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Prospects for sustainability certification of metals

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Abstract – Certification initiatives are product-focused, rely on standards and use sustainability metrics to inform end-users on the provenance of commodities. In the metals sector, the phenomenon of formal certification programs has recently gained traction. Four initiatives are reviewed to illustrate the status and prospects of metal certification. The prime case is the Conflict Free Smelter Program operated by the global electronics industry. This scheme has developed and applied standards on mineral chain-of-custody, including use of third-parties to audit smelters and refineries all over the world. Additional programs discussed are the Green Lead Project, Fair Trade and Fair Mined gold, and the Responsible Jewellery Council. Collectively these initiatives address a variety of sustainability criteria, including social, economic and environmental dimensions, but focus only on precious and specialty metals (Au, platinum group, Pb, Sn, Ta and W). Metals certifications programs are building capacity and infrastructure compared to mature programs in agriculture and other commodity sectors. Opportunities and issues for growth of metals certification are considered.

Sustainability certification of metals is a novel area, yet it is also an extension of activities that are familiar to the mining and metals industry. It applies tools like standards and codes that define practices in companies and across the sector, and indicators and metrics that are used to assess sustainability performance. Facility-level standards like ISO 14001 and OHSAS 18001 have become common place within operations. Industry associations like the International Council on Mining and Metals (ICMM) and the Mining Association of Canada (MAC) have developed global and regional codes of practice applicable to sustainability issues in the sector. International agencies and banks employ screening criteria that help qualify mineral development projects and qualify for international financing. The Global Reporting Initiative (GRI) and the CDP (formerly the Carbon Disclosure Project) coordinate annual reporting of corporate performance using environmental, social and economic metrics, including sector-specific categories for mining and metal producers.

Additionally, like life cycle assessment (LCA) that is also familiar to the metals industry, the concept of sustainability certification moves the subject of assessment, and subsequent management, from the facility to the product, where metrics are used to inform decision-making by users of materials and designers of products. This paper extends these themes of product-focus, reliance on standards and use of sustainability metrics, to consider metal certification. It also draws on work developed in analysis of other commodities to consider metals certification.

The objective is to explore the emergence of sustainability certification of metals by looking at the status of this phenomenon and prospects for growth with reference to several cases, in particular a detailed case study on assured sourcing of "conflict-free" metals.

1 Background

Sustainability certifications are used to both inform and assure businesses and

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consumers about the provenance of materials and products they purchase. Their intent is to shift market preference towards goods that exhibit better sustainability performance [1]. A wide variety of global commodities are subject to established sustainability certifications, including wood, cotton, fish, palm oil, coffee and diamonds. Resource or commodity certification schemes may include a number of attributes: 1) scope of material covered, including sectoral definition and an understanding of the types and flows of commodities in a program; 2) sustainability criteria, that are codified in standards as metrics against which performance of producers, products and supply-chains are measured and assessed; and 3) processes that provide governance, including stakeholder participation, standards development, audit procedures and accreditation, and program management.

Although traditionally the domain of engineers and economists interested in measurement and trade harmonization, research in the last two decades by political scientists and sociologists has considered the political and societal implications of product standards and certification. Forest standards, the Forest Stewardship Council in particular, were studied by Cashore [2] who identified sustainability standards as a new form of "non-state market-driven" governance of voluntary corporate behavior in environmental and social domains. There is a significant body of scholarship on agriculture and food standards that have developed in the last two decades and that considers programs on organic food and Fair Trade that are particularly concerned about outcomes affecting communities, workers and environmental sustainability in developing countries [1, 3–5]. This literature is broadly applicable to other commodities.

2 Burgeoning certification of minerals and metals

Evidence of tracking and identifying the provenance of minerals and metals commodities can be found in the early 2000's, such as the one-off-project on responsible sourcing of copper used for a building in the UK [6]. But the phenomenon of formal certification in this sector, organized under a management scheme, has only recently gained traction. First the prime case is discussed in detail. It is then followed by three other examples, allowing for a broader summary of key features, and leading into the subsequent discussion.

2.1 The case of conflict-free minerals

The Conflict-Free Smelter (CFS) program evaluates and provides assurance on the sources of minerals and metals for smelters producing tantalum (Ta), tin (Sn) and tungsten (W), and for refiners of gold (Au). Compliant companies explicitly avoid "minerals that directly or indirectly finance or benefit armed groups from conflict-affected regions" [7]. This initiative in corporate social responsibility has demonstrated that minerals can be tracked from mines to smelters in order to confirm traceability of origin from conflict-free regions [8]. Since 2010, more than sixty facilities have participated in the implementation of CFS protocols, with over forty achieving compliance as of March 2012 (see Tab. 1).

