

**The MetTrak System at  
Rutongo**

**A Preliminary Assessment**

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## Executive Summary

This report is a preliminary evaluation conducted by Partnership Africa Canada of a new digital tracking technology for conflict minerals currently operational at the Rutongo Mines site in Rwanda. This is the first time this technology has been applied in the Great Lakes region.

The MetTrak chain of custody system in operation at Rutongo Mines in Rwanda offers a convincing solution to chain of custody tracking. The system adequately fulfills the chain of custody requirements of the ICGLR Regional Certification Mechanism (RCM), which is itself compliant with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

The system accurately and automatically collects data on the origin, transport and processing of minerals, from the small lots produced by individual miners up through to the large processed export lots. Data is collected automatically and in real time. At Rutongo, for any given 1000kg export shipment, the system could automatically and in real time (i.e. with no time delays for data entry) show the provenance of all the smaller mineral lots contained in that shipment – including the mine site where each smaller lot was sourced, the data and time of its production, and the individual miner who produced it.

This complete and unadulterated data set can be transferred, again in real time, to the custody of regulatory agencies and the International Conference on the Great Lakes Region (ICGLR).

In terms of ease of use, accuracy of data collected, and labour force requirements, the system is very promising. It is both robust and flexible and, with some careful planning and local-level engagement, promises to be sustainable. What's more, the system provides full access to all mineral tracking data to both Member State governments and the ICGLR.

The sections below detail how the MetTrak system works, and analyses its conformity with ICGLR requirements. Below that are suggestions for how the MetTrak system might be extended from a single mine site owned by one company to a more fully artisanal mining scenario in Rwanda or the eastern DRC.



## 1.0 The Report

This report is a preliminary evaluation conducted by Partnership Africa Canada of a new digital tracking technology for conflict minerals currently operational at the Rutongo Mines site in Rwanda. This is the first time this technology has been applied in the Great Lakes region. The aim of the report is to provide a functional level evaluation of the MetTrak tracking system as implemented at the Rutongo Mines in Rwanda. In particular, the evaluation focusses on the system's ability to fulfill the chain of custody requirements of the ICGLR Regional Certification Mechanism (RCM), which is itself compliant with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. This report is not a technical brief, and so does not provide technical specifications. Those interested in these details should contact the company directly.<sup>1</sup>

## 2.0 Description of the MetTrak System

### 2.1 Background

The digitized tracking system under review was developed by the South African Company, MetTrak, a company with a long experience in animal, goods and vehicle tracking in South Africa, Swaziland, Namibia and Botswana. The company has drawn on this experience in the beef industry in particular to expand the use of digitized tracking into other areas such as the garment industry, mining, sugar, wood and poles, wool bale trace, pallet and containers and others.

According to the company, "MetTrak is an integrated real time software solution specialising in the tracking and tracing of all materials such as, minerals, associated products and consumables, utilised in the mining industry. It has robust reporting capabilities designed to meet the needs of the customer, the various international monitoring organisations and government requirements. The system is capable of tracking the ore from the mine tunnel through to the end user and has a comprehensive audit trail. The reporting software is user friendly, easily adapted to meet specific customer requirements and can be integrated into most database systems. It has been designed and tested in the harsh African environment making it capable of being deployed in remote areas." MetTrak was first implemented on a test basis at Rutongo Mines<sup>2</sup> in Rwanda in October of 2011. It has been fully operational since November 2011.

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<sup>1</sup> MetTrak contact: Dion Smit: +27 82 5734 906; E-mail: [dion@dionsmit.co.za](mailto:dion@dionsmit.co.za). At the time of writing, MetTrak's website was in development but was to be launched imminently. Details about MetTrak's technology and its application to livestock can be found at: [www.beeftech.co.za/index.html](http://www.beeftech.co.za/index.html).

<sup>2</sup> Rutongo Mines is a privately owned, semi-industrial cassiterite mine, north of Kigali.

## 2.2 Registration of Personnel

With the MetTrak system everyone who deals with minerals is first registered and given an ID card that is both bar-coded and remotely (RF)<sup>3</sup> readable. This includes miners, gang bosses, mine supervisors, drivers, processors, shippers, receivers, and anyone else in the mineral chain. When any action is performed on any quantity of minerals, the ID card is used to register the person responsible for that action.

The process of issuing ID cards takes less than five minutes, and takes place in one of Rutongo's on-site offices. Required equipment includes a PC (or tablet, in the case of Rutongo), digital camera, colour printer, laminate machine, and a supply of ID card blanks. Each employee's personal details are recorded in a PC, their photograph taken, and then the person's name, position and photograph are printed and laminated on to an electronic ID card blank.

In addition to personal details, each employee is placed in a functional category –e.g. miners, transporters, security. Part of the security of the system is that certain actions are reserved to certain categories. For example, a miner ID cannot be used to transport minerals; a driver category ID cannot be used to register minerals. Obviously, the non-clonability or non-counterfeitability of these ID card blanks is critical to the integrity of the system. MetTrak managers have assured PAC that the ID cards are so well encrypted as to completely resist counterfeiting. Whether or not this proves true in practice, an additional level of protection is provided by the functional categories and the assignment of particular employees to particular mine sites. For example, were the ID card of a miner cloned, and the cloned card used at a mine site where the miner is known not to work, the system is programmed to flag the discrepancy.



