

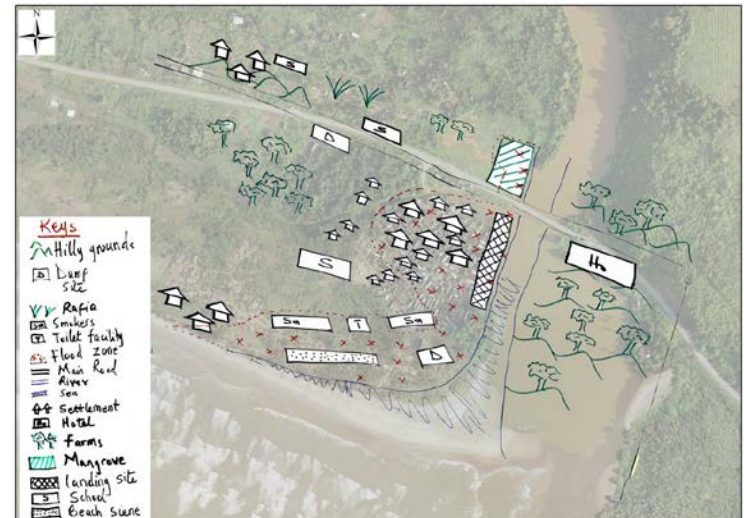
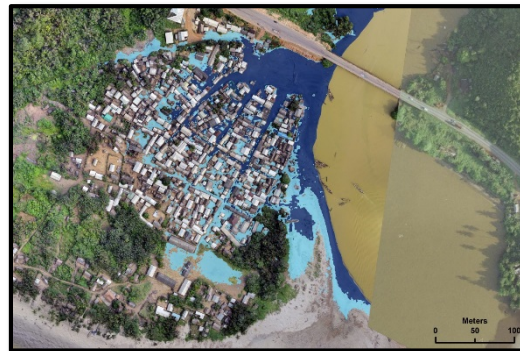
# Applying Innovative Solutions for Better Spatial Planning



# Presentation Overview

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- Why invest in spatial planning?
- USAID's past and present contributions to coastal spatial planning
- Regional "Data Hubs" and capacity building
- Innovative technological approaches – UAVs, open source web data
- Future Directions



# Why Invest in Spatial Planning?

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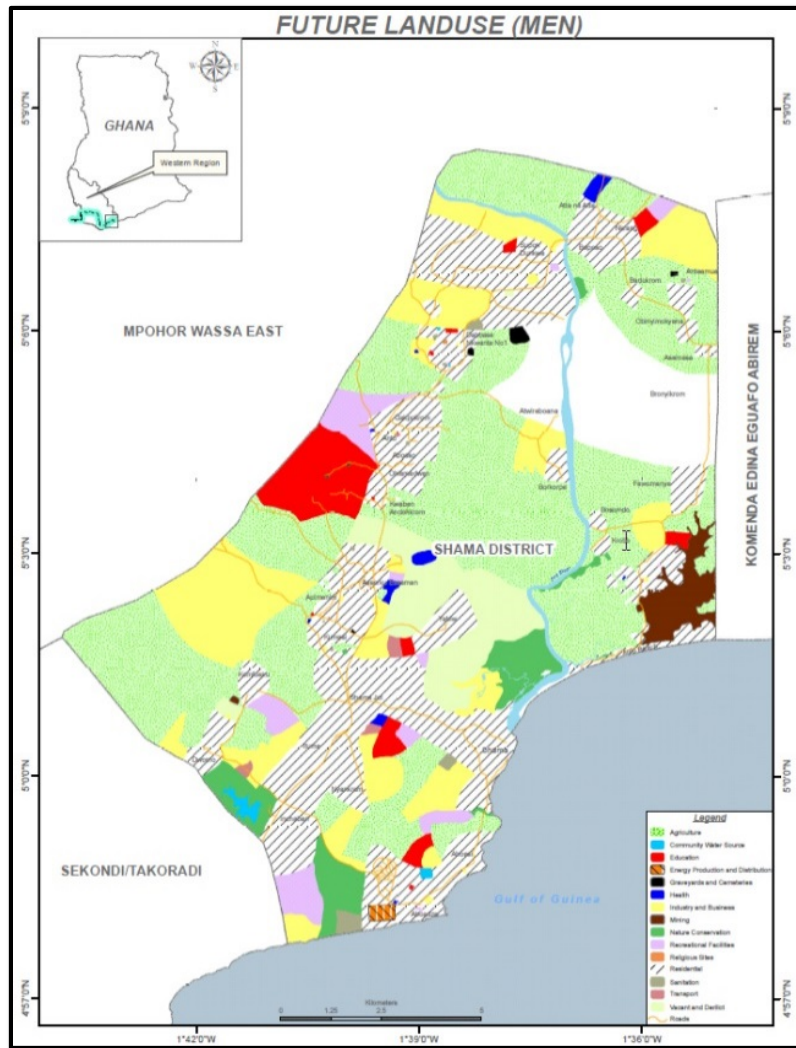
Tidal flooding in Anlo (<http://www.gbcghana.com/1.7864130>)



(Property damage of coastal communities in Accra  
<http://www.myjoyonline.com/news/2016/September-5th/accra-fishermen-count-losses-after-tidal-waves-destruction.php>)

