

# **Artisanal and Small Scale Mining Policy**

## **Tantalum-Niobium International Study Center Working Group on Tantalum and Niobium Mining**

### **Background:**

The Tantalum-Niobium International Study Center (T.I.C.) has a broad based membership encompassing all levels of the industry, including miners and traders, processors, producers and Original Equipment Manufacturers (OEMs). Some of the minerals processed have originated within the Artisanal and Small Scale Mining (ASM) sector, primarily in Africa, Brazil and South-east Asia. This policy document describes an industry initiative to positively influence the ethical standards and transparency of the supply chain and the stepwise improvement of the efficiency and safety standards of ASM operators.

Tantalum occurs in several mineral forms including tantalite, microlite, wodginite, struverite and columbotantalite<sup>i</sup>. Many countries host tantalum mineral resources and deposits, with Brazil (42%), Australia (21%) and China (11%) holding the largest estimated amount of tantalum ('Ta<sub>2</sub>O<sub>5</sub>')<sup>ii</sup>. Approximately 54% of a typical year's tantalum production is from industrial scale mining, 33% is from recycling and tin slag reprocessing, and 13% is from ASM operations<sup>iii</sup>. The great majority of niobium is derived from the mineral pyrochlore, the majority of which is found in Brazil. The separation of niobium from pyrochlore deposits requires sophisticated high capital investment procedures that are not amenable to ASM operations. Tantalum and niobium minerals when they occur in hard-rock deposits also require sophisticated industrial scale mining and processing equipment and high capital investment. While only a relatively small proportion of the world's tantalum and niobium is derived from minerals produced by ASM the integrity of the supply of these materials is important to the industry as a whole.

ASM operations focus on the small proportion of the tantalum resources that occur in near-surface alluvial or 'soft-rock' deposits, which may not be economically feasible to mine by mechanised methods. With such deposits, the separation of the tantalum bearing minerals from their impurities can often be carried out with relatively simple tools and equipment and low investment. Tantalum is particularly well-suited to ASM because of its physical and chemical properties. Tantalum's high density and chemical inertness make it suitable for gravimetric concentration; large scale chemical beneficiation is not required. Regardless of the mining method, concentrated minerals must be completely dissolved during chemical treatment by processors. Subsequent steps convert the purified solutions to forms utilised in a variety of industries such as aerospace, industrial gas turbines, optical glass, x-ray analysis, machine tools, consumer electronics, automotive industry electronics, medical and chemical processing equipment.

ASM is an important source of income for local economies and is particularly well suited for regions where investment capital is scarce. ASM operations are predominantly labour intensive, they use simple equipment that requires low capital expenditure, consume little energy, and ideally should have low environmental impact<sup>iv</sup>. Artisanal miners may work as large collectives, or small informal groups. As with other artisanal workers, for example agricultural workers, many rely on local traders to bring their product

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to market. Since an artisanal miner's income may be many times higher than that of the general population, the ASM sector provides an attractive livelihood, not only for the miners themselves, but for sub-contractors, traders, suppliers and indirect employees. In addition, the revenues generated by the sector are a significant source for governmental investment in social services and infrastructure. ASM, like other industries, should be well regulated in order to function legitimately, efficiently, and with a level of safety similar to that expected in larger scale commercial mines.

When due care is taken ASM and the supporting businesses therefore play a significant and positive role in the economies of many local communities.

The T.I.C. recognises that, for many reasons, not all ASM operations and traders work to a sufficiently high standard. Problems exist in areas such as: 1) poor or unsafe working conditions in mining operations, 2) inadequate legal frameworks and regulatory controls, 3) poor environmental practices resulting in unsightly scars on the landscape, 4) poor security of tenure of mineral rights, 5) diversion of revenues to informal trade purposes.

The T.I.C. and its members agree with the conclusions of the United Nations that disengagement from the ASM sector is neither a practical nor an ethical option<sup>v</sup>. Such disengagement would deprive those who are dependent on ASM tantalum and niobium production and trading from their current livelihoods, would increase their dependence on less ethical and unregulated trade, and would reduce government revenues and the potential for influence by the international community.

The T.I.C. considers this policy document to be a significant step towards industry self-regulation, with a primary purpose of ensuring good practice and transparency throughout the supply chain by its membership, especially in areas with weak central government regulatory oversight and security.

### **T.I.C. Policy on the ASM Sector:**

#### T.I.C. supports the ASM sector

The T.I.C. is convinced that the potential long term economic benefits to and arising from the ASM sector are significant, and therefore the ASM sector should be supported - disengagement is not regarded as beneficial to producing regions<sup>vi</sup>. A progressive and regulated approach is required by all participants in the tantalum and niobium industries to improve operating practices and transparency where they are found to be deficient or lacking.

