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 = 13,628,179ha (57.1%)
- Cultivated Area = 7,458,000ha (54.7%)
- Potential Irrigable Area = 1.9 million ha
- Total Irrigated Area = 11,000ha (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 WILDLIFE 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.)

### GHANA/GIDA'S CURRENT IRRIGATION STRATEGY TOWARDS CLIMATE CHANGE

**Sub-sector Short-Medium Term Financing (USD Millions)**

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Short-Medium Term Financing (USD Millions)</th>
<th>Long Term Financing (USD Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Water Supply</td>
<td>1,300</td>
<td>685.0</td>
</tr>
<tr>
<td>Small Towns Water Supply</td>
<td>105.3</td>
<td>196.5</td>
</tr>
<tr>
<td>Irrigation</td>
<td>591.3</td>
<td>808.2</td>
</tr>
<tr>
<td>Flood Control</td>
<td>345.0</td>
<td>N/A</td>
</tr>
<tr>
<td>Other Environmental Sanitation</td>
<td>469.0</td>
<td>525.0</td>
</tr>
<tr>
<td>Sanitation Investments</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,811.0</strong></td>
<td><strong>2,215.0</strong></td>
</tr>
</tbody>
</table>

**Remarks**

- Interventions in all 10 regions.
- In the northern and southern savannah areas.
- Rehabilitate Okyereko, Asaiman, Nobewam, Atife, Dawhenya, Tono and Via schemes.
- 11,000 ha Accra Plains irrigation project to commence.
- In consultation with feeder roads.
- In 5 regions.
SPACE TOOLS AND APPLICATIONS TO IMPLEMENT GIDA’s STRATEGIES FOR EXPANDED IRRIGATION

- PROJECT IDENTIFICATION PHASE
  - Irrigation Site Selection

- PROJECT DEVELOPMENT /CONSTRUCTION PHASE
  - Vegetation, Soil and Water Resource Surveys
  - Dam and Reservoir Surveys
  - Land Use Surveys

- POST PROJECT CONSTRUCTION/OPERATION PHASE
  - Crop Performance /Livestock Monitoring
  - Water Resource Management Monitoring
  - Pest and Disease Monitoring
  - Irrigation Infrastructure Monitoring
Thank you!