



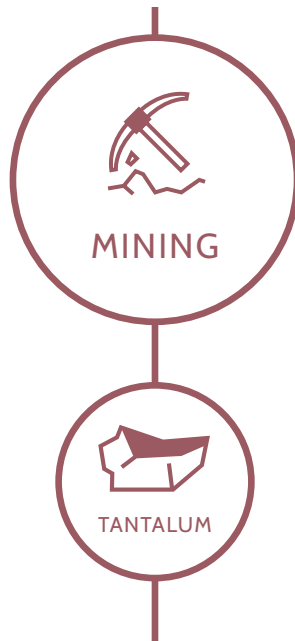
TANTALUM SUPPLY CHAIN OVERVIEW

FIFTY EIGHT



Partnership Against
Child Exploitation

A COMMODITY WITH A HIGH PREVALENCE OF THE WORST FORMS OF CHILD LABOUR



Democratic Republic of Congo is the leading producer of tantalum, accounting for over 37% of global output - significantly ahead of Brazil, the world's second highest on 22%. When compared with other commonly extracted minerals, Tantalum has the highest share of Artisanal and Small-scale Mining (ASM), an estimated 64% globally. ASM has strong links to child labour, hazardous child labour and wide-ranging environmental and social issues. The combination of these factors presents both a unique challenge and opportunity to identify and implement interventions to address child labour.

Due diligence for companies using minerals mined in high-risk and conflict areas is covered by the OECD Guidance on Responsible Supply Chains. The iTSCi scheme is the most common way to implement and monitor the OECD guidance in Tantalum supply chains. Since the introduction of conflict mineral legislation in the USA and Europe, iTSCi has provided a route to market for mining communities and aims to provide buyers of minerals with confidence that they are sourcing responsibly, whilst remaining engaged in high-risk areas such as DRC.

The OECD due diligence model centres on a top-down approach, whereby consumer-facing companies are required to audit their supply chain to "ensure respect for human rights and avoid contribution to conflict". One of the limitations of this methodology is that in source countries, local level producers can mask their engagement in human rights abuses such as funding armed groups, due to poor local governance, law enforcement and corruption. This means that global industries are spending large sums of money on due diligence, mostly at the latter stages of supply chains in non-source countries, often with little or no impact on the rates of child labour in areas of highest risk. In some cases, these efforts have even worsened working conditions and livelihood outcomes for mining communities, where the cost of implementing due diligence has driven down the price at which their products can be sold.



Any section where this symbol appears focuses on Due Diligence

WHERE IS TANTALUM USED?

Electronics industry (67%)

Most electronic products contain some form of tantalum. Products such as smart phones and laptops that are fundamental to the way many of us live our lives, are particularly dependant on this resource. Tantalum allows the electronic components to function effectively and preserves the long-term reliability of electronic devices. Amongst other components, printed wiring boards, capacitors, camera lenses, and hard disk drives are the most common.



Smartphones



Laptops



Cameras



Internet of Things

Medical industry (21%)

Used in prosthetic devices such as replacement hip joints, Tantalum is completely immune to bodily fluids and is non-irritating. Tantalum is perhaps the metal most highly resistant to attack by both oxidizing and reducing acids, making it ideal for handling the aggressive chemicals used in chemical process equipment within the medical industry.



Prosthetic Implants



Hearing Aids



Glasses

Automotive industry (9%)

Tantalum use within the automotive industry centres on microelectronics for engine management, automatic braking systems, airbag activation, and global navigation satellite systems. Tantalum will likely become more critical as we transition towards electric vehicles.



GPS Systems

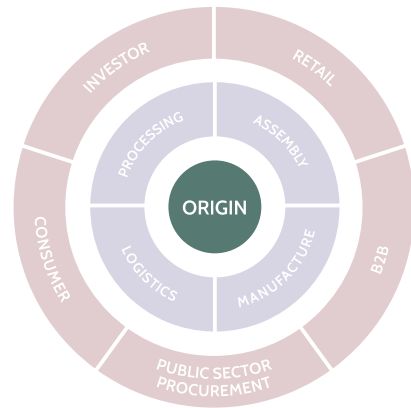
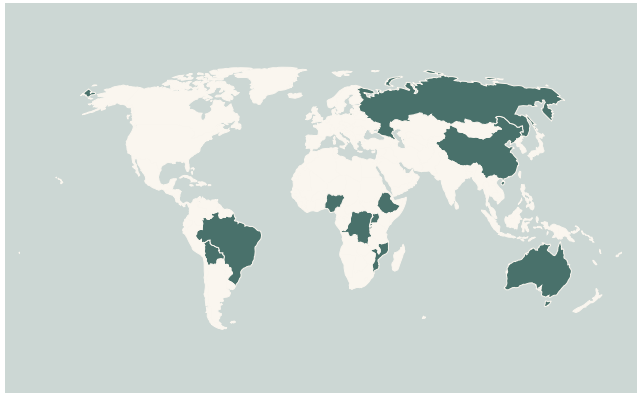


