

CHANGE DETECTION ANALYSIS ON THE IMPACT OF ILLEGAL MINING (GALAMSEY) IN GHANA;

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A CASE STUDY FOCUSING ON LAND COVER CHANGES IN SOME SELECTED DISTRICTS





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Highly motivated Geomatic Engineer, Spatial Analyst, and Researcher with an excellent track record in Engineering Survey, Geodatabase management, Geospatial Analysis, Map Design and Amateur Programming from various disciplines including health, mining, construction, technology, and many others.

PRESENTATION OUTLINE



Introduction



Research Goal





Research Methods



Results



Conclusion



Evangelize



Final Remarks

Introduction

Galamsey is a local Ghanaian term which means illegal small-scale gold mining;

Galamsey appears now to have been taken over by foreign nationals;

It has become a major topical issue in the country discussed almost every where



Introduction

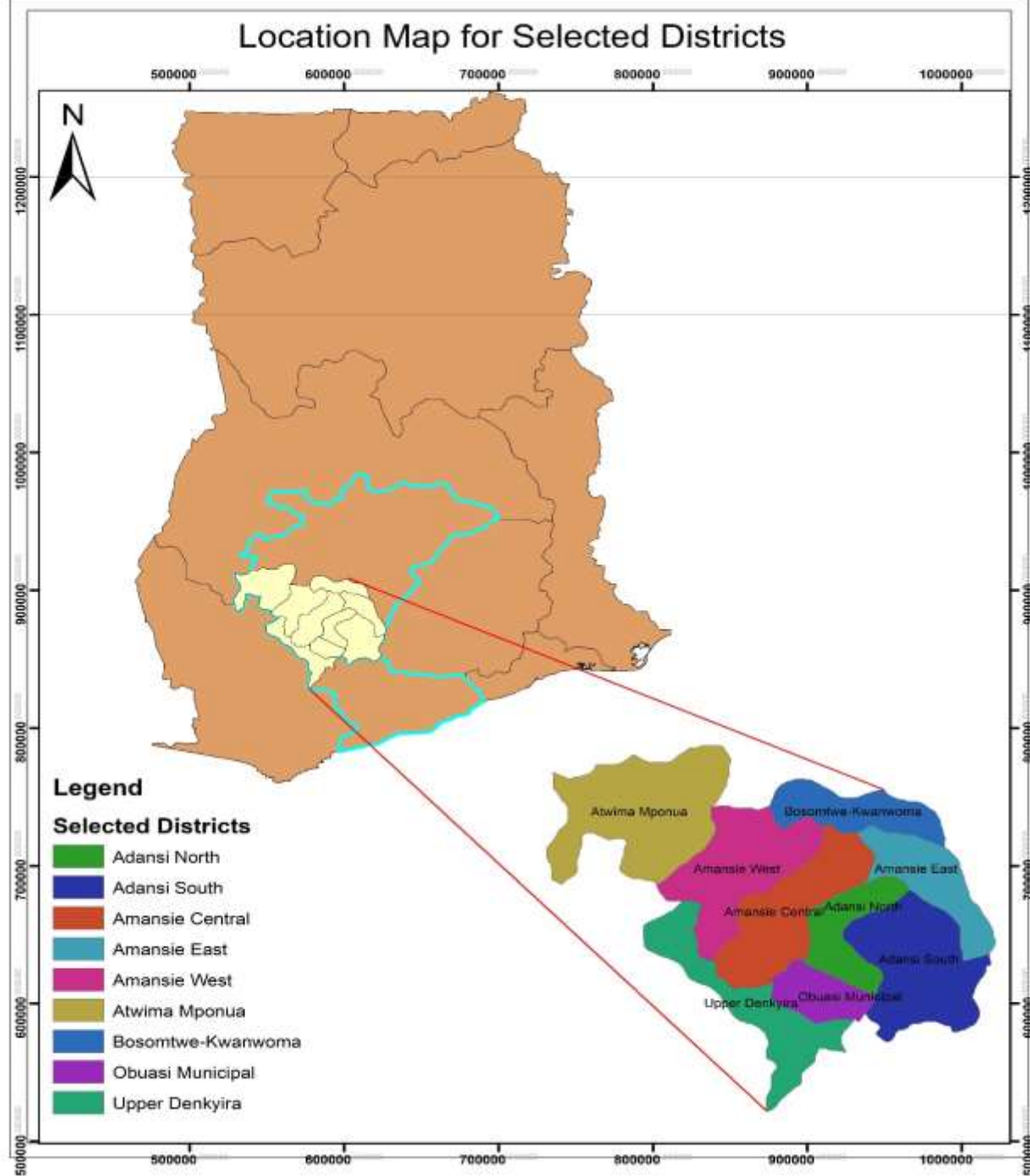
Despite all the talk about solutions; there has been little said about the **Area of Land Impacted**.

We have to be able to accurately define the depth of our problem in order to synthesis an appropriate solution.