**Worker with ID card**

In an enclosed system and semi-industrial mine such as Rutongo, these kinds of automatic cross checks provide a sufficient level of security. How security might be assured in a more open artisanal system is discussed in section 6.0 below.<sup>4</sup>

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<sup>3</sup> Radio Frequency: in functional terms, an RF tag, unlike a purely magnetic card such as the kind used in a hotel key card (for example) can be read even when the RF tag is some distance from the registration unit.

<sup>4</sup> The digital registration of miners could easily lend itself to the formalization of the artisanal mining sector, which is one of the six tools or objectives adopted by the ICGLR Heads of State at the 2010 Lusaka Special Summit on the Illegal Exploitation of Natural Resources.



## 2.3 Mineral Registration Stations

The MetTrak system at Rutongo begins the registration of minerals as they exit the tunnel at each exploitation or pit site<sup>5</sup>. In the context of large, poorly formalized mining operations, mineral registration stations can be mounted on a truck or even a backpack to allow for mobile tagging activities directly at the site of production.

The registration station consists of a computer linked to an electronic scale and a RF card reader. The card reader is able to detect ID cards at a distance of some metres (approximately 5-10 metres, depending on line of site and other conditions) from the card reader unit. The system software is set up so that registration of minerals cannot take place unless the unit registers the presence of both a mine security officer and Rutongo's designated tagging officer for the site, which may be a MetTrak employee or a government employee.

Once these two individuals are registered by the system, miners bring forward their minerals - one at a time - for weighing and registration. The process begins with a miner presenting their ID card to the tagging officer, who then makes sure that the card has been picked up by the card reader, and then cross checks the information on the card with the unit display and by visually checking the photograph and asking the miner his name.

If all is in order, the tagging officer has the miner place his material on the electronic scale. The registration unit automatically records the weight from the scale, and stores this information together the ID of the miner and the tagging and security officer, the location of the mine site and a date/time stamp recording when the weighing took place. The unit beeps to indicate that the information has been entered correctly, and the unit then prints out a receipt (similar to an ATM bank machine receipt), which is given to the miner.

The receipt lists the name of the miner, the amount of material and the time and date and location of registration. The provision of these receipts (and concomitant printing capability for the units) has been one of the keys to miners' acceptance of the system. Miners are reassured by having a physical record of their own individual production which they can use to verify payments received from the company.

Daily individual production by any given miner ranges from 1 kg to 50 kg, with a median value of approximately 10kg. By monitoring individual output, MetTrak identifies or flags producers who exceed predetermined parameters, adding an

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<sup>5</sup> The necessity to track minerals from separate pits/tunnels within an individual mining concession is not a requirement of the ICGLR scheme or of the OECD Due Diligence Guidance, but is rather a requirement of Rwanda's chain of custody regulations. However, in addition to meeting Rwanda's requirements, tracking from each pit allows the company to know the production details and employee hours for each exploitation site.



additional measure to check against fraud or to expose potentially fraudulent activities.

The tagging officer continues processing miners and accepting bags of material until there is a parcel of more or less 50kg on hand. The tagging officer then 'closes off' this parcel. Using the registration unit panel, the tagging officer indicates that the last series of bags that were registered constitute an approximate 50kg parcel.

The various bags making up this parcel are placed in a single sack. The tagging officer takes a coded plastic RF tag, instructs the registration unit to record the RF tag ID, and then affixes the RF tag to the sack, sealing the sack at the same time. As these RF tags are used at the mine site, they are known in Rutongo as "mine tags."

Physically, the RF tags are thick, hard, grey plastic squares that fit comfortably in the palm of your hand. The RF tags contain a permanent unique encrypted ID number. As with the ID cards, MetTrak officials assert that the RF tags cannot be cloned. As with the ID cards, the true protection is likely not the RF tags' encryption, but software checks built into the system that flag anomalous use of an RF tag ID number. According to MetTrak, if an RF tag ID were to appear coming from a mine or in a mineral chain to which it had not been assigned, the system would automatically raise a flag. The system's response to such a flag can be programmed in, depending on user goals. The system could block out usage of that RF tag. It could also allow usage to proceed, but alert authorities, allowing them to apprehend those making use of the anomalous tag.<sup>6</sup>

Once a 50 kg parcel has been closed off, the tagging officer returns once again to processing individual bags of miner's production and grouping these into 50kg parcels which are in turn closed off and assigned an RF mine tag. The process continues until all the production from that site for that day had been tagged. At this point, the material is ready for transport.

The data from each and every transaction (i.e. registration of bags, closing off of parcels, loading of transport trucks, etc.) is stored temporarily in the registration unit. The unit is connected, via cell phone or where necessary satellite phone<sup>7</sup>, to a MetTrak server located off-site. As and whenever the registration unit establishes a good connection, it transmits all stored packets of data concerning

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<sup>6</sup> The option of alerting authorities to cases of fraud could support the institutionalization of whistleblowing, which is yet another one of the six tools or objectives adopted by the ICGLR Heads of State at the 2010 Lusaka Special Summit on the Illegal Exploitation of Natural Resources.

<sup>7</sup> Obviously, using satellite phone will increase costs, but MetTrak claims it has reduced the packet size of its transaction records to a such a bare minimum that even data transmission via sat phone should come in at an acceptable cost.

each transaction to the MetTrak off-site server, as well as Rutongo's on-site database<sup>8</sup>.