Electric Vehicles

Typically, the mineral supply chain is understood as a linearly connected set of actors, looking top-down through the supply chain for due diligence activities and monitoring, with the origin or mine level at furthest point of the supply chain. For commodity supply chains, there is typically a “choke point” – in the case of Tantalum, this is where the raw commodity is refined or smelted before moving to manufacture and assembly. The choke point is a key point of both focus and challenge in mineral traceability and due diligence.

Primarily, child labour is a geographic challenge. So, to meaningfully understand and address it in the Tantalum supply chain, a new model is required to better identify the key stages of the supply chain, and particularly to see origin communities and mines as a critical part of the industry they enable. This can help identify opportunities for companies and investors to work together across industries to see better and faster impact where child labour exists.





Origin

Despite the huge amount of wealth created by the presence of minerals such as Coltan, from which Tantalum is derived, areas of extraction have remained extremely poor, further exacerbated by the presence of armed groups and corruption. Therefore, children in these areas mostly work to support their household, though many also seek work because they see their peers earning money and want to do the same.

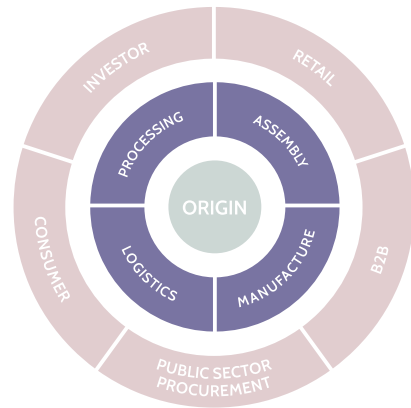
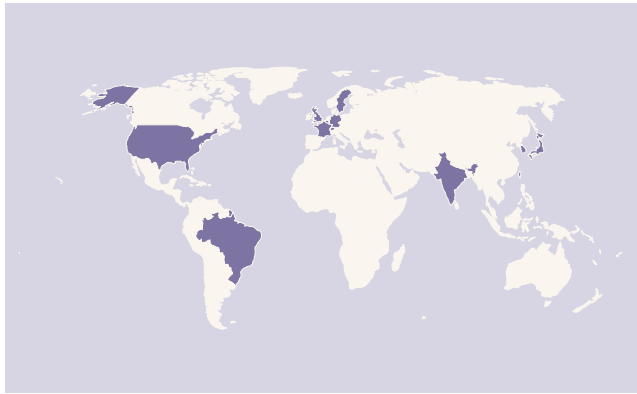
Some children attend school as well as working, but many – even those who want to study – are unable to do so due to lack of resources and opportunities for education. While in some cases children are forced to support their families financially, the cost of sending children to school (even where it should in theory be free) – including tuition and food – is the primary reason children do not go to school or drop out at a young age. Even those children who attend school do so inconsistently, depending on their family's need for them to work, and in many cases they work after school hours.

Those children who do not work outside of the home, are always involved in household work including fetching water, watching livestock, helping around the house or in the fields, or caring for younger siblings. Girls are far more likely to be engaged in paid and unpaid domestic-related labour for family or external employers. They are paid less than boys for their work in domestic labour, animal herding and jobs within mining. PACE's research indicates that perceived 'light' or 'safe' work, even within the household, can quickly become hazardous or harmful for children, who do not always have the necessary skill, equipment or adult supervision to perform their tasks safely. Children often work in isolation or away from parental care, further contributing to their vulnerability to sexual abuse and enrolment into armed groups.

Within the mine, it is in roles such as nettoyeurs, trieurs, and concasseur (washing, sorting, and crushing minerals from debris) that many women, children, and workers with disabilities can be found. It is also common to find children, mostly over the age of 15 but sometimes younger, performing some of the most dangerous roles in the mine, such as digging by hand for ore underground or engaging in commercial sex.

The predominate number of children interviewed who worked in the mines had either personally experienced or witnessed physical injuries at the mine. In one of our studies, only 3.5% of children reported wearing any type of protective clothing or equipment while working, and most of these respondents were referring to wearing shoes. Primary health care is free and relatively easy to access in the region, however long-term injuries and treatment compounded by loss of income involve additional costs. 63% of child respondents who reported an injury at work claimed they and their families were not able to afford the treatment required.

