

**A REPORT OF THE GOVERNMENT OF UGANDA DELEGATION THAT
TRAVELLED TO CHINA TO MEET
GUANGZHOU DONGSONG ENERGY GROUP AND SOUTH CHINA
AGRICULTURAL UNIVERSITY**

A delegation from Makerere University, Ministry of Agriculture, Animal industry and Fisheries; and State House visited Guangzhou Dongsong Energy Group and China South Agricultural University from April 26th 2014 through 2nd May 2014.

1. Background

The planned development of the phosphate deposits at Tororo Sukuru mines has been on-going. The exploration license was awarded to Guangzhou Dongsong Energy Group (GDE) and the planned collaboration between Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Makerere University (MAK), and South China University (SCAU) is the reason why the following key stakeholders visited China to acquaint themselves with the operations of the Dongsong Energy Group (GDE) and also assess possible partnerships with South China Agricultural University (SCAU) . The delegation comprised of representatives from MAK, MAAIF, Ministry of Trade and Industry and State House.

A zero draft of the MOU had earlier been prepared. The delegation therefore conducted a preliminary review of the draft MOU between GDE, MAK, MAAIF and SCAU to pave way for the final MOU which will form the basis of the collaboration further to the planned mining and processing and production of the phosphate fertilizers.

2. Team Composition.

The team comprised of the following members

Name	Institutional Affiliation
Anne Babinaga	Special Presidential Assistant/Investment Affairs to H.E. The President, State House - Head of Delegation
Bashir Kalenge	Private Secretary /Legal affairs to H.E. The President, State House
Bernard Bashaasha	Makerere University-Principal, College of Agricultural and Environmental Sciences (CAES)
Phinehas Tukamuhabwa	Makerere University-Director, Makerere University Agricultural Research Institute (MUARIK)
Stephen Tibeijuka Byantwale	Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)- Assistant Commissioner
James Muhangi	Makerere University, Graduate Incubatee at MUARIK.
Stephen Musinguzi	Programmes Director, Excel Hort Consult Ltd (A private firm)

	company collaborating with Ministry of Trade on Horticulture Value Chains.
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3. Terms of Reference The Terms of reference for the team were majorly to assess possible partnerships and follow up on the draft MOU between Makerere University (MAK), South China Agricultural University(SCAU), Ministry of Agriculture, Animal Industry and Fisheries and Guangzhou Dongsong Energy Group Co. Ltd. This was mainly with regard to;

- (i) Benchmarking fertilizer related capacity building practices entailing the public and private sectors;
- (ii) Exploring scholarship opportunities for Ugandan students to study about phosphate fertilizers and related disciplines in China and to arrange exchange visits by Students, Instructors and Researchers between MAK and SCAU;
- (iii) Asses opportunities for joint/mutual curriculum review and improvements;
- (iv) Explore the potential for establishing an East African Agricultural Technology Centre at Makerere University's Agricultural Research Institute, Kabanyolo (MUARIK)
- (v) Acquire first-hand experience on how phosphates are used to produce fertilizers and other products for the benefit of farmers in China
- (vi) Benchmarking MUARIK with similar institutions of excellence in China and learning from their model especially in utilization of phosphates for sustainable agricultural productivity especially on how to improve crop and animal productivity.
- vii) Agree with Guangzhou Dongsong Energy Group on short, medium and long term activities that will be implemented in order to operationalize the MOU between MAK, MAAIF, SCAU and Guangzhou Dongsong Energy Group Co. Ltd;
- (viii) Explore areas for joint research collaboration;
- (ix) Explore enterprises amenable to the production, processing and packaging for export to China from Uganda under PPP arrangements;
- (x) Explore opportunities for making phosphates an engine for creation of employment in Uganda. The complete terms of reference for the trip are presented in Annex 1.

