

**CONFLICT IMPLICATIONS OF RISING COBALT DEMAND AND THE EFFECTS OF
CLASSIFYING COBALT AS A CONFLICT MINERAL ON THE DRC**

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Abstract

As the world pushes towards renewable energy, the demand for critical minerals is predicted to see unprecedented levels of growth. One of these minerals is cobalt, a mineral needed for electric vehicles and battery storage. The largest cobalt reserves in the world are in the Democratic Republic of Congo where cobalt mining is closely related with human rights abuses and atrocities. In the wake of the energy transition, NGO's and other corporations are pushing for cobalt to be considered a conflict mineral. The literature on this topic, however, suggests that the mechanisms by which natural resources interact with a state are more complex than being given credit. Although armed conflict and human rights violations are related, they should not and cannot be effectively addressed with the same policies.

The labeling of cobalt as a conflict mineral suggests that it is directly used by armed groups to fund violence, and this legal definition would mean inclusion under supply chain transparency programs like Dodd-Frank. Furthermore, calling cobalt a conflict mineral leads many companies to treat it as such, despite the legal classification. Current data shows, however, that there is little evidence of armed groups vying for control of cobalt mines, utilizing the existing labor force in these mines, or selling cobalt for profit like is evident in Eastern Congo with other conflict minerals. The Congolese government is also seeking to monopolize the cobalt industry and push out artisanal miners, contributing to calls to classify cobalt as a conflict mineral. As seen in a comparison to Chile's copper mining industry, however, quality institutions play a key role in reducing rent seeking and promoting a healthy mining sector, particularly the healthy relationship between state owned mining companies and private/foreign investors.

Any external supply chain due-diligence efforts will face difficulty without also focusing on the underlying internal issues present in the DRC's national treatment of this resource. The

inclusion of cobalt under conflict minerals legislation also does not address the fundamental issues driving the human rights abuses in cobalt mining, which is the primary reason for the labeling in the first place.

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Introduction

The world is at a critical moment in its response to climate change. According to the Paris Accord, to prevent the worst effects of climate change total warming must remain under two degrees Celsius.¹ The global energy landscape will drastically change over the next five to ten years as states pivot to clean energy technology. Minerals like cobalt, copper and lithium are essential in creating the clean energy technology necessary for the world to achieve its net-zero emissions goal. So while the demand for fossil fuels will plummet as this technology becomes more prevalent and desirable, the demand for these minerals and metals will rapidly increase. The International Energy Agency (IEA) estimates that demand for critical mineral resources could rise by as much as six times by 2040.² The rapidly increasing demand for critical minerals will unlikely be a short term or temporary event, and this demand is reshaping the energy sector and the current geopolitical landscape. This restructuring will fundamentally shape mineral rich states, particularly fragile mineral rich states such as the Democratic Republic of Congo (DRC).

Fragile mineral rich states are already stressed from the burdens of mineral resource abundance. Scholars frequently turn to resource curse theories to analyze how mineral resource abundance perpetuates conflict, instability, and sustainability issues in developing states. A common topic of resource curse theories are conflict minerals, which are minerals that are used to, “finance armed groups, fuel forced labor and other human rights abuses, and support corruption and money laundering”.³ In general, there are four minerals considered to be conflict

¹ “The Paris Agreement,” *United Nations Framework Convention on Climate Change*, last accessed September 22, 2021, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

² “Clean energy demand for critical minerals set to soar as the world pursues net zero goals,” *International Energy Agency*, May 5, 2021, <https://www.iea.org/news/clean-energy-demand-for-critical-minerals-set-to-soar-as-the-world-pursues-net-zero-goals>.

³ “The Regulation Explained,” *European Commission*, last accessed October 6, 2021, <https://ec.europa.eu/trade/policy/in-focus/conflict-minerals-regulation/regulation-explained/>.

minerals: tantalum, tin, gold and tungsten (3TG). Well-known legislation like the United States' Dodd-Frank Act and the European Union's (EU) Conflict Minerals Regulation seek to secure the supply chain and promote responsible sourcing of these four minerals.

However, as the world turns to renewable energy, it has a profound effect on other minerals not typically associated as conflict minerals, particularly cobalt. Many international organizations estimate that the demand for cobalt will increase over the next couple decades. Currently, the DRC possesses the largest known cobalt reserves in the world, but cobalt mining in this state is already heavily riddled with child labor, human rights risks and corruption. With the rising demand for cobalt, many NGOs and human rights groups are pushing for cobalt to be legally considered a conflict mineral, and thus fall under supply chain transparency legislation.⁴ Corporations like Apple have already pledged to treat cobalt in the DRC as a conflict mineral without a legislative mandate.⁵ However, as the evolution of resource curse literature demonstrates, the mechanisms through which minerals interact with a state are complicated. While violence perpetuated by armed groups may be connected to forced labor and human rights violations, the two issues are not always related. In Eastern DRC, the location of large amounts of tin and gold deposits, the relationship between armed conflict and human rights violations in the mining sector is clear. In the cobalt mines of Southern Congo, however, there is little evidence of armed conflict. The mislabeling of cobalt and stigmatization as a conflict mineral may have little effect or even further exacerbate the human rights issues associated with the

⁴ "Cobalt: The New Conflict Mineral?" *3BL Media*, October 5, 2016, <https://www.3blmedia.com/news/cobalt-new-conflict-mineral>.

⁵ Jennifer McKeivitt, "Apple pledges to treat Congolese cobalt as a conflict mineral amid reports of child labor," *Supply Chain Dive*, March 8, 2017, <https://www.supplychaindive.com/news/apple-cobalt-sourcing-conflict-minerals-dodd-frank/437612/>.

DRC's cobalt mining industry by causing private and foreign investors to avoid sourcing from these mines completely, destroying the livelihood of vulnerable populations and communities.

It has become increasingly clear that all resources are not created equal and the simple presence of natural resource abundance alone does not trigger the mechanisms of a resource curse. This research will use a comparative case study analysis between the mining sectors of the DRC and Chile to address a two-part question. First, this research will analyze the conflict implications for rising cobalt demand in the DRC to determine if there is enough data to classify cobalt as a conflict mineral. Second, this research aims to explore the potential impacts of labeling cobalt as a conflict mineral and the impacts of supply chain due diligence programs on the cobalt mining sector. This research seeks to address both topics because they are inseparable. The definition of cobalt is driving the actions and legislation around it. Conflict minerals are minerals that are used by armed groups to fund violence. If cobalt is a conflict mineral, then the cobalt mining region should present similar characteristics than the 3TG mining region in Congo. Furthermore, if cobalt is not a conflict mineral, then treating it like a conflict mineral will exacerbate the issues in the cobalt mining sector.

Literature Review

This literature review will first address the current state of the transition to clean energy and the most recent projections for the growing cobalt demand. Second, it will discuss the history and development of the resource curse, as the conceptual frameworks surrounding this theory are crucial to understanding the mechanisms of mineral abundance and conflict. Lastly, it will provide an overview of conflict minerals and associated supply chain due diligence legislation.

