

Why a ‘Closed-Pipe Supply Chain’ Cannot Stop Violence in the Democratic Republic of the Congo

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Abstract: The approach to conflict resolution aimed at regulating the mineral trade has proved successful in Angolan and Sierra Leonean conflicts. However, despite the conflict minerals regulation and survey on the global supply chain, issue in the Democratic Republic of the Congo (DRC) has not been solved. This study compares the conflict diamond issues in Angola and Sierra Leone and the conflict minerals issue in the DRC and shows 1) mineral characteristics, 2) mineral distribution system, 3) armed actors who profit from conflict minerals, and 4) international policy on conflict minerals are the determinants of the success of conflict minerals regulations. We illustrate why a closed pipeline for conflict-free minerals cannot be constructed in the DRC and the importance of setting up customized problem-solving measures with a full understanding of the characteristics of each case, while drawing lessons from past cases.

Keywords: Conflict Minerals, Angolan conflict, Sierra Leonean conflict, Democratic Republic of the Congo, Dodd–Frank section 1502, OECD due diligence Guidance

Introduction

Conflict minerals regulations largely contributed the resolution of Angolan and Sierra Leonean conflicts but have failed in the Democratic Republic of the Congo (DRC). This study examines why it is difficult to construct a closed pipeline for conflict minerals in the DRC? In this study, the ‘closed pipeline’ refers to a supply chain in which only conflict-free minerals mined from mines validated by governments, international organizations, and industry associations are transported without funding conflict actors and smelted, distributed, and processed in conformant smelters. No matter the process of mining, trading, distribution, smelting, processing, or marketing, a closed pipeline cannot be considered to have been

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established if there are loopholes that allow minerals involved in conflicts to get mixed up.

The method of conflict resolution by depleting the financial resources of the conflict actors through halting the trade of minerals financing the conflict was introduced in the late 1990s and early 2000s through the United Nations (UN) embargo on conflict diamonds in Angola and Sierra Leone; this approach is credited as a contributor to the resolution of those conflicts (Cortright and Lopez 2004). In particular, the 'naming and shaming strategy' conducted by the UN Sanctions Committee of naming and criticizing governments, companies, and individuals who violate the embargo is credited with having been effective (Angell 2004; Cortright and Lopez 2004; Oberreuter and Kranenpohl 2007/2008). After these conflicts ended in 2002, the Kimberley Process certification system was created to certify conflict-free diamonds. In addition, the trend towards due diligence that requires companies in developed countries to consider human rights in their supply chains, not just in minerals, has increased since the 2000s. The UN Guiding Principles on Business and Human Rights were adopted in 2011, and the United Kingdom (UK) Modern Slavery Act was enacted in 2015. The conflict minerals regulation enacted by Section 1502 of the U.S. Dodd–Frank Wall Street Reform and Consumer Protection Act, and the Organisation for Economic Co-operation and Development (OECD) Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, in 2010 for conflict minerals in the DRC are also a result of this trend. However, there are significant differences between the cases of Angola and Sierra Leone, and the conflict minerals issue in the DRC.

First, there are differences in the characteristics of the conflict minerals in these respective countries. In the case of diamonds exploited in the Angola and Sierra Leone conflicts, their origin is easy to determine, because the ore retains its original form when it is transformed into final products such as jewellery or industrial tools. In contrast, 3TG and other conflict minerals in the DRC are melted down and mixed with other minerals and highly processed to become part of components, which are then incorporated into final products while retaining almost none of their original form.

Second, there are differences in the distribution systems for conflict minerals. The distribution and trade of diamonds was controlled by the Central Sales Organization (CSO) under De Beers until the 1990s. Even after the CSO stopped control, the oligopolistic nature of diamond distribution is still maintained today. In contrast, the distribution and transactions of 3TG are extremely complex, and even after a decade of implementation of a global-scale survey on the conflict minerals trade, the supply chain has not been made transparent.

Third, there are differences in the armed actors who profit from conflict minerals. In the cases of the Angolan and Sierra Leonean conflicts, the structure of the conflict was a bipolar confrontation between the government and a small number of rebel groups. In contrast, the Congo conflict had involved multiple actors, by 2020 leading to more than 120 active armed groups operating amid a general disarray (KST 2021). Furthermore, there are units of the Congolese national armed forces deployed in the eastern DRC that are involved in the illegal mineral trade and violence against civilians (UN S/2021/560).

Fourth, there are differences in the way the international community has policed conflict minerals across these countries. During the Angola and Sierra Leone conflicts, diamond embargoes were imposed as part of the UN economic sanctions⁴, prohibiting the export of rough diamonds without government certification of origin. In the case of the Congo conflict, however, the UN mineral embargo has not been enforced, and only a weak form of enforcement, due diligence, has been implemented by the OECD and the U.S.

