



SPACE TECHNOLOGY FOR FLOOD WATER HARVESTING FOR IRRIGATION AND OTHER USES

**“Integrated Flood Water Harvesting For Irrigation and
Multipurpose Use for Community Resilience and Zero Emission
in 3 Districts of the Upper East Region of Ghana”**

A Project Proposal

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FLOOD: A CURSE OR BLESSING?

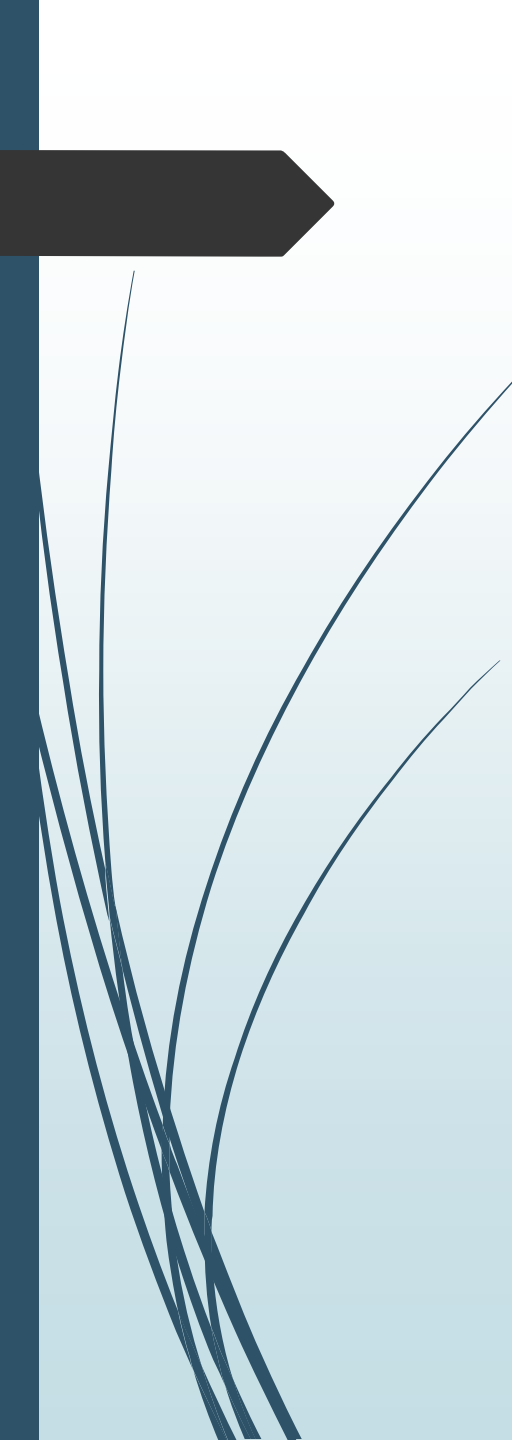
- ❑ PERCEPTION OF FLOODS

- ❑ IMPACTS

 - NEGATIVE

 - POSITIVE

- ❑ NATURAL PROCESS



LIVING WITH FLOODS.....

❑ WHY? - BENEFITS

❑ WHEN? – PERIOD

❑ HOW? - TECHNOLOGY

❑ WHAT ?- RESOURCES

PROJECT CONCEPT

- ❑ Harness and store flood water at appropriate scales (dams, dykes, geo-tanks, special boreholes) during the raining season.
- ❑ Make water available for multipurpose use through integrated water management systems (irrigation, stock water, aquaculture, household water)
- ❑ Provide environmental services through ground water recharging and watering of wildlife
- ❑ Revegetate degraded buffers along rivers and streams to increase carbon Sinks and protect banks of the rivers and streams from runoff and evapotranspiration
- ❑ Use space technology to select suitable project sites