The Energy Transition

The term “energy transition” refers to the efforts by the international community to combat climate change by reducing carbon emissions from energy sources like oil and coal, pivoting to cleaner energy sources like alternative fuels, nuclear energy, and renewable energy like wind. However, alternative fuels (like biofuel) still produce carbon emissions and nuclear energy produces radioactive waste. As a result, renewable energy is rapidly gaining momentum as it generates little waste, but this technology heavily relies on natural minerals like cobalt, lithium and copper. As the demand for renewable energy increases, so does the demand for these critical minerals. The issue with mineral resources, as opposed to fossil fuels, is that there are a diverse amount of minerals being used in different technologies. This makes studying the role of the energy transition on critical minerals very challenging, as each has varying levels of demand with different methods of mining, and each has different effects on the states that produce them.

In May 2021, the International Energy Agency (IEA) released a comprehensive roadmap for how the world can achieve net-zero emissions by 2050 as well as a comprehensive analysis for how this transition would affect critical minerals. Their findings showed that the minerals required for making electric vehicles and battery storage will be among the most rapidly growing in demand.⁶ Specifically, lithium and cobalt will see the fastest growth in demand, with lithium increasing up to 40 times and cobalt up to 25 times by 2040.⁷ These estimates were supported by estimates from the World Bank⁸ and the International Institute for Sustainable Development

⁶ “The Role of Critical Minerals in Clean Energy Transitions,” *International Energy Agency*, May 2021, <https://iea.blob.core.windows.net/assets/24d5dfbb-a77a-4647-abcc-667867207f74/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf>.

⁷ Ibid.

⁸ Kirsten Hund et al., “Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition,” *World Bank Group*, 2020, 12, <https://pubdocs.worldbank.org/en/961711588875536384/Minerals-for-Climate-Action-The-Mineral-Intensity-of-the-Clean-Energy-Transition.pdf>.

(IISD).⁹ The IISD even predicted that at the current rate of demand increase, supplies of cobalt and lithium will be significantly depleted by 2060.¹⁰

In addition to increasing demand, the IEA stated that lithium and cobalt have experienced more monthly price volatility than any other mineral besides palladium, and more price volatility than both oil and gas.¹¹ Once again, this finding was supported by the IISD, which estimated that the price for cobalt and lithium will be among the fastest rising, with cobalt being especially volatile.¹² The World Bank further identified cobalt as particularly vulnerable for price volatility.¹³

Cobalt is frequently discussed in the literature as being one of the most important minerals for the energy transition, and these states will likely see some of the greatest changes moving forward. Approximately 70% of the world's cobalt reserves are located in the DRC, which is particularly worrisome as the DRC has historically been discussed as a classic example of the resource curse. The DRC is often the subject of literature on the resource curse and provides the perfect case for examining the increasing demand of cobalt because of its active mining operation that has shaped the development of the country.

Resource Curse

The understanding of how natural resources affects developing states has evolved significantly over the past few decades. Natural resources were initially seen as a blessing for states, and economists like Adam Smith and David Ricardo argued that natural resources benefited developing economies. Through the early 1980s, most scholars thought that natural

⁹ Clare Church and Alec Crawford, "Green Conflict Minerals: The fuels of conflict in the transition to a low-carbon economy," *International Institute for Sustainable Development*, August 2018, <https://www.iisd.org/system/files/publications/green-conflict-minerals.pdf>.

¹⁰ Ibid.

¹¹ "The Role of Critical Minerals in Clean Energy Transitions."

¹² Church and Crawford, "Green Conflict Minerals."

¹³ Hund et. al. "Minerals for Climate Action," 106.

resource endowment would be the key driver allowing developing economies to become industrial states.¹⁴ This was until 1988, when Alan Gelb published a book analyzing the effects of oil rents called *Oil Windfalls: Blessing or a Curse*.¹⁵ Gelb was one of the first scholars to argue that natural resources were in reality an obstacle to development for these states. It wasn't until 1993 that British economist Richard Auty coined the term "resource curse" in his book, *Sustaining Development in Mineral Economies*.¹⁶ The resource curse is a theory that posits that high natural resource endowment promotes a variety of negative developmental effects particularly on less developed states, including rent seeking and increased levels of conflict and corruption.¹⁷ The literature surrounding the resource curse steadily increased over the next few decades from only 13 papers in 1995 discussing the framework to 2,360 paper in 2015.¹⁸

The resource curse theory has developed significantly since the 1990s beginning with Auty's book. Initially, most of the literature focused on the macroeconomic repercussions of natural resource endowment, but over time, the resource curse theory began focusing attention on the meso and micro levels.¹⁹ Eventually, non-economists began exploring the resource curse theory and diverse sub-streams of the theory emerged. Social scientists began exploring the relationship between the extractive industry at the community level, individual agency and the importance of good institutions in abating the effects of the resource curse.²⁰

¹⁴ Ramez Badeeb, Hooi Hooi Lean and Jeremy Clark, "The evolution of the natural resource curse thesis: A critical literature survey," *Resources Policy* 51, (March 2017): 124, <https://doi.org/10.1016/j.resourpol.2016.10.015>.

¹⁵ Alan Gelb, *Oil Windfalls, Blessing or a Curse* (Oxford: World Bank, 1988).

¹⁶ Richard Auty, *Sustaining Development in Mineral Economies*, (London: Routledge, 1993).

¹⁷ Jonathan Di John, "Is There Really a Resource Curse? A Critical Survey of Theory and Evidence," *Global Governance* 17, (2011): 167, <https://www.jstor.org/stable/23033728>.

¹⁸ Elissaios Papyrakis, "The Resource Curse - What Have We Learned from Two Decades of Intensive Research: Introduction to the Special Issue," *The Journal of Development Studies* 53, no. 2 (2017): 175.

¹⁹ Papyrakis, "The Resource Curse - What Have We Learned from Two Decades of Intensive Research," 177.

²⁰ Ibid.

Resource curse theory has saturated development literature to the point where many publications take the theory as a fact, rather than a theory. For example, the IEA stated in its study on critical minerals and the clean energy transition that “unfortunately, there are myriad of examples where development of resources has not led to sustainable economic growth or has caused corresponding social harm. There are many causes for this so-called ‘resource curse’”.²¹ This publication is intended to be an analysis on minerals and the clean energy transition, not a study under the resource curse framework. The IEA is discussing the resource curse as an intrinsic phenomenon in resource rich states, rather than just one theory or framework for understanding the relationship between development and natural resources.

More recent literature on the resource curse has underlined the complexity of the theory as scholars have increasingly identified phenomena that weaken its universal application.²² First, the type of resource matters and the resource curse, as it has been argued in the past, most accurately applies specifically to mineral resources, rather than just any natural resource.²³ Second, the geographical concentration of the resource matters, as minerals that are highly concentrated in one area are more likely to see the effects of the resource curse than minerals that are geographically dispersed.²⁴ Finally, the percentage of the resource in the overall economic activity of the state, as expressed by GDP, is also critical. States that heavily rely on mineral resources to drive economic activity are more likely to see the effects of the resource curse. There is a critical difference between resource abundance and resource dependence.²⁵ The

²¹ “The Role of Critical Minerals in Clean Energy Transitions,” 226.

²² Papyrakis, “The Resource Curse - What Have We Learned from Two Decades of Intensive Research,” 178.

²³ Ibid.

²⁴ Erwin Bulte, Richard Damania and Robert Deacon, “Resource intensity, institutions, and development,” *World Development* 33, no. 7 (July 2005): 1029–1044, <https://doi.org/10.1016/j.worlddev.2005.04.004>.