- Fishermen and women engaged in fish processing need access to the shorefront to conduct their livelihoods
- Coastal erosion and flooding are major threats to life and property in coastal areas
- Forests and wetlands need to be preserved for fish nursery grounds and to mitigate the impacts of climate change
- Spatial planning is key for generating and applying information to design, monitor and manage conservation sites, fisheries management, disaster risk reduction and other investments to increase the resilience of fishing families and sustain food production

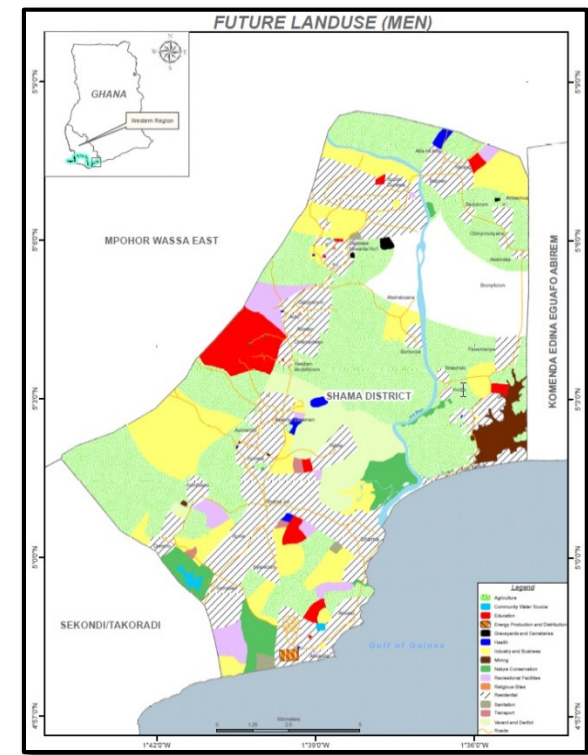
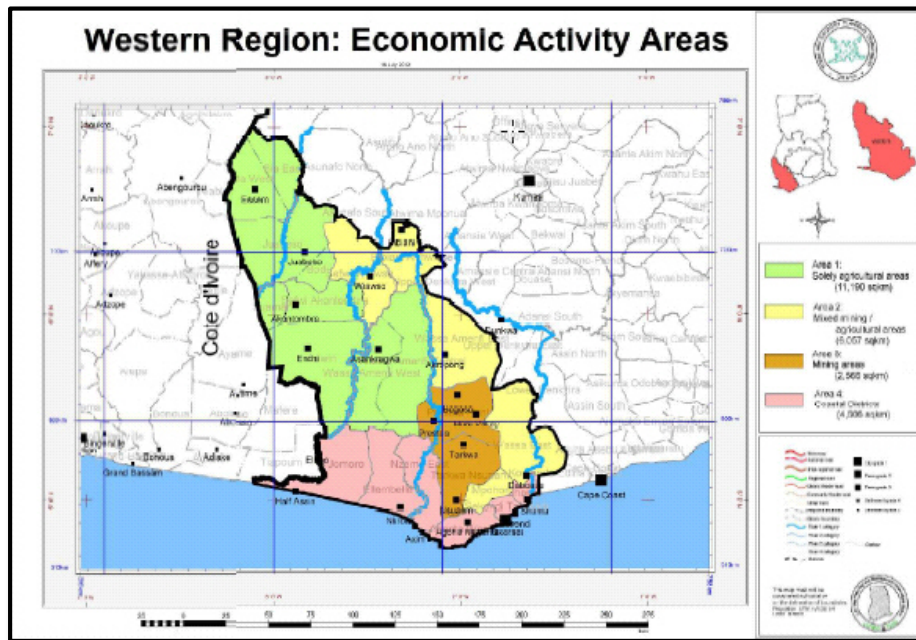
# What is Spatial Planning?



*"Regional/spatial planning gives geographical expression to the economic, social, cultural and ecological policies of society. It is at the same time a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards a **balanced regional development** and the physical organization of space according to an overall strategy"*