4. Highlights of the visit

Guangzhou Dong Song Energy Group

The team visited the offices of the GDE and held discussions with the leadership and staff of the Guangzhou Dong Song Energy Group centered on a number of pertinent issues. The discussions assisted the team to establish facts about Guangzhou Dong Song Energy Group Co Ltd, its staffing, projects running and future investment plans. It was noted that the company employs a total of over 100 staff at headquarters, with many more at its provincial office branches across China. The team appreciated that the GDE's core business is in mining, energy sector, agriculture/organic fertilizer production and distribution etc. Apart from mining, it was further noted that Dong Song Energy Group has been involved in the energy sector since 2000 and has constructed a 1,500 KW hydro power station, among other various projects.

It was further noted that DongSong Energy group intends to increase its global investment to USD2 billion over the next 5 years.

As far as fertiliser projects are concerned, the Group has got a very big presence in China, and are marketing leaders with an organic fertiliser plant that has a capacity of producing 200,000 metric tonnes per year. During discussions, it was noted that the Sukuru fertiliser project in Uganda will be the Company's first East African project where it plans to invest USD 1.5 billion over the next 6 years. The Group is also interested in establishing an Agriculture Bank in Uganda, to support the fertilizer development and distribution in the country and the Great Lakes Region among others. It was further noted that Dong Song Energy Group exported from Uganda 5 tonnes of soil from the Sukuru mines to undertake more elaborate experiments in order to work out how best to customize the phosphate fertilizers to suit different soil types and crops in Uganda.

In the mining sector the Group has an on-going coal mines project in Northern China with a production capacity of 1.2 million tons per year.

In conclusion, the team reminded itself of the key objective as being to consult with South China Agricultural University with a view of promoting agricultural technology use and agricultural development in Uganda and also to establish a framework with South China Agricultural University that promotes increased use of fertilizers to foster agricultural development in Uganda.

The meeting further appreciated His Excellency The President of Uganda's clear Vision and Focus on agricultural development as the engine of economic transformation in Uganda.

The team noted that investment in the fertilizer subsector could ignite an agricultural Green Revolution in Uganda.

Lastly, the team appreciated some key timelines including the 18th August 2014 as the day for the opening ceremony for the AP fertilizer factory in Tororo, and that the factory would be completed in 24 months (2 years) by 2016.

5.0 South China Agricultural University:

The University was founded in 1909 as Guangdong Agricultural Experimental Station. It became a College of Agriculture of Guangdong University in 1924; then a College of Agriculture of Sun Yat-Sen University in 1926; became South China Agricultural College in 1952 and eventually South China Agricultural University in 1984. The total campus area is 550 hectares with School buildings area of 778,000 square metres. SCAU has 2900 Faculty Staff (with 97 or 10 percent as Professors;

With regard to students, the University has 42,000 regular students of which 38,000 are undergraduates, 4889 graduates (12%) while 66 (0.16%) are International Students. The University has a total of 16 major disciplines including 6 National Key disciplines, 5 key disciplines of Agriculture; 1 key discipline for the State Bureau of forestry and 14 Guangdong province key disciplines.

With regard to programmes, the University has a total of 83 undergraduate programs; 77 Masters programs and 49 doctoral programs. It hosts 12 laboratories including 2 for the Ministry of Education, 5 for the Ministry of Agriculture and 5 for Guangdong province.

It has cooperation with various Universities world wide including cooperation with Sindhi Agricultural University on fertilizer technology and the Ministry of Higher Education in Pakistani.

In July 2007 it established a College on International Education that has a variety of programs in Agricultural Management and Leadership, Environmental issues, Sericulture, Rice production, Crop diseases and pest control, Agricultural economics and management. Some of the achievements so far include ;34 sessions run with 859 participants from 98 countries including 16 participants from Uganda

It established an International Training Centre (CICAT) in 1988 and has trained 1,000 international students till 2012 while actively involved in staff-student exchange.

6.0 Remarks from visiting delegation

The visiting team appreciated the warm welcome, logistical support and the initiatives taken by both Dong Song Energy Group and South China Agricultural University to help support agricultural development in Uganda and also the steps so far taken to make the proposed partnership a reality.

