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Sustainable ELECTRIC VEHICLE BATTERIES

Priority Actions to Improve the Supply Chain

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Issue Brief

CLIMATE & ENERGY
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INTRODUCTION

Electrified transportation is essential to global decarbonization - what can leaders do to ensure the supply of batteries is sustainable?

Electrifying the transportation sector is a crucial component of reducing greenhouse gas emissions globally. However, as the auto industry begins to compete with consumer electronics as a major source of demand for the lithium, cobalt, nickel, and other minerals needed for electric vehicle (EV) battery production (including for electric buses, bicycles, and scooters), it risks exacerbating existing environmental and social challenges across mining, processing, reuse, recycling and manufacturing.[1] At the same time, the growth of this industry presents impacted communities with a window of opportunity to coordinate expanded advocacy efforts and promote EV battery production initiatives that incorporate and address both historic and ongoing human rights impacts, governance needs, and local environmental impacts, while providing economic opportunity for communities.

As the electric vehicle industry expands to meet the need for decarbonized transportation, its leaders have the opportunity to leverage their considerable purchasing power to insist on sustainable practices and outcomes from its supply chain partners, from mining to reuse and recycling. This issue brief identifies key strategies for the electrified transportation industry to promote better practices in mineral extraction while ensuring achievement of essential climate goals.

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This issue brief summarizes the findings of a December 2021 convening focused on electric vehicle battery supply chain challenges and promising solutions to overcome them in a sustainable manner, as identified by convening participants.

To address the challenge, UC Berkeley School of Law's Center for Law, Energy, and the Environment (CLEE) convened experts in December 2021 to discuss opportunities for increased advocacy and collaboration and to identify policy challenges and opportunities. Participants included international human rights organizations, environmental organizations, transportation-focused organizations, mineral governance-focused organizations, and research institutes (please see Appendix A for a list of participants).

This issue brief summarizes key points from the discussion, including barriers participants identified to achieving a sustainable EV battery supply chain, along with solutions to overcome each barrier.

BARRIER: POOR SUPPLY CHAIN GOVERNANCE

Battery demand growth could present development opportunities that generate economic benefits at various stages of the supply chain and fiscal revenues for governments. However, mineral extraction and processing historically have failed to deliver equitable development in many cases. Local communities experience environmental and social impacts throughout the entire supply chain, from extraction to disposal. Policymakers lack a comprehensive and targeted governance strategy to minimize harm at each stage of battery material's lifecycle. Currently, supply chain governance and regulation approaches are less effective than participants would like them to be, and participants described the need for comprehensive, multi-governmental mandates and regulations to promote circular economy practices (i.e., practices that seek to reduce and repurpose materials, including waste materials and materials used in batteries.) Participants also described the need to promote and strengthen an international standard and overall enhanced transparency in the supply chain.

Solutions

1. Strengthen binding measures that enforce and improve existing standards. Voluntary standards developed by companies are less valuable and less effective than binding measures or state-driven regulation. Enhancing binding measures would enforce and strengthen standards while promoting global consistency around supply chain sustainability expectations. Legislation in battery-consumer countries that mandates due diligence and accountability at all stages of the supply chain would be an important step in this direction. The European Union's proposed battery regulation can serve as an example.

   As governance progresses towards binding commitments, advocacy efforts could encourage companies and members of civil society to sign onto the voluntary Initiative for Responsible Mining Assurance (IRMA).[2] IRMA aims to advance responsible mining through "independent third-party verification of the performance of industrial-scale mines against a comprehensive standard for all mined materials. The Standard was crafted though a multi-stakeholder process and provides 'one-stop coverage' of the full range of issues related to the impacts of industrial-scale mines."[3] Increasing participation in IRMA by all stakeholders impacted by mining could complement governments' binding measures and standards, raising the bar for industry actions and improving consistency across countries.

2. Implement tracking and labeling standards throughout the supply chain. Implementing battery labeling standards would help producers and consumers understand the source location and supply chain impacts of the materials used in each battery. Potential mechanisms include a battery passport, battery labeling standards, tamper-proof tracking mechanisms, and producer responsibility requirements. In particular, standards in the U.S. or other high-demand countries could help advance ambitious standards worldwide.

