

Natural Disasters of Ghana

by

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Presentation Outline

- **Background of Ghana**
- **Types of Disasters in Ghana**
- **Case Studies on Natural Disasters**
- **The Way Forward**
- **Conclusion**



Background of Ghana



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Bu

- **Population:** 27.3 million
- **Capital:** Accra
- **Area:** 238,533 sq km

Types of Disasters in Ghana

Ghana has suffered some disasters both natural and manmade. These include:

- Geological disasters (earthquakes, landslide, land and sea erosion etc)
- Hydro-meteorological disasters (floods, droughts, etc)
- Pest and Insect Infestation (army worm, anthrax , African Swine fever etc)

Types of Disasters in Ghana

- Fires and Lightning (wild fires, etc)
- Disease Epidemics (cholera, CSM, etc)
- Man-Made (marine, road air, rail, accidents, oil spillage, nuclear/radiological and accidents etc.)

Types of Disasters in Ghana

**Distribution of natural disasters:
(1900-2005, by decades)**

	1900- 1909	1910- 1919	1920- 1929	1930- 1939	1940- 1949	1950- 1959	1960- 1969	1970- 1979	1980- 1989	1990- 1999	2000- 2005	Total
Hydrometeorological	28	72	56	72	120	232	463	776	1498	2034	2135	7486
Geological	40	28	33	37	52	60	88	124	232	325	233	1252
Biological	5	7	10	3	4	2	37	64	170	361	420	1083
Total	73	107	99	112	176	294	588	964	1900	2720	2788	9821

Coastal Erosion & Inundation in Ghana

- In Ghana coastal erosion and flooding have become big environmental problems for coastal settlements

Impacts include:

- Destruction of infrastructure
- Loss of land – migration causes conflicts of land ownership
- Lost of properties due to coastal inundation etc
- Issues regarding safety/vulnerability

Coastal Erosion & Inundation in Ghana

Coastal Inundation/Floods

Types of Floods

- **Tidal Floods – High tidal waves**
- **Rainfall – High rainfall intensity**

Case Studies – Coastal Erosion & Inundation at Ada Foah

- Shoreline change analysis between 1926 and 2008 – DSAS 4.2.
- Mean shoreline change = 280.49 m & average annual rate of 3.46 m/year.

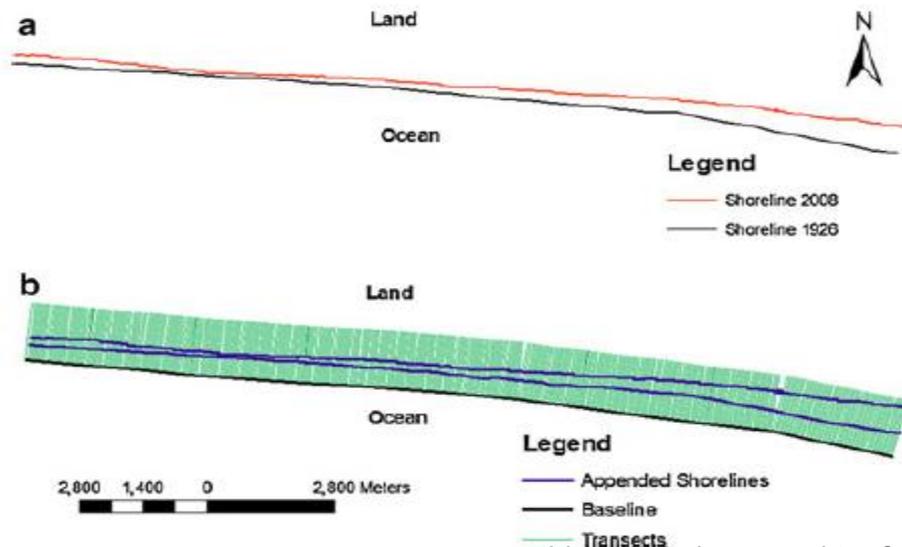


Fig. 2 a Digitized shorelines of 1926 ground survey sheet and Landsat ETM+ 2008 image b Appended shorelines, transects and baseline for shoreline change calculation



Case Studies – Coastal Erosion & Inundation at Ada Foah

Coastal ecosystems homes
of ins

Impacts - homelessness, unemployment, poverty, migration of youth to Accra and families to other communities which causes land ownership conflicts.