They conveyed warm greetings and well wishes from His Excellency The President of the Republic of Uganda and the people of Uganda. They reiterated GOU's commitment to the proposed investment and development plans being discussed. They shared some key highlights

about Makerere University and the College of Agricultural and Environmental Sciences (CAES) including the following:

- Makerere University was established in 1922 as a technical school, became a centre of Higher education in East Africa in 1935, started offering post school certificate courses in 1937, transformed into a University College affiliated with the University of London in 1949, became the University of East Africa in 1963 and an Independent national University of the Republic of Uganda in 1970.
- That Makerere University became a collegiate University with 9 colleges and one School of Law on 30th December 2011
- That Makerere University has an employment of 1,300 members of academic staff, 275 members of administrative staff and offers over 250 accredited academic programs with all academic programs accredited by the National Council for Higher Education (NCHE)
- Makerere University offers both day and evening programs and has student body of over 35,000 students of which 300 are postgraduate both national and international
- Makerere University has 7 affiliated institutions and 2 off campus centres one to the East and the other to the West
- Noted that the College of Agricultural and Environmental sciences is one of the largest and multidisciplinary at Makerere University handling a wide range of disciplines including agriculture (both crop and livestock), agricultural economics, agribusiness, forestry, food technology, agricultural engineering, natural resources, the environment, geography and tourism)
- Has 3 schools, 8 academic departments, two research institutions and 6 specialized research centers
- The centrality of Agriculture gives the college a strategic position in Uganda's economic development and poverty alleviation
- Is currently the East African Centre of excellence on Plant Breeding and Biotechnology
- Has total of 2260 students (40 percent female) and an undergraduate graduation rate of 80 percent. Many are international students
- The College has a total of 210 academic staff members, 14 undergraduate and 28 graduate programs
- The College has partnerships with Universities and Institutions world wide and has a total of 267 projects and the number is growing
- Challenges include inadequate financing, inadequate teaching space and the need to improve the practical training component of the programs

7.0 Presentation on Activated Phosphate Fertilizer Concept

A presentation on the Activated Phosphate Fertilizer (AP) developed and patented by Dr. Liao Zongwen and his colleagues was done and the following were noted:

- That AP is a low cost technology for modern farming based on combining an activator (inorganic or organic) instead of the traditional Sulphuric acid (H_2SO_4) with phosphate

rock to produce phosphate fertilizers. The ratios noted are 5% percent activator and 10 percent water.

- Noted that AP is environmentally friendly as it has no environmental harm and does not cause soil acidity as is the case with traditional phosphate fertilizers.
- SCAU has 6 Chinese patents and also US patents for the AP innovation
- Its net cost as 266RMB (USD44) per tonne
- Advised that the activator can be produced from locally available organic materials including sugar cane molasses and others
- The activator is able to produce phosphate fertilisers from rock with phosphate deposits as low as 18-27 percent-low grade Phosphorus (P) and potassium (K) rock
- That trials on rice and sugar cane have shown that AP leads to higher yields, higher sugar content (for sugarcane) and higher profits
- Observed a laboratory level demonstration of the production of the AP fertilizers
- Trials on Ugandan phosphate rock are currently on going and will have the chance to conduct trials in Uganda.
- Demonstrated the yield benefits of the water saving technology based on the water holding pad.
- Received a presentation demonstrating the benefits of the water pad in field trials and demonstrations

8.0 The Fertilizer Industry and Fertilizer use in Uganda

The Ugandan delegation shared with the GDE Group and SCAU team at the University on the Fertilizer utilization levels and the following were noted;

- That compared to China, the current low fertilizer use levels in Uganda at 1 kg per ha is partly responsible for the vicious cycle of low agricultural productivity, low incomes and is compromising Uganda's food security situation.
- That following this visit, it has been recognized that Uganda needs to design a fertilizer marketing strategy that would include farmers' training and sensitisation that is backed by sound enterprise budget assessment in order to fully implement a demand push strategy for fertiliser use, profitability and efficiency
- It was further noted that that Uganda's soils are not the same and the fertilizer utilization will have to take into consideration the soil type for each crop. For instance soil for banana growing, which is an important crop in Uganda, needs a lot of potassium.
- The other observation that was made is that, both the traditional phosphorus fertilisers including Single Super Phosphate (SSP) and Triple Super phosphate (TSP) if not properly used, are harmful to the environment in the sense that they lead to soil acidity. It is therefore imperative that the Sukuru phosphate developments take into consideration the soil acidity problem as has happened in China.

