

FEASIBILITY PROJECT STUDY

ON

**500 thousand t/yr Organo-mineral fertilizers
in Tanzania**

BUSINESS SUMMARY

by

ITRACOM Fertilizers Limited

NOVEMBER 2020

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ACRONYMS

CaCO ₃	: Calcium carbonate
CaO	: Calcium oxide
DAP	: Di-ammonium Phosphate
EAC	: East African community
Ha	: Hectare
IFL	: ITRACOM fertilizers LTD
IRR	: Internal return ratio
ISO	: International Organization for Standardization
ITRACOM	: International Trading Company
KCl	: Potassium Chloride
Kg	: Kilogram
KVA	: Kilovoltampere
LTD	: Limited
MW	: Megawatt
NPK	: Nitrogen, Phosphorus and Potassium
OHP	: Organic High Phosphates
OM	: Organic Matter
OMF	: Organo-mineral fertilizer
PPS	: Prefeasibility Project Study
PWD	: Print Working Directory
SWOT	: Strengths - Weaknesses - Opportunities - Threats
T/yr	: Tons per Year
TARI	: Tanzania Agricultural Research Institute
USD	: United States Dollar

EXECUTIVE SUMMARY

Name of the Company	ITRACOM Fertilizers Ltd Dar-es-Salaam-Tanzania Contact person : NTIRAMPEBA Simon Email:ntirasim@gmail. com Tel :(+257) 22 278790
Promoter	ITRACOM GROUP Bujumbura-Burundi Contact person : NTIRAMPEBA Simon Email:ntirasim@gmail. com Tel :(+257) 22 278790
Capacity of Plant	500,000T/yr
Location of Plant	Nala - Dodoma
Project cost/ Estimated investment	180, 000,000 USD
Employment	3000 directly
Main Activity	Organo-mineral fertilizers production
Total land for implementaion of the organo-mineral fertilizersplant	50 Ha, incentive measures: <ul style="list-style-type: none"> • Officebuildings, workshops, warehouses: 10 Ha • Experimental fields: 40 Ha
Total land for Organic High Phosphates (OHP) extraction	The information will be provided after the sampling work (ongoing)
Raw material requirement <ul style="list-style-type: none"> • Chemical fertilizers (DAP, Urea, KCl) : 50% • Organic matter (manure and compost) : 15% • Organic High Phosphates (OHP) : 35% 	250,000T/yr 75,000T/yr 175,000T/yr
Water supply and source	Existing Source-PWD &Water Resources Department, Gouvernement of Tanzania, Rainwater Harvesting captive dam at Site.
Total power requirement	10MW
Project timeline schedule	3 years
Debt : equity ratio	2 : 1

1 KEY HIGHLIGHTS OF THE PROMOTERS

ITRACOM FERTILIZERS LIMITED (IFL) is a special purpose Company established by ITRACOM GROUP, a group of companies registered in Burundi. The group is made of companies operating in different sectors including agribusiness, banking, transportation, insurance, and manufacturing, thus forming a very relevant and respected business ecosystem in the East African Region.

Established in 2019, FOMI is one of ITRACOM GROUP's flagship companies. It is the only company producing Organo-mineral fertilizers in the East African Region and other parts of Africa. The Company is strategically located in Maramvya, on the National Road 5, 2 km from Melchior NDADAYE International airport, and 15km from downtown of Bujumbura, the economic capital of Burundi.

FOMI product is ISO 9001:2015 certified and is marketed in all regions of Burundi: FOMI-IMBURA, FOMI-BAGARA and FOMI-TOTAHAZA. Agricultural lime is also one of the company's offerings.

These products are produced through a combination of locally sourced organic materials and imported mineral raw materials such as DAP, Urea, KCl, Organic High Phosphates (OHP).