At the same time, this real-time tracking information could also be transmitted to a government-owned database in the country's mines division, and also to the ICGLR's Regional Mineral Tracking Database. Technically, this requires only that data formats between MetTrak and government or ICGLR databases be compatible, or that a translation protocol be devised. MetTrak company officials further state that they have no objection to providing this kind of real time data to governments or the ICGLR; indeed, they welcome the full transparency that comes with such disclosure.

This then is one of the major advantages of the MetTrak system – instant mineral tracking data from reliable tags, continuously updated, provided to government and regulatory agencies in an unadulterated state. The level of transparency possible with the MetTrak system could provide all interested parties with critical assurances of the conflict free nature of the minerals in question. In turn, it could also contribute to the overall integrity and legitimacy of in-region traceability and certification efforts.

Table 1, below, shows a very small subsample (reduced both in fields and records) of actual data collected by the Rutongo MetTrak system. The key elements to note are that the system records the miner's name, mass of material date and time, and a unique ID for the transaction. It records these with great accuracy and ease, making the system cost effective (see Section 4.0, below, for a further discussion of costs).

Item Code	Date Created	Time Create	Mass (kg)	Item Miner
NYA-1253037000026	03/01/12	11:12 AM	2.0	ZTEST3 ZTEST3
NYA-1253037000027	03/01/12	11:51 AM	13.2	NAZAIRE TWIZEYIMANA
NYA-1253037000028	03/01/12	11:59 AM	16.0	YVES KARARA
NYA-1253037000029	03/01/12	12:04 PM	2.8	ZTEST3 ZTEST3
NYA-1253037000030	03/01/12	12:14 PM	8.0	JEAN D'AMOUR KARIMWABO
NYA-1253037000031	03/01/12	12:32 PM	4.2	SEKABUGA INNOCENT
NYA-1253037000032	03/01/12	12:44 PM	3.0	EMMANUEL MUNYAKAZI
NYA-1253037000033	03/01/12	12:46 PM	3.6	JEAN DE DIEU BANSANGE
NYA-1253037000034	03/01/12	12:46 PM	4.8	PATRICK NSHIMIYIMANA
NYA-1253037000035	03/01/12	12:47 PM	4.4	MICHEL BANKUNDIYE
NYA-1253037000036	03/01/12	12:47 PM	3.6	PATRICK UWAYO

**Table 1: Sample data collected by MetTrak at Rutongo mine**

<sup>8</sup> The on-site database was not yet operational at the time of the PAC's visit; Rutongo management planned to have this operational the following week.



## 2.4 Transport

Transport of the material from the mine site to the Rutongo processing centre is a similarly registered and controlled procedure. Transport can only take place if both the driver and a security officer are present, with ID cards read by the registration unit. In addition, the transport truck is also equipped with a RF tag, which is duly noted automatically by the registration unit. The material is then loaded on the truck, with the tagging recording the RF tags of all bags placed on the truck. The registration unit records all this information, notes the time at which the truck departs, and transmits this information to the MetTrak server.

It is possible to have RF readers placed at various points along the transport route, though this is not done on the Rutongo site. As the truck passes, the RF reader picks up the truck ID as well as that of the driver and security officer, and the time the vehicle passed. This information too is uploaded.

At the Rutongo processing centre, the truck is off-loaded, in a reverse of the loading procedure. The RF reader at the processing centre notes the time of the truck's arrival, and the ID tags of the driver and security officer. Each tagged 50kg parcel is re-weighed and then checked into the storeroom. Any large discrepancy in weight between mine site and processing centre generates a flag. At Rutongo, the material is then normally stored for processing next day

## 2.5 Processing

At Rutongo, the raw (or very rudely processed) material from each tunnel or mine site goes through a basic upgrade process to bring it up to a uniform acceptable ore grade. The first step is for a registration unit at the processing centre to register the ID of those employees performing the processing.

Material is processed in batches. The “mine tags” are removed from 50 kg parcels, recorded by the registration unit, and then the material is fed mine parcel by mine parcel into the processing equipment. The goal at the end of the process is a 1000 kg “négociant” parcel<sup>9</sup>. As some weight is lost through processing, 22 to 25 individually tagged mine parcels, each weighing 50 kg, are normally fed into the processing equipment as a batch. At the end of processing, this upgraded material is placed in a 1000 kg plastic bag, weighed, and then sealed with a RF tag, known in Rutongo as a “négociant tag”<sup>10</sup>.

The registration system records the ID of the négociant tag. In addition, as the processing system is first in first out, the system associates the 22-25 mine tags that went into processing with the resulting négociant tag. Thus, for each outgoing 1000 kg processed parcel, it is possible to trace the contents back via

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<sup>9</sup> Rutongo has since shifted to using 500 kg négociant parcels.

<sup>10</sup> The RF tag unit for a négociant tag is identical to the RF tag used for a mine tags. It's the tag's role in the system that generates the different name.



its transportation routes to the mine sites and miners who produced the original raw ore.

## **2.6 Export**

At this point, the 1000 kg négociant parcels are ready to be shipped off site. If Rutongo were directly exporting its material from Rwanda, the MetTrak system would at this point have provided more than sufficient chain of custody proofs to meet the ICGLR Regional Certification Mechanism requirements. Rutongo could at this point apply for a Certificate, using the MetTrak data as proof of chain of custody. Some improvements may be required to develop reports for each export parcel demonstrating the origin of the material in that parcel. However, given that the database structure and data collection are already in place, developing appropriate reports should be straightforward.