²⁵ Christa Brunnschweiler and Erwin Bulte, “The resource curse revisited and revised: A tale of paradoxes and red herrings,” *Journal of Environmental Economics and Management* 55, no. 3 (May 2008): 248–264, <https://doi.org/10.1016/j.jeem.2007.08.004>.

presence of a resource curse is largely dependent on the importance of the extractive sector in a state's economy and the quality of institutions governing the resource.²⁶

An important concept often associated with the resource curse, and important for this research, is the rentier state. A rentier state emerges when the economy of a country is dependent on external rent for state revenue.²⁷ These rents generated by natural resources involve little input from society and are primarily captured and controlled by the state. Essentially, "a rentier state means that if the state is more dependent on the extraction of its resources than the taxation of its citizens, the well-being of the citizens is not dependent on the wealth of the state or government."²⁸ A rentier state breaks the social contract between a government and its people and often leads to negative developmental outcomes, as the government prioritizes rent seeking over sustainable economic development. The rentier state theory is often associated with dictatorships and authoritarian regimes, often manifesting in the DRC.

Conflict Minerals and Supply Chain Due Diligence

Closely following the resource curse theory, conflict minerals are used to, "finance armed groups, fuel forced labor and other human rights abuses, and support corruption and money laundering".²⁹ The minerals usually defined as conflict minerals are tantalum, tin, tungsten and gold (often referred to as 3TG). These minerals were chosen as the legal definition of conflict minerals for many oversight regulations because they historically have been associated with the most amount of conflict. Section 1502 of the Dodd-Frank Act passed by Congress in 2008

²⁶ Papyrakis, "The Resource Curse - What Have We Learned from Two Decades of Intensive Research," 178.

²⁷ Alessandro Zicchieri, "Is Rentier State Theory Sufficient to Explain the Politics of the UAE?" *E-International Relations*, February 4, 2016, <https://www.e-ir.info/pdf/61398>.

²⁸ Allison Seyler, "Cobalt in the Democratic Republic of Congo: the cost of innovative technology and historical lessons in global economics for a more ethical future," *Suny*, May 10, 2021, https://soar.suny.edu/bitstream/handle/20.500.12648/1905/Seyler_Honors.pdf?sequence=1&isAllowed=y.

²⁹ "The Regulation Explained."

concerns the 3TG.³⁰ This section essentially requires companies to disclose their use of 3TG if the minerals are “necessary to the functionality or production of a product manufactured by those companies”.³¹ Another regulation aimed at promoting due diligence in the conflict mineral supply chain is the EU Conflict Minerals Regulation. This regulation came into effect on January 1, 2021 and covers the same four minerals as the Dodd-Frank Act.³² Another widespread regulation is the Kimberley Process Certification Scheme, created to enhance oversight over the diamond industry and adopted by approximately 82 countries, despite the official classification of diamonds as a conflict mineral.³³

The original purpose of transparency legislation in the conflict mineral supply chain is to cut off funding to armed groups perpetuating violence and conflict, but its actual effectiveness is still under debate. For example, one research study in 2019 demonstrated positive results from mandatory conflict mineral disclosures, stating that it encourages companies with poor performance records to improve their practices to avoid costly fees.³⁴ However, another study only a year later showed that the Dodd-Frank Act increased conflict levels in eastern DRC as warlords saw their profit diminish, sparking battles over unregulated gold mines.³⁵

Perhaps the most prominent theory tying resource abundance to conflict is the conflict trap, a term coined by Paul Collier to describe the feedback loops of violence that keep states in a perpetual cycle of conflict, particularly the DRC. The conflict trap has been posited through four

³⁰ “Disclosing the Use of Conflict Minerals,” *US Securities and Exchange Commission*, last accessed October 4, 2021, <https://www.sec.gov/opa/Article/2012-2012-163htm---related-materials.html>.

³¹ *Ibid.*

³² “The Regulation Explained.”

³³ “Conflict Diamonds and the Kimberley Process,” *US Department of State*, last accessed October 6, 2021, <https://www.state.gov/conflict-diamonds-and-the-kimberley-process/>.

³⁴ Fayez Elayan, Kareen Brown, Jennifer Li and Yijia Chen, “The Market Response to Mandatory Conflict Mineral Disclosures,” *Journal of Business Ethics* 169, (2019): 13, <https://doi.org/10.1007/s10551-019-04283-9>.

³⁵ Dominic Parker and Bryan Vadheim, “Resource Cursed or Policy Cursed? US Regulation of Conflict Minerals and Violence in the Congo,” *Journal of the Association of Environmental & Resource Economists* 4, no. 1 (March 2017): 1-49, <http://dx.doi.org/10.1086/689865>.

primary mechanisms where conflict: (1) increases the likelihood of conflict in the future, (2) increases the likelihood that the next conflict will be more protracted, (3) increases the intensity of future conflict and (4) increases the diffusion of conflict.³⁶

There are supply chain governance initiatives besides conflict minerals legislation that are specifically geared towards the cobalt mining industry. The Responsible Minerals Initiative (RMI) and the Responsible Cobalt Initiative (RCI), supported by the Organization for Economic Cooperation and Development (OECD), are the two largest organizations governing cobalt sourcing standards. RMI and RCI publish guidance on cobalt sourcing through the Cobalt Refiner Supply Chain Due Diligence Standard, last updated in August 2021.³⁷ Tech giants like Apple, HP, Samsung, and Sony all support the Cobalt Refiner Supply Chain Due Diligence Standard. This guidance includes various strategies to mitigate the human rights risks associated with cobalt mining but includes mandatory reporting on their supply chain to increase transparency, similar to conflict minerals legislation like Dodd-Frank.

Literature Gap

While there is a plethora of related studies on the implications for the energy transition, few publications have specifically explored the relationship between the renewable energy transition, rising demand for critical minerals and the conflict implications for the developing states in which these minerals are located. However, there are related studies. For example, in 2019, Manberger and Johansson studied the geopolitical implications for increased mineral demand driven by the energy transition. They concluded that very few states will gain significant revenue from the transition, as declining fossil fuel revenue will offset increasing revenue from

³⁶ Paul Collier and Anke Hoeffler, "Greed and Grievance in Civil War," *Oxford Economic Papers* 56, no. 4 (2004): 588.

³⁷ "RMI and RCI Publish Revised Cobalt Refiner Supply Chain Due Diligence Standard," *Responsible Business*, August 19, 2021, <http://www.responsiblebusiness.org/news/rmi-rci/>.

mineral resources.³⁸ However, they discovered some notable exceptions, specifically the DRC and Chile. Manberger and Johansson concluded that these two states have the highest potential for increased revenues under the energy transition.³⁹

The IISD report from 2018 on the energy transition and its implications for mineral rich states is perhaps the most comprehensive and relevant publication on this issue. The IISD report titled, “Green Conflict Materials,” concluded that states with an abundance of minerals needed for the clean energy transition that have preexisting development and fragility issues will see increased levels of instability and conflict.⁴⁰ The title of the report is misleading, as the IISD merely stated that these minerals have the potential to be conflict minerals, not they are currently conflict minerals. The IISD report also did not discuss the controversy around the effects of legislation like the Dodd-Frank Act and advocated for actions like increased transparency in the cobalt supply chain.⁴¹ Most of the literature examining the renewable energy transition in the context of developing states focuses on either a resource curse for renewable energy,⁴² the geopolitical implications for the energy transition⁴³, or the decreasing demand for fossil fuel.⁴⁴ There is a literature gap focusing specifically on the energy transition as a driver of mineral resource demand, under the framework of resource curse theory, as well as the conflict

³⁸ Andre Manberger and Bengt Johansson, “The geopolitics of metals and metalloids used for the renewable energy transition,” *Energy Strategy Reviews* 26, (2019): 8. <https://doi.org/10.1016/j.esr.2019.100394>.

