



# Building a technology economy in Ghana through Space Technology

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# Introduction





# Introduction

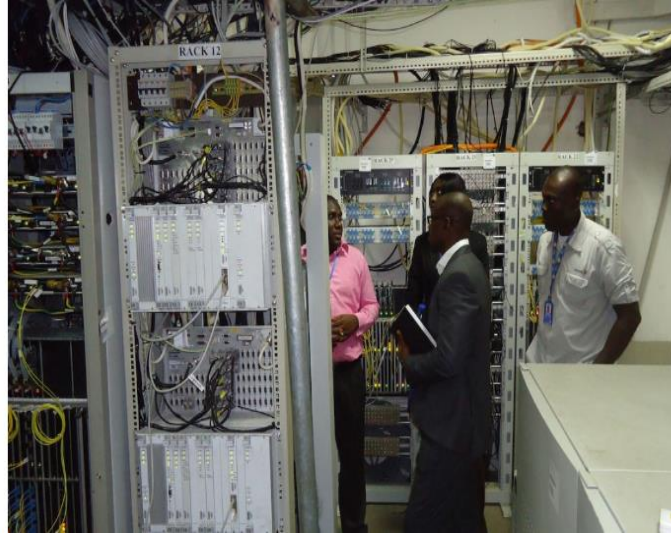


# Introduction

- Ghana is one of the emerging economies in Africa, and for some time now the country has been developing a modern technology economy through various ways. The telecommunications industry is currently the leading drive for technology advancement in the country followed by the recent discovery of crude oil



# Telecoms and Oil



# The Ghana Space Institute

- Established in 2011
- The Ghana Space Science and Technology Institute (GSSTI) which is coordinating Space activities in Ghana, is making some strides to expand the technology drive through space technology.

# Operations of GHANASAT

- The joint company has been formed with the MENASAT group which begun with case studies to demonstrate the capability of Radar satellite for the operations of the institutions in Ghana including
  - Environmental Protection Agency
  - Ports and Harbour Authority
  - Forestry Commission
  - Ghana Maritime Authority



# Roadmap of GHANASAT

- Creating a data centre
- Build a ground receiving station
- Build and launch a SAR Satellite – GHANASAT-1 by 2020
- Join in the constellation of SAR satellites in Africa

# GHANASAT Project

- The satellite application
  - Wildfire monitoring
  - Landsite and landfill monitoring
  - Climate modelling and impact assessments
    - Climate impact assessment on health
    - Climate impact assessment on extreme weather events: droughts
    - Rainfall Variability and Changes in Ghana: Impacts and Adaptation Measures

# Radio Astronomy training

- The purpose of the training programme is building a human capacity in Ghana towards the Square Kilometer Array (SKA) project.



# Radio Astronomy Outreach

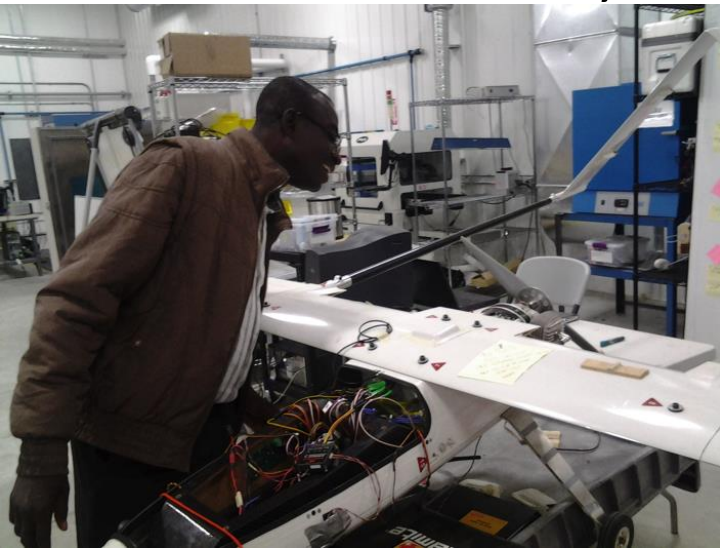
- The purpose of the outreaches to schools and the public is to raise awareness in Space science and technology in Ghana towards the Square Kilometer Array (SKA) project.





# UAV application

- The Unmanned Aerial Vehicle (UAV) of the Institute is currently been used for training purposes. Some agencies that patronised the last training sessions include National security, Ghana Armed Forces, Ghana Air Force, Energy commission, etc.



# African Space Policy

- The Institute has contributed to the African Space policy and strategy that will guide the continent on the peaceful use of space science and also support coordination among space faring nations and emerging ones.