3. Engage and support community partners via improved governance measures. Governance measures must ensure that communities impacted by battery mining and production are engaged and valued throughout any decision-making process, while also respecting a community's consent (or non-consent). As another mechanism for improving supply chain governance, advocates at local, national, and international levels should support the development of additional capacity for Indigenous-led groups/governments and civil society organizations to understand and engage in decision making processes, especially in producer countries and processing nations. Advocates may need to inventory the nations involved in the supply chain in order to identify key local partners, given the wide geographic range of mineral extraction and manufacturing and production processes.[4]

4. Reform outdated mining laws. Many participants consider extraction-promoting mining laws in the United States and worldwide to be outdated and unaligned with current values and expectations, given that these laws often originated in the 1800s. Advocates could collaborate on efforts to revise those laws and ensure safer, fairer mining practices in the United States and elsewhere. They could also develop a comprehensive strategy around emerging deep-sea mining practices.

BARRIER: LACK OF ATTENTION TO COMMUNITY NEEDS AND HUMAN RIGHTS

The current supply chain system too often fails to incorporate the rights, priorities, and needs of vulnerable groups and communities impacted by mining and processing activities, as well as the transportation activities that support movement of minerals (such as additional pollution from construction and transportation vehicles, or noise from new roads). Residents of these affected communities feel these impacts throughout the value chain, not just during mining. This lack of attention to human rights and community needs can perpetuate negative outcomes and pose a barrier to achieving the vision articulated by participants.

Solutions

1. Integrate Free, Prior, and Informed Consent (FPIC) into planning and decision-making. The United Nations Declaration on the Rights of Indigenous Peoples guarantees Indigenous peoples the right to free, prior, and informed consent (FPIC); however, FPIC is not fully integrated into all planning and decision-making processes throughout the EV battery supply chain, and parties are not always aware of FPIC practices. Governments should consider incorporating

FPIC into planning and decision-making and encourage use of FPIC principles developed by communities themselves.

2. Bolster technical assistance and funding. Advocacy organizations, philanthropic organizations, research institutions, and governments could allocate more resources towards supporting human rights and community priorities through funding and technical assistance. Specifically, additional funding and technical assistance would help governments and civil society organizations in producer countries (including Indigenous-led organizations and governments) to design and achieve the outcomes best suited for their circumstances. Participants also encouraged direct support for communities and cited potential co-ownership and co-benefit models as options for upholding community rights and wellbeing.

3. Center human rights in all decision-making. Policymakers could ensure appropriate attention to human rights if their decision processes centered human rights as a core value, not just a side benefit. For example, mining, materials collection, recycling, and other activities throughout the supply chain should prioritize workers' rights and engage communities more directly in labor processes. Other aspects of human rights include the right to clean water, a healthy environment, and opportunities for education and a livelihood, among many others. Throughout the supply chain, actors have a responsibility to operate in a manner that recognizes and elevates all components human rights, and should be held responsible for reducing risk and remedying violations that occur.

BARRIER: LACK OF INCENTIVES FOR CIRCULAR ECONOMY PRACTICES AND DEMAND REDUCTION

A sustainable supply chain that promotes human rights and environmental protection relies on a whole-of-economy approach, with sustainable measures integrated more broadly into transportation and recycling efforts. A lack of emphasis on circularity, and on strategies to minimize the projected demand for new battery materials while still achieving transportation decarbonization, poses a barrier to a sustainable supply chain that promotes human rights and environmental protection. Increased attention towards circular economy practices—including the possibility of binding standards backed by law and regulation—would reduce the need for new extraction by reusing and recycling material wherever possible. Reducing projected demand for battery-related minerals through more efficient use of batteries in the transportation sector also is a core component of circularity. Strategies that increase vehicle occupancy, expand transit use, and decrease single occupancy vehicle miles traveled can reduce projected demand for batteries by reducing the number of electric vehicles needed, while maintaining or increasing mobility. Policies to promote manufacturer and consumer adoption of more energy efficient electric vehicles with right-sized battery packs can also reduce the required battery materials needed to support a transition to electric transportation.