The sustainability metrics used are narrowly defined around "conflict", with reference to OECD [10] and US [11] definitions of conflict and conflict-free. Firms involved in the CFS are committed to improving human rights conditions and reducing violence associated with mining activities in the Democratic Republic of Congo (DRC). Recent NGO campaigns have highlighted the severity of humanitarian conditions in the eastern DRC, not dissimilar to so called "blood diamond" concerns in Africa. For US manufacturers there is added pressure from regulation by the US Securities and Exchange Commission (SEC) [11].

In the CFS, expectations on smelters become more stringent depending on the type and source of purchased inputs. Materials sourced from Level 1 countries have no known conflict and are low risk for illicit trade, and simply require documentation on source and transport of feeds into a smelter or refinery. Level 2 countries (Kenya, Mozambique and South Africa) require additional documentation about ore sources. Level 3 countries, the Democratic Republic

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Table 1. Status of the CFS program (data as of March 26, 2013 from [9]).

	Au	Sn	Ta	W
Companies participating	25	11	22	7
Companies compliant	12	5	17	0
Smelters and refineries in compliant companies	19	Not available	25	0
Countries from which CFS conflict-free mineral is sourced	16	Not available	18	0

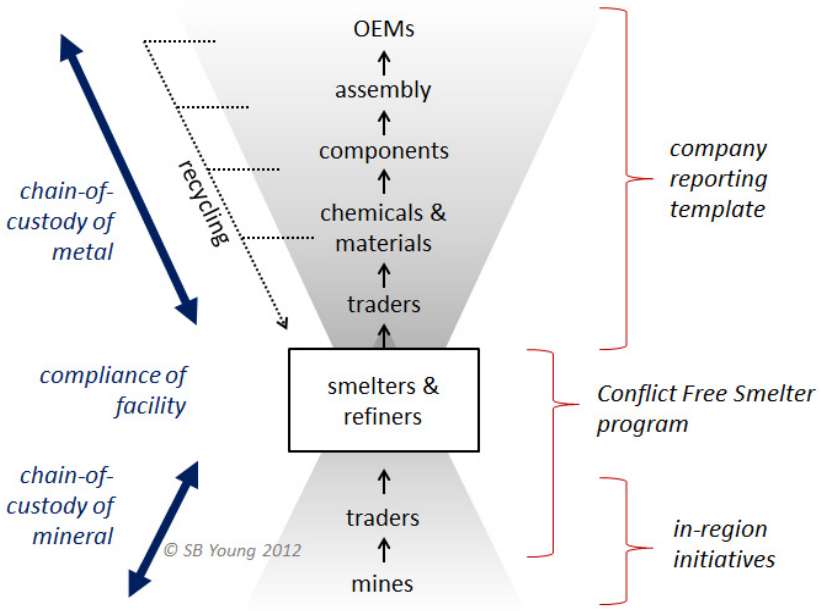


Fig. 1. Smelters and refiners provide a point for control of minerals and metals in the supply-chain (from [8]).

of the Congo (DRC) and nine neighboring nations have the strictest requirement. For shipments from these, the CFS requires smelters to demonstrate due diligence for "responsible supply chains on minerals from conflict-affected and high-risk areas" [10] that include measures such as chain-of-custody management systems and local risk assessments.

The CFS program has developed a clear understanding of mining, mineral processing, metallurgy and trade in the supply-chain (Fig. 1). For example, it allows for metals "reasonably assumed" to be recycled to be excluded [7], provides similar considerations for metal inputs to smelters and refineries that are derived as by-products of production of other metals like copper, and allows legacy materials that have been stored or stockpiled waiting metallurgical processing.

The CFS mine-to-smelter program is complemented by a separate initiative also developed by members of the global electronics industry to provide traceability of metals from end-user back to compliant smelters. These "company reporting templates" (see Fig. 1) are confidentially executed by OEM companies seeking information from their suppliers.

2.2 Three other metals programs

The conflict minerals problem is a very specific issue that narrowly addresses one area of social sustainability. Several other active programs that illustrate a wider scope of issues in metal certification are discussed next.