Goal

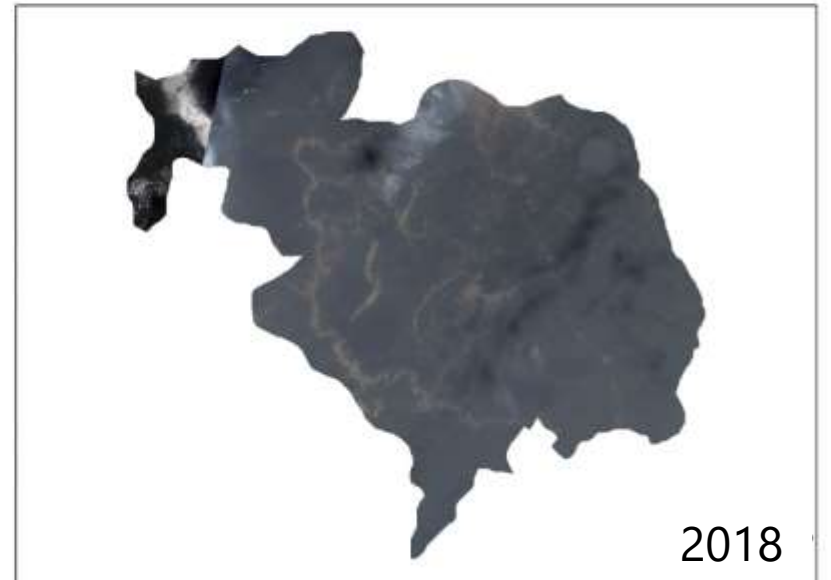
Help answer the question “
what is the depth of our
problem” with the assistance
of remote sensing
technologies and research
methods.

Introduction



STUDY AREA

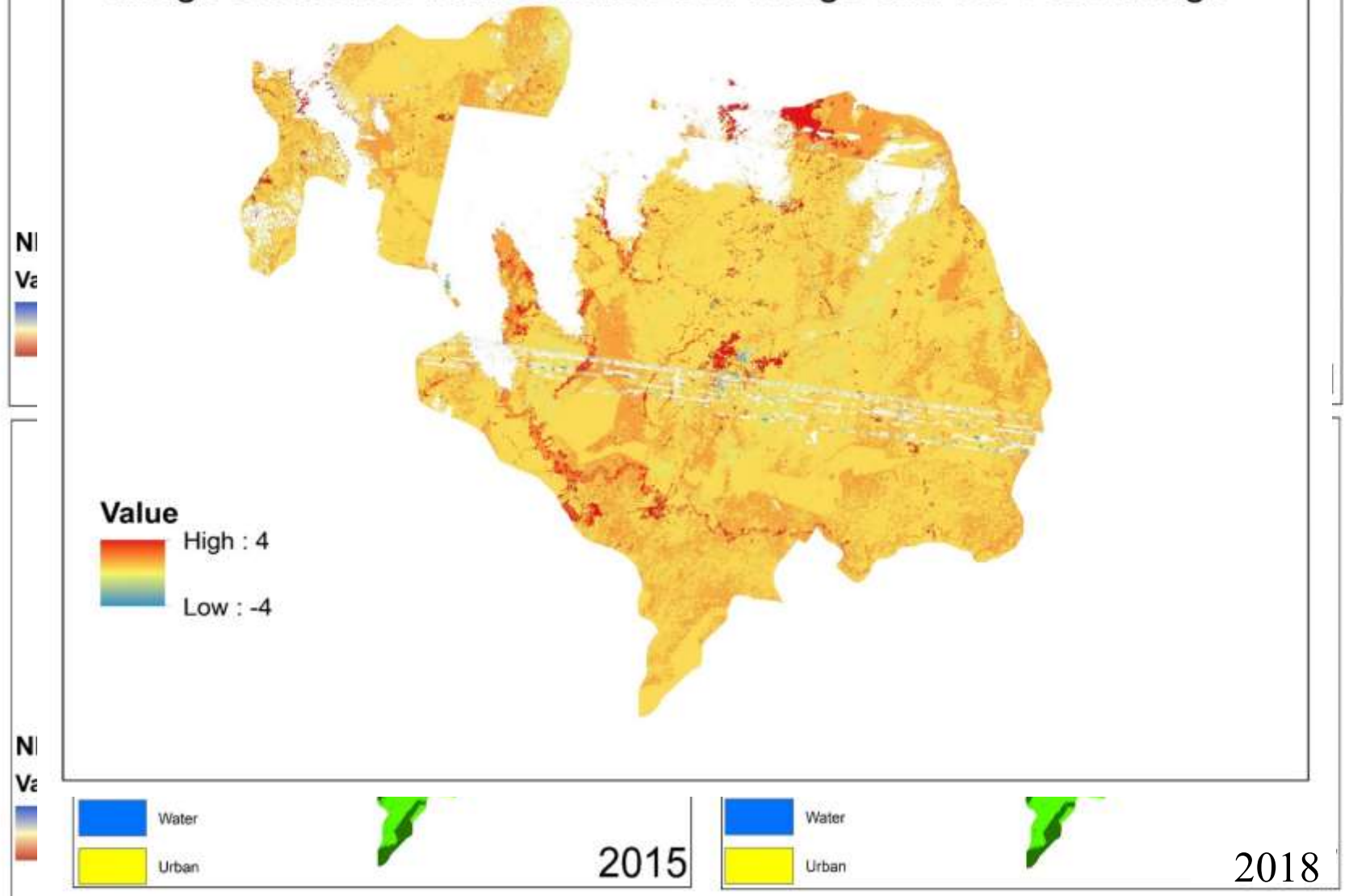
DATA



Landsat 4 Image (1991-01)
Landsat 5 Image (2001-01)
Landsat 8 Image (2015-01)
& (2018-01)

