



DESK STUDY ON AFP DEMAND

AMU Bujumbura

ICGLR



EXECUTIVE SUMMARY

As part of the AFP business concept, AMU has been requested to conduct a study on AFP demand in ICGLR implementing countries. The AFP database is the prerequisite for AFP implementation. It is made by AFP from sample information from the field and laboratory analysis.

The study started with contacting counterparts from national mining institutions in Burundi and the DRC to provide the list of active mining cooperatives/companies on mine sites producing the 3T minerals. 26 mining cooperatives/companies and 3 officers from national mining institutions in DRC and Burundi responded to a questionnaire.

The SWOT analysis based on study findings will provide an in-depth evaluation of the AFP demand and its potential future. The AFP demand depends on the whole AFP process. It will analyse the internal and external factors that could impact the success and guide future planning and decision-making.

1. INTRODUCTION

The Analytical Fingerprint technology is a scientific method that was developed by the German Federal Institute for Geosciences and Natural Resources (BGR) in 2008. It aims to verify, by means of intrinsic mineral characteristics and applied statistics, if the declared origin of 3 Ts minerals (Tin, Columbite-Tantalite, and Tungsten) in accompanying documents is plausible or not.

Following this, in the framework of supporting the implementation of the Regional Initiative on Natural Resources (RINR) of the International Conference on the Great Lakes Region (ICGLR), the German Ministry of Economic Development and International Cooperation (BMZ) initiated a regional cooperation project with ICGLR named "Transparency and Control of



the Mineral Supply Chains in the Great lakes region”, the “Analytical Fingerprint Project” being one of the cooperation project’s components. BGR has been mandated to implement the project in the region since 2011, enabling its partner institution, ICGLR, to manage the AFP method.

BGR has set up the Laboratory infrastructure related to the AFP project and has continuously transferred the skills and knowledge on AFP to ICGLR and in the region for allowing the stakeholders to appropriately act themselves concerning the implementation of the method. Among the project’s deliverables, it is worth noting the following:

- Setup of AFP sample preparation laboratories in the project’s pilot countries (Burundi, Democratic Republic of Congo, and Rwanda) for preparing the mineral samples from the field into polished sections. The laboratories are hosted by national mining institutions in the respective countries.
- Setup of an AFP central analytical laboratory hosted by the African Minerals and Geosciences Centre (AMGC) in Dar-es-Salaam, Tanzania for conducting laboratory AFP related analysis of the 3T samples.
- Analytical Fingerprint Management Unit (AMU) at ICGLR, key entity in charge of the application of the methodology and coordination of all related AFP activities, is under the ICGLR Natural Resources Unit of the ICGLR Program of Democracy and Good Governance.
- The AFP reference database at AMU is equipped with field and analytical information of samples (data) collected on mine sites producing 3T minerals in the implementing countries. The AFP database is managed by the AFP Data Analyst at AMU and hosted at ICGLR headquarters.

As the methodological support of the international cooperation project by the German Federal Institute for Geosciences and Natural Resources (BGR) project is heading to its end, it is imperative to identify key strategies for ensuring the sustainability of the project’s outcomes. It is in this perspective that AMU has conducted the study on the demand for AFP services by stakeholders to determine the key customers of AFP, identifying the key needs that need to be satisfied, advantages and limitations, as well as the potential trend of their



demand for AFP services to consolidate the AFP business concept to be further developed.

Based on a questionnaire and the respective responses from the stakeholders involved, the study is expected to answer on:

- The analytical services that the mining companies need throughout their mineral supply chains.
- How well the method is understood and its willingness to apply
- The advantages and limitations, as well as the status and trends of the AFP requests

2. STUDY OVERVIEW

2.1 AFP potential customers

The technology of AFP has been implemented for the main stakeholders of the mineral supply chain.

- First and foremost, mining cooperatives/companies are the primary point of the supply chain where the AFP method has to be applied on their mining sites, on which AFP reference samples have been collected. The AFP reference will be the integral part of the reference database, the backbone of the AFP technology.
- The mineral processing sites where minerals are processed and upgraded have been the subject of AFP sampling and applications. At the same level, in some cases, some negociants play the role of buying minerals from different mining sites and transporting them to the processing sites. The processing sites are usually owned by exporters, usually named exporting entities/comptoirs. Both above-mentioned stakeholders have been the subject of AFP sampling.
- The national mining institutions are responsible for the mining sector, including the different actors of the mineral supply chains. These institutions are the key stakeholders in the implementation of the AFP technology in the concerned countries. However, requests for AFP analyses have to go through ICGLR.