Solutions:

1. Mandate circular economy practices. Establishing mandatory circular economy practices, including in mining and mineral processing, would promote consistency throughout the supply chain and would reduce the growth rate in extraction that would be necessary to achieve global climate goals while also reducing waste material, greening extractive processes, and helping to mitigate certain human rights risks. Examples include extended producer responsibility and "right to repair" laws. However, any efforts to promote circularity must also advance a just transition and adequate investment for those affected by the loss in demand for extraction.

2. Ensure that any new extraction meets the highest standards possible of community and environmental protection. Participants expressed concern that in many cases, economic incentives typically favor new extraction, making it difficult or impossible for recycling to compete economically as raw material acquisition is still cheaper than acquiring recycled or reused materials. Reducing incentives for new, unsustainable extraction and ensuring any new extraction otherwise meets the highest environmental and community protection standards, such as those defined in IRMA's *Standard for Responsible Mining*, would make recycling and reuse more competitive and even economically favorable.

3. Develop incentives and requirements to commercialize technology for battery recycling. Manufacturers often lack economic incentives, capacity, and motivation to use recycled or reused material. Creating recycling incentives could make recycling and reuse more economically attractive and feasible, especially if policymakers develop incentives in conjunction with additional capacity for recycling, as recycling options are not available in every location or for every type of material. Participants also discussed concerns about recycling technologies, especially around chemical recycling, and encouraged innovation and research and development in the battery recycling industry to improve outcomes. Participants described the need for regulation to enable the supply and technology required to recycle batteries, especially for batteries in use now. Some places have insufficient recycling capacity and throughput, and therefore need regulatory support to scale up the market. Additionally, participants stressed the need to improve battery performance so that products can be used for longer periods of time before entering the reuse or recycling phase. Finally, incentives for battery recycling can be matched with incentives for dematerializing the extractives sector, such as by promoting innovative approaches to managing mining products and co-products of extraction.

4. Set recycled content targets. Implementing targets for incorporating recycled materials into new battery cells could promote market demand for recycled materials over newly extracted materials. For example, governments could establish a minimum percentage of recycled material required for each new battery cell. However, policymakers should design such targets so that they do not necessarily discourage the feasible reuse of batteries prior to end-of-life recycling.

NEXT STEPS AND OPPORTUNITIES FOR COLLABORATION

To advance these and other solutions, advocates and other stakeholders will need to collaborate and coordinate action.[5] Ultimately, the electrification of transportation presents an opportunity to avoid repeating mistakes of the past when it comes to extractive industries that harm local communities and environments. But without alignment across a range of stakeholders coordinated on issues like mining law reform or Indigenous rights, the overall sustainability of the electric vehicle battery supply chain will remain in question.

APPENDIX A – PARTICIPANT LIST

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ENDNOTES

All URLs last accessed February 22, 2022

1 The federal government's 100-day review of supply chain reports completed under Executive Order 14017 identifies five components of a "high-capacity battery supply chain." These five steps are "1) raw material production, 2) material refinement and processing, 3) battery material manufacturing and cell fabrication, 4) battery pack and end-use product manufacturing, and 5) battery end-of-life and recycling." The White House, Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth: 100-Day Reviews under Executive Order 14017, (June 2021), p. 86, available at https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf.

2 Initiative for Responsible Mining Assurance website available at https://responsiblemining.net/.

3 Initiative for Responsible Mining Assurance, "About Us" (webpage), available at https://responsiblemining.net/about/about-us/.

4 For more information on the electric vehicle battery supply chain and relevant mineral inputs, see Ethan Elkind et al., Sustainable Drive Sustainable Supply: Priorities to Improve the Electric Vehicle Battery Supply Chain, (2020), available at https://www.law.berkeley.edu/wp-content/uploads/2020/07/Sustainable-Drive-Sustainable-Supply-July-2020.pdf.

5 For example, a report by The University of Queensland and The University of Geneva discusses opportunities for repurposing sand mining residue that would otherwise be discarded as waste and could create harmful impacts to humans and the environment. See Louise Gallagher et al., Alternative Sand from Mineral Ores: A potential new solution to the global sand sustainability crisis – Interim report (6 months), The University of Queensland and the University of Geneva, (2021), available at https://smi.uq.edu.au/files/80302/InterimReport_Ore-Sand_ExecutiveSummary_.pdf.

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