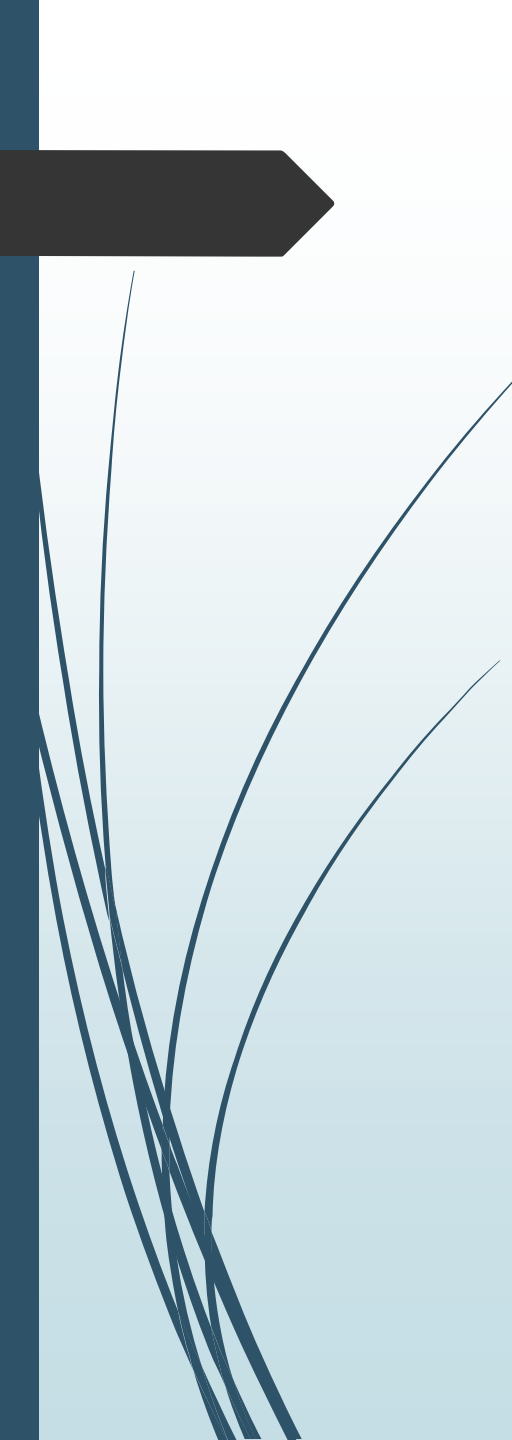
PROJECT OBJECTIVES

- ❑ Provide beneficiary communities with enough water particularly during the long dry periods of the year to increase their agricultural productivity.
- ❑ Make the project area water secure
- ❑ Promote the use of Space tools to Build Resilience of Communities against climate induced floods and droughts.



PROJECT COMPONENTS

- ☐ PROVISION OF IRRIGATION FACILITIES,
- ☐ PROVISION OF STOCK WATER AND FODDER BANKS,
- ☐ PROVISION OF PORTABLE WATER TO DEPRIVED SCHOOLS AND VULNERABLE COMMUNITIES,
- ☐ ESTABLISHMENT OF WILDLIFE WATERING POINTS WITHIN FOREST RESERVES,
- ☐ REHABILITATION OF EXISTING VEGETATION BUFFERS ALONG SELECTED STREAMS AND RIVERS AND
- ☐ BUILDING THE CAPACITIES OF FARMERS, WOMEN AND OTHER WATER USERS IN WATER MANAGEMENT AND POST CONSTRUCTION MANAGEMENT OF WATER FACILITIES