Following the success of FOMI and the socio-economic impact of its products, ITRACOM Group seeks to expand its business ecosystem by setting up a 500,000t/yr Organo-mineral fertilizers plant in Dodoma-Tanzania registered as ITRACOM FERTILIZERS LIMITED (IFL).

2 MARKET ANALYSIS

With about 80% of the population living on subsistence agriculture, animal husbandry and fishing (World Bank, 2017), the agriculture sector is the engine of economic growth and development in Tanzania (FAO, 2017). Over the past decade, the country has experienced sustained average growth of 6% -7% per year (World Bank, 2017), with agriculture sector contributing to the national economy at the rate of 25.88%. This contribution makes the agriculture sector to be the second largest sector to contribute to the national economy after services sector which accounts 44.30% (Chongela J., 2015 : "Contribution of Agriculture Sector to the Tanzanian Economy").

Around 80% of Tanzanian soils are poor in organic matter content (TARI, 2020). In order to sustain increasing rates of growth, Tanzania greatly needs a sustainable agricultural production that depends on soil with rich organic matter content and acid-neutralization capacity to ensure proper retention and release of water and nutrients; and allow for deep rooting and resistance to soil degradation.

Being the third country in sub-saharan Africa with the largest herd, Tanzania offers a significant amount of manure, one of the key raw materials in the production of organo-mineral fertilizer.

ITRACOM Fertilizers Ltd has technical capacity which offers confidence in the production of organo-mineral fertilizers that would increase the yield and the quality of Tanzanian staple foods namely maize, rice, bananas and cassava.

Moreover, considering the pH levels and soil health management in Tanzania, 70% of soils needs agricultural lime to reduce soil acidity.

Therefore, IFL will set up a plant to produce enough quantity of lime to deal with the soil acidity. The experience proved that the use of chemical fertilizers such as DAP, Urea, lime etc increase the soil acidity. That is the reason why IFL is leading in the production of OMF. For example, the following table illustrates the acidifying effects of 100kg chemical fertilizers and their equivalent in kg of lime to neutralize the residual acidity of different chemical fertilizers commonly used in Burundi and probably in East African region.

Table 1. The acidifying effects of 100kg chemical fertilizers and their equivalent in kg of lime to neutralize the residual acidity in Burundi and probably in East African region

100kg of fertilizer	Kg CaCO ₃	Kg CaO
DAP (diammonium phosphate)	-88	-50
Urea	-80	-45
Sulphate of ammonia	-110	-82
Ammonium nitrate (34% N)	-60	-34
Ammonium nitrate (26% N)	-18	-10
Anhydrous ammonia	-150	-84
NPK 17-17-17	-38	-21

Parts of Tanzania are characterized by strongly to moderate acidic soils (60,174,144.90 Ha, that is 67.6% of the arable land) and low to moderate soil organic carbon content (57,705,720 Ha, that is 78.4% of the arable land) that will require a combination of fertilizer products and agricultural lime to increase production yield.

