





# ACP-EU Development Minerals Programme Implemented in partnership with UNDP

# RETURN TO WORK (RTW) PLAN

## **PROGRESS REPORT**

An initiative of the African, Caribbean and Pacific Group of States, financed by the European Union and United Nations Development Programme, and implemented by UNDP.







## I. RETURN-TO-WORK PLANS

Return to Work projects are a valuable mechanism for workshop participants' personal and professional development. As part of your sponsorship, you were required to develop a return-to-work plan on a project you would undertake on your return, applying the knowledge and skills gained from workshop to influence change.

This follow-up on the progress of implementation of the return-to-work plan will be used to determine the most successful projects; and subsequently offer a number of selected participants the opportunity to attend future training events.

## II. REPORTING STRUCTURE FOR RETURN-TO-WORK PLANS

To facilitate ease of reporting on the progress of your return to work project, the structure below outlines the key project elements that need to be covered. **Please submit the progress update on the Return to Work Project (RWP)** using the structure provided below.

#### **GENERAL INFORMATION**

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Brief description of the project: TRAINING OF ARTISANAL AND SMALL SCALE MINERS ON GRADING OF GYPSUM FOR VALUE ADDITION

Despite the ongoing gypsum trading in the southern regions of Tanzania, identification and grading of different types of gypsum mined in the area is still a challenge to many artisanal and small scale miners. Currently gypsum trading is based on take or reject basis depending on the quality of the gypsum, it is most often gypsum are rejected due to poor purity and quality as result of mixing up with unwanted materials also gypsum are thrown away as gangue leading to the so called (loss), this affect daily income generated . Adequate knowledge on the identification of different types of gypsum mined in the area will reduce loss/dilution and designated gypsum to its proper uses and hence maximization of the profit. This







project intends to train artisanal small scale miners in grading of mined gypsum based on their typical mineralogy present, this will fingerprint percentage of mineral purity and assisting artisanal in grading of gypsum and later to improve the welfare of the artisanal and small scale miners in Tanzania.

#### What were the expected outcomes and what outcomes did you achieve?

-Gypsum mined in southern regions of Tanzania will be classified based composition and calculated percentage purity

-Artisanal small scale miners to be trained on grading of gypsum based on geochemical "fingure prints" and visual observation of minerals crystal and clastics presents.

Three different types have been established based on visual observation and chemical analyses see (Table

## 1) and (Figure 1)

i) Fresh, massive, whitish crystal (High grade) with 80.05 % of purity

ii)Fresh, Mixed whitish and Dark grey gypsum minerals with 79.19 % of Purity

iii) Fresh, massive dark grey gypsum, occasional crystal with 77.31 % of purity

	Sample # 1	Sample # 2	Sample # 3	Sample # 4				
	%	%	%	%				
Si	<lod< td=""><td><lod< td=""><td><lod< td=""><td colspan="2">18.82</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td colspan="2">18.82</td></lod<></td></lod<>	<lod< td=""><td colspan="2">18.82</td></lod<>	18.82				
S	14.9	14.7	14.4	2.62				
К	<lod< td=""><td><lod< td=""><td><lod< td=""><td>9.58</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td>9.58</td></lod<></td></lod<>	<lod< td=""><td>9.58</td></lod<>	9.58				
Ca	22.6	22.7	22.5	2.69				
Cr	<lod< td=""><td><lod< td=""><td><lod< td=""><td colspan="2">0.01</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td colspan="2">0.01</td></lod<></td></lod<>	<lod< td=""><td colspan="2">0.01</td></lod<>	0.01				
Ti	<lod< td=""><td><lod< td=""><td>0.0279</td><td colspan="2">0.50</td></lod<></td></lod<>	<lod< td=""><td>0.0279</td><td colspan="2">0.50</td></lod<>	0.0279	0.50				
Mn	<lod< td=""><td><lod< td=""><td><lod< td=""><td>0.06</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td>0.06</td></lod<></td></lod<>	<lod< td=""><td>0.06</td></lod<>	0.06				
Fe	0.07	0.07	0.23	5.67				
Ni	<lod< td=""><td><lod< td=""><td><lod< td=""><td>0.003</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td>0.003</td></lod<></td></lod<>	<lod< td=""><td>0.003</td></lod<>	0.003				
Cu	<lod< td=""><td><lod< td=""><td><lod< td=""><td>0.003</td></lod<></td></lod<></td></lod<>	<lod< td=""><td><lod< td=""><td>0.003</td></lod<></td></lod<>	<lod< td=""><td>0.003</td></lod<>	0.003				
Zr	0.01	0.01	0.01	0.02				
Sn	0.02	0.01	0.01	0.01				
Sb	0.04	0.04	0.03	0.02				
Le	62.4	62.5	62.8	60.0				
Total	100.00	99.96	99.97	99.98				
Calculated								
CaSO4 x 2H <sub>2</sub> O	80.05	79.19	77.31	14.10				

