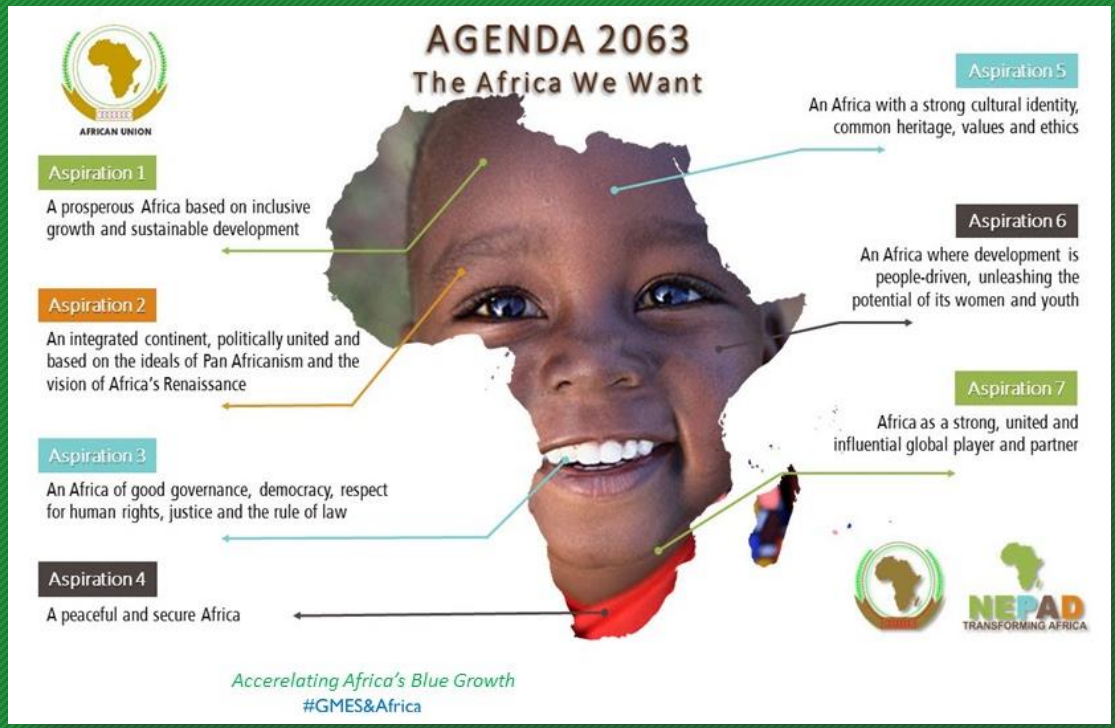
African Union

Space Applications for Sustainability on Earth



Meshack Kinyua

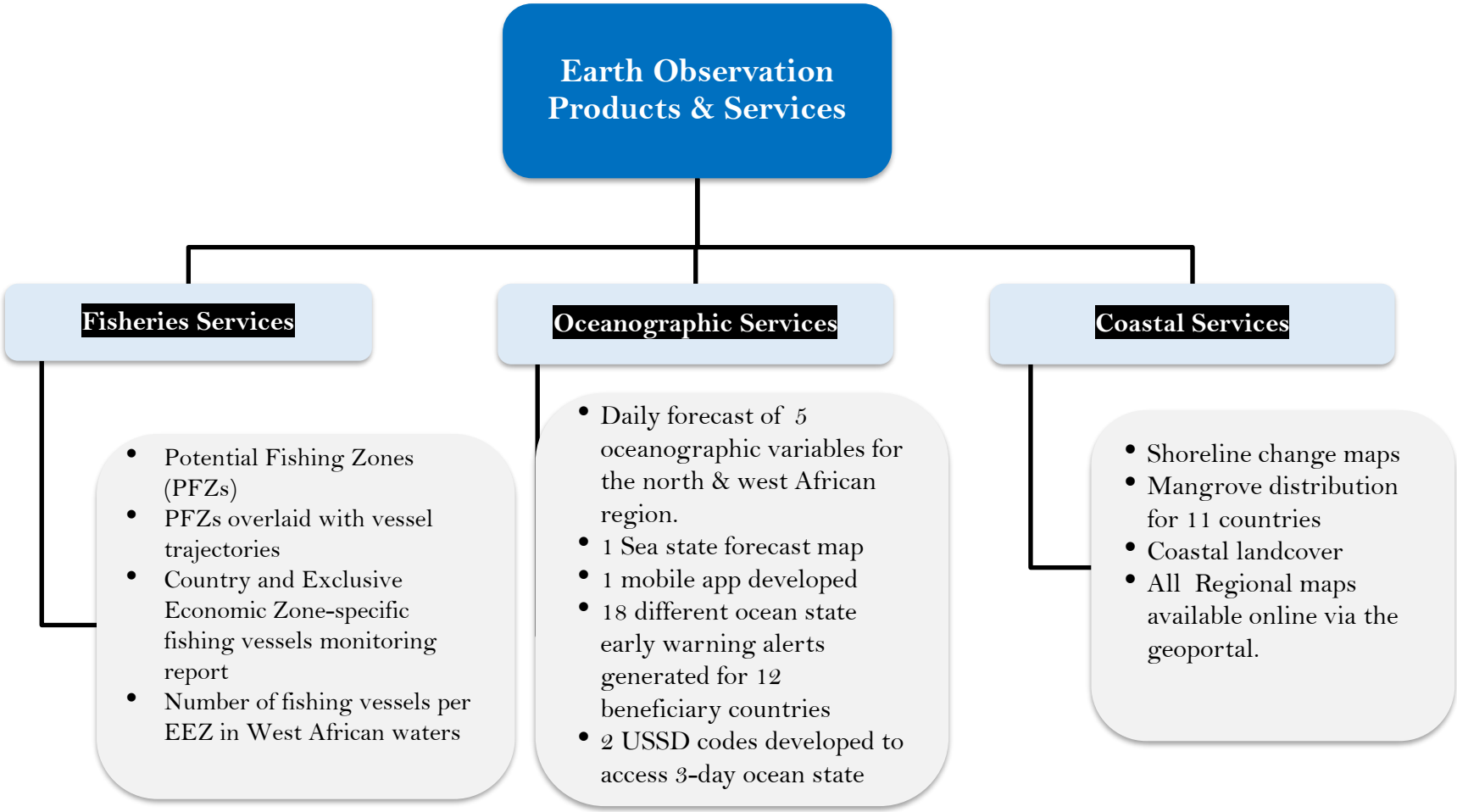
Capacity Lead-Space and Emerging Technologies