Given these differences, it is not clear whether we can naively reapply the same methods used in the conflict diamond issue in Angola and Sierra Leone to the DRC. It is necessary to re-examine whether it is really feasible to establish the closed pipeline for 3TG in DRC, and to develop a solution that is in line with the reality on the ground. Furthermore, similar considerations would need to be made when expanding regulation of conflict minerals to other minerals such as cobalt and mica, which are different in nature.

Keeping in view the aforementioned issues, Section 2 of this paper reviews existing research on the impact of the conflict minerals regulation and presents the significance of this study. Section 3 shows how the construction of a closed pipeline in the DRC has been unfeasible. Section 4 then illustrates the differences between conflict minerals issue in Angola, Sierra Leone, and the DRC in terms of 1) mineral characteristics, 2) mineral distribution system, 3) armed actors who profit from conflict minerals, and 4) international policy on conflict minerals. In conclusion, we argue for the need to reconsider the way of implementing the conflict minerals regulation, by analysing the actual situation to determine why a closed pipeline covering conflict-free 3TG in the DRC cannot be constructed.

The primary research method for this study is a literature review and interviews. The literature review included the collection and analysis of the following materials: 1) Previous research on the conflict minerals issue and the impact of the regulation in eastern DRC, 2) Reports from UN expert groups and NGOs, and 3) Publicly available materials from companies and industry associations. The interviews consisted of semi-structured interviews with the following subjects: 1) 40 personnel from 3TG smelters/refiners, electronics companies, auditing firms, and other companies (intermittently from 2014 to 2021), 2) Visits to the International Tin Association (ITA) Tin Supply Chain and Certification Initiative (ITSCI) in Rwanda and Uganda (in 2018 and 2019). In addition, we conducted focus group discussions with those in charge of the conflict minerals surveys at electronics companies through closed meetings hosted by electronics industry associations (five times between 2016 and 2021).

1. A deep valley between upstream and downstream

When the conflict minerals regulation was issued in 2010, evaluations of the regulation were split (Hanai 2021). Business studies, mainly on corporate social responsibility (CSR), expected that the regulation would build a closed pipeline and

⁴ Angola: S/RES/1173(1998), Sierra Leone: S/RES/1306(2000).

cut off sources of funding for conflicts, thereby helping to resolve conflicts (Reinecke and Ansari 2016; Taka 2016; Vlaskamp 2019).

In contrast, regional researchers who have engaged in field research in the DRC since before the regulation are sceptical about the conflict resolution effects of the regulation and indeed express strong concern about its negative effects. The reason for this scepticism among some researchers is that too much focus on conflict minerals could lead to a misunderstanding of the nature of the problem. Autesserre (2012) criticizes the simple narratives that identifies minerals as the cause of conflict, as hindering the conflict resolution. Cuvelier et al. (2013) are also wary of the risk of dealing with complex conflicts with a narrow understanding. In 2014, a total of 70 researchers, advocacy groups, and other representatives related to the DRC released an open letter calling for a change in policies that focus more on local context and the root cause of conflicts, such as 'access to land, identity, and political contest in the context of a militarized economy, rather than a single focus on minerals' (70 signatories 2014).

As for adverse effects, studies have reported them since shortly after the regulation was enacted. Seay (2012) argues that Dodd–Frank Act 1502 had already triggered a de facto embargo in the eastern DRC even before it went into effect, causing miners to lose their jobs. When Dodd–Frank Act 1502 was finalized in 2012 and the first reports filed in 2014, NGOs reported that conflict actors were withdrawing from 3T mines (Bafilemba et al. 2014). There was also a steady stream of reports from field researchers that their concerns had become reality. Parker and Vadheim (2017) point out that even as miners were impoverished by a decline in the price of minerals, conflict-related violence increased between 2010 and 2012. They claim that regulation has an adverse effect on conflict resolution. Stoop et al. (2018) supported that claim with a study that extended the time horizon to between 2013 and 2015. Furthermore, Parker et al. (2016) indicated that after the enactment of Dodd–Frank Act 1502, the infant mortality in the targeted areas increased by 143percent through 2013, and attributes this to mothers' reduced consumption of health care goods for their infants due to lower household incomes. It should be noted, however, that opinion on the causes of unintended consequences is even more divided; Koch and Kinsbergen (2018), for instance, argue that temporary 'unintended negative effects' are overstated. In general, Cuvelier et al. (2014) indicates that although the conflict minerals regulation has become a wake-up call for diverse actors, leading to the creation of various mineral certification mechanisms, they have been slow to improve the situation on the ground.