The other observation was that Prof Liao Zongwen – the Director of the New Fertiliser Research Centre – College of Natural Resources and Environment at South China Agriculture University has innovated a phosphorus fertiliser that is not harmful to the soil, with 30 percent more phosphorus than the conventional ones and this could indeed raise the standard of fertilizers used in the country.

The Uganda delegation further brought to the fore a number of issues including:

- The need for a detailed soil mapping of Uganda to understand the specific needs of different soils and appreciated that Dong Song group has already started on a related process
- The need to emphasize farmer training and sensitisation as a route to creating fertiliser demand
- Noted that there is a need to build on existing input distribution networks including the Uganda Agro-input dealers Association (UNADA) with 2300 stockists currently serving 5 million farmers, Area marketing cooperatives and existing government programs such as the National Agricultural Advisory Services (NAADS)
- Emphasised the need to appreciate the dichotomous nature of the fertiliser market in Uganda comprised of smallholder subsistence farmers and commercial plantation farmers who currently consume 70 percent of all the fertilisers imported in Uganda
- Reiterated the need to realign any fertiliser development strategy with existing national laws and policies including the regional political and economic blocks
- Noted that beyond phosphorus, Uganda has large sources of organic manure, sources of agriculture lime, vermiculite deposits and volcanic ash and noted that a fertiliser strategy that integrates all these might serve the needs of Ugandan farmers better
- Appreciated the need to support strategies aimed at addressing pests and disease problems and post harvest loses in order to realize the full potential of the benefits from fertiliser use.

9.0 Outcomes of the visit

The team agreed that;

- Of critical importance is a strategy to increase farmers' awareness of the benefits of fertiliser use and make fertilisers both available and affordable at reasonable prices.
- The idea of promoting an Agriculture Bank in Uganda to avail farmers agricultural loans for them to pay for the fertilisers and other agriculture inputs and implements is of paramount importance..
- The Makerere University Agricultural Research Institute , at Kabanyolo (MUARIK) when elevated as an East African Agriculture Technology Centre of Excellency working in collaboration with MAAIF , would play a critical role including sensitizing and educating farmers about fertiliser usage.
- Complimentary research to investigate the most appropriate fertilizer type for domestic use and export to earn foreign exchange is of critical importance.
- Prospects for securing support for the East Africa Technology development centre are high given that China South Agricultural University has already submitted to

the Chinese Ministry of Agriculture a proposal for a Technology Development Institute as one of the projects.

- The configuration of the Technology Training centre could be such that SCAU and Makerere University provide and drive the technology with the Chinese Government, Government of Uganda and the development partners providing the necessary financing.

10.0 The draft MoU

The Draft MOU was presented and discussed (see draft 1 copy attached) and agreed that it would further be reviewed by the parties and submitted to the Solicitor General for clearance before the proposed date of endorsement in June 2014.

The following proposed amendments were agreed:

- A statement on Makerere University's research capacity highlighting CAEs as the current East Africa's Centre of Excellence in Plant Breeding and Biotechnology
- A statement on MUARIK potential including land totaling 650 acres, basic physical infrastructure and human resources also highlighting that MUARIK would serve as the location of the proposed East African Agricultural Technology Centre
- Inclusion of clauses on Intellectual Property Rights(IPR), Time frame and *Force Majeure*
- Explicit emphasis on all elements of capacity building including capacity building for research and extension, students, farmers, fertiliser distribution system and others. Research to be comprehensive to include major elements of the value chain including pests and diseases, water (moisture) management, value addition and post harvest handling and gender and other cross-cutting issues, among others
- Explicitly indicate the need for student and staff exchange visits
- Include clause on the environmental impact and possible mitigative actions
- Explicit indication that should one clause be invalidated/unlawful it should not affect the other clauses in the MoU.