Case of GMES & Africa

Ocean & Marine Services

Water & Natural Resources (Land) Services

Ocean & Marine Services



Oceanographic Service

➘ Achievements

Regional Marine Forecast

Mobile Application (**GMES-UG**)

To access ocean state forecasts and fishing vessel information in **North** and **West** Africa

Available on **Android** and **iOS** phones.

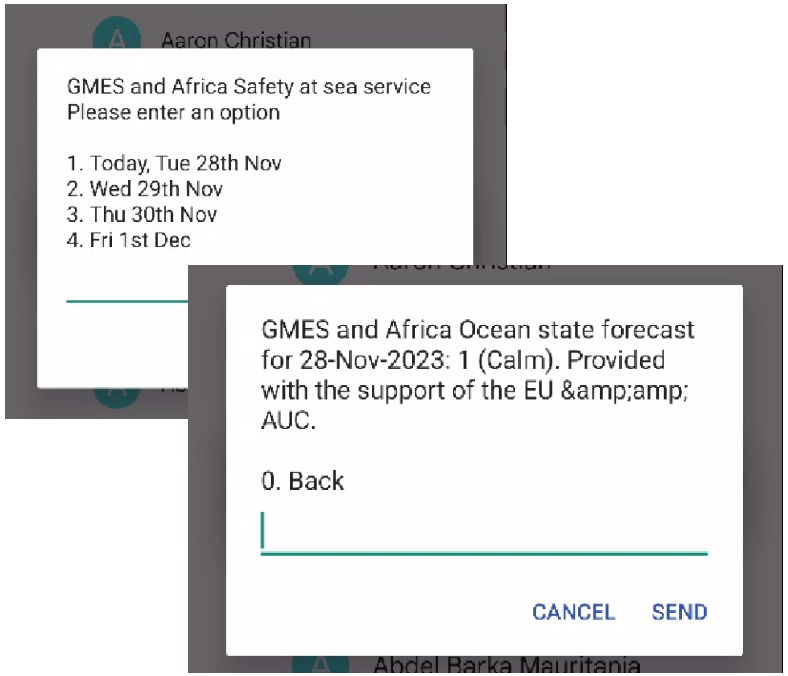
500 Users

18 Countries

Oceanographic Service

USSD short code to access forecast.
***920*88# for Ghana**
***348*87# for Nigeria**

16,071 unique users (Nov. 24, 2023)



About 3,500,000 fishers in West Africa, with an estimated fatality rate of **1000 per 100,000.**

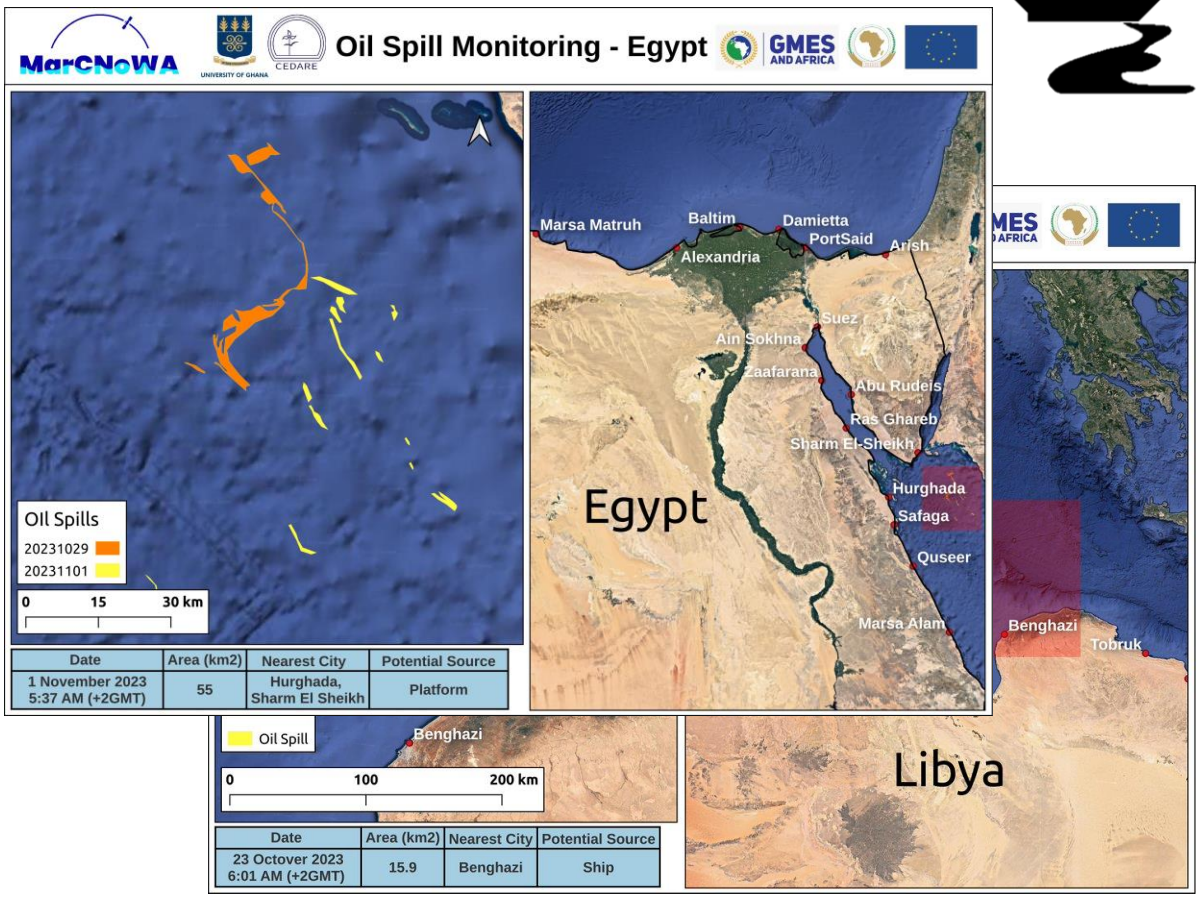
In Ghana, before the introduction of Safety at Sea Service (**2016**), the following were estimated for 2014 – 2015.