³⁹ Ibid.

⁴⁰ Church and Crawford, “Green Conflict Minerals.”

⁴¹ Ibid. 37

⁴² Andre Mansson, “A resource curse for renewables? Conflict and cooperation in the renewable energy sector,” *Energy Research and Social Sciences* 10, (2015): 1-9. <https://doi.org/10.1016/j.erss.2015.06.008>. Caterina Gennaioli and Massimo Tavoni, “Clean or ‘Dirty’ Energy: Evidence on a Renewable Energy Resource Curse,” *Fondazione Eni Enrico Mattei*, 2011.

⁴³ Daniel Scholten and Rick Bosman, “The geopolitics of renewables; exploring the political implications of renewable energy systems,” *Technological Forecasting and Social Change* 103, (2016): 273-283, <https://doi.org/10.1016/j.techfore.2015.10.014>.

⁴⁴ Jim Krane, “Climate change and fossil fuel: An examination of risks for the energy industry and producer states,” *MRS Energy & Sustainability: A Review Journal*, (2017): 1-12, <https://doi.org/10.1557/mre.2017.3>; Inigo Capellan-Perez, “Fossil fuel depletion and socio-economic scenarios: An integrated approach,” *Energy* 77, no. 1 (2014): 641-666, <https://doi.org/10.1016/j.energy.2014.09.063>.

implications for developing states with existing mining sectors. Moreover, there is sparse literature focusing on whether cobalt should be classified as a conflict mineral and what the effects of treating it as such may be. Most of the existing literature, like the IEA and IISD studies, focus on the mining industry in general and do not discuss the effects of conflict minerals legislation.

The issues with the trend towards overgeneralization of the resource curse framework to all states with resource abundance have become increasingly apparent. As recent literature demonstrates, the exact mechanisms by which the resource curse interacts with a state are very complex and highly individualized to the characteristics of the state. The manifestation of the resource curse depends on the type of resource, the interaction of the resource in the overall economy, the quality of institutions of the state etc. This same idea applies to cobalt since it is not the same as tin or gold. It has its own variables with how it interacts with the DRC, separate from other conflict minerals. As a result, the classification of cobalt is critical as it will affect a wide range of issues like legislation and private sector investment. While supply chain due diligence legislation does not include cobalt, NGO's and companies are independently ascribing the definition of "conflict mineral" to cobalt, thus resulting in similar supply chain management programs associated with 3TG that may not be applicable to cobalt.

Methods

This research utilizes a comparative case study analysis between the DRC's cobalt mining sector and Chile's copper mining sector under the resource curse framework. Specifically, it utilizes the difference in institutional quality between the DRC and Chile as a comparison point to discuss the conflict implications of rising cobalt demand and the potential impact of conflict minerals legislation. Although much of the discussion will concern the DRC,

additional discussion of Chile's copper mining industry was included for several key reasons. Cobalt is typically a byproduct of copper mining, making the cobalt and copper industries extremely similar, if almost interchangeable. Chile is also generally regarded as a state that escaped the resource curse, and analysis of the institutional differences in the two countries' mining industries will lead to a better understanding about how increasing cobalt demand will affect the DRC. Moreover, Chile is currently the largest copper producer in the world, and with copper being an important element for the energy transition, it is likely that their mining industry will experience similar rising levels of demand to that of cobalt and increase as much as 300 percent through 2050.⁴⁵

Criteria

The hypothesis of this study is two-fold. If cobalt is a conflict mineral, then the cobalt mining region should present similar characteristics than the 3TG mining region in Congo. Furthermore, if cobalt is not a conflict mineral, then treating it like a conflict mineral will exacerbate the issues in the cobalt mining sector. The first question to be addressed is if the conflict implications for rising cobalt demand in the DRC warrants cobalt being classified as a conflict mineral. Similar criteria used by Dodd-Frank and the EU Conflict Minerals Regulation will be used to assess the validity of classifying cobalt as a conflict mineral. The two primary criteria are: (1) the presence and activity of armed groups in Southern Congo and (2) evidence of armed groups using profits from cobalt to directly fund violence. Since there is no objective criteria or standard for how much violence there needs to be for a mineral to be considered a conflict mineral, cobalt will be compared with 3TG mining in Eastern Congo.

⁴⁵ "Where Does Copper Come From?" *Copper Development Association Inc.* last accessed October 5, 2021. https://www.copper.org/education/Kids/copperandkids_wheredoescopper.html.

The second question is how supply chain due diligence, like that in Dodd-Frank, would affect cobalt mining in the DRC. This question will draw largely on the comparative case study analysis between the “bad” institutions of the DRC and the generally regarded “good” institutions of Chile to understand how the DRC’s cobalt industry will respond to supply chain transparency initiatives.

Case Study: The Democratic Republic of Congo

Brief History of the DRC

The DRC gained independence in 1960 and was widely regarded as one of Africa’s most promising countries.⁴⁶ It is the largest state in sub-Saharan Africa and possesses vast amounts of natural resources and economic potential. However, by 1990, it was on the brink of political and economic collapse⁴⁷, with the Fragile States Index listing the DRC as the fifth most fragile state in the world, only scoring higher than states like Syria, Somalia, and Yemen.⁴⁸ The severe development issues in the DRC are well documented, with KPMG International already reporting back in 2012 that only about 26% of the population has access to clean water, 18% complete secondary school and 6% have access to electricity.⁴⁹ The DRC also has an extensive history of armed conflict with over 100 armed groups in eastern DRC alone.⁵⁰ While not all this violence is fueled by conflict minerals, these minerals certainly perpetuate and exacerbate this armed conflict.

⁴⁶ Stephanie Matti, “Resources and Rent Seeking in the Democratic Republic of the Congo,” *Third World Quarterly* 31, no. 3 (2010): 401. <https://doi.org/10.1080/01436597.2010.488471>.

⁴⁷ Ibid.

⁴⁸ “Fragile States Index,” *The Fund For Peace*, May 20, 2021, pg. 17,

<https://fragilestatesindex.org/2021/05/20/fragile-states-index-2021-annual-report/>.

⁴⁹ “Democratic Republic of Congo: Country Mining Guide,” *KPMG International*, 2014,

<https://assets.kpmg/content/dam/kpmg/pdf/2014/09/democratic-republic-congo-mining-guide.pdf>.

⁵⁰ “Violence in the Democratic Republic of Congo,” *Council on Foreign Relations*, last accessed October 6, 2021, <https://www.cfr.org/global-conflict-tracker/conflict/violence-democratic-republic-congo>.

Much of this conflict originates from the DRC's colonial history with Belgium. Beginning in approximately 1870, King Leopold II of Belgium sponsored an expedition in the Congo Basin, making it his private property, and renamed the region as the Congo Free State. During this time, King Leopold's military forced the population to produce rubber, resulting in the deaths of millions of Congolese from overworking, poor living conditions and disease.⁵¹ Belgium continued the path of extracting resources from the Congo even after the return of King Leopold to Belgium in 1908, albeit not as aggressively as before. Belgium had exclusive access to the mining in Katanga, the southern region of the DRC and location of the entire copper belt as well as a large portion of tin reserves. In 1956, discontent among the Congolese population reached an all-time high and a political manifesto was published that led to instability as the Congolese people began revolting against Belgium. The rising political instability led to massive rioting and the deaths of thousands of Congolese from Belgian security forces. Shortly after, Belgium recognized Congolese independence and proceeded to work with nationalist organizations on a transfer of power. On June 30 1960, the DRC obtained independence and immediately fell into chaos due to preexisting social and political discontent.⁵² The DRC has been plagued by ethnic conflict, political instability and armed conflict since 1960, with the mining industry playing a key role in perpetuating this conflict.