Among the above stakeholders, mining cooperatives are the main stakeholders that have been exposed to AFP, as the primary objective of the project was to develop a first reference dataset in order to develop and verify the methodology. In DRC, 300 mine sites belonging to 80 cooperatives had been sampled. In Burundi, 80 mine sites from 61 cooperatives/companies were sampled. At the same time, only 3 exporting companies had been sampled in Burundi and only 2 negociants in DRC had been subject to AFP sampling. Thereby, mining cooperatives/companies constitute the main niche as customers of AFP technology.

However, during AFP sampling campaigns, exporting companies had also expressed interest in the use of AFP. This has been considered when drawing the study sample to collect insights on the method from different counterparts.

2.2 Sampling and sample size

The study participants had been selected only from the two (2) AFP implementing countries, which are Burundi and DRC as AFP related activities are no longer carried out in Rwanda. As stipulated above, the focus has been on mining cooperatives/companies that had been subject to AFP sampling. 61 cooperatives in Burundi and 80 in DRC had been sampled by AFP.

Purposive sampling had been used to select cooperatives/companies from which more than 2 AFP samples are available and with a production exceeding 500 Kg per month. Among these, 48 cooperatives/companies in Burundi and 26 in DRC were of study interest. Furthermore, 2 negociants from DRC and 3 officers from national mining institutions (2 from OBM-Burundian office of mining and carries and one from Division of mines in DRC) are part of the study sample.

2.3 Data collection methods

Data for this demand study had been collected through the literature review and through questionnaires. The literature review allowed identifying the study subjects and gathering information on potential areas of AFP application,



such as existing ICGLR third-party audits. It allowed identifying the AFP requests already received and taking them into account when identifying potential customers of AFP services. A questionnaire elaborated using Google Forms was used to collect data from the identified participants. To avoid responsive delays or lack of information due to internet access or inability to answer electronically the questions by respondents, phone calls were used.

2.4 Data analysis

Descriptive analysis was carried out to determine the potential customers of AFP services, as well as their needs and the potential AFP requests. For estimating the trends of AFP services, the proportion of respondents interested in the method, the number of already AFP requests, as well as other criteria such as the use of AFP in ICGLR third-party audits, will be considered.

3. STUDY FINDINGS

3.1 AFP customers

The study respondents conduct their mining activities in Burundi and the DRC. 15 mining cooperatives over 48 in Burundi and 10 mining cooperatives over 26 and 1 negociant in DRC answered to the questionnaire. In DRC, they are geographically located in South Kivu (9) and in North Kivu (2). In Burundi, most of the respondents are operating in Northern and Western provinces namely Kirundo (5), Ngozi (4), Muyinga (2), Kayanza (3) and Bubanza (1).

