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Blood Coltan: Remote-controlled warfare and the demand for strategic minerals

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The Congolese war, which has killed over six million people since 1996, is the deadliest conflict in the world since the Second World War. If you add the number of deaths in Darfur, Iraq, Afghanistan, Bosnia and Rwanda over the same period, it would still not equal the millions who have died in the Democratic Republic of Congo.

Part of a solution to this is for western governments to hold Rwanda and Uganda accountable for funding proxy armies in the DRC. The retreat of M23 rebels from the Eastern DRC in recent days shows international pressure to stop Rwanda from supporting the rebels is working. The DRC insurgency is far from over, as other rebel groups are still to be defeated. There is a long way to go before stabilization in the region will be possible.

Considering that violence and brutality in the DRC is proportionate to the demand for the eastern regions of the country's rich mineral deposits, it is less a matter of who is funding and supporting one army or another. The question is, rather, what is creating a heightened demand for conflict minerals?

The high-grade metal tantalum, processed from the precious mineral coltan, makes it possible to build smaller and smaller electronic gadgets like smart phones and tablets. It is also essential in powering a new trend of military applications such as drones. A new demand for tantalum has

boosted coltan mining, trading and smuggling. As stockpiles run low, it is most likely a tantalum shortage could intensify violence again, which directly and indirectly affects people in the mining areas of the eastern DRC.

This province is the richest source of coltan in the world, with an estimated eighty percent of the world's coltan reserves. Competition for minerals has a direct effect on the relentless violence in the region. Women and young girls have been among visible victims of the conflict and hundreds of thousands of them have been raped by opposing warring factions as a weapon of war.

A country the size of Western Europe, the DRC holds an estimated \$24 trillion in mineral reserves, including gold, diamonds, copper, cobalt, coltan, tin, tungsten, zinc, manganese, magnesium, uranium, niobium, gold, diamonds and silver. Armed groups vie for control of mineral mines and the routes for mineral transportation. Minerals are channeled through neighbouring countries, Rwanda and Uganda by violent rebel groups and then bought by multinational companies. The Washington Post reports Congolese minerals are smuggled into Rwanda to the tune of \$6 million a day.

Tantalum plays a vital role in the growing coltan market. A derivative of coltan, tantalum is a key component in modern electronics. It is the metal used in capacitors or devices that store energy.

Tantalum capacitors are not only used in smartphones. They are important for aerospace and military technologies, which rely on tantalum capacitors for running applications that reach very high temperatures.

With an extraordinary ability to withstand a broad range of temperatures and to resist corrosion, tantalum capacitors are a marvel of technology. They can retain a charge for an extended time and can tolerate operating environments of up to 200 °C.

One of the biggest challenges for defence electronics designers is in managing extremely high temperatures generated by the high performance processors in the new military applications. Recent innovations in thermal management have made it possible to operate under high heat loads using tantalum capacitors.

This extends to smart bombs, on-board navigation in drones, robots and a variety of weapons systems, such as the capacitors in anti-tank systems. Further advances in technology have brought the rapid development of fully autonomous weapons or lethal autonomous robots. In short, if it were not for tantalum's amazing heat resistant properties, these systems would otherwise overheat.

At this year's SPIE Defense Security and Sensing electro-optics conference trade show in Baltimore, the latest products were unveiled for drones technology. The focus at SPIE was on a new generation of drones that require small, light and low energy consuming technology.

Such advances in military technology increase the need for coltan. The International Consortium of Investigative Journalists reports: "Coltan's ability to hold and move electrical signals and its

conductive ability in extreme temperatures, makes it ideal for smart bomb guidance controls. Security analysts say it is a strategic mineral.”

Tantalum derived from coltan is essential in powering a new trend of military applications made by the US. Yet, the US has no domestic source of coltan. In order to sustain a continued flow of coltan, it depends entirely on imports.