 Table 1:Classification of gypsum samples based on chemical analysis and % of purity











Onsite training has been undertaken ( See Appendix)

What were the expected outputs and what outputs did you achieve? Please be specific. For example, if you held a workshop or presentation to share the knowledge you gained during the training workshop: Where was the workshop held? When? How many people attended? What was the gender balance? Please also attach as an appendix any photos or other media.

Expected outputs	Achievement			
Identification of different gypsum species available	Three different species of gypsum minerals have			
in the area to fingerprint its mineralogy and	been identified in the area.			
percentage of clastics (Impurity) present, aiming to				
guide artisanal small scale miners in identification	Percentage of Purity of different types has been			







and grading of gypsum.	obtained which later were used to grade Gypsum				
Artisanal small scale miners to be trained on	Artisanal have been trained on identification of				
grading of gypsum based on visual mineralogy	different species of gypsum, this knowledge aided				
observation	them in grading of gypsum and reduction of				
Artisanal small scale miners to be trained on grading of gypsum based on the results of mineralogical composition identified from geochemical analysis.	gypsum loss and dilution.				

Onsite Training on identification of different species of gypsum based on visual observation of minerals composition was conducted between 19<sup>th</sup> - 20<sup>th</sup> December 2016 and 19<sup>th</sup> -21 February 2017 and at Kiranjeranje kilwa district in Lindi region. Minerals identification was made in different samples which were randomly selected in different stockpiles of gypsum. 50 small scale miners were participated in the training. During this training different species of gypsum were identified with emphasize taken on how improper selection of minerals would results in loss and dilution of gypsum by other gangue minerals and which would impact the final product to be sold. Proper selection of high grade gypsum will reduce the dilution/gypsum losses and resulted to high value final product to be sold leading to maximization of profit to artisanal and small scale miners.

Please describe the key partnerships and collaborations that you established in your country as well as any joint collaboration with other countries

#### I have established collaboration with,

- i) Small scale miner's organization at kiranje kiranje in Kilwa District Lindi region, with this collaboration, acquisition of all necessary information and follow up of this project was ease.
- ii) Vocational education and training and authority (VETA) Dar salaam office, have been consulted, to learn how they conduct short courses and accreditation to be offered in those short courses. Preparation of Memorandum of understanding (MOU) between University of Dar es salaam and Vocational is in progress.
- iii) African Minerals and Geosciences Centres (AMGC) in Dar es salaam, Memorandum between

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UDSM and AMGC has been signed, with this signed MOU, training, research and consultancy related to development will be conducted by two Institutions.

What indicators of success have you achieved since the start of implementation? (Describe the indicators of success in relation to the expected outputs and outcomes)

- 1. Artisanal small scale miners at Kiranjeranje village in Kilwa district have been trained to identify different types of gypsum by using basics minerals identification skills and geochemical fingerprints.
- 2. Artisanal small scale miners are capable in grading different types of gypsum, this knowledge was not known before, and they assumed every material used to be gypsum which was not right.
- 3. This project has been presented to the Ministry of energy and Minerals (MEM-T) and accepted.
- 4. Training Manual for artisanal and small scale miners will be prepared

What strategic opportunities have you acted upon that have contributed to the continued success of your project? (include linkages to sub-regional and regional agendas)

I have been consulted several times to on identify of different rock/mineral sample if either are gypsum or not and advice for geochemical analysis when whenever necessary.