METHODS USED

Image Difference between the 2017 Image and the 1991 Image

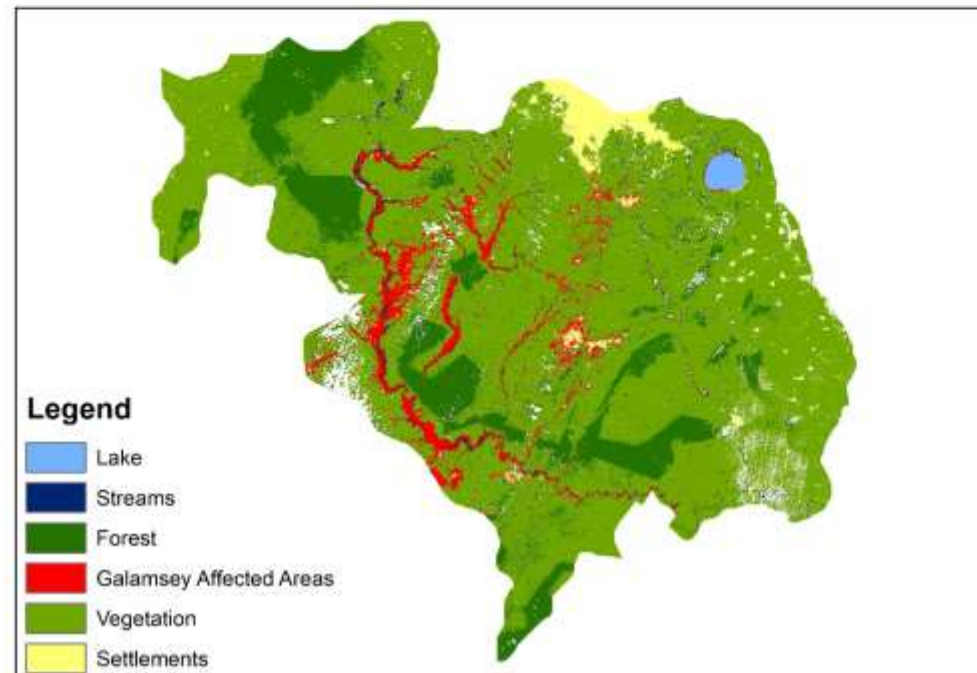


RADIOMETRIC &
SPATIAL
VALIDATION
CORRECTION

LIMITATIONS

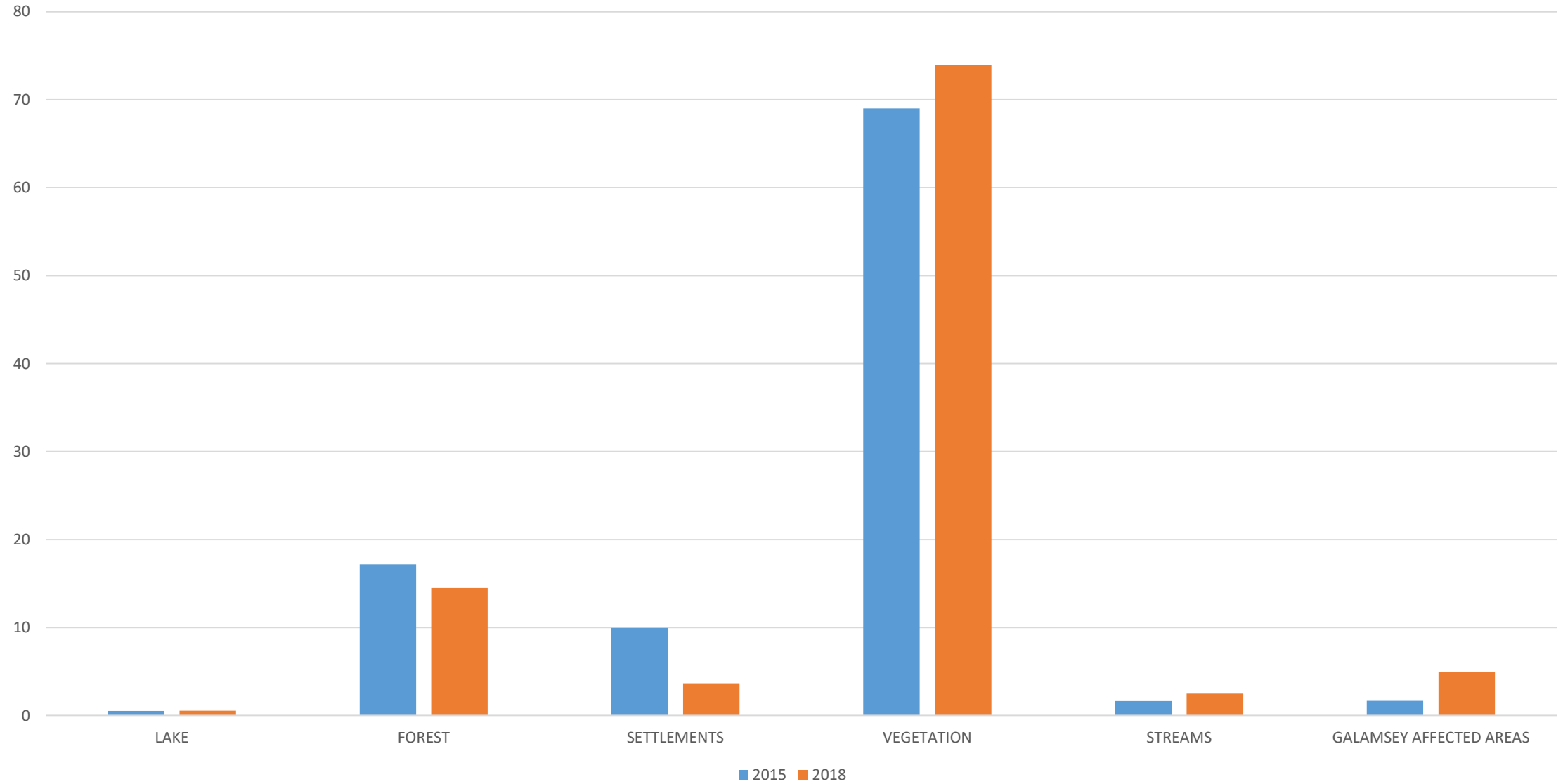
- Cloud Cover
- Image Resolution

RESULTS



RESULTS

LAND COVER USE (2015 & 2018)

