



Preventing Environmental Crime and Human Vulnerability through the MGPOC Framework: The Case of Zimbabwe's Lithium Industry

COLLECTION:
EXPLORING THE NEXUS
BETWEEN HUMAN
VULNERABILITIES
AND ENVIRONMENTAL
CRIME

METHODS ARTICLE

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ABSTRACT

Based on a research in progress, the 'micro-geopolitics of organised crime' (MGPOC) framework examines how and why organised crime groups (OCGs) around the globe develop illicit economies associated to natural resources. The foundational premise underlying the MGPOC is that OCGs vie for contested resources-rich territories, transport routes, and access to national and international markets in order to secure strategic hubs of illicit wealth, influence and power, thus creating conditions for large-scale violence primordially at a local scale. The present methodology article represents a step forward in the research agenda. Its purpose is to test—and refine—the MGPOC as an actionable early-warning tool aimed to prevent OCGs from creating illicit economies out of environmental commodities. The article is also keen on highlighting the nefarious ramifications of environmental crime to human vulnerability, particularly to democratic governance, environmental sustainability and citizen security. Because a concrete case study is central to this strategic intelligence assessment, the article analyses lithium in Zimbabwe—Africa's largest producer and world's sixth—and the variables that might enable organised crime to tap into this industry, especially as this metal becomes increasingly critical in the energy sector's transition towards a low-carbon future.

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Although not unprecedented, the creation of illicit economies by organised crime has swiftly become an ever-present phenomenon in the 21st century. In particular, organised criminal groups (OCGs) have economically diversified into several environmental crimes,¹ namely: logging in Latin America (*Insight Crime 2020*), the exploitation and trade of wildlife in Africa (*Nellemann et al. 2014*), oil theft in Mexico (*Alonso-Berbotto & Chainey 2021*) and Nigeria (*Reed 2019*), or the extraction of minerals and precious metals in Ukraine (*Zabyelina & Kalczynski 2020*), Colombia (*van Uhm 2020*), Venezuela (*ICG 2019*) and South Africa (*GI-TOC 2020*), to mention some notable examples.

In light of this global trend, and based on research in progress, the ‘micro-geopolitics of organised crime’ (MGPOC) framework examines how and why OCGs around the globe develop illicit economies associated to natural resources (*Carbajal-Glass 2020a; 2020b; 2021a; 2021b; 2022*). The foundational premise underlying the MGPOC is that OCGs vie for contested resources-rich territories, transport routes, and access to national and international markets in order to secure strategic hotspots of illicit wealth, influence and power, thus creating conditions for large-scale violence primarily at a local scale.

The present methodology article represents a step forward in the research agenda. Its purpose is to test—and refine—the MGPOC as an actionable early-warning tool aimed to prevent OCGs from creating illicit economies out of environmental commodities. The article is also keen on highlighting the nefarious ramifications of environmental crime to human vulnerability, particularly to democratic governance, environmental sustainability and citizen security locally. Because a concrete case study is central to this strategic intelligence assessment, the article analyses lithium in Zimbabwe—Africa’s largest producer and world’s sixth (*USGS 2021*). The reason this paper focuses on lithium is due to its ‘unlootable’ nature. As for this, ‘lootability’ refers to the relative ease in which the value of an illicit resource can be extracted. Lootable, or diffuse, resources are easily accessible and extractable to those who can control the area in which they are located. Conversely, ‘unlootable’ resources tend to require high levels of technology or skills to extract, and be geographically concentrated (point-source resources) (*Ross 2004: 350*). Their extraction involves costly mining technology and little labour input (*Addison et al. 2002: 367; Lujala et al. 2005: 543; Ross 2003*). In addition, point-source resources have been associated with corruption, patron-client networks, and personalistic rule. Due to the difficulty—or high cost—of accessing the resources, unlootable resources are more likely to be controlled by the government, armed groups, or corporations affiliated with the state. This is because these groups are more likely to have long-term control of the resource, which make the high cost of investment more feasible.

The presence of lootable resources is more likely to lead to non-secessionist wars, while unlootable resources tend to lead to separatist conflict, as grievance is sparked over the unfair distribution of wealth (*Ross 2003: 56*). Unlootable resources under state control provide means of financing for governments, who then may not need to develop a tax base or economic diversification. This can result in poor economic growth amid elite self-enrichment and, with it, an aggrieved populace (*Addison et al. 2002: 384; Malaquias 2001: 319*).

This said, after briefly explaining the methods employed for this case study, the paper sketches out the tenets of the MGPOC framework. Next, the paper analyses the dynamics of Zimbabwe’s socio-political landscape and its lithium industry through the prism of the MGPOC. In the process, this section portrays the variables that might enable organised crime to tap into this industry, especially as this metal becomes increasingly critical in the energy sector, particularly in the transition towards a low-carbon future. This section also highlights how an eventual lithium-based illicit economy may increase human vulnerability in an already social, economic and politically vulnerable background. The paper concludes with final remarks on the creation of illicit economies by OCGs and next steps in the research agenda.

