



SPACE TECHNOLOGY AND IRRIGATION ANSWERS CLIMATE CHANGE

THE IRRIGATION SUB-SECTOR CONTRIBUTION TO ADAPTATION MEASURES IN GHANA

FRANCIS D. OHEMENG



GHANA IN RETROSPECT

- LAND AREA
- WATER RESOURCES
- CLIMATE
- AGRICULTURE AND IRRIGATION
- ENERGY
- POPULATION
- BIODIVERSITY RESOURCES
- ECONOMIC STATUS = MIDDLE INCOME
- DISASTERS
- INFRASTRUCTURE

SOME STATISTICS OF GHANA

DEMOGRAPHY

Total Population = 24.66 Million
Growth rate = 2.5%/annum (2010 Census)
Agricultural population = 56.2% of total

LAND AREA

☐ TOTAL LAND AREA = 238,533 sq km
☐ Agricultural land Area = 13,628,179 ha (57.1%)
☐ Cultivated Area = 7,458,000 ha (54.7%)
☐ Potential Irrigable Area = 1.9 million ha
☐ Total Irrigated Area = 11,000 ha (formal schemes)

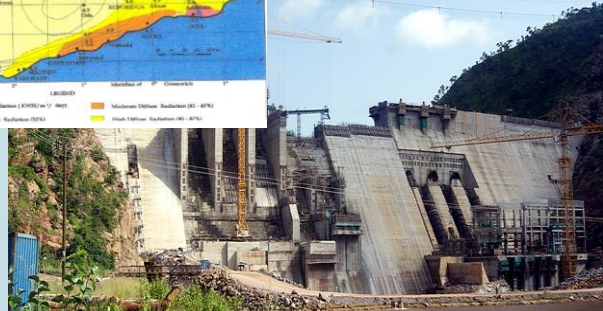
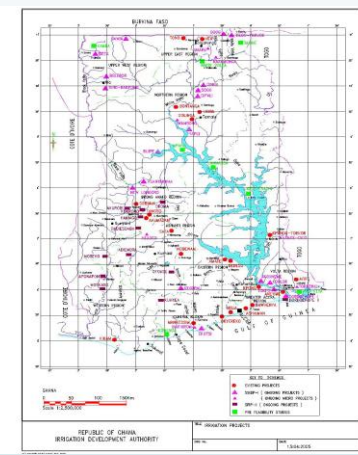
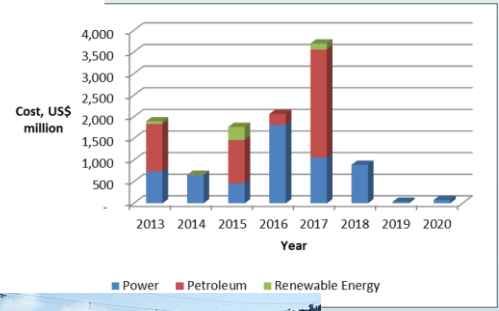
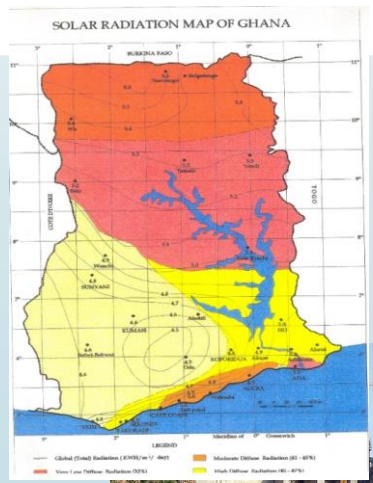
☐ TOTAL WATER STOCK = 600 BILLION M³

☐ TOTAL WATER INTAKE (WITHDRAWAL) = 982 million m³ (1.8%)

☐ IRRIGATION = about 652 million m³ (66.4%)

☐ DOMESTIC = 235 million m³ (23.9%)

☐ INDUSTRY = 95 million m³ (9.7%) (FAO, 2005)