## What opportunities opened up for you personally as a result of your RWP?

-To work closely with artisanal small scale miners, I have been visiting and discussing with them on different methods applied in prospecting and mining of gypsum mineral, I Advised them the best way to do in order to increase production and maximize their daily income. I have been consulted several times to advice on the best way for exploring and mining of Gypsum.

-This project has opened opportunity to work closely with local and international exctractives stakeholders such as Repoa, NRGI and different civil society organization to empower artisanal and small scale miners in Tanzania.

-This project was among three Tanzania Project presented during Development Minerals alumni day event on 5<sup>th</sup> April 2017 and opened an opportunity for future collaboration with UNDP Tanzania in extractives sector.

- I was nominated to attend 5 days training workshop entitled ""How best can Tanzania harness natural resources for the realization of its development goals" organized by REPOA in collaboration with Natural Resource Governance Institute (NRGI) on 3<sup>th</sup> to 7<sup>th</sup> July 2017 in Dar es Salaam, whereby I had a time to share my project and knowledge gained from ACP EU Development Minerals training workshops. a network of Extractive sector stakeholders in Tanzania established, where by different updates on sectors either local or International is being shared.

-A summary of my project was summarized and shared to Ministry of energy and Minerals (MEM-T) to give

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an updates on the ongoing gypsum trading in the Southern Tanzania. Report is entitled as **"Gypsum trading in the southern regions of Tanzania as an emerging opportunity in the low values minerals and materials (LVMM) sector** "

Please explain any problems encountered during implementation of your project, highlighting any deviations from the project plans (Describe the solutions sought for the problems and corrective actions undertaken for the deviations)

- i) Remoteness of the study area Study area is located approximately 550- 600km from the city of Dar es s salaam, this project was executed when I was undertaking others geological works in of Lindi and Mtwara regions inroder to save costs.
- ii) Budget constraint Geochemical analysis to fingerprint composition of different types of gypsum are expensive.
- iii) Tanzania combined RWP wasn't implemented due to resources constraint, I decided to design and implement my own RWP utilizing minimal resources and assistance from my employer.
- iv) Large number of small scale miners and artisanal to be trained, I decided to train final year undergraduate students to assist in the exercises.

#### What specific actions have you undertaken to ensure sustainability of your project?

- To establish strongly relationship between small scale miners and University of Dar e salaam to easy project execution.
- Memorandum of understanding between University of Dar es salaam and AMGC has been signed for further activities in the implementation of Project.
- Minister of energy and Minerals (MEM-T) has been informed on the ongoing project, aiming support whenever necessary.

#### Please describe any future actions in the table below

This Project has contributed in the Industrialization agenda which is under nation Five year's development plan 2 (FYDP2) and is currently implemented in Tanzania. One of the key Pillar of FYDP2 is value addition which is addressed in this project. This project has trained artisanal and small scale miners on how to add value by making sure each gypsum of different purities are designated to specific use, for example gypsum board manufactures, Plaster of paris (Pop), Cement Manufacturers, and Fertilizers manufactures.

Since 2016 Tanzania through Ministry of energy and Minerals (MEM-T) decided to utilize its internal







sources of gypsum and stop importation from outside, this stimulated higher demand of gypsum in Southern regions of Tanzania. To sustain the market a constant supply of high quality gypsum is highly needed, this will be achieved by ensuring artisanal and small scale miners who are the primary supplier are able to deliver high quality of gypsum.

Period Activities	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Activity 1:	Study area selection	Field visit and gathering of necessary information	Site visit and sample collection	Identification of types of Gypsum and onsite training			
Activity 2:	Sample collection	Geochemical analysis of different gypsum types	Training on identification of different gypsum types based on chemical composition	Follow up			





Figure 1: Gypsum grading based on visual observation and chemical composition





Figure 2: Diluted gypsum stockpile (Mixed of Gypsum minerals and clastics materials)/ Dilution of Gypsum minerals



Figure 3: Onsite training on proper grading of gypsum minerals to minimize dilution/losses

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