Fig. 4 Dilapidated structure of an old police station at Ada Foah

Case Studies – Coastal Erosion & Inundation at Ada Foah

•Publication – Natural Hazards Journal

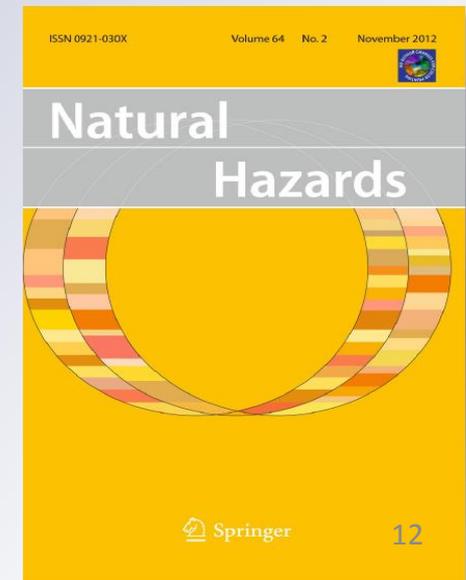
Sea erosion at Ada Foah: assessment of impacts and proposed mitigation measures

John Manyimadin Kusimi & James Lawer Dika

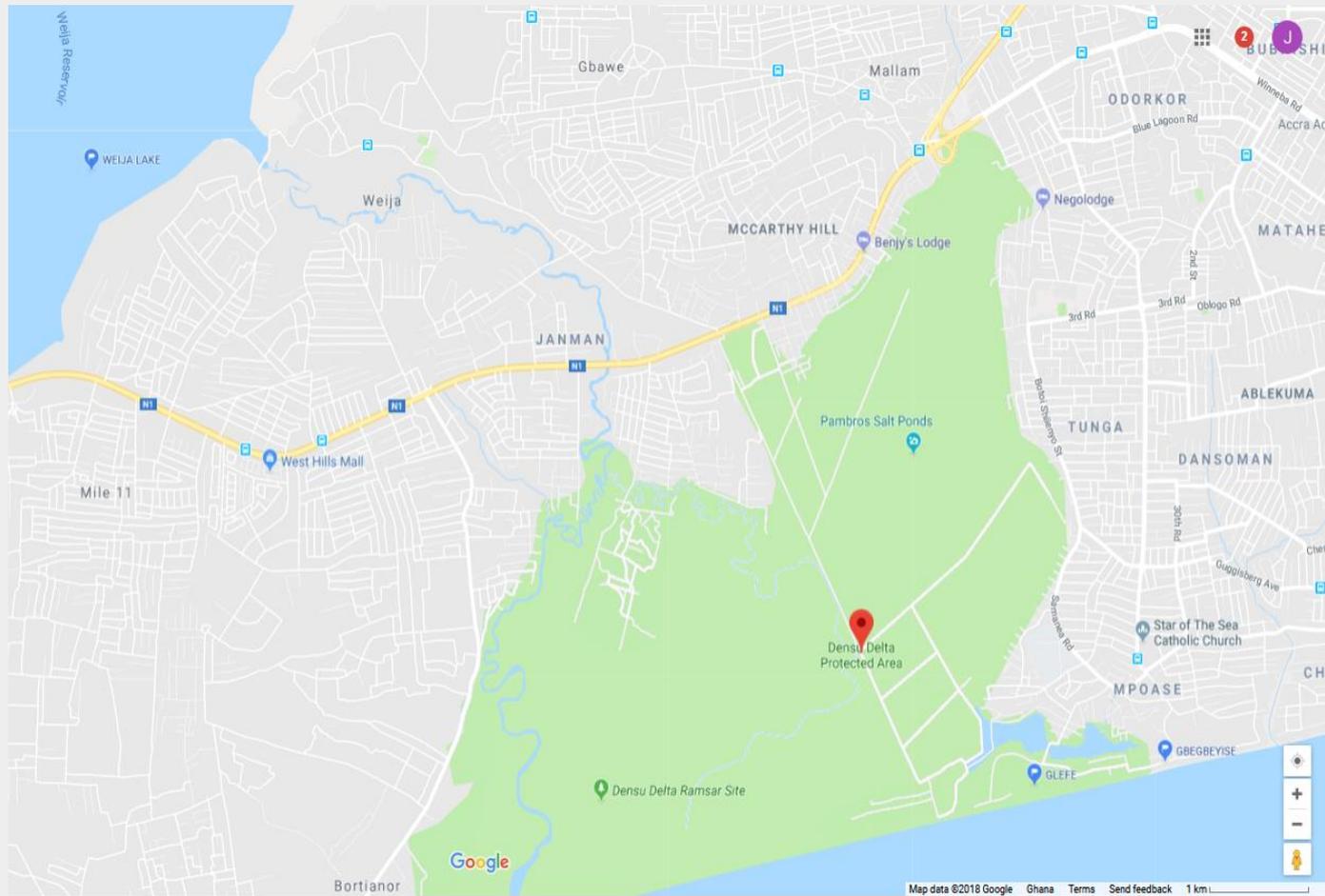
Natural Hazards
Journal of the International Society
for the Prevention and Mitigation of
Natural Hazards