# A scalable integrated approach

- Region
- District
- Community

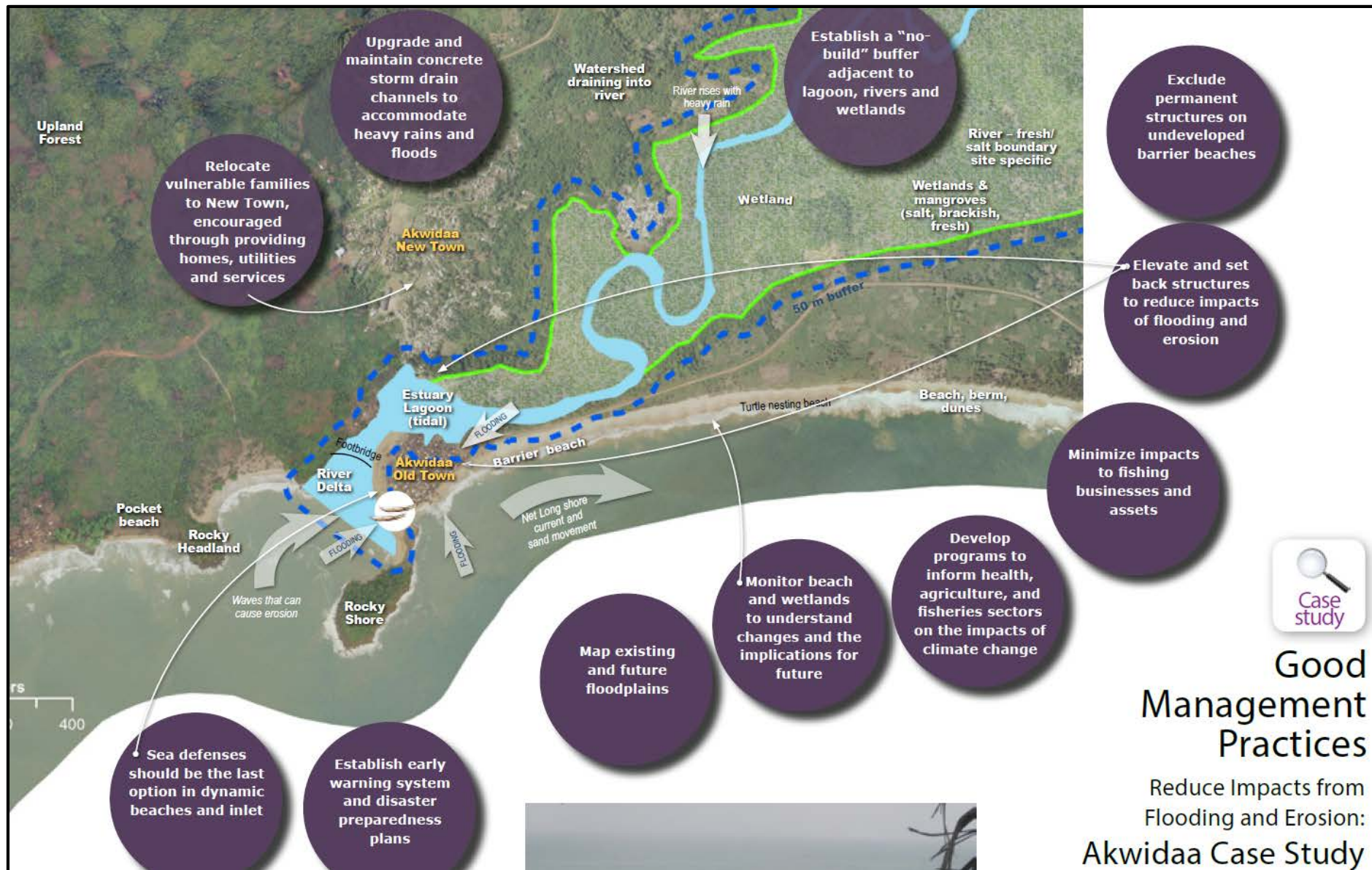


# Integrated Coastal Management Toolkits



**USAID/Ghana  
Integrated Coastal and Fisheries  
Governance Project (2009-2014)**

# Vulnerability Assessments in Fishing Communities



## Good Management Practices

Reduce Impacts from Flooding and Erosion:  
Akwidaa Case Study