- Number of accidents: **168**
- Number of deaths: **52**
- Number of canoes damaged: **110**, mainly from storm surges, tidal waves

In 2022

- Number of accidents: **08** from tidal waves
- Number of deaths: **01**
- Number of canoes, nets and outdoor motors damaged: **75,** mainly from storm surges, tidal waves on land

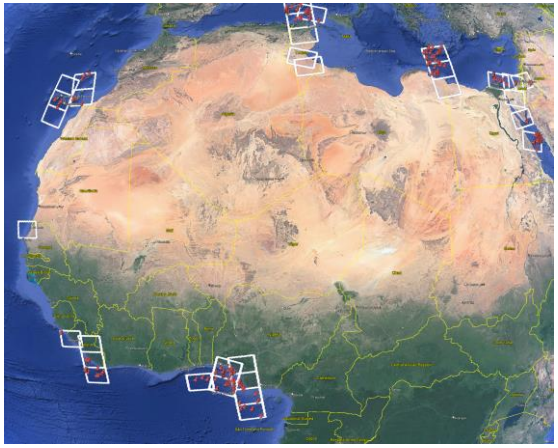
Oil Spill Service



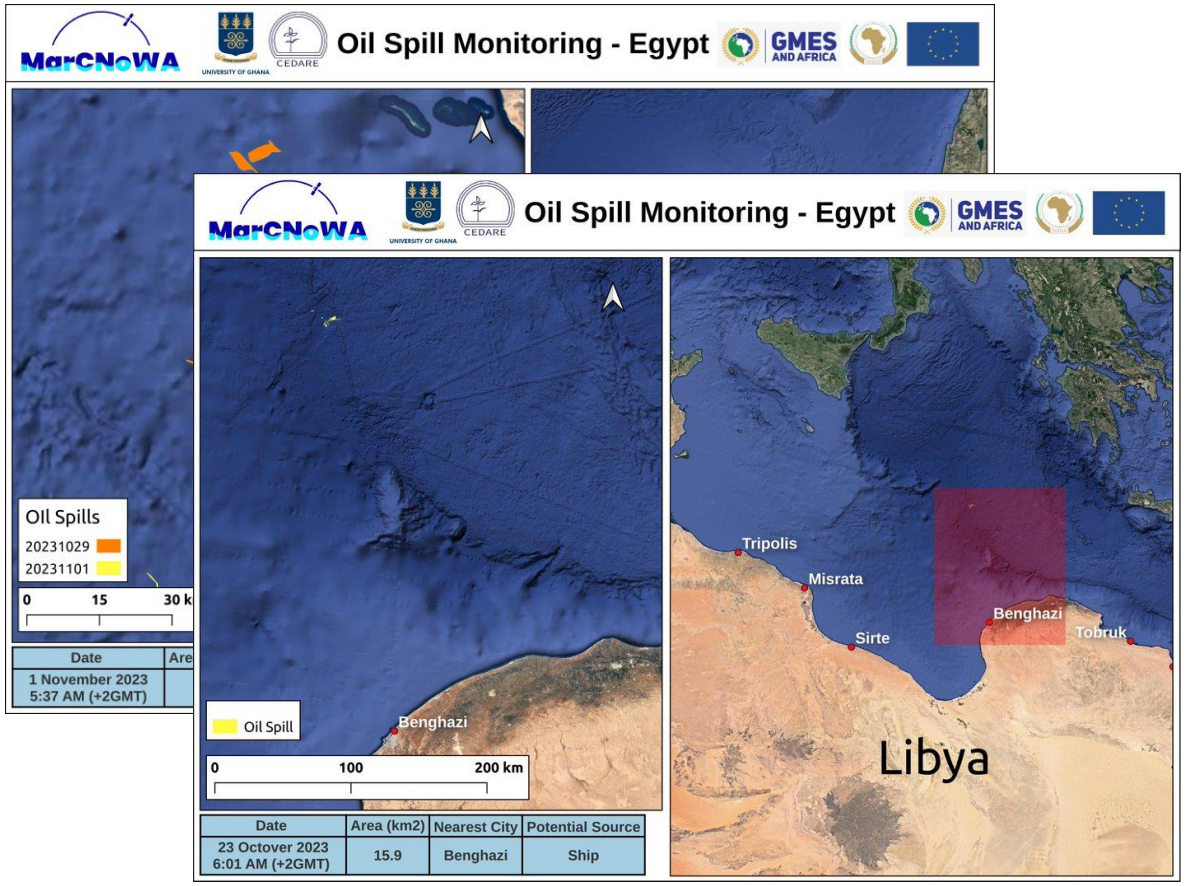
Since **March 2022 Egypt / Libya**

Total Number of potential **oil spills detected – 71 cases**

Total **area covered** - **2071.8 km²**



Oil Spill Service



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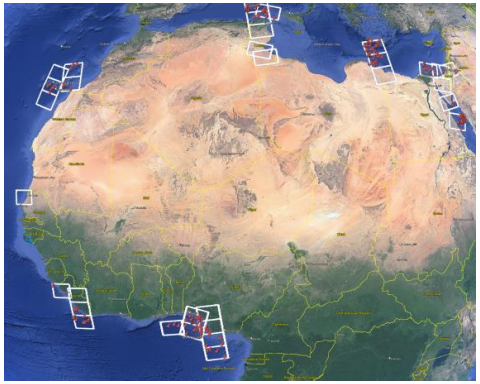

Ship Traffic Monitoring

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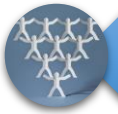
MARINE AND COASTAL OPERATIONS FOR SOUTHERN AFRICA AND THE INDIAN OCEAN

Phase 2

Marine and Maritime Service

Improve surveillance of vessels within **African oceans**



Enhance co-ordination for enforcement and policing of coasts and oceans

Identify and protect sensitive and unique **marine habitats and species**

Manage the limited human and financial resources to govern ocean resources and environment

Address high levels of Illegal, Unreported and Unregulated **(IUU) fishing activities**

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Ship Traffic Monitoring

GMES AND AFRICA

African Union

EUROPEAN UNION

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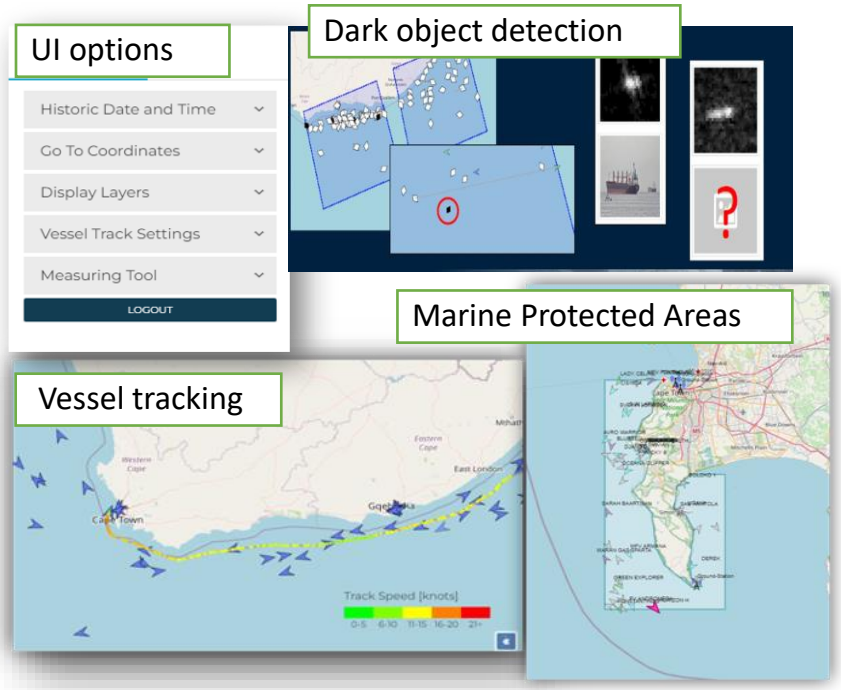
Marine and Maritime Service