ISSN 0921-030X
Volume 64
Number 2

Nat Hazards (2012) 64:983-997
DOI 10.1007/s11069-012-0216-3



Coastal Erosion & Inundation along the shore of the Densu Delta



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Densu Delta - West of Accra



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Coastal Erosion & Inundation along the shore of the Densu Delta

- Shoreline change analysis between 1975 and 2018 – DSAS 4.2.
- Coastal recession ranged between 0.1 -150m while accretion ranged between 1.6 – 16.6 m.

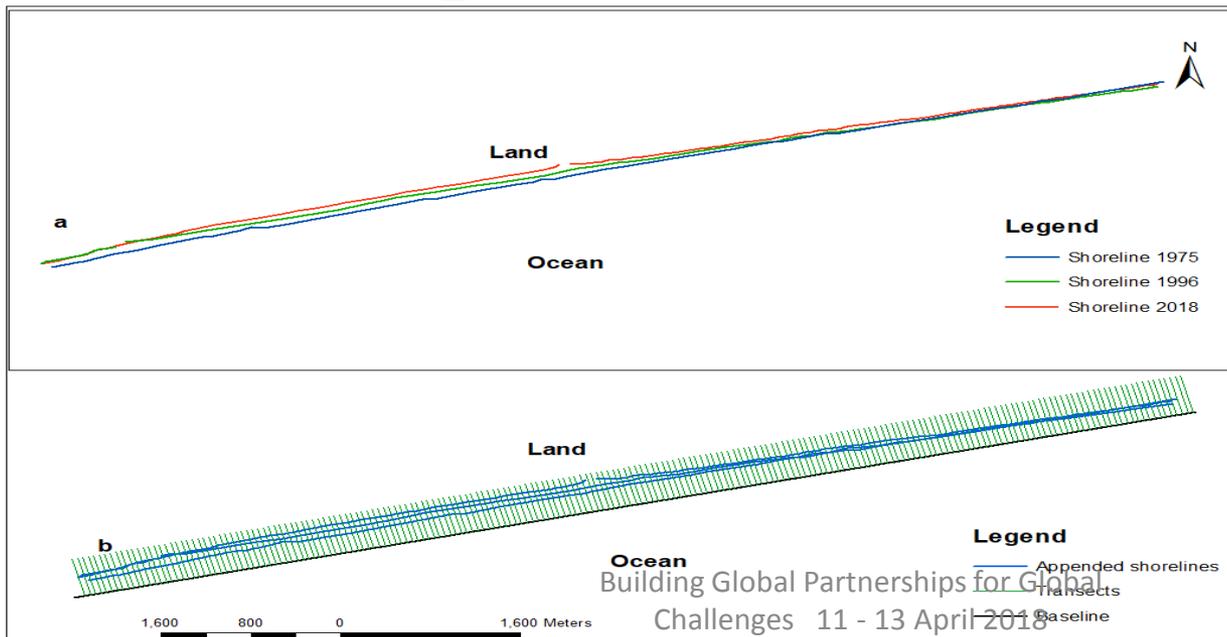


Fig. a) Digitized shorelines of 1975, 1996 and 2008.
b) Appended shorelines, transects and baseline for shoreline change calculation