Rutongo currently exports its material through a Kigali export partner. The export partner has not yet installed the MetTrak technology, but once it does the process of tracking the material from Rutongo to the exporter will be similar to that of tracking the mine parcels from the mine site to the Rutongo processing centre: the transporter and security officer will be registered, the transport truck will be ID'ed via its own RF tag, and the time and date of departure from the mine will be recorded.

At the exporter's site, the arrival of the truck would be recorded, as well as the ID of each négociant tag as the 1000kg parcels were checked in. The exporter would, at that moment, have the complete provenance of that material at their disposal. For the Kigali exporter, this would provide an additional advantage. Because data in the MetTrak system is collected and transmitted in real time, the exporter will be able to verify the origin of all the material in a Rutongo shipment, even before the Rutongo truck enters the exporter's facility. This ability to verify the origin of material before allowing it onto an exporter's premise is a requirement of the ICGLR RCM.

Once the Kigali exporter is ready to ship the material overseas, the data in the MetTrak database (or more likely, reports generated from that data) can also be used to provide the proofs of chain of custody required by the ICGLR.

## **3.0 Fulfillment of Requirements**

### **3.1 Overview**

From the perspective of standard setting/regulatory body such as the ICGLR, the key question regarding the MetTrak system is whether it fulfils the requirements of the ICGLR Regional Mineral Certification (RCM) system, the standards for which have been harmonized with the OECD Due Diligence Guidance. The chain of custody requirements for industrial producers are covered by Appendix 4a of the ICGLR Certification Manual. The chain of custody requirements for exporters



are listed in Appendix 5. These standards have been included below at the end of the report.

The MetTrak system, in its current prototype stage, already meets the vast majority of the listed requirements. The conformity of the system with some requirements is obvious. For example, Standard 1, “Maintain records for a minimum of five years, preferably on a computerized database”.

The system’s conformity with other requirements can be inferred. This is the case with Standard 6.2 “Mine Operators shall not tolerate any form of forced or compulsory labour.” The MetTrak system tracks the minerals produced and the payment received by each individual miner. The fact that no production can enter the system without it being attributed to a particular miner, and the fact that a record of payments to all miners is kept in the system database suggests that minerals extracted by an un-paid miner cannot enter the system. This technology could therefore complement mine site inspections that aim, in part, to identify and/or monitor forced or unfair labour conditions. The use of ID cards for every person on the mine site, to use another example, may also dissuade the use of child labour.

The system’s conformity with the standards will not be explained point by point. Some further standards, which the MetTrak system neither helps nor hinders, are considered not relevant to the current discussion and so are not listed below. Those requirements that the MetTrak system only partially meets – and there are only two - discussed below. In both cases, conformity with the ICGLR requirements can be achieved with only minor modifications.

### **3.2 Data Sharing Standards**

One of the most impressive aspects of the MetTrak system is its conformity with the ICGLR Data Sharing Standards, contained in Section 4.10 of the Certification Manual:

*4.10 The system ensures that all the tracking data from the mineral chain and the Chain of Custody tracking system, including the disaggregated lot or shipment tracking data (i.e. the data for each individual lot or shipment), and the input and output data of individual chain operators are transmitted to the ICGLR Secretariat on a monthly basis, or more frequently. The data from the Chain of Custody system shall be transmitted to the ICGLR Secretariat in full, in its unprocessed state. The data shall not be redacted, aggregated, grouped, or otherwise processed in any way that might serve to hide, disguise, obscure or otherwise impede the ability of the ICGLR Secretariat to have full access to every particular of every parcel, lot or shipment of Designated Minerals. (ICGLR Certification Manual, section 4.10.)*



As noted above, the MetTrak system collects such data in real time from each of the registration stations along the mineral chain. The only challenge for either Member States or the ICGLR in obtaining this data is a technical one: the regulatory agencies will have to have on hand or develop tracking databases capable of receiving and making use of this data. For Member States in which MetTrak operates, the simplest strategy would be to install a copy of MetTrak's database in its own offices. For the ICGLR, either the ICGLR Regional Tracking Database will have to be made compatible with MetTrak's format, or protocols developed to translate data from one database to another. In either case, the national-level and ICGLR databases would have to be flexible enough to accommodate all other tracking technologies in operation or in development that conform to ICGLR standards. These are technical challenges that are relatively easily overcome but will require collaboration and coordination.

### 3.3 Analysis of Remaining ICGLR Standards

#### Standard

*14.4. A description of the material, including the ore type (e.g. cassiterite), its weight (e.g. 1000kg), and grade (e.g. 45%)*

*18.2. The weight, ore type, and grade of the mixed lot.*

#### Analysis

The MetTrak system does not record the grade of material exiting a tunnel for transport to the company processing centre. However, this is not a requirement of the ICGLR system. Recording the grade of lots shipped from the Rutongo concession to the Kigali exporter is an ICGLR requirement. Rutongo does record this information, but it was not clear from the data provided whether the grade information was included in the data uploaded to the MetTrak server with each négociant parcel. Possibly, Rutongo/MetTrak does record and transmit this information, and it was merely absent from the records viewed by PAC. If it is not current practice to include the grade information as part of the records uploaded with négociant parcels, the company should take steps to modify the MetTrak system and its own practices accordingly.