Besides the debate over the effectiveness of the regulation, a detailed study of the current use of conflict minerals in eastern DRC reveals that conflict actors continue to profit from minerals even after the implementation of the regulation. Vogel, who conducted field research in North Kivu and South Kivu provinces, notes that monitoring of conflict-free mines is not being carried out as planned; he also points out that officials from the mineral certification agency ITSCI may have missed the involvement of the Mai Mai, local militias (Vogel 2018). NGO Global Witness (2022) also details how mineral certification schemes appears to 'facilitate the laundering of minerals originating from mines controlled by abusive militias or that use child labour'. In addition, many researchers have noted the formation of

‘stationary bandits’⁵ in eastern DRC in areas where the government is not well administered and where conflict actors who have gained effective control of mining areas offer protection rackets to the population in exchange for ‘tax collection’ (Krauser 2020; Parker and Vadheim 2017; Sánchez de la Sierra 2020).

What emerges from these previous studies is the reality that even though the conflict actors have withdrawn from direct control of the mines due to the introduction of the regulation, they have remained in the areas surrounding the mines and continue to profit from the mineral trade. This means that a closed pipeline has not been constructed in the eastern DRC.

Indeed, evaluation can vary greatly depending on which part of the conflict minerals regulation one focuses on. If we focus on the behavioural change in the business community, where companies downstream in the supply chain have begun to take action, the introduction of the regulation can be seen as a major step forward in and of itself. On the other hand, if we focus on the negative effects of the regulation, the high costs they generate, rather than benefits, will be emphasized. In addition, however, before discussing the effectiveness of the regulation, we should not overlook the fact that field surveys have shown that the regulation is not being implemented as intended in the first place. Based on previous research, this study takes the view that the regulation may have been designed in an impractical way that cannot be plausibly implemented in the first place, and advocates that this analysis of the current situation be reflected in policy reform.

2. Blueprint and reality of the closed-pipe supply chain

In this section, we review the blueprint of the closed pipeline that the conflict minerals regulation aims to establish, and then show how that blueprint has become unfeasible for the upstream, midstream, and downstream supply chain.

2.1. Upstream: The Regional Certification Mechanism in mineral extracting areas

In the upstream, the Regional Certification Mechanism (RCM) was launched in 2009 at the initiative of the International Conference on the Great Lakes Region of Africa (ICGLR) and Western countries. According to the ICGLR Certification Manual, the initial blueprint of the RCM was as follows: The government mines inspector conducts a survey, and mines are classified into one of four categories: Certified (Green Flagged), Improving (Yellow Flagged), Un-certified (Red Flagged), and not inspected for one year (Blue Flagged). Red Flagged mines will be banned from producing minerals for at least six months. Green Flagged mines are issued certification tags. The ore is tagged after it is packed in bags, and a closed-pipe supply chain is established if traders and smelters purchase only tagged ore.

For 3T mines, the monitoring, certification, and tagging are conducted by the

⁵ A phenomenon in which, in a state of anarchy, armed forces that can rationalize theft from the population for the provision of peaceful order and public goods gain some level of acquiescence in their actual theft for that purpose (Olsen 1993).

Service for Assistance and Organization of Artisanal and Small-Scale Mining (SAESSCAM), set up by the Congolese Ministry of Mines in collaboration with the International Tin Supply Chain Initiative (ITSCI) of the International Tin Research Institute (ITRI 2018—International Tin Association: ITA), and funded by the International Development Agency Pact and the World Bank’s PROMINES project⁶. However, it lacks the resources to monitor the estimated 3,000 ASM mines in the eastern DRC, and certification has not been implemented as designed.

The first problem is the low number of mines the certification agencies monitor. According to the NGO International Peace Information Service (IPIS), of the 2,959 3TG ASM mines in eastern DRC, 1,296 are certified by SAESSCAM, Division of Mines, and ITSCI, which is only 43.8percent⁷. Given that minerals are still being extracted, there is a possibility that ore mined in uncertified mines is being transported to certified mines and tagged for export. ITSCI regularly reports cases of certification tags being lost or bags of ore with certification tags being taken away by armed actors, including the Congolese military, at the mines ITSCI monitors (ITSCI 2022). Moreover, according to the 2019 IPIS report, of the 272 mines validated by ITSCI in 2016–2018, 41percent were concentrated in mines accessible by car and 34percent in areas accessible within two hours on foot, with the remaining 25percent in remote areas that are inherently prone to interference by armed actors (Matthysen et al. 2019). In April 2022, Global Witness published a report, ‘The ITSCI Laundromat’, that detailed the possibility that 80percent of minerals tagged at a validated mine, Nzibira, were illicitly introduced from other unvalidated mines (Global Witness 2022).