Coastal Erosion & Inundation along the shore of the Densu Delta

- **Shoreline Recession**



Eroded coastline at Gbegbeyise

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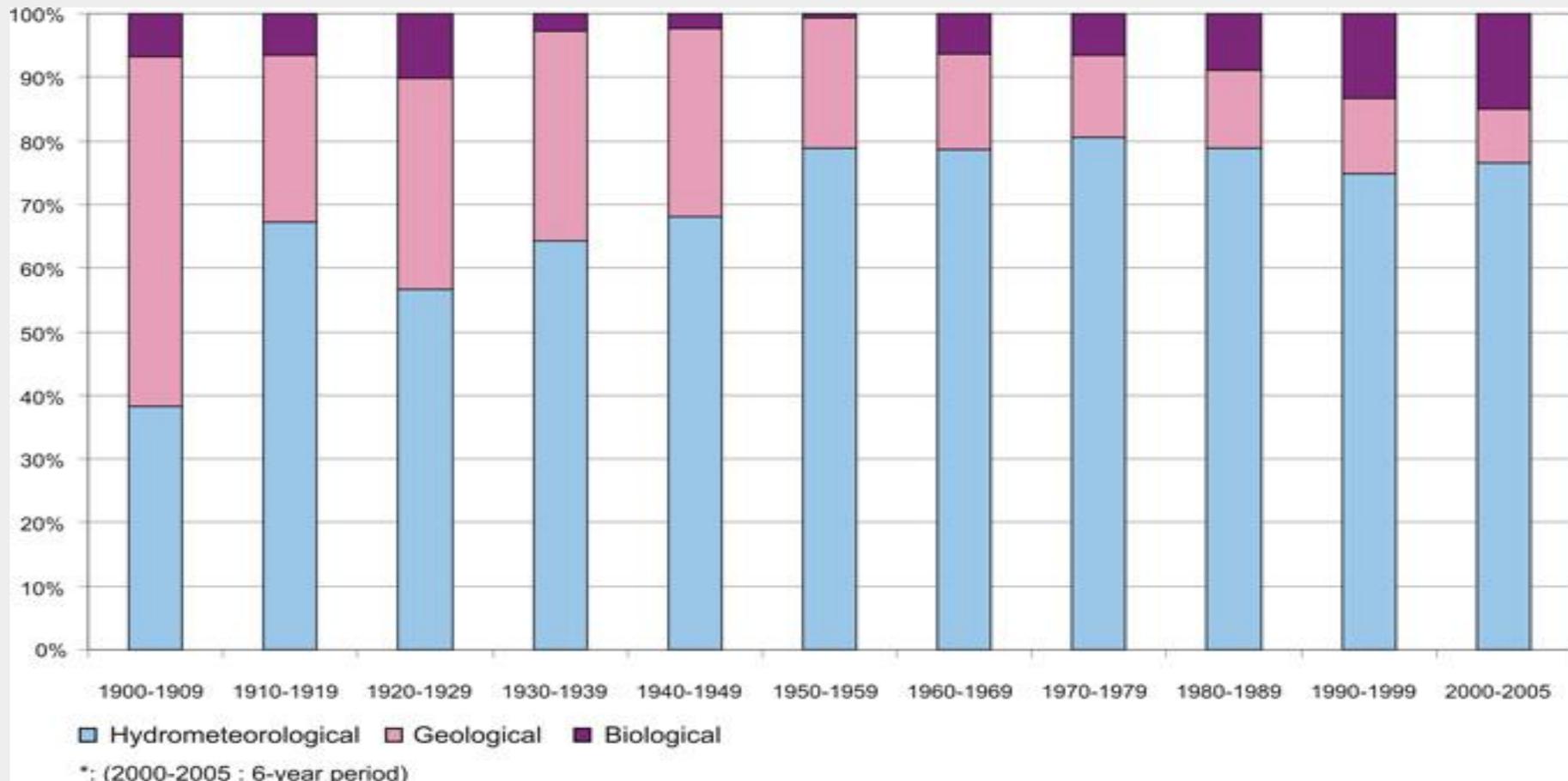
Hydro-meteorological Hazards of Ghana

Floods – inland flooding

- Inland flooding is the major hazard facing Ghana especially urban floods – informal settlements.
- Most towns and cities are prone to floods and in the cities virtually every rain causes floods in the informal settlements.

Hydro-meteorological Hazards of Ghana

Distribution in percentage of natural disasters:
(1900-2005), by decades



Hydro-meteorological Hazards of Ghana

Floods – inland flooding

Causes of inland floods:

