https://doi.org/10.51196/srz.26.8

THE TAINTED SHADOW OF THE GREEN REVOLUTION: THE COBALT CONUNDRUM IN THE DEMOCRATIC REPUBLIC OF THE CONGO

Błażej Popławski
Polish Africanist Society, Warsaw

Roman Chymkowski
University of Warsaw

> Many point a finger of blame at the DRC [Democratic Republic of the Congo] and other poor countries for their poverty. Yet we don't seem to remember, or want to remember, that starting around 1870, King Leopold of Belgium created a slave colony in the Congo that lasted for around 40 years; and then the government of Belgium ran the colony for another 50 years. In 1961, after independence of the DRC, the CIA then assassinated the DRC's first popular leader, Patrice Lumumba, and installed a US-backed dictator, Mobutu Sese Seko, for roughly the next 30 years. And in recent years, Glencore and other multinational companies suck out the DRC's cobalt without paying a level of royalties and taxes. (Sachs 2021)

/// The Green Energy Revolution

The optimisation of energy (or raw material consumption) and the reduction of carbon dioxide are today – at a time of escalating concerns about anthropogenic climate change – economic concepts within the geopoliti-

cal mainstream (Yergin 2020; Gemenne 2021; Blanc 2023; Hulme 2023). The green energy revolution is heralded as a transformative movement towards clean, renewable sustainable energy and environmental protection. Central to this revolution is the idea of becoming totally independent from fossil fuels, and the adoption of eco-friendly technologies that reduce carbon emissions. However, the "dark side" of this green shift is that heavy reliance on critical minerals – particularly on cobalt, a metal extracted and processed in countries in the postcolonial world – is marred by significant ethical, social, political, and environmental challenges.

/// The Importance of Cobalt

Our species has been digging minerals from the ground practically since the beginning of its existence. When *homo sapiens* first appeared in Africa between 200,000 and 300,000 years ago, they immediately began digging for minerals to make tools. Stones, apart from being utilitarian, were often considered sacred. They were attributed the power of oracles and were used in religious rituals. They were considered a medium of transcendence. Mines became the portal between human territory and the realm of the gods. Nearly every mine in the premodern world was thought to be inhabited by some version of an earth spirit: a capricious creature, sometimes benevolent, but more often vengeful (Hunt 2018). Germanic miners, for example, whispered to each other about insidious elves, trolls, and kobolds. A Spanish thinker, Pedro de Valderrama (1550–1611), noted in 1617 that:

> The subterranean spirits are those who dwell in caverns and other recesses of the earth, where they kill or suffocate or render insane miners in search of precious metals. The Germans call them Kobolds. They are gnomes, dwarfs not over an ell in height, and they help in cutting stones, getting out metals, packing them in baskets and hauling to the surface. They laugh and whistle and perform a thousand tricks, but their services often redound to the injury and death of those whom they serve. They cut the ropes, break the ladders, cause the fall of rocks, send poisonous vapor; and you will see rich mines abandoned for the fear of them […]. It is they who cause earthquakes […]. They are not only the guardians of the mines, but of hidden treasures, which they allow no one to take. (Valderrama 1939: 474–475)

The term *kobold* gave its name to the metal cobalt (Greinert 2011: 10). This chemical element, with symbol Co and atomic number 27, is a critical component in lithium-ion batteries, which power everything from smartphones and laptops to electric vehicles (EVs) and renewable energy storage systems. Its properties enhance battery stability, energy density, and lifespan. Lithium-cobalt batteries are considered much more ecological than old lead-acid and nickel-cadmium batteries. Currently, a smartphone battery contains only 5 g to 10 g of refined cobalt, but a single EV battery can use up to 15,000 g (Lewicka 2007: 6–7; Fletcher 2011).

The EV sector is now by far the largest cobalt consumer – it currently accounts for 45% of total cobalt demand, with this share continuing to rise (Cobalt Institute 2024: 6). In addition, cobalt-based superalloys are also used in environments that require high strength and resistance to extreme temperatures and corrosion – these superalloys are critical in the aerospace and power generation industries (Wang 2006). Cobalt acts as an effective catalyst in several chemical reactions, particularly in the petrochemical and plastic industries. It is used in the synthesis of hydrocarbons and the production of polyester and other plastics (Olivetti et al. 2017). It can be added that cobalt-based blue pigments (cobalt blue) have been used since antiquity for jewellery and paints, and to impart a distinctive blue tint to glass (the oldest cobalt-coloured glass is from the eighteenth dynasty of Egypt, 1550–1292 BC) (Rehren 2003).