Table 2. Hydrogen Potential (pH) levels and soil health management in Tanzania

pH	Acidity and Alkalinity levels	Soil health Implications	Management options	Dominant Regions	Area (ha)	%
<5,5	Strongly acidic	-Deficiency of Nitrogen (N), Phosphorus (P), Potassium (K), Calcium (Ca), Sulphur (S) and Magnesium (Mg) -High levels of Iron (Fe) and Manganese (Mn)	Uses of agricultural lime and non-acidifying fertilizers having N, P,K, S, Ca and Mg nutrients	Katavi, Njombe, Iringa, Kigoma, Mtwara, Ruvuma, Lindi, Tanga, Manyara, Rukwa, Mbeya, Kagera, Geita, Tabora and Singida	19,022,753.9	21.4
5.5-6.5	Moderately acidic	-Deficiency of N, P, K, S, Ca and Mg -High levels of Fe, Mn and Boron (B)	Uses of non-acidifying fertilizers having N, P,K, S, Ca and Mg nutrients	Katavi, Njombe, Iringa, Kigoma, Mtwara, Ruvuma, Lindi, Tanga, Rukwa, Mbeya, Kagera, Geita, Tabora, Singida, Morogoro, Pwani, Dar es Salaam, Mara, Simiyu, Shinyanga and Mwanza	41,151,391	46.2
6.6-7.3	Neutral	Most nutrients became readily available to plants	Uses of non-acidifying fertilizers for particular crops	Iringa, Mbeya, Tabora, Singida, Morogoro, Simiyu, Shinyanga and Mwanza, Kilimanjaro, Arusha, Manyara, Tanga, Dodoma and Songwe	10,871,142.9	12.2
7.4-8.4	Moderately alkaline	Deficiency of N and P	Uses of gypsum and acidifying fertilizers having N and P nutrients	Arusha, Kilimanjaro, Shinyanga, Simiyu, Mara, Tanga, Dodoma, Morogoro, Mbeya, Pwani, Tanga, Songwe, Rukwa, Tabora, Singida, Manyara, and Dar es Salaam	2,157,031.2	2.4
>8.4	Strongly alkaline	Deficiency of N, P, Fe, Mn, Cu, Zn and B	Uses of gypsum and acidifying fertilizers having N, P, Zn, Fe, Cu, B and Mn nutrients	Arusha, Kilimanjaro, Manyara, Shinyanga, Simiyu, Tabora, Dodoma, Singida, Tanga, Mbeya and Dar es Salaam	943,863.0	1.1

Source: Map prepared by Tanzania Agricultural Research Institute (TARI), 2020

Table 3. Organic Carbon (OC) levels and soil health management in Tanzania

	Levels of OC	Soil health Implications	Management of Soil Organic Carbon (OC)	Area (ha)	(%)
> 1.3	Low	-Soil contains very small amount of organic matter that enrich the soil -Soil contain very small amount of Nitrogen (N) -Soil has very little ability to store nutrients and water	-Cultivation of cover crops, intercropping, Crop rotation and uses of manure -Un burned plant residues	30,015,099	40.8
1.4-2.4	Moderate	-Soil contains an average amount of Organic matter that fertilizes the soil -Soil contain moderate amount of nitrogen (N) -Soil has moderate ability to store nutrients and water	-Cultivation of cover crops, intercropping, Crop rotation and uses of manure -Un burned plant residues	27,690,621	37.6
2.5-3.5	High	-Soil contain high amount of organic matter that enriches the soil -Soil has high level of Nitrogen (N) -Soil has high ability to store nutrients and water	-Cultivation of cover crops, intercropping, Crop rotation and uses of manure -Un burned plant residues	14,441,043	19.6
< 3.5	Very high	-Soil contain very high amount of organic matter that enriches the soil -Soil has very high level of Nitrogen (N) Soil has high ability to store nutrients and water	-Cultivation of cover crops -Un burned plant residues	1,420,542	1.9

Source: Map prepared by Tanzania Agricultural Research Institute (TARI, 2020)

It is well known that the proper handling of soil acidification and poor soil fertility is based on the use of organic fertilizers, but in most cases, organic fertilizers have lower nutrients contents to sustain healthy plant growth. Indeed, low economic feasibility mainly because of the availability and logistics of applying great amounts of organic fertilizers over large areas is an obstacle for organic compound use. Moreover, the low analytical value of the different organic sources such as cow manure has forced the industry to enrich it with mineral soluble sources, providing high N, P, and K concentrations in a lower volume and creating so-called organo-mineral fertilizers.

Thus, organo-mineral fertilizers are characterized as a mixture of organic and mineral fractions and can be produced in several N, P and K proportions suitable for crop requirements.

There is enough evidence that organo-mineral fertilizers support the producers in obtaining higher yields and offer a sustainable and economically alternative in crop production. The advantage of organo-mineral fertilizers over mineral fertilizers is the supply of a range of macro- and micronutrients in addition to organic matter. It has been established that, in the long run, the use of organo-mineral fertilizers is more efficient in the control of the systematic soil acidification and maintaining soil fertility.