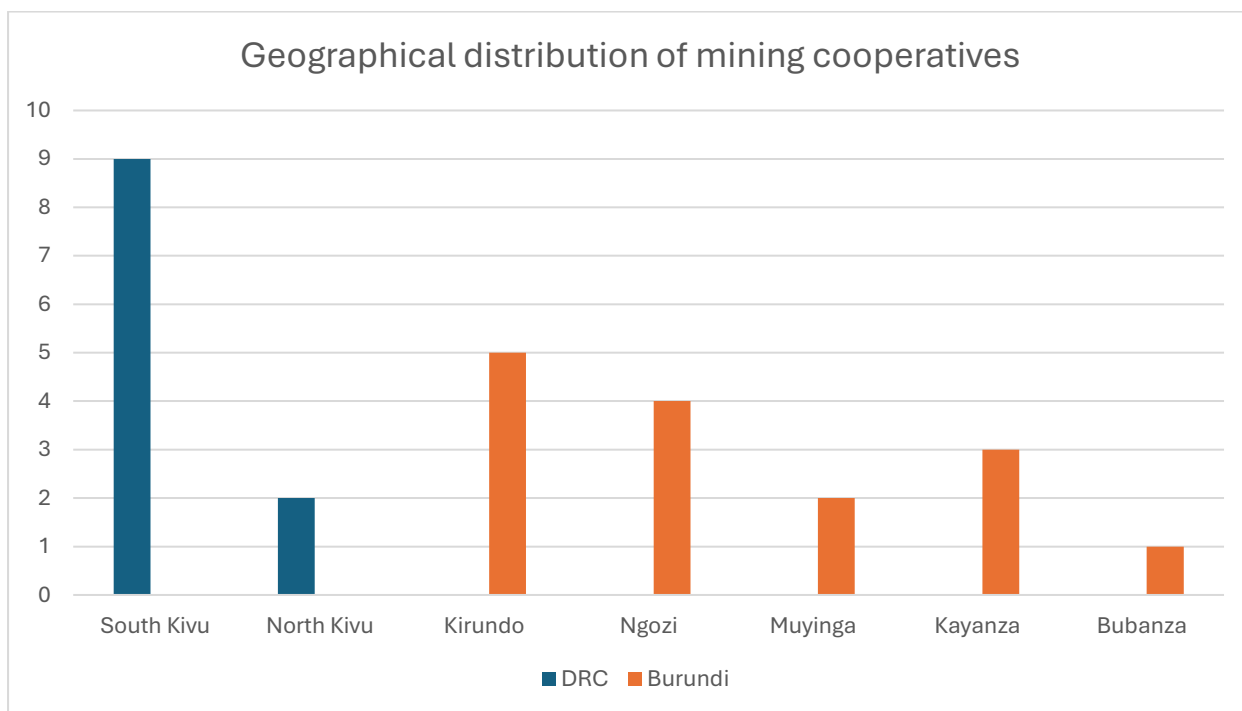


Figure 1: Geographical distribution of mining cooperatives

Both respondents conduct mining exploitation (25) except 1 who is solely a negotiant. Among the 25 mining cooperatives/companies, 3 simultaneously do exploration; 2 are also negociants; 6 have processing plants, and 3 are also exporting companies.



3. Type d'activité

26 responses

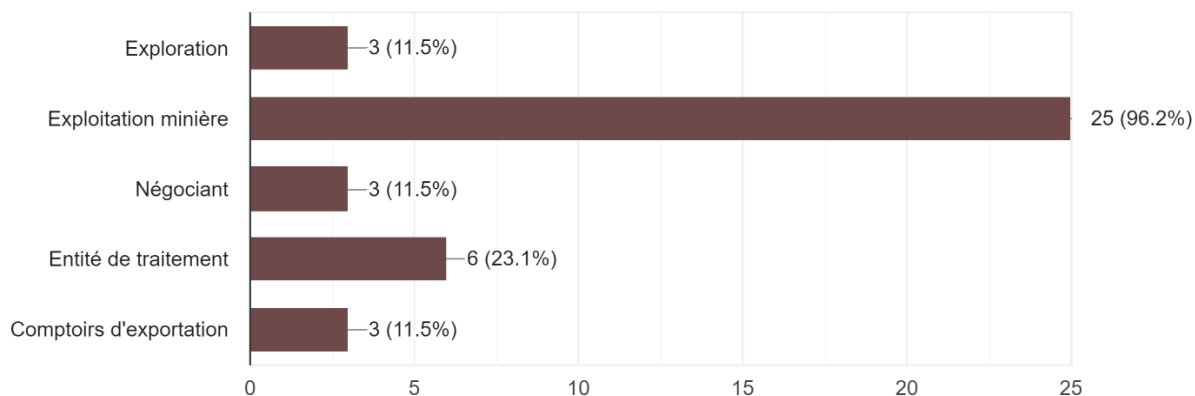


Figure 2 : Different mining activities carried out by respondents

This study revealed that 65% of the respondents are interested in the method AFP, whereas 35% are not interested in the method. This is due to the low level of understanding of the motives and advantages of the use of AFP. Even if the respondents are among the ones who had been subject to AFP sampling, the



study revealed that they do not well understand the advantages of the use of the method.

3. Etes-vous intéressé(e) par la méthode AFP ?

26 responses

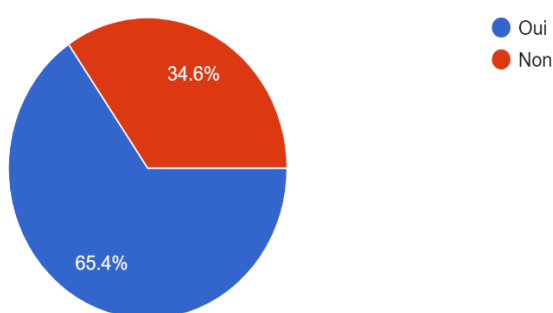


Figure 3: Proportion of potential customers of AFP among the AFP mining cooperatives

Another category of potential customers that have been approached is national mining institutions. Discussions have been conducted with three counterparts of the Office Burundais des Mines (OBM) in Burundi and one from the Division des Mines of South Kivu in DRC.