In May 2018, the US Department of the Interior, in coordination with other executive branch agencies, published a list of 35 critical minerals: it included cobalt (United States Department of the Interior 2018). In the twenty-first century, cobalt has become an extremely valuable metal. In June of 2024, the price of cobalt had decreased by 1,985 USD/T or 6.81% since the beginning of the year, according to trading on a contract for difference that tracks the benchmark market for this commodity. Historically, cobalt reached an all-time high of 95,250.00 USD/T in March of 2018 (Trading Economics 2024).

The Democratic Republic of the Congo (DRC) – one of the poorest countries in the world, with a long history of exploitation by foreigners, who exported rubber resin, ivory, and copper in the nineteenth and twentieth centuries (Hochschild 1998) – is home to over 60–70% of the world's cobalt reserves (4,000,000 tonnes). The country has suffered from a resource curse relating not only to cobalt but to a range of other minerals, including copper, uranium, tin, zinc, coltan, and diamonds (Davidson 2016: 32). The Katanga region (formerly Shaba province), particularly around the cities

of Kolwezi and Lubumbashi, is rich in cobalt, which is often found alongside copper deposits. This region has almost 40% of the global reserves of cobalt. Other African countries, such as Madagascar, Morocco, Zambia, and South Africa, also have cobalt deposits, but their contributions are significantly smaller compared to the DRC. Other significant producers of cobalt include Australia (1,500,000 tonnes), Indonesia (600,000 tonnes), Cuba (500,000 tonnes), the Philippines (260,000 tonnes), Russia (250,000 tonnes), and Canada (220,000 tonnes). In total, annual global cobalt production reaches 200,000 tonnes, with the DRC contributing just under 150,000 tonnes to the mix. The demand for cobalt is forecasted to more than double by 2030 to 400,000 tonnes (Kapusta 2006; Kalantzakos 2019: 8–9). It should be stressed that the cobalt economy, based on the extraction and only initial processing of the raw material, perpetuates the neocolonial logic of exporting low-processed goods from the so-called Third World to former colonial countries, as well as to other countries: India, Australia, and especially China, which currently has approximately 65% of the world's cobalt refining capacities (Deberdt & DiCarlo 2024). A significant proportion of DRC miners, who extract cobalt, have never seen EVs, and most users of EVs and mobile devices have never seen people working in Congolese cobalt mines. The radical energy transition planned by the European Union, including a total ban on registering cars powered by combustion engines, depends on cobalt supplies (Alves Dias et al. 2018). This once again turns the West's gaze to Congo, but China is competing with Europe and the United States for influence in the country. International corporations, such as the Chinese CMOC Group Limited and the Swiss Glencore, are the primary entities engaged in cobalt mining. It is worth emphasising the role that China plays in this sector of the neocolonial global economy. The economic and political dependence of the DRC on external entities results in limited opportunities for the development and implementation of the DRC's national interest. It can be said that China is winning the resource (cobalt) war with other countries (Gulley et al. 2018). Chinese firms (not solely CMOC Group Limited), because of their strong relationship with the DRC, now globally control almost all the cobalt refineries. In 2008, China and the DRC signed a controversial agreement to exchange mining concessions for infrastructure and development assistance. The Sino-Congolese mining company Sicomines (Sino Congolaise des Mines) was set up as a joint venture between Gécamines (a state-controlled corporation founded in 1966 and a successor to the Belgian Union Minière du Haut-Katanga) and a consortium of Chinese companies led by

Sinohydro and China Railway Engineering Corporation (Neema Byamungu 2022: 5–8). The Chinese quickly purchased fifteen of the DRC's top nineteen large-scale mines (LSM), which produce more than 80% of the world's refined cobalt. The largest cobalt refiner in the world, with a 20% market share, is Huayou Cobalt. Huayou is the owner of Congo DongFang Mining, one of the largest copper and cobalt mining companies operating in the DRC (Sinclair 2020).

/// The Democratic Republic of the Congo: Ground Zero

Cobalt mining represents a significant source of revenue for the DRC. It attracts substantial foreign ventures and contributes to the country's GDP. Certainly, it should contribute, though shady transactions are commonplace in the mining sector. The DRC has been judged to be, in many ways, a type of violent kleptocracy, in which the ruling regime and its networks of business partners and facilitators maintain control over some of the country's most valuable assets. Corporate governance lacks transparency, and there is endemic corruption (McFerson 2009; Matti 2010).

In the DRC, state institutions that should have control over the mining sector function poorly. The army, the Republican Guard, the paramilitary members of the Support and Supervision Service for Small-Scale Mining (Service d'Assistance et d'Encadrement de l'Exploitation Minière à Petite Echelle is a Congolese government agency), and different rebel groups control a number of mines and extract large amounts of revenue from them (Callaway 2018: 19). These entities are partly responsible for land conflicts, the exclusion of the indigenous people, widespread crime, and the almost total absence of the rule of law. The changes the DRC made to mining laws in 2002 and in 2018 attracted new investments in copper and cobalt projects. However, the economic benefits have been unevenly distributed. A considerable portion of the profits from cobalt mining still ends up with foreign corporations and local elites, while the majority of the population remains impoverished (Spittaels & Hilgert 2010: 177–178).