# Regional Data Hub Vision

## Town and Country Planning Department

### Capacity Building



Equipment

Training

Support

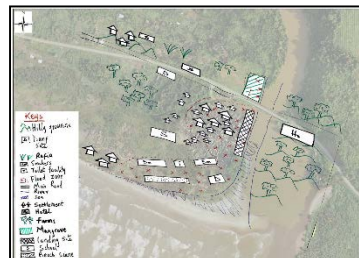
Stakeholders

Knowledge

Collaboration

Data

### Local Knowledge



### Functions

Central storage for official data

Merge regional data

Coordinate cross-boundary projects

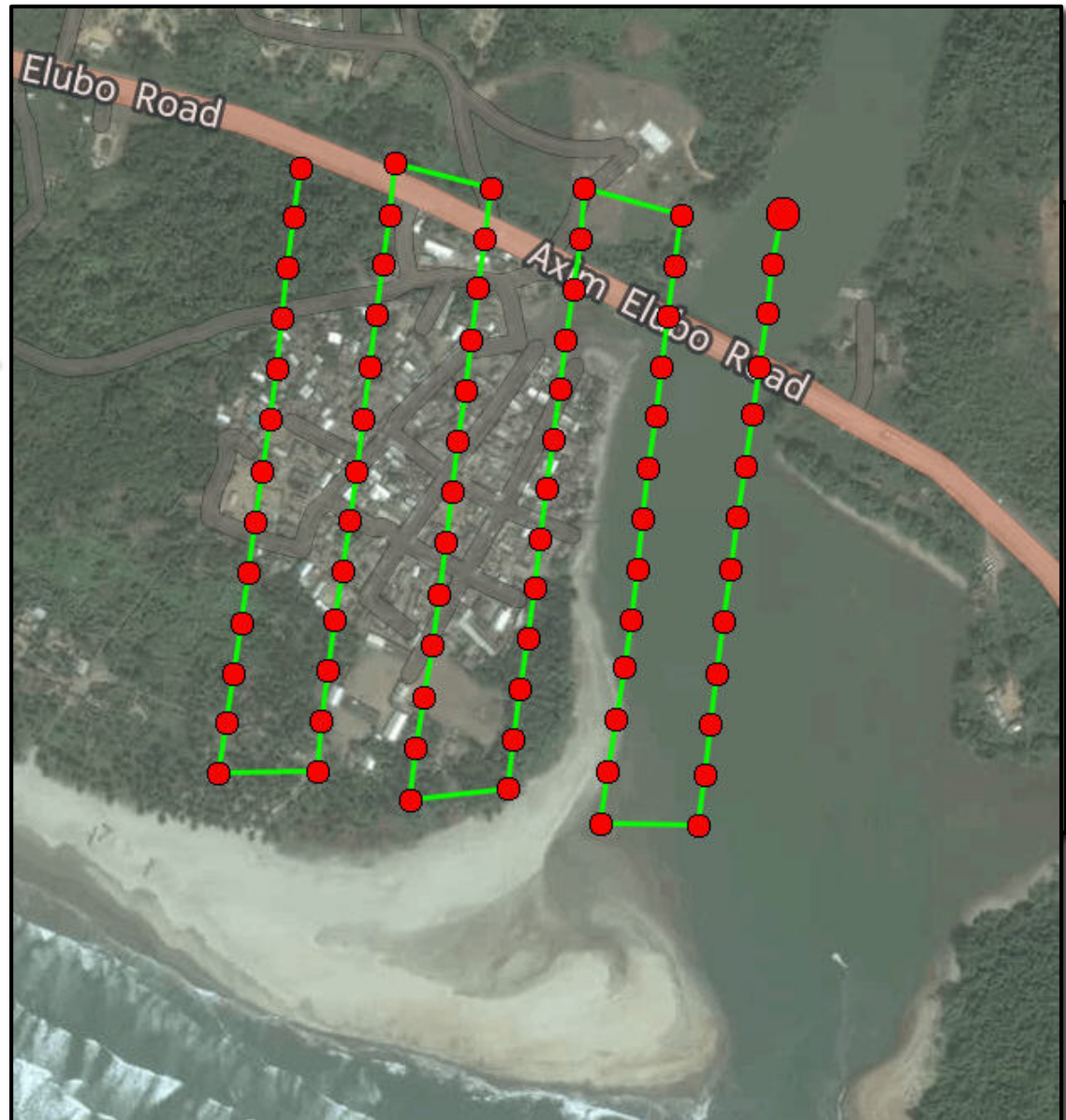
Data collection standards and documentation