The Burundi success story as to the use of organo-mineral fertilizers may serve as a benchmark for Tanzania with regard to soil resilience improvement and enhanced crop production in the aforementioned areas (Table 2). Today, thanks to the observed socio-economic impact of FOMI's fertilizer products, the company has become very relevant in the economy and the Government of Burundi took significant steps in the support of this industry through conducive policies/subsidies in order to promote organo-mineral fertilization.

Indeed, the organic matter (OM) found in the organo-mineral fertilizer have contributed to the soil physical structure improvement, water uptake capacity and nutrient supply to plants, thus increasing crop production. This may apply to similar acidic soils of Tanzania.

Though, it appears that the consumption of fertilizers in the EAC countries, Tanzania included, is still low compared to the rest of the world (Table 4), it is evident that the needs are yet to be met in Tanzania as revealed by the available data on the national demand of fertilizers from 2012 to 2016. Available data from the Ministry of Agriculture, TFRA, and World Trade Organization prove beyond reasonable doubts that the increased consumption of fertilizers from 586,000 tons in 2019 to 718,051 tons in 2020, still leave the demand of fertilizers considerably higher than its supply in the market. Indeed, the average use of fertilizers in EAC is about 30kg/ha while the average in Tanzania is around 8kg/ha. Therefore, the Tanzanian market leaves a gap of 1,000, 000T per year. This market situation builds a significant case for a new fertilizer plant offering organo-mineral fertilizer products to enter the market.

Table 4. Change in the amount of fertilizer applied in the EAC compared to the rest of the world (in Kg / ha)

Year	Burundi	Rwanda	Uganda	Tanzanie	Kenya	Monde
2014	10.9	11.8	1.7	8.4	11.3	138
2013	7.4	10.1	2.3	4.7	52.5	135.2
2012	5.7	4.1	1.8	7.7	42.1	133.8
2011	5.6	0.1	1.8	8.6	43.6	133.9

2010	3.6	0.1	1.7	8.8	30.3	129.2
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Source: ADISCO, 2017

Table 5. The National Fertilizer Demand (tons) of Tanzania (attached annex 1)

Source: Tanzania fertilizer regulatory authority, 2021

3 TECHNICAL ANALYSIS

3.1 Raw materials

Many substances are needed to produce organo-mineral fertilizer because it is a mixture of organic and mineral fractions:

- Chemical fertilizers (DAP, Urea, KCl): 50%
- Organic matter (manure and compost): 15%
- Organic High Phosphates (OHP): 35%

3.2 Production Process

Organo-Mineral Fertilizers production follows a specific process to make sure the following specifications are met:

- The fertilizer should be fully decomposed and thermally treated.
- The fertilizer should not be mixed with soil or sand.
- The fertilizer should be free of weed seeds, viruses, bacteria, fungi, nematodes, pathogens, insects and animals.
- The content of toxic heavy metals in the fertilizer should not exceed the permissible limit.

3.2.1 Machinery

Machinery and equipment will mainly consist of units that will help process the raw material all the way to packaged products. This process will require:

- The crushing unit
- The mixing unit
- The blending Unit
- The drying unit
- The cooling unit
- The sorting unit
- The coloring unit

- The packaging unit

The production process is pinpointed in following chart:

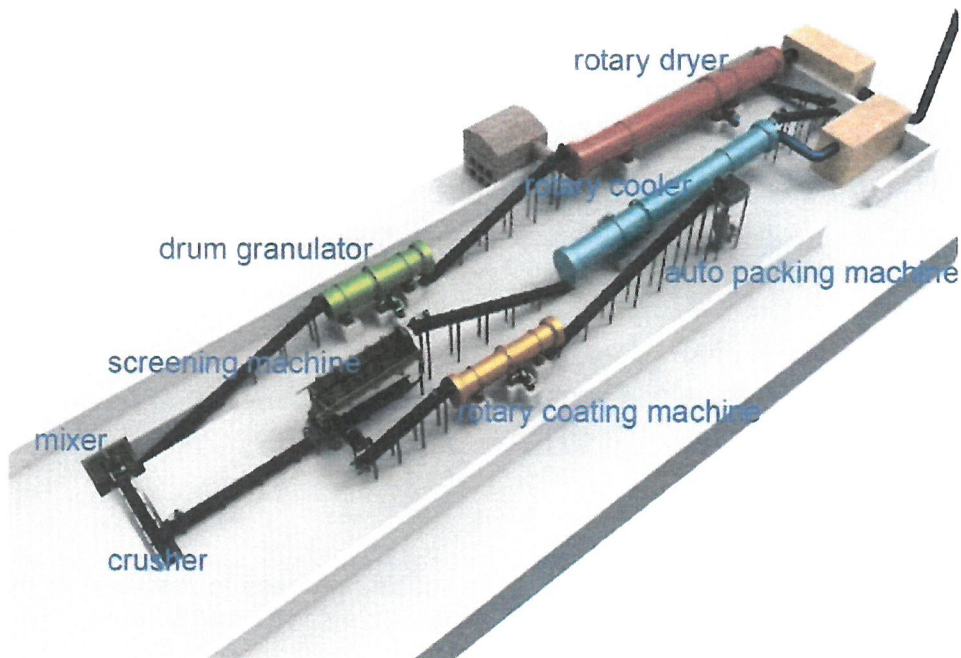


Figure 1. The machineries and production process of the plant

3.2.2 Buildings and equipments

3.2.2.1 Organic High Phosphates unit

Item	Role	Quantity
Line of crushers	Grinding of limestone	2
OHP powder production line	Grinding of limestone pebbles into limestone flour with grain size range of 0.02-1mm	1
Excavator	Extraction of limestone and loading into dump trucks	5
Dump trucks	Transport of raw materials and distribution of finished products	40
Generator	Electricity production crusher, Grinder	2
Buildings	Workshops for machines, Control room, fuel stocks, spare parts	4

3.2.2.2 Organo-mineral fertilizer production unit

Item	Role	Quantity
Garbage sorting unit	Segregation of organic and non-organic material	2
Compost turning machines	Mixture of raw material and aeration of compost	2
FOMI production unit	Grinding, mixing, granulation and packaging	2
1500 KVA transformers and accessories	Electric power	4
1500KVA generator and accessories	Rescue/Emergency Electric power	4
Loader excavators	Raw materials Loading	5
Fork lift	Finished products and heavy spare parts loading	5
Security and surveillance system	Fire prevention system, video surveillance, internal communication	6
Buildings	Machine workshop, technical offices, repair workroom and spare parts storage, laboratory, Fertilizers raw materials hangar, fertilizer storage shed	8
Trucks	Transport of raw materials and distribution of finished products	100

3.2.2.3 Administration offices, parking lots, pathways and security areas

Item	Role	Quantity
Administration	Building of 4 floors for staff office	1
Traffic and parking	Traffic areas management, parking for machines and trucks	4
Plant security system	Fence construction around the site, rainwater drainage system and secure of the plant	NA

3.2.3 Finished Products

IFL will produce 3 main OMF types:

- FOMI-IMBURA/HARVEST (generally applied as basic fertilizers); and

- FOMI-TOTAHAZA/GROWING & FOMI-BAGARA/WEEDING both used as supplementary fertilization.

All these 3 main products will be produced using different formula to fit fertilization requirement of different crops, especially the main Tanzanian staple foods.

In addition to those 3 main products, IFL will produce agricultural lime matching market demand.