Perhaps the most pressing concern with cobalt mining in Africa is the human rights abuses associated with artisanal and small-scale mining (ASM), a kind of bootleg mining arousing associations with the preindustrial world as it is largely not mechanised: it relies frequently on hand tools and basic extraction methods. The DRC Chamber of Mines and the International Institute for Sustainable Development estimate that about 2 million Congolese are involved in ASM, while the global union IndustriALL

puts the number at more than 12 million (United States Department of Labor – Bureau of International Labor Affairs 2020: 427). According to an official from the environment department of the Ministry of Mines, artisanal extraction takes place in less than 1% of the DRC's mining area, whereas the head of an artisanal miners' cooperative claims that ASM contributes 80% of coltan production (Putzel & Kabuyaya 2011: 19–20). The importance of ASM was noticed by, among others, researchers from the Geneva Center for Business and Human Rights, who clearly stated that without ASM cobalt, traders will not be able to meet a global demand that is projected to multiply eightfold by 2026 and fourteen times its current levels in the next decade (Baumann & Cremer 2020: 1).

The topic of ASM entered the media discourse at the beginning of the twenty-first century. Alarming descriptions of the working conditions of miners have appeared regularly in newspapers such as *The Washington Post* and *The Financial Times*. The BBC, CNN, and Al Jazeera have made several videos on the topic. Amnesty International has published reports on the situation of cobalt miners in the DRC. The most comprehensive analysis of the system of ASM in the DRC is contained in *Cobalt Red: How the Blood of the Congo Powers Our Lives*, written by Siddhart Kara in 2023. Kara specialises in modern slavery (*Sex Trafficking: Inside the Business of Modern Slavery*, 2009; *Bonded Labor: Tackling the System of Slavery in South Asia*, 2012; *Modern Slavery: A Global Perspective*, 2017), and he adapted his methodology from slavery research to describe the ASM and LSM systems in Africa. Through a journalistic investigation, he gathered shocking testimonies from Congolese people and found that many individuals endure immense suffering and even die mining cobalt. He asserts that cobalt mining is the pinnacle of the slave plantation system.

According to the research conducted by Kara, the majority of miners in ASM work in extremely hazardous conditions. No one maps the excavations or conducts research drilling. Untrained workers dig tunnels, break rocks, and wash minerals with their bare hands. They earn 1–5 USD daily. Many Africans work in mines under the control of Lebanese, Chinese, or South Asian businessmen. There is little to no regulation. The workers lack basic protective gear and safety protocols. The risk of accidents, such as tunnel collapses, is high, leading to frequent injuries and fatalities.

Nevertheless, this illegal and quasi-legal sector is integrated with formal structures, involving miners (*creuseurs*), agents (*négociants*), trading houses (*comptoirs*), and government oversight agencies. The *comptoirs* purchase minerals from the local market and either process them to some degree or

sell them directly to LSM, factories, or industrial mining companies. Women and children are the main victims of this phenomenon, primarily because they are more involved in the informal, or "grey," economy. Women in ASM also face heightened risks of gender-based abuses like sexual violence and economic control (Amnesty International 2017; Kelly et al. 2014).

The mining process exposes the Congolese miners to toxic metals and dust. Metallic cobalt dust and sparingly soluble cobalt salts are classified as carcinogens. A powdered mixture of cobalt and tungsten causes lung diseases, bronchial asthma, and fibrosing alveolitis (Roto 1980; Morgan 1983; Domingo 1989). Scientists have noted high radioactivity levels in mining regions. The physical demands of mining, coupled with the lack of protective equipment, result in numerous health problems for thousands of Congolese.

Many miners work under conditions of forced labour; they are coerced by economic desperation, debt bondage, or threats of violence. These workers are often trapped in a cycle of exploitation, where they earn barely enough to survive, let alone pay off their debts or improve their living conditions. The lack of viable economic alternatives forces them to remain in these exploitative situations.

Human trafficking is another grim reality in the cobalt mining sector. Individuals, particularly from vulnerable communities, are lured by the promise of work and a better life, only to find themselves exploited and enslaved in the mines. They are often subjected to physical abuse, confinement, and threats against their families, leaving them with no means of escape.

Apart from the context of bonded labour and slave labour, it should be added that the volatile nature of the cobalt market means that many communities in the DRC are subject to global economic instability. Price fluctuations can lead to sudden drops in income, exacerbating poverty and insecurity. Traditional lifestyles and community structures are often displaced by mining operations (Bolay & Calvão 2022). Additionally, the lure of earning money from mining draws children out of school, perpetuating a cycle of poverty and lack of education. Social services, such as healthcare and education, are frequently neglected in mining areas, further entrenching poverty.