Provide access to official data

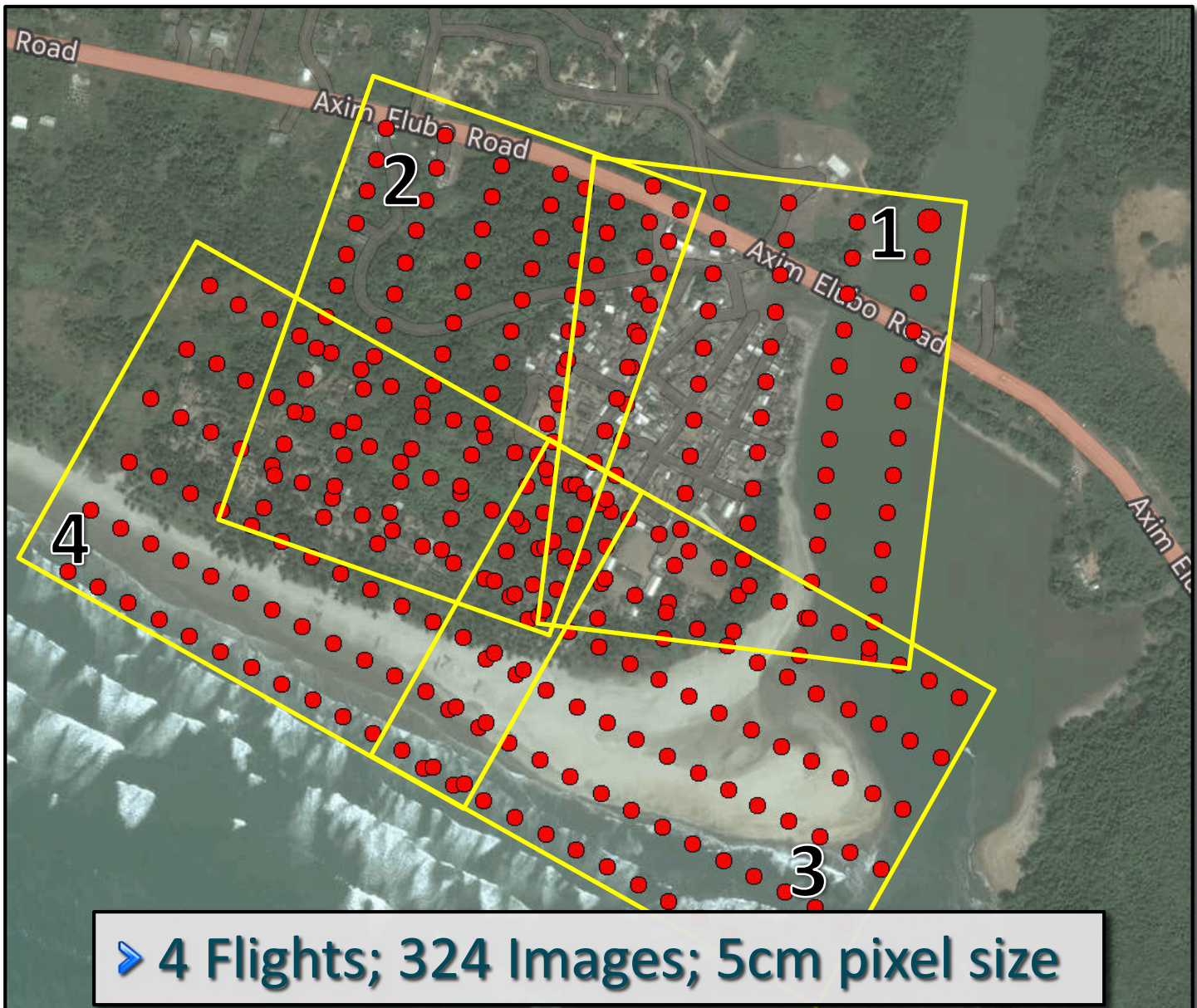


# UAV Mapping System

- Drone
  - DJI Phantom2 Vision+
- Mission Planning
  - Pix4D Capture App
- Post Processing
  - Pix4Dmapper



# Sanwoma (Ankobra)



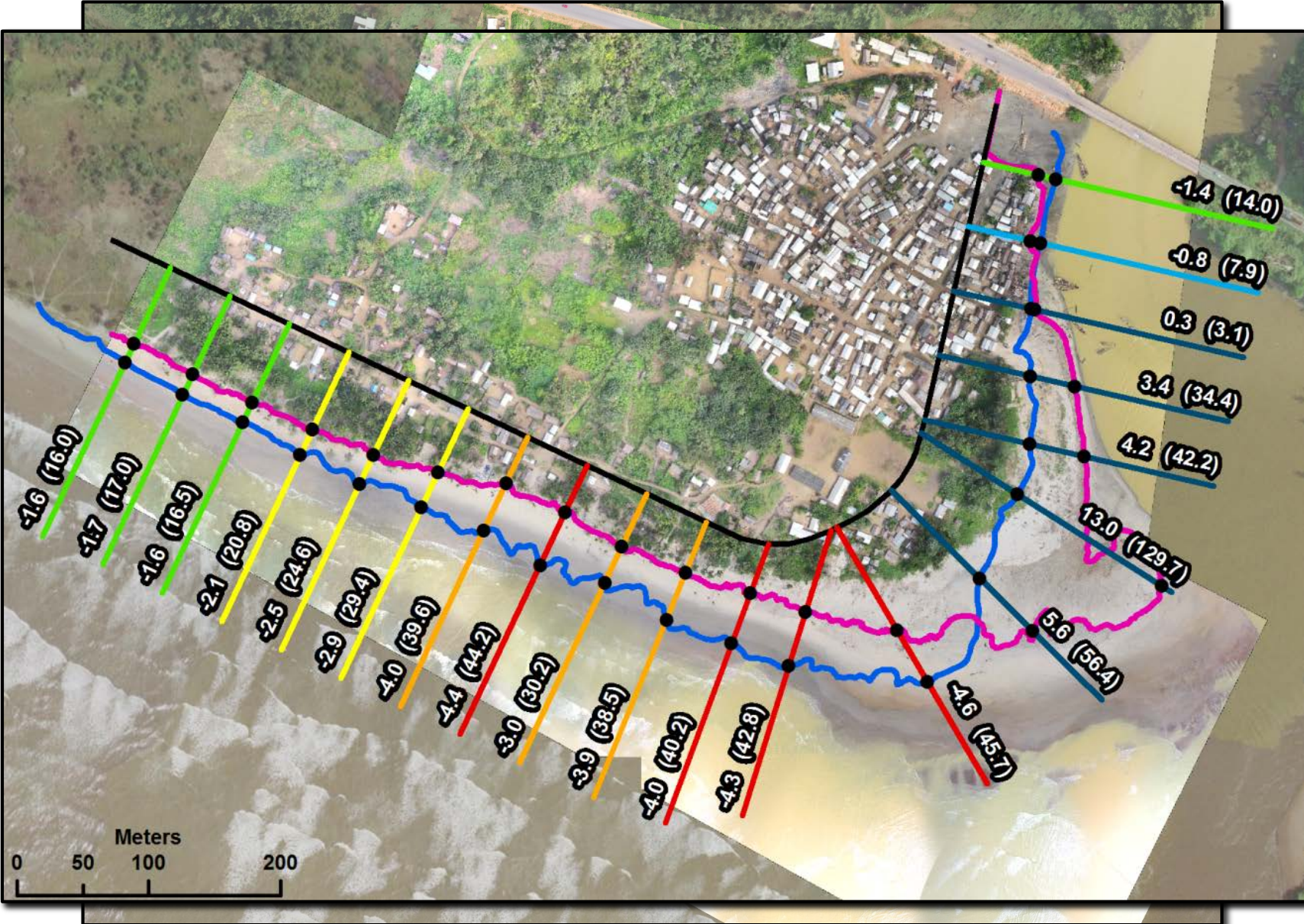
# Sanwoma (Ankobra)