Second, it has not been ruled out that minerals are used to finance conflicts, as conflict actors take a ‘toll tax’ from vehicles on roads around mines. The third problem is that taxation on these roads and villages may be deliberately overlooked by certification agencies. We elaborate on these two problems in 4.3.

These realities in the upstream sector show that a closed pipeline of conflict-free minerals has not been constructed in the eastern DRC.

2.2. Midstream: Conflict-Free Smelter Initiative

Programs to certify conflict-free (2017-conformant) smelters/refineries in the midstream of the supply chain (Conflict-Free Smelter Initiative: CFSI), have been launched. The fact that minerals in eastern DRC have been a source of funding for the conflict has been revealed by international aid agencies and NGOs since the publication of a UN report in 2001 (UN S/2001/357; Global Witness 2004). Therefore, the certification processes for midstream smelters have been underway. Initially, the initiative was taken by a partnership between the Global e-Sustainability Initiative (GeSI) of ICT and electronics companies and the Electronic Industry Citizenship Coalition (EICC) (2017-Responsible Business Alliance: RBA). It is estimated that 3TG ores from mines around the world are consolidated into approximately 500 smelters/refiners. To eliminate conflict minerals from the supply

⁶ Pact, <https://www.pactworld.org/itsci/partners>

⁷ IPIS, Interactive Web Map, <https://ipisresearch.be/mapping/webmapping/drongo/v5/>

chain, it is crucial to identify conflict-free/regulation-conformant smelters. EICC/RBA has been investigating smelters of 3TG since 2010; smelters that have been audited according to the protocols established for each mineral are certified as conformant smelters/refiners, and the list is made public. With the expansion of mineral certification to include cobalt in 2017, the EICC, which was formerly primarily for electronics companies, was replaced by the RBA, the CFSI was replaced by the Responsible Minerals Initiative (RMI), and the Conflict-Free Smelter Program (CFSP) was replaced by the Responsible Minerals Assurance Process (RMAP). With this change, the term RMAP-conformant smelter, instead of CFS-conformant, was adopted. As of February 2023, a total of 61 smelters of tin, 38 of tungsten, 34 of tantalum, and 32 of gold have been audited and found conformant with the relevant RMAP standard (RMI website).

The assessment of conformant smelters is systematically implemented and is commendable. The problem is that the determination of whether the ore procured by a smelter is conflict-free or not depends on the certification mechanism upstream (RMI website). For instance, companies using tantalum rely on ITSCI certification to import the mineral, but as mentioned above, there are problems with ITSCI certification.

2.3. Downstream: survey on supply chain using Reporting Template

Downstream in the supply chain, product manufacturers are surveying the sourcing of minerals. Section 1502 of the Dodd–Frank Act, enacted in the United States in July 2010, requires listed companies that require 3TG for the function or manufacture of their products to investigate the country of origin of the 3TG they use, and if the country of origin is the DRC or surrounding countries, to determine whether the minerals are involved in conflict and to make a report (form SD) to the Securities and Exchange Commission (SEC) and disclose the information on the web. Pursuant to the final rules established by the SEC in August 2012, their application began in January 2013, and the first reports were filed by covered companies in May 2014.

What specific surveys are being conducted? First, companies should create a policy on the procurement of conflict minerals and publish it on their website. A typical policy is to express concern about human rights abuses committed by armed groups in the DRC and neighbouring countries, to recognize the problem that mineral extraction in the region is a source of conflict financing, to state that the company has no intention of contributing to human rights abuses by procuring raw materials, components, or products using these conflict-related minerals, and to declare its commitment to responsible mineral sourcing (Web survey, April 2014). When downstream companies procure materials and parts from upstream companies, these procurement policies are in place to help them confirm each other's policies (smelters, personal communication Tokyo, 3-22 April 2014).

Companies then use the Conflict Minerals Reporting Template (CMRT) developed by RMI to contact their suppliers and investigate whether the materials and parts they purchase are made from minerals involved in conflict. This survey cascades from Tier 1 suppliers to Tier 2, Tier 3, and beyond. Since the supply chain

for minerals is global and transcends national borders, the survey also extends to suppliers around the world, not just in the United States and EU countries. For example, even in Japan, which does not have its own domestic regulations on conflict minerals, almost all companies dealing with 3TG conduct supply chain surveys; even though there is no domestic legal obligation to investigate, Japanese companies are investigated by their business partners because they are part of the supply chain in the U.S. and EU countries (JEITA website), and thus de facto must conduct their own investigations.