A further impact of mining is related to the ecological crisis in the DRC. Open-pit mining, which is common in the country, leads to deforestation, soil erosion, and contamination of water sources with heavy metals. The mining process, both in LSM and ASM, generates toxic waste that poses risks to local ecosystems and communities. The long-term environmental degradation threatens biodiversity and the health of residents in mining areas (Hund & Megevand 2013: 2–5, 44–45).

/// An Economy of Invisibility

The example of the exploitation of cobalt deposits in the DRC shows that the energy transformation benefits people other than those who bear its greatest costs. Those who perform the most dangerous and least paid work related to cobalt mining live in a completely different social reality than the users of electric cars (with opposite economic, legal, and technological conditions of existence) and are therefore invisible to them. Given that the labourers are primarily citizens of the DRC, the energy transformation presupposes an epistemological operation in which non-white labourers, including children, are removed from sight. Rich residents of wealthy cities, concerned about the purity of the air they breathe, cannot see poor people using simple hand tools to dig underground tunnels (Lennon 2020: 937).

Contrary to progressive slogans, the energy transformation is the realisation of a long-familiar Occidentalist idea of modernisation (Ajl 2021), which has been taken over by new actors in geopolitics, especially China. This idea assumes a story whose setting is at the centre of the world rather than at its periphery, but today the division into centre and periphery is not necessarily a division into the West and the rest of the world. Given the difference between the manual labour involved in cobalt mining in the DRC and the consumption of the corresponding goods and services by people with the economic resources to do so, it should be concluded that the distance between the two social realities (Smith 2022) is both spatial and historical – these are two different, though related, economic eras. From this point of view, whenever we talk about the energy revolution, we should keep in mind the territorial limitation of the concept.

Reports about cobalt mines in the DRC and photos that can be found on the Internet bring to mind the Manichean model of the relation between coloniser and colonised that Frantz Fanon presented in his classic book (Fanon 1963: 39). On the one hand, there is the world of the master, that is, the world of wealthy, healthy, physically, and morally clean people, and on the other hand, the world of the servant or even slave, that is, of miserable, dirty people.

/// The International Response and Corporate Responsibility

In 2007, the DRC became a signatory to the Extractive Industries Transparency Initiative (EITI), which requires that the details of mining contracts be made available for international scrutiny. The EITI multi-stakeholder

group, which includes government, business, and civil-society representatives, is supposed to require mining companies in Congo to publish their contracts as part of the EITI disclosure. So far, however, the impact of the EITI has been limited due to lack of implementation (ITIE–RDC 2023).

In 2022, the Inter-Ministerial Commission to Combat Child Labour in Mines and Artisanal Mining Sites launched the Child Labour Monitoring System. The Ministry of Labour of the DRC began recruiting for 2,000 labour inspectors and controllers, some of whom are to be trained to conduct inspections at mine sites. Furthermore, the ECG (Entreprise Générale du Cobalt) was meant to play a significant role in formalising the flows of cobalt and circumventing the Chinese trading houses. However, the effectiveness of these actions leaves much to be desired. The new laws are not respected due to political chaos and the activity of various rebel groups in the DRC. Numerous lucrative mining agreements are signed in opaque deals between unaccountable and unelected political leaders, mining companies, and other economic operators (Kippin 2008). Child labour, human trafficking, and exploitation are rampant in mining communities, and the response of the authorities to these problems has been de facto nonexistent.

Various international initiatives and organisations are working to improve conditions and eliminate child labour from the supply chain. A World Economic Forum (WEF) white paper in 2020 outlined the current state of artisanal cobalt mining in the DRC and offered recommendations to make the industry fair and safer. According to the WEF, the formalisation of ASM practices should be an essential step to address the widespread human rights problems that are prevalent at Congolese mining sites (World Economic Forum 2020).

Today the most important initiatives in regard to the cobalt economy are the Cobalt Institute (CI), the Responsible Cobalt Initiative (RCI), and the Fair Cobalt Alliance (FCA), which aim to promote responsible sourcing practices and improve the livelihoods of miners and their families. The Cobalt Institute, formed in 1982, is a trade association composed of producers, users, recyclers, and traders of cobalt. The Institute cooperates with the International Council on Mining and Metals (Cobalt Institute n.d.). The Responsible Cobalt Initiative was established in 2016 by the Chinese Chamber of Commerce for Metals, Minerals, and Chemicals Importers and Exporters, in collaboration with the Organisation for Economic Co-operation and Development. The Fair Cobalt Alliance was founded in 2020 by Fairphone, Signify, and Huayou Cobalt. The primary objectives of these three initiatives are to promote the sustainable and responsible

production and use of cobalt in all its forms, to promote cooperation between all stakeholders, especially on issues of human health, sustainability, and responsible sourcing, to eradicate child labour, to mitigate the environmental impact of cobalt mining, and to enhance transparency in the supply chain to ensure that cobalt is sourced responsibly.