2005 Imagery

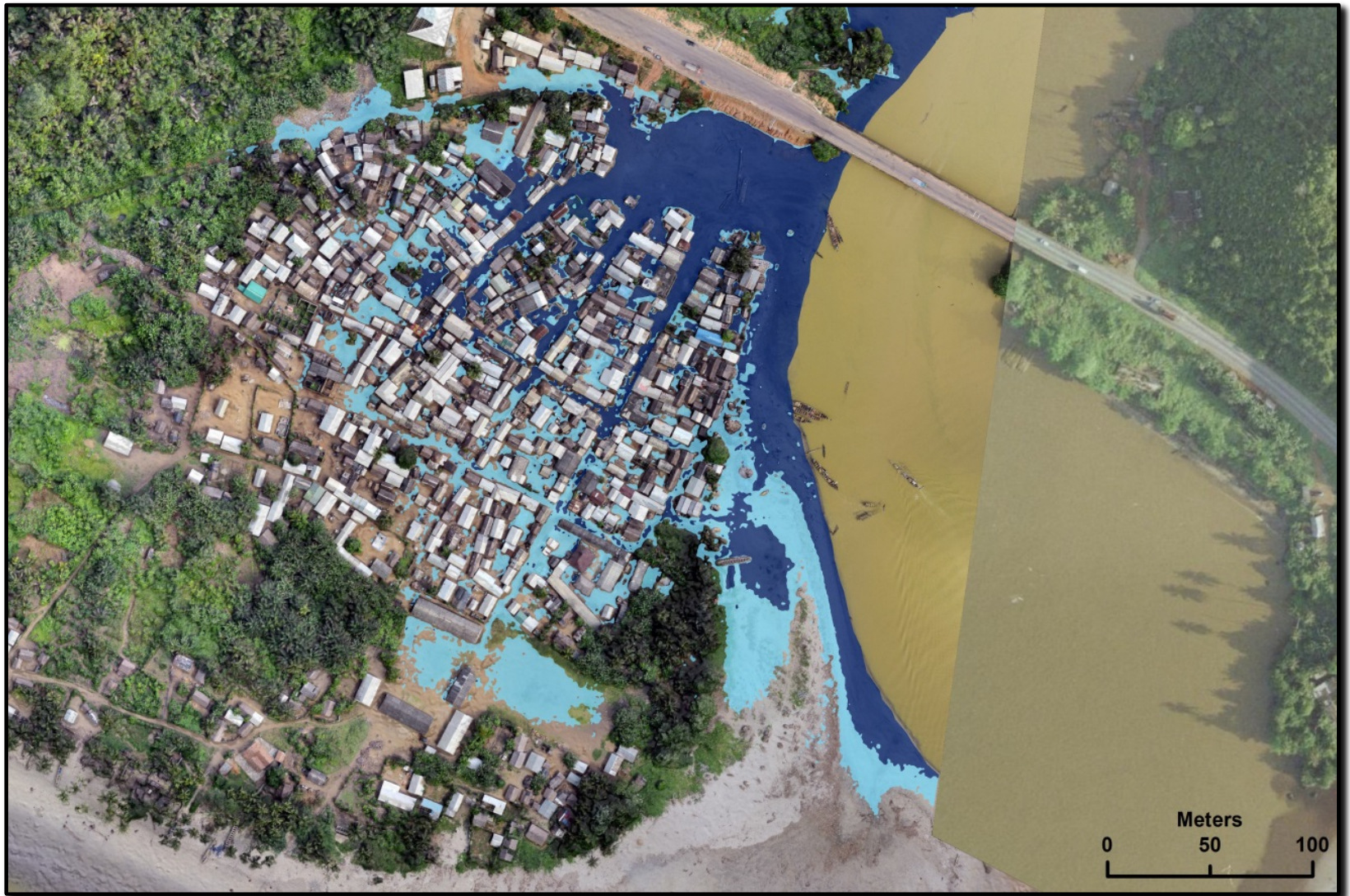
2016 UAV



# Sanwoma Erosion



# Sanwoma Flooding



# Old Shama Erosion



# Ecological Monitoring



# Ecological Monitoring

- 38.1 Ha Healthy
- 3 Ha Dead, Dying, Cut





# Elmina Bay Resort

Not Connected Range: 100% --% --% 0



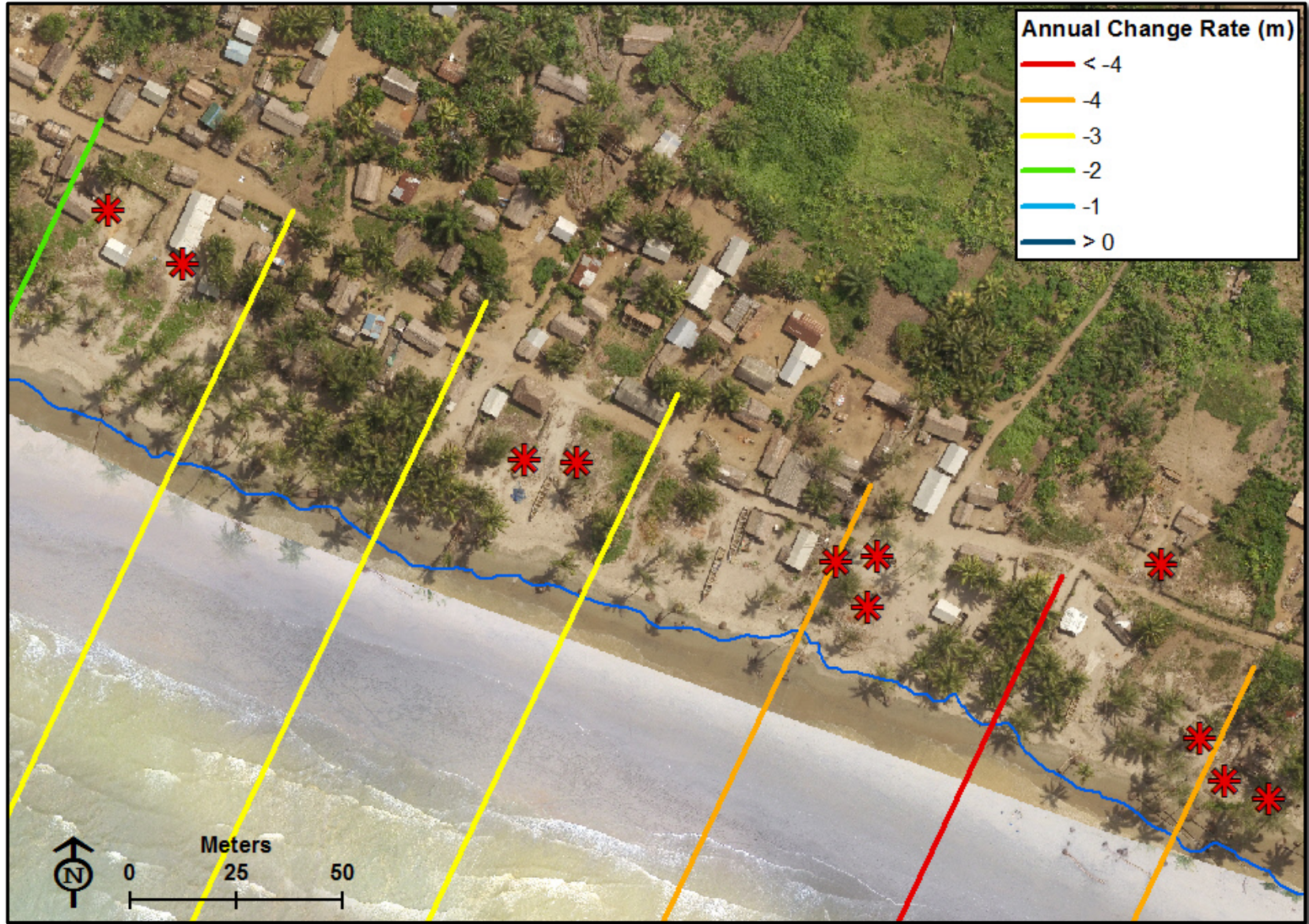
2016

ca. 2013

# Upper Axim Infrastructure



# Sanwoma Damage Assessment



# Building Capacity



SFMP  
GIS Data  
available  
on-line

GIS - Ghana SFMP Map ... x +

-1f10e91b743d4e2c9a04da06114aca62&q=&sortField=numviews&sortOrder=desc

ArcGIS Features Plans Gallery Map Scene Help

Sign In





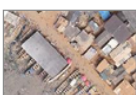
## Ghana SFMP Map Center

JOIN THIS GROUP SHARE

Maps and apps pertaining to the latest work on Ghana's Sustainable Fisheries Management Program

Facebook Twitter

### Group Content

	Title	Owner	Rating	Views	Date