#### Standard

*14.6. Values and details of all taxes, fees or royalties paid to government for the purpose of extraction, trade, transport or processing of the lot, along with any other payments made to governmental officials for the purpose of extraction, trade, transport or processing of the lot.*

#### Analysis

PAC did not have the opportunity to view all parts of the MetTrak database for Rutongo; the financial record keeping was one aspect of the system that was unavailable at the time of inspection. That said, it is clear that the MetTrak database system allows the company to track production and with it any of the production-related obligations to government. What is not clear is whether the



MetTrak system has been set up to calculate taxes, fees and royalties due on each lot, on a lot by lot basis. However, the modifications involved in enabling the system to calculate this information on a lot by lot basis would be minor.

#### 4.0 Costs

Cost is a critical consideration in any chain of custody system. The net cost charged for the service must be low enough so as not to adversely affect economic operators, particularly in periods of lower commodity prices. It is not PAC's place to quote company pricing information, and in any case MetTrak is still working out its pricing model, taking into account how it will operate in a more fully artisanal situation. That said the company is confident that the automated nature of its data capture procedures, and the relatively low capital cost of its equipment, should enable it to keep costs low. It is currently developing a business model with a commitment to sustainability over the long term, thus avoiding short-term (start-up) related cost peaks.

Immediately prior to the public release of this report, Rutongo Mines was paying \$500/tonne for its traceability services, with an additional \$200/tonne levy to the Rwandan government to pay for the government field personnel required to operate and maintain the system<sup>11</sup>. While the company would not give firm figures on its pricing, MetTrak could likely provide traceability services for half the above noted amount, and perhaps even less.

#### 5.0 Logistics

The other question regarding the MetTrak system is whether it would work in the more rugged environments of rural Rwanda or especially the eastern DRC. As noted above, the registration units can transmit their data either via cell phone or satellite phone. In more remote locations, such as Bisie in Eastern DR Congo, a sat phone link would be the only alternative. However, MetTrak appears to already have systems field tested using sat phone links, so this should not be issue. As indicated above, mineral registration stations can be also be mounted on a truck or even a backpack to allow for mobile tagging activities directly at the site of production.

Perhaps a more genuine concern is the need for power, which is infrequent and unreliable in the eastern DRC. MetTrak's registration units are essentially stripped down PCs, and thus require AC power to operate. However, the power requirements are sufficiently low that MetTrak believes they could be operated

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<sup>11</sup> Note that the current levy also includes charges for additional services not directly related to traceability such as risk assessments and incident reporting. These services are not provided by the MetTrak system. Users of the MetTrak traceability system would likely incur some further costs in order to be ICGLR and OECD compliant. These costs should be borne in mind in making comparisons.



via charged DC batteries (car batteries, most likely) run through an inverter. The batteries in turn would be trickle charged via solar cells.

Such charging systems are in relatively common usage in the eastern DRC; they are not prohibitively expensive, and as the technology is familiar, it should be within the reach of local residents to maintain such as set up.

Some modifications by the company may be required to reduce the power consumption of its units to a bare minimum. MetTrak may also want to explore developing a field unit that uses DC power, thus obviating the need for an inverter. A field trial, involving various stakeholders (government-private sector-civil society), in the eastern DRC would be a useful way to test out these options and both the feasibility and sustainability of this technology in such contexts.

## 6.0 Extension to Artisanal Chains

### 6.1 Paying for Traceability

The MetTrak system is clearly very promising. It provides accurate data collection, quickly and with great transparency. Given that its data collection procedures are automated (and can be more sparing of government personnel costs by relying, to varying degrees, on MetTrak personnel), the MetTrak system should also be able to offer significant savings to exporters, processors and miners now required to demonstrate (and pay for) the traceability of their product. The question is how to extend the MetTrak system from its current successful implementation in a single mine site to the dispersed, fully artisanal situation that characterises large parts of Rwanda and the eastern DRC, and to do so in a way that offers savings to exporters and increased accuracy to governments. The key to a successful implementation in the artisanal realm is a realisation that exporters (known generally as *comptoirs* in the DRC and exporters in Rwanda) are the natural choke point—both logistically and financially—on the artisanal chain and thus the natural fiscal point from which traceability services provided further up the artisanal chain can be amortized.

Exporters understandably sometimes balk at this role, particularly as traceability charges and surcharges have doubled and tripled in recent years. However, the fact remains that traceability charges levied at the exporter level are passed up the chain to artisanal producers and artisanal traders in the form of reduced mineral prices. As it turns out, this greatly simplifies the challenge of providing traceability.

The advantage of this situation is that it allows a traceability provider such as MetTrak to make all the necessary investments and install the required traceability infrastructure at points further up in the mineral chain, without having to concern itself with pursuing individual diggers or field traders for payment. As noted above, payments are assessed at the level of the exporters, who then pass these costs back up the chain by adjusting the price paid for minerals.



In one sense, this puts the costs of traceability on those higher up the mineral chain, including artisanal miners. However, currently in places such as the DRC there is actually a premium for fully traceable material. By making their material traceable, artisanal miners are thus gaining a price premium, less the costs of the traceability services. As long as the premium is larger than the cost of traceability, miners should be willing to adopt this traceability technology.