¹ According to Europol (*2021a*), environmental crime refers to activities that breach environmental legislation and cause significant harm or risk to the environment, human health, or both.

METHODS

This case-study research was based on the ‘intensive study of a single unit [...] for the purpose of understanding a larger class of similar units (a population of cases)’ (Gerring 2009: 95). Ultimately, building on Flyvbjerg (2006), the case study of lithium in Zimbabwe seeks to produce more generalizable knowledge on the political, social and economic factors that allow OCGs develop illicit economies around the globe, in particular those based on natural resources.

This desk-based research relied on a combination of data collection methods and content analysis. First, as suggested by Bazzell (2019: 501) and Hobbs et al. (2014), open-source intelligence (OSINT) techniques were used to structure a dataset on news and scholarly literature about Zimbabwe’s background, with special attention on the way organised crime is embedded—and the role it performs—in what Khoshkish (1979) referred to as the ‘socio-political complex’. The research design was complemented with existing literature on trends in organised crime, the crime-government nexus, and the creation of illicit economies in the extractive industries. Lastly, government and non-government sources were consulted to collect statistics on the lithium industry.

TENETS OF THE MGPOC

The MGPOC framework focuses on the interconnection of five key components (see Diagram 1).² Firstly, it assumes the existence of a *profitable legal production process*³ associated with a specific natural resource (i.e., lithium). This component implies that the production of, for instance, lithium (i.e., extraction, transport, storage, export and processing of the metal) is bound to local geographies and shaped by the laws of global supply and demand (Carbajal-Glass 2021b).

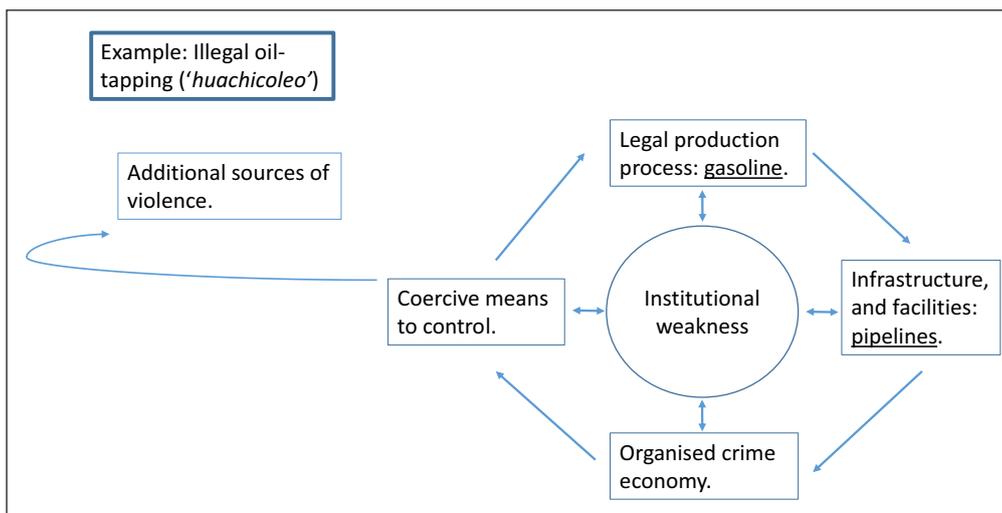


Diagram 1 Micro-Geopolitics of Organised Crime.

Source: Elaborated by the author.

Additionally, the MGPOC suggests the presence of *infrastructure related to a specific production process*. Albeit minimal and oftentimes simple, this infrastructure (e.g., lithium ore processing plants, warehouses or machinery) can be infiltrated by OCGs either by co-optation, collusion, and/or government’s inability to avert criminal groups from using it (Carbajal-Glass 2020a: 157). The presence of infrastructure related to a particular production process reflects the influence of geography over politics insofar as infrastructure projects and investments are connected to geographic determinants in the first place (e.g., the existence of huge lithium deposits).

The framework also considers the *incorporation of a legal production process* into the dynamics of organised crime’s economy. Additional revenue streams cause severe imbalances in the crime-government nexus, whereby criminal groups have additional resources—manpower and weaponry—to neutralise potential law enforcement activities and rival criminal groups (Carbajal-Glass 2020b).

² The components of the MGPOC are explained more in-depth in Carbajal-Glass (2020a).

³ For the purposes of this research, a production process comprises the following phases: extraction, transport, storage, export and processing of lithium.