The biggest problem with conflict minerals sourcing surveys is that the supply chain is often too complex to complete the survey. The GAO reported that 1,057 U.S. listed companies submitted reports in 2020, and 58percent of them were able to identify the country of origin of the 3TG they use. The DRC and nine surrounding countries (‘Covered Countries’) accounted for 42percent of this 3TG, and other countries for 16percent; for the remaining 42percent, the country of origin could not be identified or the origin was not reported (GAO 2021). Company representatives interviewed by GAO said that although supplier awareness of conflict minerals is increasing, ‘many companies reported difficulties in determining the country of origin of conflict minerals, in part as a result of lack of access to suppliers and complex supply chains involving many suppliers and processing facilities’ (GAO 2019, p. 11).

It should be noted that it is not a question of whether a company’s economic activities were involved in conflict, but whether maximum investigation and remedial efforts were taken. When a company makes significant efforts, it can satisfy business partners even if the company fails to provide enough information about mineral sourcing. It is evident that even more than 10 years after the introduction of the regulation in 2010, a closed pipeline has not been established in the downstream of the supply chain.

3. Why has a closed pipeline not been constructed?

This section shows why the method of depleting the financial resources of the conflict actors by stopping the trade of minerals that are financing conflict, and thereby producing conflict resolution, has worked in Angola and Sierra Leone but not in the DRC, and in particular, why a closed pipeline cannot be constructed, based on four points: 1) mineral characteristics, 2) mineral distribution system, 3) armed actors who profit from conflict minerals, and 4) international policy on conflict minerals.

Table 1. Difference of conflict minerals

	1. Mineral characteristics	2. Mineral distribution system	3. Armed actors who profit from conflict minerals	4. International policy on conflict minerals
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Angola conflict, Sierra Leone conflict (diamonds)	Ore retains its original form; industrial and jewellery uses	Controlled by CSO	Government vs. an armed group	UN embargo
Congo conflict (3TG)	Melted down, mixed with other minerals, highly processed; mainly industrial uses	Complex supply-chain	More than 120 armed groups and national armed forces	Due diligence

Source: Authors' construction

3.1. Mineral characteristics

In terms merely of the physical ease of smuggling, there is no significant difference between the rough diamonds from the Angola and Sierra Leone conflicts and the 3TG in the Congo conflict. Both diamond and 3TG mines in Africa, where the deposits are close to the surface, are easily mined through small-scale artisanal mining. Moreover, both diamond and 3TG ore are small, light, and expensive, making them easy to smuggle.

However, there is a significant difference in the ease of determination of origin between diamonds, which retain their original form even when they become a final product, and raw minerals that are melted and mixed with other minerals to become the product, attaining a form different from the original. Diamonds are not melted or mixed with other minerals, although they go through the processing stages of marking, cleaving, bruting, and polishing, which mark the direction of the cut after the rough diamond is washed. Therefore, their origins can be distinguished by isotope analysis. In contrast, 3TG are melted down and mixed with other minerals or highly processed to become part of a component, which is then incorporated into the final product, totally transformed from the raw mineral. Since they are mixed with minerals produced in other regions at the smelter stage, it becomes difficult to identify the origin of the minerals. In the case of gold, in particular, ore is melted down and recycled many times, making it extremely difficult to identify its place of origin. For this reason, Section 1502 of the Dodd–Frank Act excludes recycled gold from the survey. This difference in mineral characteristics is a major factor that leads to differences in mineral distribution systems, armed actors who profit from conflict minerals, and international policy on conflict minerals.

3.2. Mineral distribution system

Until the 1990s, the distribution and trading of diamonds in the international market was almost entirely controlled by the Central Selling Organization (CSO) under De Beers. The CSO was a group of diamond-buying companies that purchased rough diamonds from mines around the world on full purchase terms and sold them exclusively to a small number of customers known as 'sight holders.' This allowed De Beers to regulate overall supply and demand in the rough diamond market and

maintain prices (Takeuchi 2001). Although the company declared the end of whole purchases in July 2000 (The Guardian 2000), the oligopolistic nature of the diamond distribution system has been maintained ever since. There are only 16 diamond jewellery exchanges worldwide, and almost all diamonds for jewellery are traded on these exchanges.

