



# **REPORT**

**Technology Round Table Discussion  
1<sup>st</sup> February 2019**

## Introduction

Conservation International - Guyana hosted a Technology Round Table Discussion on February 1<sup>st</sup>, 2019 at the Cara Lodge in Georgetown under the Project “GEF GOLD/A Supply Chain Approach to Eliminating Mercury in Guyana’s ASGM Sector: El Dorado Gold Jewelry – Made in Guyana”. The Project being one of the two that make up CI-Guyana’s Responsible Mining Initiative. The other being the NORAD-Funded “Addressing Drivers of Deforestation.

Ms. Sara Bharrat, Communications Coordinator, CI-Guyana, who facilitated the Discussion, invited persons to introduce themselves and state how they were connected to the Responsible Mining Initiative or more directly to mining activities. *(See List of Participants attached at Annex 1)*

## Overview of the GEF GOLD Project

**Ms. Ingrid Sarabo, GEF GOLD Project Director, CI-Guyana recalled** the GEF GOLD Project Objective:

To assist Guyana with converting to mercury-free mining by 2025 by directly involving business enterprises with profit motive, in leading the shift in the development of mercury-free ASGM supply chain and downstream El Dorado Gold brand jewellery; and the Six components of the Project:

### *Component 1*

*Introduction of mercury free technologies and other efficient techniques and practices – so, by the end of this project appropriate mercury free technologies will have been transferred through demonstrations and training.*

### *Component 2*

*Establishment of a mechanism for financing artisanal miners who utilize mercury free technologies and more efficient and environmentally friendly practices than those currently in use*

### *Component 3*

*Development of a chain of custody process in the production of Gold, including a verification mechanism, as well as the establishment of arrangements for direct market access for the Eldorado Gold Brand both locally and internationally*

### *Component 4*

*Strengthening or where necessary, establishing Policies, regulations and guidelines to support responsible gold production and value added*

### *Component 5*

*Regular monitoring of project activities against targets and outcomes and management of risk*

### *Component 6*

*Communication and Knowledge Management – Sharing of information among all local stakeholders as well as among the 8 child projects.*

Ms. Sarabo referred to the core objectives of the Technology Round Table Discussion:

1. To recommend suitable Mercury-Free Technologies and techniques for the ASGM Sector in Guyana taking into consideration those that have been tested locally; and

2. To recommend criteria for selecting appropriate mining sites for demonstrating Mercury-Free Technologies and Techniques.

She suggested that there should be free and frank discourse, noted that the sharing of ideas and experiences was critical to the day's discussion and that every effort should be made to let "all ideas contend", given the scope of experience and knowledge present in the room.

### **Presentations**

**Ms. Shemeiza Thom, Mineral Processing Engineer, GGMC** delivered the first presentation entitled "Mercury-Free Technology and Mining in Guyana" which highlighted the importance of the adaptation of Mercury-Free technologies by our local small and medium scale miners. The presentation highlighted the range of appropriate mercury-free technologies which have been incorporated in the demonstration activities carried out by officers of the GGMC. Ms. Thom emphasized that, legally, miners were only supposed to use mercury during the final stage of the mineral recovery process i.e after the sluice box has been "washed down". She emphasized the need for miners to use Personal Protective Equipment (PPE) whenever handling/utilizing mercury and that the following was strictly prohibited:

- (i) Sprinkling mercury in mining pits
- (ii) Placing mercury in sluice boxes; and
- (iii) Using amalgam plates

The group was advised that miners typically utilize three types of sluice boxes – Straight, Double Deck and Triple Deck – these remain the most economically viable means of recovering fine gold, even though not always efficiently utilised.

A comparison of costs:

#### Sluice Box

Fitted Mats and Riffles US\$2,500 plus 6" Engine US\$5,500 Total - US\$8,000

#### Small Centrifugal Concentrators

Gold Kacha Single Circuit – Gold Kacha US\$6,500 plus Gold Cube US\$500 plus vibrating screen US\$8,000  
Total - US\$15,000

Knelson Concentrator US\$30,000

Blue Bowl Concentrator US\$300

Ms. Thom's presentation highlighted the following barriers to adopting Mercury-Free Technologies in Guyana:

- Equipment not available locally
- Equipment comparatively expensive
- Resistance to change
- Need for prospecting to aid most equipment selection

*(See Full Presentation attached at Annex 2)*

**Mr. Ron Bath, Managing Director, We Save Mining Foundation**, Suriname presented a model for influencing behavior change that focuses primarily on economic improvement with environmental wellness as a derivative. The approach involved the introduction of locally-fabricated and therefore more

affordable technologies, to miners and others along the value chain who have an interest in reducing the use of mercury in their gold processes. An urgent need to transition away from mercury-use by miners has developed for Suriname as the country has taken steps to ban the use of mercury in the mining sector.

Mr. Bath's presentation included an adaptation of the Clarkson Method (2014), that utilized simple inexpensive alternatives to the original components –

- Portable cement mixer with dolly for rotary drive - Easy to move, load & unload
- Drive pulleys with rotation speed of 60-70 RPM
- Mill Tumbler made from Steel Pipe and Plate - 250lb weight
- Cut ½", ¾" & 1" Cold Rolled steel rods for Grinding Media

The above system costs a total of US\$2,500 and can also be used for grinding / cleaning smelter slag & rusted cons.

A special Japanese made mat was introduced as one of the best available "miracle mats" for lining the sluice box without the use of nails which could lead to flattened riffles.