PROJECT OUTPUT

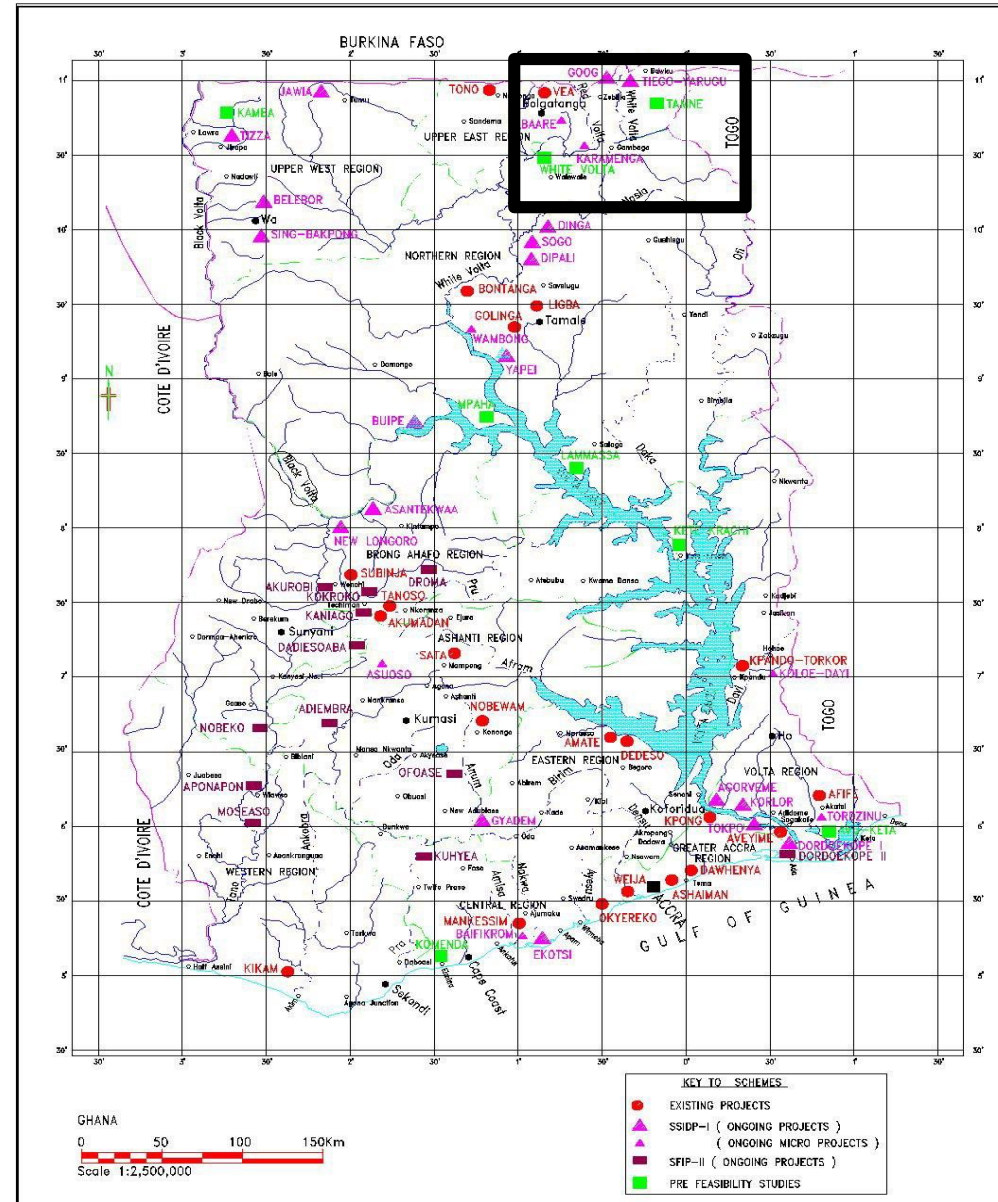
- ❑ Four (4) flood water storage systems of various kinds, sizes and capacities are constructed to provide water for irrigation.
- ❑ Four (4) irrigation infrastructure and other supporting (auxiliary) infrastructure are constructed for crop production on 2,000 ha land.
- ❑ Ten (10) livestock and wildlife watering facilities of various sizes and capacities are established in the three districts.
- ❑ 20 ha forestation of existing buffers rehabilitated along selected streams, rivers and reservoirs
- ❑ Four (4) Water Users Associations are established and trained in sustainable water management in irrigation and community water systems and provided with requisite capacities to maintain the water infrastructure,
- ❑ 15 women would be trained in post harvest processing and marketing of farm produce.



PROJECT OUTCOMES

- ❑ Increased crop and livestock production, especially rice, maize, guinea corn, onion and other leafy vegetables, sheep. Goats etc.
- ❑ Increased employment and livelihoods
- ❑ Increased capacities of water users in water management
- ❑ Enhanced capacities of women in post-harvest processing and storage
- ❑ Improved resilience of communities in three districts towards water stress and floods
- ❑ Reduction in time spent by women and school children looking for water for domestic and other uses
- ❑ Wildlife and forest reserves restored to appreciable levels to support flora and fauna
- ❑ Increase Carbon sinks.

