

PROJECT REVIEW



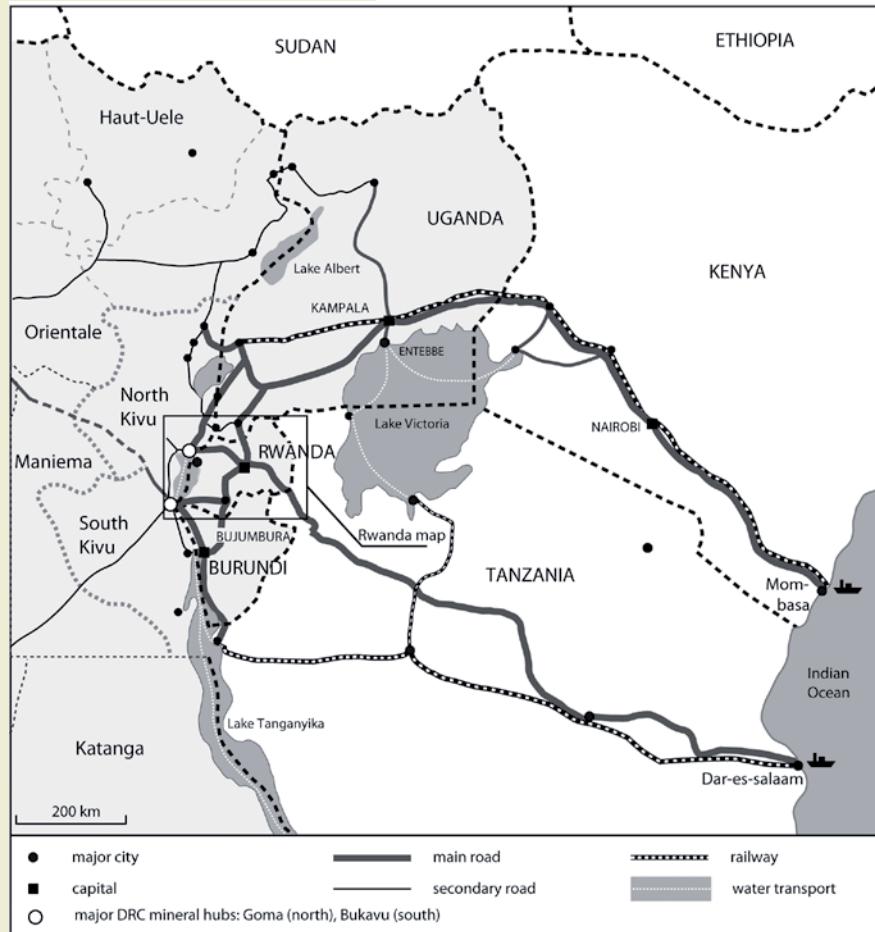
Bundesanstalt für
Geowissenschaften
und Rohstoffe



Implementing Certified Trading Chains (CTC) in Rwanda

This document was prepared for the Federal Institute for Geosciences and Natural Resources (BGR) in cooperation with the Rwanda Geology and Mines Authority (OGMR)

PROJECT REVIEW



Implementing Certified
Trading Chains (CTC)
in Rwanda

Imprint

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Editorial

Methodology: This project review is the result of a desk-based study that involved analyzing the several dozen reports, scientific papers, audits, presentations and other documents developed during the course of the CTC Rwanda pilot project, and then integrating this information into a coherent overview of the CTC project, including its origins, implementation and future development. The desk-based work was supplemented where appropriate by telephone interviews with key personnel.

The Author: Shawn Blore is a widely published researcher and analyst, with deep expertise on the Kimberley Process Certification Scheme (KPCS), artisanal and small-scale mining (particularly diamonds), value chains, mineral chain traceability and mineral certification systems. His work has been published and utilized by a variety of clients in the public, academic and not-for-profit sectors. Professional landmarks include designing the framework for the ICGLR mineral certification system, and publishing groundbreaking research on clandestine networks of diamond exporters in Brazil and Venezuela.

Acknowledgements: This report draws heavily on the work of a number of BGR experts and consultants. A full project bibliography is given in Appendix 3, but some standout contributions must be noted here. Markus Wagner and Gudrun Franken were the lead authors on the original CTC concept paper. Jim Freedman developed the initial draft set of standards, the core of which has held firm through numerous refinements and adaptations. Estelle Levin's work provided a theoretical framework and much useful background. Frank Melcher's papers on Analytical Fingerprint show his key role in the development of AFP. Michael Biryabarema was essential to understanding the project from the Rwandan point of view. Philip

Schütte and Gudrun Franken guided the CTC project and this paper throughout. Henri Pierre Gebauer's assistance and the Sector Project Policy Advice Mineral and Energy Resources's support was both invaluable and much appreciated. Where the work of these or other authors was used extensively in the text, credit has (or should have been) given via footnotes. If here or there this has been overlooked, we beg the authors' indulgence.

Disclaimer: This report is prepared from sources and data which the author believes to be reliable, but he makes no representation as to their accuracy or completeness. The report is not to be construed as providing endorsements, representations or warranties of any kind whatsoever. Opinions and information provided are made as of the date of the report issue and are subject to change without notice.

Purpose of the Report

The Certified Trading Chains in Mineral Production Pilot Project was initiated within the framework of a German-Rwandan technical cooperation program to increase the competitiveness of the Rwandan mineral sector by developing best practice and enhancing transparency.

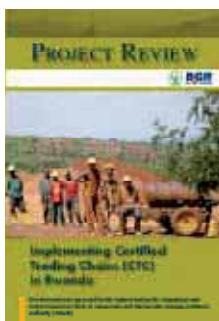
The pilot project is being jointly implemented by the Federal Institute for Geosciences and Natural Resources (BGR) and the Rwanda Geology and Miners Authority (OGMR).

BGR was commissioned by the Federal Ministry for Economic Cooperation and Development (BMZ) as well as by the Federal Ministry of Economics and Technology (BMWi) to support the pilot program in the mineral sector in Rwanda.

The aim of the present report is to summarize and provide an insight into the progress achieved during the project implementation phase, to compile the lessons learned and to disseminate relevant information on the CTC approach to a broad number of stakeholders. Furthermore, this report situates the CTC Pilot Project in the broader context of certification initiatives in the African Great Lakes region

Acronyms

APP	Analytical Fingerprint
ASM	Artisanal and Small-scale Mining
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources)
BMWi	Bundesministerium für Wirtschaft und Technologie (German Federal Ministry of Economics and Technology)
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry for Economic Cooperation and Development)
CASM	Communities and Small-scale Mining
CEEC	Centre d'Evaluation, Expertise et Certification
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
CTC	Certified Trading Chains
DRC	Democratic Republic of the Congo
EICC	Electronics Industry Citizenship Coalition
EITI	Extractive Industries Transparency Initiative
ETI	Eurotrade International
FLA	Fair Labor Association
FSC	Forest Stewardship Council
GIZ	Gesellschaft für Internationale Zusammenarbeit (German International Cooperation)
GMC	Gatumba Mining Concession
ICGLR	International Conference on the Great Lakes Region
ISO	International Standards Organisation
ITRI	International Tin Research Institute
iTSCI	iTRI tin supply chain initiative
KPCS	Kimberley Process Certification Scheme
MINICOM	Ministry of Trade and Industry of Rwanda
MINECOFIN	Ministry of Finance and Economic Planning of Rwanda
MSC	Marine Stewardship Council
NGO	Non-governmental Organisation
NRD	Natural Resources Development
OECD	Organisation for Economic Cooperation and Development
OGMR	Rwanda Geology and Mines Authority
RBS	Rwanda Bureau of Standards
RINR	Regional Initiative against the Illegal Exploitation of Natural Resources
RML	Rutongo Mines Limited
SAESSCAM	Service d'Assistance et d'Encadrement du Small Scale Mining
WMP	Wolfram Mining and Processing



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Implementing Certified Trading Chains in Rwanda

Executive Summary

This report details the origin, development and implementation of the Certified Trading Chains (CTC) in Mineral Production Pilot Project in Rwanda. The report further details lessons learned in the CTC pilot, and briefly explores how the knowledge gained might be utilized in aiding the implementation of other certification efforts in the Great Lakes Region.

The CTC pilot project was initiated in September 2008, and is due to run until June, 2011. The project has been jointly implemented by the Rwanda Geology and Mines Authority (OGMR) and the German Federal Institute for Geosciences and Natural Resources (BGR). The CTC pilot was initiated in response to calls from the United Nations Group of Experts on the Democratic Republic of the Congo, the International Conference of the Great Lakes, and the leaders of the G8 group of nations for a mineral certification system that would help resolve the problem of "conflict minerals" (tin, coltan, and tungsten ore as well as gold) in the Great Lakes Region of Central Africa.

The first step in the CTC pilot involved the development of a set of certification standards appropriate for Artisanal and Small-scale Mining (ASM) in the African context. The CTC standards were based initially on the OECD integrity instruments and then refined through extensive consultation with regional and international stakeholders. The working set of CTC standards involved 20 standards grouped into five principle areas of concern: origin and transparency of mineral flows and the associated payments; working conditions; security and human rights; community consultation and gender relations; environment.

The standards were applied via baseline audits to four volunteer mineral producers in Rwanda. The results

of the baseline audits were then used to refine both the standards and the auditing procedure, and to suggest areas where company performance should be improved. Consultants were hired to provide assistance and advice to the mineral producers on areas indicated by the baseline audits.

The auditing procedures, performed by an independent third-party auditor, were adjusted to bring them into conformity with the standards of ISO 19011:2002, in anticipation of the developing requirements of the ICGLR certification scheme and the OECD's Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

A second round of compliance audits was performed on five mining concessions and the associated mineral trading chains of the four CTC companies participating in the pilot project.

Through its participation in the CTC pilot, OGMR and other Rwandan government authorities developed greater capacity for regulating Rwanda's mineral sector. The CTC standards further provides OGMR and other government institutions with a basis for establishing best practice in the Rwandan mineral sector (and particularly the ASM portion of the sector).

The CTC standards and auditing procedures provide a template for other certification schemes geared to ASM mineral production, in particular the mineral tracking and certification scheme being developed by the ICGLR as part of its Regional Initiative against the Illegal Exploitation of Natural Resources (RINR).

1 Introduction and Background

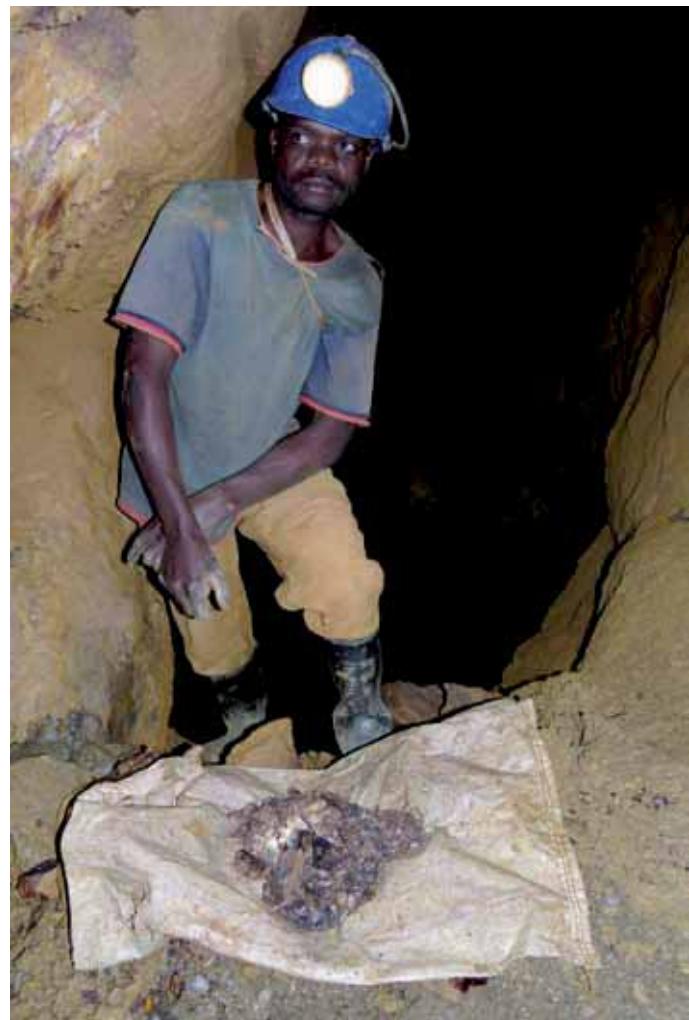
1.1 Conflict and the Central African Mineral Trade

The modern history of Central African mineral producing nations has been tragically rife with conflict. The litany of mineral producers in the region that have experienced war, civil war or domestic insurrection includes Rwanda, Burundi, Uganda and the Democratic Republic of the Congo (DRC). In the DRC, notably, the conflict continues to this day.

Linkages between artisanal diamond mining and the conflicts in West and Southern Africa were first documented and accepted in the late 1990s¹, but it was not until the 2001 publication of the first report of the UN Panel of Experts² that a similar claim was made concerning the linkages between other high-value minerals and the conflicts in the DRC and Central Africa. That report drew a clear link between the war and insurrection in the DRC and the pillage and exploitation of high-value minerals. Subsequent UN reports drew a bead on the distribution channels³, naming several mineral aggregators and exporters in countries adjacent to the DRC as purchasers of minerals from conflict sources⁴. By purchasing these minerals, the UN panels suggested, these companies were complicit in fomenting and continuing the fighting⁵.

Further research documented the involvement of renegade Congolese military units in the exploitation of high value minerals, notably cassiterite⁶ and gold⁷. NGOs took up the issue, researching and popularizing their own findings showing a clear link between the exploitation and trade of high-value minerals such as tin ore (cassiterite), tantalum ore (tantalite; "coltan" when in association with niobium ore), tungsten ore (wolframite and other minerals), and gold and the funding of illegal armed groups and renegade military units⁸. "Conflict minerals" was the short form given to this phenomenon.

Conflict minerals grew into an international issue. Governments began to take note. By the middle of the decade, the phenomenon of conflict minerals had begun to dominate discussion involving the DRC and the Central African mineral sector.



Cassiterite miner at Rutongo

1.2 Conflict as one of Several Interrelated Challenges

However, while conflict was clearly the greatest and most evident problem, the mineral trade in Central Africa was in fact beset by a constellation of challenges, including weak governance, a lack of physical security, corruption, mineral smuggling, lack of transparency, and a mineral sector dominated by artisanal and small-scale (ASM) producers¹⁰. Many of these difficulties were interrelated, reinforcing each other to create downward spiralling vicious circles of bad governance, disinvestment and conflict.

To take but one highly simplified example, the lack of security in the region caused large-scale formal mines to either pull out or not invest, leaving the field to artisanal miners, a type of exploitation that is often difficult to supervise regulate and tax. Supervising ASM required an increase in government resources, just as mining revenue – a primary source of income for most Central African nations – decreased. Lack of revenue left governments without funds to adequately remunerate mines officers and customs officials, who took to extracting payments directly from miners or traders to make up for their non-existent salaries. Traders, to circumvent demands for illegal payments at customs posts, began to smuggle mineral shipments. Revenue to government fell even further, leaving government with even fewer resources to pay mines officers, customs officials, the army and police force that could provide the internal security that is a prerequisite for peace, good government, and eventual investment in the mineral sector.

A comprehensive solution to this challenge or constellation of challenges would have to address more than simply the question of conflict mineral and conflict financing. Such a solution would clearly also have to involve governments, likely as the lead agencies¹¹. Certainly, the problem was beyond any one company, or even any one sector.



Artisanal miners clearing tunnels at Nemba

Downstream purchases of minerals, be they aggregators-exporters located in the producing countries or adjacent states, or smelters located overseas, were faced with a crippling lack of reliable information concerning their upstream supply chain. True, only a very small number of these purchasers, motivated either by moral concerns or by a desire to avoid the reputational damage that comes from being named in a UN report, genuinely wished to avoid purchasing material from sources contributing to conflict¹². But for those that did wish to do the right thing, the information required to distinguish conflict from non-conflict material simply did not exist.

1.3 Certification and Artisanal Mining

The options open to corporate players were thus to either purchase everything and accept the ensuing moral hazard and reputation risk, or else to pull out altogether. Disengagement, however, involved another set of risks. Upwards of 2 million miners¹³ across the Great Lakes Region of Central Africa work directly in artisanal mining, a majority of them young men. Pulling out brought with it the spectre of mass unemployment, leading almost certainly to an escalation in the level of conflict.

A classic dilemma: war and death if you do, death and war if you don't.

What was needed was a third and better option, a strategy to reconfigure political economic relations around mining and trading so as to move control of the resource away from armed groups and towards more appropriate stewards, namely government, civil society, and a law-abiding, un-militarised private sector¹⁴.

Mineral certification was considered one of the most likely strategies to facilitate this transformation¹⁵. The Certified Trading Chains concept was one of the first attempts to apply the mineral certification strategy on the ground in Central Africa.

What is Certification?

Certification is a relatively new invention in the world of international commerce. A positive outgrowth of globalization, certification stems from the desire of global consumers to ensure that the products they use in their daily lives conform to certain ethical and environmental standards, even as the supply of raw materials and manufactured products moved overseas beyond the reach of their own domestic legislation. Recognizing the power of the consumer marketplace, producers of these products are anxious to fill this market demand.

At its core then, certification is a voluntary agreement between consumers and producers, irrespective of where in the world they may be physically located. Consumers agree to limit their consumption to, or especially seek out, products that meet an agreed upon standard. Producers agree to manufacture or supply their product according to that same standard. Both sides agree upon an independent auditor to verify that the standard is being met. Both sides benefit.

Producers gain in numerous ways – more secure market access, an advantage in the marketplace over competitors who are not certified, and often a price premium, willingly paid by consumers in recognition of the heightened quality of the producer's product. Consumers get the satisfaction of knowing that their daily purchasing decisions are supporting the moral, ethical or environmental standards to which they subscribe.

While the initial impetus behind certification came from educated consumers and the NGO community, certification initiatives have also been gaining increased support amongst development agencies as a means to promote Corporate Social Responsibility in developing countries.

Sanctions or Certification

Trade sanctions are the more traditional method for dissuading governments and non-state actors from exploiting resources contributing to the conflict, imposed a dozen times by the UN or coalitions of nations in the years since World War II¹⁶. The first report by the UN Panel of Experts on the DRC in 2001 recommended sanctions on high-value minerals of likely DRC provenance¹⁷.

However, critics of sanctions have argued that it is most often the ordinary citizens and the poor who bear the brunt of their effects while the policy makers in elite circles and government – that is, the ones who formulated the policies that resulted in the sanctions – are often able to avoid suffering the effects of sanctions¹⁸. By 2005, thinking at the UN Expert Group had evolved somewhat. The 2005 report of the UN Group of Experts recommended instead that a traceability system for high value minerals shall be developed. In pursuit of this goal, the UN Expert Group recommended that a pilot study of the concept be launched¹⁹.

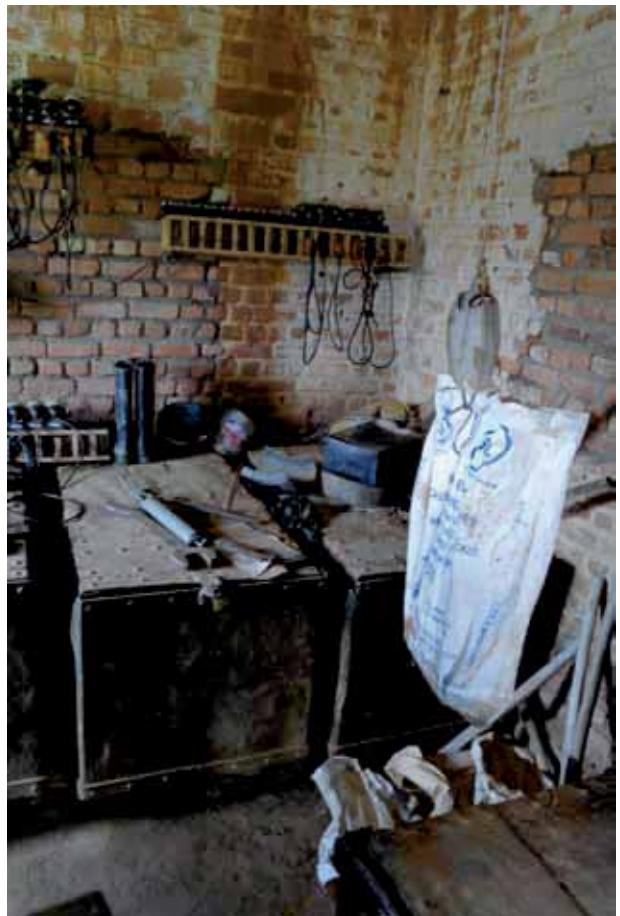
It was at this point – at the request of the German Government – that the German Federal Institute for Geosciences and Natural Resources (BGR) began to study the question of mineral traceability and mineral certification.

1.4 Certified Trading Chains

Laying the Theoretical Framework

In early 2007, the BGR commissioned an internal policy paper to examine the theoretical and technical case for a pilot project for mineral certification for ASM mineral production²⁰. About 10 % to 30 % of

world production of various mineral commodities is produced by artisanal and small-scale miners²¹. In the developing world there are often more people engaged in ASM than in formal large-scale mining (LSM)²². In the Great Lakes Region, upwards of 2 million diggers make a direct living from ASM, while an estimated 10 million people are supported directly and indirectly by the ASM sector²³. Worldwide, ASM is frequently characterized by unsafe working condition, poor remuneration and little attention to environmental impact. The scope, then, for the application of the mineral certification to the ASM sector is vast, the potential impacts enormous.



Ore concentrate storage and weighting area at individual mining site, Rutongo

Where sanctions aim to use economic forces to influence behaviour by withdrawing from a market, certification aims to influence behaviour by engaging with that market. Certification offers interested buyers (consumers and companies) a mechanism whereby they can selectively purchase only those materials that meet a certain standard, be it for origin, method of production or social and environmental impact.

Where conflict is the major issue, a certificate of origin guarantees the buyer that, at a minimum, proceeds from the purchase of the material will not be used to finance or benefit belligerent armed groups. The Kimberley Process Certification Scheme (KPCS) for rough diamonds, founded in 2003, is such a certificate of origin scheme. Producers (nation states) warrant that their rough diamonds were not produced under conflict conditions. Buyers pledge to purchase only rough diamonds with Kimberley Certificates certifying their conflict-free origin²⁴.

Other certification schemes aim to go beyond origin, and guarantee the conditions under which a product is produced. The Fair Labor Association (FLA) arose out of allegations that garment manufacturers in developing countries were employing exploitative or even slave labour practises in the manufacture of t-shirts, running shoes and other consumer apparel destined for retail in wealthy first world markets. The FLA certifies that garments and textiles were manufactured in a manner respecting workers' rights. Similarly, the Forest Stewardship Council (FSC) certification program guarantees that the wood products in question were produced in ways respecting environmental sustainability.

A mineral certification scheme modelled on these lines would guarantee not just the origin and traceability of the materials, but also certify that the conditions under which the minerals were mined and traded had met



Artisanal miners panning ore concentrate

certain standards with respect to worker safety, health, environment and gender, among others. Transparency standards would ensure that producer governments received fair taxation for their mineral production. Certification of mineral origin and traceability would make it possible to link these standards to specific mine sites. This kind of mineral certification scheme would help buyers curtail the supply of tainted conflict minerals, to exclude violation of broadly accepted international standards (such as child labour) in their supply chain, and in doing so to positively choose ethical minerals, sourced and produced in ways that contributed to the peaceful economic and social development of the Great Lakes Region. This was the type of certification scheme envisioned in the Certified Trading Chains proposal.

Industry Partners

What all certification schemes have in common is a need for the voluntary and enthusiastic engagement on the part of industry. For the Certified Trading Chains (CTC) pilot project, the BGR concept paper recommended finding committed partners who could push advancement of the project, both among the consumer industry (the mineral processing industry in this case), as well as among governments and international organisations.

Attracting such partners meant articulating the benefits of certification. For the consumer end of the trading chain, in this case of the mineral processing industry, CTC offers a number of benefits: traceability of mineral supplies through direct linkage to a certified producer, direct market access, enhanced supply security through regionally diversified sourcing, and the opportunity to maintain the social license to operate and potentially to gain a competitive branding advantage through product differentiation²⁵.

At the producer end, CTC offers mineral producers the potential for better market access, higher earnings through direct sales, improved planning reliability, sales agreements as a basis for finance, and better health and safety as well as environmental conditions.

For developing country governments, which often suffer from poor law enforcement and weak institutional capacity in the mineral sector, CTC offers the prospect of improved mineral sector governance. Certification is thus not a replacement for government regulation, but a complement to it. The CTC standards would at all times be compliant with national laws. For producer governments then, CTC offered the medium to long-term prospect of sustainable use of the national natural resource, support to regulation of the informal sector, conflict prevention, and the likelihood of additional state revenues.