Both have expressed their high interest in using the AFP technology as they have implemented the AFP sampling and are the ones to receive the mineralogical results of AFP. Their motives will be developed in the subsequent paragraphs.

3.2 Customer needs and types of AFP requests

To determine whether the customer needs to be satisfied by AFP, the study participants were first asked if they were interested in the method, to express the reasons why they were interested in the method, as well as other needs related to the analysis of their minerals. The study revealed that 65% of the respondents are interested in the method, while 35% are not interested in the method. For the latter, in-depth discussions revealed that even if they had been



subject to AFP sampling, they have little knowledge about the method and its benefits.

3. Etes-vous intéressé(e) par la méthode AFP ?

26 responses

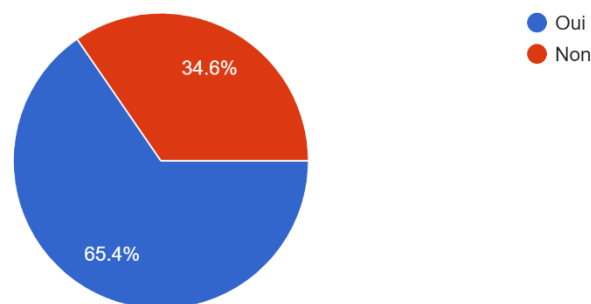


Figure 4: Interest status in the AFP method by the study's respondents

65% of the respondents need to use the AFP method for demonstrating that the minerals are conflict-free in origin, 47.1% want to use the AFP in case of conflicts on the ownership of minerals, and 17.6% on the evaluation of the mineral chain of custody. There is no exporting company that has expressed interest in the use of AFP in the risk assessment. Discussions revealed that this is due to less knowledge about the possibility of requesting AFP in the risk assessment procedures.



4. Si oui à la question précédente, quelle est l'une ou plusieurs de ces demandes d'application de l'AFP pourrait-elle vous intéresser ?

17 responses

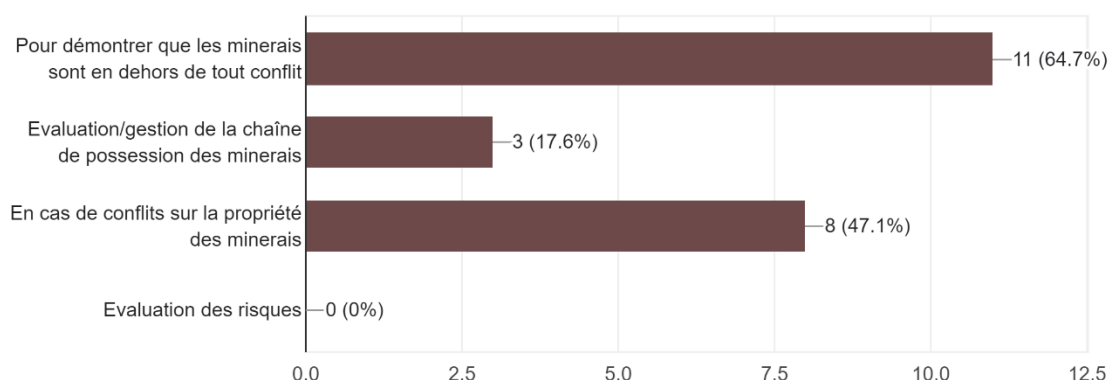


Figure 5: Different AFP applications

Moreover, respondents expressed their needs in a more detailed analysis of their minerals. 85% of respondents answered that the grade of their minerals is measured by the buyer of their minerals, and 15% of respondents (exporting companies and negotiant) analyse their minerals by spectrometer. Miners are paid according to the grade of minerals. That is the reason why 85% of respondents would like to have a service where they can themselves verify their mineral's grade. Also, the respondents are interested in a more detailed analysis of their minerals for determining other valuable minerals apart from 3T, for cross-checking the minerals' grade provided by the buyer, and for allowing in-depth exploration of their mining sites.

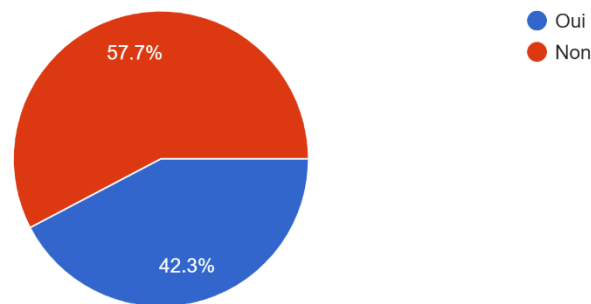
3.3 Demand for AFP application and analytical services

The study also revealed that 42% of the respondents have already made requests for applying AFP technology on their mineral supply chains (mine sites or exporting companies).