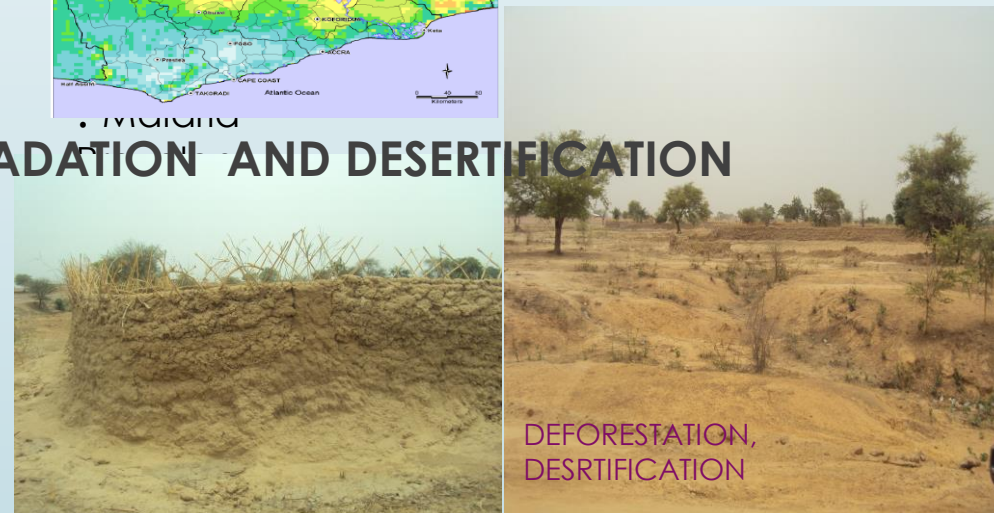
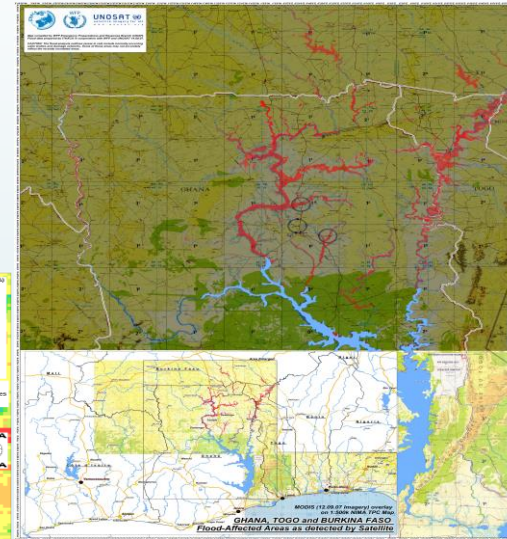




CLIMATE CHANGE PERSPECTIVES IN (NORTHERN) GHANA

SOME MANIFESTATION OF CLIMATE CHANGE IN GHANA

- ▶ HIGH CLIMATIC VARIABILITY
 - ▶ EXTREME RAINFALL INTENSITIES
 - ▶ FLOODS
 - ▶ DROUGHT
 - ▶ HIGH TEMPERATURES
- ▶ INCREASED DISEASE BURDEN
- ▶ DEFORESTATION, LAND DEGRADATION AND DESERTIFICATION
- ▶ BIO-DIVERSITY LOSS
- ▶ SEA LEVEL RISE
- ▶ POVERTY



SOME ADAPTATION MEASURES TO SOLVE CLIMATE CHANGE IMPACTS IN GHANA



- **IRRIGATION**
- **WATER HARVESTING AND CONSERVATION (FLOOD WATER , RAIN WATER, UNDERGROUND WATER)**
- **CONSERVATION FARMING (SOIL CONSERVATION)**
- **AGROFORESTRY AND CATCHMENT AREA PROTECTION**
- **PRECISION AGRICULTURE**
- DEVELOPING RESILIENCE IN FISHERIES
- NATURAL BARRIERS: PROTECTION OF COASTAL ECOSYSTEMS WIDLIFE CORRIDORS
- REDUCING VULNERABILITY TO SALINIZATION AND COASTAL EROSION
- AWARENESS AND PREPAREDNESS FOR EMERGENCIES (EARLY WARNING SYSTEMS)
- IMPROVED FOREST GOVERNANCE ADAPTED TO REGIONAL AND LOCAL NEEDS
- REDD+ AND LOCAL DEVELOPMENT
- RENEWABLE ENERGIES: SOLAR-THERMAL, PHOTOVOLTAIC, WIND AND HYDRO POWER





GHANA/GIDA'S CURRENT IRRIGATION STRATEGY TOWARDS CLIMATE CHANGE

- ▶ WATER AND LAND RESOURCE INVENTORY AND MAPPING
 - ▶ WATER RESOURCE
 - ▶ LAND RESOURCE
 - ▶ SETTLEMENT AND INFRASTRUCTURE
- ▶ DEPLOY WATER HARVESTING TECHNOLOGIES
 - ▶ IRRIGATION
 - ▶ STOCK WATER
 - ▶ RURAL WATER
- ▶ DEPLOY IRRIGATION SYSTEM TECHNOLOGIES
 - ▶ DRIP, SPRAY TUBES, LATERAL MOVE, CENTER PIVOT)
- ▶ DEPLOY WATER MANAGEMENT TECHNOLOGIES
 - ▶ (WATER USER ASSOCIATIONS ETC.)