The Pilot Project

For the CTC scheme to work, all of these various actors – mineral producers, governments in producer nations, mineral traders and consumers, development agencies – with relevant expertise would have to play an important part.

For the pilot project, the BGR paper proposed aiming for a few basic elements: voluntary chain of custody certification, standards for production adapted to local conditions, and a rigorous process of independent verification.

If the pilot project proved successful, CTC could move on to an implementation phase. Note that even here, participation by industry need not be universal for a certification scheme to be successful. Indeed, the Kimberley Process is unusual in that all producers and processors signed on at the beginning. Normally, certified material occupies only a part of the market, at both the producer and consumer end.

In the context of the Great Lakes region of Central Africa, certified production areas and certified trading chains would act as islands of legality and good governance in the general morass of disorganized, untraceable, and possibly illegal or conflict material²⁶. In the medium term, these legal islands will spread to form island chains and then possibly whole continents of legality, as producers and traders see the advantages of certification, and certification encompasses a greater share of production in the region.

However, CTC could only be attempted if it adequately addressed the concerns of all the key regional stakeholders, most notably the concerns of governments in the region.

1.5 Rwandan Goals and Challenges

In Rwanda, Government officials faced their own unique set of challenges. Conflict was happily not an issue within the country. After the tragic events of 1994, Rwandan authorities quickly re-established peace, then founded a new government known both at home and internationally for its probity and financial integrity. The Rwandan mineral sector, however, faced serious challenges relating to declining levels of production, privatization, environmental and social performance, and market access.

Starting in the 1930s, Rwanda had traditionally been one of Central Africa's stronger mineral producers, reaching a peak in 1977 of 2239 tonnes of cassiterite and 836 tonnes of wolframite²⁷. Beginning in 1973, however, a stepwise nationalization of the sector lead to mismanagement, declining production and the eventual collapse of the sector²⁸, a phenomenon exacerbated but not caused by the events of 1994 (see Figure 1). Rwandan officials diagnosed state ownership as the underlying cause of the mining sector's anaemic performance, and embarked on a policy of privatization as the solution.



Cassiterite ore, ready for washing

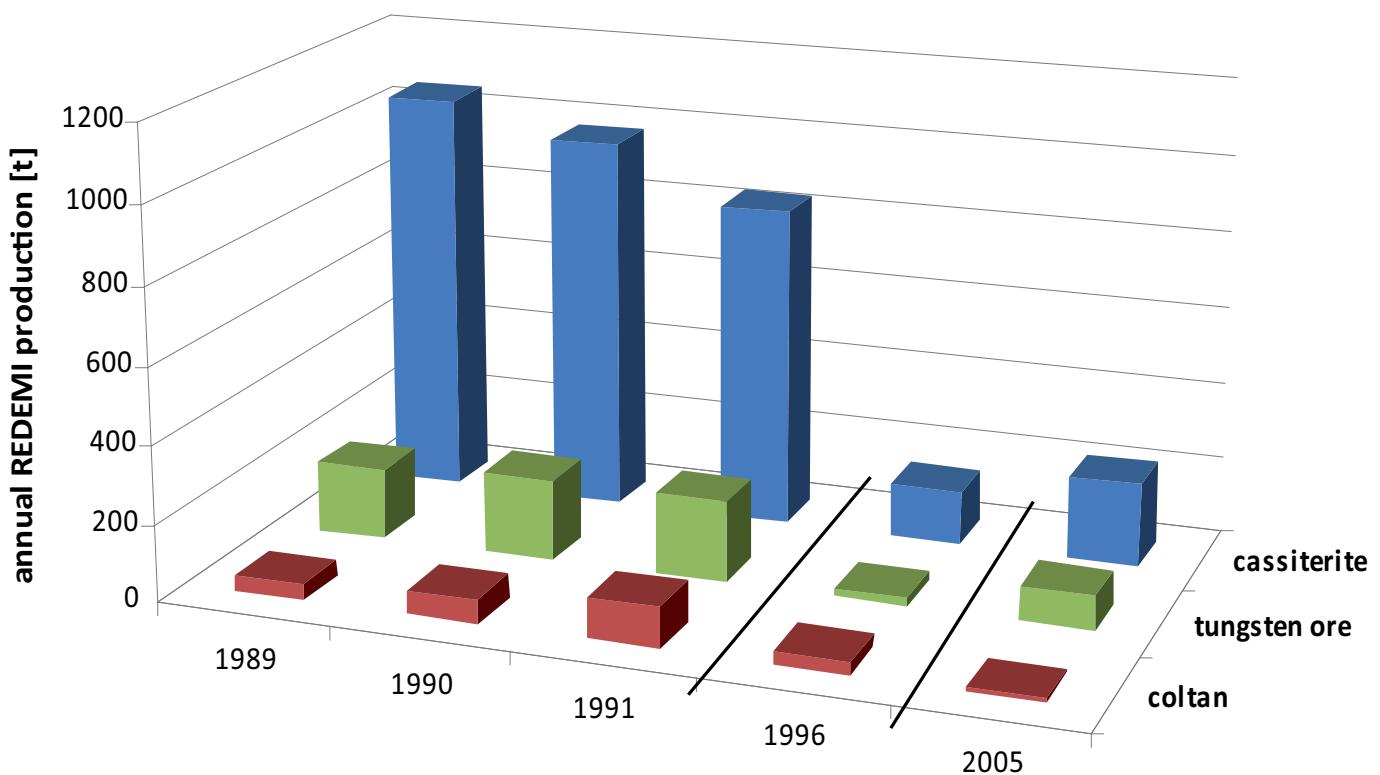


Figure 1: Rwanda (REDEMI) mineral production, 1989-2009²⁹

New private sector owners, it was decided, would be able to make the capital investments required to re-invigorate the Rwandan mineral sector. The privatization process began in earnest in 2005, with many mining concessions formerly held by state companies transferred to private companies or to joint ventures in which the private interest held the majority share. The privatization process resulted in significant foreign mining investments in the 2006-2009 period, and consequently a recovery in production levels³⁰.

Henceforth, government would concentrate on building support services, regulation, inspection and the promotion of value addition.³¹ Privatization thus left Rwanda's mineral authorities with the new challenge of regulating the mines to guarantee the country's wider social and economic development goals, in a situation where they no longer held direct ownership of the mines.

Protecting the environment was one important goal. Bad mining practices from the colonial and immediate post-independence eras had left behind significant waste dumps, many adjacent to or contiguous with current areas of exploitation³². As a result, Rwandan society was sensitive to the question of mining and environment. Other goals included managing Rwanda mineral production so that it adhered to the laws regarding labour, security and health of the citizens, and enabling women to play an active role in the mineral sector³³.

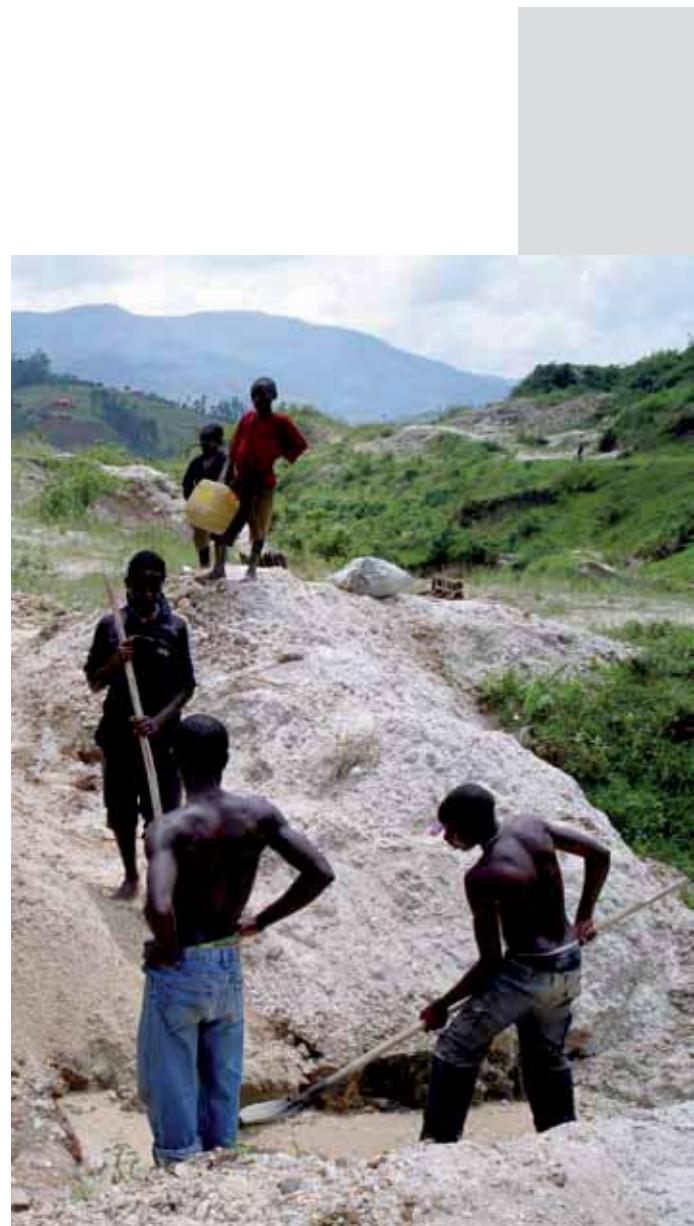
What Rwandan officials were seeking was a set of tools that would allow them to manage their domestic mining sector according to the standards of international best practice as realistic for the ASM and semi-industrial sector framework. They wanted to develop the capacity to set these standards, to adopt the standards into their own mining regulations, and to monitor and enforce these standards.

Rwanda also had concerns regarding market access. While the country was not afflicted with armed conflict within its own borders, events in the region still left their mark. UN Expert reports noted or highlighted the role played by Rwandan-based companies in the transportation, processing and export of minerals from dubious or conflict sources inside the DRC³⁴. Some of these minerals, it was noted, were simply being transported across Rwanda to ports in East Africa. Other shipments were being purchased, processed and re-exported by companies based in Rwanda.

Further confusing the issue, a substantial portion of mineral ore originally sourced in the DRC and then upgraded in Rwanda is, upon export, declared by Rwandan officials to have been of Rwandan origin³⁵. The re-classification is based on a Rwandan regulation that permits a foreign mineral product to be re-classified as Rwandan production after a certain level of in-country value-addition (e.g. resulting from upgrading the mineral concentrate)³⁶. This practise not only increases the difficulty of obtaining reliable Rwandan production statistics, it also serves to effectively disguise material of DRC origin, and conflate Rwandan mineral production with the “conflict mineral” production in the DRC. The net effect of these reports was to strongly link the production of minerals in eastern DRC – including conflict minerals – with minerals exported from Rwanda (Figure 2). Outside the region, the two mineral streams were essentially conflated into one.

As the political groundswell to do something about the DRC conflict grew in the wider world, Rwanda was faced with a real possibility of loss of market access, of being unable to sell its minerals abroad.

Fuels and mining products accounted for 55% of Rwanda’s total exports in 2009. Rwandan officials were thus strongly motivated by the goal of securing access to foreign markets for its domestic mineral production.



Ground sluicing at Gatumba

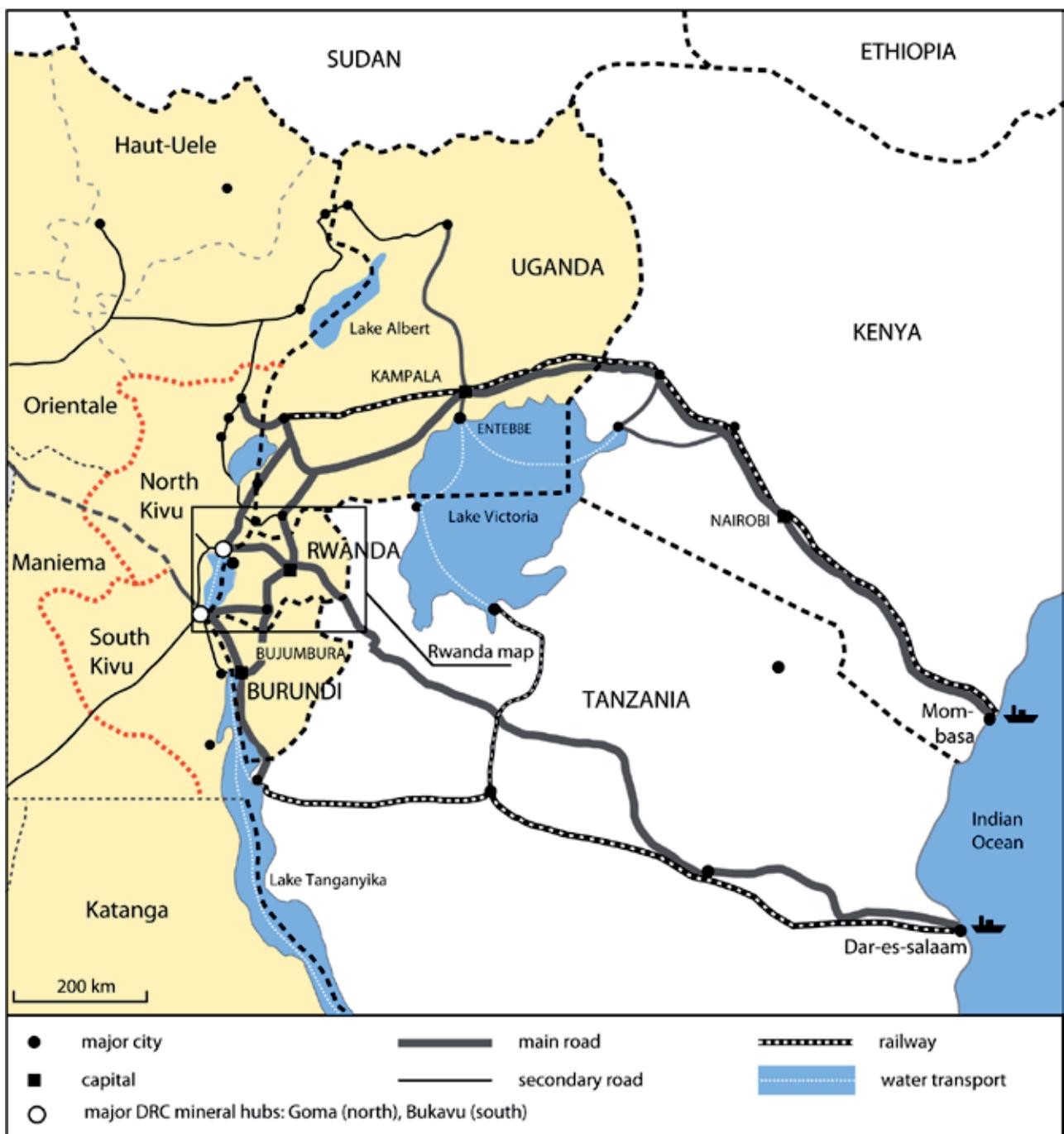


Figure 2: Map of the Great Lakes Region displaying major infrastructure units in eastern Central Africa. Minerals produced in eastern DRC are aggregated at major mineral hubs and subsequently transported to Mombasa and Dar-es-salaam. Upon their passage through the eastern DRC neighbor states, these minerals may lose their indication as "DRC origin" due to variable out-country processing and mixing with foreign mineral production. Map adapted from International Alert³⁷

2. Initiation of the Certified Trading Chains Pilot

2.1 Laying the Political Groundwork

Experience with previous certification schemes shows that there are four critical steps in the establishment of a new certification scheme³⁸:

1. The creation of a market campaign to pressure industry to change its practices;
2. The acceptance by key governments of the need to facilitate creation of a certification scheme;
3. The creation of a stakeholder-based set of standards for improving corporate practices; and
4. The creation of a credible independent mechanism for certifying companies.

The first two of these steps are essentially political undertakings, and as such beyond the remit of a technical organisation such as the BGR. However, by 2007 other avowedly political actors, notably the various NGO groups working on the issue had effectively laid the political groundwork for a solutions-based approach like CTC by instilling support for the idea among both industry and government.

Support from Industry

Industry support for certification efforts is often engendered in response to a sustained campaign by non-governmental organisations, who manage to successfully instil in the consuming public's mind an aversion to some moral hazard found in the supply chain of a company or sector.

The case of minerals in the Great Lakes is no exception. Traditionally, the majority of businesses buying coltan, cassiterite and wolframite ores have been at best minimally concerned with the human rights and environmental abuses that accompany the

exploitation and trade of these minerals³⁹. Ironically, this is particularly true of the low-level buyers and aggregators, those closest to the areas of production, and thus best informed on the manner in which those minerals are produced.

However, shortly after the publication of the first UN Panel of Experts report in 2001, a number of NGOs took up the issue of Great Lakes conflict minerals⁴⁰, targeting in particular the smelters and the electronics companies that were the major buyers of and eventual end-users of these materials. Recognizing their partial responsibility for the social problems resulting from the mining and trade of minerals later used in the manufacture of their products⁴¹, and aware of the reputational damage their companies and brands could suffer if they failed to address this issue, these end-user companies in turn began to put pressure on suppliers further up the mineral chain to clean up their mineral sourcing.

Fear of losing market access thus generated willing industry partners, the sine qua non of a successful certification scheme.

Companies in Rwanda thus came under pressure to do something, in an environment where guiding government regulation was lacking, and appropriate Corporate Social Responsibility (CSR) practices had never been developed. They were thus open to the concept of certification and CTC, which offered a guiding framework for CSR and mineral chain traceability.

The ICGLR and the Protocol

On December 15, 2006, eleven Central African nations⁴² came together to found the International Conference on the Great Lakes Region (ICGLR), an intergovernmental organisation dedicated to promoting the peaceful social and economic development of the Great Lakes region. At the same meeting, the eleven heads of state jointly adopted the Pact of Peace,

Stability and Development in the Great Lakes Region. The Pact contains 10 protocols, but the key one for mineral certification is the *Protocol Against the Illegal Exploitation of Natural Resources*. Among its measures, the Protocol calls explicitly for the creation of a certification mechanism:

"...member states undertake to establish a regional mechanism ... to serve as a tool for combating the illegal exploitation of natural resources. This mechanism shall institute accredited standards as regards natural resource exploitation and shall include provisions on certification of origin..."⁴³

Within the region itself, there was thus clear support at the highest level in favour of a mineral certification system. To implement the measures outlined in the protocol, work began on the Regional Initiative Against the Illegal Exploitation of Natural Resources (RINR), a regional framework for monitoring and controlling natural resource exploitation in the Great Lakes region.

Enlightened Self Interest

Outside the region, for those voices that continued to argue a policy of disengagement, BGR presented an additional piece of intriguing research that further supported the case for a certification mechanism, on both moral and economic grounds. The research analysed the importance of artisanal and small-scale mining (ASM) – the predominant form of mining associated with conflict – to global primary mine output (see Figure 3).

The numbers were surprisingly high: 25% of the lifetime consumption of tin (cassiterite) came from ASM sources, 26% of tantalum (coltan), 6% of tungsten (wolframite), 10% of gold.

In light of these figures, German and other first world consumers had a moral duty to ensure that products

they relied on so extensively were produced in an acceptable manner. Economically, it was clear folly to leave such an important source of minerals in such a precarious supply situation. Pursuing certification was thus a clear case of enlightened self-interest.

The G8 Summit 2007

Taking advantage of Germany's turn in the rotating G8⁴⁴ presidency, and taking up BGR's extensive groundwork on mineral certification, the German foreign ministry placed the topic of artisanal mining and certification on the agenda for the 2007 G8 summit in Heiligendamm. In the ensuing discussions all eight industrial nations recognized the importance of the issue.

The final communiqué from the summit contained eight clauses on minerals and raw materials, highlighting the critical importance of transparency, and "good governance of mineral resources consistent with social and environmental standards."⁴⁵

Artisanal and small-scale mining (ASM), the G8 leaders noted, "are often conducted in an informal manner and do not meet minimum social and environmental standards...". To help rectify this salutation, the G8 leaders expressed their support for "a pilot study...concerning the feasibility of a designed certification system for selected raw materials."

Combined with the endorsement of the African heads of state as contained in the Protocol of the ICGLR, the G8 declaration meant there was now clear support at the highest political levels for a mineral certification system for Central African mineral production. BGR thus took up the challenge of initiating a pilot certification project together with partners in the ICGLR region.

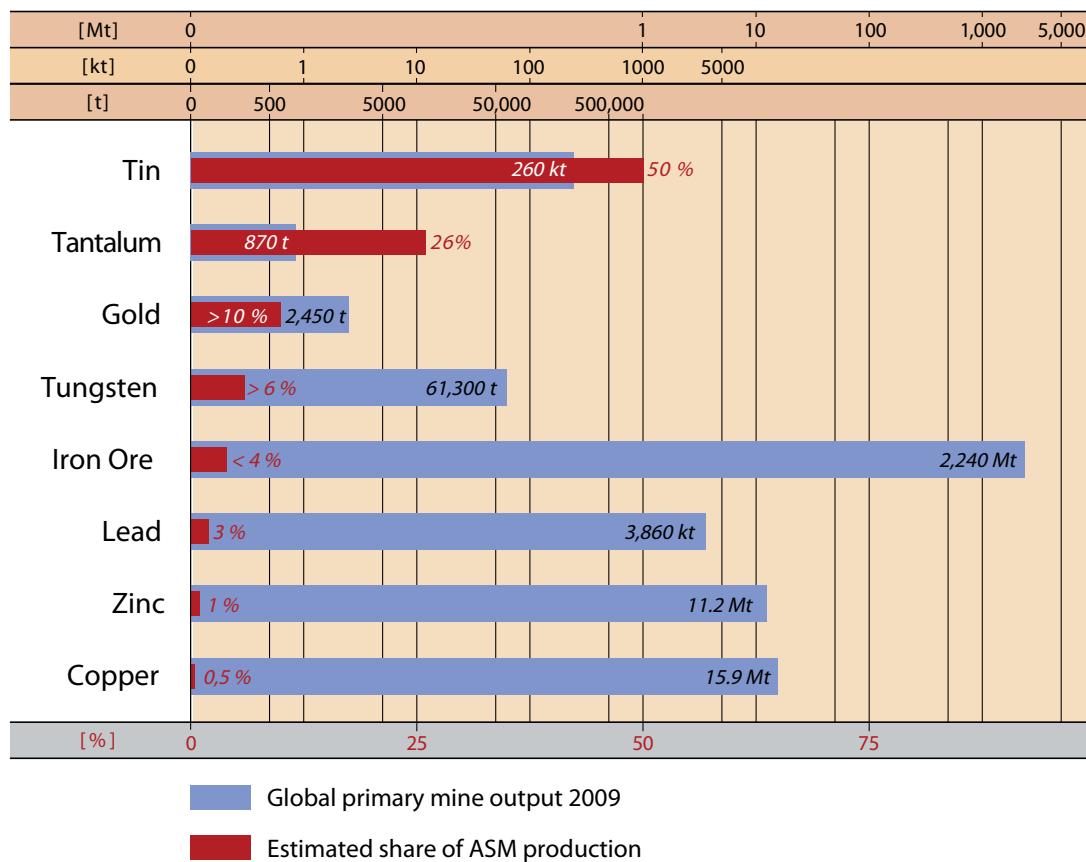


Figure 3: ASM Contribution to Global Mineral Production

2.2 Where to Start?

Before beginning a pilot project on certification for ASM minerals, BGR was forced to confront the question of where to start, or to put it more specifically, which minerals should they focus on, and what country should they approach as a partner?

The Optimum CTC Window

An analysis of the value to volume ratio for minerals provided insight as to where certification measures could best be applied (see Figure 4).

At the low end, low-value bulk minerals such as iron ore (97\$/tonne) tend not to attract artisanal production;

diggers armed with only picks and shovels can't move enough ore fast enough to make it worth their while. At the top end, the high price of gold (\$900/oz⁴⁶) and diamonds (\$12/ct⁴⁷) attracts vast numbers of artisanal producers. However, the potentially overwhelming value of any particular find, particularly with diamonds, tends to strongly inhibit the formation of shared work arrangements in the ASM exploitation of these minerals.