Exporters should, of course, at all times retain the option to not use MetTrak's services. No company or entity should ever maintain a monopoly on traceability services; traceability should instead be a matter of willing buyer-willing seller, with exporters choosing the traceability service that offers the best results at the optimal price provided the preferred service respects both national laws and ICGLR standards. (This topic is discussed further below, after an outline of the technical aspects of implementing a MetTrak traceability chain.)

## 6.2 Trial Mineral Chains: Rwanda and DRC

As noted above, with exporters serving as the financial anchor from which traceability services can be paid for, MetTrak is in a position to install the necessary infrastructure further up the mineral chain in order to make chain of custody tracking possible.

In the case of Rwanda, a strategic trial could involve tracking material from one of the larger artisanal cooperatives located in the west of the country. Working with the Rwandan government and cooperative officials<sup>12</sup>, MetTrak could identify the cooperative's most productive pits or tunnels and install tracking stations at these sites. ID cards could be issued to cooperative miners and managers, as well as truckers, transporters and others involved in the cooperative's mineral chain. At that point, registration of minerals could begin.

Ideally, MetTrak employees – trained and paid by MetTrak – would be on hand to run the registration stations, and to ensure that material was tagged correctly. It is probably that a government official might also be required to ensure that only material from the cooperative's pits gets presented for tagging<sup>13</sup>.

For transportation, MetTrak could obviously put tags on the trucks normally used by the co-operative and potentially put tracking stations along the transport route for added security. At the export end, the cooperative's normal buyer would have a registration station installed on their premises, allowing the exporter to register the material as it enters their site. (Whether this station would require a MetTrak employee or whether it could simply be run by the exporter would involve negotiation with the exporter)

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<sup>12</sup> Outside agencies such as BGR and PAC could also likely assist in this effort.

<sup>13</sup> Indeed, the Rwandan government might want to look to the MetTrak trial when planning a proposed series of detailed mines inspections, which are intended to capture details such as mine capacity.



In Rwanda, where exporters were paying roughly \$700 per tonne in traceability levies,<sup>14</sup> MetTrak may want to consider a phase-in period – perhaps by offering its services free of charge for a period of a few months. During this period, miners could trace their material through MetTrak stations, which would duly track the material into the exporter in Kigali. The exporter and government would have the opportunity, at no cost, to verify in a hands-on way that the MetTrak system does indeed provide the necessary level of chain of custody tracking. At the end of the phase-in, MetTrak could begin charging for its services, likely on a per tonne basis.

In the DRC, a pilot project could focus on a large single point source of material, with Bisie being a logical target<sup>15</sup>. Tracking the Bisie chain would require at least six monitoring stations: one monitoring station at the Bisie mine site itself (given Bisie’s isolation, it’s unlikely that material from anywhere else would enter the chain at this point); another at the government barrier at the bottom of the 40km foot path leading from Bisie; another in the processor/trading town of Mubi; one station at the airfield of Kilambo; a final station at Goma airport. As in Rwanda, a MetTrak and/or government employee should operate each station.

In the DRC, the obvious government partner in this effort would be SAESSCAM, which already has personnel tracking minerals at each of the checkpoints mentioned above. Given the scale of Bisie, and the number of miners and transporters involved, a significant registration drive would be required in order to issue all participants with an ID card. However, as a recent Diamond Development Initiative project evaluation in Kasai Oriental (2011) has demonstrated<sup>16</sup>, miners are amenable to registration as long as they can see a benefit.

Coordination with miners and traders associations and local civil society would be required to ensure that everyone understood the goals of the scheme and to win cooperation of miners, traders, transporters and others.

In Goma, registration stations would be installed in those *comptoirs* interested in taking part in the pilot. Unlike Rwanda, there is currently no other tracking scheme covering Bisie, so there is not the same concern about double billing. Still, MetTrak might consider a phase-in period to demonstrate the efficacy of its system, after which billing could begin, with the most likely scenario being a per tonne charge levied at the *comptoir* level, with *comptoirs* passing these costs back up the chain.

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<sup>14</sup> \$700 per tonne at the time of writing.

<sup>15</sup> The Bisie site in Eastern DR Congo is responsible for some 60-75% of Nord Kivu province’s cassiterite production.

<sup>16</sup> The Diamond Development Initiative has managed to register more than 75,000 diamond miners in Kasai Oriental and Kasai Occidental in a matter of a few months, both by reducing the costs of registration from \$25 to \$5, and by creating joint registration teams that included government, industry and civil society.



## Annex 1: ICGLR Chain of Custody Standards

### Appendix 4a. Standard for Industrial Mining

**All actors in the mineral chain, including but not limited to mine operators, traders, processors and smelters shall:**

1. Maintain records for a minimum of five years, preferably on a computerized database.
2. Ensure that all taxes, fees, and royalties related to mineral extraction, trade and export from conflict-affected and high-risk areas are paid to governments and disclose such payments in accordance with the principles set forth under the Extractive Industry Transparency Initiative (EITI).
3. Avoid cash purchases whenever possible, and ensure that all unavoidable cash purchases of minerals are supported by verifiable documentation and preferably routed through official banking channels.
6. Not tolerate nor by any means profit from, contribute to, assist with or facilitate the commission by any party of:
  - 6.2. Any forms of forced or compulsory labour, which means work or service which is exacted from any person under the menace of penalty and for which said person has not offered himself voluntarily.
  - 6.3. The worst forms of child labour.
9. Implement the provisions of the chain of custody system at the level of a single physical site.
10. Transmit their data (except for pricing data) and records to the ICGLR Secretariat on a monthly basis, or as required by the ICGLR Secretariat.