The existence of this oligopolistic distribution system allowed rapid response to problems by the international community in Angola and Sierra Leone. In May 2000, slightly after Global Witness published a report, ‘Conflict Diamonds: Possible for the Identification, Certification and Control of Diamonds’ and demanded corporate action in response (Global Witness 2000), industry associations began to respond quickly. In May of the same year, a meeting of industry associations was held in Kimberley, South Africa; in June, De Beers hosted the London Conference on Conflict Diamonds by industry associations and governments of importing countries; and in July, the International Diamond Manufacturers Association (IDMA) and the World Federation of Diamond Bourses (WFDB) met in Antwerp to create the World Diamond Council (WDC). The WDC was given the task of developing and implementing a system to track the import and export of rough diamonds, to prevent them from being used for illicit purposes (Angell 2004). This has resulted in the Kimberley Process Certification System. The oligopolistic nature of the distribution system makes it difficult for smuggled rough diamonds to blend into the supply chain, maintaining a closed pipeline of diamonds (Kimberly Process Website)⁸.

In contrast, the distribution and trade of 3TG is complex and uncontrolled, and even after 10 years of global-scale conflict minerals surveys, its supply chain is not transparent. It is estimated that there are 500 3TG smelters/refineries worldwide, and more than 1,000 companies listed in the U.S. alone use 3TG (GAO 2021). Unlike other minerals such as diamonds, which largely maintain their original form in the manufacturing process, 3TG is mixed with various minerals as a raw material and undergoes a complex processing path. Typically, the product is imported and exported across borders many times during the smelting, material processing, component manufacturing, and assembly stages, and passes through multiple suppliers between the final product’s manufacturing company and the smelter. To determine the origin, it is first necessary to identify the smelter, but between the most downstream company and the smelter, the product may have gone through 5–8 suppliers. Thus, even if a conformant smelter is certified by the RMI, it is difficult for end-product manufacturers to identify which smelter their minerals were smelted in. On the other hand, the DRC and Rwanda account for 40percent and 20percent of global tantalum production, respectively (USGS 2020). Even if the smelter cannot be identified, it is quite likely that the tantalum handled by the company comes from the DRC. Therefore, companies dealing in tantalum rely on ITSCI certification to import the mineral (tantalum smelter, personal communication, Tokyo, 8 September

⁸ However, the UN Group of Experts has noted that diamonds are being smuggled into Cameroon from Central Africa (UN S/2021/569), and if the government agency issuing the certificate of origin falsifies the certification, illegal diamonds cannot be prevented from entering the supply chain.

2017). Furthermore, Congolese tin accounts for only 3 percent of world production, and less than 1 percent for tungsten and gold (USGS 2020). Identifying Congolese minerals in the vast and complex mineral supply chain has been extremely difficult.

3.3. Armed actors who profit from conflict minerals

As regards the structure of conflicts, in both Angola and Sierra Leone it was a bipolar confrontation of the government versus a small number of rebel groups. In the case of the Angolan conflict, the National Union for the Total Independence of Angola (Portuguese acronym UNITA) fought against the Angolan government. In Sierra Leone, the Revolutionary United Front (RUF) fought against the Sierra Leonean government, and the National Patriotic Front of Liberia (NPFL) in neighbouring Liberia supported the RUF. Since the diamond-mining areas were controlled by the anti-government armed groups, it was mainly these armed groups that were using diamonds as a source of funding for their military effort and thus for the conflict. Therefore, UN economic sanctions temporarily banned the export of rough diamonds, thereby cutting off this main source of funding for the armed groups (Hirsh 2004; Le Billon 2001; Oberreuter and Kranenpohl 2007/2008).

To the contrary, in the Congo, there are and have been multiple conflict actors. The Alliance of Democratic Forces for the Liberation of Congo (AFDL), Rally for Congolese Democracy (RCD), and Movement for the Liberation of the Congo (MCL) fought against the Congolese government during the periods of two Congo Wars, from 1996 to 2002. Furthermore, military forces of neighbouring countries stationed in eastern Congo, including Rwanda, Uganda, and Burundi, were also directly involved in illegal mining and trading of minerals (UN S/2001/357; Global Witness 2004). Even after the conflict had officially 'ended' in 2003, armed groups continued to fight and split, by 2020 leading to more than 120 armed groups, including local self-defence armed groups called Mai Mai, rebel groups of Uganda and Rwanda, and to an overall situation of disarray (KST 2021). In addition to these armed groups that have intervened in the mining and trade of minerals, there are units of the Congolese national armed forces deployed in the eastern DRC that are involved in the illegal mineral trade and violence against civilians (UN S/2021/560).

These complexities in the structure of the conflict adds two difficulties to the conflict minerals issue. First, the complex conflict structure allows conflict actors to become 'stationary bandits' in various locations in eastern DRC. In other words, conflict actors who have gained effective control of mining areas run protection rackets, offering relative safety to the population in exchange for 'tax collection' (Krauser 2020; Parker and Vadheim 2017; Sánchez de la Sierra 2020). As detailed below, these 'stationary bandits' make the establishment of a closed pipeline unfeasible. Second, as detailed in the next section, the large number of actors involved makes targeted sanctions extremely difficult to enforce.