3.2.4 Site and layout plan of the Plant

IFL will tap into the implementation strategy and experience of its sister company based in Burundi. According to its experience, a successful implementation of the proposed venture requires the availability of two main sites:

1. Organic High Phosphates extraction site
2. The Plant site of about 50 Ha

Both extraction and the Plant sites will require incentive measures.

The sites selected for the venture may meet the following requirements:

- Easy access to public utilities such power, water, and steam generation,
- Proximity to main roads, port and/or airport for logistical benefits and cost savings when importing raw materials and distributing finished products.

Based on the preliminary field's data, the location of the Plant should be in Dodoma-Tanzania. Location map showing the site, specific location with project boundary & project layout along with coordinates will be given later. From our experience, it is expected that the required space has to be at least 50 hectares for the construction of the production plant of organo-mineral fertilizers with an annual capacity of 500,000 tons including land to be used as pilot farms.

The following is the layout plan of the Plant:



Figure 2. Layout plan reference of the Plant

The layout plan includes a unit for storage of raw materials, a composting unit, factory, offices, laboratories and the piloting fields for trials and tests.

3.3 SWOT Analysis

In the development of this venture, this leadership and the management will take into consideration the strengths, weaknesses, opportunities and threats as shown in the following table.

Table 6. SWOT analysis table

Strengths	Weaknesses
<ul style="list-style-type: none"> • Significant manufacturing experience of organo-mineral fertilizers in the EAC and Africa: - Promoters successfully run a similar company in Burundi. • Availability of funds: - ITRACOM Group of companies has enough financial capacity to pull this project through. • Innovative technology: - The latest 	<ul style="list-style-type: none"> • Staff: - No skilled staff in the production of OMF, which will increase staff onboarding cost • Business environment: - Adaptation time to the business environment of Tanzania may be relatively longer than the time it has taken in Burundi • Marketing: High cost of advertisement and marketing

<p>technologies are being used to generate higher yields</p> <ul style="list-style-type: none"> • Channels: - Promoters have proven and robust experience in raw material sourcing, marketing, distribution and logistics value chain. • Quality of Fertilizer Products: - The fertilizer has contributed to fast restoration of soil fertility in comparison with mineral fertilizers. 	
Opportunities	Threats
<ul style="list-style-type: none"> • Incentive measures: -The promoters expect to tap into the Incentive policy to investors • Raw materials: - Some of the key raw materials are present in the country • Market: - There is an obvious need and demand for organo-mineral fertilizer. • Energy: - There is an existent supply of alternative energy like gas • Transfer of knowledge: - The promoters already have skilled staff in the region i.e. Burundi to train new staff members 	<ul style="list-style-type: none"> • Competition: Pricing might be a challenging exercise to compete with existing suppliers of mineral fertilizers. • Market penetration: There could be a resistance to change in the farming community (shifting from the mineral to organic mineral fertilizers).

4 ENVIRONMENTAL MANAGEMENT

The proposed project will not have any significant adverse impact on the existing environment as sufficient pollution control measures are incorporated in the process technology and plant design.

The process technology also incorporates special scrubbing equipment like Dual Mole Scrubbing System and also Dedusting system. In this OMF plant Air pollution control equipment i.e. Cyclone, Scrubber, Mist eliminator etc. shall be installed during the commissioning of the plant itself. There will be no liquid waste and solid waste generation from the plant. All liquid spillages shall be collected and recycled back to the process.

Since no liquid effluent and solid waste will be discharged from the plant there will not be any significant adverse impact on the ecosystem.

The vegetation and aquatic systems of the area will be protected by adopting these environmental protection measures.