- Interactive Web Viewer
- Vessel Detection
- Vessel Tracking
- Dark Target Detection



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Service Delivery Process

Marine and Maritime Service

Extended Data Footprint

- AIS data coverage extended
- SAR data coverage extended

Service Upgrades and Maintenance

- Service audit and stabilization
- Monitoring Tool Implemented
- System updated

Oil Spill Detection

- Inclusion of new regions planned for 2024

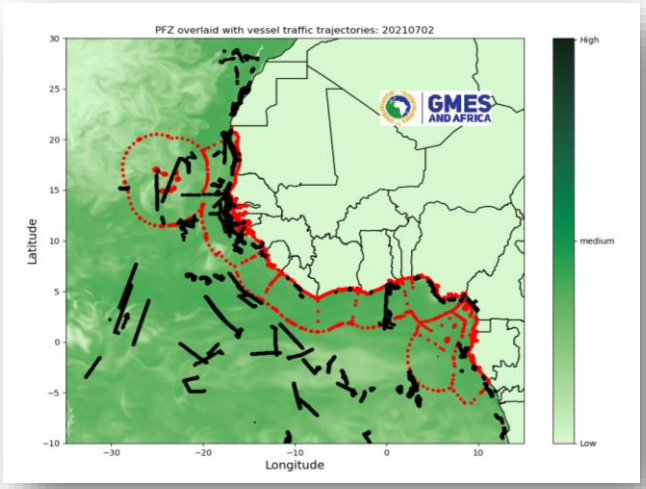
Additional Layers

- Sea Surface Temperature
- Chlorophyll
- Wind speed and direction
- Wave height
- Layer Legends planned for Q4

Data API Integration

- Marine Object API in development
- Creation of anonymized vessel objects
- Accessible to all decision support tools

Case of Potential Fishing Zone and Vessel Monitoring




```
Fishing vessels found within Cote d'Ivoire's EEZ:
==================================================
AVRA
EGALUZE
F/V GUEOTEC
F/V VIA AVENIR
P/VOLUNTEER
PANOFI PATH FINDER
SYDNEY SOFIA
Total number of fishing vessels within EEZ: 7

Fishing vessels found within Cape Verde's EEZ:
==================================================
ALESHKA
CROIX DU SUD 1
IVAN NORES
KORYO MARU NO38
MANUEL NORES
MONTECLARO
PATRICIA NORES
VILLA DE MARIN
VILLA NORES
Total number of fishing vessels within EEZ: 9
```

75 Recipients of service including Ministry of Fisheries, Monitoring, Control and Surveillance (MCS) Units, Regional Fisheries Bodies (SRFC & FCWC GoG)

Service has enhanced the visibility of F/V operating within the EEZ of The Gambia.