Sánchez de la Sierra, who analysed panel data from 650 sites in eastern Congo beginning in 1995, found that armed groups imposed a variety of taxes on local residents, including an 'entry tax' on miners entering tunnels, a 'poll tax' on villages controlled by armed actors, a 'toll tax' on transit, and a 'turnover tax' on businesses (Sánchez de la Sierra 2020). Krauser, who analysed mining data from IPIS and

conflict data from the Uppsala Conflict Data Program (UCDP), found that violence within a 40-km radius of mines 'taxed' by conflict actors dropped by 35percent, while it rose by 76percent in the 40–56-km region, indicating an 'eye of the storm' phenomenon (Krauser 2020). This means that even after the withdrawal from mines, conflict actors continue profiting from minerals by taxation of surrounding areas and that they are in competition with each other to control areas and tax them. According to the 2017 IPIS report, there are 798 roadblocks in North and South Kivu provinces, and 'roads without roadblocks are rare'. Around 75percent of the total (597 locations) had at least one armed actor; among them, 22percent (174 locations) had non-state armed groups, and 71percent (569 locations) had government actors, comprising administrative entities, army, and police (Schouten et al. 2017).

With such an elaborate tax collection system in place, it is challenging to implement the certification of conflict-free mines. Vogel, who conducted a field survey in North and South Kivu provinces, pointed out that certification has not been implemented as designed. One factor is the operational problems faced by the certification agencies. SAESSCAM, ITSCI, and PACT were supposed to work as a combination of external policy and local practice, but as they do not have enough staff, in some areas only one person covers half a dozen mines over many square kilometres, sometimes unpaid. Therefore, while ostensibly pursuing traceability of minerals, in reality, that person is forced to balance their own life with the pressure from miners and traders. In some cases, ITSCI can be seen as tacitly approving of local control by local militias, especially when that control is accepted by local people and many miners belong to the militias (Vogel 2018). It can be said that in combination with operational problems, 'stationary banditry' becomes the other factor that makes certification unfeasible. Furthermore, ITSCI does not validate gold mines, because it specializes in 3T. In 2012, the NGO IMPACT launched the Just Gold project to validate gold mines, but it only validates a small number of mines (IMPACT 2020).

3.4. International policy on conflict minerals

In the conflicts in Angola and Sierra Leone, the UN embargos on diamond and the associated naming & shaming by the Sanctions Committee, military operations by British Special Forces, and peace negotiations with the armed forces have worked in synergy to bring about resolution of the conflicts. During the conflicts in Angola and Sierra Leone, embargoes on diamonds were imposed as part of UN economic sanctions, temporarily banning the export of rough diamonds. In Sierra Leone, the embargo was on rough diamonds, which their origin is not certified by the government (UN S/RES/1306 (2000)), but since the origin certification system had not been established when the sanctions took effect, it was effectively a total embargo. With the implementation of sanctions, the United Nations established the Sanctions Committee, which began monitoring sanctions violations. In Angola, the sanctions, which were the first ever UN resource embargo targeting specific conflict minerals, were routinely violated for the first two years after they entered into force in 1998, and were thus not strictly 'implemented' even when they were 'in force'. The situation changed, however, after Canadian Ambassador Robert Fowler was

appointed chairman of the UN Angola Sanctions Committee in 1999. Fowler established a panel of experts to investigate sanctions violations in detail, reporting by name the governments, companies, and individuals who violated the sanctions and providing detailed information on the manner and amount of the transactions (UN S/2000/203). The aim was to generate debate, including rebuttals from the named governments and companies, and to keep a closer watch on sanctions violations (Cortright et al. 2000). The Sanctions Committee called this a ‘naming & shaming’ strategy. These policies have been credited with bringing about behavioural changes in governments, businesses, and individuals, and to the achievement of strict enforcement of the diamond embargo, which contributed to the depletion of UNITA’s financial resources and the end of the conflict (Oberreuter and Kranenpohl 2008). Fowler established a panel of experts to investigate sanctions violations in detail, reporting by name the governments, companies, and individuals who violated the sanctions and providing detailed information on the manner and amount of the transactions (UN S/2000/203).

