MJB Consulting
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mjbconsulting.co.za
martin@mjbconsulting.co.za
+ 27 (0) 72 842 76 53

Conflict Minerals Traceability: A Scientific Proof?

By

Martin J. Bauwens
Managing Director at MJB Consulting

Given the various stages conflict minerals go through before being sold to electronics companies, some consider that one cannot "absolutely guarantee that an illegal shipment did not enter the supply chain"[1]. The situation on the ground in Eastern DRC is complex and does not make traceability an easy task. The mine sites are difficult to access, some of them are controlled or racketeered by armed groups, illegal taxes are often levied during the transport of the minerals to the buyers in town and minerals from various sources can easily be mixed to mask their provenance or simply to consolidate the loads. In such a context, it does not seem possible to provide an absolute guarantee as to the conflict-freeness of minerals.

However, the point is that Section 1502 of the Dodd-Frank Act does not require absolute certainty. It allows issuers – who use conflict minerals originating from the DRC countries or who are unable to conclude that they don't - to discharge their responsibilities by exercising due diligence on the source and the chain of custody of the conflict minerals and by reporting on the company's efforts to determine their location of origin.

In terms of conflict minerals, there is an apparent political consensus to define due diligence as "an on-going, proactive and reactive process through which companies can ensure that they respect human rights and do not contribute to conflict"[2]. Pivotal to this process is to put together a risk management strategy "by either (i) continuing trade throughout the course of measurable risk mitigation efforts; (ii) temporarily suspending trade while pursuing ongoing measurable risk mitigation; or (iii) disengaging with a supplier after failed attempts at mitigation or where a company deems risk mitigation not feasible or unacceptable"[3]. Once, says the US State Department[4], issuers have taken the appropriate internal and independent auditing measures and due diligence, these issuers may rely on the "documented representations" of their suppliers.

Still, when addressing reliance on such representations, the SEC considered that supplier declarations may be sufficient "now" due to its understanding of the current information systems in place to trace the origin of conflict minerals. However, in the future, these declarations may no longer be sufficient to satisfy the issuers' reporting obligations as information systems improve[5] and therefore allow for more efficient investigation into the origin of minerals.

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[1] Melik J., "Can conflict minerals be controlled?", 28 March 2011, (http://www.bbc.co.uk/news/business-12730470).
[2] OECD, Recommendation of the Council on due diligence guidance for responsible supply chains of minerals from conflict-affected and high-risk areas, 25 May 2011, p. 3.
[3] Ibidem, p. 4.
[4] US Department of States, "Statement concerning implementation of Section 1502 of the Dodd-Frank Legislation concerning conflict minerals due diligence", 15 July 2011, p. 2.
[5] Federal Register, Securities and Exchange Commission, Vol. 75, No 246, 23 Dec. 2010, Conflict Minerals, Proposed Rules, p. 80957.

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As a result, the most efficient way for issuers to mitigate the risk of fuelling conflict and human rights abuses when using conflict minerals is to rely on or to develop information systems that provide the trustiest data on the origin of these minerals. A recent technology, called geochemical fingerprinting, should play a significant part in conflict minerals traceability and is currently tested in Germany and in the US:

1. Analytical Fingerprinting: developed by the German Federal Institute for Geosciences and Natural Resources (BGR), Analytical Fingerprinting (AFP) is a method which aims at "identifying the origin of a mineral concentrate by comparing its mineralogical and geochemical characteristic features to samples of known provenance"[6]. AFP has been developed for Ta-Nb (coltan), Sn (cassiterite) and W (wolframite) ores. BGR uses Mineral Liberation Analysis (MLA) to identify the mineralogy of a representative sample (polished block of 3x3 cm). Then, laser ablation-ICP-MS analyses are performed on selected grains identified by MLA. About 50 measurements per mineral and per sample provide enough information for a statistical test that evaluates the best match of the unknown ore with a sample in the database[7]. The AFP method is currently available as a forensic instrument and positive certification for tantalum ore concentrates. Cassiterite AFP development will be concluded by end 2011, whereas wolframite AFP is expected by 2012/13.

2. Laser-Induced Breakdown Spectroscopy: developed under the auspices of the US Army Research Laboratory, the method uses laser-induced breakdown spectroscopy (LIBS) to determine the chemical composition of an ore in order to ascertain its geographic location[8]. Fourteen columbite–tantalite samples were analyzed from three pegmatite fields in North America to determine if statistical analysis of the chemical information contained in the LIBS spectra could be used as a means of rapidly distinguishing the geographic sources of the samples. A >90% success rate was achieved. Yet it remains to be determined if the high level of correct classification obtained with a model based on three classes can be extended to the larger number of classes associated with a more geographically diverse set of localities.

Both methods have the capacity to bring scientific evidence as to the geographic origin of conflict minerals, which is one of the most important disclosure imposed on issuers by section 1502 of the Dodd-Frank Act.

These methods will have to be supported by a robust and regularly updated database of regional samples collected from the mine sites in the DRC countries. Downstream, the minerals exported from the DRC countries may then be analyzed and compared against the geochemical data available in the database in order to verify the exporter declarations as to the origin of the minerals.

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[6] http://www.bgr.bund.de/EN/Themen/Min_rohstoffe/CTC/Downloads/AFP_update.pdf?__blob=publicationFile&v=2
[7] Email from Dr. Frank Melcher, BGR, 17 May 2011.
[8] Russell S. Harmon, Katrina M. Shughrue, Jeremiah J. Remus, Michael A. Wise, Lucille J. East, Richard R. Hark, "Can the provenance of the conflict minerals columbite and tantalite be ascertained by laser-induced breakdown spectroscopy?", Anal Bioanal Chem (2011) 400:3377-3382 , Springer, 03 May 2011, p. 2.

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However, knowing the source is not enough and additional measures should be put in place to sustain the conflict-freeness of the conflict minerals. Firstly, the mine sites, where the samples were collected from, must be secured to ensure they are not controlled or racketeered by armed groups. Secondly, the local authorities must provide security along the transport routes to prevent illegal taxes from being levied between the extraction sites and the point of export. At this stage, the exporters will be able to verify the origin of the minerals against the geochemical information contained in the database and forward the results to the smelter.

This is our vision of an ideal traceability model in the DRC countries. It is to be construed as a dynamic process, a "quest", more than a dogmatic proposal, to progressively develop sound mechanisms to mitigate the risks of fuelling conflict and gross human rights abuse in Central Africa.

Martin J. Bauwens
Managing Director
MJB Consulting