Enabled initiation of legal proceedings against fishing vessels that have engaged in violations.

Requires integration of the AIS into the legal documents pertaining to fisheries.

Results: Implemented a fishing ban commencing at the baseline and extending to 1 nautical mile, as well as a 6-month period of biological rest spanning from Bijol island to 2 nautical miles. **THE FISHERIES (AMENDMENT) REGULATIONS, 2019. The Gambia**

Fisheries Service

Fisheries and Aquaculture Service

50 - 60% of global catch originates from small-scale fisheries – mostly informal in nature – with much of the catch internationally traded

- Forecasting is vital - small vessels, fishing over reefs, limited comms
- Small-scale fishers typically lack access to accurate forecasting
- Data costs, TV & radio infrequency
- Red tides and water temps influence fishing

Small-scale fisheries support global food systems … but lack formal recognition, governance and access to critical supporting technologies

Fisheries Service: Integrating Satellite

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Fisheries and Aquaculture Service

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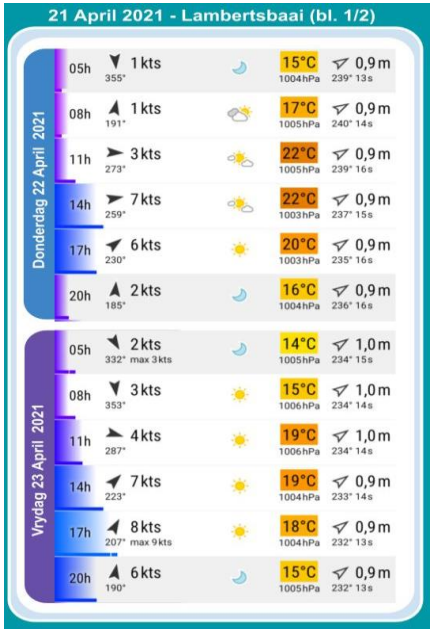

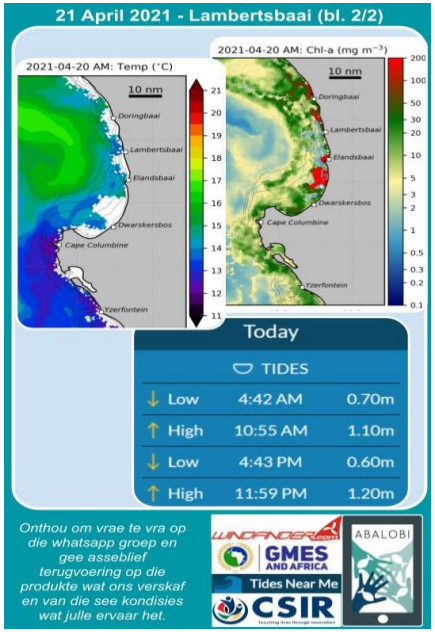

- Wind, weather and air temperatures from GFS (low-res), NAM (hi-res) or WRF (hi-res)
- Waves from WW3, Tides from xTide
- SST from Sentinel-3 SLSTR and Chlorophyll-a from Sentinel-3 OLCI
- Display format designed in consultation with fishers, distributed via WhatsApp

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Fisheries Service: Integrating Satellite data

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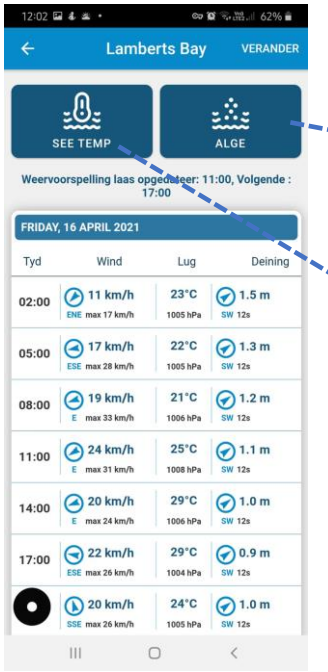
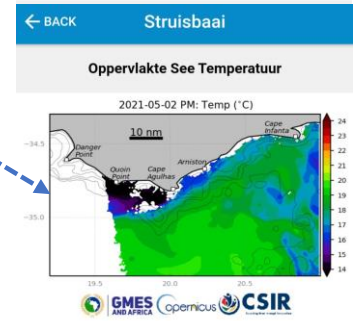
Fisheries and Aquaculture Service



Multiple languages

Full week forecast

Update every 3 hours



Low data draw

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NSRI National Sea Rescue Institute

ABALOBI

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Milestones

Fisheries and Aquaculture Service

- Successful integration of Copernicus data into app facilitating fisher safety and deployment decision making in two key communities (West and South Coast)
- Producing a record of artisanal fisher effort and catch
- Fishers' feedback calls for expansion of the service to new SA communities (west and south coasts Q4 2023, east coast in 2024)
- Increase in revenue because of improved market access through ABALOBI App allow for greater community involvement

Sea Rescue Service

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Marine and Maritime Service

- Coastal communities utilize ocean resources to provide a livelihood. The ocean also attracts tourists for recreational activities.
- Shipping and large cargo vessels in transit regional EEZs
- *Reports of people and vessels in difficulty in coastal waters require rapid, informed response to preserve life and recover stricken vessels.*
- *Requirement for information to recreational and operational stakeholders about expected conditions at sea*

SOUTH AFRICA

Pensioner drowns near Hermanus after heavy rains

SOUTH AFRICA

Fisherman sustains injury in near-drowning on KZN north coast

SOUTH AFRICA

Mystery fishing trawler adrift between Mozambique and SA

29 July 2019 - 11:32

News | Armed Groups

Dozens feared drowned after boat capsizes off Mozambique

Last week's incident came to light on Monday after survivors managed to reach Pemba beach.