Efforts to tackle child labour and other human rights challenges within the Tantalum value chain centre around the OECD due diligence guidance and platforms such as iTSCI or RCS Global which enable traceability and due diligence implementation. One of the unintended consequences of programmes is that the cost of implementation represents a much higher proportion of expenditure for companies and individuals operating in DRC and other source countries, compared to companies operating at other stages of the supply chain. There is evidence that the cost of due diligence is being passed on from exporters (comptoirs) to their suppliers, impacting the livelihoods of everyone working at the mine.



Processing, manufacturing & assembly

Coltan ore is refined into its derivatives for use on the global market by smelting companies. The processing stage is commonly understood to be the pinch-point in most mineral supply chains, due to the relatively small number of refineries and smelters globally. This is particularly pronounced in the Tantalum industry, where there are just 37 smelters refining Tantalum, compared to 187 for Gold, 82 for Tin and 57 for Tungsten. China has the market-leading share of Tantalum smelters (38%), followed by USA (15%) and Japan (13%). The Responsible Minerals Initiative (RMI) develops standards and certification for smelters and refineries based on OECD Due Diligence guidance.

This stage of the supply chain represents a real opportunity to improve the lives of mining communities. Building smelters in source countries, alongside complimentary Research and Development and higher education sectors, would allow mining communities to retain maximum value for their natural resources and develop pathways to safer and better-paid jobs in the local mining industry.

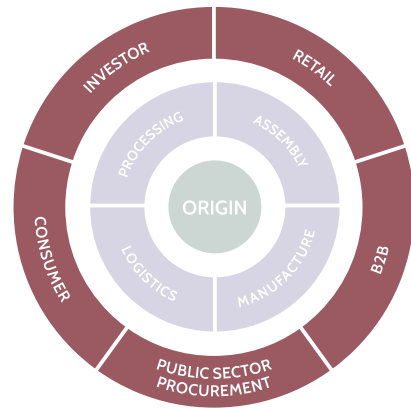
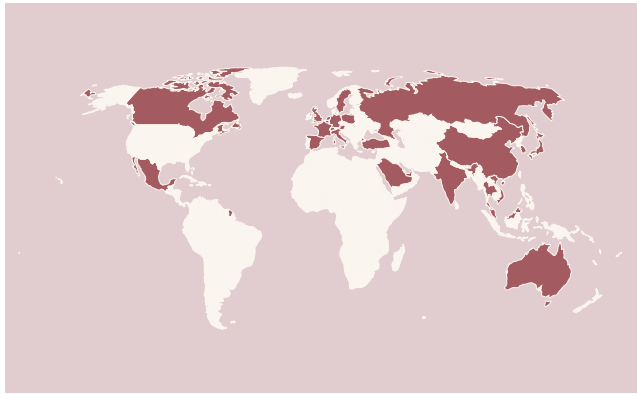
Once refined, Tantalum's primary use is in the creation of capacitors. Tantalum capacitors have an extremely high capacitance in a very small volume, which has been central to making increasingly smaller electronic devices or making additional room for larger processors or speakers. Tantalum is also used to create surface acoustic wave filters, used

in mobile phones and televisions to improve audio quality. Printed circuit boards, camera lenses, and hard disk drives are all made with Tantalum, and are used in a wide variety of products from mobile phones and laptops to pacemakers and hearing aids to GPS devices and engine management systems for the automotive industry. Tantalum is also used to manufacture prosthetic joints and other medical implants due to its high resistance to corrosion.

DD

The OECD Costs and Value of Due Diligence in Mineral Supply Chains report indicates that it is these stages of the supply chain that there is the greatest spend on due diligence - primarily on hiring and training staff to audit and report on supply chain practices. This highlights another challenge with the existing due diligence model, as most of the money companies spend identifying or addressing human rights risks in their supply chains is spent in non-source countries, where there is a very low risk of child labour and other human rights issues.

Recycling and reusing Tantalum from old products is high on the agenda within the industry, but the due diligence guidelines don't particularly apply to this sector and often create a tick-box only response to due diligence requirements. These challenges highlight the need for a more integrated way of viewing the value chain and stages in it - to help ensure better and faster action where child labour exists.



Retail

Although the retail of products containing Tantalum is global, the top importers of electronic products are the United States of America, China, and Hong Kong. Most customers at this stage of the supply chain have never even heard of Tantalum or its critical use in everyday products, let alone the human rights issues and child labour associated with its extraction.

Consumer-facing and Business to Business (B2B) companies, public-sector procurement bodies and investors all have critical roles to play and there is a need to draw organisations from all three levels of the value chain to identify how resources and interventions can be more effectively targeted at addressing child labour where it primarily exists – at the origin of the supply chain.



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