5. Avez-vous déjà fait une requête de l'AFP?

26 responses



Also, the study revealed that 61.5% of the respondents had been subject to ICGLR third-party audits and all the respondents use a mineral traceability system.

6. Aviez-vous fait l'objet ou utilisez-vous ?

26 responses

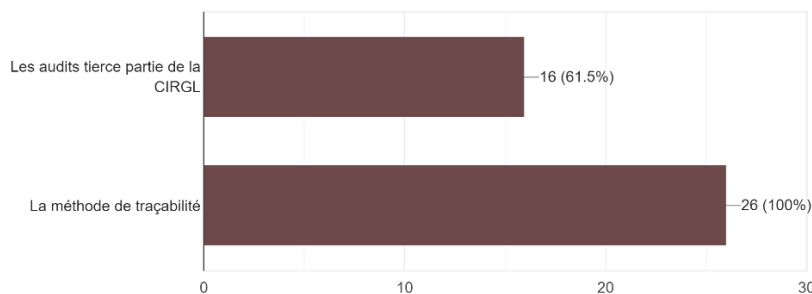


Figure 6: Proportion of respondents that apply the mineral traceability system and requested ICGLR third-party audits

Considering that ICGLR is working towards the integration of the method AFP into ICGLR third-party audits and the above study findings, prospects can be made that the demand for AFP services will increase.

Besides this, there is more interest that has been expressed toward the analytical services of AFP. 85% respondents expressed their interest in the use of the mineralogical analytical method to determine the grade of their minerals,



whereas others asked for a thorough analysis of minerals from their mining sites for determining if they are valuable minerals other than 3T present on their mine sites and for further exploration of their mining sites. All of this can contribute to the increase of AFP demand in the future.

3.4 Competitors of the AFP method

The study revealed that there is no other method that can be used to verify the origin of minerals.

Despite this, the mineralogical analysis that can be done by AFP can also be obtained through exporting companies/entities in Burundi and the DRC that analyse the minerals for their clients with no charges. For administrative purposes and tax payment during the mineral export, the Office Burundais des Mines (OBM) in Burundi, the CEEC in DRC, performs mineral analysis for the export companies for a fee between 80 and 100 USD.

As the AFP sample preparation laboratories in Burundi and the DRC are now equipped with a spectrometer, national mining institutions can use it to provide mineralogical services to mining cooperatives at a competitive price.

4. THE SWOT ANALYSIS

The SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis is based on the study findings. It will provide an in-depth evaluation of the AFP demand and future potential, including identification of internal and external factors that could impact the AFP demand.

4.1 Strengths

a) The unicity of the technology:

It verifies the probability of the stated origin in the papers of the 3T minerals and uses intrinsic features of mineral concentrate by laboratory analysis. It is a



unique feature among regional certification mechanisms, control, and traceability tools.

b) AFP Infrastructure with institutional framework and skill set up in the region:

The infrastructure includes the sample preparatory laboratories hosted by national mining institutions of implementing countries, the analytical laboratory hosted at AMGC, in Dar es Salaam, Tanzania, and the reference database hosted at ICGLR Headquarters, in Bujumbura, Burundi. The sample preparation labs produce polished sections of samples collected from mine sites to be analysed at the regional analytical laboratory. The analytical data of AFP samples and their related field information are recorded and stored in the AFP database. The sampling and sample preparation are performed by technicians/geologists from national mining institutions or geological surveys.

The Analytical Management Unit (AMU) is embedded into the ICGLR technical unit and was trained to oversee the whole process, including data evaluation by statistical techniques and interpretation.

The staff from national mining institutions/geological surveys were trained to perform the sampling and preparation of AFP samples, while AMGC provided staff dedicated to the AFP analytical laboratory.

c) AFP technology is part of the regional certification mechanism as a control tool

The revised RCM manual adopted in 2019 provides the use of AFP as a form of Analytical Mineral Determination (AMD) for 3T minerals, as an additional tool to assist with the probabilistic verification of origin. It provides the use of AFP by any actor of the mineral supply chain (from the mine sites to the export points).

d) Partnership and political willingness of ICGLR MS:

The ICGLR is technically and methodologically enabled with the database and the respective methodology at the AMU. It is the owner of the AFP infrastructure, and the operationalization is insured by AMGC for the



analytical laboratory; the implementing countries are hosting the preparatory labs. The whole process of AFP is already owned by the national mining institutions and geological survey departments already who are performing field sampling and sample preparation, and AMGC, which is working on the sustainability of the analytical laboratory.