4.1 WASTEWATER RECOVERY

As part of our environmental policy that stems from our corporate social responsibility, our aim is to achieve a zero effluent discharge target. IFL will install Wastewater Recovery Units for treating the effluent streams in order to entirely reuse it. The unit will consist of:

1. Sand filter back wash water from water treatment plant and cooling tower
2. Water treatment plant resin regeneration effluent - acidic and alkaline Cooling towers blow down
3. Domestic effluent

Based on the characteristics of the effluent streams, trade effluents are categorized and retreated as given below:

1. Sand filter back wash water from water treatment plant and cooling tower containing high suspended solids effluent is treated by using Lamella Clarifier technology
2. Water treatment plant resin regeneration and cooling tower blow down effluents containing high dissolved solids is treated by Reverse Osmosis technology

5 GREEN BELT

Where needed, IFL will develop and maintain a green belt within the granted area for the plant. The green belt shall contain different species adapted and recommended by the research and scaling up services of Tanzania.

6 PROJECT IMPACTS

6.1 Economic effects

Project activities will have various beneficial economic effects related to:

- The substitution of imports of chemical fertilizers
- The reduction in the price of fertilizer on the local market
- The increase in the use of fertilizer
- The reduction of the trade balance by reducing imports of chemical fertilizers
- Technology transfer
- The reduction of poverty and malnutrition due to increased agricultural yield and thus reduced staple food cost.

6.2 Social effects

The project will have a range of beneficial social effect:

- Rural poverty alleviation, due to the substitution of chemical fertilizers which, in the long run, cost excessively high to the local population.
- Time and cost saving due to accessible fertilizer products distributed through well organized networks spread out around the country
- Huge job and business creation opportunities in the business ecosystem of the plant.

6.3 Environmental impact

Environmental issues are of paramount importance in many cities. The project will allow for:

- The collection of household wastes and other waste which remain the major environmental problem of cities.
- The fight against erosion because organic fertilizers improve water infiltration in the soil unlike chemical fertilizers.
- The reconstitution of the water table.
- The reduction of the soil acidity and water table contamination.
- The restoration of the beneficial soil microorganisms.

7 FINANCIAL ANALYSIS

INVESTMENT BREAKDOWN	US\$Mil.
Land/Building	10,300,000
Plant&Machinery	20,000,000
Vehicles	8,000,000
Furniture & Fittings	2,000,000
Pre-expenses	1,500,000
Others	500,000
Working Capital	135,000,000
TOTAL	180,000,000

7.1 Determination of investment needs

The total estimated investment cost is **"One hundred and eighty million US dollars (180,000,000 USD)"**

7.2 Sources of funds

Funding for the entire project will be raised by ITRACOM GROUP which deals in organo-mineral fertilizers manufacturing, transport and logistics, insurance, banking, and numerous other business ventures in Burundi.

INTERNAL RETURN RATIO						
Annee	ANNEE 1	ANNEE2	ANNEE3	ANNEE4	ANNEE5	Total
Cash flow (1)	49,883,838.00	49,883,838.00	49,883,838.00	49,883,838.00	49,883,838.00	249419190
(1+taux) ^t (2)	1.143068028	1.306604518	1.49353785	1.707215365	1.951463302	7.601889063
(1)/(2)	43640305.53	38178222.51	33399781.6	29219417.2	25562273.17	170000000
I=	170000000					
$\text{Valeur Actuelle Nette (VAN)} = \sum_{t=1}^N \frac{\text{Cash flow}_t}{(1 + \text{taux})^t} - I = \text{VAN}$						
				0.006654263	>0	
IRR=14.31%						

NPV =NET PRESENT VALUE

ANNEE	ANNEE1	ANNEE2	ANNEE3	ANNEE4	ANNEE5	Total
Cash flow (1)	49,883,838.00	49,883,838.00	49,883,838.00	49,883,838.00	49,883,838.00	249419190
(1+taux)t (2)	1.1	1.21	1.331	1.4641	1.61051	6.71561
(1)/(2)	45348943.64	41226312.4	37478465.82	34071332.56	30973938.69	189098993.1
I=	170000000					

$$Valeur Actuelle Nette (VAN) = \sum_{t=1}^N \frac{Cash\ flow_t}{(1 + taux)^t} - I = VAN \quad 19098993.1 > 0$$