The MGPOC assumes that the illicit appropriation of a production process takes place *through coercive means*. Although not exclusively—since it is common to find cases where criminal groups have a robust popular support and/or the protection of corrupt government authorities, as the framework's last component states—the infiltration of a legal production process implicitly calls for the use of violence, adding alternative cycles of violence and counter-violence to an already complex socio-political environment (e.g., the use of the military to repress people, the rise of vigilante or paramilitary groups) (Carbajal-Glass 2021b).

Finally, at the core of the MGPOC is the *prevalence of government corruption*. The crime-government nexus makes OCGs increasingly politically influential in a particular 'geographic hotspot' (UNODC 2021:8), enabling the establishment of a complex set of interactions between these groups and political elites as well as economic actors (Carbajal-Glass 2022). It is worth mentioning that government corruption and OCGs violence will cross-fertilize each other depending on the type of criminal-state relations, namely: predatory, parasitic and symbiotic (see Lupsha 1996; Cockayne 2011).

CASE STUDY

After briefly describing the lithium industry's relevance globally, the paper now assesses through the analytical components of the MGPOC the conditions that may allow organised crime in Zimbabwe to tap into a lithium-based illicit economy in the coming years. This section also highlights the potential implications to human vulnerability in this scenario even more so in an already vulnerable socio-political environment.⁴

Lithium supply security is now a top priority for technology companies worldwide (USGS 2021: 99). Some estimates suggest that the demand for lithium will outstrip supply by 2023, driving prices higher (O'Brien & Nickel 2016). Moreover, other estimations suggest that lithium's global demand may grow eight times by 2030 (Runkevicius 2020). The global demand of this mineral commodity responds to the growing market for portable electronic devices, electric tools and vehicles, and grid storage applications. In 2020, nearly three quarters of all mined lithium went into batteries (71%); the rest was used for a variety of products such as ceramics and glass (14%), and lubricating greases (4%) (USGS 2021: 98). The world's top lithium-producing countries in 2020 were: Australia, Chile, China, Argentina, Brazil, Zimbabwe and Portugal (USGS 2021).

As for Zimbabwe, the production reached 1,200 metric tonnes of lithium content⁵ that year, with an estimated 220,000 metric tonnes of lithium content in reserves⁶ (USGS 2021: 99). The Bikita mine, located in the southern Masvingo province, is Zimbabwe's largest lithium deposit, with roughly 150,000 tons of lithium content reserves (NS Energy 2020)—roughly 68% of the country's current overall reserves. By 2018, much of Zimbabwe's extracted lithium went to China, where the majority of the world's lithium batteries are made (Church & Crawford 2018).

Although it could be said that Zimbabwe is still in its onset in terms of lithium production capacity⁷—the Bikita mine was the only fully operational lithium deposit in the country by 2020 (Sibanda 2020)—the central government has claimed the country will meet 20% of the world's total demand for lithium as soon as it fully exploits its known lithium resources (Stevens 2019). According to Mthandazo (2021), about four major lithium projects are currently under development in Zimbabwe, where multinational firms expect to invest up to US\$300 million in the coming few years to reach full production. Chief among these infrastructure projects is the Arcadia Lithium Project mine⁸—near the capital Harare, in northern Zimbabwe—that would reach an annual production of 2.5 million tons of lithium ore once the mine is fully operational—something that would approximately equate to US\$3 billion in exports (Stevens 2019). Also, the

⁴ For instance, Zimbabwe's Human Development Index score in 2019 was 0.571, ranking at 150 out of 189 countries (UNDP 2021).

⁵ In the Earth's crust, lithium is present at between 20 to 70 parts per million by weight. This requires an efficient extraction system to separate lithium content from other minerals and rocks such as granite (Chemistry Views 2019).

⁶ Meaning the part of the reserve base that could be economically extracted or produced at the time of determination (USGS 2021: 196).

⁷ In 2020, Zimbabwe's lithium production represented only 1.4% of the world's production (BP 2021).

⁸ For more details on the Arcadia project, see: Mining Technology (2020).

national government plans to open a lithium ore processing plant in Bulawayo—the second biggest city after Harare, located in southwest Zimbabwe—in order to add value into the country's lithium supply chain (Stevens 2019).

Indeed, adding lithium to an already rich mining sector—which includes diamond, platinum, gold, and iron ore (Todd 2019)—would yet increase the sector's relevance to the national economy that in 2020 contributed roughly 60 percent of the annual foreign exchange inflows into the country (Sibanda 2020). However, Zimbabwe's mining sector has recurrently struggled with transparency and effective governance (CNRG 2021; LSE Consulting 2021). In 2017, the last year Zimbabwe appeared in the Resource Governance Index, the country's mining sector was labelled as failing, meaning the government does not have schemes to ensure resource extraction benefits society, whilst it is highly probable that mining activity only benefits a selected group of companies and national elites (NSGI 2021). Moreover, according to research by Saunders and Caramento (2018: 1175), and Maguwu (2017), the mining sector in Zimbabwe has been historically marked by government corruption, elite predation and regime rent-seeking.