Development of the DRC's Cobalt Mining Sector

The DRC is not only currently the largest cobalt producer in the world, they also have the largest cobalt reserves and are the eighth largest copper producer.⁵³ When the DRC gained

⁵¹ "Congo, Democratic Republic of the," *The World Factbook*, September 27, 2021, <https://www.cia.gov/the-world-factbook/countries/congo-democratic-republic-of-the/>.

⁵² "History of the Democratic Republic of Congo," *Britannica*, last accessed October 5, 2021, <https://www.britannica.com/place/Democratic-Republic-of-the-Congo/History>.

⁵³ Benjamin Sovacool, "The Precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of Congo," *The Extractive Industries and Society* 6, no. 3 (2019): 915. <https://doi.org/10.1016/j.exis.2019.05.018>.

independence in 1960, the mining industry operated previously by Belgium was quickly nationalized. The state-owned mining company Gecamines took over all mining operations and started to greatly expand operations. By 1987, Gecamines was already the largest cobalt producer, and the fourth largest copper producer, in the world.⁵⁴ However, the events of the First Congolese War lasting from 1996 to 1997, and the events leading up to it, had a profound impact on the cobalt industry. Industrial cobalt mining in the DRC collapsed during the 1990s. Gecamines became so mismanaged that the World Bank estimated that during the 1990s, Gecamines' capacity utilization was only 10% and the company was \$2.5 billion in debt.⁵⁵ This resulted in the ASM sector rapidly expanding to fill this production gap. In 1999, Kabila established the The Service d'Assistance et d'Encadrement du Small Scale Mining (SAESSCAM) to oversee the growing ASM sector.⁵⁶

The next large shift in the cobalt mining sector occurred in 2001, when Laurent-Desire Kabila was assassinated.⁵⁷ His son, Joseph Kabila, assumed office and subsequently passed a series of mining reforms aimed at opening the DRC to foreign investors. In 2002, Kabila's government published a new Mining Code which restricted ASM miners to regions where industrial mining is not possible. Essentially, ASM miners were forcibly removed from industrial cobalt mines to attract foreign investors. This also had the dual function of placing all cobalt mining under the control of corporations linked to Kabila and to the government directly, out of the control of the public. Kabila also restructured Gecamines, which resulted in the destruction of a vital element of the local economy, the company losing half its workforce and inflating the

⁵⁴ Ibid.

⁵⁵ "Artisanal Mining in the DRC," *World Bank*, 2007, https://delvedatabase.org/uploads/resources/2007_CASM_DSouza_DRC-Artisianal-Mining-Key-Issues-Challenges-Opportunities.pdf.

⁵⁶ Sovacool, "The Precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of Congo," 920.

⁵⁷ Ibid.

ASM sector further, as many of the unemployed joined the ASM sector.⁵⁸ This trend continued in 2007, with Kabila's reelection. Approximately 29 joint venture and privatization contracts were issued as Kabila passed more reforms to the mining sector designed to transfer more concessions to foreign investors while still outlawing many ASM operations. This particularly attracted Chinese attention, and in 2008, Chinese companies invested approximately \$9 billion between infrastructure and joint ventures with Gecamines.⁵⁹

The ASM and large-scale mining (LSM) sectors of the DRC's cobalt industry are now in an awkward state of coexistence. Before the second Congolese war, ASM accounted for 90% of all cobalt mining. However, since Kabila assumed office, ASM in the DRC accounted for 20% of the national supply and 12.9% of the global supply. Conversely, LSM has rapidly expanded to account for approximately 80% of the DRC's total cobalt production.⁶⁰ However, even though LSM contributes such a larger percentage of the DRC's total cobalt production, the sector only employs approximately 120,000 people. While the exact employment statistics of the ASM industry are hard to determine, the ASM industry employs anywhere from 500,000 to 1 million Congolese. This suggests that ASM plays a critical not only for economic development, but for income generation in the most vulnerable regions of the DRC.⁶¹

This disparity in labor could have important implications for the rentier state theory. Before Kabila's push for foreign investments, the Congolese government, through state-run mining companies, accumulated mass amounts of easily corruptible resource rents. However, these resource rents were largely replaced by rents via foreign investments, mainly from China.⁶²

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ "DR Congo," *Bundesanstalt für Geowissenschaften und Rohstoffe*, last accessed October 27, 2021, https://www.bgr.bund.de/EN/Themen/Min_rohstoffe/CTC/Mineral-Certification-DRC/CTC_DRC_node_en.html.

⁶² Matti, "Resources and Rents Seeking in the Democratic Republic of Congo."

This increased rent seeking, corruption and lack of economic diversification is typical of rentier states.

Cobalt Mining and Armed Conflict in the DRC

Special attention is paid to the ASM sector when discussing the conflict and human rights issues associated with the DRC's mining industry. In regards to mining equipment, protective gear and safety standards, the LSM is not perfect but is more heavily regulated.⁶³ The unregulated ASM sector, however, is rife with human rights concerns. In 2016, Amnesty International published a sobering look into the ASM industry in the DRC, documenting severe human rights abuses which included child labor and endangerment, hazardous working conditions and government failure to prevent these atrocities.⁶⁴ They have since been one of the leading NGOs calling for cobalt to be classified as a conflict mineral and has been pressuring companies to publish their supply chain data on their use of cobalt.⁶⁵ This report by Amnesty International, though, lumped all of the child labor, environmental, corruption issues etc. in the cobalt mining sector under one term: conflict. They then advocated that companies follow similar practices outlined in 3TG legislation for cobalt supply chains,⁶⁶ largely rebranding cobalt as a conflict mineral, and pressured many companies to adopt the same supply chain due diligence practices in place for 3TG for cobalt as well. This report is one of the first comprehensive accounts of cobalt ASM mines and marks the beginning of the push to classify cobalt as a conflict mineral.

⁶³ Sovacool, "The Precarious political economy of cobalt: Balancing prosperity, poverty, and brutality in artisanal and industrial mining in the Democratic Republic of Congo," 923.

⁶⁴ "This is what we die for," *Amnesty International*, 2016, <https://www.amnesty.org/en/wp-content/uploads/2021/05/AFR6231832016ENGLISH.pdf>.

⁶⁵ "Amnesty International Pushes for Companies Using Cobalt to Publish Their Supply Chain Data," *Assent Blog*, April 29, 2019, <https://blog.assentcompliance.com/index.php/cobalt-publish-supply-chain-data/>.

⁶⁶ *Ibid*, 70.