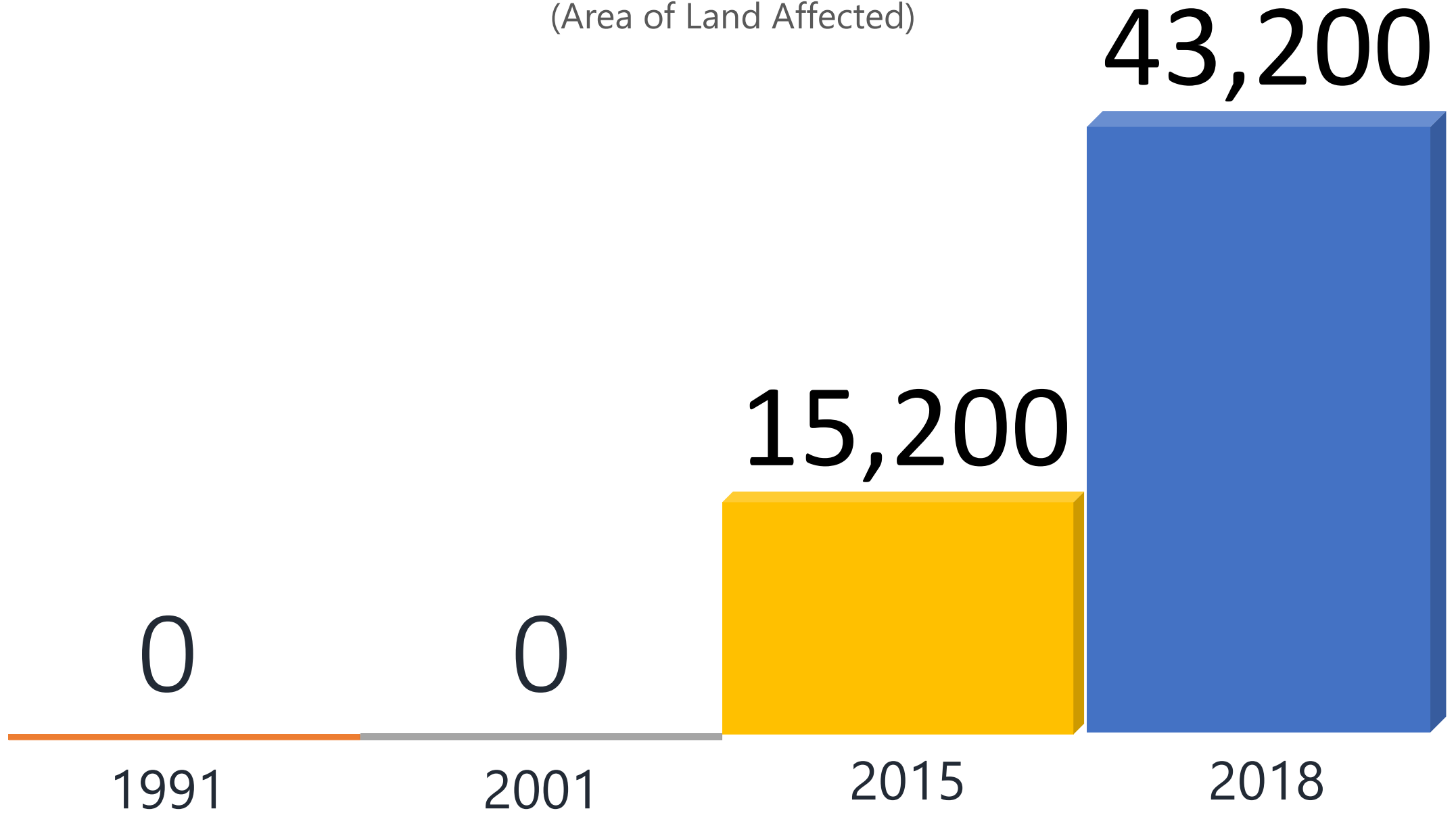


RESULTS

	2015		2018	
VALUE	AREA (HECTARES)	AREA (%)	AREA (HECTARES)	AREA (%)
LAKE	4746.87	0.52	4755.42	0.54
FOREST	156829.86	17.19	127669.41	14.49
SETTLEMENTS	90793.80	9.95	32313.87	3.67
VEGETATION	629416.50	69.01	651156.38	73.90
STREAMS	15071.58	1.65	21956.76	2.49
GALAMSEY AFFECT AREAS	15227.01	1.67	43223.76	4.91