<b>All Results</b> Maps Layers Scenes Apps Tools Files <input type="checkbox"/> Show ArcGIS Desktop Content	 Open Details	2012 Landcover for the Amansuri Wetland Area, Ghana Landcover derived from RapidEye 5m imagery Tile Layer by URIEDC_cdamon Last Modified: April 16, 2015 ★★★★★ (0 ratings, 0 comments, 109 views)			
	 Open Details	2002 Landcover for the Coastal Area in Ghana's Western Region Landcover derived from Landsat 30m imagery Tile Layer by URIEDC_cdamon Last Modified: April 14, 2015 ★★★★★ (0 ratings, 0 comments, 93 views)			
	 Open Details	Scanned Nautical Charts for Ghana Scanned Nautical Charts for Ghana Imagery Layer by URIEDC_cdamon Last Modified: March 28, 2016 ★★★★★ (0 ratings, 0 comments, 54 views)			
	 Open Details	2005 Orthophotography for Coastal Ghana 2005 orthomosaic for the Ghanaian coast Imagery Layer by URIEDC_cdamon Last Modified: March 28, 2016 ★★★★★ (0 ratings, 0 comments, 39 views)			
	 Open Details	Axim High-Resolution Imagery, December, 2015 High-resolution color imagery for the Lower Axim landing site in Ghana's Western Region Imagery Layer by URIEDC_cdamon Last Modified: September 5, 2016			