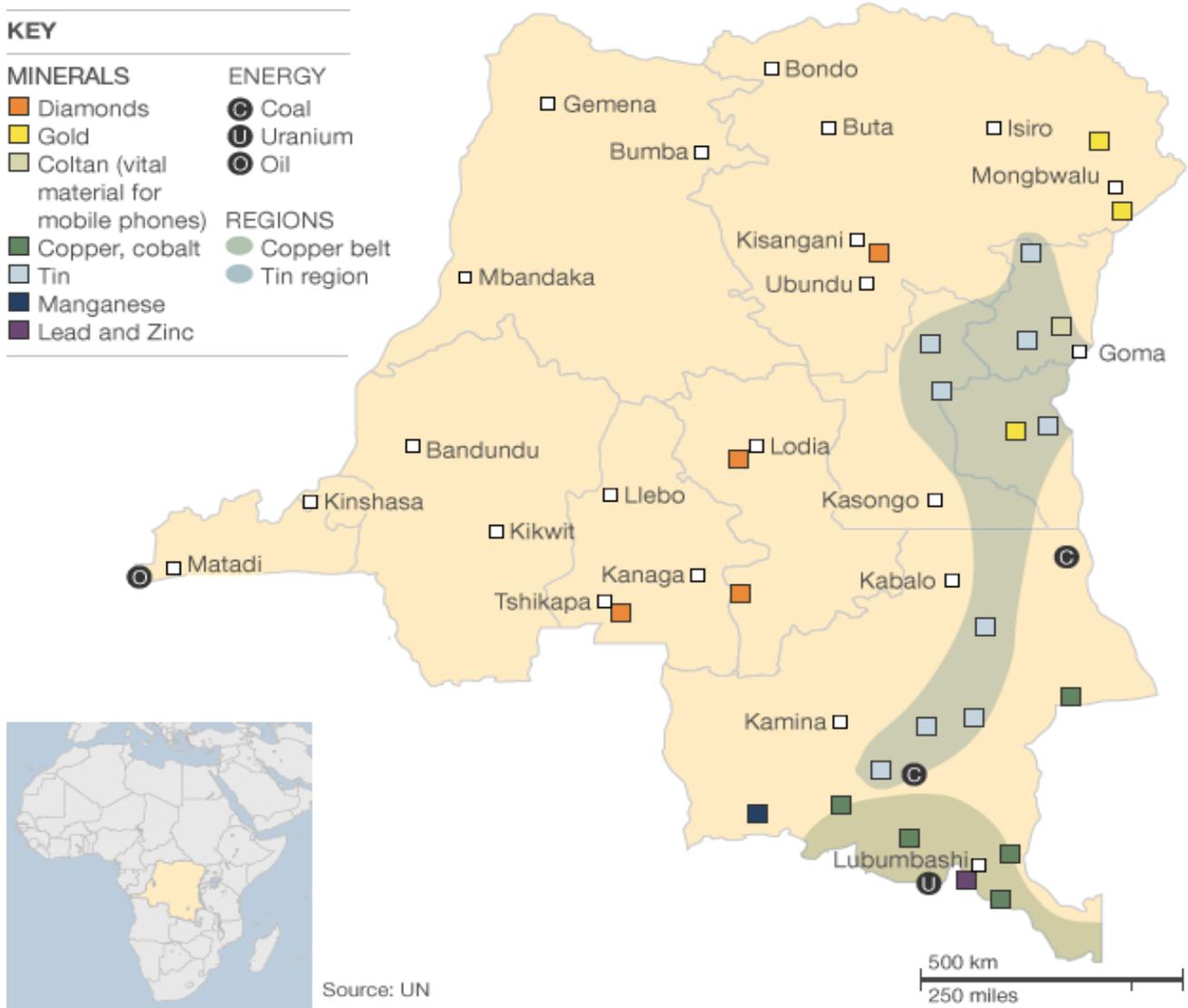
The 3TG are considered conflict minerals because there is sufficient evidence, according to legislation like Dodd-Frank, that these minerals are directly used to fund armed groups and perpetuate conflict. This legislation is therefore meant to cut off funding for these armed groups and decrease the size of the market directly funding the violence. If cobalt has similar conflict implications than 3TG, there should be a noticeable presence of armed groups in the region and evidence of armed groups using cobalt to fund violence, but neither of these criteria are present in Southern Congo, the location of the copper belt.

Figure 1 is a UN map of the major mineral sites in the DRC and Figure 2 is a tracker of all the violent incidents in the DRC from October 1, 2018 to October 24, 2021. As shown when comparing these two figures, most of the violent conflict in the DRC is in the Eastern Congo, with Southern Congo experiencing little violence resulting from armed groups. If cobalt were a conflict mineral there would be a comparable level of violence and armed groups in the East (where gold, tin and coltan are mined) and in the South (where cobalt is mined), especially considering the 30% increase in cobalt demand from 2016 to 2020. Currently, it appears that rising cobalt demand has had marginal conflict implications for the DRC thus far. The issue now is estimating how the unprecedented rise in cobalt demand will change this dynamic, as demand is projected to rise approximately 25 times through 2050. This projected demand increase, however, is predicated on the notion that there will be no viable substitutes for cobalt as the world innovates climate change solutions. Assuming that cobalt demand continues to increase, this may not have any direct impact armed conflict in the region, as cobalt demand has already increased by 30% since 2016 and the main effect has been on human rights violations, not increases in armed conflict. Armed conflict, sustainable development, human rights abuse etc. are all interrelated, but not interchangeable.

The lack of armed groups and violence around cobalt mines also suggest that armed groups are not directly profiting from cobalt to fund further violence. For example, there is an estimated \$28 billion worth of gold in eastern Congo and in 2016 there was a huge gold rush in the Shabunda territory in eastern Congo, generating approximately \$38 million a year. To capitalize on this gold rush armed group Raia Mutumboki, supported by Chinese owned mining company Kun Hou Mining, began expanding operations to secure ASM gold mines across Shabunda, using the profits from these gold mines to sustain its activities.⁶⁷ Raia Mutumboki secured these ASM gold mines and exploited the workers for free forced labor. However, there is little evidence of armed groups vying for control of cobalt mines, utilizing the existing labor force in these mines, or selling cobalt for profit like is evident in Eastern Congo with 3TG.