Having artisanal producers organized in some larger responsible unit such as a company or cooperative is not a prerequisite for certification; the Kimberley Process, which certifies proof of origin, covers unorganised ASM production. However, for a certification mechanism that aims to achieve improvements at the production level regarding minimum standards

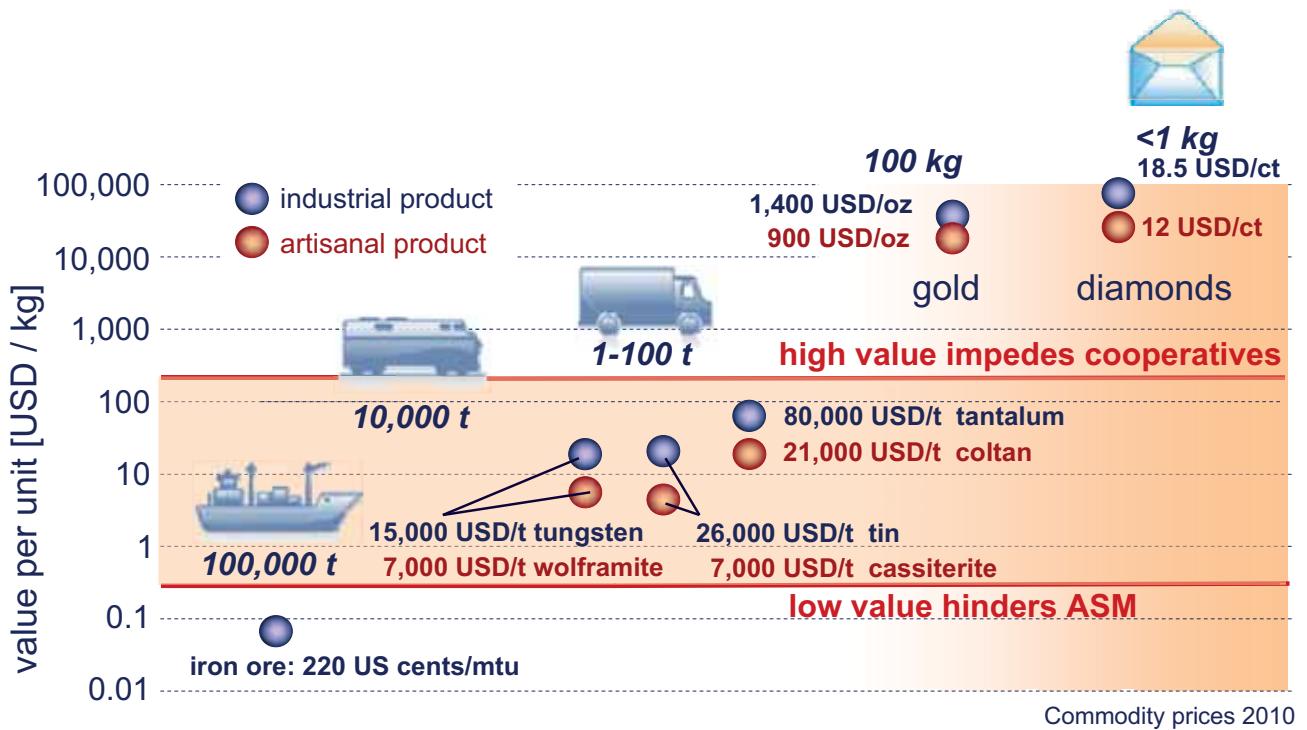


Figure 4: The optimum certification window

(e. g. no child labour) or production standards (i. e. working conditions, environment), some form of miner organisation may well prove necessary. Certainly, for the purposes of a pilot project, it was felt it would be simpler to concentrate on ASM scenarios where there was some significant degree of worker organisation.

The CTC window, then, was the magic band in the middle, including minerals such as wolframite (approx \$8,000/tonne), cassiterite (approx \$7,000/tonne) and coltan (approx US\$21,000) – minerals valuable enough to attract artisanal exploitation, but not so valuable that any one find could dwarf longer term cooperative effort, and with yields and ore concentrations consistent enough that artisanal producers were likely to organise into larger, more stable work crews. These minerals are also linked to conflict in the Great Lakes region.

The Case of Gold

The analysis above indicates that conditions for certification may be optimal within the CTC window, which includes the so-called "3Ts" of tantalum, tin and tungsten. Certainly, the analysis indicated that, in the pilot phase, concentrating on these three minerals would more likely yield useful results. However, gold is also a conflict mineral in the Great Lakes Region⁴⁸. Indeed, it likely contributes more to conflict financing (and lost government revenue) than either tin, tantalum or tungsten⁴⁹. For this reason gold is listed as one of the target minerals in the ICGLR's Regional Initiative Against the Illegal Exploitation of Natural Resources (RINR), in the OECD Due Diligence Guidance, and in the US Dodd-Frank Act.

Clearly then, a solution will have to be found to the challenge of artisanal gold exploitation and conflict

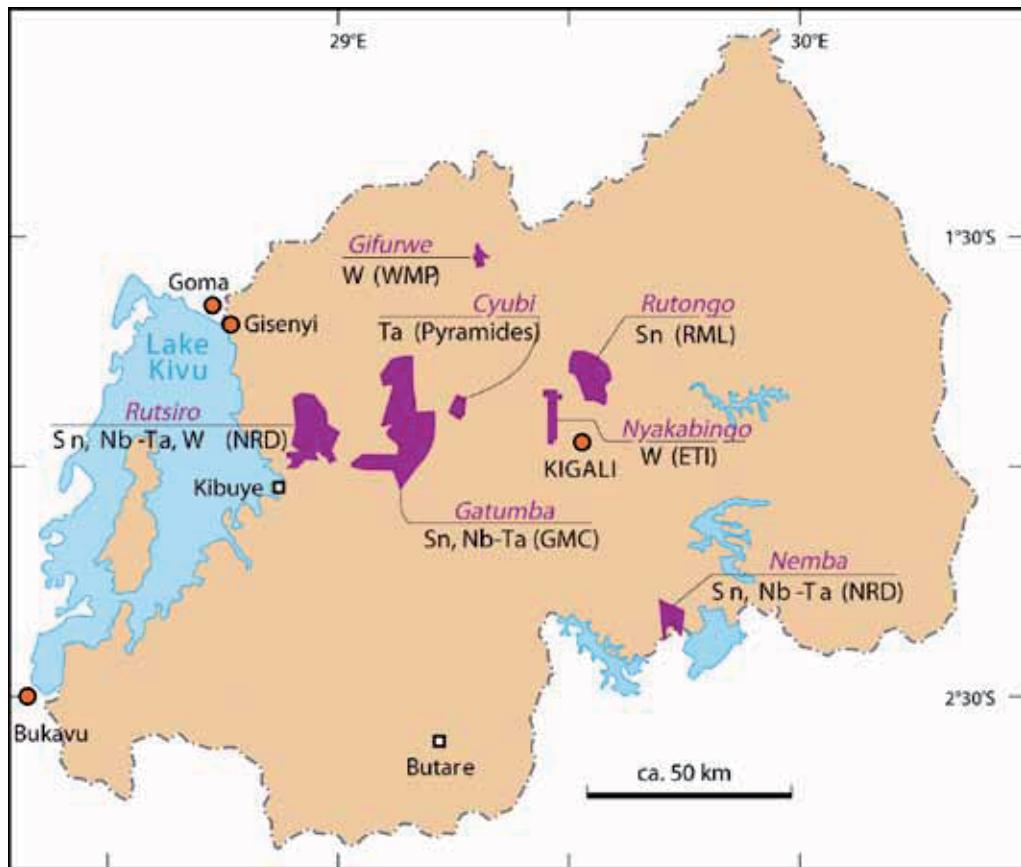


Figure 5: Map of Rwanda showing CTC pilot companies/concessions

financing in the Great Lakes Region. The on-going certification project in the DRC plans to address ASM gold production by providing an extra certification manual for gold (in addition to "TTT"). There is no significant gold production taking place in Rwanda at the moment, but, in case this situation changes, it might become necessary to adapt the certification scheme accordingly.

However, while the CTC framework stands ready, or nearly so, to encompass ASM gold production, the complexity of the downstream trading chain for gold, the fungibility of gold and money, and the highly fragmented and geographically diverse consumer jewellery market for gold has to date resulted in relatively weak demand for certification among end-users and downstream purchasers of Central African gold⁵⁰. This, in turn, may well slow adoption

of certification among ASM gold producers and traders. Some further awareness raising efforts among downstream purchasers, end-users and trading/entrepot nations may thus be required before CTC for gold begins to gain traction in producer nations.

Partner Countries - Rwanda

In terms of partner countries, Rwanda stood out from the first. The country was well organized but small (see map Figure 5), with only a moderately sized minerals sector comprising both independent artisanal miners and, importantly, a number of small mining companies. What's more, the companies themselves were semi-artisanal – with the organizational structure of a company, but the production techniques of ASM. For a pilot stage, all this would help in limiting the complexity

of the task, while providing lessons and results that would be useful in extending the certification concept to other, more fully artisanal situations both within Rwanda and beyond.

At a higher strategic level, Rwanda was an important player in the region, and in some ways a model of for neighbouring countries. A success in Rwanda would certainly have impact throughout the region. In early 2008, BGR approached Rwandan authorities about participating in a certification pilot.

2.3 Forging a Partnership

The Rwandan government was certainly interested. The CTC concept fit in with many of their own concerns for their mineral sector, in particular the need to secure market access for their minerals, and to regulate the newly privatized mineral firms to ensure their compliance with Rwanda government policies. However, Rwandan authorities wanted to make sure that CTC standards would be adapted to fit the local context, in accordance with their own laws and the mineral policy strategy of Rwanda.

Negotiations began on a working partnership and Agreed Minutes between BGR and OGMR on the pilot project were signed in September 2008 followed by an Implementation Agreement between Germany and Rwanda in January 2009.

The program objective, according to the agreement, was for "the participating pilot mine sites in Rwanda [to be] upgraded to the level of internationally accepted norms and standards by the instrument of CTC."

As the project progressed, it was further agreed to establish a broader basis for the development of the national process. In July 2010, a Memorandum of Understanding (MOU) was signed by the Director General of the Office of Geology and Mines of Rwanda (OGMR), the Director General of the Rwanda Bureau of Standards (RBS), and a representative of BGR.

The purpose of that agreement was "to establish and maintain Certified Trading Chains (CTC) which will ensure the transparency, social responsibility and economic development of the Rwandan mining sector."

Regional Contribution

The Rwandan government was also involved in the ICGLR project for a Regional Initiative Against the Illegal Exploitation of Natural Resources. The director of OGMR served on the Steering Committee charged with developing and managing the RINR. Supporting



Cassiterite mining at Masoro tunnel, Rutongo

a certification mechanism through the CTC project in Rwanda was thus seen as a Rwandan contribution to the regional initiative.

2.4 The Plan in Outline

With the partnership forged, work on a project plan developed quickly. The procedure for implementing CTC in Rwanda would proceed in a series of six steps (see Figure 6 below), which were agreed upon in the First Planning Workshop held with OGMR, BGR and project stakeholders in March 2009.

Step 1: Elaboration and Adaptation of a Set of Standards.

Develop a draft set of CTC standard for production and trading, with on-going adjusting and refining these in partnership with Rwandan government stakeholders.

Step 2: Baseline Audits and Recommendations

Assess the level of performance of a volunteer group of operators against the standard by performing a baseline audit on each operation. Recommend improvements to audit standards and to mining operators.

Step 3: Expert Monitoring and Technical Advice to Participants

Assist companies to improve their performance, by studying the results of the baseline audits and by providing appropriate information, advice and technical assistance. Give the companies some time to incorporate these lessons into their operations.

Step 4: Consultation with National Authorities and Stakeholder Group

Consult on the standards, audit results and expert advice with Rwandan authorities and all other relevant stakeholders.

Step 5: Compliance Audits and Documentation of Results

Re-audit the companies a second time, to gauge their improvement against the CTC standard. Document results.

Step 6: Dissemination of Results

Disseminate results to all stakeholders. Plan for the adoption of the CTC standard and procedures into the appropriate Rwandan or ICGLR Regional governing structures.



Ground sluicing at Gatumba



Figure 6: Steps to Developing the CTC Pilot Project in Rwanda

3. Developing a Standard

3.1 The Initial Draft

BGR began work on developing a general standard in early 2008. Professor Jim Freedman, a consultant with significant experience in the region, was contracted to develop a standard that would be both comprehensive but also practical, and applicable in the context of the Rwandan ASM sector.

Certifying mineral origin and traceability was to be a key part of the standard. Given the ongoing conflict situation in the region, it was imperative that the standard give assurance as to the clean provenance of mineral ore. However, the standard was also to include a significant Corporate Social Responsibility (CSR) element, including elements addressing working conditions and the environment.

In developing the standard, the consultant made recourse to applicable Rwandan legislation as well as the most relevant international standards. These included industry norms⁵¹, NGO human rights guidelines⁵², principles developed by the United Nations⁵³, and instruments developed by the Bretton Woods institutions⁵⁴.

However, the primary sources for the standard were the two "Integrity Instruments" of the Organization for Economic Cooperation and Development (OECD) – the Guidelines for Multinational Corporations (2000) and the Risk Awareness Tool for Multinational Enterprises in Weak Governance Zones (2006).

The OECD guidelines were selected in light of their international reputation, grounded in the 39 member states⁵⁵ that have signed on to these instruments and agreed to implement their provisions. Together, these 39 states generate 90% of all foreign direct investment flows globally, and are home to almost all major extractive industry corporations⁵⁶.

Using the integrity instruments as a basis, the consultant drafted a set of 23 standards. As the OECD guidelines were designed for international companies, the guidelines had to be adapted to the specific environment of artisanal mining. To accompany each standard, the consultant further developed a set of level descriptors measuring compliance. The level descriptor described five different levels of compliance, with a scale from 0 (non-compliant) to 4 (fully compliant) assigned to each level.



CTC kick-off workshop in Kigali, March 2009: CTC standard consultation with national stakeholders

The 23 standards fell into five broad categories, each embodying one of the principles of the CTC concept⁵⁷. These five CTC principles were as follows:

1. Origin and volumes of produced and traded goods as well as company payments to host government are transparent.
2. The company does not use child labour and ensures fair remuneration and work conditions as well as continual improvement of health and safety measures for all employees.
3. The company ensures security on company sites whilst respecting human rights.
4. The company consults communities in which it operates and contributes to their social, economic and institutional development taking into account gender sensitive aspects.
5. The company seeks continual improvement of its environmental performance.

The next step was to refine these standards.

3.2 Testing and Refining the Draft Standard

The draft standards were always seen primarily as a catalyst for discussion. Beginning in 2008, BGR began the process of adapting and refining the standards, through consultation with the Rwandan government and Rwandan companies, and through conferences and workshops involving civil society, government and academics. The sections below describe this consultation process sequentially, though in actual fact the processes moved in parallel, with significant overlap and positive reinforcement between the various types of consultation.

Conferences and Workshops

In October and November of 2008, BGR held open workshops on the CTC standards. The first was held

at the annual conference of the Communities and Small Scale Mining Program (CASM), held that year in Brasilia, Brazil. The second was held in Bonn, in cooperation with the NGO Fatal Transactions. Both workshops were open to a variety of interested stakeholders, including representatives from civil society (NGOs), academia, government, ASM and formal producers and international development consultants.

Participants at both workshops were given a detailed overview of the CTC project, its background and accomplishments to that point. Subsequently, participants discussed the concept and proposed set of standards in some detail, addressing both the appropriateness of the standards themselves, as well as the challenges of verification and appropriate mechanism for enforcing compliance.

In-Country Consultations – NRD and the Government of Rwanda

The first draft standard was further subjected to field testing, with the cooperation of the mining company Natural Resources Development (NRD) Rwanda. Though in operation for less than a year at that point, NRD agreed to allow its operations to be evaluated, with the understanding while perhaps few of its operations would meet the standard, the process would improve the standard as well the company's CSR capabilities.

Visits were made to all the active concessions operated by NRD, and essential data was collected on salaries, employee policies, security policies and fiscal obligations. This was followed by interviews with the owner and managers and other key personnel⁵⁸. These visits and interviews identified critical issues, including staff salaries, safety of artisanal workers, theft prevention, environmental standards and local taxation. These issues, in turn, served as the basis for extensive consultations with the relevant departments of the Government of Rwanda, among them the Ministry of Lands, Environment, Forestry, Water and Natural

Resources, the Rwanda Environment Management Authority (REMA), the Ministry of Labour, the Revenue Authority, and the Ministry of Local Government.

Through this process, the international norms became better adapted to Rwandan realities: some standards were re-written in response to Rwandan government concerns or expectations regarding sensitive matters such as bribery and collective bargaining; social standards had to be included which had received little or no mention in the OECD integrity instruments. Artisanal miners were a case in point. Though they are considered essential to mineral production in Rwanda, there is as yet no Rwandan legislation governing how artisanal miners are to be employed or compensated. The number of standards was reduced from 23 down to 20.

A stronger and more regionally appropriate standard set emerged as a result of this initial round of consultations. The next step was to expand the consultation and testing process to include a wider range of mining concerns.

3.3 Broadening the Test Base

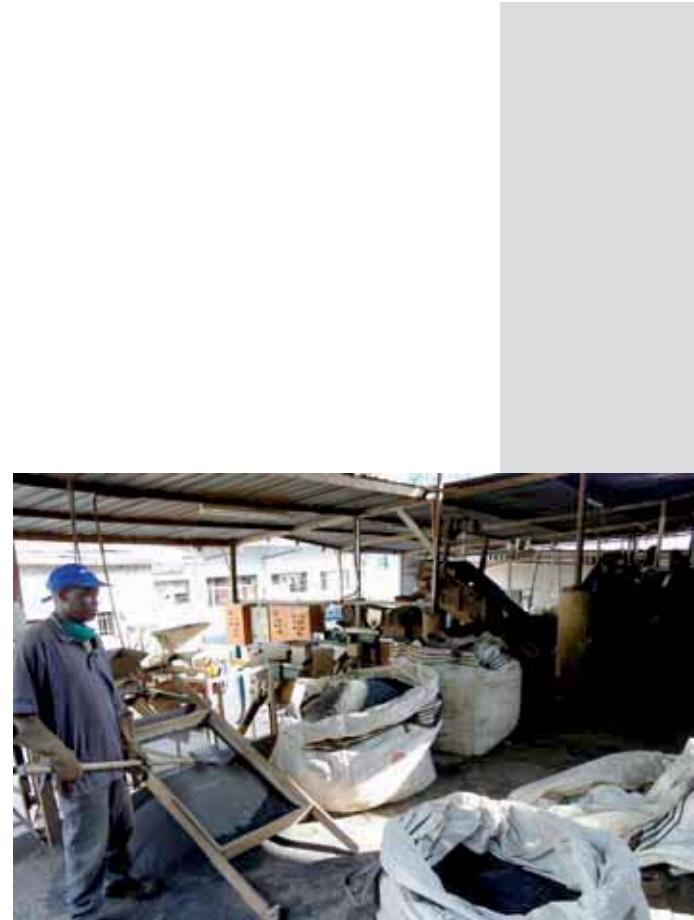
In March, 2009, OGMR and BGR jointly organized a planning workshop in Kigali for the pilot project on mineral certification in Rwanda. This was the beginning of the second round of consultations on the standard.

In-country representatives included officials from relevant ministries (MINICOM, MINECOFIN), relevant government divisions such as OGMR, RBS, as well as representatives from mining companies, the association of artisanal miners as well as individual traders.

At the workshop, three companies announced their voluntary participation in the CTC pilot – Euro Trade International (ETI)/Rutongo Mines (RML)⁵⁹, Gatumba Mining Concession (GMC) and Natural Resources Development Rwanda Ltd (NRD). A fourth company, Wolfram Mining and Processing Ltd (WMP), joined the pilot later in 2009⁶⁰ (More information on these

companies is available in Section 3.5 and Appendix 1).

The companies agreed to participate in the pilot testing of the CTC standard, by agreeing to subject their companies and some of their mining concessions to a series of CTC audits. Together, these four companies (and five concessions) produced 493 tonnes of cassiterite, 39 tonnes of coltan, and 349 tonnes of wolframite in 2009. Taking Rwandan export figures (excluding re-exports of DRC material) as a proxy for Rwandan production, the CTC concessions together accounted for 40% of Rwanda's wolframite production, 12% of its cassiterite and 4% of its coltan production⁶¹. The actual proportions are almost certainly higher⁶².



Ore concentrate upgrading at mineral processing plant Gisenyi

The purpose of the two-day workshop was to develop a road map of the project with participants as well as to adapt and refine the principles and standards, then jointly set out a program for testing the CTC standard through a series of trial audits.

The BGR presentations emphasized that CTC is tailored to the artisanal sector and small-scale mining sector, and benefits producers, artisanal miners, governments and end-consumers. The standards contain provisions regarding labour and working conditions, environment, community development, security (including the role of security forces in enforcing human rights), and the traceability and transparency of the mineral chain. BGR noted that the credibility of the standards and the independent auditing process were key to winning acceptance of the standard from the international community, including international NGOs. This in turn may be critical to securing market access.

This last issue had become point of some concern. In the United States, Congress was then preparing legislation that would require companies importing consumer electronics containing tin, tantalum, tungsten or gold into the United States to be able to positively demonstrate that the metals in those components had not originated in a Central African (DRC) conflict mine. Companies that could not comply risked having their consumer products tagged as 'conflict', with likely disastrous effects on consumer sales.

In response to the legislation, consumer electronics companies could be expected to pressure component makers, who would in turn put pressure up the chain on smelters and their suppliers to ensure they could demonstrate the origin and traceability of the minerals they purchased. Producers who could not demonstrate the origins of their mineral ores and supply chain due diligence would likely lose customers. Rwandan mineral producers had no effective traceability and supply chain due diligence mechanism, and thus risked being shut out of the largest consumer market on earth.

The ensuing round of consultations on the CTC standards, which included feedback from an independent auditor, served not to water down but rather to tighten up the standards, resulting in language that in several cases was more logical, enforceable and rigorous. Consultations extended beyond the workshop, proceeding for several months in more informal discussions and comments between the companies, government and BGR.

At the workshop itself, participants further agreed on a program and timetable for putting the standard into practise. The first step was a preliminary set of test or baseline audits, in which companies could see how their operations measured up. This would be followed by a round of technical assistance, during which BGR undertook to provide the companies with guidance and assistance on how to better meet their obligations under the CTC standards. This would be followed by a final set of compliance audits. The initial baseline audits were set to begin in mid-2009. The second, compliance audits were to be completed by the end of 2010.

3.4 The Working Standard Set

What emerged from this consultation process was a working set of 20 standards, organized into the 5 guiding CTC principles. The "working set" of standards formed the basis for the two rounds of auditing. However, the standards remain very much a work in progress. Adjustments were made to certain standards and level descriptors between the first and second round of audits. Continued refinement of the standards and especially the level descriptors will likely be necessary as the CTC project moves from the pilot phase to implementation and to integration with other regional and international initiatives (see 9. Next Steps).

Table 1: The CTC Working Standard Set

Principle 1. Origin and volumes of produced and traded goods as well as company payments to host government are transparent
1.1 Origin and production volume of minerals from the mine site throughout the trading chain are traceable.
1.2 Meet fiscal obligations required by host government law.
1.3 Publish all payments made to government according to internationally accepted standards.
1.4 Actively oppose bribery and fraudulent payments.
Principle 2. The company does not use child labour and ensures fair remuneration and work conditions as well as continual improvement of health and safety measures for all employees.
2.1 Pricing and distribution systems for artisanal miners and sub-contractors, as well as salary levels for employees are fair, legal, and regulated.
2.2 Ensure that no child labourers (age under 16) work on company sites.
2.3 Support workers' organizations and collective bargaining.
2.4 Provide essential protective safety equipment to workers and production services to support the work of artisanal miners.
2.5 Ensure occupational health in all company operations as well as insurance for workers.
2.6 Provide training for workers on safety, health and effective use of on-site facilities.
Principle 3. The company ensures security on company sites whilst respecting human rights.
3.1 Provide sufficient and adequately trained security forces.
3.2 Undertake security risk assessments.
Principle 4. The company consults communities in which it operates and contributes to their social, economic and institutional development taking into account genders.
4.1 Interact regularly with communities and local governments to address grievances and other common concerns.
4.2 Support local enterprises to supply company operations.
4.3 Support integrated development programs in nearby communities for livelihood security, social and physical infrastructure, and capacity building.
4.4 Obtain free, prior and informed consent before acquiring land or property.
4.5 Understand the situation and perspectives of the women in the company's area of influence and design and implement company operations in a gender sensitive way.
Principle 5. The company seeks continual improvement of its environmental performance.
5.1 Carry out an environment impact assessment as the basis for developing an environmental management and protection plan and strategy.
5.2 Properly treat or dispose of hazardous material and waste from its site(s).
5.3 Provide a plan for mine closure and make provision for the full costs of rehabilitation upon closure.

3.5 The CTC Pilot Companies

Four companies in Rwanda joined in the pilot phase of the CTC project in Rwanda: Natural Resources Development (NRD), Gatumba Mining Concession (GMC), Eurotrade International (ETI)/Rutongo Mines (RML), and Wolframite Mining and Processing (WMP). Though there are obviously differences from company to company, the four pilot firms share enough similar characteristics to enable sketching out an idealized schematic of the typical pilot company mineral chain, as shown in Figure 7 below.