The "Green Lead" project was an ambitious concept that ran approximately from

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2000 to 2010 [12]. Conceived by the mining industry to bolster the market for the metal, the scheme presented a "vision of mining, processing, transporting, treating, manufacturing, storing, using and recycling lead – with zero harm from lead exposure to people and the environment", with an initial goal to develop a "closed loop" of the metal around the stewardship of lead-acid batteries in various regions [13]. The scheme dissolved after it was unable to establish a viable governance framework across stakeholders [14].

Fair Trade and Fair Mined gold arises from the work of the Fair Trade Labelling Organisation (FLO) and the Association of Responsible Mining (ARM) focusing on artisanal and small scale mining (ASM) [15,16]. Their standard was published in 2010 and emphasizes social and economic criteria more so than environmental, for example covering principles of collaboration between stakeholders, employment equity and distribution of income. Mining cooperatives in Bolivia, Columbia and Peru were the first producer organizations certified under the scheme [17].

The Responsible Jewellery Council (RJC) program is the fullest sustainability scheme for metal production, with over 400 members participating [18]. It operates in two parts: a "code of practices" that requires audits of member facilities and a product-focused "chain-of-custody" certification that includes certification of gold and platinum group metals. It completed its first certification in 2012 for recycled gold from a US refiner. The supplier of metal to the London Olympic Games, Rio Tinto, for example, is an RJC certified member.

Looking across these three initiatives compared to the CFS, all four aim to control minerals flow from mine to smelter to end-user. However, the CFS specifically targets smelters (for Sn, Ta, W) and refineries (Au) as "gates" in the mineral supply-chain where material flows can be observed and controlled (see Fig. 1). These sites are limited in number and more easily identifiable compared to upstream mines and artisanal sites (which are included in the Fair Trade program), and the variety of downstream processors and manufacturers (which are included with miners as members in the RJC).

3 Discussion and conclusions

3.1 Status

Based on this modest sample, the status of metal certification is summarized by considering differences and commonalities in management, in ways and means certification is provided, and in sustainability issues covered.

The four programs are operated by quite different entities, including both upstream and downstream actors. End-users of metals manage the CFS, as members are mostly from the world-wide electronics industry. Similarly, the RJC membership is primarily jewelers but with metal producers directly involved. The Green Lead program, in contrast, was created by and for miners. The Fair Trade program, true to its principles, is focused on grassroots in developing countries.

Third-party audits are a central feature of all the programs. However, standards and processes differ. The Green Lead project developed its own standards, and did not employ a chain-of-custody on material. The others refer to independent authorities to guide their standards and accreditation: the quasi-governmental International Organisation for Standardisation, which publishes ISO 17021 and ISO 19011; and the ISEAL Alliance, an association of sustainability standards entities that develops its own codes of conduct. Metals certifications programs are building their capacity and infrastructure compared to food, agriculture and other commodity sectors [3, 5]. For example, in three years CFS has satisfied many of the recognized requirements of credible social and environmental standards [19], including consultative standards development and certification processes, but still lacks a formal accreditation of auditors and a dispute mechanism.

Sustainability criteria in the Green Lead project were solely environmental, whereas the CFS is narrowly focused on the human rights issue of conflict. The other two schemes are much broader, and address sustainability across multiple criteria.

3.2 Prospects

In reference to prospects for growth in metal certification, a key question is whether and

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to what extent the cases presented here are generalizable. The CFS model, for example, could expand in four directions: more metals could be included, a wider set of sustainability criteria could be considered, geographic focus could expand beyond DRC, and there could be greater participation of stakeholders (including mining companies, end-users, manufacturers, and NGOs). For the conflict-minerals domain, at least one research report has highlighted that a narrow focus on human-rights issues ignores serious environmental and biodiversity concerns in the African Great Lakes Region of Africa [20]. However, this direction may not address other concerns that are highlighted in established industry codes and sustainability reporting for the mining sector, such as impacts and responsibility of legacy sites.

Finally, consider the types of metals covered by the schemes reviewed here. Four are specialty metals that are limited in both their origins and number of producers involved (Pb, Sn, Ta, W); the others are precious metals (Au and platinum group metals), which carry both high value and high visibility to end-consumers. Lead and gold are widely produced from both primary and recycled sources, and gold is very widely distributed and used in investment, consumer and industrial applications. Otherwise there is a limited set of metals and markets involved. This raises the question of what might drive metal certification beyond precious and specialty metals, perhaps to include ferrous, light metals and base metals. Based on the analysis above, the future of metal certification will hinge on the extent end-users in larger markets are interested in the provenance of their metal resources.

4 Disclosure statement

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