# African Space Policy

- To use space science and technology to derive optimal socio-economic benefits that both improves the quality of life and creates wealth for Africans and in addition contribute to the international body of knowledge and the knowledge economy.
- To develop and maintain indigenous infrastructure, human capital and capabilities that service an African market and that cater for the geospatial and space information needs of the African continent

# Plasma Technology projects with Keshe Foundation

The GSSTI is establishing a collaboration with Keshe Foundation Spaceship (KFSS) Programme Organisation for teaching and research in

- Water treatment
- Health application – cancer and wound treatment
- Agriculture – crops and animal farming
- Energy – production of power unit for domestic use



# State of river Pra



# Illegal mining

Dredging: It is the process of removing sediments and debris from the bottom water bodies (e.g. lakes, rivers, harbors, dams ).

But these people are not doing for good, but looking for alluvial gold, and making the water turbid, hence destroying the water bodies



# Keshe water treatment



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 Telephone: 0303962554  
 Our Ref: NCR/CAS/969/19/136  
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 National Nuclear Research Institute  
 Ghana Atomic Energy Commission  
 P.O.Box 143-90  
 Legon - Accra  
 8<sup>th</sup> February, 2016

### SAMPLE ANALYSIS REPORT

CLIENT: Keshe Foundation (GH)  
 SAMPLE: Treated River Water  
 JOB NO.: CD14861

MEASURED PARAMETERS	TEST UNIT	1 Offin Treated				2 Offin Control				3 Pra Treated				4 Pra Control				GUIDELINE VALUES FOR DRINKING WATER	
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	WHO	GSA		
pH		7.27	7.62	7.73	7.55	7.27	7.62	7.73	7.55	7.27	7.62	7.73	7.55	7.27	7.62	6.5-8.5	6.0-8.5		
Temperature	°C	26.9	26.9	26.9	27.0	26.9	26.9	26.9	27.0	26.9	26.9	26.9	27.0	26.9	26.9	-10°C	Above ambient		
Conductivity	µS/cm	157.5	268.5	232.3	178.2	157.5	268.5	232.3	178.2	157.5	268.5	232.3	178.2	157.5	500-700				
Total Dissolved Solids	mg/L	179.3	134.65	1164.45	88.9	179.3	134.65	1164.45	88.9	179.3	134.65	1164.45	88.9	179.3	1000	1000			
Total Suspended Solids	mg/L	210	35	230	5	210	35	230	5	210	35	230	5	210	5	5			
Alkalinity	mg/L	45	75	65	105	45	75	65	105	45	75	65	105	45	200	200			
Turbidity	FAU	200	32	226	4	200	32	226	4	200	32	226	4	200	5	5			
Salinity	ppt	0.2	0.1	1.1	0.1	0.2	0.1	1.1	0.1	0.2	0.1	1.1	0.1	0.2	25	100			
Apparent Colour	mg/Gaah	220	20	50	1	220	20	50	1	220	20	50	1	220	25	100			
True Colour	mg/Gaah	15	3	5	0	15	3	5	0	15	3	5	0	15	5	5			
<b>TRACE METALS</b>																			
Fluoride	mg/L	0.015	0.011	0.001	0.013	0.015	0.011	0.001	0.013	0.015	0.011	0.001	0.013	0.015	1.5	1.0 - 1.5			
Chloride	mg/L	0.99	48.98	396.81	28.99	0.99	48.98	396.81	28.99	0.99	48.98	396.81	28.99	0.99	250-1000	250			
Sulfate	mg/L	11.2	17.9	85.7	16.8	11.2	17.9	85.7	16.8	11.2	17.9	85.7	16.8	11.2	200	200			
Potassium	mg/L	1.5	2.5	6.5	1.0	1.5	2.5	6.5	1.0	1.5	2.5	6.5	1.0	1.5	30	30			
Total Hardness	mg/L	52	65	48	53	52	65	48	53	52	65	48	53	500	500				
Nitrate as N	mg/L	0.406	0.318	0.002	2.966	0.406	0.318	0.002	2.966	0.406	0.318	0.002	2.966	0.406	10 - 45	10			
Phosphate	mg/L	0.014	0.083	0.012	0.218	0.014	0.083	0.012	0.218	0.014	0.083	0.012	0.218	0.014	0.01	0.01			
Sulphate	mg/L	2.5101	2.0089	0.014	1.021	2.5101	2.0089	0.014	1.021	2.5101	2.0089	0.014	1.021	250 - 500	250 - 500				
<b>TRACE METALS</b>																			
Total Iron as (Fe)	mg/L	0.217	0.420	0.203	0.501	0.217	0.420	0.203	0.501	0.217	0.420	0.203	0.501	0.217	0.3				
Total Manganese as (Mn)	mg/L	0.010	0.031	0.007	0.040	0.010	0.031	0.007	0.040	0.010	0.031	0.007	0.040	0.010	0.5				
Total Copper as (Cu)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	1.0				
Total Zinc as (Zn)	mg/L	0.039	0.077	0.031	0.072	0.039	0.077	0.031	0.072	0.039	0.077	0.031	0.072	0.039	3				

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# Future prospects and collaboration

- The Space Institute in Ghana is opened for collaboration in many areas of human space technology applications
- Need for capacity building, training, projects, advice





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