All four companies have legal title to mineral concessions in Rwanda, which they choose to exploit making use, apart from their regular employees, of teams of artisanal miners. These teams of miners are not company employees, but rather "sub-contractors", paid solely on the basis of their mineral production. Several of the companies do provide "productive services" to their miners, often in the form of trained technicians to blast harder rock formations. Company treatment of sub-contracted miners varies greatly. Some companies treat sub-contractors almost like employees, and provide them with health insurance and protective gear (PPE). In other companies, company contact with the

sub-contracted miners is (or was) conducted primarily (often solely) via the team leader or gang boss.

It is the gang boss who selects miners to work on his team, and organizes their work. At the end of each working day, the minerals produced by each team are stored – separate from those of other teams – in a company warehouse at the mine site. At many sites, this "primary" pre-concentrate material goes through a basic upgrading process at the mine site – often once a week or so - before being transported to the company's main facility in Kigali or Gisenyi.

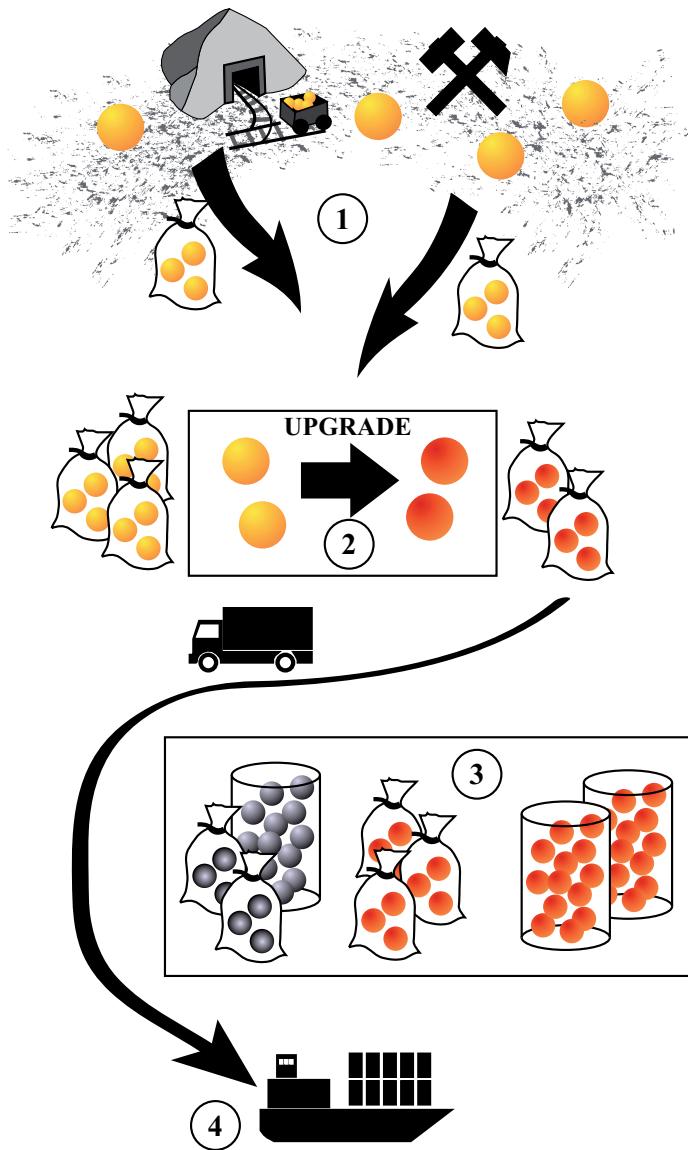
The company normally weighs and samples the separate production of each team at this point. Teams are paid based on the volume and the grade of the concentrate they produce. The team leader then receives payment for the minerals delivered, and oversees distribution of the proceeds of that delivery to the members of his team.

The work to this point generates various levels of paperwork, with the details varying greatly from one company to the next.

At the company facility, material from many different mining teams and (sometimes) from different concessions is mixed together (aggregated) and often processed to increase the mineral concentration. From this upgraded material, different consignments or lots of material are prepared for shipment. The weight and mineral concentration of these lots is always recorded. Some companies sell the material directly to an overseas buyer. Others sell to mineral traders in Kigali, who then further upgrade the material and ship it on to their own overseas customers. The mineral trader may also act as a logistics partner and facilitate concentrate export, without acting as a buyer.



Concentrate bag tagging at Gifurwe



Artisanal miners extract ore from dig sites on concession

- extracted ore may be washed/ground sluiced on site to obtain ore concentrates
- miners may temporarily store concentrate near dig site for transport aggregation
- transport as 50 kg sacks or smaller units (depending on size of operation)

Central company storage/processing facility (on-site or major town)

- concentrate aggregation from multiple sources (from within the same company), typically into 50 kg sacks
- trucking to mineral hub

Mineral hub (Kigali, Gisenyi): trader or logistical partner

- formal grade analysis, possibly further concentrate upgrading
- aggregation of multiple sources (from same or different producers or traders) to fill drums and 22 t containers
- formal export procedure, trucking to exit port

Exit port (Dar-es-salaam, Mombasa)

- ore concentrates shipped to overseas customers (e.g., smelters)

Figure 7: A Typical Mineral Trading Chain as Applicable for CTC Companies in Rwanda

4. Applying the CTC Standard Set – Baseline Audits

4.1 Why Audit?

Credible independent auditing is the key feature to any successful certification scheme. Independent auditing is also a basic requirement in every proposal or initiative put forward by reputable stakeholders to address the conflict mineral phenomenon⁶⁷. Certification hinges on a pledge, made by producer to consumer, that a product will be sourced and produced according to an agreed-upon standard. The audit serves as the guarantee to the consumer and the general public that this pledge was kept.

The credibility and independence of the auditor is thus a critical feature of the audit. An auditor must have the skills and experience in order to carry out an audit with competence. An auditor must also be free – and seen to be free – and any financial or institutional constraint that might affect his ability to report fully and truthfully on a company's performance.

For similar reasons of credibility, the results of the auditing process must be made available to the consuming public in some form⁶⁸. Companies often have concerns about commercially confidential information leaking out in audit results. While this is a legitimate concern, it must be balanced against the goal of maintaining the consumer's confidence in the credibility of the audit process. An extensive summary of results is likely the minimum that can be released while still maintaining audit credibility.

Two Rounds of Audits - Baseline and Compliance

For the CTC project, it was decided to have two rounds of auditing. The first round – the baseline audit – was intended first to test out the viability of the auditing, and secondly to provide some initial data on

company performance as a base for CTC consulting to support company management in improving company performance in identified key areas. The second round – the compliance audits – were designed to truly test the companies against the CTC standard, and thus determine which companies would be eligible for certification.

4.2 Types of Audits – Independence and Credibility

The credibility of any audit is inextricably tied to the structural independence of the person or company performing the audit. Table 1 (below)⁶⁹ outlines the different types of auditing arrangements, showing why credibility rises with the independence of the auditor.

With a first party audit, a company examines its own operations, generally keeping the results confidential. While first party audits can be a useful tool for companies examining their own operations, they are generally perceived as having little credibility outside the company itself.

In a second party audit, a client or purchaser conducts the audit, or else a trade association develops a set of standards and monitors the performance of one of its members against that standard. Civil society organisations (NGOs) typically have strong concerns about the reliability and veracity of second party audits, which often affect their acceptance by consumers.

In a true third party audit, the audit is performed by an entity that is completely independent of the company being audited, as well as free of any financial or other interests in that company. Third party auditors normally have to go through an accreditation process in which they demonstrate their competence and their independence. Third party audits have the most credibility with consumers, NGOs and other outside observers.

Table 2: Levels of Auditor Independence

Level of Independence	Who Does the Assessment?
First Party	Assessment conducted by the person or organisation that is undergoing evaluation. A first party audit includes internal audits or peer reviews. e.g. company manager
Second Party	Assessment conducted by a person or body that is related to or has an interest in the organisation being evaluated, such as a client or purchaser of products from the organisation. e.g. buyer, trade association, paid consultant Also a second party audit when an industry has an association that creates some standards for its members and then verifies in its own way whether the members meet those standards. e.g. ITRI
Third Party	Assessment conducted by a person or body that is independent of the organisation being evaluated, and of user interests in that person or organisation. Certification and accreditation bodies most often carry out third party audits. e.g. FSC, FLA, MSC, KPCS

The CTC Rwanda scheme opted from the beginning for third party auditing, in order to ensure the maximum credibility for the certification scheme. Putting this into practise meant locating and engaging a qualified 3rd party independent auditor.

4.3 Selecting and Accrediting the Auditor

Determining the process by which independent auditors will be accredited and selected is an integral part of developing a full-fledged certification system. The accreditation process for auditors ensures that an auditor has both the necessary skills and the independence to perform a professional, credible independent audit. Different certification systems have different procedures for accrediting auditors. What all

the schemes have in common, however, is a separate accreditation body and a published accreditation standard.

However, these steps are really required for a stand-alone certification scheme, and even then only in the implementation phase. The current CTC project is still a pilot. For the implementation phase, CTC is more likely to be integrated into the regional framework of the ICGLR (see 9. Next Steps).

For the pilot project, officials from BGR and OGMR put out a public tender for an independent auditor, then applied much the same criteria of competence and independence – though in a non-formal manner - to the resulting applications. Through this process a South African auditor, Dr. Nellia Mutemeri, was selected to conduct the first round of baseline and compliance audits.

4.4 Audit Methodology

The goal of the baseline audits was to determine the compliance of each participant companies with the CTC standard set. As mentioned above, the standard set contains 20 standards, grouped under five principles. Summarized in short form, these principles are:

1. Mineral Traceability, transparency of taxation;
2. Child labour, wages, worker health and safety;
3. Security while respecting human rights;
4. Respect for local communities;
5. Environment.

The baseline audits consisted of a preparation phase, a research phase and an analysis and results phase.

In the preparation phase, the auditor prepared structured lists of questions and questionnaires to use in interviews with companies, miners, workers and other interview subjects.

The research phase required the auditor to collect, as a first step, a good deal of background information on Rwanda and the Rwandan mineral sector, largely through interviews with knowledgeable Rwandan sources. For example, in order to evaluate whether a company was paying all due taxes, the auditor had to interview officials at the Rwanda Revenue Service (RRS) to determine what those taxes might be, and what documents would serve as proof of payment. Similarly, in order to evaluate whether companies' were meaningfully engaging with local communities, the auditor had to determine who those communities were, and what level of engagement could be reasonably expected under Rwandan law and tradition. In order to determine traceability of mineral consignments, the auditor had to interview company officials and government officials to develop schematic diagrams of each company's mineral chain⁷⁰, then determine

which documents from the company or government could serve as proof of custody for each step in the chain. Similar background research was required to understand Rwandan norms for working conditions and the environment.

In the second part of the research phase, the auditor conducted field visits to each of the companies' main offices and a selected sub-set of their mining concessions, examining production books and employment records, collating documents and conducting interviews according to the prepared lists of questions. The auditor further visited some of the local communities adjacent to the inspected mining concessions⁷¹.

In the analysis and results phase, the auditor reviewed the material collated during the research phase, analysed the performance of each company against each of the 20 standards, and assigned a value to the company's performance.



On-site verification of mineral traceability during CTC audit

The site visits for the audits began in July, 2009, and the base line audits were completed and submitted in September, 2009. The results are shown in Section 4.6 below.

4.5 Auditor Recommendations for Subsequent Audits

In her report, the auditor noted a number of problems and issues, and suggested ways these could be remedied in future audits. These included:

- Poor responses from the key informants: the auditor suggested addressing this issue by structuring the information gathering sessions to better suit the interviewees, and by giving as much notice as possible so that interview subjects could adequately prepare.
- Multiple mining sites involving travel and difficult logistics: the auditor suggested selecting, with the assistance of the companies⁷², a few representative but accessible mining sites.
- Poor and inconsistent documentation: The auditor suggested companies should learn to keep and compile evidence showing their compliance with CTC standards, preferably preparing a portfolio of such evidence in advance of audits.
- Special contracts: the auditor noted that special tax regimes some companies claimed to have been granted by the Rwandan government complicated the task of verifying whether the company had fully remitted all its taxes. In particular, the language in some contracts offered as proof of a company's tax exempt status was often obscure and open to interpretation. The auditor suggested the government tax authorities develop a system such

as a "tax clearance certificate" which would state clearly that – in the eyes of the government – a company had paid all due taxes.

4.6 Baseline Audit Results

Practicality of the Auditing Process

The first and most important result of the first round of baseline audits was that it demonstrated the viability of the auditing process in the Rwandan context. The auditor noted the difficulties of reaching some of the more remote production sites, obtaining meaningful interviews with some work crews, and obtaining full documentation for some processes and tax payments. Nonetheless, for all four companies the auditor obtained the information required to perform a credible evaluation. While auditing is a reasonably common feature in manufacturing processes and even in industrial mining, it had not been previously attempted for artisanal mining in an African developing country such as Rwanda. The successful completion of the baseline audits was thus no small accomplishment.

The Scoring Mechanism

For each standard, the auditor was required to evaluate all the available information, then match the actual condition or status of the producer with the appropriate level descriptor from the CTC standard, and assign the corresponding score. The auditor was further required to justify the scoring by citing the evidence supporting her conclusions. In some cases, where a company's performance fell between different level descriptors, the auditor assigned half marks (i.e. 1.5, 2.5).

In the development of the CTC scheme, a minimum score of 2 for most standards had been suggested as a guideline. In the future, this might be applicable to all

standards. However, at the moment, some standards – such as payment transparency – are partly dependent on government action, and so beyond company control to improve. To fail an audit as a result of a low score on such a standard was considered to be overly harsh. Discussion continues on this point; as of yet, the scoring mechanism remains a guideline only.

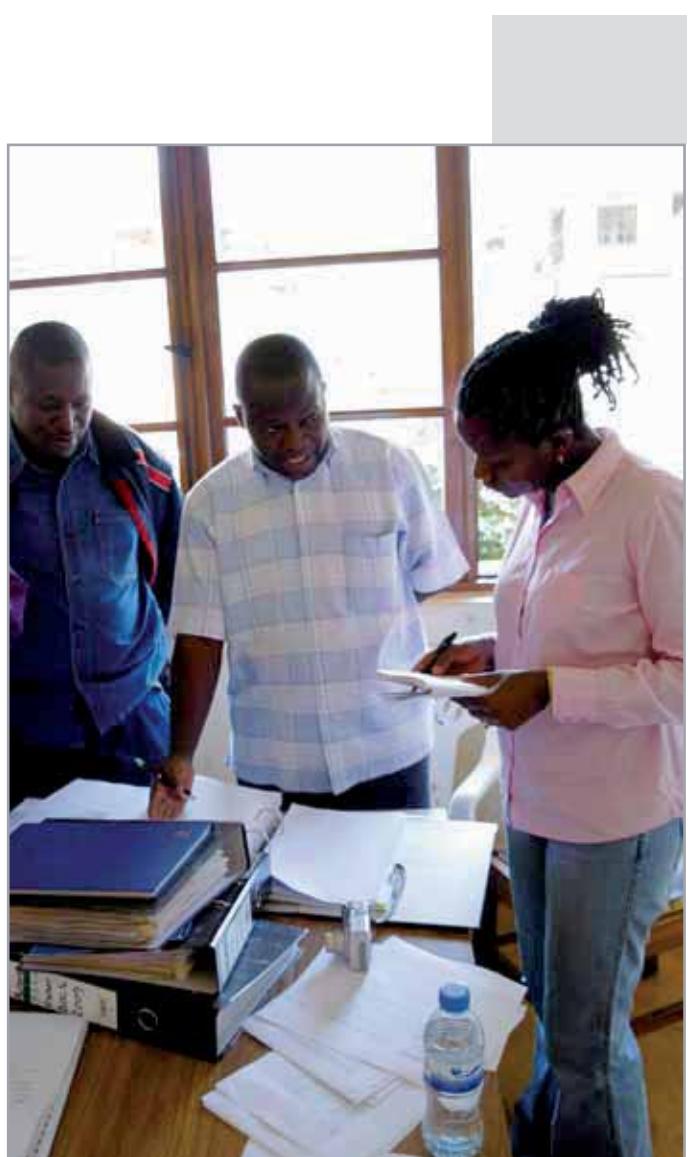
For the entire set of 20 standards, the guidelines suggested an average mark of 3, equivalent to a score of 60 out of 80 for the entire 20 standards in the audit⁷³. The sole exception to the ‘minimum of 2’ rule was for Standard 1.1, regarding traceability. Given the importance of mineral traceability and origin to the credibility of the scheme, it was suggested that companies should have to score a perfect 4 for this standard.

As noted above, however, the scoring mechanism as yet remains a guideline only.

Numerical results

The results of the baseline audits are shown below in Table 3. While keeping score is a natural impulse, the intent of the baseline audits was never to evaluate one company relative to another, or even individual companies relative to a passing or failing grade. Rather, these audits were intended first and foremost to test out the audit process and determine whether the required information could be gathered in a reliable way in a reasonable time frame.

Beyond that, the baseline audits were intended as research and informational tools, to help companies identify their strengths and weaknesses, and to suggest areas where advice and technical assistance would be of use. While some results were higher or lower than others, the results suggested that the candidate companies would benefit from assistance in all five principal CTC areas. Providing this assistance was the goal of the next step of the project.



Verification of company documentation during CTC audit

Table 3: Results of CTC baseline audits at four Rwandan mineral producers 2009-2010

Baseline Audit	NRD	GMC	ETI/RML	WMP
1. Transparency of mineral flows and payments				
1.1 Origin and volume traceable	2.5	2.5	2.5	3.5
1.2 Meet fiscal obligations to government	3	3	n/a	4
1.3 Publish all payments to government	1	3	1	1
1.4 Oppose bribery and fraud	3	2	2	2
2. Working conditions				
2.1 Salary levels and artisanal prices fair	3	3	3	3
2.2 No child labor (children under 16)	4	4	4	4
2.3 Support collective bargaining	2	3.5	3	4
2.4 Provide safety equipment and productive services to workers	3	2	4	2.5
2.5 Ensure occupational health and insurance	3	3	3	2.5
2.6 Provide training to employees on health and safety	1.5	1.5	4	2
3. Provide security respecting human rights				
3.1 Provide sufficient, trained security	3	3	3	3
3.2 Undertake security risk assessments	1	1	1.5	1.5
4. Community consultation and development				
4.1 Interact regularly with local community	3	3	3	3
4.2 Support local enterprises to supply company	3	3	3	3.5
4.3 Support integrated develop programs in nearby communities	2	2	2.5	2.5
4.4 Informed consent before acquiring property	4	4	n/a	4
4.5 Gender sensitivity in operations	1	1	1	1
5. Environmental performance				
5.1 Carry out environmental impact assessment	2	2	2	1.5
5.2 Properly dispose of hazardous waste	1	2	1	0.5
5.3 Make provision for cost of mine closure	1	1	1	2.5
Total points	47.0	49.5	44.5	51.5

5. Improving Company Performance

5.1 Technical Assistance

The baseline audits had determined how companies, unaided, performed against the CTC Standard Set. The audits further provided useful insight into those areas where the companies were most in need of assistance in upgrading their operations to meet internationally accepted standards.

For the next step of the project, the CTC pilot set out to provide that assistance, commissioning a set of five consultancies by recognized experts to analyse aspects of the companies' performance pertaining to the standard set. The consultants also offered advice and recommendations for improvement, along with outreach and assistance, either through workshops or other forms of engagement. The five consultancies were loosely based on the five CTC principles, and included work on traceability and record keeping systems, corruption, community relations and gender, occupational health and safety, and environment.

5.2 Record Management, Traceability and Mineral Tracking

The traceability standard is the first of the 20:

"1.1 Origin and production volume of minerals from the mine site throughout the trading chain are traceable"

Most companies had performed reasonably well on this standard, with scores ranging from 2.5 to 3.5. Unfortunately, with the world's ever-increasing focus on conflict minerals, merely good was insufficient. To qualify as certified, companies had to score a perfect 4 on the traceability standard.

What's more, the required level descriptor (4) for this standard was one of the most rigorous and detailed in the entire standard set. In full, the required level descriptor reads as follows (footnoted definitions included immediately below the text):

4 = Producer and buyer¹ plausibly declare amount, type, and origin of mineral shipments clearly, correctly and verifiably at the mine, at points where material is aggregated, as well as at export and import² sites. Producer and buyer take appropriate measures³ to ensure the integrity of mineral shipments and allow for an independent third party to take any mineral sample at any time for AFP⁴ analysis.

Explanations for Standard 1.1:

¹ Buyer: entity purchasing minerals from a producer; for auditing purposes, it is the responsibility of the producer to ensure the buyer is adequately documenting the producer's mineral shipments and to facilitate auditor access to buyer documentation relevant for traceability.

² Declaration of mineral shipments at import sites only refers to situations where the producer and the importer are in a direct business relationship.

³ "Appropriate measures" refers to

- (1) secure mineral storage sites;
- (2) the presence of adequate security forces to ensure the physical integrity of a mineral shipment with optional sealing for company-internal transportation (e.g., from mine site to processing plant);
- (3) sealing of individual mineral transport bags/containers and adequate security presence once the ownership of the material shifts from one party to another (e.g., from producer to buyer).

⁴ AFP refers to the Analytical Fingerprint technique developed at the Federal Institute of Geosciences and Natural Resources (BGR) as defined in the document BGR (2010), Analytical Fingerprint (AFP), July 2010 update.

As written, the standard demands immaculate record keeping of companies wishing to meet the requirements of this standard. The requirement that companies ensure the integrity of mineral shipments also puts the onus on companies to ensure the secure transport and storage of mineral material. The requirement that production levels be plausible lead in turn to the auditor performing plausibility checks on production (as noted below in Section 7).

Traceability – Primus inter pares

The study on record management and traceability⁷⁴ was conducted by a team from the consulting firm Resource Consulting Services. From the beginning traceability had been the key standard, primus inter pares in the CTC standard set. With the July 2010 passage of the U.S. Dodd-Frank Act, this became even more relevant. Under the terms of Dodd-Frank, Rwandan companies that could not trace their materials to source faced the possibility of losing customers whose downstream mineral chain lead in to U.S. market.

Certification is based on the premise of engaging with companies, allowing them to continue to do business while using market forces and consumer demand to lever improvements in corporate social performance. Without the US market, many Rwandan companies could quite conceivably close precluding any possibility of improvement.

Requirements for Mineral Traceability

The purpose then, of the traceability study was to detail the record keeping systems currently in place in CTC pilot companies in Rwanda, advice companies on possible improvements, and if possible devise a system that would provide document-based mineral traceability for the mineral chains of CTC pilot companies.

The study further analysed the minimum requirements that any tracking system would have to fulfil in order to meet the CTC standard for traceability, whatever technology was used. These consisted of:

1. Continuity of information along the mineral chain;
2. Effective Information Management:
 - a. International standards suggest records should be kept for a period of five years;
 - b. Digital storage of data is strongly recommended
3. Full traceability of all material through concentration and aggregation processes;
4. A reporting mechanism

Records must be submitted and kept by a central certification or regulatory authority.

The consultant proposed a traceability system – the CTC Passport – that would meet the analysed minimum requirements, and then held workshops with companies to explain and refine the concept.

While the CTC passport was one part of a possible solution to the challenge of traceability, other possibilities were also being developed. ITRI, an international lobbying association of tin producers, had developed its own traceability scheme termed iTSCI for cassiterite⁷⁵, a system involving numbered tags, documentation, and electronic record keeping⁷⁶. In 2010, ITRI field tested the scheme briefly at a single mine in the eastern DRC. Seeing the iTSCI scheme as a meaningful addition to supply chain due diligence management in Rwanda, OGMR in September, 2010 entered into an agreement with ITRI⁷⁷, by which the iTSCI traceability scheme would be adapted to local conditions and progressively applied throughout Rwanda. By February 2011, the adapted iTSCI scheme had been introduced at five concessions of three mining companies in Rwanda.

The CTC standard on traceability does not dictate a particular technology or technique, but rather a level of performance – whatever the technology employed, it will have to meet the CTC traceability standard. Rwanda's adoption of the iTSCI tagging system is thus entirely compatible with the CTC certification program.

However, it is important to note that mineral traceability is but one element of good supply chain due diligence practice. Traceability, however implemented, has to be verified through independent on-the-ground audits to achieve credibility at the international level.

5.2 Bribery and Illicit Payments

Two standards were addressed by this consultancy, one on transparency, the other on corruption and fraud. Transparency is addressed by standard 1.3

1.3 *Publish all payments made to government according to internationally accepted standards*

Three of the four companies scored only 1 on this standard, a status described by the following level indicator:

1 = *The company does not publish payments made to government yet discloses payments if requested.*

Corruption and fraud is the subject of standard 1.4:

1.4 *Actively oppose bribery and fraudulent payments*

The pilot companies scored surprisingly low on the bribery and fraud standard, with three of the four companies receiving the minimum passing score of two out of 4. Level 2 is described as follows:

2 = *An unwritten company-wide policy forbids company personnel from accepting fraudulent payments or making them to government officials.*

To help improve these scores, a consultancy on transparency, illicit payments and bribery⁷⁸ was prepared by Harrison Mitchell, working for Projekt-Consult GmbH, a German mining consulting firm.