4. 2 Weaknesses

a) Technical limitations of the method's applicability:

Since its inception, based on scientific development, all documents produced by BGR claim that the AFP method can theoretically identify the source and provide a probability of regional origin of specified minerals. However, the detailed analysis indicated that the capabilities of AFP are only applicable to the verification of the indicated origin in accompanying documents. AFP application is generally suitable only for unmixed ore concentrates; AFP application on the mixed concentrates from multiple mine sites is currently limited. This is challenging the application of AFP by different stakeholders of the mineral supply chains, including the ICGLR TPA.

b) Low understanding of the AFP method and expectations by stakeholders:

There are various stakeholders in the process, including ICGLR and partners, member states, the public and private sector, which includes mining companies with large exporters, small exporters, and miners. All of which have varying understanding and expectations of the AFP method that can impact the demand for AFP. The understanding of the AFP method constantly needs communication efforts in order to foster a clear perception of the benefits and methodological limits.

c) Reliance on external funds and bureaucracy

ICGLR and AMGC are intergovernmental organizations that depend on MS contributions and partners' funds only. These are two regional intergovernmental bodies with separate decision-making systems influenced by their member states. This creates bureaucracy in decision-making.



4. 3 Opportunities

a) Integration of AFP into ICGLR TPA:

Member states have already officially accepted AFP as an integral part of the RCM, and AFP entities are already established in the region. Both are strong arguments to persuade people and institutions to accept and use AFP, although they have never heard about it or are still sceptical toward it.

AFP technology has been integrated into the ICGLR TPA system as a control mechanism tool to be used during mineral supply chain risk assessment. Audits are conducted from export points to the mine sites. Audits are conducted on a basis of 3 years for the individual exporter. Based on the ICGLR strategic plan, 50 audits in the region are planned to be conducted per year. Audits will be requested by Auditors based on findings before and after the mine site visits, by the audit committee during the audit report review, and by the exporter audited in case of appeal.

b) Increase of interest in responsible mineral due diligence:

The global focus of companies on responsible sourcing and transparency in mineral supply chains presents a significant opportunity for the demand for AFP technology.

4. 4 Threats

a) The sustainability of the Analytical laboratory, including the cost of analysis:

The basic funding mechanisms of ICGLR and AMGC are a prerequisite for the sustainability of the AMU and the AFP analytical laboratory, posing the main risk to AFP demand. The analytical laboratory is equipped with high-tech machines that need to be regularly maintained and operated, and which require dedicated funds. The cost of analysing samples is not yet known.

b) The security situation in the region, specifically in Eastern DRC:



In case there is no security in the mining area, it is difficult for mining companies to conduct activities in compliance with the due diligence regulation, and they they will be subject to the suspension of mining activities.

CONCLUSION

The AFP method, which is a scientific method for 3T minerals to be used to verify if their declared origin is plausible or not, can be a useful tool for different stakeholders of the mineral supply chain. The desk study carried out in Burundi and the DRC revealed a significant interest in the use of the method. First and foremost, 65% of the respondents expressed their interest in the use of the method in demonstrating the conflict-free origin of their minerals. 47% of the respondents added the use of AFP in demonstrating the ownership of minerals, while the other 17% urged to use of AFP in the evaluation of the mineral chain of custody. Also, 42% have already made an AFP request.

Additionally, the study respondents are interested in the analytical services of AFP, particularly mineralogical analyses. The latter will help them to verify the grade of their minerals, to determine if there are valuable minerals other than 3T, and to envisage further exploration of their mine sites. However, those services should be provided at a competitive price by AFP sample preparation laboratories as the exporting comptoirs offer this service at no charge.

Furthermore, considering that ICGLR is working towards the integration of AFP into ICGLR third-party audits, this is a new way of exploring that can lead to an increase in AFP application requests.

Finally, the study revealed that there is a need to sensitize mining stakeholders about the benefits of the AFP method. It has been observed that most of them accepted the AFP reference sampling without knowing the real benefits of the method and its related applications. They have also asked the following questions related to AFP:

- What is the price of AFP?
- What are the benefits of AFP?



- Where are the analytical results of our samples?

5. References

1. List of active mine sites and negociants from DRC
2. List of active mine sites and companies from Burundi
3. AFP sample list from DRC
4. AFP sample list from Burundi