It is worth pointing out that ever since Zimbabwe became an independent country, it has been ruled by a single party, namely, the Zimbabwe African National Union-Patriotic Front (ZANU-PF) (see Sachikonye 2017; Chigora et al 2015; Shaw 1986). First under the tenure of Canaan Banana (1980–1987), followed by Robert Mugabe (1987–2017), and currently by Emmerson Mnangagwa after a military coup ousted Mugabe in November 2017, and a contested election took place in July 2018 over fraud allegations by the Movement for Democratic Change (MDC), the main opposition party (Thompson 2018). The political regime under the ZANU-PF's hegemony relies heavily on its alliance with the military. According to Kasipo (2018: 3), illicit economies have been a pillar of the patronage system that has ensured ZANU-PF's permanence in power and, more importantly, the military support to the regime (see also Towriss 2013). Perhaps the case of the Marange diamonds⁹ depicts in full body this civil-military dynamic, whereby senior military officers and ZANU-PF party officials were the main beneficiaries of the diamond exploitation (see PAC 2012).

In this sense, when it comes to illicit economies in Zimbabwe, the state plays a central role in controlling, shaping and benefiting from organised crime (Kasipo 2018). On the one hand, there is criminal activity among low-to middle-level public servants. On the other, organized-criminal activities are carried out by political elites themselves in partnership with business (Ibid). For instance, research conducted by Mawowa (2013) revealed how most of the gold buyers in the Zimbabwean illicit market are frontmen for political elites and politically connected businesses. Overall, the nature of Zimbabwe's political regime—a single-party government; a centralized authority of the president; a corporatist pact within the party; alliance with economic interest groups and bureaucratic leaders—explains the role of subordination organised crime currently plays within the crafts of the Zimbabwean state, something strikingly akin to countries like Mexico before its democratisation process (Carbajal-Glass 2022).

However, the cohesion of the ZANU-PF has been weakened as rival factions competed for presidential succession in 2017 (Oxford Analytica 2017). Two main groups were at play, namely: Team Lacoste which leaned toward President Mnangagwa; and the faction called G40 that endorsed former First Lady, Grace Mugabe. The upcoming presidential election, –or re-election, in 2023 will reveal President Mnangagwa's leadership and any possible challenge from within the ranks of the ZANU-PF (Ndebele 2021). The party-government's cohesion is something to monitor when analysing the evolution of organised crime in Zimbabwe. Indeed, further ruptures within the party-government may represent a reconfiguration of the political landscape altogether and, therefore, an ensuing shift in the crime-government nexus. In particular, in a more fragmented political system, organised crime operating in Zimbabwe may develop a sense of agency or autonomy with regards to the lithium business, at a moment in which there will be more advanced infrastructure to tap into. As in other case studies (see Carbajal-Glass 2020a; 2021b; 2022), changes in the political regime often have implications in the structures of the criminal underworld, chief among them the 'emancipation' of organised crime groups from the government and their new capabilities to 'infiltrate legal business structures at high level or set up own companies' (Europol 2021b).

9 A world-class diamond deposit found in 2006 in eastern Zimbabwe.

In addition, the social roots of illicit economies in Zimbabwe should be another variable to bear in mind for this case study. Since 2010, when economic fall outs took place, Zimbabwe's economy has been struggling with acute shortages of cash dollars, increases in prices of basic goods, high unemployment and low levels of foreign investment (Lewis 2018). As a result, Zimbabwe's economy became one of 'getting by' (Jones 2010: 286), and *kukiya-kiya* became the new normal in the country's informal sector. *Kukiya-kiya* refers to 'unorthodox ways of eking out a living in a tough environment, or the irregular exploitation of whatever resources are at hand' (Kasipo 2018: 6). This practice has permeated the Zimbabwean society to the point that, according to estimates by the International Monetary Fund in 2018, the country's informal economy that year was the second largest in the world (Medina & Schneider 2018).

In such context, the creation of an illicit economy based on lithium by OCGs will likely cause a steep rise in criminal violence in Zimbabwe—such as the one registered in 2019 and early 2020 when Zimbabwe went through a dramatic spate of machete gang violence across artisanal and small-scale gold mining areas (GI-TOC 2020; Mkodzongi 2020). OCGs will be prone to vie for lithium-rich territories through violent means (Carbajal-Glass 2020a), thus generating additional sources of social grievances, tensions at a local level and possibly large-scale violence. In this sense, an eventual lithium-based illicit economy by OCGs in Zimbabwe will be yet another example on how different actors such as multinational companies, criminal groups, government authorities, or paramilitary groups, all contribute to the escalation of violence, political instability and social fragmentation locally. Overall, the case of lithium in Zimbabwe could become yet another example on how environmental crime increases the risk of conflict over natural resources and its impact to human vulnerability, particularly to democratic governance, environmental sustainability and citizen security at a local level.