Transparency

With regard to the publication of payments made to government, several of the lowscoring companies responded with concerns of business confidentiality, suggesting that the publication of this information could benefit competitors. These companies also noted they would be willing to publish such payments, if directed to do so by the Rwandan authorities. Improving performance on this standard would seem to require clear direction from the Rwandan government.

The consultant noted in his report that Rwanda is considering joining the Extractive Industries Transparency Initiative (EITI), a multi-nation initiative between governments, industry and civil society, which has at its core the principle that oil, gas and mining companies divulge royalties, taxes and other payments made to their host governments. To implement the EITI, governments typically pass a law or executive order to ensure corporate compliance.

The consultant explained the advantages both to companies and government of membership in EITI, and recommended pilot companies support the Rwandan government initiative to become a full EITI member.

Little Corruption in Rwanda

The companies' low scores on the corruption standard were surprising because Rwanda is an exception among nations of the Great Lakes in that it has and rigorously enforces a policy of no tolerance toward corruption. The Anti-Corruption Law of 2003 requires all entities, including companies, to set up internal policies to mitigate corruption:

"The officials in organs of the public service and public institutions, those in private institutions, companies and non-governmental organizations are under obligation to set up mechanisms for the prevention of corruption and related offences."⁸⁰

However, on closer examination, most companies that scored low did so because, while they had an anti-corruption policy among senior managers, they had not formalized it nor ensured that the policy extended down through line employees, and thence through to sub-contractors. Their scores thus corresponded to level indicator 2:

„An unwritten company-wide policy forbids company personnel from accepting fraudulent payments or making them to government officials.“

Formally articulating an anti-corruption policy and ensuring its enforcement would raise these companies up to level 3. The consultancy provided a draft anti-corruption policy for companies to adapt, and provided advice on how to ensure the policy was understood and enforced by managers and employees.



Concentrate panning at Gifurwe

Evaluating Risks

While Rwanda's efforts to eliminate corruption are laudable, the country is not as yet corruption free. Rwanda's is ranked 89th out of 180 nations on Transparency International's Corruption Perception Index, on a level comparable to Mexico, Morocco and Lesotho⁸¹—a great improvement on years past, but still with some way to go.

The consultant thus performed a de-facto risk assessment for each company, identifying areas where corruption or the solicitation of payments did or could potentially pose a problem. True to their reputation, Rwanda's national institutions proved models of probity in their dealings with mining companies; no issues were reported with regard to either the National Revenue Authority or OGMR⁸².

Local Officials, Local Communities

The same rectitude was alas not found among local government officials, nor in local communities. The majority of mining firms reported requests for 'facilitation payments' from local police and local government officials, and requests from local communities for gifts or other services. Several of the companies reported acceding regularly to such requests. While not strictly bribery, these payments fell into a legal grey area, not well defined in law.

The consultant recommended that the companies develop a formal policy and mechanism for dealing with such requests. To help prevent misunderstandings with local communities, it was recommended that a company-community committee be formed, where issues of gifts, contributions, facilitation payments and other requests could be discussed and explained. The consultant recommend that, if made, payments to the local community be approved by senior management

and communicated to locals in a transparent and effective manner.

Sub-contractors and Gang Leaders

The consultant further examined the situation and performance of sub-contractors, notably the work gangs of artisanal miners who dig out the mineral ore. While extending the company policy on bribery through to sub-contractors would push performance in the standard up to a perfect 4, here there were more serious issues.

In particular, the dominant position of the senior sub-contractor or gang boss had created a situation with significant opportunities for abuse of power. It was the gang boss who determined who could work on a gang as a miner. At the time of the consultancy, women miners in some sites reported that gang bosses demanded sexual favours in return for the right to work on a mining gang⁸³.

The gang boss was further given the responsibility of distributing payments to his crew, after receiving a lump sum from the company. As the company did not typically verify how much money each miner receives, and as miners were often unclear as to how much money they were owed, this provided the gang boss a significant opportunity to abuse his position to pocket an inordinate share of the mining proceeds for himself.

To deal with these sub-contractor issues, the consultant recommended a transparent system of payments, so that each miner would be aware of the exact amount he was due, as well as a system of checks and balances, by which miners would confirm receipt of payment via a signature.

Taking note of these recommendations, the CTC team in consultation with stakeholders adjusted Standard 2.1 to require companies to pay closer attention to payments to sub-contractors⁸⁴. The level descriptors for this standard were similar to include specific requirements for spot checks on artisanal miners payments.

The consultant further recommended that the company have regular meetings with gang leaders, and separate meetings with miners, to discuss any problems. Finally, it was recommended that the companies create a gender sensitive whistle blowing mechanism, as a way to report abuse or complaints against gang leaders. Subsequent audits noted improvements in both these situations, as shown in the results and discussion in Section 7.

Theft

Theft was reported as a significant problem for all companies; miners and gang-leaders are believed to sometimes sell the ore they dig out of company concessions directly to independent traders. These independent buyers are able to offer a better price, as they have none of the overhead required to run a mining company. In effect, the miners selling to external traders are stealing company ore. Although this was not strictly a problem of corruption, it has the potential to affect aspects of the CTC scheme such as traceability, by diverting mineral flows from recognized and traceable channels.

Accordingly, the consultant offered guidance on how to diminish or eliminate this problem. It was recommended that companies work to improve relations with miners and the local community, so that stakeholders develop a sense that the company is working for their best interest. The consultant further recommended that

companies make a point of always paying workers and miners on time – theft was often reported to result when companies delayed payment for mineral material already dug and delivered, leaving miners with a problem of cash flow. As a further surety, the consultant recommended companies develop a good working relationship with the local police force.

Taking into account this recommendation, the level descriptors for the revised Standard 2.1 were similarly revised to include a requirement that subcontracted miners be paid at 'regular' intervals, defined as at least once per month.

Workshop on Corruption

On May 27th 2010, the consultant held a workshop at OGMR to present the draft code of conduct and proposed anti-corruption policy to executives of the CTC pilot companies. As the main points of the anti-corruption policy, it was recommended that companies take the following steps:

- a. **Adopt, publish and communicate a company Code of Conduct:** The code of conduct should contain general statements of conduct as well as several points that specifically address corruption.



- b. **Develop an Internal Risk Assessment and Guidelines to deal with risk:** The guidelines should contain specific policies to address such identified risks as payments in kind, gifts, facilitation payments, as well as financial risk.
- c. **Develop a policy on transparency and revenue disclosure to international best practice:** This would be particularly facilitated were the Rwandan government to join the Extractive Industry Transparency Initiative (EITI). CTC companies were encouraged to support Rwanda joining EITI.
- d. **Implement senior management oversight, awareness-raising, training and reporting mechanisms:** A senior company manager should be assigned to oversee this task.

Finally, in response to feedback from participating companies, the consultant developed and delivered a series of hands-on tools to help companies implement the anti-corruption policy, and deal with the specific issues they were facing.

5.3 Occupational Health and Safety

Three standards in the CTC standard set deal with occupational health and safety of workers. They are, as follows:

- 2.4 Provide essential protective safety equipment to workers and production services to support the work of artisanal miners;
- 2.5 Ensure occupational health in all company operations as well as insurance for workers;
- 2.6 Provide training for workers on safety, health and effective use of on-site facilities.

The pilot companies performed reasonably well in this area. For Standard 2.4, the average of the four companies' scores was 2.9 (with individual scores ranging from 2.5-4); for Standard 2.5 the average was 2.9 (range 2.5-3); for Standard 2.6 the average score was 2.3 (range 1.5-4).

If there was a general weak point to the companies' performance, it was that health and safety standards – such as the provision of safety equipment and training – were observed for employees, but not extended (or not consistently extended) to the companies' large contingent of sub-contracted artisanal miners. A secondary issue for many companies was that, while safety training or accident reporting might exist in practise, there was little formal documentation of these programs.

This issue was addressed in part by a modification of the standards. Standard 2.5 was modified, substituting the word "worker" for "employee" to make it clear that the requirement for insurance extended to sub-contractors.

As the passing score for the standard set is 3, there was clearly some need for improvement. A consultancy on occupational health and safety⁸⁵ was thus prepared by Bernd Drechsler, Jennifer Hinton and Manfred Walle, working for Projekt-Consult GmbH.

What is Occupational Health and Safety?

The function of an occupational safety and health (OSH) system, the consultancy clarified, is to provide the foundation for a safe and healthy working environment through policies, procedures, roles and responsibilities, and systems of accountability. OSH is the basis for measures to prevent and counter disease and injury of workers. Additionally, within the context of small Rwandan mines, the OSH system provides a vehicle through which work arrangements with artisanal miners can be formalized.

Field Investigation: Risks and Hazards

To determine the current state of occupational safety and health in Rwandan small scale mines, the consultancy undertook a rigorous and comprehensive investigation of mining conditions on each of the concessions of each of the pilot mining companies. The investigation was, in effect, a second audit, more detailed and profound even than the original CTC baseline audit.

In the course of this investigation the consultancy identified a number of OSH issues and problems. These included problems with mine safety, such as the practise of undercutting steep pit walls without using sufficient timber support to shore up the overhang. In mines with underground tunnels, sufficient lighting was often a problem, passageways were not always kept clear, and rails for ore carts poorly maintained. Some mines suffered from the danger of dust (and thus silicosis) in the mine shafts.

There were also issues regarding safety equipment and training. On many concessions, miners did not have adequate personal protective equipment (PPE), had not undergone sufficient (or any) safety training, and were not covered by health insurance in the case of accident. Several of the mines did not have a reporting system for accidents and injuries. None of the mines had a program or policy to deal with HIV/AIDS. The consultancy noted that the root of many of these issues was the practise common among many of the companies of employing a large workforce of sub-contracted artisanal miners. The number of miners at any given mine site ranged from 60 to 1000 men and women. At many concessions, the sub-contracted miners were largely informal – they had no company registration, no ID cards, no insurance or health care, and very often no work boots, hard hats, or safety training.

In addition, the lack of formality raised other structural concerns, notably a lack of accountability; as the artisanal miners are not known or accountable to the company, there are significant risks in terms of accounting for persons working underground, or registering mine site accidents. The lack of accountability in turn leads to difficulties in controlling and managing behaviour. Hazards here involve the undercutting of weak rock, explosives handling, working under the influence of drugs or alcohol, among others.

Assistance and Solutions

To ameliorate the OSH issues identified in the field research, the consultancy attempted to develop basic, easy-to-understand templates and guidelines that companies could customize, adapt and adopt in support of safe and healthy work environments, and thus greater compliance with CTC standards. As a first step, the consultancy developed a draft OSH policy. A complementary HIV/AIDS policy was also provided. The draft OSH policy provided detailed information on OSH roles and responsibilities for all participants in the production process, including owners, mine managers, the OSH officer, line managers, gang leaders, miners and workers. The draft OSH policy included program guidelines on important elements in an OSH policy, including detailed instructions on how to perform a hazard and risk analysis, how to implement a preventative maintenance program and incident investigation programs. The draft contained procedures and suggestions for communicating OSH policy and procedures to all levels within the company. These include guidance and suggestions on forming a joint OSH committee (JOSHC) in the mine structure. Finally, the OSH policy contained detailed guidance on setting up training programs to increase safety awareness, accident preparedness and emergency response capabilities, including first aid.

In addition to the draft OSH policy, the consultancy provided an annex with detailed listings of further sources of useful information, including free downloadable manuals and handbooks, many geared to workers of only basic literacy.

The consultancy concluded by noting that the success of the OSH policy and programs is clearly contingent on company capacity and commitment to bring artisanal miners into the fold. CTC target companies generally recognize the significance of formal integration of artisanal miners and informal workers in achieving progress towards safe and healthy work environments. However, the companies have varying degrees of technical and financial capacity and differing levels of interest and motivation to formalize artisanal miners and support OSH improvements in their operations.

For significant improvements to be realized a concerted effort on the companies' part will be crucial in order to establish formal linkages with workers as well as gang leaders and to develop a greater sense of organization and accountability in all facets of the workforce. Formal arrangements with gang leaders should be established as a first step, but these must extend to individual women and men in the artisanal mining and informal workforce. Establishment of formal, gender-responsive groups, of registration systems and the issuance of identify-cards are crucial to OSH outcomes as well as sustained and reliable productivity and positive relationships with communities around mining areas. These measures are necessary to develop adequate OSH standards, and will also serve to support formal integration of artisanal miners into Rwandan small mining operations.

5.4 Gender Equality

There is one standard in the CTC standard set dealing with gender equality and gender sensitivity.

4.5 Understand the situation and perspectives of women in the company's area of influence, and design and implement company operations in a gender-sensitive way.

All four companies scored equally at 1 for this standard, a level indicator corresponding to the following:

1 = There are no investigations on the impact of company operations on women, but the company claims to respect gender issues in policies and strategies.

This was one of the consistently lowest scores for any standard in the set.

Accordingly, a consultancy⁸⁶ on gender sensitivity was conducted, this one by Johanna Carstens, working for Projekt-Consult GmbH.

Reasons for Gender Equity

The consultant began by noting three key structural reasons why companies would find it to their advantage to pursue gender equity in the work place. The first is simply that with the chronic lack of skilled personnel in Rwanda, considering or actively encouraging women candidates doubles the chances of finding the appropriate employee. Secondly, practical experience of managers in Rwanda is that for some jobs - accountancy, cashier, store keeping and mineral sorting were among those listed - women often performed the work better than male employees⁸⁷. Thirdly, gender equity in the workplace is a priority for the Rwandan government, which actively promotes this policy.

Observations from the Field – Mining Companies

Field visits to company offices revealed that for company employees (as opposed to sub-contractors) there was nothing in hiring policies or work place atmosphere to particularly discourage women employees –remuneration for women employees was equal to that of men for example, workplace harassment appeared not to be an issue, and company managers state they would hire qualified women candidates, if they applied.

However, the consultant found that the pilot companies had done little to encourage women candidates. Mining has the reputation of being a male domain in Rwanda, and companies had shown little effort to modify that image. They had not specifically sought out female employees. Work place facilities did little to cater to women – toilets, changing rooms, areas to nurse children were a problem in all the company workplaces. Perhaps not surprisingly then, the consultant found the gender profile of the pilot companies to be overwhelmingly male.

In particular, senior management posts in all pilot companies were held by men, as were virtually all scientific posts. Some companies had a few women in senior technical positions, and in accounting.



Effluent water settling ponds at Cyubi

Observations from the Field – Dig Sites

The situation in the mining sites was significantly worse for women. The most grievous problem reported was the practise of some work gang bosses at one concession site demanding sexual favours from women in exchange for employing them on the work gang. In addition, women on some mining gangs reported that they received less money than male miners, and did not receive protective gear (PPE) from the company, even in situations where male sub-contractors do receive such gear.

Suggestions for Improvement – Mining Companies

The consultant suggested a number of practical ways in which companies could work to improve their performance vis-à-vis gender. In terms of employing more women, the consultant noted that the skill shortage in Rwanda is real, and that qualified woman candidates in fields such as geology and mining engineering are rare. That said, the consultant suggested the companies should work to raise awareness of the jobs available to women in the mining industry, perhaps through an advertising campaign.

The consultant further recommended that companies ensure that training opportunities are available equally to men and women, so that both genders have the opportunity to raise their skill levels and move up the corporate ladder.

Finally, the consultant suggested that companies move quickly to take care of practical issues such as toilets, changing rooms and nursing areas. These issues are easily solved, and go a long way towards creating a more female-friendly workplace.

Suggestions for Improvement – Dig Sites

To deal with the much more serious problems on mining concessions, the consultant recommended that companies develop a gender equity policy – a draft was provided – with a strict policy of gender equality for all employees and sub-contractors. To implement this policy, the company should begin by ensuring that male and female sub-contractors receive identical treatment from the company, particularly in regards to payment, provision of safety gear (PPE) and company deduction for or contributions towards social security and pension funds.

To deal with the issue of sexual harassment, the consultant recommended that companies begin with workshops for both male and female miners, as a way of educating both sexes to their rights and responsibilities, and as a way of opening channels of communication.

Self-organisation of Female Workforce/Recognised Representatives

To give women workers – both employees and miners – a stronger voice in the company, the consultant recommended that they be encouraged to organise into a female workers' association. The association would provide a forum where women could discuss workplace problems. The leader or spokeswoman for the association would be a recognized channel through which women workers could convey their concerns to company management.

In order to facilitate the creation of such women's organisations, the consultant held meetings with women miners at three different mining concessions, belonging to two different companies. At all the sites, the women

workers appeared enthusiastic about the concept, seeing it as a way of solving problems on their own, or else communicating their concerns to company managers. By the end of the consultancy, at least one worker's association for female miners looked set to come into being.

5.5 Environment

There are three standards in the set pertaining to the principle of environmental performance. Here, too, the companies' performance left room for improvement. The first environmental standard reads as follows:

5.1 Carry out an environment impact assessment as the basis for developing an environmental management and protection plan and strategy.

The average of the four companies scores for this standards was 1.9. This corresponds most closely to level indicator 2.

2 = The company has committed itself to completing an environmental impact assessment in the near future.

For the second environmental standard (below), the companies' score was lower still, averaging only 1.1. This is the standard that deals with waste disposal:

5.2 Properly treat or dispose of hazardous material and waste from its site(s).

The nearest level indicator – level 1 – reads as follows:

1 = Hazardous materials and waste from site operations are not disposed of responsibly. However, the company has concrete plans to undertake hazardous materials and waste disposal.

The third environmental standard deals with mine closure:

5.3 Provide a plan for mine closure and make provision for the full costs of rehabilitation upon closure.

The companies' average score was 1.4. (One company scored 2.5, the other three scored only 1). The four-company average falls between level indicators 1 and 2.

2 = A mine closure plan exists and the site operation makes provisions to partially cover costs of rehabilitation and any monitoring or treatment that may be required after closure.

1 = A mine closure plan does not yet exist, and no provisions have yet been made to cover costs of rehabilitation and any monitoring or treatment that may be required after closure; however; there is intent to do provide a plan and to make provisions in the future.

Company Response

The low scores would seem to be indicative of poor environmental performance on the part of the pilot companies. However, some portion of this stemmed from the companies' lack of formal documentation of their environmental policies. Because of their small scale, Rwandan CTC pilot companies tend to view their operations as low impact, and consequently have not developed formal environmental policies.

Standard 5.1 calls on companies to carry about an Environmental Impact Assessment (EIA). An EIA is standard practise for large mining operations. However, an EIA is a lengthy and sophisticated process, performed normally by a team of professionals headed by an environmental or mining engineer. For the small scale operations prevalent in Rwanda, some form of

EIA would have to be found that was appropriate to the companies' scale and environmental impact.

Standard 5.2 concerns proper disposal of hazardous material and waste. For the pilot companies, large volumes of mercury, cyanide and other chemicals are not involved in the production process. The main waste product consists of low volumes of sterile, broken rock. The standard company procedure for such material is to dump it in locations adjacent to the dig site. However, while this may be an appropriate method, the procedure still requires justification and documentation through a waste disposal plan.

Standard 5.3 deals with mine closing plans. As with impact assessment and waste disposal, mine closure for small scale mines will likely be less extensive than is common for large scale mines. None-the-less, the standard requires that a formal plan with funding be in place.

Mining impact on the environment is a sensitive topic in Rwanda, due in large part to a legacy of bad mining practise from the colonial and immediate post-independence era. Historic liabilities from the 1930s onwards, including waste dumps and degraded landscapes adjacent to or near current mining operations have left the general public leery of company claims of minimal impact.⁸⁸

The CTC project decided to research environmental management tools appropriate to small scale operations.

The Environmental Impact Declaration

The CTC pilot project opted to explore whether less elaborate processes might be found that, while less expensive, still served the purpose of monitoring company performance and protecting the environment. The first of these was the Environmental Impact Declaration (EID).

The EID was developed in Chile as a tool to support small and medium sized mining enterprises in coping with environmental regulation in Chile in a simplified and appropriate way. The EID catalogues a mine's operations and environmental impacts, thus facilitating a decisions as to whether a simple Declaration of Impacts is sufficient, or whether the project requires a complex environmental impact study. To test out this technique, an EID was conducted at NRD's Mara concession.⁸⁹ This concession, a small ASM operation not directly included in CTC, was selected as an EID pilot site, with the EID subsequently being disseminated among the management of all companies to serve as a template.

The EID described the location and geology of the Mara concession, then described and evaluated the environmental impact of mining related activities such as drilling and blasting, ore processing, and waste dumping. The evaluation took into consideration factors such as the impacts on local populations, flora and fauna, prehistoric sites, tourism and agriculture. The EID further catalogued and evaluated the principle discharges and emissions from the site, including emissions to the atmosphere, ground and surface water, industrial waste and residue, and household waste.

The EID generally found the current mine's impacts were minimal. Significant flora and fauna are almost wholly absent from the environs of the mine, as are prehistoric sites and tourism. Due to location and size, the mine would have little impact on the local subsistence and cash crop (coffee) agriculture. Water is used extensively to process the ore from the mine, both during an initial rough processing phase and again during a finer phase at a central location. The EID suggested that because the processing sites are located at some distance from any surface streams, impacts on surface and ground water were unlikely. Rock separated from the mineral ore extracted at Mara is simply dumped. Smaller dumps from primary processing are located close to the mouth of the

shaft where the material is sourced. A larger dump, which extends down the side of a ravine, is located close to the Mara central processing facility. It was asserted in the EID that, primitive as it was, this dumping procedure posed no environmental hazard, given that the material is sterile and inert. The greatest danger is that of instability, which can be managed as long as care is taken to ensure the rock dumps didn't grow too high, nor the slope of the rock dump grow too steep. The EID asserted that rock dumping would remain an appropriate technique, even with a substantial increase in production.

Consultation

The EID of Mara showed one possible method for formally documenting environmental procedures and standards in a manner that is appropriate to the small scale of CTC pilot company operations, yet still acceptably stringent.

Given the interest in environmental issues in Rwanda, however, care will have to be taken to consult widely with a variety of stakeholders to ensure that environmental management plans are acceptable to the wider community. Future discussions should include representatives of local communities and representatives from Rwandan civil society, preferably from an NGO with some expertise in environmental issues. As open and inclusive discussion is critical to maintaining the standard's credibility, the CTC team has already begun outreach to NGOs with known expertise in the ASM sector. In addition, OGMR and the Rwanda Environmental Management Agency (REMA) have recently formed a workgroup to improve environmental governance.

6. Analytical Fingerprint (AFP)

6.1 Why Fingerprint?

Analytical Fingerprint (AFP) refers to the technical process of identifying the origin of a mineral concentrate via laboratory analysis that compares its mineralogical and geochemical features with samples of known provenance in a mineral reference sample database. Successive reports from the UN Panel of Experts have noted the role of tin, tantalum and tungsten in financing conflict in Central Africa, and called for the development of a traceability system for these minerals. The AFP project forms part of this effort. Developed in parallel to work on the CTC standards, AFP was conceived from the beginning as an integral part of the CTC project; AFP provides independent verification with respect to the origin and traceability of minerals, while CTC provides a general frame of application for AFP.⁹⁰

A significant portion of the world's tantalum (the metal in coltan ore⁹¹) originates in Africa (in particular since the 2008 shutdown of major mines in Australia), much of it in the Great Lakes Region, much of it artisanally produced. The ASM production and high value-to-volume ratio of tantalum lends itself to both conflict financing and to smuggling and fraud. The graph of African tantalum export statistics by nation (Figure 8) during the "coltan boom" of the late '90s illustrates at least part of the interest many nations have in a functioning AFP technique.

The graph shows succeeding peaks of coltan export, with the lion's share moving successively from DRC and Rwanda to Zimbabwe and then to Mozambique. Each successive peak represented approximately the same maximum output of tantalum, about 350 tonnes.