In the case of the Sierra Leone conflict, two events in May 2000 had a major impact on international policy. One was a publication of a report by Global Witness entitled ‘Conflict Diamonds: Possibilities for the Identification, Certification and Control of Diamonds’. The other was the detention of 500 personnel of United Nations Mission in Sierra Leone (UNAMSIL), a UN Peacekeeping Operation (PKO), by armed groups (Hirsh 2004). This shocking detention of PKO personnel and the fact that the brutal conflict in Sierra Leone was linked to diamonds was reported in Western countries and aroused public opinion. Articles on the Sierra Leone conflict in the *New York Times* and *The Guardian* jumped from 6–14 per month until April 2000 to 95–122 in May, prompting calls for active involvement in conflict resolution (Hanai 2011). With this backing of public opinion, the UN implemented a diamond embargo in July 2000 (S/RES/1306 (2000)). Furthermore, the UN implemented the same embargo against Liberia, which violated sanctions and supported the RUF in 2001 (S/RES/1343(2001)). It is difficult to say that the diamond embargo was the only factor that contributed directly to the resolution of the conflict, since the British government sent British special forces to the country as soon as the diamond embargo went into effect in July 2000, which led to the RUF’s acceptance of a peace agreement and the disarmament of its soldiers. Still, it is true that the diamond embargo, as part of a combination with military measures, had a fatal impact on conflict actors, helping them to abandon the conflict.

In the case of the Congo conflict, on the other hand, there is no UN mineral embargo in place, and only a loose form of due diligence by the OECD and the U.S. is being enforced. Under this method of regulation, companies are not prohibited from using conflict minerals. Compared with an entire mineral embargo, the due diligence approach could curb the negative impact on miners and residents who depend on mineral extraction and trade because it does not restrain mineral trade that is not involved in conflict at least in theory. Unlike UN economic sanctions, the regulations directly target only listed companies in OECD countries, so even if their supply chains are global in scope, non-Western traders will not have to comply with the regulation if their final consumption sites are in, for example, the Middle East or Russia (ITSCI, personal communication, Wakiso, 30 August 2019). This problem is

especially serious for the regulation of gold. While the primary end products of 3T are electronics, manufactured mainly in Western countries, gold is also in high demand as a precious metal, and its market share in the Middle East and Russia is not negligible.

In addition, while UN economic sanctions are often used as a bargaining card to bring conflict actors to the peace talks table (Hufbauer et al. 2007), the due diligence method is not expected to serve similarly as a bargaining card. For example, in the Angola case, the UN adopted a resolution that sanctions would take effect if UNITA did not comply with the peace process within 10 days of the resolution. On the other hand, the Congo's Conflict Minerals Regulation due diligence approach is not designed to function as a bargaining card, because it aims not to impact conflict actors directly but to achieve its aims indirectly through supply chain transparency. Therefore, where in the Angola and Sierra Leone cases, the embargo had not only the direct effect of depleting the sources of funding for the conflict by halting diamond exports but also the secondary effect of using the embargo as a negotiating card to get UNITA and RUF to agree to peace, to disarm their soldiers, or to provide incentives for Western governments to intervene directly to resolve the conflict, in Congo's case, since this secondary effect does not function, the closed pipeline must be constructed according to the blueprint and strictly implemented to deplete the mineral funding source of conflict actors. However, the mineral characteristics, the distribution system, the conflict actors that profit from conflict minerals, and the implementation methods all present significant difficulties for achieving this.

Conclusion

This study has considered the differences between the conflict diamond issue in Angola and Sierra Leone and the conflict minerals issue in the DRC in terms of 1) mineral characteristics, 2) mineral distribution system, 3) armed actors who profit from conflict minerals, and 4) international policy on conflict minerals. These four elements are interrelated. In particular, the mineral characteristics affect the characteristics of minerals distribution systems; how actors deal with those minerals; and consequently, the way of policing them. This means that differences in the nature of the minerals can in turn lead to differences in the problem-solving measures required and employed.

On this basis, we present two policy implications based on this study. First, when establishing a closed pipeline for conflict-free 3TG, the difficulty lies in the upstream, mineral-producing regions. Even if downstream supply chain traceability is improved from the smelter/refinery stage onward, the entire supply chain will be polluted if the profits collected through the 'taxation' of mineral mining and trading in mineral-producing regions accrue to actors in the conflict. It is recommended to strengthen support for upstream mineral certification agencies, in order to enable downstream companies that perform due diligence to strive not only for the traceability of the downstream supply chain but also to ensure that the mines and transportation upstream are conflict-free.

Second, we emphasize the importance of setting up customized problem-solving measures by scrutinizing the differences in various factors that result from

differences in different minerals' nature. As noted in the introduction to this paper, there is a movement to expand the conflict minerals regulation to other minerals, including cobalt and mica. Companies are shifting their focus to this next problem, even though the 3TG problem has not yet been resolved. At this juncture of EU regulation, this study advocates a re-examination of the factors that have prevented measures that were successful in Angola and Sierra Leone from succeeding in Congo, and the need to introduce solutions appropriate to each individual mineral issue.

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