RESULTS

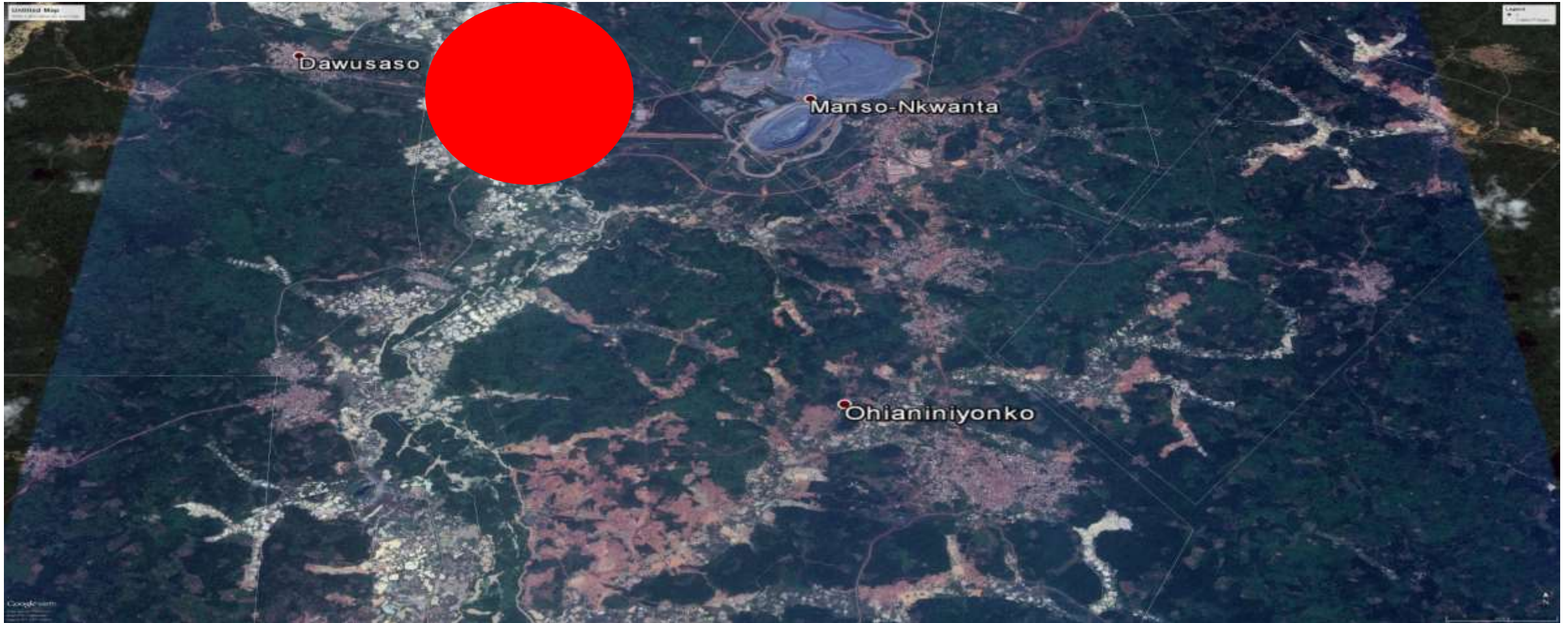
(Area of Land Affected)



THE OFFIN RIVER



MANSO COMMUNITY



OBUASI COMMUNITY



SOME AFFECTED

RIVERS

- Offin
- Tano
- Jeni
- Oda
- Birem

FOREST RESERVES

- Anwiaso East
- Jeni River
- Tano Suraw
- Apamprama
- Oda River
- Subin Shelterbelt
- Supuma Shelterbelt
- Denyau Shelterbelt

COMMUNITIES

- Okyerekrom
- Odumase
- Anyinam
- Obuasi
- Dunkwa
- Oseikrom
- Odaho
- Mpatasie
- Domenase
- Onwe
- Manso
- Nkuntini
- Manso Akropong
- Manso Nkwanta
- Asamang
- Manso Atwere
- Odumase
- Assin Praso
- Assin Breman
- Foso
- Akropong, etc.

WHY SHOULD I CARE?

Africa will have to step up to the plate in terms of the biggest food producer for the coming decade



CONCLUSION

- The area of land being destroyed by Galamsey activities has risen through time to a new high of 43,200 Hectares in 2018
- Various Water bodies, forest reserves and communities are being heavily affected by the activities of Galamsey.
- It has become more eminent that as a country we require modern technologies and research techniques to be able to monitor our natural resources.
- Remote Sensing provides the potential for constant monitoring of our lands and sea shore for better decision making now and in the future.
- The launch of GhanaSat1 by All Nations University College in Koforidua is a step in the right direction and the government of Ghana should get involve to help with the advent of Remote Sensing Technologies and Techniques in Ghana.

PROJECTS



MORTALITY DISTRIBUTION
IN KUMASI



STATE OF GALAMSEY
IN GHANA



DIGITIZATION



RENEWABLE ENERGY
POTENTIAL



GHANA'S RENEWABLE ENERGY POTENTIAL

SECTION ONE: ENERGY INDICATORS AND ENERGY BALANCE

Table 1.1: Energy Indicators (2007 – 2016)