Most of those nations have significant coltan deposits, so to some extent the graph represents the natural operation of supply and demand, with new deposits

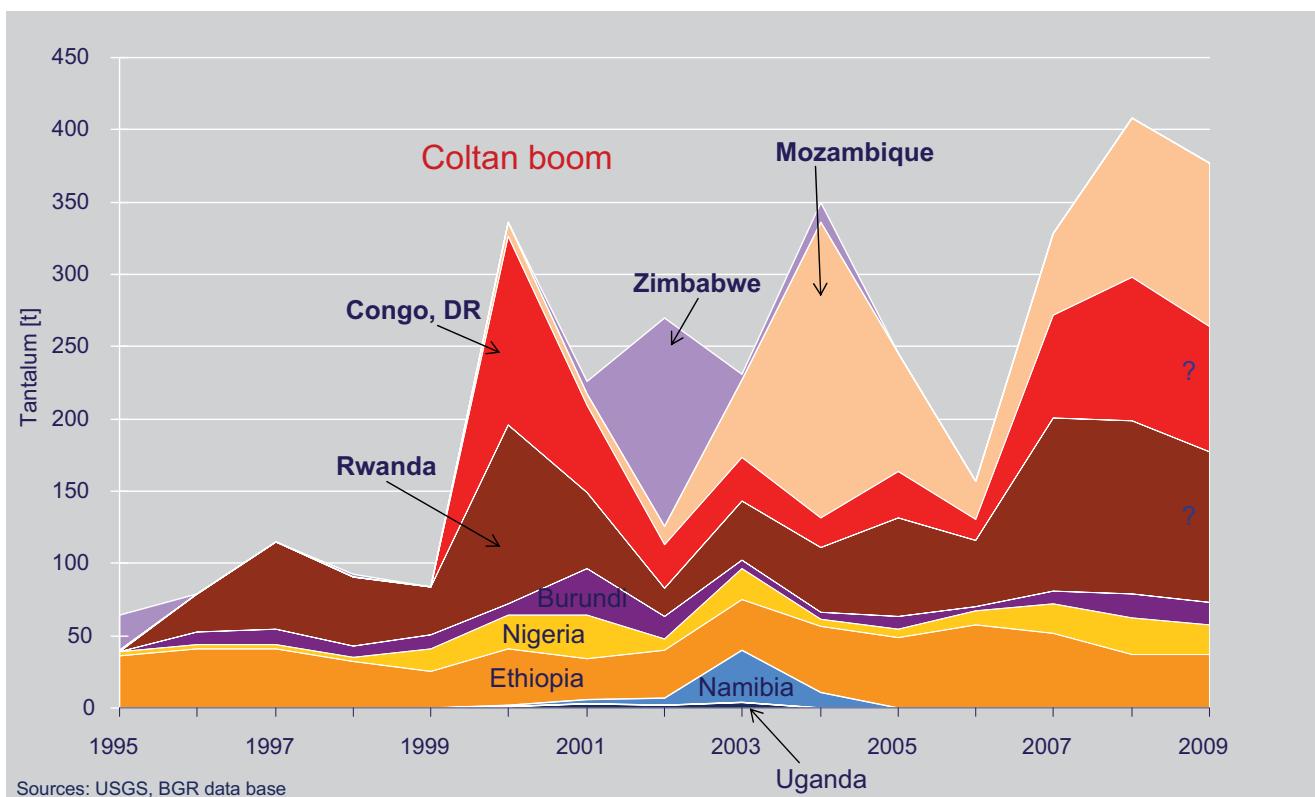


Figure 8: Tantalum exports from Africa by country, 1995-2009, illustrating variable short-lived export peaks (not correlated with production capacity)

in these countries coming on line in response to the rise in coltan prices. However, a significantly greater share is due to the tendency of high-value materials in weak governance zones to flow downhill across porous borders to those jurisdictions with the most lax traceability and export regimes and the lowest royalty and taxation rates, implying a potentially huge loss of income for the original coltan-producing states.⁹²

Producer nations then, have a strong interest in AFP as a way of helping constrain the flow of minerals within recognized legal channels. AFP also held strong potential as a useful tool in the effort to combat the conflict mineral phenomenon. Finally, AFP fit in to the CTC framework of assuring full traceability of minerals throughout the upstream trading chain, from mine site to

metallurgical processor. AFP's role was envisioned not as a substitute for other traceability measures such as good chain of custody documentation, but rather as an additional forensic tool, to be brought to bear in cases of dispute, or where deeper investigation was required, to lend further credibility to inquiries with respect to the origin of minerals.

6.2 The Technology

The effort to develop a workable AFP procedure began in 2006 under the direction of Dr. Frank Melcher of BGR's laboratory in Hannover. The AFP team felt that some feature or combination of features involving the geological age (geochronological

signature), mineralogy or geochemical features should serve to reliably distinguish one mineral concentrate sample from another. At least part of the challenge lay in determining laboratory procedures to extract this data.

After having experimented with a wide range of analytical techniques (e.g., Melcher et al. 2008), the AFP team identified the methods yielding the most relevant mineral source-specific data and, focusing on these high-impact techniques, progressively streamlined the laboratory procedure to a two-step process.

The Lab Procedure: Sample Preparation, SEM, Laser Ablation

As a prelude to analysis, several 100 grains of a given mineral concentrate are mounted on a polished section. The polished sections are then put through a two-step procedure. In the first step, the polished section is run through a scanning electron microscope (SEM). A software program, called Mineral Liberation Analysis (MLA), then analyzes the SEM data to create a detailed image or mineralogical map of the section surface, showing grain shapes, grain sizes, intergrowths, and, critically, the location and mineral type of the minerals of interest (i. e. Ta, Sn, W) on the sample surface.

In the second step – called laser ablation inductively coupled plasma mass spectrometry (LA ICP MS) – the geochemical (major and trace elements) and isotopic composition of individual concentrate grains is measured; this is repeated at least 50 times per sample concentrate to ensure representative coverage. The mass spectrometer data is then used to determine the sample's origin as outlined below.

Analysis: The Paternity Test

The mass spectrometer data from the lab procedure is analysed through a series of sequential tests that compare the test data to known sample characteristics contained in a BGR reference database of (Rwandan and other) mineral concessions progressively built since 2006, thus narrowing down the characteristics of the sample to a single, confined mine site area. This procedure has been dubbed a paternity test.

BGR's AFP team have found that, in the case of coltan, the technique is capable of reliably distinguishing between dig sites no more than a few kilometres apart. Figure 9 (below) shows how locations in close spatial proximity can have radically different mineralogical compositions.

Accuracy with Mixed Samples

Analytical fingerprinting (AFP), as described above presupposes that the analysts are working with a pure sample of material from a single mine site. The analysis becomes more difficult, and somewhat less reliable, once the material has been mixed or aggregated.

Where material from one age province had been blended into material from another age province (i.e. where DRC material has been blended into Ituri or Mozambique-sourced material), the AFP technique can reliably spot the different ages 100% of the time, and predict the origin from different age provinces.

Where material from the same age province but different mine sites has been blended (i.e. DRC material and Rwanda material), the functionality of AFP will depend on the number of sources that contributed to the final mix and on the presence and quality of the data measured on standard samples from the different sources in the database. If the number of sources is low

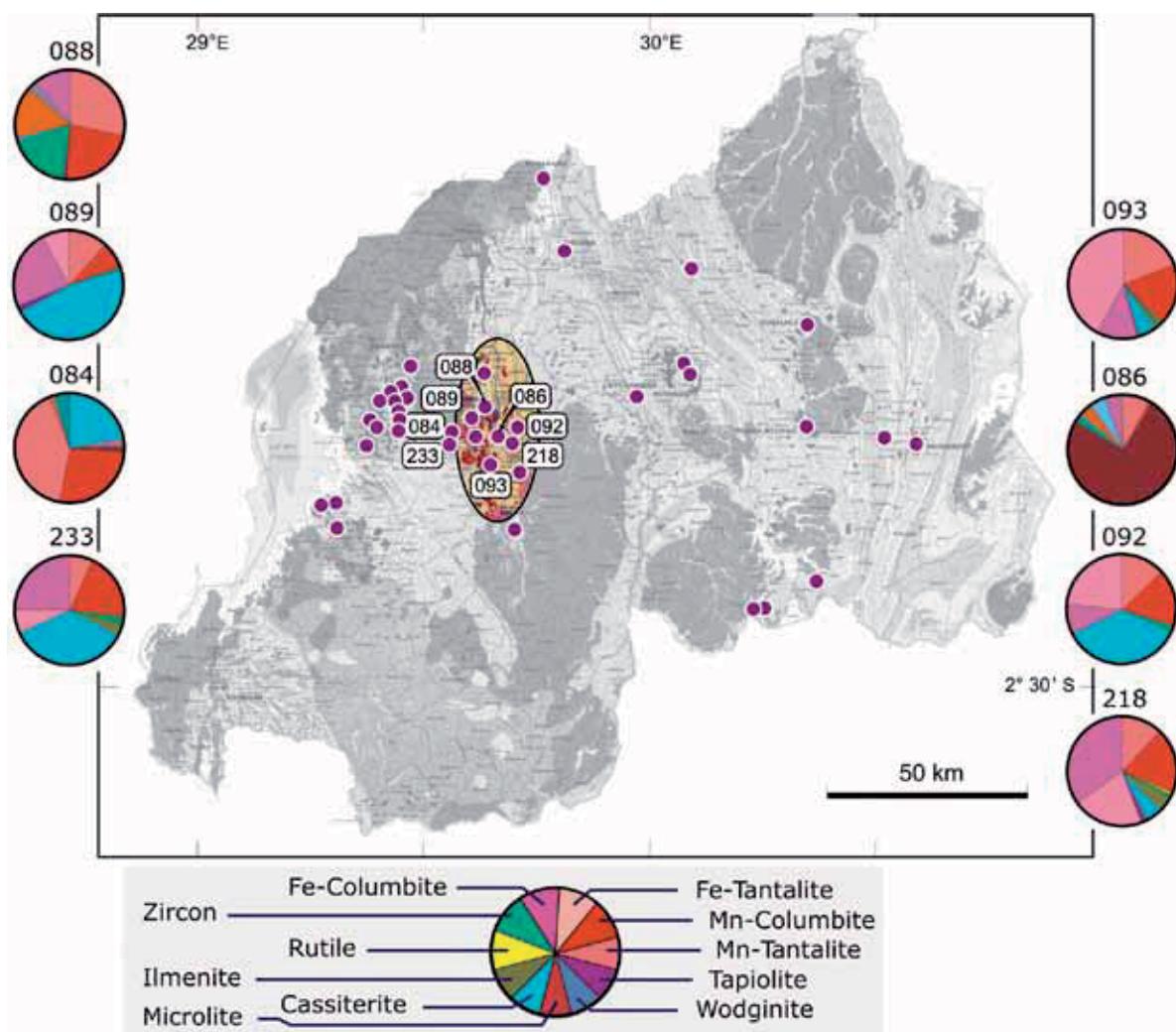


Figure 9: AFP sampling locations in Rwanda and exemplary illustration of mineralogical differentiation of ore concentrate samples from within the Gatumba concession

(i.e. 3-4) there are computer algorithms that can sort out the source of the blend with reasonable accuracy. Where the number of sources rises (i.e. >10), the ability to tease out origin becomes problematic at the current stage of development⁹³.

The other Two Ts

While the initial AFP process focussed on coltan, the AFP team has been pursuing a similar line of research to develop AFP analysis for cassiterite (tin) and wolframite (tungsten). BGR estimates it will have a similar AFP database and procedure available for

cassiterite in 2011, and for wolframite by the end of 2012. This will make it possible to apply AFP to all ore concentrates containing the 3T (tin, tungsten, tantalum) that are being extensively mined in Rwanda and the neighbouring Kivu provinces.

At the current moment, it is not possible to perform AFP analysis for gold.

6.3 Synergies: Integrating AFP into CTC

Constraints

While the technological achievement represented by the AFP project is considerable, there remain some constraints to its application for mineral traceability in the context of CTC.

In order to function, the AFP technique requires an up-to-date database with samples from all of the production sites in the area of interest. As of January, 2011, the AFP reference database contained a total of 750 samples from 270 locations from 40 countries worldwide. For some countries, such as Rwanda, the database is now very likely sufficiently stocked. For others, notably DRC, more sampling will be required before the system goes operational. In all cases, resampling will also be required for concessions that have changed either their mining technique or the ore-body under exploitation.

Though a technical process, obtaining field samples is not overly complex. A partnership with OGMR – and later with other interested nations – is seen as the most efficient and cost effective way of obtain sufficient samples to stock a meaningful database. Two OGMR technicians have already been trained in sampling techniques. For AFP to become operational, each nation interested in applying the technique would likely have to put a sampling unit in place.

A second and perhaps more serious constraint is the laboratory time and equipment required for the AFP analysis. Currently, the equipment and measurement routines for AFP are available only at BGR's laboratory in Hannover. However, the German government, through BMZ, has commissioned the BGR to establish a laboratory in Africa in the framework of its support to the ICGLR's Regional Initiative against Illegal

Exploitation of Natural Resources (RINR). A fully equipped lab would be able to process approximately 1000 samples per year (i.e. 20 a week), at a likely minimum cost of several hundred dollars per sample. Given these constraints, AFP analysis is not intended as a standard procedure on every shipment. The section below explores how AFP could be utilized.

Possible Applications

There are two complementary ways of integrating analytical fingerprint (AFP) into a mineral certification system. Under the first scenario, AFP becomes a regular, integral part of integrity control along the mineral chain. Under the second scenario, AFP is brought in as a forensic or analytical tool for a deeper investigation after anomalies are discovered or reported in the mineral chain. The first scenario offers far more rigorous control of mineral chain integrity, at the cost of far greater logistical overhead for collecting samples and organizing testing. The second scenario is more easily manageable, but offers fewer guarantees.

Scenario 1: Integrity Control of Mineral Trading Chains

In this scenario, AFP testing is a regular feature of the mineral chain. AFP samples are collected at regular intervals (e.g., once per month) at key points to be defined along the mineral chain (e.g., at the mine site, trading centre, as the material enters a comptoir, at export, etc). The samples would have to be collected by a trained and independent agency⁹⁴, and stored in a secure location (a sample warehouse) under the control of the certifying agency. Samples would be stored for some set period of time (i.e. 2 years), until their usefulness had expired.

Not every sample would be tested. Rather, some subset of samples would undergo AFP analysis, according to a protocol designed to cover the majority of production, or the production most at risk of anomalies, or both. Positive results (i.e. the mineral matches the claimed source) would serve to demonstrate and verify the integrity of the system. Negative results would trigger a secondary, more exhaustive investigation. In this scenario, the warehouse of samples would be available for use in any in-depth follow up investigations.

Note that the logistical challenges of collecting and managing the sample warehouse required under this scenario should not be underestimated. Though some "piggy-backing" on the existing sampling procedures on independent assay companies should be possible, collecting samples at key points along the mineral chain for each of the CTC companies will likely involve a significant commitment of manpower.

Scenario 2a: Verification of Mineral Trading Chain Anomalies

In this scenario, AFP testing might be triggered by one or more events raising suspicion that a mineral producer or trader sourced some or all of the material in a consignment from an illegal source related to a conflict-affected region. These suspicion-raising events might include anomalies detected during a regular certification audit, or reports received via a whistleblowing mechanism, or production figures that were inconsistent with actual production capacities. Were AFP testing a regular part of the mineral chain as in Scenario 1, failure in a regular AFP test would also serve to trigger a follow up finger printing investigation.

The advantage of this scenario is that it does not involve the overhead of creating and managing a sampling warehouse. AFP is reserved as an investigative or forensic technique for cases where

there are already grounds for probable suspicion. However, as there is no sample warehouse to fall back on, the authorities managing the AFP program will have to be agile enough to act on their suspicions and collect a sample before the suspect consignment – and its evidence – is shipped overseas.

Scenario 2b: AFP Positive Certificate

In this case, as in Scenario 2a (above), AFP sampling is not a regular part of the mineral chain. In this scenario, sampling is triggered not by doubts or suspicions, but rather in response to desire of an artisanal producer or trader to pre-emptively demonstrate clean origin of the material and integrity of the mineral chain. Once tested, material that passed the AFP analysis could be issued with an "AFP positive certificate". This certificate would serve as proof of the origin of the material after having passed through the trade chain.



AFP sampling at Rutsiro performed by BGR and OGMR geologists

7. Compliance Audits

Independent third-party audits are the core of the CTC system. CTC audits represent on-the-ground assessments of supply chain due diligence with respect to the CTC standard set, both at mine sites and along the associated trading chains.

For the second round of audits, called compliance audits, significant changes were made to the auditing procedures. Some of these changes stemmed from modifications of the standards or level indicators⁹⁵. Significant modifications also resulted from the determination to align the audit procedures to the ISO guidelines defined in ISO 19011:2002. This was done in order to ensure compatibility between CTC and the developing ICGLR standards.

The compliance audits took place from October to December 2010, with subsequent audit analysis in the January - February 2011 period. Audit reports were reviewed by company management and discussed in the national certification workgroup in Rwanda in January - February 2011.

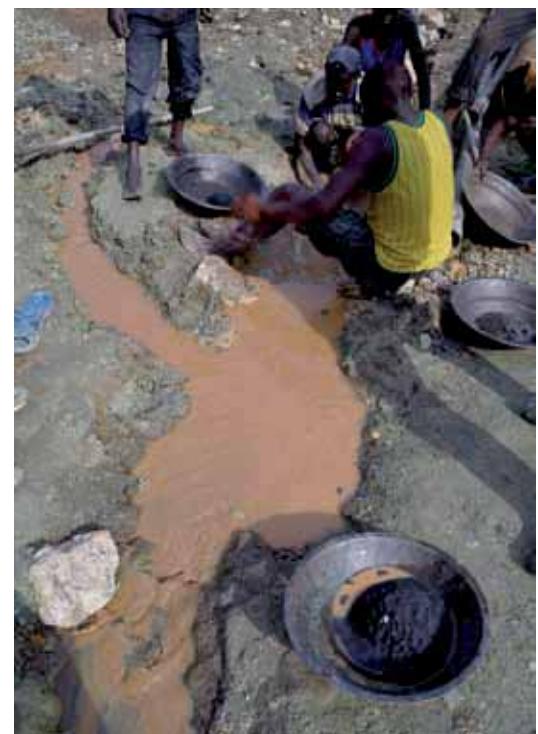
The audit goal was to (1) investigate supply chain due diligence measures employed by mineral producers and traders, and (2) evaluate mining conditions at the pilot company concessions with respect to the CTC standard set (Figure 10). The methodology included site inspections, key informant interviews, and document review and analysis.

Plausibility Checks

In the compliance audits, a great deal more attention was paid to the question of mineral origin and traceability throughout the upstream trading chain. In particular, the compliance audits contained a plausibility check, in which the declared production of a concession was checked against the potential

productive capacity of the site, and against internal company records. Plausibility checks were implemented in part to guard against the possibility of certified site being used to "launder" conflict minerals (i.e. disguising material from the DRC with documentation from a certified Rwandan site). Plausibility was checked through a combination of the following:

(1) An analysis of the plausibility of production figures for a given mine, based on a review of mining methods, the number of artisanal miners, mineral processing capacity, and consumables usage (i.e. kgs of dynamite or kgs of nitrate per kilo of ore concentrate produced). Using these input data, the auditor evaluated whether the specific production volume reported by the audited mining company were consistent and plausible. The auditor further cross-referenced documentary evidence, for example by comparing the listed numbers of miners and the payments made to miners, with production for a particular period. This documentary evidence was further verified by site inspections.



Coltan concentrate panning at Gatumba

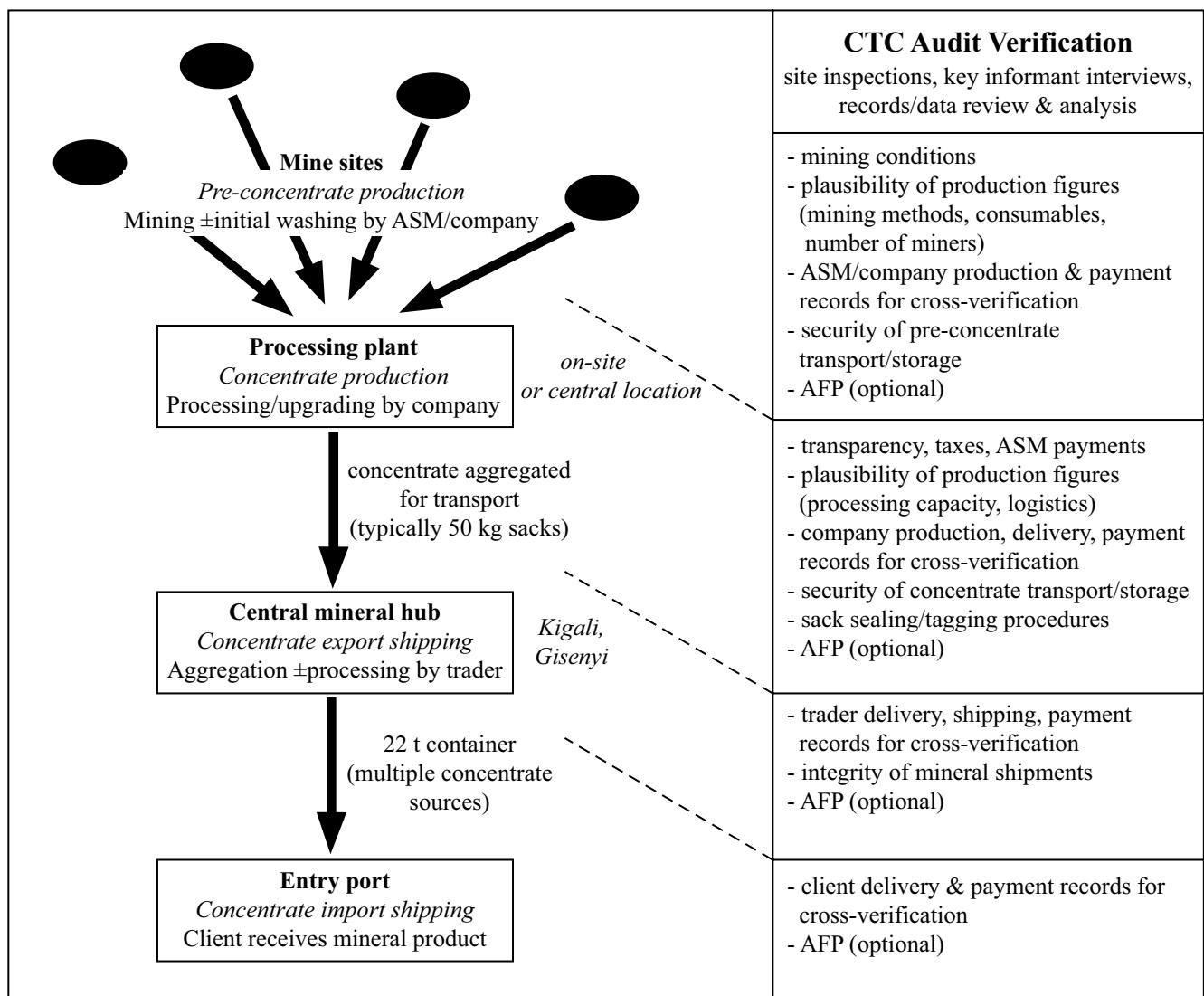


Figure 10: Schematic mineral trading chain sketch and scope of associated CTC auditing activities

(2) Cross-verifying and balancing production, processing, and shipping records, including ASM production records, company production, processing, and transport records, as well as other transport and trade records of mineral pre-concentrates and concentrates of variable grades.

In this manner, potential production anomalies, e.g., by "laundering" conflict minerals of illegitimate origin

through a CTC concession, would be detected. The credibility of mineral origin claims by Rwandan mineral producers is additionally boosted by introducing the iTSCI tagging scheme.

Transport Checks

The compliance audits also verified the integrity of the transportation process for shipments of mineral concentrate. Many of the problems with conflict minerals involve illegal taxation along transportation routes, and as a result many of the developing standards on certification and mineral chain due diligence – such as OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, and the draft ICGLR standards – require inspection and verification of the process and routes by which mineral concentrate is transported. The compliance audit procedures were adapted in order to ensure compatibility with the evolving regional and international requirements.

In the second round audits, then, the auditor evaluated security measures in place to ensure the integrity of shipments or mineral concentrate. The auditor checked for the presence of company security during mineral storage and transport, as well as sealing or tagging of individual mineral concentrate sacks or whole transport lots. The audit findings in this regard represent an indication of a company's due diligence practice with respect to mineral origin and traceability.

Results

The compliance audits are intended as the main tool by which Rwandan mineral producers can demonstrate supply chain due diligence. Future CTC audits will thus use the compliance audit procedures and standards as a reference.

The audit findings were compiled in comprehensive audit reports, made available to members of the certification workgroup in Rwanda, as well as to the respective mining companies. A summary of the scores is shown below in Table 4.

Most of the companies showed improvements, often significant ones, in some or all of the five CTC categories. Of particular note is the improvement in Standard 4.5 – the standard relating to gender sensitivity. Issues identified in the baseline audits and consultants' reports were addressed with sufficient rigour that three of the CTC companies improved their scores from 1 in the baseline audit to 2.5 in the compliance audit phase.

In terms of mineral traceability (standard 1.1), two of the four companies achieved perfect scores of 4. As noted above in Section 4 above, a formal scoring mechanism and compliance level for the audits is still under discussion. However, given the international focus on supply chain due diligence, perfect scores in this standard will almost certainly be a requirement. Two of the CTC companies at least have already met this condition.