PROJECT LOCATION



REPUBLIC OF GHANA
IRRIGATION DEVELOPMENT AUTHORITY

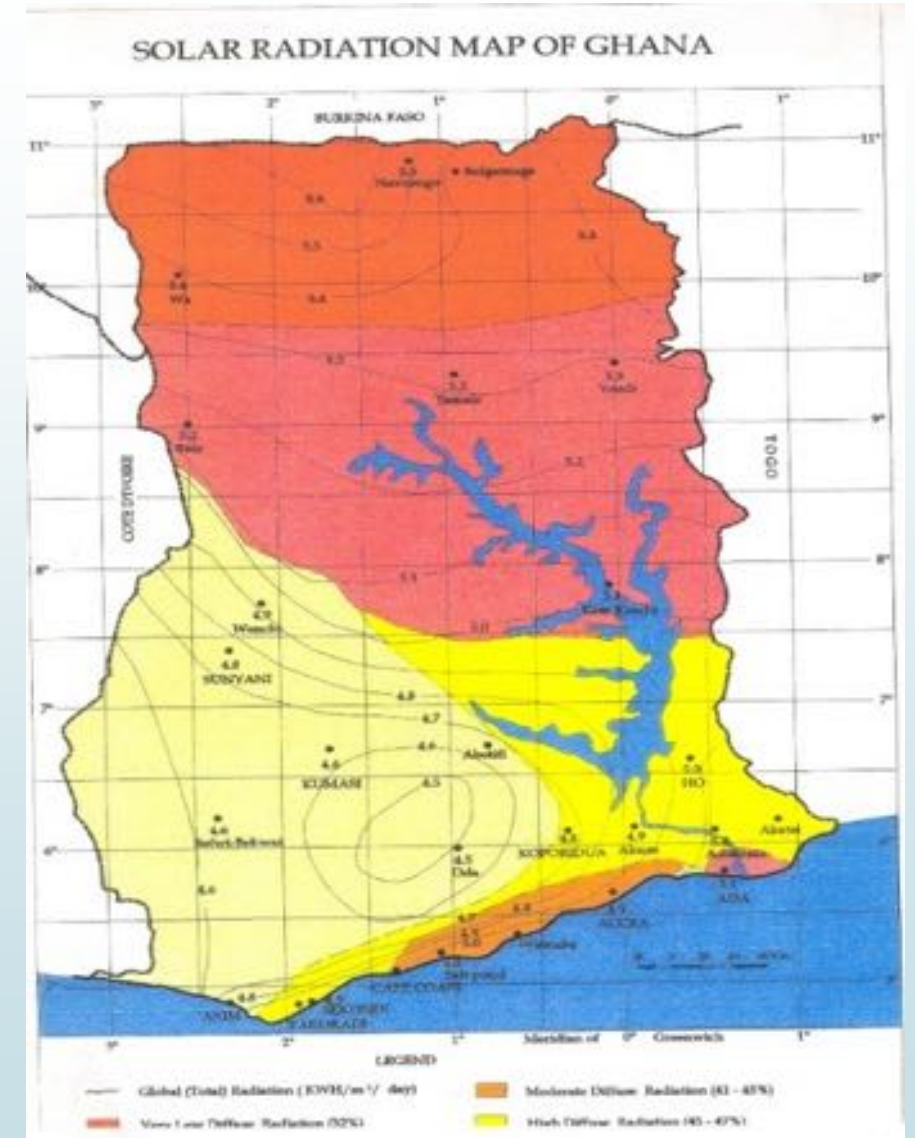
TITLE IRRIGATION PROJECTS

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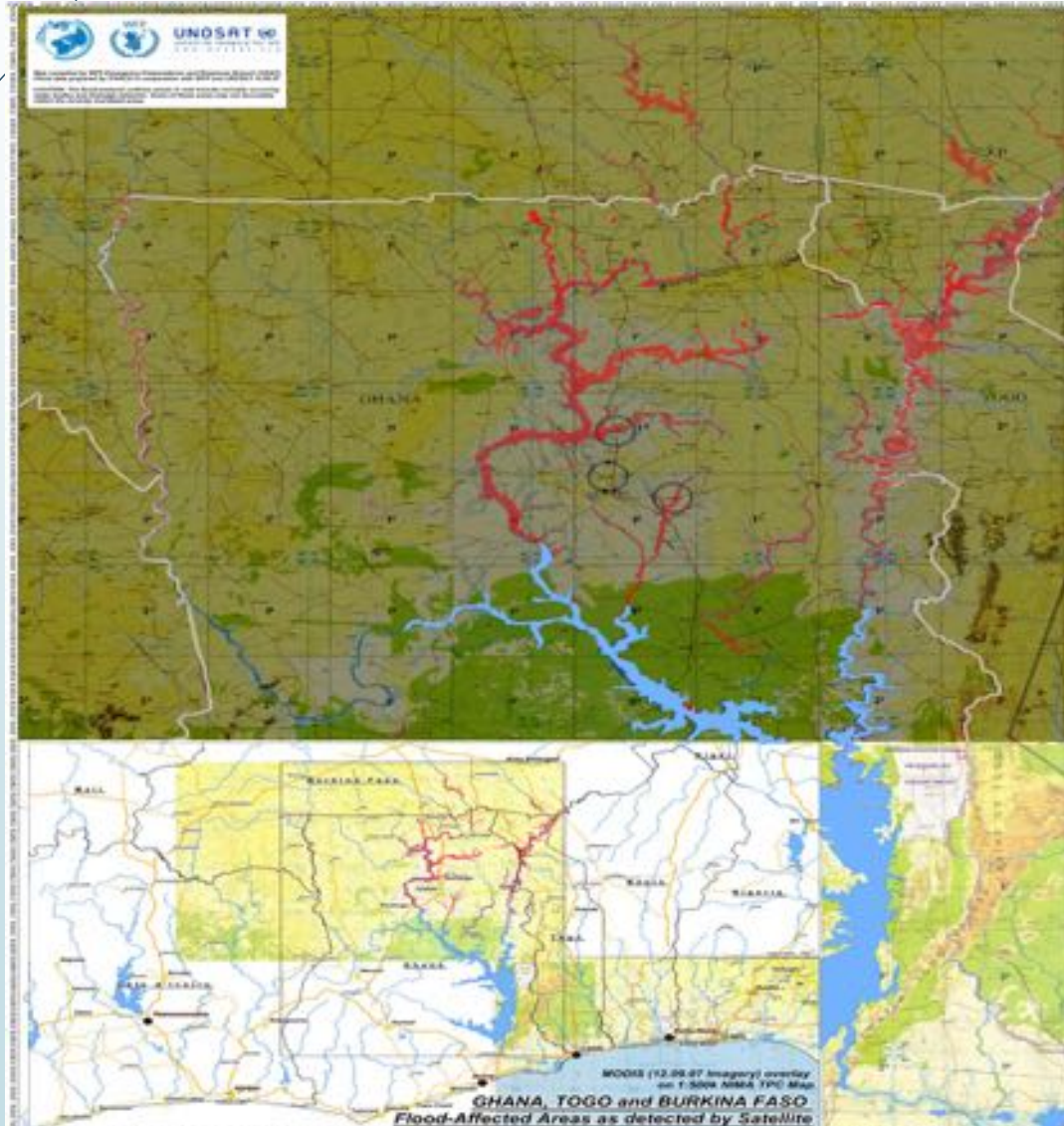
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PROJECT AREA FEATURES- CLIMATE

- HIGH SOLAR RADIATION
- HIGH TEMPERATURES
- LOW HUMIDITY
- STRONG WINDS
- HIGH RAINFALL INTENSITY



Project area - FLOODING



The area is subject to annual flooding but the floods are followed by long periods of drought which makes the people water insecure. Rivers and valleys dry forcing the people to cultivate within the river beds and along the river banks causing further degradation

A FLOODED COMMUNITY



Project area - DROUGHT



DRY BED OF
MOGNORI RIVER



DRY VALLEYS

THE COMMUNITIES