#### **The Mine operator shall:**

12. Source Designated Minerals only from a mine site registered as Certified in the ICGLR Regional Mine Site database.
14. Register the following information, for each domestic outgoing lot of Designated Minerals (non-domestic lots – i.e. exports – are subject to the Certification and Export procedures of Section II 5).
  - 14.1. A unique mine operator lot number for the lot.
  - 14.2. The identification of the mine operator, including name, address and mine site location given with reference to the Mine Site Identification in the ICGLR



Regional Mine Site database, government identification number, as well as other relevant information.

14.3. The identification of the customer or recipient, including name, address and site location, government identification number, as well as other relevant information.

14.4. A description of the material, including the ore type (e.g. cassiterite), its weight (e.g. 1000kg), and grade (i.e. 45%).

14.5. The mine site from which the mineral was sourced, given with reference to the Mine Site Identification as it exists in the ICGLR Regional Mine Site database.

14.6. Values and details of all taxes, fees or royalties paid to government for the purpose of extraction, trade, transport or processing of the lot, along with any other payments made to governmental officials for the purpose of extraction, trade, transport or processing of the lot.

14.7. The date when the lot is sealed.

14.8. The date when the lot is shipped.

14.9. Name of the responsible staff person who verified the documentation associated with the lot.

15. Ensure that the information described in the previous paragraph (paragraph 14) accompanies each lot, in either paper or electronic form.

16. Verify the documentation described in paragraph 14 prior to shipping, to ensure that the supplied approved material is in compliance with the documentation.

17. Document separately each lot of approved material.

### **Mixing Lots**

Additionally, where a Mine Operator purchases or otherwise obtains Designated Minerals from artisanal producers or other Mine Operators, or otherwise incorporates minerals from another mine site into a lot, that mine operator shall:

16. Be permitted to mix material from different Certified mine sites.



17. Where material has been mixed, have in place internal tracking and metallurgical accounting procedures that can account for the mine sourcing of a mixed lot of mineral ore.

18. For each new mixed lot, the mine operator shall record the following information:

18.1. A new unique mixed lot number shall be assigned to the mixed lot.

18.2. The weight, ore type, and grade of the mixed lot.

18.3. The purchase order numbers of each externally purchased lot included in the mixed lot, along with the weight and grade of ore that each externally purchased lot contributed to the mixed lot.

18.4. The weight and grade of ore included from the mine operator's own site, if any, along with the Mine Site Identification of that site, given with reference to the Mine Site Identification in the ICGLR Regional Mine Site database, government identification number.

19. Additionally, where a mine operator purchases material from external Certified mine sites, the mine operator's accounting system must be able to accurately demonstrate that sales and exports of approved mineral ore do at all times match the production and purchases from Approved mine sites.

20. For outgoing domestic lots of mixed lots of certified material, the procedure shall be as in paragraphs 14-17, with the following exceptions.

20.1. The mixed lot number described in paragraph 18.1 shall substitute for the mine operator lot number of paragraph 14.1.

20.2. The sourcing information of paragraphs 18.3 (external purchases) and 18.4 (own site production included in the lot) shall substitute for the mine site information of paragraph 14.5.

**Furthermore, the mine operator shall:**

21. Transmit their record of purchases, acquisitions and sales, as described in paragraphs 14 (domestic outgoing lots), 16(external purchases) and 20 (outgoing mixed lots) to the member state government and ICGLR Secretariat on a monthly basis, or as required by the ICGLR Secretariat

**Processing**

Additionally, where a Mine Operator processes Designated Minerals the Mine Operator shall:



22. Comply with the standards for Mineral Processors or Smelters given below under “**Processing:**” in paragraphs 29-33.

**Appendix 5: Standards for Exports of Minerals from Certified Mine Sites and for Issuing ICGLR Mineral Certificates**

**General Requirements:**

**All Exporting Entities including but not limited to Processors, *Comptoirs*, Smelters or other entities shall:**

1. Maintain records for a minimum of five years, preferably on a computerized database.
2. Ensure that all taxes, fees, and royalties related to mineral extraction, trade and export from conflict-affected and high-risk areas are paid to governments and disclose such payments in accordance with the principles set forth under the Extractive Industry Transparency Initiative (EITI).
3. Avoid cash purchases whenever possible, and ensure that all unavoidable cash purchases of minerals are supported by verifiable documentation and preferably routed through official banking channels.
6. Not tolerate nor by any means profit from, contribute to, assist with or facilitate the commission by any party of:
  - 6.2. Any forms of forced or compulsory labour, which means work or service which is exacted from any person under the menace of penalty and for which said person has not offered himself voluntarily.
  - 6.3. The worst forms of child labour.
9. Implement the provisions of the chain of custody system at the level of a single physical site.
10. Transmit their data (except for pricing data) and records to the ICGLR Secretariat on a monthly basis, or as required by the ICGLR Secretariat.
11. Provide, upon request by an ICGLR Third Party Auditor, the ownership (including beneficial ownership) and corporate structure of the mining company, trading company or exporter, including the names of corporate officers and directors; the business, government, political or military affiliations of the company and officers.