Artisanal coltan and cassiterite mining at Gatumba

Table 4: Results of the Compliance Audits for the four CTC Pilot Companies

Compliance Audit	NRD ^(a)	GMC	ETI/RML	WMP
1. Transparency of mineral flows and payments				
1.1 Origin and volume traceable		2.5	4	4
1.2 Meet fiscal obligations to government		3.5	4	4
1.3 Publish all payments to government		1	1	1
1.4 Oppose bribery and fraud		2.5	3	2
2. Working conditions				
2.1 Salary levels and artisanal prices fair		4	4	4
2.2 No child labor (children under 16)		4	4	4
2.3 Support collective bargaining		2.5	3	2.5
2.4 Provide safety equipment and productive services to workers		1.5	4	4
2.5 Ensure occupational health and insurance		3	4	4
2.6 Provide training to employees on health and safety		1.5	4	3
3. Provide security respecting human rights				
3.1 Provide sufficient, trained security		4	4	4
3.2 Undertake security risk assessments		2.5	3	2.5
4. Community consultation and development				
4.1 Interact regularly with local community		3.5	3.5	3.5
4.2 Support local enterprises to supply company		2.5	3.5	3.5
4.3 Support integrated development programs in nearby communities		3	3	3
4.4 Informed consent before acquiring property		4	n/a	n/a
4.5 Gender sensitivity in operations		2.5	2.5	2.5
5. Environmental performance				
5.1 Carry out environmental impact assessment		2	3	3
5.2 Properly dispose of hazardous waste		1.5	1.5	1.5
5.3 Make provision for cost of mine closure		1	1	1.5
Total points		52.5	60	57.5

^(a)Final results pending

8. Summary of Accomplishments

From its conceptual foundations laid out since early 2007 through its on-the-ground pilot phase initiated in early 2009 to the first quarter of 2011, the CTC Rwanda Pilot Project achieved a number of significant accomplishments. CTC has:

Established the theoretical case for certification of artisanal mineral production in Africa

- Certification as a possible contribution to the solution of the conflict mineral phenomenon, as an alternative to sanctions, and as a solution to a interrelated nexus of issues concerning ASM in Africa (and elsewhere).

Established a strong working partnership with the government of Rwanda

- Rwanda's active, early and full participation proved crucial to development of standards, and to the long-term regionally sustainability of certification as CTC gets adopted by the governments and institutions of the region.

Developed a practical certification standard

- The Standard Set was based on OECD guidelines, but adapted to artisanal mining conditions in Africa
- The Standard Set has been re-worked and refined though consultations with government, civil society and industry stakeholders, establishing an on-going process of consultation and adaptation.

Established third party auditing as an absolute prerequisite for certification

- Necessity for baseline and compliance audits understood and accepted by all stakeholders in the process; participants pledged to abide by results.

Tested the viability of auditing partially ASM production

- Independent auditor successfully scrutinized operations of four pilot companies, including their ASM operations in the field.

Assisted pilot companies in their efforts to comply with standard

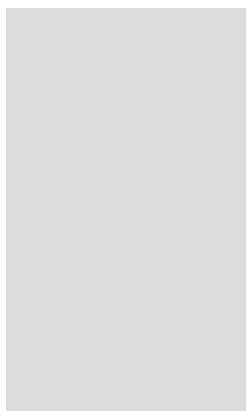
- Pilot companies were assisted with mineral traceability documentation, gender sensitivity, environmental compliance, occupational health and safety, and avoiding bribery and fraud.

Established template for third party auditing of ASM in Africa

- Developed procedures and terms of reference for third party audits of quasi-ASM producers in African context;
- Mineral certification as a means for responsible mineral producers and their clients sourcing from conflict-affected or high-risk areas to stay engaged, rather than disengaging;
- Procedures include plausibility check, reconciling actual mine capacity with claimed production;
- Procedures include verification of mineral traceability/chain of custody, for a variety of mineral tracking systems;
- Procedures include full evaluation of producer performance against full CTC set of standards.

Adjusted audit methodology to conform with regional standards

- Audit procedures and standards adjusted to conform with ISO 19011:2002, as per ICGLR requirements;
- Established the technical viability of the AFP technique and demonstrated its practical applicability in assuring mineral origin;
- Procedures include full evaluation of producer performance against the CTC standards set (working conditions, security and human rights, community development, environment).



CTC certification ensures mining is conducted in harmony with local communities

9. Next Steps

As the CTC pilot project in Rwanda nears the end of its initial phase, it becomes opportune to consider the future of the certification project, and how it might best be taken from the pilot stage to further implementation. Full consideration of the available options requires a brief update on related political and technical developments in Africa and overseas in the years since the CTC concept was first proposed.

9.1 Other developments

United States Conflict Mineral Legislation

The U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act, was passed and signed into law 21 July 2010. Title XV, Section 1502 of the Act contains a series of provisions designed to control US companies' use of 'conflict minerals'. For the purposes of the act, 'conflict minerals' are defined as coltan (columbite-tantalite), cassiterite, wolframite, gold and their derivatives⁹⁷.

The US law applies only to reporting companies, that is public companies traded on US exchanges which are required to file quarterly reports to the Securities and Exchange Commission (SEC). It is thus unlikely to apply directly to small mineral traders or even many smelters. Nonetheless, its effects will be felt in the region as they indirectly affect all mineral chain stakeholders.

The law requires affected companies to disclose as part of their regular reporting whether any conflict minerals – required for the functionality of any of their products – was sourced in the DRC or any adjoining country.

If a conflict mineral was used, and was sourced in the DRC or adjoining country, the company is required to prepare and submit to the SEC the following:

1. a report describing the measures taken by the reporting company to exercise due diligence on the source and chain of custody of the conflict mineral;
2. an independent audit of the above report (including the name of the auditor);
3. a description of the products manufactured by the Reporting Company or manufactured for it by a contractor that are not 'DRC conflict free' (that is, the products that do contain conflict minerals from the DRC or one of its immediate neighbours);
4. a description of the facilities used to process the conflict minerals;
5. the country of origin of the conflict minerals;
6. a description of the efforts employed by the Reporting Company to determine the mine or location of origin of the conflict minerals 'with the greatest possible specificity'.

Finally, the law requires the reporting company to make all of this information publicly available on the company's website.

The law is likely to have a significant effect on US manufacturers of consumer electronics, makers of products such as cell phones, computers and games. Faced with the possibility of some of their consumer products being publicly labelled as DRC conflict products, these companies are likely to put heavy pressure on their suppliers to make sure of their sourcing, with the results cascading up the mineral chain. Some smelters and purchases may disengage from the region. Those that remain will certainly demand that mineral exporters be in a position to thoroughly document the sources of the materials they're selling, and be able to demonstrate these

sources do not involve conflict.

With the advent of the US bill, and then its passage, interest on the part of companies and governments in the region in traceability and certification increased significantly. Indeed, a rush has developed to have an adequate response in place by the time US legislation goes into effect in April 2011.

ICGLR Regional Initiative Against the Illegal Exploitation of Natural Resources (RINR)

As mentioned above, the International Conference on the Great Lakes Region (ICGLR) committed itself at its founding in 2006 to establishing a certification mechanism for natural resources from the region. The ICGLR effort took on a new impetus, however, in response to the concerns of member nations (especially DRC and Rwanda) about the impending US legislation.

Early in 2010, the Canadian NGO Partnership Africa Canada (PAC) researched and published a study for the ICGLR⁹⁸, outlining what a regional certification mechanism would look like and how it would function. PAC's expertise stemmed from its experience in helping design and then monitor the Kimberley Process Certification Scheme (KPCS) for rough diamonds. The PAC scheme for the ICGLR contained four key elements:

1. mineral tracking from mine site to point of export (the implementation of which is left to national governments);
2. data on regional mineral flows transmitted to a central ICGLR database, which then analyses mineral flows looking for imbalances between production and sales, or purchases and exports, etc;

3. independent third party auditing to a regional standard, with auditors and auditing standards managed by a committee with multi-sector representation (i.e. government, industry, civil society);
4. an overall investigator, or mineral chain auditor, to look for anomalies, discrepancies, fraud, smuggling or signs of more complex conflict financing.

To establish the credibility of the ICGLR Tracking and Certification Scheme with African populations, foreign governments and corporations, consumers and the larger NGO community, audits and mineral flows are to be made freely available on a publicly accessible website managed by the ICGLR.

The scheme was adopted by an ICGLR working committee into the organisation's Regional Initiative Against the Illegal Exploitation of Natural Resources (RINR), which was then approved by a conference of the ICLGR mining ministers in Nairobi in September, 2010, and formally adopted by the ICGLR heads of state, as noted in the Lusaka Declaration of December 15, 2010.

The ICGLR is thus now fully committed to bringing a regional tracking and certification scheme into being. However, fulfilling that commitment will require the ICGLR to marshal all possible resources, and to reach out to other actors in the region to form strategic partnerships.

Certification in the DRC

In late 2009, BGR began a mineral certification project in the DRC based on an adapted CTC approach, focussing on South Kivu province, and working in partnership with the DRC Ministry of Mines as well as two DRC government mining agencies, the CEEC⁹⁹ and SAESSCAM¹⁰⁰.

The certification project in DRC has as its objectives, the development implementation of a mineral traceability system, building the capacity of DRC mining sector institutions, and the integration of certification into national legislation.

Faced with a larger and less formal artisanal sector than in Rwanda, the certification project in the DRC has worked on developing a standard set that would be applicable to conditions in the DRC, where conflict financing is a serious problem and miners often tend not to be organized into larger responsible organizations. In addition to the critical issue of conflict, the CTC pilot in DRC will also have to work out a mechanism whereby artisanal miners or dig sites can be held responsible to a set of standards. This may require the establishment of a larger responsible organisation such as a company, miner's association or cooperative.

As a basis for this effort, the certification project in DRC is developing a comprehensive mapping database of DRC artisanal dig sites, including estimates on minerals produced and number of miners employed. Multi-stakeholder discussions on the CTC Standard Set for DRC and the formal introduction of certification manuals are scheduled to begin in the first quarter of 2011.

iTSCI Mineral Tracking

In response to the problem of conflict minerals, the International Tin Research Institute (ITRI), a tin industry association, began work in July, 2009 on the ITRI Tin Supply Chain Initiative (iTSCI)¹⁰¹, a tracking and traceability scheme for the Central African artisanal cassiterite mining sector. The first phase of the project focussed on the mineral chain from the level of comptoirs and exporters upwards, working on standardizing and improving the chain of custody documentation for mineral shipments.

ITRI's second phase focussed on developing a practical traceability scheme for tracking minerals from the artisanal dig site through the hands of field traders to the comptoir. This 'tag and bag' scheme was based on the idea of tamper proof mineral sacks and numbered tags. Information from the tags is used to identify where minerals were sourced and what routes they followed on their way in to comptoirs in larger towns.

A pilot project was initiated in March 2010 in South Kivu province¹⁰², in cooperation with the DRC artisanal mining agency SAESSCAM. After some initial teething problems, the iTSCI pilot at Kalimbe began to report credible results¹⁰³; it began to look as if the tag and bag system could well function as a reliable mechanism for assuring mineral traceability. Unfortunately, full results were cut short when the DRC president ordered a shut down of mining in North and South Kivu and Maniema provinces September 11, 2010¹⁰⁴

In September 2010, the government of Rwanda through OGMR entered into an agreement with ITRI to develop a similar tag-based tracking scheme in Rwanda¹⁰⁵, with one of the CTC pilot companies volunteering to try out the tagging system first. As of February 2011, three of the CTC companies are applying an adapted iTSCI system, overseen by OGMR, at five concessions in Rwanda.

OECD Due Diligence Guidance

In 2009, the Organisation for Economic Cooperation and Development (OECD) began work on a set of guidelines defining due diligence responsibilities for companies sourcing minerals from areas of high risk and conflict. The process for developing the guidelines involved several rounds of consultation with governments, industry and civil society.

The final document, OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, was adopted and approved by the OECD in late 2010.

The OECD Due Diligence Guidance was based on the two OECD integrity tools¹⁰⁶ that formed the initial basis of the CTC Standard Set. The intent of the Guidance is to help companies respect human rights and avoid contributing to conflict through their mineral sourcing practices. The Guidance is also intended to cultivate transparent mineral supply chains.

In terms of concrete tools, the Guidance provides a model mineral supply chain policy, suggested measures for risk mitigation, and indicators for measuring improvement. In addition, the Guidance contains a supplement on tin-tantalum-tungsten tailored to the challenges associated with the structure of the supply chain of these minerals. BGR, along with representative from the ICGLR and the DRC government have been members of the OECD working group developing these guidelines. Many of the lessons learned from CTC pilot have been shared with the OECD working group.

Though voluntary and not legally enforceable, the Guidance and the OECD carry substantial weight in the corporate and government sectors. The OECD Due Diligence Guidance was endorsed by the eleven member states of the International Conference on the Great Lakes Region (ICGLR) in their Lusaka Declaration, adopted on 15 December 2010.

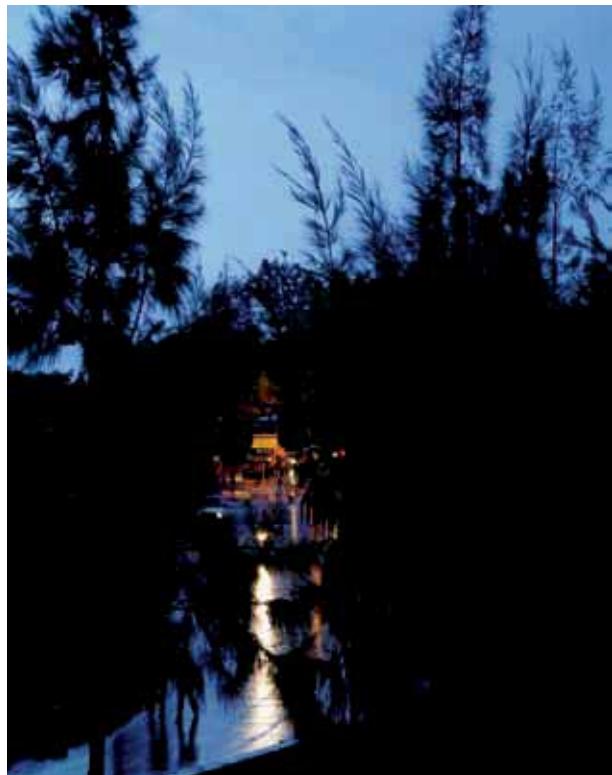
9.2 The Way Forward on the National Level

For Rwandan authorities, CTC was a way to support improving the performance of the mineral sector in areas they had already identified as being of crucial importance – including environment, traceability, gender. The CTC standard set thus served as guidelines on realistic best practise for the local artisanal mining sector. The workshops and outreach, auditing, consultancies and AFP also served to build capacity within Rwandan regulatory agencies.

Rwanda's eventual goal was to adapt the CTC standards into a set of mining sector regulations. The process of adapting the CTC standards and transforming them into regulations has now begun, spearheaded by the Rwanda Bureau of Standards (RBS).

By establishing these new regulations, and building regulatory capacity within Rwandan government institutions, Rwanda's goal is to bring the Rwandan mineral sector up to a realistic local level of best practice. For some standards, such as traceability, performing according to the benchmarks set out in the CTC standards will thus soon be not just a matter for certification, but also a matter of conforming with Rwandan law.

On the issue of how to verify company performance against the new standards, Rwandan authorities have a couple of options. In the near term, Rwandan authorities may opt to develop a domestic independent auditing program. Developing this capability would require Rwandan authorities to set up an auditing secretariat, which would have to develop a standard by which to accredit independent auditors, and then formally articulate a set of terms of reference by which audits would be conducted. The secretariat would also have to develop a formula to fund the audits, and a mechanism to pay the auditors while preserving impartiality and independence.



The DRC-Rwanda border station at Goma/Gisenyi. Mineral transit affects the whole region and therefore requires a regional solution

Rwandan authorities would further have to decide whether to have this auditing secretariat be a completely government-run operation, or instead to additionally involve industry and civil society in a joint oversight body. Multi-stakeholder representation is becoming very much a norm in international certification and auditing schemes, and may well be necessary to ensure international public acceptance of the Rwandan domestic auditing regime. Indeed, an extension of the certification workgroup (OGMR, RBS, BGR, MINICOM, MINIFOM), currently overseeing the CTC system in Rwanda, to the above parties is currently under discussion.

In the longer term, Rwandan authorities may opt to integrate their systems into the ICGLR's developing regional certification system. That option is explored below.

9.3 The Way Forward on the Regional Level

From the beginning BGR viewed the CTC pilot project as the first step in a process of developing region-wide traceability and certification systems. As the end of the pilot phase approaches, the question becomes how best to make use of the lessons learned during the CTC pilot to aid in the ongoing efforts to develop and harmonize region-wide standards and initiatives.

As noted above, Rwanda intends to incorporate the CTC standards into a national code of practice and, partly, into its domestic regulations. ITRI has developed a bag and tag systems to assure mineral traceability, in cooperation with the governments of Rwanda and the DRC. ITRI has also begun considering a 2nd party audit scheme to verify traceability. The OECD Guidance includes provisions for independent auditing, as does the US Dodd-Frank Act.

Initially, these initiatives developed in parallel, as various stakeholders sought to develop responses to various aspects of the problem posed by conflict minerals and artisanal mining in Central Africa. While theoretically, these various initiatives could have continued to function in isolation, in practical terms the companies and producers whose performance was being verified would likely have begun to suffer "audit fatigue", as one scheme after another passed through seeking to verify performance to this or that standard. Funding these various audits would also have constituted a challenge. Finally, having multiple certification systems in operation might well have served to confuse customers and the consuming public as to which was the definitive or "gold standard". As a result, none of the standards might have carried sufficient credibility to assure market access.

To avoid this overlap, the various initiatives have begun to explore how to integrate within the framework of the regional ICGLR system, covering the mineral

sector in the entire Great Lakes Region under a single certification standard. Initial steps for harmonization were also taken in Rwanda through the cooperation of the CTC and iTSCI schemes, coordinated through OGMR. Clearly, the practical experience gained in the CTC pilot project will continue to make significant contributions as the process of regional integration moves forwards.

9.4 Working to Develop Regional Certification

Building on the foundations of the CTC Rwanda pilot from 2008-2011, a new BGR project, scheduled from 2011-2015 and aligned with a related GIZ project, aims to develop and implement the ICGLR mineral certification scheme in Rwanda –as a further development of the CTC program –as well as in Burundi and other ICGLR nations. The German government has committed to support the ICGLR in bringing forward certification on a national and regional level, while also integrating the AFP technology into the process as required. An agreement was signed in November, 2010 between BGR, GIZ and ICGLR formalizing this support until 2015.

Developing further certification under the ICGLR banner will necessitate some coordination of effort between the various on-going initiatives. In this implementation phase, the practical experience gained in the CTC pilot – with standard development, plausibility checks, traceability, auditing, AFP and other elements – should prove invaluable.

In terms of standard development, the CTC pilot has already had a strong influence on the regional scheme. The ICGLR standards incorporate elements from the certification project in DRC, which were based in turn on the initial Rwanda CTC standard set. While the ICGLR standards initially focus strongly on supply chain due diligence, optional progress criteria address other

aspects of ASM production such as environment and working conditions. The expectation is that over time these progress criteria will be adopted into a core set of required standards in order to account for long-term sustainability of ASM governance through certification. The standards created in the CTC pilot will thus live on as the new region wide ICGLR mineral production standard.

Independent auditing is in many ways the key to a credible certification system, and it is perhaps here more than anywhere that the CTC experience will prove useful. The ICGLR scheme contains a third party audit mechanism, and the national audit mechanism could merge into the regional mechanism, as soon as it is established. As currently designed, the ICGLR audit scheme would be managed via a secretariat housed at the ICGLR. A multi-sector audit committee (with representatives from government, industry, and civil society) would accredit independent auditors, commission audits and adjust or adapt the standards as required.

In terms of practical experience, the CTC pilot has shown the viability of auditing and verifying mineral chains, even when different chain of custody and traceability systems are in use. Under the ICGLR scheme, mineral tracking remains the responsibility of national governments. Some governments may opt for adapted iTSCI tagging schemes; others may implement different or additional systems. The ICGLR audit system will have to verify them all, just as the CTC audits had to verify chain of custody as implemented by different companies with different tracking systems.

Similarly, the CTC experience verifying production of particular mine concessions via plausibility checks built into the audit process is another valuable, practical technique that should find application under the ICGLR scheme. This, combined with the application of the AFP technique in case of doubt, should make the system

more robust with respect to fraud attempts which may possibly test the integrity of the system at some point. Finally, the CTC pilot has provided a proven template for the steps in developing a set of standards and auditing process, from developing the standards, to testing and refining the standards through consultation with stakeholder groups, to developing, testing and refining the terms of reference for auditors and commissioning third party audits. All this should find application in the ICGLR scheme.

In summary, then, the ICLGR scheme offers a useful framework for developing and implementing mineral traceability and certification on a regional scale. The CTC pilot project offers invaluable practical lessons on how such a system can be implemented.

Endnotes

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⁵United Nations (2009). 'Final report of the Group of Experts on the Democratic Republic of the Congo'. United Nations Security Council. S/2009/603.

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⁷The Curse of Gold - Democratic Republic of Congo, Human Rights Watch, 2005; United Nations (2010) 'Final Report of the UN Group of Experts on the Democratic Republic of Congo', United Nations Security Council. S/2010/596, paragraphs 196-9.

⁸Congo's Gold: How Gold Pays for Congo's Deadly War, CBS News, November 2009. Available at http://www.cbsnews.com/stories/2009/11/25/60minutes/main5774127_page4.shtml

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¹¹On both the need for government leadership, and the multi-threaded nature of the challenge, see "Why U.S. Leadership is Critical to Reforming the Mineral Trade in Eastern Congo", Aaron Hall, Centre for Strategic and International Studies, December 29, 2010

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¹³Report of the Secretary-General pursuant to paragraph 8 of resolution 1698 (2006) concerning the Democratic Republic of the Congo, UN Security Council, S/2007/68, p17

¹⁴Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 1

¹⁵United Nations (2005). 'Final report of the Group of Experts on the Democratic Republic of the Congo'. United Nations Security Council. S/2006/53, paragraphs 117-119.

¹⁶Assessing Corporate Social Responsibility against International and National Standards, Jim Freedman, BGR, January 2008, page 4

¹⁷United Nations (2001). 'Final report of the Panel of Experts on the Illegal Exploitation of Natural Resources and other Forms of Wealth in the Democratic Republic of the Congo'. United Nations Security Council. S/2001/357, paragraph 221.

¹⁸Ibid, p.5

¹⁹United Nations (2005). 'Final report of the Group of Experts on the Democratic Republic of the Congo'. United Nations Security Council. S/2006/53, paragraphs 117-119.

²⁰Zertifizierte Handelsketten im Bereich mineralischer Rohstoffe (Certified Trading Chains in Mineral Production - Concept Note), Markus Wagner, Gudrun Franken, Nicola Martin, Frank Melcher, Jürgen Vasters, BGR, April 2007, 101 pages

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²²Ibid, p94

²³Figures are estimates only. From Artisanal & Small-scale Mining and Livelihoods in Africa, Karen Hayes, Common Fund for Commodities, 2008, page 9

²⁴KPCS core documents available at www.kimberleyprocess.com

²⁵Zertifizierte Handelsketten im Bereich mineralischer Rohstoffe (Certified Trading Chains in Mineral Production - Concept Note), Markus Wagner, Gudrun Franken, Nicola Martin, Frank Melcher, Jürgen Vasters, BGR, April 2007



²⁶Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 3

²⁷The CTC (Certified Trading Chains) Mineral Certification System: A Contribution to Supply Chain Due Diligence and Good Governance in the Mining Sector of Rwanda and the Great Lakes Region in Central Africa, P. Schütte, G. Franken, J. Vasters, F. Melcher, D. Küster, Federal Institute for Geosciences and Natural Resources (BGR), page 4

²⁸Ibid

²⁹ Production data for 1989-2005 refers exclusively to that of REDEMI, a mostly state-owned mining company that held a near monopoly in Rwanda at that time. Figures from Assessing Corporate Social Responsibility against International and National Standards, Jim Freedman, BGR, January 2008, page 7; additional data from OGMR; 2009 data is only for the five Rwandan mineral producers who volunteered to participate in the CTC project at seven mining concessions. Figures from The CTC (Certified Trading Chains) Mineral Certification System: A Contribution to Supply Chain Due Diligence and Good Governance in the Mining Sector of Rwanda and the Great Lakes Region in Central Africa, P. Schütte, G. Franken, J. Vasters, F. Melcher, D. Küster, Federal Institute for Geosciences and Natural Resources (BGR), page 4

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³¹CTC Presentation at CASM Brasilia, October 2008

³²Personal communication, Dr. Philip Schütte, BGR, February 3, 2011

³³Personal Communication, Dr. Michael Biryabarema, Director of OGMR, January 23, 2011

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³⁵United Nations (2009). 'Final report of the Group of Experts on the Democratic Republic of the Congo'. United Nations Security Council. S/2009/603, paragraphs 208-210; The Hill Belongs to Them - The need for international action on Congo's conflict minerals trade, Global Witness, December 2010, page 13

³⁶The Hill Belongs to Them - The need for international action on Congo's conflict minerals trade, Global Witness, December 2010, page 13

³⁷International Alert: The Role of the Exploitation of Natural Resources in Fuelling and Prolonging Crises in the Eastern DRC, International Alert paper,

January 2010, 90 p.