In accord with the CI, RCI, and FCA postulates, major technology and automotive companies have pledged to source cobalt responsibly. Corporations like Apple, Tesla, and BMW have committed to ensuring their cobalt supply chains are free from child labour and human rights abuses. However, achieving this goal is challenging due to the complexity and opacity of the supply chain. Ensuring traceability in the chain is complex, and illegal mining and smuggling still remain significant problems.

Certainly, eliminating bonded labour and slave labour in cobalt mining requires a multifaceted approach (Diemel & Hilhorst 2019) and not solely corporate outsourcing of responsibility (Calvão et al. 2021). Strengthening regulations and improving enforcement are essential steps. Governments, particularly in the DRC, need to enhance their capacity to monitor and regulate mining activities, ensure compliance with labour laws, and provide social services to vulnerable communities.

Investment in education and alternative livelihoods is also crucial. By providing families with viable economic alternatives and ensuring children have access to quality education, the reliance on child labour can be reduced. Community development programmes that focus on health, education, and economic empowerment can create a sustainable pathway out of poverty for mining communities.

/// Conclusion: The Green Revolution Begins Locally

In 2012, a Canadian author, Andrew Nikiforuk, published *The Energy of Slaves: Oil and the New Servitude*. In this controversial book, Nikiforuk formulated the following thesis: the energy institution of slavery has shaped our careless use of fossil fuels (Mouhot 2011); currently, a moral revolution in our attitudes towards energy consumption needs to occur. According to Nikiforuk, the only way out is by reducing the demand for energy – a call as radical as abolition was two centuries ago.

Nikiforuk imagines a future where industrial people use 90% less energy than today. Such thinking has a slightly utopian tone, although it contains slogans attributed to radical supporters of the green revolution. In this kind of discourse, it is worth noting Nikiforuk's use of the slogans

"liberation" and "abolition of slavery." The first phase of this "emancipation" – assuming decarbonisation becomes real – could involve a thorough restructuring of the cobalt economy.

In this era of escalating climate change concerns, the green revolution promises – even in a less radical version than Nikiforuk proposes – a sustainable future, but the reliance on critical minerals casts a dark shadow over this vision. As the example of the Congolese cobalt mines shows, energy slavery is not just a metaphor with which to describe our relationship to the environment, it is a painfully concrete term – climate change, in requiring the search for energy technologies based on critical raw materials, is a new justification for enslaving people (Babie 2017: 39). Contrary to expectations, the fight against the anthropogenic causes of climate change has not led to a more equitable economy, without the exploitation of poor communities. The extraction of raw materials needed to produce batteries for electric vehicles reinforces phenomena well known from the past, including from Europe's colonisation of Africa (Neville 2020; Blaszkiewicz 2021). As organised labour protests in the DRC show, contemporary exploitation by multinational corporations is seen as an extension of colonisation, that is, the economic control of a less-developed country by rich countries, including former colonial ones (Rubbers 2009, 2010). This is both a spatial and temporal phenomenon, as it means not only the subjugation of entire societies to the consumption needs of the richest part of humanity, but also the stunted development of these nations, along with the effects on their future generations (Babie 2017: 52).

However, the situation in the DRC is not solely the consequence of the global race for raw materials (Vogel 2022). The new dimension of global inequality as a side effect of counteracting the effects of climate change calls into question the idea of a just energy transition. At the same time, it creates the need for legal regulations, which are at least as important as new technologies. "Climate change alters society in fundamental ways, entailing new forms of power, inequality and insecurity – together with new forms of cooperation and solidarity. Moreover, since national boundaries do not limit climate change, national responses are insufficient." (Beck et al. 2013: 2)

Addressing the ethical and environmental challenges of cobalt mining is imperative to ensure that the transition to renewable energy is truly sustainable and just. This transition should not come at the expense of human rights, including the rights of those involved in the manufacture of sustainable energy products. To ensure that the negative impacts of cobalt mining are minimised, comprehensive reforms are needed. The establishment

of effective recycling mechanisms (Church & Wuennenberg 2019) and the production of lithium-iron batteries could alleviate the pressure on mining activities and reduce the need for continuous extraction from vulnerable regions like the DRC. Ultimately, the transition to cleaner energy requires more than just technological advancements. Priorities should include improving governance and regulatory frameworks in the cobalt economy, investing in responsible community development, supporting miners' organisations, and promoting sustainable mining practices. Addressing these issues requires a coordinated effort from all the stakeholders: international corporations, Chinese and African governments, consumers, and – the most overlooked link in the chain – the producers (miners, who may have no idea of their place in the global cobalt production chain and may not even have seen an electric vehicle).