Energy Indicator	Unit	2007	2008	2009	2010	2011	2012	2013	2014	2015 ¹	2016
Total Primary Energy Supply	KTOE	6,404	6,273	6,036	6,946	7,609	8,362	8,564	9,147	9,550	9,660
Total Final Energy Consumed	KTOE	5,259	5,187	5,706	5,629	6,174	6,613	6,887	6,983	7,162	7,086
Total Electricity Generated	GWh	6,978	8,324	8,958	10,167	11,200	12,024	12,870	12,963	11,492	13,022
Total Electricity Consumed	GWh	6,441	7,219	7,454	8,317	9,187	9,258	10,583	10,695	9,685	11,418
Total Petroleum Products Consumed	KTOE	2,127	2,071	2,598	2,491	2,827	3,318	3,422	3,377	3,545	3,320
Total Biomass Consumed	KTOE	2,594	2,518	2,493	2,464	2,576	2,589	2,676	2,792	2,785	2,783
Population	million	22.3	22.9	23.4	24.7	25.3	25.9	26.5	27.0	27.7	28.3
GDP (Constant 2006 prices)	million Ghana cedis	19,913.4	21,592.2	22,336.0	24,101.0	27,486.0	30,040.0	32,237.0	33,522.0	34,808.0	36,016.0
Energy Intensity of the Economy	TOE/GHS 1,000 of GDP	0.26	0.24	0.26	0.23	0.22	0.22	0.21	0.21	0.21	0.20
Total Energy Consumed/capita	TOE/capita	0.24	0.23	0.24	0.23	0.24	0.26	0.26	0.26	0.26	0.25
Total Electricity Generated/capita	kWh/capita	312.9	363.5	382.8	411.6	442.7	464.2	485.7	480.1	414.9	460.2
Total Electricity Consumed/capita	kWh/capita	288.9	315.3	318.5	336.7	363.1	357.4	399.4	396.1	349.6	403.5
Total Petroleum Products Consumed/capita	TOE/capita	0.10	0.09	0.11	0.10	0.11	0.13	0.13	0.13	0.13	0.12
Total Biomass Consumed/capita	TOE/capita	0.12	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Total Electricity Consumed/GDP	kWh/GHS 1,000 of GDP	323.5	334.4	333.7	345.1	334.2	308.2	328.3	319.0	278.2	317.0
Total Primary Energy Supply/GDP	TOE/GHS 1,000 of GDP	0.32	0.29	0.27	0.29	0.28	0.28	0.27	0.27	0.27	0.27
Total Petroleum Products Consumed/GDP	TOE/GHS 1,000 of GDP	0.11	0.10	0.12	0.10	0.10	0.11	0.11	0.10	0.10	0.09
Total Primary Energy Supply/capita	TOE/capita	0.29	0.27	0.26	0.28	0.30	0.32	0.32	0.34	0.34	0.34
Grid Emission Factor (wind/solar projects)	tCO ₂ /MWh	0.41	0.41	0.41	0.35	0.32	0.35	0.51	0.32	0.28	0.39