NPV=10%

INITIAL CASH INVESTMENT	170,000,000.00	According to the payback ratio it will take the business between 3 years and 5 months to recover the Investment cost
ANNUAL CASH FLOW	49,883,838.00	
PAY BACK RATIO	3.41	
NET PROFIT	32,883,838.00	
NET SALES	299,240,520.00	The business profitability is at 11% per year
NET PROFIT RATIO	11%	
NET PROFIT	32,883,838.00	
COST OF INVESTMENT	170,000,000.00	The gain generated by the investment is 19% of the initial cost
ROI	19%	

9 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study is to demonstrate the financial feasibility and the relevance of this project. Based on the profitability analysis and the information presented in this study, it is concluded that the project is feasible as the net present value for the project is positive 32,883,838 USD and the project directly provides 3000 job opportunities for the residents.

From this study, the following conclusions may be drawn:

- ❖ The project will generate acceptable financial and economic returns. It falls within the scope of both the fertilizer policy and act.
- ❖ The project is technically feasible, financially viable and economically profitable.
- ❖ The key financial ratios are acceptable.
- ❖ The project will create a pool of skilled personnel which will be useful for the future development of fertilizer industry in Tanzania.
- ❖ The project will substantially contribute to Government revenues and hence strengthen its external revenue position.
- ❖ The project will sustainably increase agricultural production and productivity and consequently increase population income.

The financial, environmental and socio-economic benefits presented in this study demonstrate that the population and the government of Tanzania will greatly leverage on this project in their developmental efforts because it creates a business ecosystem that provides relevant breaks to the private and the public sectors.

(Annex I)

TANZANIA FERTILIZER REGULATORY AUTHORITY

FERTILIZER REQUIREMENTS, AVAILABILITY AND UTILIZATION FOR THE PAST DECADE

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
1 Demand forecast (MT)	385,000	385,000	385,000	485,000	485,000	485,000	485,000	485,000	485,000	514,138	586,604	718,051
2 Dom. manufacturing (MT)				18,479	18,479	230	9,809	11,744	12,997		33,873	
3 Imports (MT)	302,000	279,115	302,453	289,795	283,793	342,783	427,486	418,090	435,178	514,725	524,972	
4 Exports (MT)				164,645	11,911	54,828	252,556	55,009	34,616	96,370	145,367	
5 Domestic availability (MT)	302,000	279,115	302,453	125,150	290,361	288,185	184,739	374,825	413,560	418,355	413,478	
6 Utilization (MT)	263,390	257,645	251,715	210,876	283,580	309,088	325,916	296,036	351,858	364,968	363,145	
7 Soil requirement (MT)												
8 Total arable land ('000 ha)							44,000			1,089,964		
9 Total cultivated arable land ('000 ha)							14,520					
10 Fertilizer utilization (Kg/ha)	18	18	17	15	20	21	22	20	24	25	25	
11 Fertilizer nutrients utilization (Kg/ha)												
12 Dom. manufacturing Vs. utilization												
13 Importation increments												
14 Utilization Vs. dom. Availability	87%	92%	83%	75%	74%	89%	111%	109%	113%	134%		
15 Dom. availability Vs. demand forecast (%)	78%	72%	79%	75%	74%	89%	111%	109%	113%	134%		
16 Utilization value (x 1,000 Tshs)	181,739,100	177,775,050	173,683,350	145,504,440	195,670,200	213,270,720	224,882,040	204,264,840	242,782,020	251,827,920		
17 Utilization Vs. PP forecast (%)	68%	67%	65%	55%	74%	80%	85%	77%	91%	95%		
18 Utilization Vs. soil requirement (%)	24%	24%	23%	19%	26%	28%	30%	27%	32%	33%		
19 Utilization change based on 2009 (%)	0%	-2%	-4%	-20%	8%	17%	24%	12%	34%	39%		