11.0 Way Forward

A consensus was reached on the following key issues;

1. Amendment of the draft MOU to take into consideration the issues that were raised, by 25th May 2014.
2. Date of signing the final version of MOU tentatively set of 18th June 2014, at South China University of Agriculture. All new innovations and technologies born from the collaboration to be promoted in Uganda through this partnership, should be first tested in Uganda for adaptation to the Uganda local conditions, using the East African Agricultural Technology Centre to be established at Kabanyolo and MAAIF.
3. The revision of the MoU should be done in accordance to the national policy and legal framework of Uganda where the partnership is to be implemented.

12.0 Conclusion.

Although the time available was short to see what is happening on the Chinese fields and farms. The Chinese Government and Institutions are highly committed to food security issues. Uganda has a lot to learn from the Chinese initiatives that include fertilizer use to ensure food security. Therefore, the best option to ensure food security for all in Uganda is to increase crop productivity and use of fertilizers is one of the sure means to achieve this goal for the country.

Annex 1.

TERMS OF REFERENCE FOR THE PLANNED VISIT TO CHINA

1. Trip background

The planned development of the phosphate deposits at Tororo and the planned collaboration between Makerere University (MAK), Ministry of Agriculture and South China University (SCAU) is the reason why the following key stakeholders have formed a delegation to visit China. The delegation comprises representatives from Makerere University, Ministry of Agriculture animal industry and fisheries (MAAIF), and Ministry of Trade and Industry and State House.

The draft MOU between MAK, MAAIF and SACAU will be reviewed in order to map out how the collaboration will effectively work in order to meet the objectives of the Uganda Government as far as the mining of the phosphates are concerned; and the interest of the Chinese Government as far as the collaboration with South China are concerned.

2. Trip Objectives

a) Make a follow up on the draft MOU between Makerere University (MAK) and South China Agricultural University (SCAU) as far as the following key deliverables are concerned:

(i) Training of Uganda phosphate Engineers, Agronomists and Technicians, by benchmarking training and capacity building in best practices and forging partnerships for short term and long term training leading to award of Certificates, Diplomas and Degrees.

ii) To provide scholarships to Ugandan students to study about phosphates and related disciplines in China and to arrange exchange of visits by students, instructors and researchers between MAK and SCAU.

(iii) Asses opportunities for joint/mutual curriculum review and improvements.

(iv) Establish an East African Agricultural Technology Centre at Makerere University and Agricultural Research Institute, Kabanyolo (MUARIK).

b. Discuss with staff of Guangdong Province and Ministry of Agriculture of China on how they cooperate with, and support Universities in China.

c. To visit a demonstration firm (s) to see how phosphates are used to produce fertilizers and other products for the benefit of farmers in China.

- d. Benchmarking MUARIK with similar institutions of excellence in China and learning from their model especially in utilization of phosphates for sustainable agricultural productivity especially on how to improve crop and animal yield.
- e. Agree with Investor the on short, medium and long term activities that will be implemented in order to operationalize the MOU between MAK, MAAIF and SCAU.
- f. Explore joint research opportunities with SCAU in the areas of common interest, including but not limited to soils, crops, agricultural machinery, livestock, etc.
- g. Explore enterprises amenable to the production, processing and packaging for export to China from Uganda under PPP arrangements.
- h. Explore opportunities for making phosphates an engine for creation of employment in Uganda.

3. Expected trip outcomes

- a. Acquisition of best practice on how South China University collaborates with similar institutions such as MAK and MAAIF in the development of phosphate fertilizers. e.g how does China South University collaborate with fertilizer manufacturers and distributors on the training of phosphate mining technicians and earthmoving plant operators.
- b. Identification of themes/programmes for the planned collaboration and exchange of visits.
- c. Acquisition of best practices from field tours of mid-size and large scale farmers on sustainable use of phosphate fertilizers for viable productivity.
- d. Review the draft MOU and recommend other areas of collaboration for mutual benefit to enable the effective twinning of the partnership between MAK, MAAIF and SCAU.