CONCLUSION

OCGs are constantly evolving and adapting worldwide. So it is necessary to have the analytical tools aimed at studying and, ultimately, anticipating their behaviour. In particular, the MGPOC framework seeks to become an actionable early-warning tool aimed at preventing OCGs from creating illicit economies out of environmental commodities. The framework consists of five key components, namely the existence of a profitable legal production process associated to a natural resource; the existence of infrastructure and facilities related to a specific production process; the incorporation of the production process into the OCG's economy; the appropriation of a production process through coercive means; and government corruption/institutional failure.

This paper draws on the MGPOC framework to identify the structural variables that may enable OCGs to create an illicit economy out of lithium in Zimbabwe. Concretely, the key structural variables involved in this case study are five, namely:

- a) The increasing existence of lithium-related infrastructure as a result of the Zimbabwean government policy towards this industry.
- b) An eventual power reconfiguration within the ZANU-PF and, therefore, of the political regime as such.
- c) The 'emancipation' of OCGs due to the shift in the crime-government nexus, as a result of an eventual change in the political regime.
- d) The social roots of illicit economies within the Zimbabwean society (i.e., *kukiya-kiya*).
- e) The increase of lithium's global demand. In particular, China's priority to make its lithium industry more resilient by diversifying its access to this critical raw material and consolidating its lithium-based supply chains integration.

The monitoring of these variables will be key to anticipate any feasible attempt from OCGs to create and maintain an illicit economy based on lithium in Zimbabwe. The combination of the above-mentioned variables will further political volatility and conflict in this African country, thus increasing human vulnerability particularly in those lithium-rich localities.

This being said, this case study attested how structural factors promote organised crime activity in a country. In this sense, the MGPOC framework is not only concerned with OCGs

in themselves, that is, their specific means, ways and ends. Instead, it acknowledges that organised crime, in this case in Zimbabwe, is not an isolated entity insofar as it is part of a social reality and a consequence of political and economic dynamics. Ultimately, this case study portrayed how illicit economies are administered by entrepreneurs in political and business spheres in the legitimate world. As for the social fragmentation, cases like Zimbabwe's lithium industry represents a sheer example of the wider danger of conflict onsets over natural resources. The way lithium is sourced will determine whether this energy transition supports peaceful, sustainable societies in countries like Zimbabwe or, instead, will pose a serious threat to human vulnerability. Finally, it is worth saying that a step forward in this research agenda consists in turning the MGPOC framework into a quantitative tool, most likely an index.

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COMPETING INTERESTS

The author has no competing interests to declare.

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REFERENCES

- Addison, T, Le Billon, P and Mansoob Murshed, S. 2002. Conflict in Africa: The cost of peaceful behaviour. *Journal of African Economies*, 11(3): 365–386. DOI: <https://doi.org/10.1093/jae/11.3.365>
- Alonso-Berbotto, A and Chainey, S. 2021. Theft oil from pipelines: an examination of its crime commission in Mexico using crime script analysis. *Global Crime*, 1–23. DOI: <https://doi.org/10.1080/17440572.2021.1925552>
- Bazzell, M. 2019. *Open Source Intelligence Techniques: Resources for Searching and Analyzing Online Information*. Austin, Texas: GoldBooks. DOI: <https://doi.org/10.33896/SPolit.2019.54.11>
- BP. 2021. *Review of World Energy: Key Minerals—2020 in review*. [online access at <https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/key-minerals.html> last accessed 14 November 2021].
- Carbajal-Glass, F. 2020a. Where the Metal Meets the Flesh: Organized Crime, Violence, and the Illicit Iron Ore Economy in Mexico's Michoacán. In: Zabyelina, Y and van Uhm, D (eds.). *Illegal Mining: Organized Crime, Corruption, and Ecocide in a Resource-Scarce World*, 147–183. London: Palgrave-Macmillan. DOI: https://doi.org/10.1007/978-3-030-46327-4_6
- Carbajal-Glass, F. 2020b. Spaces of influence, power and violence: The micro-geopolitics of organised crime, 1 December. Available at <https://shoc.rusi.org/blog/spaces-of-influence-power-and-violence-the-micro-geopolitics-of-organised-crime/>, [Last accessed 14 November 2021].
- Carbajal-Glass, F. 2021a. The micro-geopolitics of organised crime: A framework to read criminal groups in the 21st century', 22 March. Available at <https://urbanviolence.org/the-micro-geopolitics-of-organised-crime/> [Last accessed 14 November 2021].
- Carbajal-Glass, F. 2021b. Natural resources and the micro-geopolitics of violent non-state actors: a first approach. *Special Issue of the IAU-HESD publication series on SDG16*. (Forthcoming).
- Carbajal-Glass, F. 2022. The political trajectory of homicidal violence: organised crime in Michoacan's urban Apatzingán. *Crime, Law and Social Change*. (Submitted for review).
- Chemistry Views. 2019. Selective extraction of lithium from salt lake brines, March 5. Available at https://www.chemistryviews.org/details/ezone/11138711/Selective_Extraction_of_Lithium_from_Salt_Lake_Brines.html [Last accessed 14 November 2021].
- Chigora, P, Guzura, T and Ndimande, J. 2015. The Zimbabwe African National Union-Patriotic Front (ZANU-PF) regime in power in the 21st century: A question of popular support or preserving power by undemocratic means. *International Journal of Politics and Good Governance*, 6(3): 1–23.
- Church, C and Crawford, A. 2018. *Green Conflict Minerals: The fuels of conflict in the transition to a low-carbon economy*. Available at <https://www.iisd.org/story/green-conflict-minerals/#group-Introduction-nRsxuyXi5a> [Last accessed 14 November 2021].