Sustainable Fisheries Management Project

<http://arcg.is/1RKgAS6>



# UAV Pilot Summary

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- UAVs provide cost effective means to capture current, high res. imagery for planning and analysis
- High-quality products fill data gaps
- Output products directly compatible with Ghanaian GIS systems
- Specialized software and equipment needed for quality products
- Limited battery capacity = Low coverage

# Moving Forward We Can:

- Reduce the need for costly solutions
- Save lives and property
- Preserve space for food production needs
- Sustain fishing as a way of life



**Daily Graphic** Ghana's Biggest Selling Newspaper Since 1950  
Friday, September 11, 2015 Visit www.graphic.com.gh

**60 Million-dollar Sakumono Sea Defence Project completed**

By Emmanuel De Rowson, ACCRA

June 2015, it involved the construction of a 1,100-metre armour rock perimeter, a two metre quarry wall and two groynes to serve as a buffer zone between the sea and the marinal stretch.

The project is expected to provide additional protection of a 1,000 metres of coastal stretch from the Boulogne Tides beach front to the Sakumono University.

**Work on the Sakumono Sea Defence Project has been completed.** The 150-million project was sponsored by the Government of Ghana.

**Project** Due to the alarming rate of tidal erosion along the Sakumono coastal stretch, the government in October 2011 contracted Anasom Building Co. to construct a sea defence wall on that stretch.

The first phase was completed in December 2012 at a cost of US\$40 million. It covered a stretch of 3,000 metres from the Anasomoko community to the Accra-Tema railway.

The second phase, which cost US\$46 million, started in

At the handover ceremony, the Minister of Water Resources Works and Housing, Dr Kwaku Agyeman Mensah, said the project formed part of several other sea defence projects which were at various stages of completion at Ada, Makomo, Abanabar, Wansongo, Nono, Takand, Aisa and Anasomokor.

He commended the contractors for completing the project within the stipulated period and reiterated the Tema Municipal Assembly's plan to build a sea wall to protect the town.

**QUICK READ**  
Work on a US\$60 million Sakumono Sea Defence Project has been completed.

**Scan to see more pictures**  
Graphic LIVE

Dr Kwaku Agyeman Mensah (left) congratulates Mr. Kwaku Agyeman Mensah, General Manager, Anasom Construction Limited, after the latter had handed over the project to him. With them is Mr. Peter Tetteh, Executive Director in charge of Business Development, Anasom Construction Limited. Pictures: EMMAKULE, SAMBOA ADDAI

Item	Unit	Price	% Change
1. Diesel	Litre	3.2000	-1.2%
2. Kerosene	Litre	2.8000	-1.5%
3. Gasoline	Litre	3.5000	-1.0%
4. Lubricants	Litre	4.5000	-1.0%
5. Cement	50kg	1.2000	-1.0%
6. Bricks	1000	1.5000	-1.0%
7. Sand	Cubic Metre	1.8000	-1.0%
8. Gravel	Cubic Metre	2.5000	-1.0%
9. Steel	kg	1.8000	-1.0%
10. Copper	kg	1.8000	-1.0%
11. Aluminium	kg	1.8000	-1.0%
12. Zinc	kg	1.8000	-1.0%
13. Lead	kg	1.8000	-1.0%
14. Tin	kg	1.8000	-1.0%
15. Iron	kg	1.8000	-1.0%
16. Nickel	kg	1.8000	-1.0%
17. Silver	kg	1.8000	-1.0%
18. Gold	kg	1.8000	-1.0%
19. Platinum	kg	1.8000	-1.0%
20. Palladium	kg	1.8000	-1.0%

**PRICES**  
PRICES Effective 1st September, 2015 (27 Aug - 11 Sept Average)

**PRICES**  
PRICES Effective 1st September, 2015 (27 Aug - 11 Sept Average)



# Resources

Map Data

<http://arcg.is/1RKgAS6>

National Coastal Planning Workshop

[http://www.crc.uri.edu/download/GH2014\\_SCI020\\_HM\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_SCI020_HM_FIN508.pdf)

Small Unmanned Aircraft (SUA) Pilot Project

[http://www.crc.uri.edu/download/GH2014\\_SCI019\\_EDC\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_SCI019_EDC_FIN508.pdf)

Ankobra Vulnerability Assessment

[http://www.crc.uri.edu/download/GH2014\\_ACT023\\_HM\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_ACT023_HM_FIN508.pdf)

Exchange Visit For TCPD Officers: Workshop Report, June 29-30, 2015

[http://www.crc.uri.edu/download/GH2014\\_SCI013\\_HM\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_SCI013_HM_FIN508.pdf)

Ahanta West Integrated Coastal Management Toolkit

[http://www.crc.uri.edu/download/GH2009DC3P012\\_AWDtoolkit\\_508.pdf](http://www.crc.uri.edu/download/GH2009DC3P012_AWDtoolkit_508.pdf)

Analysis Of Spatial Planning Options: Ankobra

[http://www.crc.uri.edu/download/GH2014\\_ACT046\\_SpS\\_FIN508.pdf](http://www.crc.uri.edu/download/GH2014_ACT046_SpS_FIN508.pdf)