https://www.amnesty.org/en/latest/news/2017/09/the-dark-side-of-electric-cars-exploitative-labor-practices/>

UNICEF estimates that 40,000 children work in mining across the south of the Democratic Republic of the Congo where cobalt is found. On the DRC, this article states that “Amnesty International found children as young as seven in the mining areas. None of the adult or child miners we saw wore face masks that could prevent them from inhaling cobalt dust, which could lead to potentially fatal lung disease. Mines collapse frequently, burying people underground.”...Also says that the DRC then sells to Chinese and South Korean manufacturers to then put into electric vehicles. There needs to be a norm around electric vehicle companies and “who their smelters or refiners are” - a more transparent supply chain that can be traced.

Irwin, J. (2021, December 6). EV'S DIRTY SECRET; A push to source batteries without

environmental, child labor abuses. Automotive News, 96(7015), 0001.

[https://link.gale.com/apps/doc/A686028282/AONE?u=csus\\_main&sid=bookmark-AONE&xid=02050528](https://link.gale.com/apps/doc/A686028282/AONE?u=csus_main&sid=bookmark-AONE&xid=02050528)

Also on the Democratic Republic of the Congo and lithium mining, “according to Wilson Center, a U.S. public policy think tank, cobalt mines in Congo rely on about 40,000 children -- some as young as 6 years old -- or about 16 percent of the 255,000 people who work in the mines. Workers are often paid less than \$2 per day.” ... also says how “China is responsible for 90 percent of global rare-earth element supply and is instrumental in processing raw materials for EV batteries around the world.” It is interesting how most of these studies say that the DRC is using child labor the most, and not many studies, if at all, say that China utilizes child labor for their processing of the DRC’s raw materials





(even though China uses child labor for other things, like coal... from US Dept. of Labor).

Lawson, Michele. "The DRC Mining Industry: Child Labor and Formalization of Small Scale Mining". Wilson Center. September 1, 2021.

<https://www.wilsoncenter.org/blog-post/drc-mining-industry-child-labor-and-formalization-small-scale-mining>

Trujillo, & Puello, G. O. R. (2021). Economic shocks and their effect on the schooling and labor participation of youth: evidence from the metal mining price boom in Chilean counties. *The Annals of Regional Science*, 68(1), 65–93. <https://doi.org/10.1007/s00168-021-01069-8> <https://link-springer-com.proxy.lib.csus.edu/content/pdf/10.1007/s00168-021-01069-8.pdf>

Chile is the world's largest producer of copper, which is present in lithium-ion batteries used in the batteries for electric vehicles. This article discusses how when the global economy goes down, children in Chile ages 15-18 years old and their school enrollment increases, with a "simultaneous increase in the labor force participation rate" (p. 80). Their statistical analysis showed that "results presented empirically validate the assumption that the metal mining price boom had a negative impact on returns to schooling which encouraged youth to join the labor market in those counties (in Chile) where metal mining activity is present" (p. 84).