- CNRG.** 2021. *Mortgaging the future in return for power: Zimbabwe's natural resources and the 2018 election*. [online access at <https://za.boell.org/en/2021/08/02/mortgaging-future-how-zanu-pf-turns-zimbabwes-natural-resources-party-political> last accessed 14 November 2021].
- Cockayne, J.** 2011. State fragility, organised crime and peacebuilding: towards a more strategic approach. *NOREF Report*, September 15. [online access at <https://noref.no/Publications/Themes/Peacebuilding-and-mediation/State-fragility-organised-crime-and-peacebuilding-towards-a-more-strategic-approach> last accessed 9 January 2022].
- Europol.** 2021a. *Environmental crime*. [online access at <https://www.europol.europa.eu/crime-areas-and-trends/crime-areas/environmental-crime> last accessed 14 November 2021].
- Europol.** 2021b. *EU Policy Cycle—EMPACT*. [online access at <https://www.europol.europa.eu/crime-areas-and-trends/eu-policy-cycle-empact> last accessed 14 November 2021].
- Flyvbjerg, B.** 2006. Five misunderstandings about case-study research. *Qualitative Inquiry*, 12(2): 219–245. DOI: <https://doi.org/10.1177/1077800405284363>
- Gerring, J.** 2009. The Case Study: What Is and What It Does. In: Boix, C and Stokes, SC (eds.), *The Oxford Handbook of Comparative Politics*, 91–122. Oxford: Oxford University Press. DOI: <https://doi.org/10.1093/oxfordhb/9780199566020.003.0004>
- GI-TOC.** 2020. Afghan meth and illicit gold mining. *Africa and Global Illicit Economy*, Ep. 12. [online access at <https://player.captive.fm/episode/ff8b160c-a8a5-43b9-b5b2-875afa14a357> last accessed 8 January 2022].
- GI-TOC.** 2020. Civil society observatory of illicit economies in Eastern and Southern Africa. *Risk Bulletin*, Issue 4 (January–February). [online access at <https://globalinitiative.net/wp-content/uploads/2020/01/RB4.3rdpp.23.01.v1.pdf> last accessed 8 January 2022].
- Hobbs, C, Moran, M and Salisbury, D.** (eds.) 2014. *Open Source Intelligence in the Twenty-First Century: New Approaches and Opportunities*. London: Palgrave Macmillan. DOI: <https://doi.org/10.1057/9781137353320>
- ICG.** 2019. *Gold and Grief in Venezuela's Violent South*. [online access at <https://www.crisisgroup.org/latin-america-caribbean/andes/venezuela/073-gold-and-grief-venezuelas-violent-south> last accessed 8 January 2022].
- Insight Crime.** 2020. *Timber Mafias—Preying on Latin America's Forests*, September. Available at: <https://www.insightcrime.org/investigations/timber-mafias-latin-america/> [Last accessed 8 January 2022].
- Jones, JL.** 2010. 'Nothing is straight in Zimbabwe': The rise of the kukiya-kiya economy 2000–2008. *Journal of Southern African Studies*, 36(2): 285–299. DOI: <https://doi.org/10.1080/03057070.2010.485784>
- Kasipo, M.** 2018. *Political transition in Zimbabwe: A new era for organized crime?* August. Available at <https://globalinitiative.net/analysis/political-transition-in-zimbabwe-a-new-era-for-organized-crime/> [Last accessed 14 November 2021].
- Khoshkish, A.** 1979. *The Socio-Political Complex: An Interdisciplinary Approach to Political Life*. Oxford: Elsevier. DOI: <https://doi.org/10.1016/B978-0-08-023391-8.50015-X>
- Lewis, B.** 2018. Zimbabwe's mining minister says lithium biggest draw. *Reuters*, February 6. Available at <https://www.reuters.com/article/ozabs-uk-africa-mining-zimbabwe-idAFKBN1FQ1CZ-OZABS> [Last accessed 14 November 2021].
- LSE Consulting.** 2021. *Sustainability Impact Assessment in Support of Negotiations with Partner Countries in Eastern and Southern Africa in view of Deepening the Existing Economic Agreement Partnership. Case Study: Mining Sector in Zimbabwe and Madagascar*. [online access at <https://www.lse.ac.uk/business/consulting/assets/documents/Case-Study-Mining.pdf> last accessed 14 November 2021].
- Lujala, P, Gleditsch, NP and Gilmore, E.** 2005. A diamond curse? Civil war and a lootable resource. *Journal of Conflict Resolution*, 49(2): 538–562. DOI: <https://doi.org/10.1177/0022002705277548>
- Lupsha, PA.** 1996. Transnational organized crime versus the Nation-State. *Transnational Organized Crime*, 2(1): 21–48.
- Maguwu, F.** 2017. *Investigating illicit flows in the Zimbabwe's lithium mining sector*, July. Available at <https://www.business-humanrights.org/en/latest-news/investigating-illicit-financial-flows-in-zimbabwes-lithium-mining-sector/> [Last accessed 14 November 2021].
- Malaquias, A.** 2001. Diamonds are a guerrilla's best friend: The impact of illicit wealth on insurgency strategy. *Third World Quarterly*, 22(3), 311–325. DOI: <https://doi.org/10.1080/01436590120061624>
- Mawowa, S.** 2013. The political economy of artisanal and small-scale gold mining in central Zimbabwe. *Journal of Southern African Studies*, 39(4): 921–936. DOI: <https://doi.org/10.1080/03057070.2013.858540>
- Medina, L and Schneider, F.** 2018. Shadow economies around the world: What did we learn over the last 20 years? *IMF working paper*, January 24 [online access at <https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583> last accessed 14 November 2021]. DOI: <https://doi.org/10.2139/ssrn.3124402>