SAAF again comes to the rescue of seafarers

The South African Air Force (SAAF) helped rescue two seafarers in two separate incidents on the same day last week during operations off South Africa's east coast.

The first incident began in the evening of 2 February when National Sea Rescue Institute (NSRI) Richards Bay duty crew were placed on alert to prepare to patient evacuate a 29 year old male crewman, from Syria, injured onboard a bulk carrier that was heading towards Richards Bay.

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NATIONAL SEA RESCUE INSTITUTE

ABALOBI

UNIVERSIDADE EDUARDO MONDLANE

WIOMSA Coasts Ocean and People

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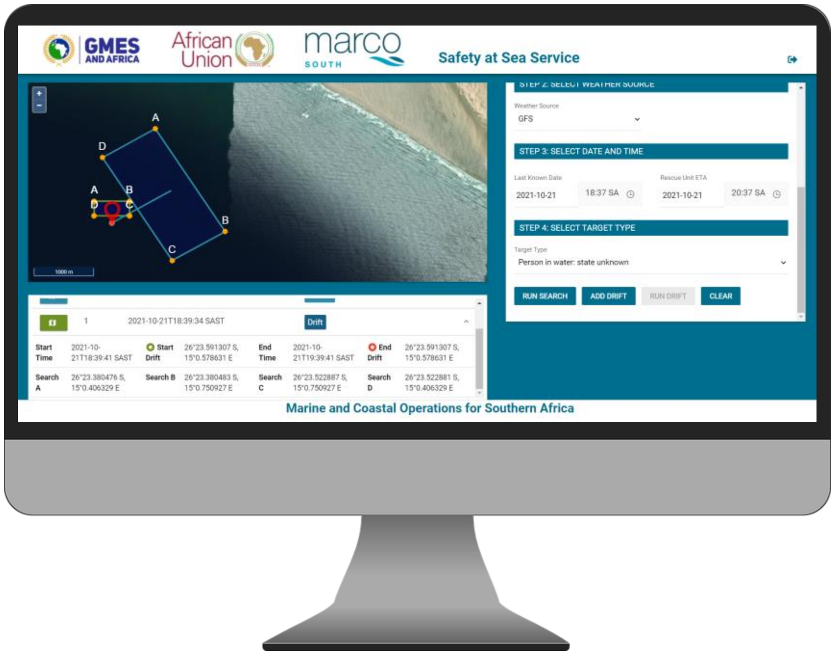
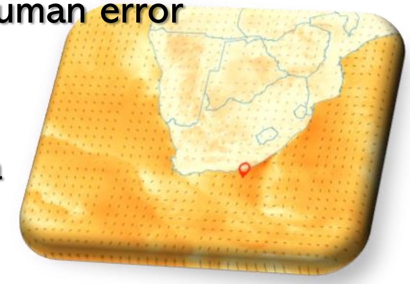
Marine and Maritime Service

Sea Rescue



- We support sea rescue officials by providing real time calculations and locations of objects or people lost at sea
- Web portal design produced in consultation with NSRI
- Digitized drift calculations and object specific coefficients routinely used by NSRI to improve response time and eliminate human error

Global forecasting products with a ¼ degree spatial resolution provided at a 3 to 6h latency to public users



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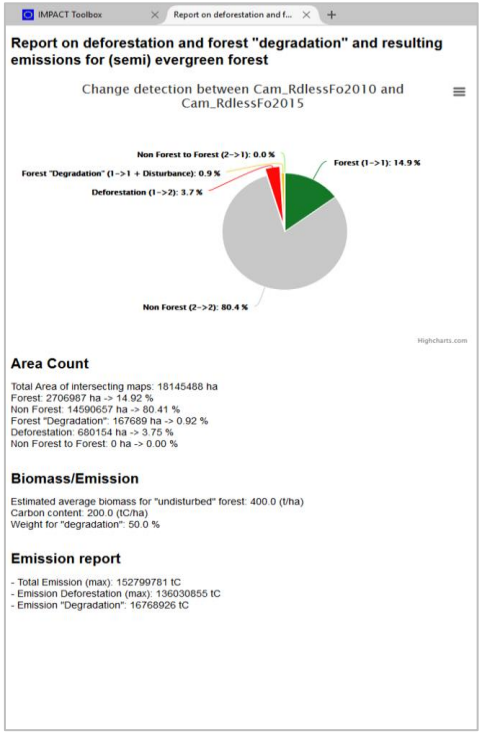
Land Services