³⁸Steps 1,3,4 from Branded! The Unexpected Consequences of Successful Global Branding, Michael Conroy, as quoted in Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 8; Step 2 added by the author - Conroy prefers to see certification as a purely consumer movement, but government often plays a critical role. In the KPCS governments are central; the FLA, though now independent, began in the Clinton white house.

³⁹Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 2

⁴⁰Notably IPIS, Human Rights Watch, Global Witness, Enough

⁴¹Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 2

⁴²Angola, Burundi, Central African Republic, Democratic Republic of the Congo, Kenya, Republic of Congo, Rwanda, Sudan, Tanzania, Uganda, Zambia

⁴³Protocol Against the Illegal Exploitation of Natural Resources, ICGLR, Article 11⁴⁴The G8 is an association of the world's most developed industrial nations. It includes Canada, France, Germany, Italy, Japan, the U.K, the U.S.A., and Russia

⁴⁵Growth and Responsibility in the World Economy, Summit Declaration, G8 Summit Heiligendamm, June 7, 2007, Items 80-87

⁴⁶Figures as of 2010

⁴⁷This is an average figure for DRC, which produces vast quantities of low quality industrial diamonds, mixed with smaller quantities of gem quality diamonds. For the gem quality diamonds the average price is closer to \$200/ct, and can easily soar into the tens of thousands for rarer high quality finds.

⁴⁸For gold's role in financing the FDLR, see United Nations (2009). 'Final report of the Group of Experts on the Democratic Republic of the Congo'. United Nations Security Council. S/2009/603., paragraphs 124-63.

⁴⁹Lost Government Revenue: Personal Communication, Paul Mabolia Yenga, DRC Ministry of Mines, September 29, 2010; Role in conflict financing: United Nations (2010), "Final Report of the UN Group of Experts on the Democratic Republic of Congo", S/2010/596, paragraph 117-185, 207.

⁵⁰OECD Due Diligence Guidance For Responsible Supply Chain Management Of Minerals From Conflict-Affected And High Risk Areas, Implications For The Supply Chain Of Gold And Other Precious Metals, Philip Olden: August 2010



⁵¹International Council of Mining and Metals ([ICMM]), Ten Principles, 2004

⁵²Danish Institute for Human Rights, Human Rights and Business Program, Human Rights Compliance Assessment, 2005

⁵³United Nations Sub-Committee on Human Rights, United Nations Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights, 2003

⁵⁴International Finance Corporation, International Finance Corporation's Performance Standards on Social and Economic Sustainability, Washington, D.C. revised and updated in 2006, see: http://www.cao-ombudsman.org/html-english/advisor-safeguard_091905.htm

⁵⁵These include the full OECD member nations plus another ten countries that have signed on to the integrity instruments separately.

⁵⁶Assessing Corporate Social Responsibility against International and National Standards, Jim Freedman, BGR, January 2008, page 10

⁵⁷The recognition that the standards fell into categories and the formal elaboration of these categories into what became the CTC principles was actually one of the refinements to come out of the subsequent consultation process. For purposes of clarity and narrative flow, however, the principles are stated here.

⁵⁸Assessing Corporate Social Responsibility against International and National Standards, Jim Freedman, BGR, January 2008, page 15

⁵⁹These two companies share the same management and most investors; for the purposes of the pilot they were considered effectively one company

⁶⁰These four companies were later joined in the project by a fifth company, Pyramides.

⁶¹The CTC (Certified Trading Chains) Mineral Certification System: A Contribution to Supply Chain Due Diligence and Good Governance in the Mining Sector of Rwanda and the Great Lakes Region in Central Africa, P. Schütte, G. Franken, J. Vasters, F. Melcher, D. Küster, Federal Institute for Geosciences and Natural Resources (BGR), page 4

⁶²Rwanda as yet lacks the capacity to monitor mine production and generate credible production statistics. Export figures stand in as proxies. Unfortunately, a significant portion of DRC mineral ore is regularly re-classified as being of Rwandan origin, normally after having been processed to upgrade the mineral concentrate. (See The Hill Belongs to Them – The need for international action on Congo's conflict minerals trade, Global Witness, December 2010, page 13)

⁶³S.891, The Congo Conflict Minerals Act of 2009, was introduced into the U.S. Senate 23 April 2009; H.R. 4128, The Conflict Minerals Trade Act, was introduced into the U.S. House of Representatives 19 November 2009.

The two bills were later combined and introduced as an amendment to the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was passed and signed into law 21 July 2010

⁶⁴A fifth company, Pyramides, joined the CTC pilot in August, 2009. However Pyramides is a semi-industrial miner, and the issues relating to ASM were thus not relevant. Pyramides' inclusion in the pilot was a useful test of CTC standards and auditing procedures for a semi-industrial operation. However, those results lie outside the scope of the present work and so are not included.

⁶⁵Details on the audited mining concessions can be found in Appendix 2.

⁶⁶Most companies undertook improvements to this situation as a result of participation in the CTC audit process

⁶⁷This includes proposals put forward by the UN, the OECD, the US Congress, the ICGLR, ITRI, BGR and others.

⁶⁸The FLA publishes complete audit results on its website. The new Dodd-Frank law similarly requires that audited company supply chain due diligence reports be made public on company websites. FSC places summaries of audit results on its website.

⁶⁹ISEAL (2007, Module 1: 24), as found in Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, page 7

⁷⁰Or chains; some companies had more than one, depending on their eventual customer

⁷¹Some auditing standards, notably that of the Fair Labor Association (FLA), require auditors to interview workers off the work site, away from their bosses and supervisors. Workers, it is felt, are less likely to speak candidly in the presence of their employers. (see FLA Principles of Monitoring, page 4, available at www.fairlabor.org). The CTC baseline auditor appears to have been less than careful on this point; miners were often interviewed in the presence of their gang bosses and company supervisors; company officials were often present in interviews with local communities. This element has been noted, and care should be taken to remedy this element as the system moves from pilot stage to full implementation.

⁷²While the difficulties of performing site visits in-country should not be minimized, allowing the audit subject to specify which part of its operations an auditor could inspect would likely serve to compromise the independence and validity of the audit in the eyes of external observers. A better solution might well involve government logistical support through OGMR of auditor inspection efforts.

⁷³In cases where a standard was not applicable to a particular company, the standard would not be applied, and the corresponding total for that company would be pro-rated [ie for one n/a standard the passing score would become 57 out of 76, etc]

⁷⁴Report on Developing the Record Management System Standard, Harrison Mitchell, Marie Lintzer, Mathieu Tromme and Nicholas Garrett, Resources Consulting Services, September, 2010

⁷⁵Later extended to tantalum and wolframite (in Rwanda)

⁷⁶For details on the ITRI scheme, see 'iTSCI' ITRI Tin Supply Chain Initiative, Phase 2 Project Outline; Available at <http://www.itri.co.uk/> (site accessed 28 Jan 2011)

⁷⁷ITRI and Rwandan Government to co-operate on iTSCI conflict mineral traceability scheme, ITRI press release, 10 September 2010; Available at <http://www.itri.co.uk/> (site accessed 28 Jan 2011)

⁷⁸Development of a policy and guidelines on bribery and illicit payments for Rwandan mining enterprises, Harrison Mitchell, Projekt-Consult, June, 2010

⁷⁹The most obvious and direct solution to this issue would be for Rwanda to join EITI and/or pass suitable regulations directing companies to publicly divulge their payments to government. In the absence of such government direction, companies could still choose to reveal their payments, unless actively directed not to by government authorities. Where government has directed companies not to reveal their payments, it could be argued that companies should not be penalized by a low score for this condition in a CTC audit. In this situation, however, the lack of payment transparency would remain a Certification issue, one to be addressed through further discussion and consultation.

⁸⁰LAW NO 23/ 2003 RELATED TO THE PUNISHMENT OF CORRUPTION AND RELATED OFFENCES, Article 3; the article continues as follows "To prevent corruption and related offences, every institution and public establishment must, at least: a)have its own procedure manual describing the decision making process; b)determine the time limit for decision making and the related regulations; c)respect the procedure of public invitation to tender; d) have an internal audit department; e) present a report to the relevant authorities; f) adopt a code of conduct for its officials and employees; g) recruit its employees by competition; h) ensure professional ethics; i) ensure equal treatment of those seeking services without subjecting them to delaying and tiresome manoeuvres."

⁸¹Development of a policy and guidelines on bribery and illicit payments for Rwandan mining enterprises, Harrison Mitchell/ Projekt-Consult, June 2010, page 5

⁸²Ibid, page 22

⁸³The discovery of this potential or actual abuse of power demonstrates the importance of carefully managing the interview setting. This information came to light solely because the consultant was careful to interview ordinary miners separately, with neither gang boss nor company representative present. The CTC pilot is considering making such "interviews in isolation" a required technique for the auditing process.

⁸⁴The old standard "2.1 Maintain salary or payment levels equal to or greater than those in comparable enterprises within Rwanda" was changed to the following: "2.1 Pricing and distribution systems for artisanal miners and sub-contractors, as well as salary levels for employees are fair, legal, and regulated"

⁸⁵An Occupational Safety & Health System for Small Scale Mines In Rwanda, Bernd Drechsler, Jennifer Hinton and Manfred Walle, Projekt-Consult, July, 2010

⁸⁶Development of a policy and guidelines on gender equality for Rwandan mining enterprises, Johanna Carstens, Projekt-Consult, June, 2010

⁸⁷Development of a policy and guidelines on gender equality for Rwandan mining enterprises, Johanna Carstens, Projekt-Consult, June, 2010, page 4

⁸⁸Personal Communication, Dr. Philip Schütte, BGR, 20 January 2011

⁸⁹Environmental Impact Declaration for NRD`S Mara Concession, A. E. Ehlers, August 2010

⁹⁰Zertifizierte Handelsketten im Bereich mineralischer Rohstoffe (Certified Trading Chains in Mineral Production - Concept Note), Markus Wagner, Gudrun Franken, Nicola Martin, Frank Melcher, Jürgen Vasters, BGR, April 2007, page 98

⁹¹Coltan is a trade name, used in Central Africa for tantalum-niobium ores and concentrates, mainly columbite-tantalite $(Fe, Mn)(Nb, Ta)_2O_6$

⁹²Fingerprinting of conflict minerals: columbite-tantalite ("coltan") ores, Frank Melcher et al, SGA News, June 2008, page 16

⁹³Personal Communication, Dr. Frank Melcher, BGR, 25 January 2011

⁹⁴Samples could not, for example, be collected by the mineral producer or trader, as this would bring with it the possibility of the samples being 'salted' or adulterated.

⁹⁵For example, the modification noted above to Standard 2.5, where the word "worker" substituted for "employee" to make it clear that the requirement for insurance extended to sub-contractors

⁹⁶Results for the NRD compliance audit are not yet available, due to delays in providing key documentation regarding mineral traceability along the trading chain

⁹⁷Note that under Dodd-Frank, these four metals are conflict minerals no matter where in the world they are sourced. The further reporting requirements then commence for conflict minerals sources in the DRC and its neighbours (where those conflict minerals are necessary for the functionality of a given product).

⁹⁸Lessons from Existing Certification Schemes for the Regional Certification



Mechanism of the International Conference on the Great Lakes Region,
Shawn Blore, Ian Smillie, Partnership Africa Canada, June 2010

⁹⁹The CEEC or Centre d’Evaluation, d’Expertise et de Certification was created to register, value and tax DRC diamond production. In 2008 the CEEC’s mandate was extended to include other high value minerals including gold, coltan, tantalum and tin.

¹⁰⁰The Service d’Assistance et d’Encadrement du Small Scale Mining was established by decree of the DRC president in March, 2003, with the explicit mission to assist and formalize artisanal miners

¹⁰¹DRC Tin Supply Chain Initiative, ITRI press release, 1 July 2010; available at www.itri.co.uk (accessed 28 January 2011)

¹⁰²Supply chains unite to start iTSCI mineral traceability project in DRC, ITRI press release, 19 Mar 2010; available at www.itri.co.uk (accessed 28 January 2011)

¹⁰³Personal Communication, Karen Hayes, PACT, 29 September 2010

¹⁰⁴Communiqué du ministre des mines en rapport avec la décision du président de la république sur la suspension de l’exploitation minière, DRC Ministry of Mines Press Release, 11 September 2010

¹⁰⁵ITRI and Rwandan Government to co-operate on iTSCI conflict mineral traceability scheme, ITRI press release, 10 September 2010; Available at <http://www.itri.co.uk/> (site accessed 28 Jan 2011)

¹⁰⁶OECD Guidelines for Multinational Enterprises; OECD Risk Awareness Tool for Multinational Enterprises in Weak Governance Zones.

Appendix 1: Profiles of CTC Pilot Companies

Company	Natural Resources Development (NRD)		
Concessions	Rutsiro	Nemba	
Mineral	Sn, W, Ta	Sn	
Production	<10 tonnes/month (each mineral)	10-20 tonnes/month	
Mine Type	Small pits, tunnels	Open pit	
Number of Miners	900 (approx)	700-1500	
Baseline Audit	August, 2009	August, 2009	
Compliance Audit	December, 2010	December, 2010	
Notes			
Company	Gatumba Mining Concession (GMC)		
Concessions	Gatumba		
Mineral	Sn, Ta		
Production	10 tonnes/month (Sn); 2-3 tonnes/month (Ta)		
Mine Type	Small pits, some tunnels		
Number of Miners	600 (strong seasonal variation)		
Baseline Audit	August, 2009		
Compliance Audit	November, 2010		
Notes			
Company	Eurotrade International (ETI)/Rutongo Mines Limited (RML)		
Concessions	Nyakabingo	Rutongo	
Mineral	W	Sn	
Production	Up to 40 tonnes/month	Up to 80 tonnes/month	
Mine Type	tunnels	Tunnels	
Number of Miners	Several hundred	>2000	
Baseline Audit	August, 2009	Not performed	
Compliance Audit	Not performed	October, 2010	
Notes	Nyakabingo submitted to baseline audit, but not yet to compliance audit due to a temporary shutdown of mining operations	Rutongo run by separate company (Rutongo Mines Ltd) that shares ownership & management with ETI. Rutongo subjected to compliance audit	
Company	Wolframite Mining and Processing (WMP)		
Concessions	Gifurwe		
Mineral	W		
Production	> 10 tonnes/month		
Mine Type	Mostly open pit, some tunnels		
Number of Miners	400 approx		
Baseline Audit	March, 2010		
Compliance Audit	November, 2010		
Notes			
Company	Pyramides		
Concessions	Cybubi		
Mineral	Ta		
Production	n/a		
Mine Type	Open pit		
Number of Miners	n/a		
Baseline Audit	November, 2010		
Compliance Audit	n/a		
Notes	Cybubi is a small scale industrial mine, not artisanal. Auditing performed to test CTC on small scale industrial production		

Appendix 2: Publications and References of the CTC Pilot Project in Rwanda

Initial Concept

Zertifizierte Handelsketten im Bereich mineralischer Rohstoffe (Certified Trading Chains in Mineral Production - Concept Note), Markus Wagner, Gudrun Franken, Nicola Martin, Frank Melcher, Jürgen Vasters, BGR, April 2007, 101 pages

Pilot Project on Mineral Certification in Rwanda: Project Outline, OGMR, BGR, March 2009, 10 pages

Project Development

The CTC (Certified Trading Chains) Mineral Certification System: A Contribution to Supply Chain Due Diligence and Good Governance in the Mining Sector of Rwanda and the Great Lakes Region in Central Africa, Philip Schütte, Gudrun Franken, Jürgen Vasters, Frank Melcher, Dirk Küster, Aachen International Mining Symposia 2011, Sustainable Development in the Mining Industry conference paper, 15 p.

Cooperation Agreements

First Meeting Of The Working Group For The Implementation Of The Memorandum of Understanding Between OGMR, RBS& BGR, 15 Sept 2010, 9 pages

Standards Creation and Development

Assessing Corporate Social Responsibility against International and National Standards, Jim Freedman, BGR, January 2008, 60 pages

Certified Trading Chains in Mineral Production: Principles and Standards, BGR, November, 2008, 19 pages

First Planning Workshop for the "Pilot Project on Mineral Certification in Rwanda, OGMR and BGR, 25 Mar, 2009; 29 pages

CTC guidelines as established at the implementation workshop, Kigali, March 2009, and proposed modifications according to stakeholder feedback, submitted to the national certification workgroup in August 2010, March 2009-Aug, 2010, 23 pages

CTC Draft Standards Rwanda, Submitted to National Certification Workgroup in August 2010, August, 2010, 27 pages

Technical Feasibility Studies

Certified Trading Chains in Mineral Production: Towards Technical Assistance, BGR, Estelle Levin, September 4, 2008, 81 pages

Certified Trading Chains in Mineral Production & The Extractive Industry Transparency Initiative: Synergies and Scope for Collaboration, by Nicholas Garrett, BGR, September 21, 2008, 43 pages

Political Background

Summit Declaration, G8 Summit Heiligendamm, June 7, 2007

Auditing

Terms of Reference: Compliance Audits of Mining Companies in Rwanda to the CTC-Standard Set, OGMR, BGR, June 2009, 6 pages

Compliance Audits of Mining Companies in Rwanda to the CTC Standard Set – NRD Baseline Audit Report, Dr Nellia Mutemeri, OGMR, BGR, 23 Sept 2009, 63 pages

Compliance Audits of Mining Companies in Rwanda to the CTC Standard Set – GMC Baseline Audit Report, Dr Nellia Mutemeri, OGMR, BGR, 23 Sept 2009, 51 pages

Compliance Audits of Mining Companies in Rwanda to the CTC Standard Set – ETI Baseline Audit Report, Dr Nellia Mutemeri, OGMR, BGR, 23 Sept 2009, 51 pages

Compliance Audits of Mining Companies in Rwanda to the CTC Standard Set – WMP Baseline Audit Report, Dr Nellia Mutemeri, OGMR, BGR, 23 Sept 2009, 65

Gatumba Mining Concession Certification Audit, Dr Nellia Mutemeri, BGR, OGMR, January 2011, 89 pages

Rutongo Mines Certification Audit Report, Dr Nellia Mutemeri, BGR, OGMR, January 2011, 87 pages

Wolfram Mining and Processing - Gifurwe Certification Audit Report, Dr Nellia Mutemeri, BGR, OGMR, January 2011, 104 pages

Assistance to Pilot Companies

Development of a Policy and Guidelines on Gender Equality for Rwandan Mining Enterprises, Johanna Carstens/Projekt-Consult, 22 June 2010, 38 pages

Development of a policy and guidelines on bribery and illicit payments for Rwandan mining enterprises, Harrison Mitchell/ Projekt-Consult, June 2010, 54 pages

An Occupational Safety & Health System For Small Scale Mines In Rwanda, Bernd Drechsler, Jennifer Hin-

ton, Manfred Walle, Projekt-Consult, July 15th, 2010, 88 pages

Environmental Impact Declaration For NRD'S Mara Concession, Anthony Ehlers, Jürgen Vasters, Philip Schütte, Prosper Nkanika, NRD and BGR, August 2010, 22 pages

Report on Developing the Record Management System Standard, Harrison Mitchell, Marie Lintzer, Mathieu Tromme and Nicholas Garrett, Resource Consulting Services, September, 2010, 50 pages

Compliance Audits of Mining Companies in Rwanda to the CTC Standard Set – Inception Report: Certification Audits, Dr Nellia Mutemeri, 23 Oct 2010, 23 pages

AFP

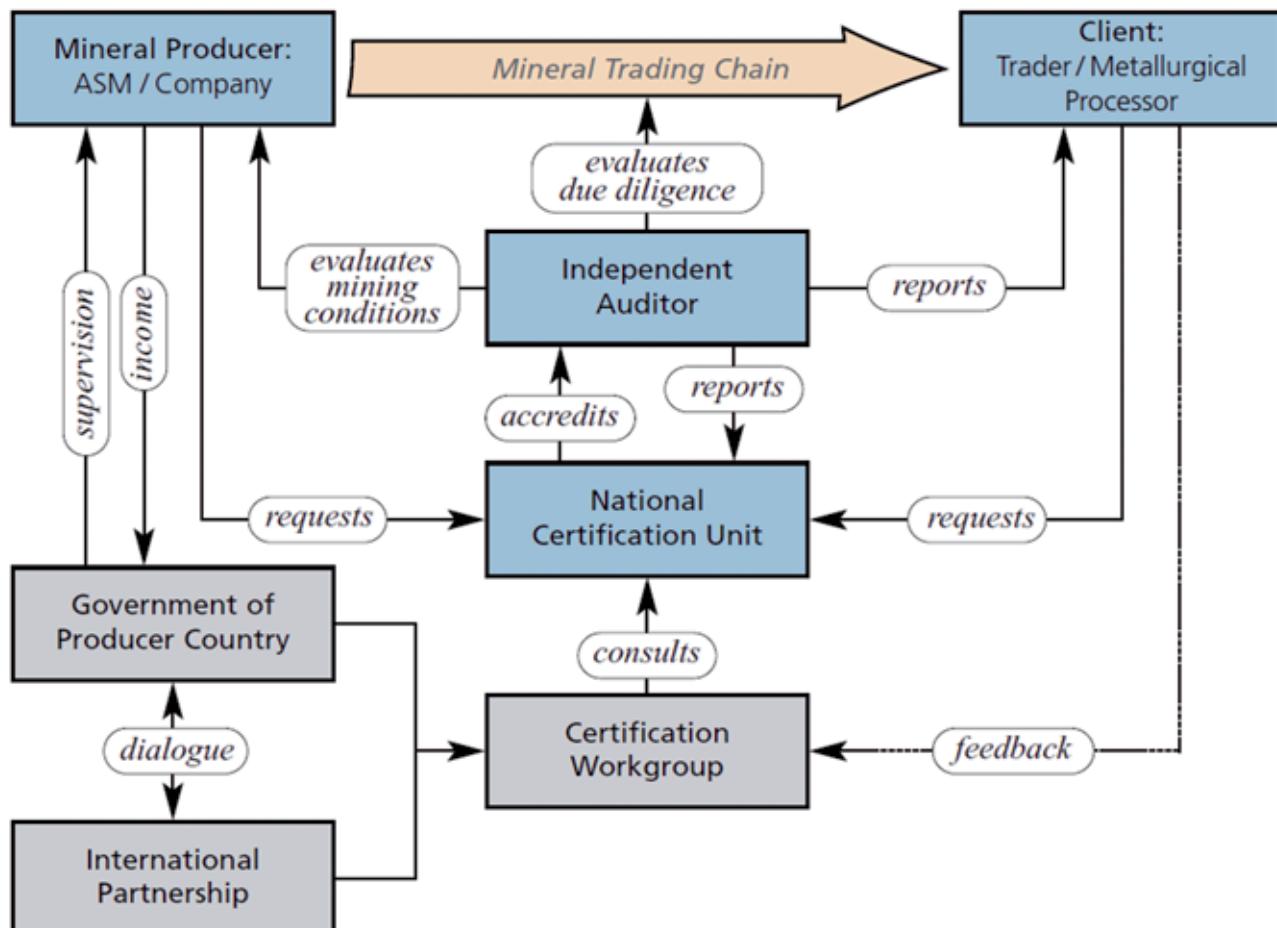
Fingerprinting of conflict minerals: columbite-tantalite ("coltan") ores, Frank Melcher et al, SGA News, June 2008

AFP Update: Analytical fingerprint (AFP) for tantalum ("coltan"), tin, and tungsten ores, Philip Schütte, Torsten Graupner, Hans-Eike Gäbler, BGR, July 2010, 5 pages

AFP Application Models for Mineral Certification Systems (Analytical Finger Print), Philip Schütte, Jürgen Vasters, Frank Melcher, Hans-Eike Gäbler, Torsten Graupner, BGR, 30 Sept 2010, 8 pages

Report on a field trip to the Natural Resources Development (NRD) Rwanda concessions Rutsiro and Mara (western Rwanda), Torsten Graupner, Frank Melcher, Philip Schütte, BGR, October 2010, 33 pages

Appendix 3: CTC Governance Scheme



The CTC governance scheme as currently operating at the national level in Rwanda. Adaption of the governance system to the ICGLR scheme is envisaged in the mid-term.



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