PLAN	Interventions	Plan Period)	Remarks
GIDA Corporate Plan (2012-2014)	Develop 22,590 ha of small/micro scale irrigation	Short – medium term	Interventions in all 10 regions.
	Develop water harvesting infrastructure for 200 ,000 ha of land.	Medium to long Term	In the northern and southern savannah areas
	Rehabilitation of existing schemes to increase production and value of irrigation schemes by 30-50%	Short term	Rehabilitate Okyereko, Asaiman, Nobewam, Afife, Dawhenya, Tono and Via schemes
	Complete construction of large scale irrigation projects to irrigate 100,000 ha in Northern & Southern Sectors	Medium to long Term	11,000 ha Accra Plains irrigation project to commence
	Provide 35km of access roads annually to 9 small scale irrigation schemes	Short + medium	In consultation with feeder roads
	Provide 10,000 boreholes for agricultural production (irrigation and livestock)	Long Term	In 5 regions

NATIONAL INFRASTRUCTURE PLAN (NDPC, 2013	Sub-sector	Short-Medium Term Financing (USD Millions)	Long Term Financing (USD Millions)
	Urban Water Supply	1,300	685.0
Small Towns Water Supply	105.3	196.5	
Irrigation	591.3	808.2	
Flood Control	345.0	N/A	
Other Environmental Sanitation Investments	469.0	525.0	
Total	2,811.0	2,215.0	



SPACE TOOLS AND APPLICATIONS TO IMPLEMENT GIDA'S STRATEGIES FOR EXPANDED IRRIGATION

PROJECT IDENTIFICATION PHASE

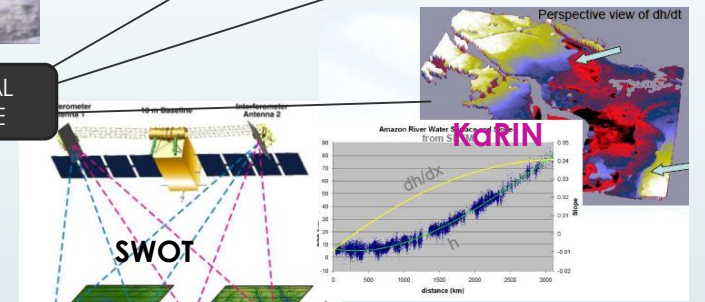
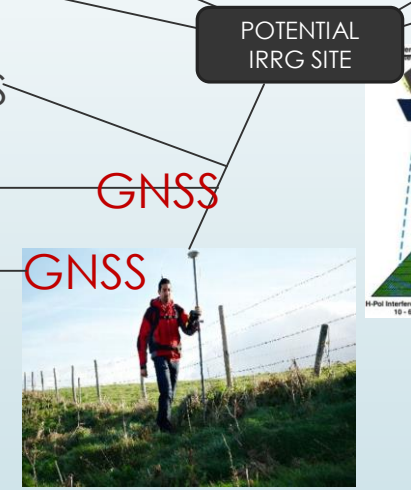
- IRRIGATION SITE SELECTION



SATELLITE DATA

PROJECT DEVELOPMENT / CONSTRUCTION PHASE

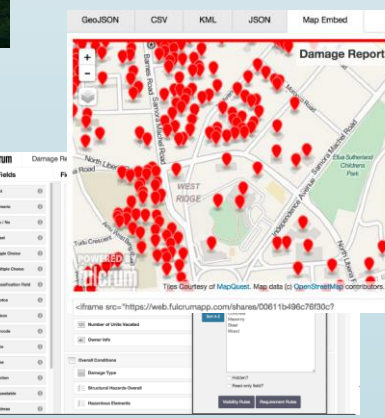
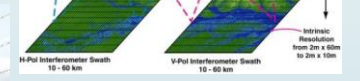
- VEGETATION, SOIL AND WATER RESOURCE SURVEYS
- DAM AND RESEVOIR SURVEYS
- LAND USE SURVEYS