Bibliography:

/// African Resource Watch, Amnesty International. 2016. *"This Is What We Die For": Human Rights Abuses in the Democratic Republic of the Congo Power the Global Trade in Cobalt.*

/// Ajl M. 2021. *A People's Green New Deal*, Pluto Press.

/// Alves Dias P., Blagoeva D., Pavel C., Arvanitidis N. 2018. *Cobalt: Demand-Supply Balances in the Transition to Electric Mobility*, European Commission, https://doi.org/10.2760/97710.

/// Amnesty International. 2017. *Time to Recharge: Corporate Action and Inaction to Tackle Abuses in the Cobalt Supply Chain.*

/// Babie P. 2017. "Climate Change Is Eco-Slavery: A Climate Future of Australian Property Law," *Monash University Law Review*, vol. 43(1), pp. 35–75.

/// Baumann-Pauly D., Cremer D. 2020. *How New Business Models Can Address Human Rights Risks in the Cobalt Supply Chain*, Geneva Center for Business and Human Rights.

/// Beck U., Blok A., Tyfield D., Zhang J. 2013. "Cosmopolitan Communities of Climate Risk: Conceptual and Empirical Suggestions for a New Research Agenda," *Global Networks: A Journal of Transnational Affairs*, vol. 13(1), pp. 1–21.

/// Blanc P. 2023. *Géopolitique et climat*, Presses de Science Po.

/// Blaszkiewicz H. 2021. "From a Colonial to a Mineral Flow Regime: The Mineral Trade and the Inertia of Global Infrastructures in the Copperbelt," [in:] *Across the Copperbelt: Urban & Social Change in Central Africa's Borderlands Communities*, eds. M. Larmer, E. Guene, B. Henriet, I. Peša, R. Taylor, Boydell & Brewer, pp. 207–232.

/// Bolay M., Calvão F. 2022. "Labour, Incorporated: Dependent Contracting and Wageless Work in Africa's 'Responsible' Mines," *Cahiers d'études africaines*, vols. 245–246, pp. 123–151.

/// Callaway A. 2018. *Powering Down Corruption: Tackling Transparency and Human Rights Risks from Congo's Cobalt Mines to Global Supply Chains*, Enough Project.

/// Calvão F., Mcdonald C.E.A., Bolay M. 2021. "Cobalt Mining and the Corporate Outsourcing of Responsibility in the Democratic Republic of Congo," *The Extractive Industries and Society*, vol. 8(4), pp. 1–10.

/// Church C., Wuennenberg L. 2019. *Sustainability and Second Life: The Case for Cobalt and Lithium Recycling*, International Institute for Sustainable Development.

/// Cobalt Institute. N.d. "Principles and Objectives," https://www.cobaltinstitute.org/about-us/principles-and-objectives/, accessed: 20.06.2024.

/// Cobalt Institute. 2024. *Cobalt Market Report 2023*, https://www.cobaltinstitute.org/wp-content/uploads/2024/05/Cobalt-Market-Report-2023_FINAL.pdf, accessed: 21.02.2025.

/// Davidson N. 2016. *The Lion that Didn't Roar: Can the Kimberley Process Stop the Blood Diamonds Trade?*, ANU Press.

/// Deberdt R., DiCarlo J. 2024. "La RDC est le plus grand producteur mondial de cobalt: comment le contrôle des élites locales peut façonner l'industrie mondiale des batteries," *The Conversation*, 9.09.2024, https://theconversation.com/la-rdc-est-le-plus-grand-producteur-mondial-de-cobalt-comment-le-controle-des-elites-locales-peut-faconner-lindustrie-mondiale-des-batteries-238347?utm_source=clipboard&utm_medium=bylinecopy_url_button, accessed : 11.04.2025.

/// Diemel J.A., Hilhorst D.J.M. 2019. "Unintended Consequences or Ambivalent Policy Objectives? Conflict Minerals and Mining Reform in the Democratic Republic of Congo," *Development Policy Review*, vol. 37(4), pp. 453–469.

/// Domingo J.L. 1989. "Cobalt in the Environment and Its Toxicological Implications," *Reviews of Environmental Contamination and Toxicology*, vol. 108, pp. 105–132.

/// The Fair Cobalt Alliance. N.d. https://www.faircobaltalliance.org/, accessed: 20.06.2024.

/// Fanon F. 1963. *The Wretched of the Earth*, trans. C. Farrington, Grove Press.

/// Fletcher S. 2011. *Bottled Lightning: Superbatteries, Electric Cars, and the New Lithium Economy*, Hill and Wang.

/// Gemenne F. 2021. *Géopolitique du climat. Les relations internationales dans un monde en suchauffe*, Armand Colin.

/// Greinert A. 2011. *Kobalt w środowisku przyrodniczym i antropogenicznym*, Uniwersytet Zielonogórski.