- Mining Technology.** 2020. Arcadia Lithium Project, Harare. Available at <https://www.mining-technology.com/projects/arcadia-lithium-project-harare/> [Last accessed 14 November 2021].
- Mkodzongi, G.** 2020. The rise of ‘Mashurugwi’ machete gangs and violent conflicts in Zimbabwe’s artisanal and small-scale gold mining sector. *The Extractive Industries and Society*, 7: 1480–1489. DOI: <https://doi.org/10.1016/j.exis.2020.10.001>
- Mthandazo, N.** 2021. Multinationals make headway in Zim lithium. *The Zimbabwe Independent*, July 9 [online access at <https://www.theindependent.co.zw/2021/07/09/multinationals-make-headway-in-zim-lithium/> last accessed 14 November 2021].
- Ndebele, L.** 2021. Mnangagwa on a mission to win 2023 presidential election ticket, October 6. Available at <https://www.timeslive.co.za/news/africa/2021-10-06-mnangagwa-on-a-mission-to-win-2023-presidential-election-ticket/> [Last accessed 14 November 2021].
- Nellemann, C, Henriksen, R, Raxter, P, Ash, N and Mrema, E.** 2014. *The environmental crime crisis: Threats to sustainable development from illegal exploitation and trade in wildlife and forest resources*. Nairobi: United Nations Environment Programme (UNEP) & Interpol.
- NS Energy.** 2020. Profiling the top six lithium-producing countries in the world, November 23. Available at <https://www.nsenerybusiness.com/features/top-lithium-producing-countries/> [Last accessed 14 November 2021].
- NSGI.** 2021. *2021 Resource Governance Index*. Available at <https://resourcegovernanceindex.org/> [Last accessed 14 November 2021].
- O’Brien, R and Nickel, R.** 2016. Battery-hungry world turns to South America’s ‘lithium triangle’. *Reuters*, March 15 [online access at <https://www.reuters.com/article/us-latam-lithium-idUSKCN0WH1BZ> last accessed 14 November 2021].
- Oxford Analytica.** 2017. ZANU-PF divisions will undermine Zimbabwean elections, March 9. Available at <https://www.emerald.com/insight/content/doi/10.1108/OXAN-DB218498/full/html> [Last accessed 14 November 2021].
- PAC.** 2012. *Reap what you sow: Greed and corruption in Zimbabwe’s Marange diamond fields*, November. Available at <https://impacttransform.org/wp-content/uploads/2017/09/2012-Nov-Reap-What-You-Sow-Greed-and-Corruption-in-Zimbabwes-Marange-Diamond-Fields.pdf> [Last accessed 14 November 2021].
- Reed, E.** 2019. Action needed on Nigerian oil theft. *Energy Voice*, November 8 [online access at <https://www.energyvoice.com/oilandgas/africa/211750/action-needed-on-nigerian-oil-theft/> last accessed 8 January 2022].
- Ross, ML.** 2003. Oil, Drugs and Diamonds: The Varying Role of Natural Resources in Civil War. In: Bellentine, K and Sherman, J (eds.), *The Political Economy of Armed Conflict: Beyond Greed and Grievance*, 47–70. Boulder, Colorado: Lynne Rienner.
- Ross, ML.** 2004. What do we know about natural resources and civil war? *Journal of Peace Research*, 41(3): 337–356. DOI: <https://doi.org/10.1177/0022343304043773>
- Runkevicius, D.** 2020. As Tesla Booms, Lithium is Running Out. *Forbes*, December 7 [online access at <https://www.forbes.com/sites/danrunkevicius/2020/12/07/as-tesla-booms-lithium-is-running-out/?sh=24c47b531a44> last accessed 14 November 2021].
- Sachikonye, L.** 2017. The protracted democratic transition in Zimbabwe. *Taiwan Journal of Democracy*, 13(1): 117–136.
- Saunders, R and Caramento, A.** 2018. An extractive developmental state in Southern Africa? The cases of Zambia and Zimbabwe. *Third World Quarterly*, 39(6): 1166–1190. DOI: <https://doi.org/10.1080/01436597.2017.1409072>
- Shaw, W.** 1986. Towards the one-party state in Zimbabwe: A study in African political thought. *The Journal of Modern African Studies*, 24(3): 373–394. DOI: <https://doi.org/10.1017/S0022278X00007084>
- Sibanda, G.** 2020. Zim set to dine with big hitter of lithium. *Sunday Mail*, December 13 [online access at <https://www.sundaymail.co.zw/zim-set-to-dine-with-big-hitters-of-lithium> last accessed 14 November 2021].
- Stevens, LM.** 2019. Zimbabwe’s lithium mine is attracting global attention. *African Mining Market*, October 14 [online access at <https://africanminingmarket.com/zimbabwes-lithium-mine-is-attracting-global-attention/4906/> last accessed 14 November 2021].
- Thompson, J.** 2018. Zimbabwe President Emmerson Mnangagwa accused of using armed forces to gain electoral advantage. *Sunday Times*, July 8. [online access at <https://www.timeslive.co.za/news/africa/2018-07-08-zimbabwe-president-emmerson-mnangagwa-accused-of-using-armed-forces-to-gain-electoral-advantage/> last accessed 14 November 2021].
- Todd, F.** 2019. Zimbabwe aims to triple its mining industry revenue to \$12 bn by 2023. *NS Energy*, October 15 [online access at <https://www.nsenerybusiness.com/news/zimbabwe-mining-industry-2023/> last accessed 14 November 2021].
- Towriss, D.** 2013. Buying Loyalty: Zimbabwe’s Marange Diamonds. *Journal of Southern African Studies*, 39(1): 99–117. DOI: <https://doi.org/10.1080/03057070.2013.765694>