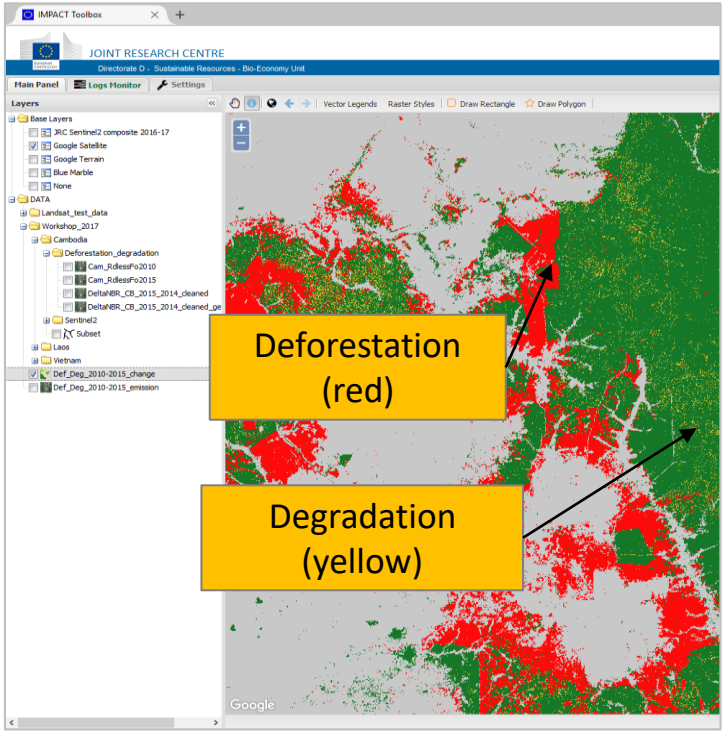
Carbon Emissions reporting tools

JRC, ICPAC, TFS and KFS
Pilots sites in TZ and KE
Collaboration with CLIMSA

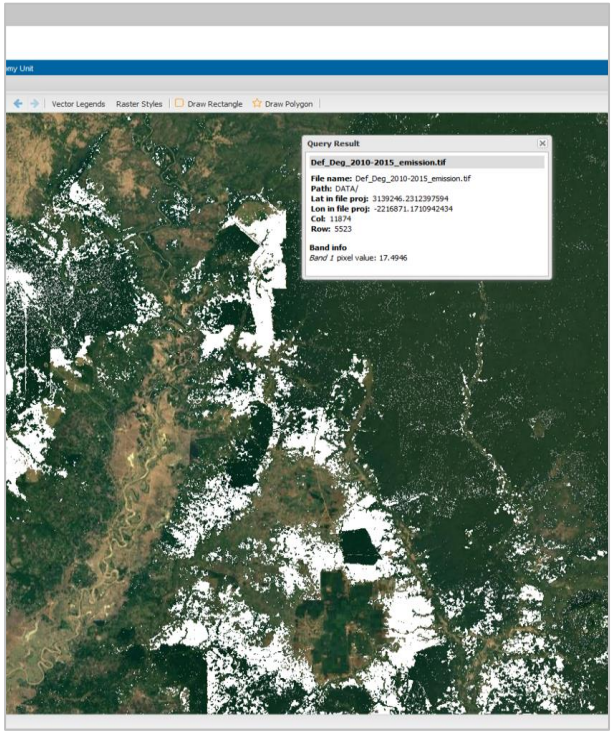
Stats



Map of deforestation and degradation

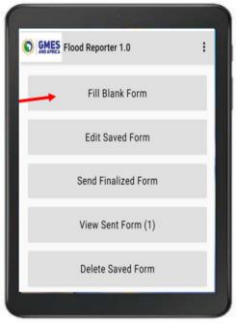


Map of emissions

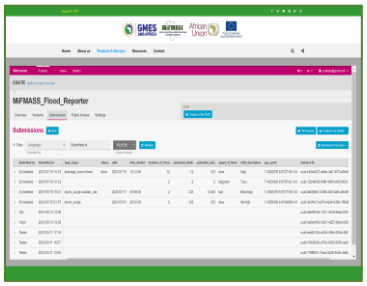


GDZHIAO Flood Services

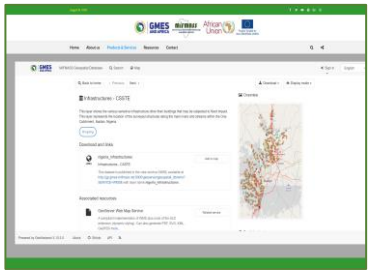
Flood event database



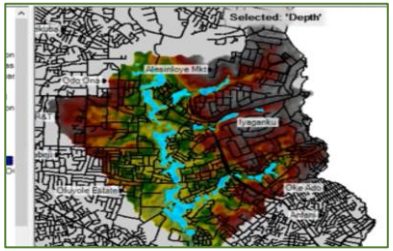
Flood reporter



Flood assesment & mgt



Geospatial database



Flood forecasting

Integrated Electronic Flood Services

Phase 2 goals: **Consolidation, Operalisation and scaling the flood services to many more countries**

Flood-reporter: Leveraging Crowd-sourcing

GMES AND AFRICA Phase 2

- Flagship product
- Data collectors
- Higher cost of mobilizin data collection
- Trained professionals:
  DMOs & mapping institutions

- Crowd-sourced flood monitoring
- Focus is on the citizens as data collectors
- Much higher resolution of data
- Lesser cost of flood data collection
- Wider spread

Why the crowd-sourcing approach

It supports real-time monitoring of flood events which can trigger rapid response for mitigation

Promoting community active participation in flood monitoring thereby fostering a sense of involvement in a shared responsibility

Fosters community engagement and empowerment towards flood resilience

Leverages the pervasiveness of citizens' mobile devices in the community

Aids better flood impact/damage assesment; better understanding of flood pattern, intensity - these can enhance flood modeling and early warning services

Enables scientific researches towards innovative flood mitigation strategies through combine efforts of the citizens and experts.