/// Gulley A.L. 2022. "One Hundred Years of Cobalt Production in the Democratic Republic of the Congo," *Resources Policy*, vol. 79, 103007, https://doi.org/10.1016/j.resourpol.2022.103007.

/// Gulley A.L., Nassar N.T., Xun S. 2018. "China, the United States, and Competition for Resources that Enable Emerging Technologies," *Proceedings of the National Academy of Sciences of the United States of America*, vol. 115(16), pp. 4111–4115.

/// Hochschild A. 1998. *King Leopold's Ghost: A Story of Greed, Terror and Heroism in Colonial Africa*, Mariner Books.

/// Hulme M. 2011. "Reducing the Future to Climate: A Story of Climate Determinism and Reductionism," *Osiris*, vol. 26(1), pp. 245–266.

/// Hulme M. 2023. *Climate Change Isn't Everything: Liberating Climate Politics from Alarmism*, Polity.

/// Hund K., Megevand C. 2013. *Deforestation Trends in the Congo Basin Reconciling Economic Growth and Forest Protection*, The World Bank, Central Africa Forests Commission.

/// Hunt W. 2018. *Underground: A Human History of the Worlds beneath Our Feet*, Random House.

/// ITIE–RDC. 2023. *Rapport ITIE-RDC. Exercices 2020–2021*, Comité Exécutif ITIE–RDC.

/// Kalantzakos S. 2019. "The Geopolitics of Critical Minerals," *Istituto Affari Internazionali Papers*, vol. 19, pp. 1–15.

/// Kapusta J. 2006. "Cobalt Production and Markets: A Brief Overview," *Journal of Metals*, vol. 58(10), pp. 33–36.

/// Kara S. 2023. *Cobalt Red: How the Blood of the Congo Powers Our Lives*, Macmillan.

/// Kelly J.T.D., King-Close A., Perks R. 2014. "Resources and Resourcefulness: Roles, Opportunities and Risks for Women Working at Artisanal Mines in South Kivu, Democratic Republic of the Congo," *Futures*, vol. 62, pp. 95–105, https://doi.org/10.1016/j.futures.2014.04.003.

/// Kippin H. 2008. "Copper & Controversy in the DR Congo," *Review of African Political Economy*, vol. 35(117), pp. 482–486.

/// Lavine S. 2015. *The Powerhouse: America, China, and the Great Battery*, Penguin Publishing Group.

/// Lennon M. 2020. "Postcarbon Amnesia: Toward a Recognition of Racial Grief in Renewable Energy Futures," *Science, Technology, & Human Values*, vol. 45(5), pp. 934–962, https://doi.org/10.1177/0162243919900556.

/// Lewicka E. 2007. "Kobalt – wyjątkowy metal wielu zastosowań," *Gospodarka Surowcami Mineralnymi*, vol. 23(2), pp. 5–16.

/// Matti S.A. 2010. "The Democratic Republic of the Congo? Corruption, Patronage, and Competitive Authoritarianism in the DRC," *Africa Today*, vol. 56(4), pp. 42–61.

/// McFerson H.M. 2009. "Governance and Hyper-Corruption in Resource-Rich African Countries," *Third World Quarterly*, vol. 30(8), pp. 1529–1547.

/// Morgan L.G. 1983. "A Study into the Health and Mortality of Men Exposed to Cobalt and Oxides," *Journal of the Society of Occupational Medicine*, vol. 33, pp. 181–186.

/// Mouhot J.-F. 2011. *Des esclaves énergétiques. Réflexions sur le changement climatique*, Champ Vallon.

/// Neema Byamungu C.-G. 2022. *Blue Metal Blues: Cobalt, the Democratic Republic of Congo, and China*, South African Institute of International Affairs.

/// Neville K.J. 2020. "Shadows of Divestment: The Complications of Diverting Fossil Fuel Finance," *Global Environmental Politics*, vol. 2, pp. 3–11.

/// Nikiforuk A. 2012. *The Energy of Slaves: Oil and the New Servitude*, Greystone Books.

/// Olivetti E.A., Ceder G., Gaustad G.G., Fu X. 2017. "Lithium-Ion Battery Supply Chain Considerations: Analysis of Potential Bottlenecks in Critical Metals," *Joule*, vol. 1(2), pp. 229–243, https://doi.org/10.1016/j.joule.2017.08.019.

/// Putzel L., Kabuyaya N. 2011. *Chinese Aid, Trade and Investment and the Forests of the Democratic Republic of Congo*, Center for International Forestry Research, https://doi.org/10.17528/cifor/003723.

/// Rehren T. 2003. "Aspects of the Production of Cobalt-Blue Glass in Egypt," *Archaeometry*, vol. 43(4), pp. 483–489.