CULTIVATE CROPS IN
THE VALLEYS

Project area - VEGETATION

Wildlife and Livestock are at risk from water scarcity and feed due to extreme drought after the floods forcing them to migrate to other areas in search of feed and water



DRY & BARE FOREST
UNDERGROWTH



DRY VEGETATION

SPACE APPLICATIONS & PROJECT DEVELOPMENT



► PROJECT IDENTIFICATION PHASE

- IRRIGATION SITE SELECTION

► PROJECT DEVELOPMENT /CONSTRUCTION PHASE

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

► POST PROJECT CONSTUCTION/ OPERATION PHASE

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



QICKBIRD

SRTM

TERRA- SAR X

SATELLITE DATA

POTENTIAL IRRIGATION SITE

GNSS

GNSS

GNSS

SWOT

KaRIN

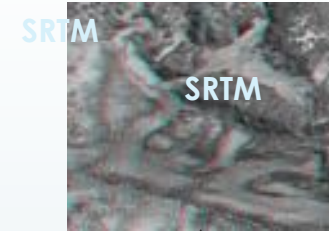
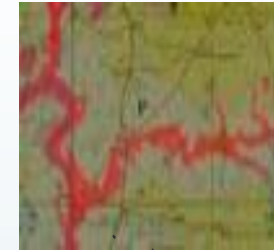
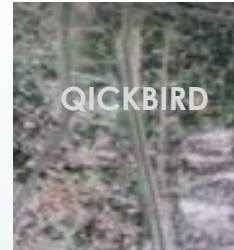
GROUND SURVEY DATA