GHANA'S RENEWABLE ENERGY POTENTIAL

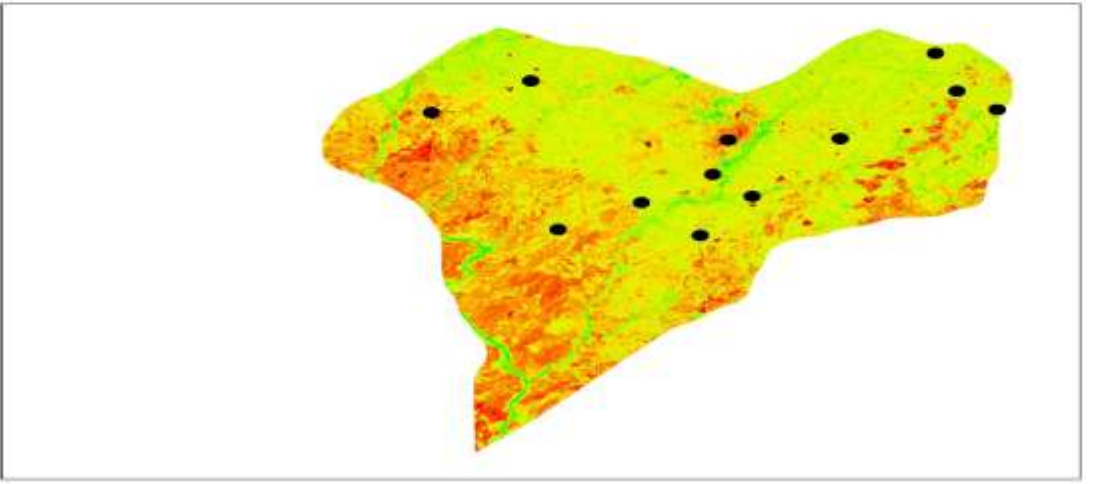
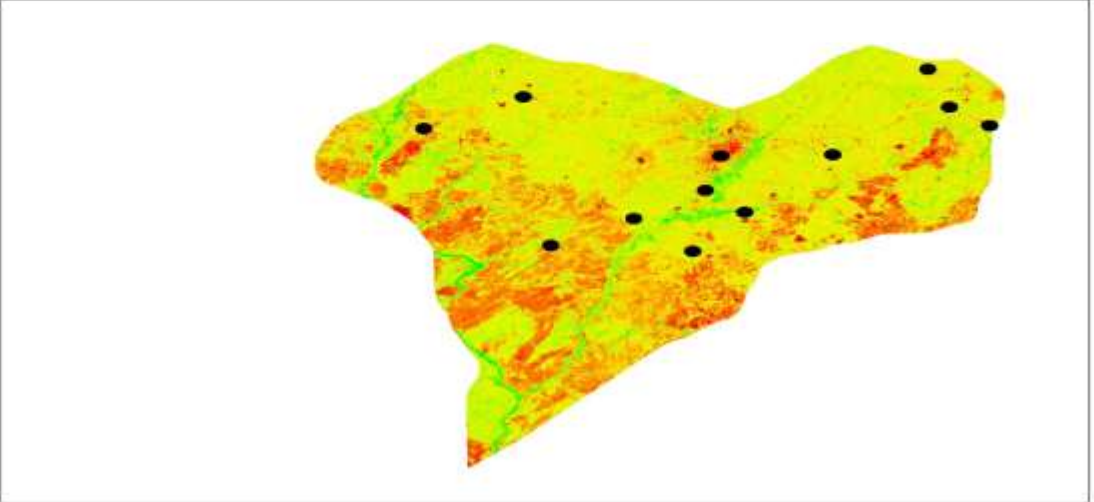
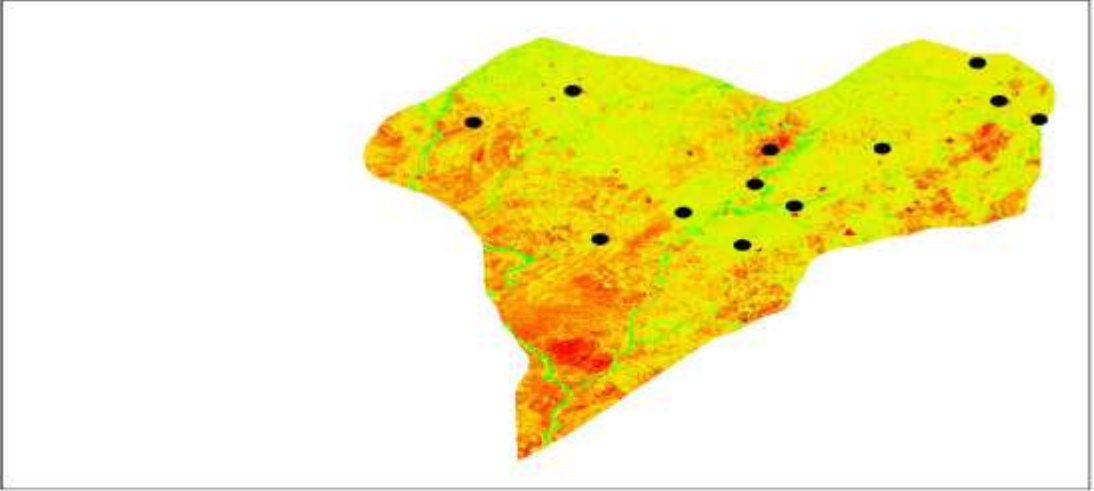
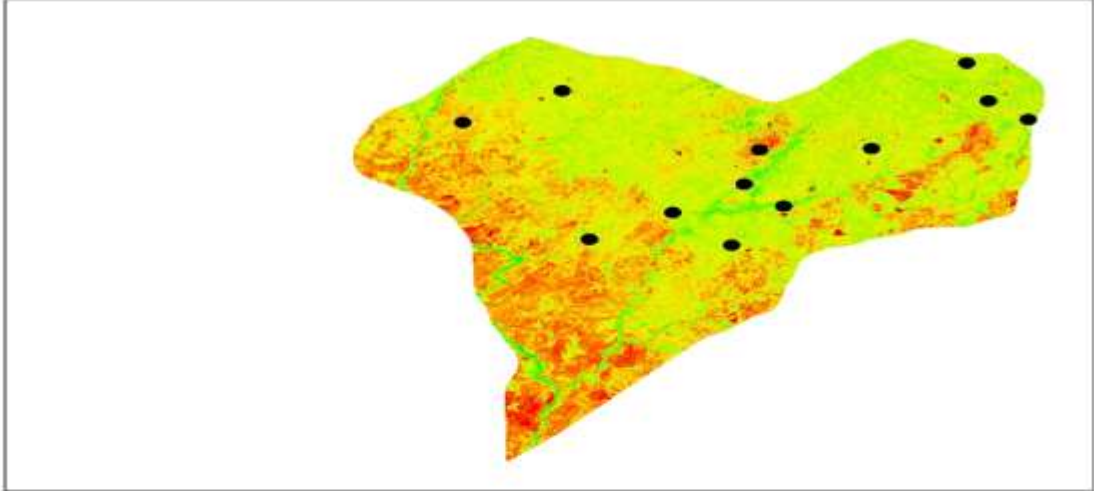
SOLAR AND HYDRO