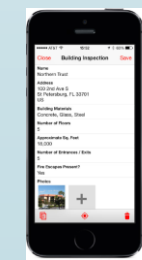
GROUND SURVEY DATA

POST PROJECT CONSTRUCTION/ OPERATION PHASE

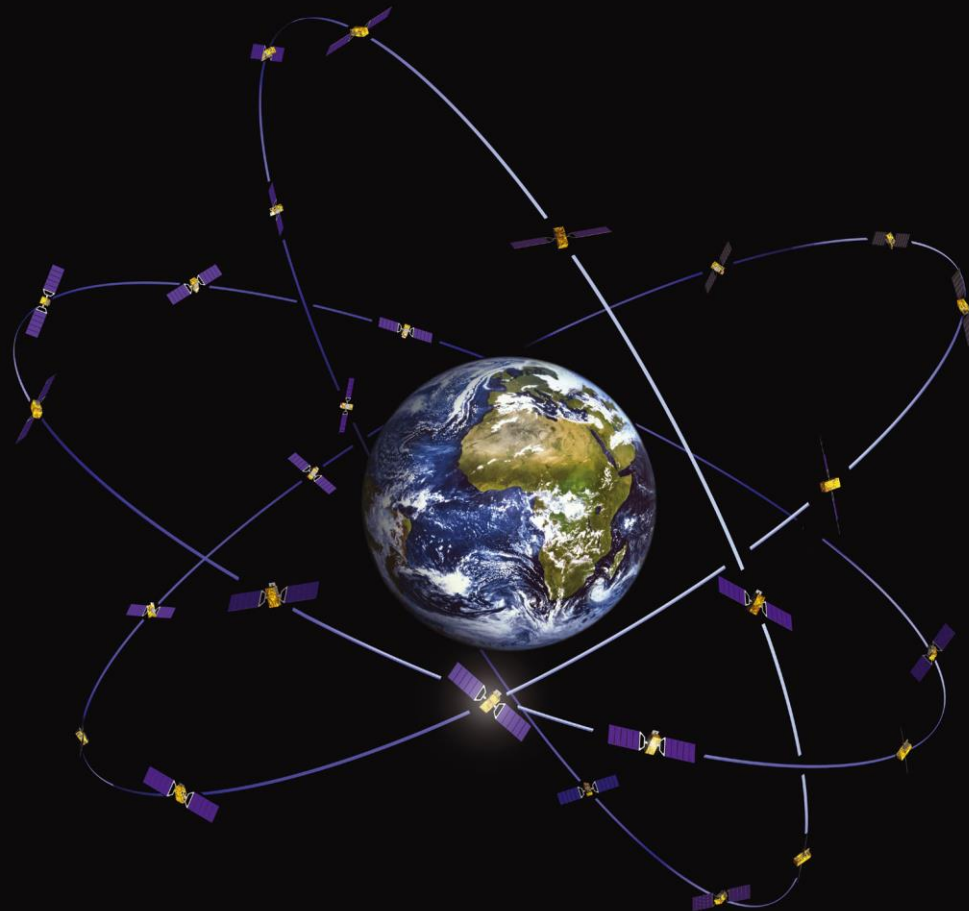
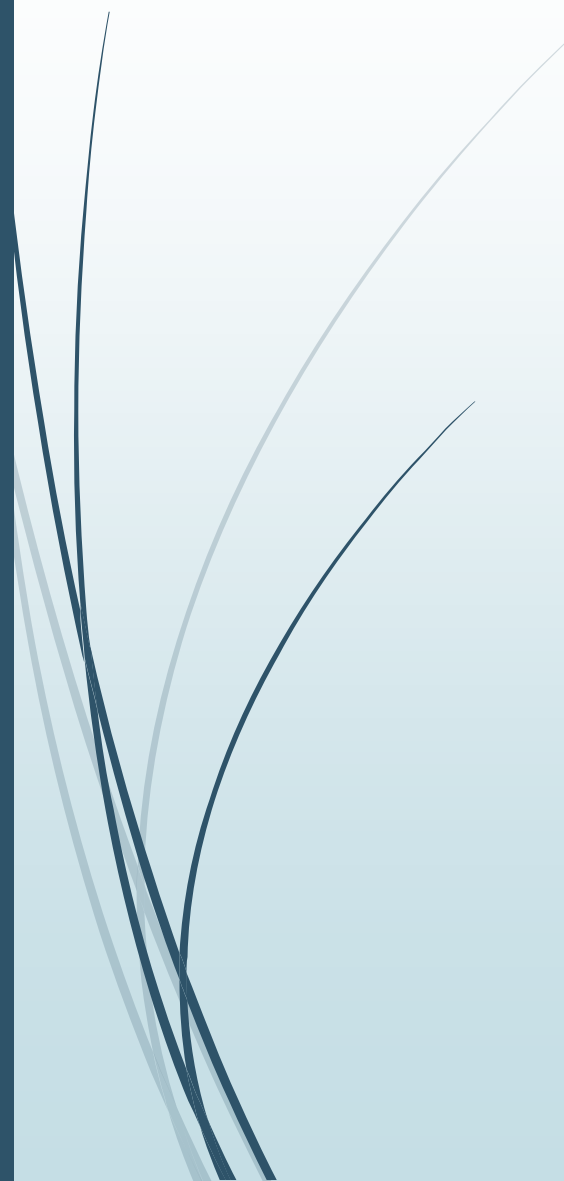
- CROP PERFORMANCE / LIVESTOCK MONITORING
- WATER RESOURCE MANAGEMENT MONITORING
- PEST AND DISEASE MONITORING
- IRRIGATION INFRASTRUCTURE MONITORING



FIELD MONITORING DATA



fulcrum
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Thank you!