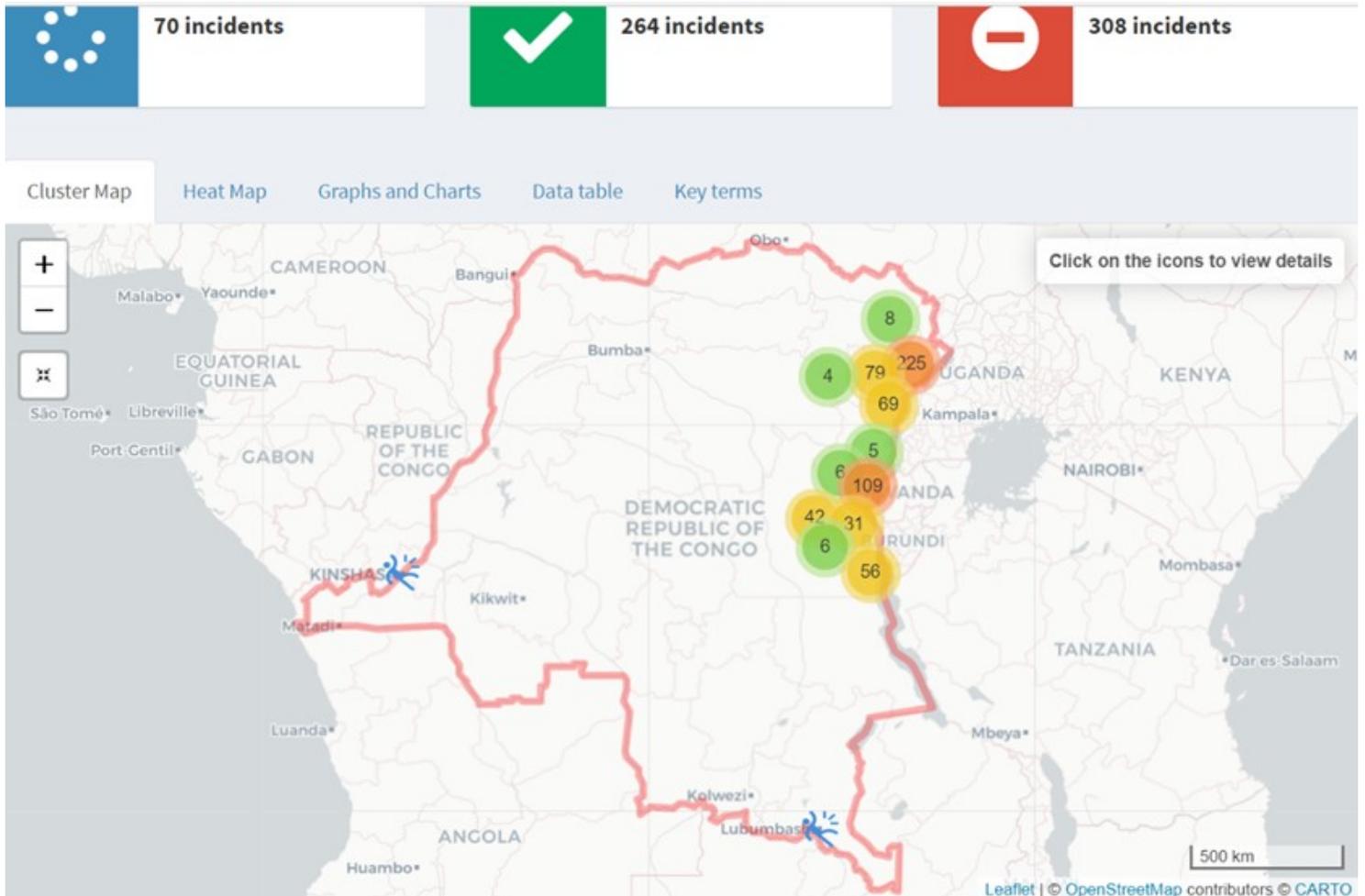
⁶⁷ “River of Gold,” *Global Witness*, July 5, 2016, <https://www.globalwitness.org/en/campaigns/conflict-minerals/river-of-gold-drc/>.

Figure 1: Geographical Location of Minerals in the DRC⁶⁸



⁶⁸ “Explore DR Congo in maps and graphs,” BBC, November 27, 2012, <https://www.bbc.com/news/world-africa-15722799>.

Figure 2: Armed Conflict Incidents in the DRC⁶⁹



⁶⁹ “Dashboard of incidents in Eastern Congo,” *IPIS*, last accessed October 27, 2021, https://ipisresearch-dashboard.shinyapps.io/kufatilia_app/.

Case Study: Chile

Now that the conflict implications for rising cobalt demand have been established, the next question to address is the effects of conflict minerals legislation on a mineral that is not currently associated with armed conflict. While the DRC is the largest cobalt producer, Chile is the largest worldwide producer of copper and home to the largest known copper reserves.⁷⁰ Despite the abundance of a similar resource, however, the DRC and Chile have very different developmental outcomes. Rather than fall victim to perpetual armed conflict, Chile profited from its copper mining and is often used as a case study for how a state can avoid the resource curse. The difference in institutional quality between the DRC and Chile provides a vital comparison point for analysis.

Development of Chile's Copper Industry

The DRC and Chile share many of the same roots of colonialism. Before copper mining, the Spanish were interested in Chilean gold, and as early as the 1540s, Spanish settlers established the first gold mine at Marga Marga with Spanish settlements forming around these new sources of income. The Spanish continued to expand mining operations in Chile, eventually beginning copper mining in the 17th century. From Chile's independence in 1810 to 1970, copper mining grew rapidly, totaling approximately 75% of Chile's exports in 1970.⁷¹ These copper mining endeavors, however, were owned almost exclusively by North American companies, meaning that the Chilean state saw little of the rents from its own copper mines.⁷² Consequently,

⁷⁰ "Profiling the world's top five copper mining countries in 2020," *NS Energy*, May 20, 2021, <https://www.nsenergybusiness.com/news/top-five-copper-mining-countries/>.

⁷¹ Seyler, "Cobalt in the Democratic Republic of Congo: the cost of innovative technology and historical lessons in global economics for a more ethical future."

⁷² John Fleming, "The Nationalization of Chile's Large Copper Companies in Contemporary Interstate Relations," *Villanova University*, 1973, <https://digitalcommons.law.villanova.edu/cgi/viewcontent.cgi?article=1985&context=vlr&httpsredir=1&referer=>.

political unrest at the loss of these rents began in the 1960s, culminating with the nationalization of Chile's copper mining under the state-owned company CODELCO in 1971.

In the early 1970s, Chile was a socialist country under Salvador Allende which was overthrown in 1974 by the military leader Augusto Pinochet, who became the self-appointed leader of Chile. Pinochet began instituting many of the same strategies as Kabila in the DRC, liberalizing the legislation around the mining sector and opening it to foreign investors. However, an important split occurred in the Pinochet government regarding the future of nationalized companies that did not occur in the DRC. The military leaders preferred keeping the mining sector nationalized, as the military benefited off the rents from CODELCO. Pinochet's technocrats, rejecting socialism, wanted to privatize these nationalized mining companies. The two parties reached a concession, and CODELCO stayed nationalized with the military keeping all the profits from the existing CODELCO operations, but CODELCO was prohibited from opening new enterprises. Instead, the military was to encourage private sector investment into new mining operations and guarantee the property rights of private companies. The result of this period of dictatorship was a rentier state where the state owned both the national copper mining company CODELCO and Chile's other mining company ENAMI, but encouraged private sector investment into untapped mines.⁷³

In 1990, Chile ended its era of dictatorship in favor of democracy and elected Patricio Aylwin as its first president. The continuity provided by CODELCO through this political transition became vital to maintaining stability, as CODELCO continued to provide approximately \$1 billion annually to the Chilean state, which helped support Aylwin's initial

⁷³ Paul Haslam, "Overcoming the Resource Curse: Reform and the Rentier State in Chile and Argentina, 1973-2000," *Development and Change* 45, no. 5 (2016):1146-1170, <https://doi.org/10.1111/dech.12259>.

social policies and stabilized the exchange rate.⁷⁴ In 1992, Alywin’s administration passed the “CODELCO law” which fundamentally transformed the organization. While CODELCO remained state owned, this new law sought to model CODELCO as a private firm to maximize profits in addition to the current rents. The CODELCO law allowed both CODELCO and ENAMI to pursue joint ventures with multinational corporations (MNC) to create long term profitable projects, increase research and development, and created a framework for these two organizations to work closely with the private sector. For example, CODELCO opened the Radomiro Tomic mine, currently one of the largest mines in Chile with approximately \$641 million of private sector investment.⁷⁵ This public-private sector coordination facilitated a healthy relationship where CODELCO/ENAMI could use private sector investment to modernize its operations and the Chilean state could use rents from its mining industry to facilitate economic growth and diversification. This relationship also helped bolster Chile’s ASM sector, as mines that were deemed too small for CODELCO were transferred to ENAMI and the private sector supported them through subsidies.⁷⁶