The United States’ Defence Logistics Agency (USDLA) maintains reserves of strategic minerals and rare metals in its National Defence Stockpile (NDS). The NDS was established in 1939 to reduce the possibility of “a dangerous and costly dependence by the United States upon foreign sources for supplies of such materials in times of national emergency.”

Despite this, US tantalum stocks have depleted in recent years. According to Daniel McGroarty, in a Pentagon report last year about US dependency on minerals, the Department of Defence recommends stockpiling tantalum and eight other strategic minerals. If the US were to run out of tantalum, would it be able to continue building its state-of-the-art weaponry?

The consequences of a tantalum shortage would have a calamitous effect on the DRC. A shortage of coltan ore at the end of 2000 contributed to an overnight price hike from \$49 to \$275 per pound (454 grams). The moment of the price hike was also a time of great intensification of violence in the Eastern DRC.

Today the price of tantalum is up again and the rise in price corresponds to the violent situation on the ground. In June the situation in the DRC became increasingly insecure. The International Committee of the Red Cross (ICRC) warned: “...acts of violence committed against civilians, including murder and sexual assault, remain at a very worrying level and regularly cause the displacement of thousands of families.”

Conflict-free campaigns attribute the tantalum rise as a response to the smartphone and tablet market. These campaigns aim to ensure rebel forces do not control sources of tantalum to finance armed conflict and that supply chains are transparent. These initiatives look at supply chains and manufacturing connected to companies like Apple and Samsung, but there is more to tantalum than the phone and gadgets market.

Conflict-free advocates make the mistake of overlooking the links between minerals and the weapons manufacturing industry. It is doubtful defence companies will be seeking out conflict free mineral sources anytime soon. A conflict-free weapon is an oxymoron.

Even less likely is the prospect of the defence sector abiding new federal legislation, which requires public companies to disclose whether they use conflict minerals from the DRC. Under the 2010 Dodd–Frank Wall Street Reform and Consumer Protection Act, US companies are required to submit a report to the Securities and Exchange Commission by May 2014 on the sources of the minerals they use.

Campaigns for conflict-free minerals are calling on electronics companies to use fair trade, conflict-free materials in smartphones, laptops and tablets. Their work has been successful in

increasing the number of conflict-free mines in the eastern DRC. What has not been addressed is the larger role of conflict minerals beyond the realm of consumer electronics.

At the current rate, the weapons industry could exceed smartphone and tablet makers in coltan consumption if it has not already. Extended use of drones in the past decade means the US needs tantalum because the basic circuitry in drones is built with tantalum from refined coltan. This connection to weapons manufacturing gives new meaning to the term ‘blood coltan’.

Blood coltan is not exclusive to central Africa. Significant coltan reserves exist in the Amazon jungle covering the Venezuelan-Columbian border creating an emergent black market. Drug lords dominate the Columbian side of the border. This is considered a conflict zone as coltan is smuggled through the danger area on its way from Venezuela to Columbia and to Brazil.

In the DRC, mineral mining, trading and smuggling continue to fund the ongoing conflict. Armed groups include the Congolese national army (FARDC) whose ranks include many former rebels. The M23, which has given up control of the region, is made up of former members of the FARDC who mutinied in April 2012. A Global Witness report last year revealed members of FARDC make millions of dollars through their control of the mines. Constant struggles between the FARDC and numerous rebel groups over control of minerals mining and transportation of minerals have a direct effect on the killing, raping and ongoing violence in the region.

The rush on coltan engenders the violence in the DRC. Spearheading that demand is tantalum, a key ingredient in new military technologies.

The US obsession with “surgical” remote-controlled warfare, especially drones, is sharpening the appetite for tantalum. The US has killed thousands in Pakistan, Afghanistan, Yemen and Somalia with the ever-increasing drone strikes. Armed drones are also in operation in Mali, Libya and Niger.

This highlights a worrying connection between two contemporaneous wars – the twelve-year ‘war on terror’ and the sixteen-year war in the Congo. Joining the two is the demand for Congolese minerals.