#### T.I.C. supports government regulation of ASM

A body of regulations specifying the objectives of the region, effectively applied by a strong controlling government is the best environment for a formalised ASM sector. The T.I.C. will work for the improvement of governance in areas of:

- 1) eliminating diversion of revenues from official revenue authorities,
- 2) safety and environmental standards in mining operations, and
- 3) security of tenure of mineral rights.

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Members will comply with host government laws and regulations. Members will in all situations respect human rights at their own operations. Through supply chain influence members will aim to encourage ASM to be performed in conditions of freedom, equality, safety and human dignity.

### T.I.C. seeks to improve transparency of mineral production and trading

The T.I.C. condemns any activities that have the effect of routing mineral revenues to United Nations sanctioned groups.

The T.I.C. and its members will support governments and cooperate with their relevant authorities to assure adherence to regulations aimed at improving transparency of the supply chain. To this end members will aim to take steps to confirm that all suppliers are officially recognized or licensed organizations, who adopt similar policy approaches as the purchasing company, and who obtain proper documentation regarding the origin of all their material. The application of similar procedures throughout the supply chain will be encouraged.

To accompany this Policy, the T.I.C. proposes a practical step by step guide “Tantalum Supply Chain Transparency Recommendation” for the T.I.C. membership. This initiative facilitates the necessary inquiry, in line with the CEEC progress as mentioned in the UN Report of Experts paragraph 84<sup>v</sup>, to achieve the best possible adherence to UN due diligence objectives. As progress is made by the CEEC, the document will be amended in line with the UN objectives.

The T.I.C. shall, within twelve months of the adoption of this Policy, offer the chance for members to carry out independent audits of their supply chains for transparency. The T.I.C. shall recommend further annual audits as appropriate.

### T.I.C. approach to traceability

The T.I.C. recognises that manufacturers of tantalum and niobium containing products have a growing interest in the concept of sustainable development, as well as in the origin and supply chain of materials used in the products. The T.I.C. requires that its members carry out appropriate due diligence and rigorously maintain records including the origin of the tantalum and niobium minerals in order to provide a chain of custody that will stand up to generally recognized auditing standards. The T.I.C. believes that, today, document trace work is the only viable option for origin tracking and as such should be followed scrupulously within the bounds of commercial confidentiality.

### T.I.C. attitude towards Fingerprinting

Tantalum and niobium are elements and as such are indistinguishable from other like elements; therefore they cannot be fingerprinted. Ores of tantalum, sourced from different geographical regions, do not retain their physical form in the final product, making a fingerprinting technology, as used for diamonds, impossible. Existing radiological/chemical origin tracing techniques do not have adequate geographical resolution to distinguish between material sources<sup>vii</sup>. The T.I.C. will continue to support feasibility studies of mineral ore tracking or tracing technologies in the hope that improvements will be made resulting in a reliable, economically sound fingerprinting scheme that will benefit customers of tantalum products. All certification processes

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should be scientifically rigorous and economically feasible before implementation, otherwise more harm than benefit will result to both the ASM sector and potentially the entire tantalum industry.

### T.I.C. policy on Fair Trade

T.I.C. members will pay fair and competitive prices for minerals produced by the ASM sector and will seek to achieve an acceptable economic outcome for the host mining country and community and the whole mineral supply chain. Access to international markets provides the opportunity for maximum economic benefit not only to the ASM operators, but also to the local communities and the country of origin.

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<sup>i</sup> Known colloquially as 'Coltan' in central Africa

<sup>ii</sup> Burt, R.O. (GraviTa Inc., Canada) "Tantalum – a rare metal in abundance" *Paper presented to 50th General Assembly of the T.I.C., Tallinn, Oct 2009*

<sup>iii</sup> United States Geological Survey Minerals Yearbook 2007, T.I.C. Bulletin No 132 Dec 2007 p.2-4 and industry sources

<sup>iv</sup> FARAH, H.H., Evaluation of Private Sector Mining Projects in Africa by the African Development Bank, in *African Mining '95*, The Institution of Mining and Metallurgy, London, 1995

<sup>v</sup> United Nations Group of Experts. Report S2008/773 "Final report of the Group of Experts on the Democratic Republic of the Congo". *United Nations*, Dec 2008

<sup>vi</sup> Garrett, N and Mitchell H. (Resource Consulting Services, UK) "Trading Conflict For Development", *Document commissioned by the U.K. Department for International Development*, April 2009

<sup>vii</sup> Melcher F., Graupner T., Sitnikova M. and Oberthür T. (Federal Institute for Geosciences and Natural Resources Germany) "Fingerprinting the origin of tantalum ores" *Paper presented to 49th General Assembly of the T.I.C., Shanghai, Oct 2008*