**Applying for an Export**

***Comptoirs*, mines, processors and smelters and other exporting entities shall:**



12. Register the following information in their own records and on the form or forms provided by or sanctioned by the Member State government, for each exported lot of Designated Minerals.

12.1. A unique *comptoir* lot number or export order number for the lot.

12.2. The identification of the exporting entity including name, address and site location, as well as other relevant information required to identify the exporter.

12.3. The identification of the customer or recipient, including name, address and shipping destination, as well as other relevant information required to identify the customer or importer.

12.4. A description of the material, including the ore type (i.e. cassiterite), its weight (i.e. 1000kg), and grade (i.e. 45%).

12.5. Values and details of all taxes, fees or royalties paid to government for the purpose of extraction, trade, transport, processing or export of the outgoing lot, along with any other payments made to governmental officials for the purpose of extraction, trade, transport, processing or export of the outgoing lot.

12.6. The *comptoir* purchase order number of every incoming lot of Approved mineral ore that was used to produce the outgoing lot.

12.7. The weight of mineral ore from each incoming lot (identified via purchase order number) used to produce the outgoing lot.

12.8. The date when the lot is sealed.

12.9. The date when the lot is shipped.

12.10. The route and transport company responsible for transporting the shipment.

12.11. Name of the responsible staff person who verified the documentation associated with the lot.

13. Verify the documentation described in paragraph 12 (exports) prior to shipping, to ensure that the supplied certified material is in compliance with the documentation.

14. Document separately each lot of certified material.

15. Provide to the Member State government representative in charge of verifying the export documentary evidence, in the form of Chain of Custody documents and records from the exporting entity's internal mineral accounting



system, that the minerals presented for export were sourced from Certified mine sites. In particular, the exporting entity should present to the Member State government representative documentary proof that each of the incoming lots (identified via purchase order number) that were used to produce the outgoing lot has complete Chain of Custody documents, and can thus be reliably tracked all the way back to the Certified mine site from which it originated.

16. The Exporting entity must provide the Member State Government documentary evidence that exports of Designated Minerals or metal do at all times match its purchases of designated mineral ore or from Certified mine sites.

### **Export**

#### **Furthermore, the exporting entity shall:**

17. Upon receiving a valid, countersigned certificate from the Member State government representative empowered to countersign Certificates, export the lot of certified minerals while the Certificate is still valid.

### **Reporting to ICGLR Secretariat:**

#### **Furthermore, the exporting entity shall:**

18. Once an export has been approved by a Member State and a Certificate issued, transmit a copy of the Certificate, and the information in paragraphs 12 (exports) to the Member State government and the ICGLR Secretariat on a monthly basis, or as required by the ICGLR Secretariat.

### **Government Verification Process:**

#### **When advised by the Exporting Entity that an export has been prepared, the Member State government representative shall:**

19. Verify the status of the Exporting Entity in the ICGLR's Database of Exporters (in situations where the ICGLR database is unavailable, the status can be checked in the Member State's Database of Exporters). An Exporting Entity listed as Un-certified (Red Flagged) in the ICGLR's Database of Exporters is not eligible to have any of its exports certified. Processing must stop at this point. An Exporting Entity listed as Certified (Green Flagged) or Yellow Flagged is eligible to have its exports certified. Processing of the export may continue.

20. Verify the information and documentation described in paragraph 12 (exports) to ensure that the lot of minerals presented for export is in compliance with the documentation.

21. Verify, by examining the Chain of Custody documents, and the exporting entity's internal mineral accounting system, and other documents and records where required, that the Designate Minerals presented for export were sourced from Certified mine sites. In particular, the Member State government



representative should verify that each of the incoming lots (identified via purchase order number) that were used to produce the outgoing lot has complete Chain of Custody documents, and can thus be reliably tracked all the way back to the Certified mine site from which it originated

22. Verify using documentary evidence that exports of mineral ore or metal do at all times match its purchases of mineral ore or metal from Certified Mine Sites.

23. Register the *comptoir* purchase order numbers of the lots of minerals presented by the exporting entity as proof that this export is balanced by purchases from Certified Mine Sites.

24. Record their own name, position, identification number, and the date the lot was verified.

25. Record the information from paragraph 12 (exports) on government forms or records of the export.

26. Transfer the information from paragraph 12 (exports) to a Certificate, and affix their signature on the form accompanying the lot, as proof that they personally inspected and verified the lot and its accompanying documentation.

27. Forward the Certificate and all other supporting forms and documentation to the Member State government representative empowered to Countersign the Certificate.

**Furthermore, the Member State Government representative shall:**

23. After completing an export process, collate the information noted in paragraph 12 (exports).

24. Transmit the collated information, and a copy of the Certificate, to the Member State government and to the ICGLR Secretariat on a monthly basis, or as required by the ICGLR Secretariat.

**Government Countersigning Procedure:**

**The Member State government representative empowered to countersign the Certificate shall:**

25. Examine the Certificate and all other supporting forms and documentation and verify to his satisfaction that the information is accurate and correct.

26. When satisfied that all documents are in order, affix his signature, his printed name, and the date and place of signing.

27. Return the Certificate to the Exporting Entity.



28. Keep a copy of the forms and other documentation that accompany each export of minerals.