It was emphasized that there are simpler and cheaper versions of currently available mining equipment that can be produced locally; another example given was amalgam retorts sized at 30g and 1kg already manufactured in Suriname.

Mr. Bath highlighted some of his Key Lessons Learned over the past 12 months

- A significant number of Stakeholders are out there and available for collaboration
- To hold the miners' attention, focus on Economics and NOT the Environment !!
- Language and Literacy ~ Reading & Writing abilities NOT a certainty
- Need to be aware of Cultural Programming that only "Running More Material" guarantees more gold
- Indigenous Messengers ~ Receptivity increases thru familiar face/tongue
- Logistics ~ Travel to Ground Zero & Equipment Sourcing & Delivery
- Solvency/Capitalization ~ Miners have or will locate funds for equipment
- "Buy-In" (behavioral change) thru Consultation & Demonstration
- Social Media In Use (WhatsApp)
- Obtaining Accurate Mercury Use and Gold Recovery Data from Miners is vital

*(See Full Presentation attached at Annex 3)*

## **Discussion**

The two presentations generated a free-flowing discussion during which participants shared their observations, comments and concerns. Following are the key messages garnered:

- (i) In considering the use of large pieces of equipment, consideration must be given, to the logistics – possible need for lowbed or crane to move along difficult terrain.

- (ii) Important that prospecting be done first- characterization of ore needed to confirm profitability of venture.
- (iii) Miners should be made aware of the efficiencies of the new technologies, many of which allow “one pass” processes that save time, money and generate significantly higher recovery rates.
- (iv) The Pesticides and Toxic Chemicals Control Board (PTCCB) has responsibility for overseeing the use of all toxic chemicals including mercury – the entire process regarding the management of use and access to mercury is under review.
- (v) Research into the amount of mercury utilized in Guyana as a percentage of that imported, should be undertaken.
- (vi) Medium scale miners should be targeted first for the technology demonstrations then incentivized to encourage the next category of miners - one to four 6” dredge – to make the shift, then the smaller miners will be more likely to come on board.
- (vii) The social implications of using mercury should be as much a part of the discussion as the economic advantages.
- (viii) Extension services desperately needed for all our miners, but particularly for those utilizing 4” and 6” dredges. Assistance needed in determining operating costs and capital costs to arrive at economic feasibility.
- (ix) The recovery rate of a “properly functioning” sluice box is very high; important that technical assistance be given with respect to design – angles and single-double-triple deck options to ensure efficacy.
- (x) Stakeholders in the field (miners) must be engaged through regular collaboration to ensure they are part of the solution especially as their buy-in is most needed.
- (xi) Important for locations where gold is burnt to be outfitted with retorts.
- (xii) Use of Approved Personal Protective Equipment should be rigorously enforced.

It was agreed that the main technologies for the primary and secondary processes associated with mercury-free mining include the retort, sluice box, concentrator, shaking table, gold cube and blue box but this list is not exhaustive.

The importance of conducting demonstrations for the miners to see and understand the benefits of the recommended mercury-free technologies was the common thread through many of the statements made by participants.

### **Criteria for identifying the suitable alternative technology for demonstration purposes**

Participants had a lively exchange on technologies best suited to be demonstrated at mining sites selected under the GEF GOLD Project. It was noted that GGMC had a full list already compiled based on ore suitability and that there was no need to develop another list. Consequently, it was agreed that there was need for criteria for selecting technologies and techniques for specific demonstration purposes. The following criteria were identified for recommendation:

1. Affordable and efficient
2. Technically Feasible
3. Location appropriate (size and type of equipment)
4. Energy efficient – Practical (renewable energy in harmony with Guyana’s Green Development Strategy)

### **Criteria for identifying Concessionaire/ Demonstration sites**

**Mr. Rene Edwards, Director of Field Implementation, CI** explained the process through which three broad landscapes – South Rupununi, Upper Potaro and Lower Potaro were identified by the RMI Project Steering Committee for Project implementation. He stated that the 3 landscapes were chosen based on specific requirements:

- Areas must be forested
- Areas must have Non-Indigenous mining
- Areas must have Indigenous mining
- Areas Be close to hinterland towns
- Must have a mix of stakeholder interests
- Must have opportunity for work in areas other than mining
- Must have high likelihood of success

Mr. Edwards stated that subsequent to the PSC decision, the MNR had advised that project activities should not take place in the Marudi area.

Participants questioned whether the Upper Potaro had a significant number of miners, and the Mazaruni and Puruni were propose as possible Landscapes areas instead. It was agreed that the Regions as stated in the ProDoc should be revisited based on the following criteria developed for the identification of concessionaires that the project should with to develop demonstration sites:

1. Land Tenure
2. Willingness to embrace new technology.
3. Willingness to contribute resources (cash/ in kind)
4. Willingness to accommodate exchanges with sector stakeholders
5. Willingness to allow research and sharing of non-commercial data.
6. Accessibility (for miners – large numbers)
7. Proximity to large number of miners
8. In proximity to willing “influencers” (shops and other service providers)

9. Already established/ worked area
10. Willingness to demonstrate multiple mining and processing methods
11. Willingness to have exploration/ prospecting & mineral characterization undertaken: -  
commercially viable deposits

### **Next Steps**

Draft Report to be circulated to all participants then taken to the PSC for its consideration. All the final decisions will be circulated.

The Round Table Discussion ended with the usual exchange of courtesies.