The difference in how Chile and the DRC treat their ASM sector reveals the disparate institutional quality of each state. In the DRC, as previously discussed, the Congolese government is trying to constrain ASM activities to gain a greater control over the resource rents. For example, in November 2019, Congolese Prime Minister Sylvestre Ilunga signed a decree aimed at controlling, “the whole value chain of the artisanal sector”.⁷⁷ Since the DRC does not generate rents or profits from its ASM sector, it tries to constrain and limit ASM operations,

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ William Clowes and Michael Kavanagh, “DRC moves to monopolize about 25 percent of all cobalt exports,” *Aljazeera*, January 30, 2020, <https://www.aljazeera.com/economy/2020/1/30/drc-moves-to-monopolise-about-25-percent-of-all-cobalt-exports>.

seeking to consolidate its mining activities to the LSM sector thereby generating rents from foreign investments. In Chile, however, the public-private sector relationship aimed at long-term profit generating projects facilitates an environment where the state helps artisanal and small-scale miners. An example being that 93% of Chile's copper output comes from large industrial mines. While this is significantly smaller than the DRC, 9% is still a sizable quantity, and fluctuating copper prices make it difficult for these small mines to compete. In August 2019, copper prices fell to an all-time low and placed a major strain on Chile's small copper manufactures. The top copper producers in Chile signed a deal in response to sublet their properties to artisanal miners. Essentially, these large mining companies rented their properties to artisanal miners, allowing these miners to extract copper and sell it. These properties were not extremely valuable to these global miners⁷⁸, but the difference in institutional response between Chile and the DRC highlights the critical importance that good institutions have in avoiding rentier state behavior.

Analysis

The most revealing implication from these case studies is the critical importance of the public-private sector relationship in facilitating healthy economic growth, avoiding rentier state behavior and the building of sustainable mining operations in the copper/cobalt mining industry. While Chile largely has a relationship of cooperation, the DRC maintains one of exploitation and extraction. This public-private sector dynamic has vital implications for the potential impacts of mislabeling cobalt as a conflict mineral.

⁷⁸ Cecilia Jamasmie, "Top miners in Chile sign deal to help country's small producers," *Mining.com*, August 30, 2019, <https://www.mining.com/top-miners-in-chile-sign-deal-to-help-countrys-small-producers/>.

As previously shown, there is little evidence of cobalt facilitating and perpetuating armed conflict in the DRC. Unlike Eastern Congo, Southern Congo lacks any of the indicators of cobalt funded armed violence. There is no evidence of rebel groups fighting for control of cobalt mines, perpetuating forced cheap labor or selling cobalt for a profit to fund other operations, which are all elements of the conflict trap. The cobalt mining industry certainly has profound issues surrounding human rights and sustainability, however, as revealed by the complex mechanisms of the resource curse, the issue of armed conflict and the issue of human rights and sustainability require different approaches. Legislation like Dodd-Frank is meant to limit the amount of money from 3TG and reduce the market directly funding violence. The effect of conflict minerals regulation on 3TG sectors remains decidedly mixed. Many scholars find that mandatory supply chain disclosures have a positive impact, while others argue that it worsens conflict through mechanisms like increasing resource competition over unregulated mines. However, implementing legislation designed to shrink a market directly funding violence, when there is no violence in that supply chain, will likely only lead to negative results.

Regardless of the debate of the effects of conflict minerals legislation on 3TG, it is likely that mislabeling cobalt as a conflict mineral will lead to negative unintended consequences for cobalt, largely because of the public-private sector dynamic in the DRC. Most of the human rights issues in the DRC's cobalt mining sector occur in the unregulated ASM sector, and the DRC lacks a support structure similar to Chile's that encourages private sector investment and formalization of the ASM sector. Thus, the branding of cobalt as a conflict mineral may cause foreign investors to avoid ASM mining all together, and this phenomenon has already been observed. In May 2020, the biggest cobalt producer in China agreed to stop all sourcing from the

ASM sector.⁷⁹ However, ASM mining directly contributes to the economic well-being of hundreds of thousands of Congolese. As the DRC moves to limit ASM mining and foreign entities limit cobalt sourcing from unregulated mines, it destroys the income of thousands of people and has the opposite effect from what is intended, exacerbating the human rights abuses and sustainable development issues in the country.

There are promising initiatives, like the RCI Cobalt Refiner Supply Chain Due Diligence Standard, that include more holistic reforms besides simple cobalt disclosure mandates. The negative stigma and connotation from labeling cobalt as a “conflict mineral”, however, will likely push companies to treat cobalt like 3TG, failing to address the underlying associated human rights issues in the ASM sector. While including supply chain due diligence has led to some positive impacts, these positive impacts have largely been dictated by downstream expectations and have failed to address the core issues in the ASM mining sector.⁸⁰ The underlying human rights issues in cobalt mining stem from the dysfunctional private-public sector relationship and rent seeking behavior established during the Kabila regime. Working to repair this framework and to formalize and subsidize the ASM industry, as Chile has done, is critical to addressing the human rights violations in the DRC’s ASM sector.

Conclusion

The energy transition is fundamentally changing the energy sector, and international agencies are predicting an unprecedented increase in demand for cobalt. While it remains to be seen if these projections are true, what is clear is that the demand will continue to increase until

⁷⁹ “China’s biggest cobalt producer agrees to stop buying from individuals in DRC due to concerns over child labour,” *Business & Human Rights Resource Centre*, May 29, 2020, <https://www.business-humanrights.org/en/latest-news/chinas-biggest-cobalt-producer-agrees-to-stop-buying-from-individuals-in-drc-due-to-concerns-over-child-labour/>.

⁸⁰ Lucia Mancini et. al., “Assessing impacts of responsible sourcing initiatives for cobalt: Insights from a case study,” *Resources Policy* 71, (2021), <https://doi.org/10.1016/j.resourpol.2021.102015>.

new technology or innovations are made to reduce the critical importance of cobalt to the energy transition. The subsequent rising demand for cobalt is perpetuating the human rights violations and sustainability issues already plaguing the DRC's artisanal mining sector. To profit off the increasingly valuable cobalt, the Congolese government is seeking to monopolize the cobalt industry and push out artisanal miners. In response, many NGOs are calling for cobalt to be classified as a conflict mineral, but as the evolution of the resource curse theory demonstrates, the interaction of mineral resource abundance on developing states is highly complex. As seen in Chile's copper mining industry, quality institutions play a key role in reducing rent seeking and promoting a healthy mining sector, particularly the healthy relationship between state owned mining companies and private/foreign investors. Armed conflict and human rights violations, while related, should not be addressed with the same policies. Rising cobalt demand, thus far, has not facilitated or exacerbated armed conflict in the DRC, which is the very definition of a "conflict mineral". While the issues plaguing this mining industry need to be addressed, it should not be addressed by labeling cobalt as a conflict mineral and pulling the mineral under legislation like the Dodd-Frank Act, as this fails to address the underlying abuses of human rights. Any external supply chain due-diligence efforts will face difficulty without primarily focusing on the underlying internal issues in the DRC's cobalt industry. Ultimately, any successful reform must focus on shifting the DRC's perspective of ASM mines from being a barrier to profit to being an opportunity for economic growth. This research can provide a basis for further study into how the private-public sector relationship can be reformed to address the issues in the DRC's cobalt industry.

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Curriculum Vita

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