GHANA'S RENEWABLE ENERGY POTENTIAL

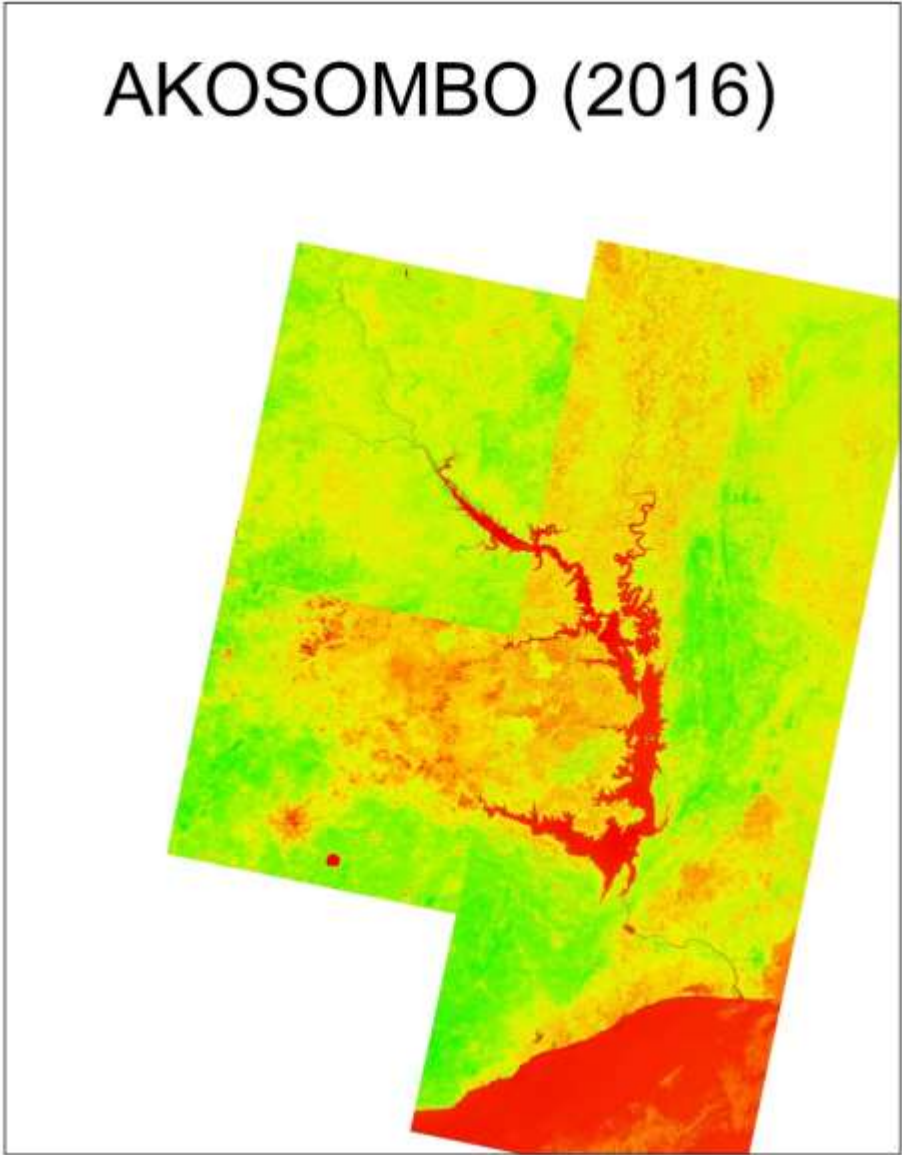
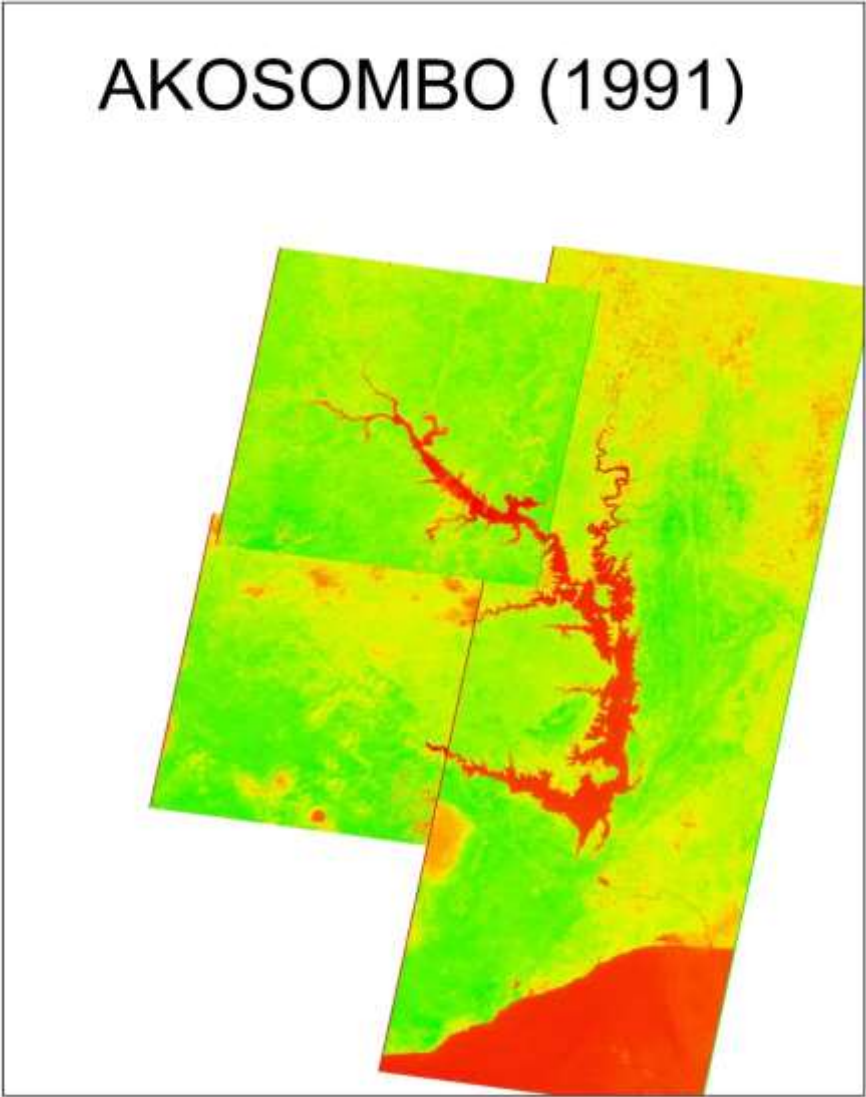
SOLAR

NDVI FROM 2013 TO 2016



GHANA'S RENEWABLE ENERGY POTENTIAL

HYDRO



APPLICATIONS TO PROBLEMS OF TODAY



IRRIGATION



URBAN SPRAWL



SUITABILITY ANALYSIS FOR INFRASTRUCTURE



CLIMATE CHANGE



AGRICULTURE



RESOURCE MONITORS

“

What stands between Africa's current prostrate condition and a future of prosperity and abundance for its long standing population; One Word "Knowledge". (*Olufemi Taiwo*)

If Africa is to become a continent that offers the best life for humans, it must become a knowledge society immediately. (*Olufemi Taiwo*)



“

We have collated more information about our planet and beyond in the past two decades than we did between the 1900 and 1990.

It is our responsibility to ensure we make you of education to better the lives of all within our community.



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THANK YOU