UNDP. 2021. *Human Development Index 2019*. Available at http://hdr.undp.org/en/content/latest-human-development-index-ranking?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=EAIaIQobChMIv5Hk1suT9AIVfyGtBh28XQXJEAAAYASAAEgK6efD_BwE [Last accessed 14 November 2021].

USGS. 2021. *Mineral Commodities Summaries 2021*. Virginia, USA: U.S. Geological Survey.

van Uhm, D. 2020. The Diversification of Organized Crime into Gold Mining: Domination, Crime Convergence, and Ecocide in Darién, Colombia. In: Zabyelina, Y and van Uhm, D (eds.), *Illegal Mining: Organized Crime, Corruption, and Ecocide in a Resource-Scarce World*, 105–146. London: Palgrave-Macmillan. DOI: https://doi.org/10.1007/978-3-030-46327-4_5

Zabyelina, Y and Kalczynski, N. 2020. Shadowy Deals with ‘Sunny Stone’: Organized Crime, Informal Mining, and Illicit Trade of Amber in Ukraine. In: Zabyelina, Y and van Uhm, D (eds.), *Illegal Mining: Organized Crime, Corruption, and Ecocide in a Resource-Scarce World*, 241–272. London: Palgrave-Macmillan. DOI: https://doi.org/10.1007/978-3-030-46327-4_9

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