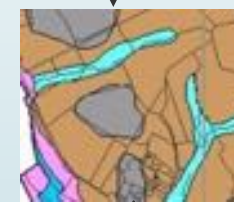
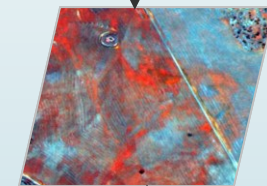
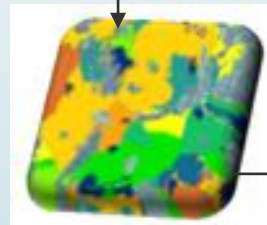
FIELD MONITORING DATA

PROJECT SITE SELECTION APPROACH

SATELLITE DATA
ACQUISITION



GIS DATA
PROCESSING
intermediate
products



MAP
OVERLAYS

SITE MAP –final
product





PROCESS MODELS

- ❑ RESERVOIR CATCHMENT AREA ASSESSMENT
- ❑ LAND USE ASSESSMENT
- ❑ SITE ACCESSIBILITY ASSESSMENT
- ❑ SOIL SUITABILITY ASSESSMENT
- ❑ SOCIO-ECONOMIC IMPORTANCE ASSESSMENT
- ❑ GROUND WATER ASSESSMENT
- ❑ DAM/RESERVOIR SITE SUITABILITY MODELLING

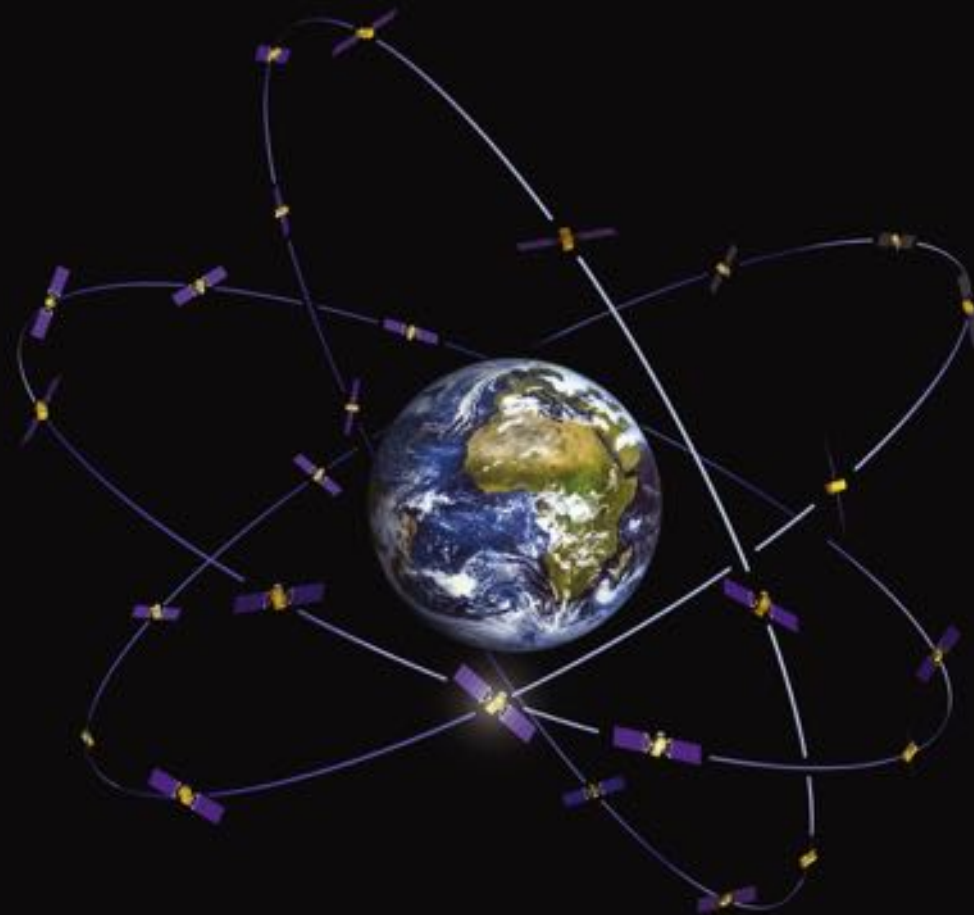


IMPLEMENTING AGENCY : GIDA

FUNDING SOURCES: TO BE DEVELOPMENT PARTNERS

AMOUNT: 30 MILLION USD

PROJECT DURATION: 5 YEARS



Thank you!