- Climate change – storm intensity & frequency

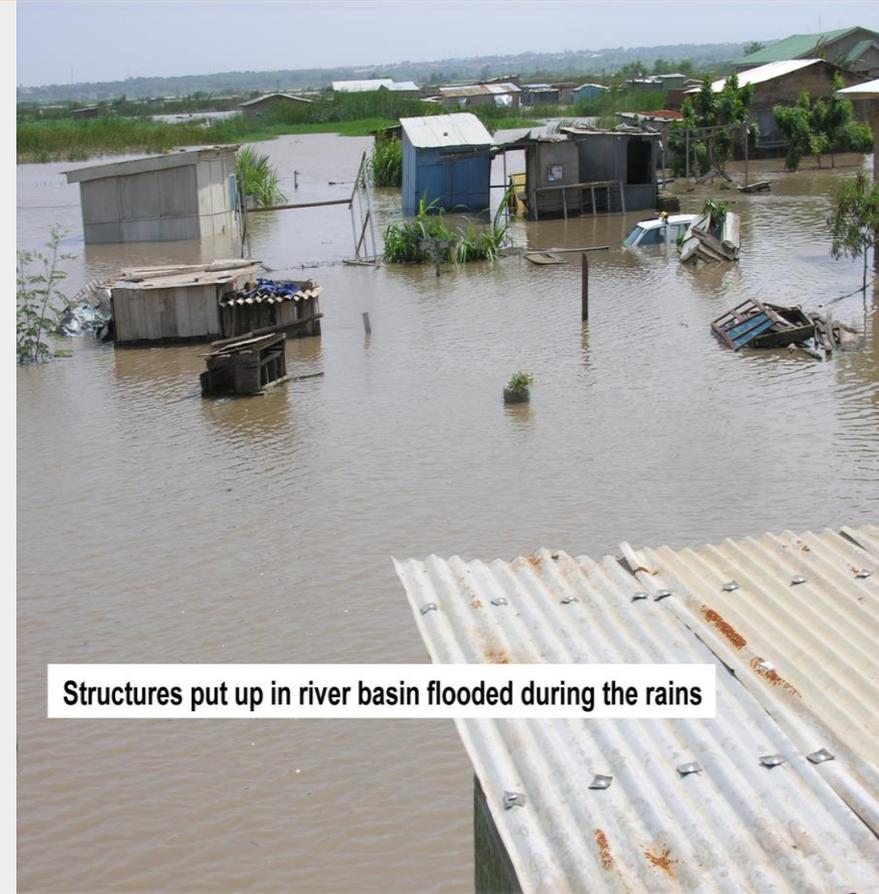


Hydro-meteorological Hazards of Ghana

Floods – inland flooding

Causes of inland floods:

- Urban growth/Urban Sprawl
 - occupation of floodplains
 - Reduction of infiltration from impervious surfaces

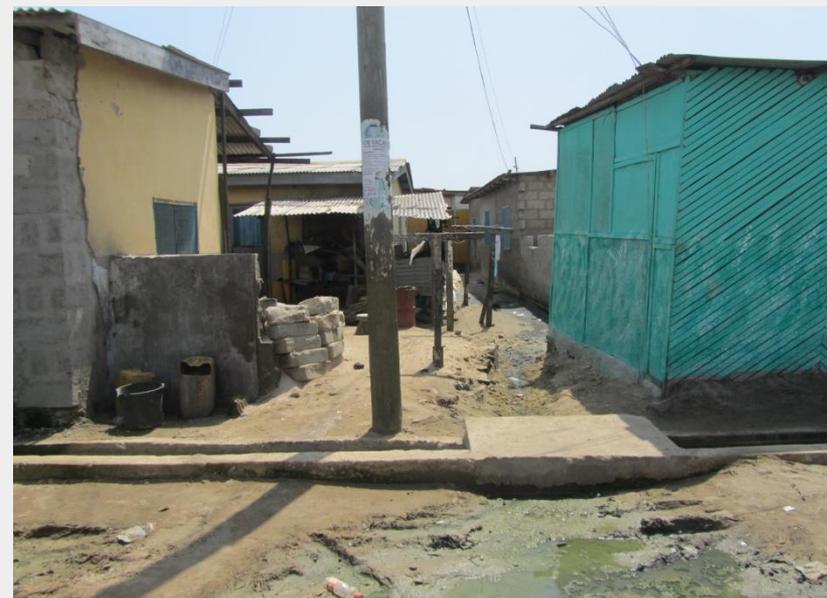


Hydro-meteorological Hazards of Ghana

Floods – inland flooding

Causes of inland floods:

- Lack of good drainage systems – informal settlements
- Poor waste management – particularly solid



Flood occurrence and impacts

Impacts include:

- Lost of lives and properties

Year	1989	1991	1995	2001	2007	2008
No. of people affected	2,800	2million	700,000	144,025	332,600	58,000

Year	1995	1999	2007
No. of people killed	145	52	56



Flood occurrence and impacts

Impacts include:

- Food in-security in the country side (destruction of farms and livestock)



Relief being distributed to flood victims

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Flood occurrence and impacts

Impacts include:

- Water pollution – waste into surface water bodies, disconnection of pipe lines
- Outbreak of epidemics e.g. cholera, dysentery – health hazards



Flood occurrence and impacts

Impacts include:

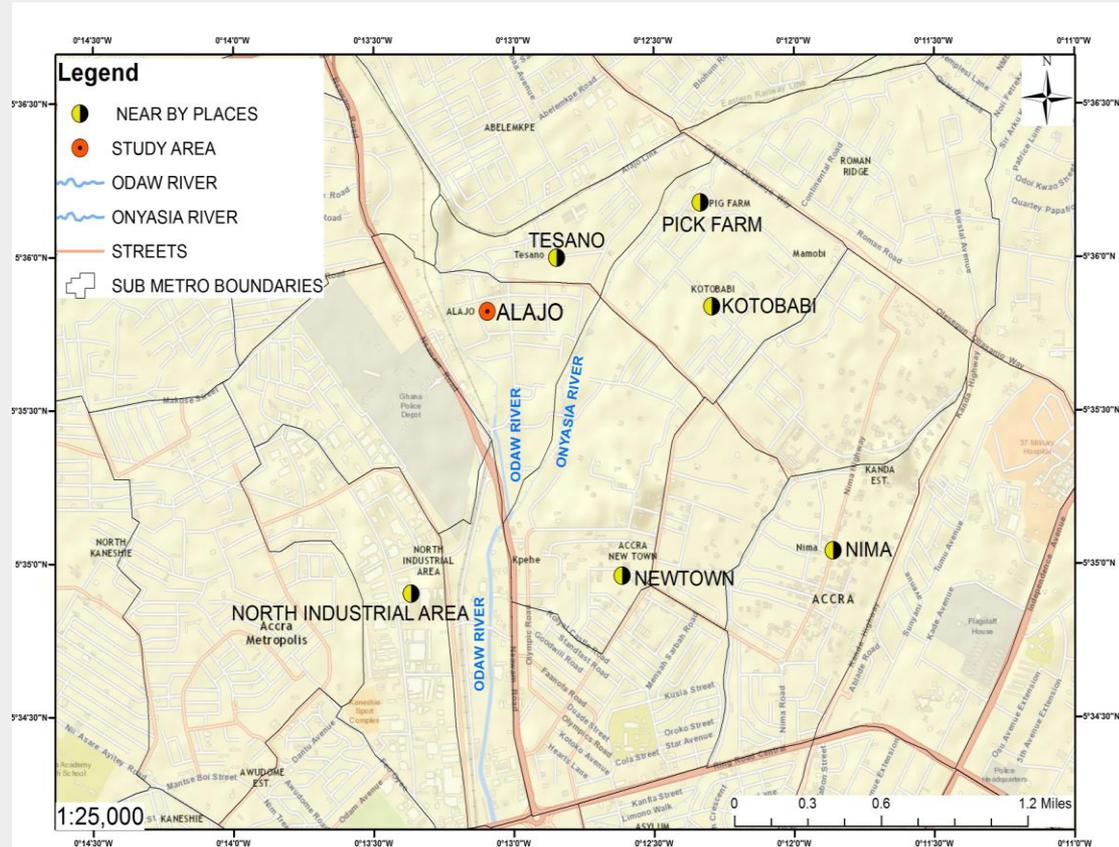
- Destruction of infrastructure both urban & in the hinterland – roads, bridges etc



Case study: Flooding in Alajo - Accra

Causes

- Situated in a floodplain of Odaw River



Case study: Flooding in Alajo - Accra

Causes

- Siltation of drains (reduce drains carry capacity) and clayey soils (reduce infiltration)



Case study: Flooding in Alajo - Accra

Causes

- Improper buildings layouts resulting in lack of drainage systems



Case study: Flooding in Alajo - Accra

Causes

- improper waste management and disposal-choked drains



Biological Hazards

- Pests and insects infestation (army worm, anthrax , African Swine fever, bird flu etc) – affects food security and income of farmers

The Way Forward

- Flood hazards assessment on riparian zones in the hinterland to investigate food security impacts
- Flood modelling and prediction
- Coastal erosion modelling
- To encourage data gathering, preparation of hazards/ risk maps and sensitization on natural hazards
- Inform national policies on hazards prevention & management

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