/// The Responsible Cobalt Initiative. N.d. https://respect.international/responsible-cobalt-initiative-rci/, accessed: 20.06.2024.

/// Roto P. 1980. "Asthma, Symptoms of Chronic Bronchitis and Ventilator Capacity among Cobalt and Zinc Production Workers," *Scandinavian Journal of Work, Environment and Health*, vol. 6, *Supplement*, pp. 1–49.

/// Rubbers B. 2009. "The Story of a Tragedy: How People in Haut-Katanga Interpret the Postcolonial History of Congo," *The Journal of Modern African Studies*, vol. 47(2), pp. 267–289.

/// Rubbers B. 2010. "Claiming Workers' Rights in the Democratic Republic of Congo: The Case of the Collectif des ex-agents de la Gécamines," *Review of African Political Economy*, vol. 37(125), pp. 329–334.

/// Sachs J. 2021. *Speech at the UN Food Systems Pre-Summit*, https://www.jeffsachs.org/recorded-lectures/5jf86pp5lxch35e6z3nct6xnmb8zy5, accessed: 20.06.2024.

/// Sinclair M. 2020. "Seizing the Means of Production: Cobalt and the Electric Vehicle Sector," [in:] *China's Uneven High-Tech Drive*, ed. S. Kennedy, Center for Strategic and International Studies, pp. 42–46.

/// Smith J.H. 2022. *The Eyes of the World: Mining the Digital Age in the Eastern DR Congo*, The University of Chicago Press.

/// Spittaels S., Hilgert F. 2010. "Are Congo's Mines the Main Target of the Armed Groups on Its Soil? A Geographical Test," [in:] *Zgubne transakcje. Fatal Transactions. Surowce mineralne a rozwój państw afrykańskich*, eds. D. Kopiński, A. Polus, Difin, pp. 170–179.

/// Trading Economics. 2024. "Cobalt," https://tradingeconomics.com/commodity/cobalt, accessed: 20.06.2024

/// United States Department of Labor – Bureau of International Labor Affairs. 2020. *Findings on the Worst Forms of Child Labor*.

/// United States Department of the Interior. 2018. "Final List of Critical Minerals 2018," *Federal Register*, vol. 83(97), pp. 23,295–23,296.

/// Valderrama P. 1939. "Histoire generale due monde et de la nature (1617–1619)," [in:] *Materials toward a History of Witchcraft*, eds. H.C. Lea, trans. A.C. Howland, vol. 2, University of Pennsylvania Press, 1939.

/// Vogel C.N. 2022. *Conflict Minerals, Inc.: War, Profit and White Saviourism in Eastern Congo*, Oxford Academic.

/// Wang S. 2006. "Cobalt: Its Recovery, Recycling, and Application," *Journal of the Minerals, Metals and Materials Society*, vol. 58(10), pp. 47–50.

/// World Economic Forum. 2020. *Making Mining Safe and Fair: Artisanal Cobalt Extraction in the Democratic Republic of the Congo*.

/// Yergin D. 2020. *The New Map: Energy, Climate, and the Clash of Nations*, Penguin Press.

/// Abstract

The aim of this article is to characterise the system of the cobalt economy. The introduction presents the importance of cobalt for the green energy revolution. The production chain and the role of the main entities that co-create it are described. Then, the functioning of cobalt mines in the Democratic Republic of the Congo – including both large mines managed by corporations and artisanal small-scale ones – is discussed. Attention is drawn to phenomena such as forced labour, bonded labour, slave labour, child labour, the situation of women, and violations of all health and safety

standards in mines. The article ends with an analysis of the effectiveness of international initiatives aimed at improving the situation of producers and implementing the idea of sustainable development.

Keywords:
green energy revolution, cobalt, Democratic Republic of the Congo, artisanal and small-scale mining, modern slavery, neocolonialism

/// Błażej Popławski – a historian, sociologist, and museologist, he received a PhD in the humanities from the University of Warsaw. A member of the Polish Africanist Society. He has conducted field researches in East and West Africa (Kenya, Tanzania, Uganda, Ethiopia, Nigeria, the Ivory Coast). His research interests include the contemporary history of Africa, postcolonial theory, and development issues.

ORCID: https://orcid.org/0000-0001-5171-8192

E-mail: blazej.poplawski@gmail.com

/// Roman Chymkowski – anthropologist and sociologist, director of the Institute of Polish Culture; in his book *Nietożsamości. Tillion, Fanon, Bourdieu, Derrida i dylematy dekolonizacji* [Nonidentities: Tillion, Fanon, Bourdieu, Derrida, and the Dilemmas of Decolonisation] (2019) he presents the attitudes of four Francophone intellectuals towards the Algerian War of Independence.

ORCID: https://orcid.org/0000-0002-5107-8428

E-mail: roman.chymkowski@uw.edu.pl