Fluvial Navigation Service in Congo Basin

Congo Basin is now the “Earth’s first lung”; with 204 millions ha of forests (5,3 millions km2); 26% of world’s inundated forests (46% of the Congo basin), 2nd world inundated forest after the Amazon;

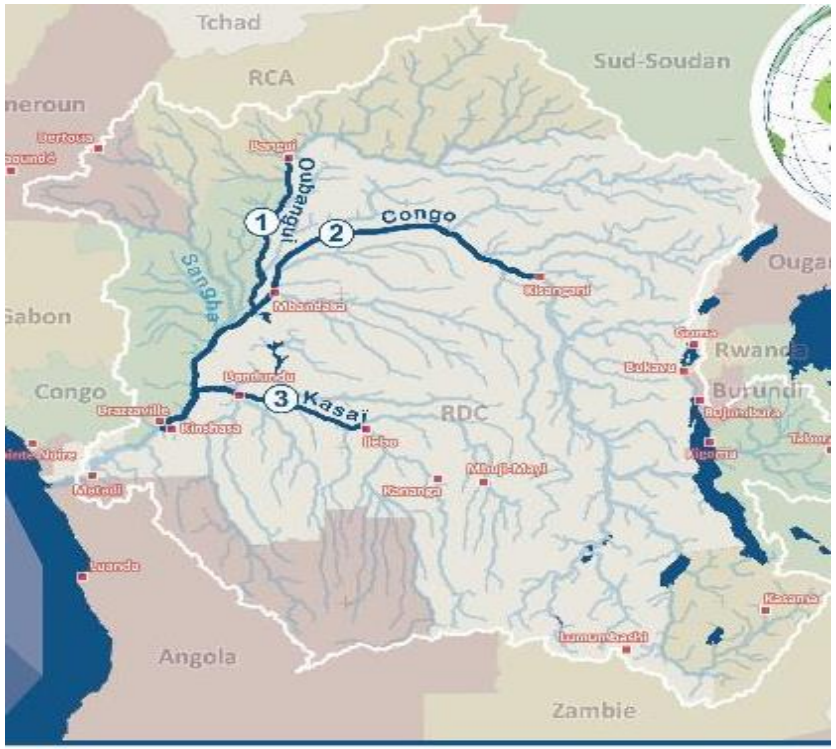
25,000 Km navigable waterways is a key driver for blue economy in the central African region mainly for transportation;

Enormous hydropower potentials estimated to 150 000 MW of which 44 000 MW located at Inga site enough to power Africa;

Fluvial Navigation Service in Congo Basin

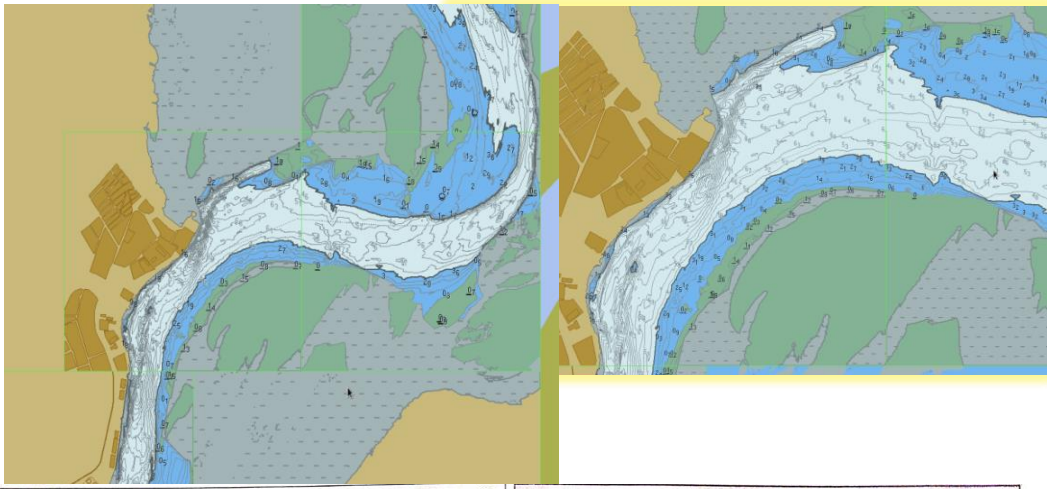
River transport

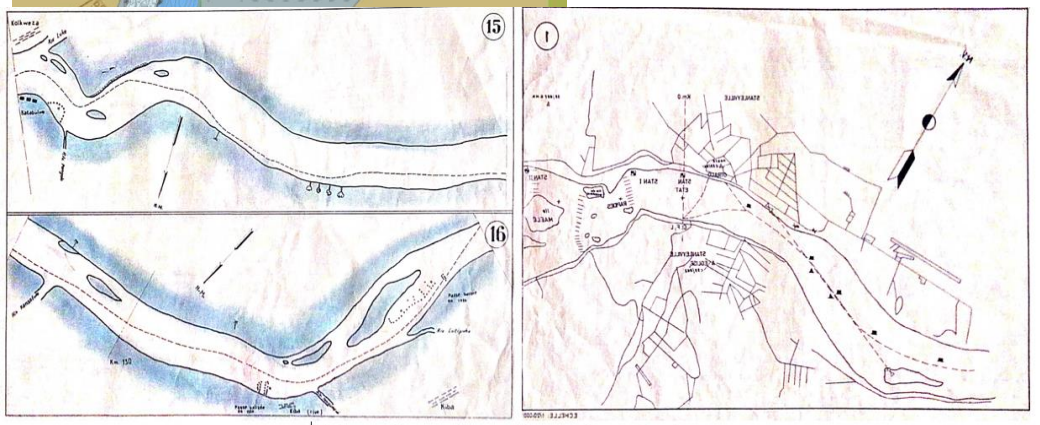
- More than 2 Mio T/ year
- More than 2,500 River vessels
- 10 times cheaper
- Main mode of transportation



es navigables dans le Bassin du Congo

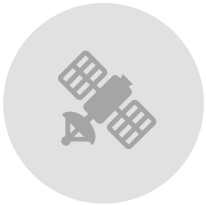
Fluvial Navigation GeoService





Calque des anciens albums de navigation

Challenges



Challenges with integrating multi-core in-situ data with satellite observations

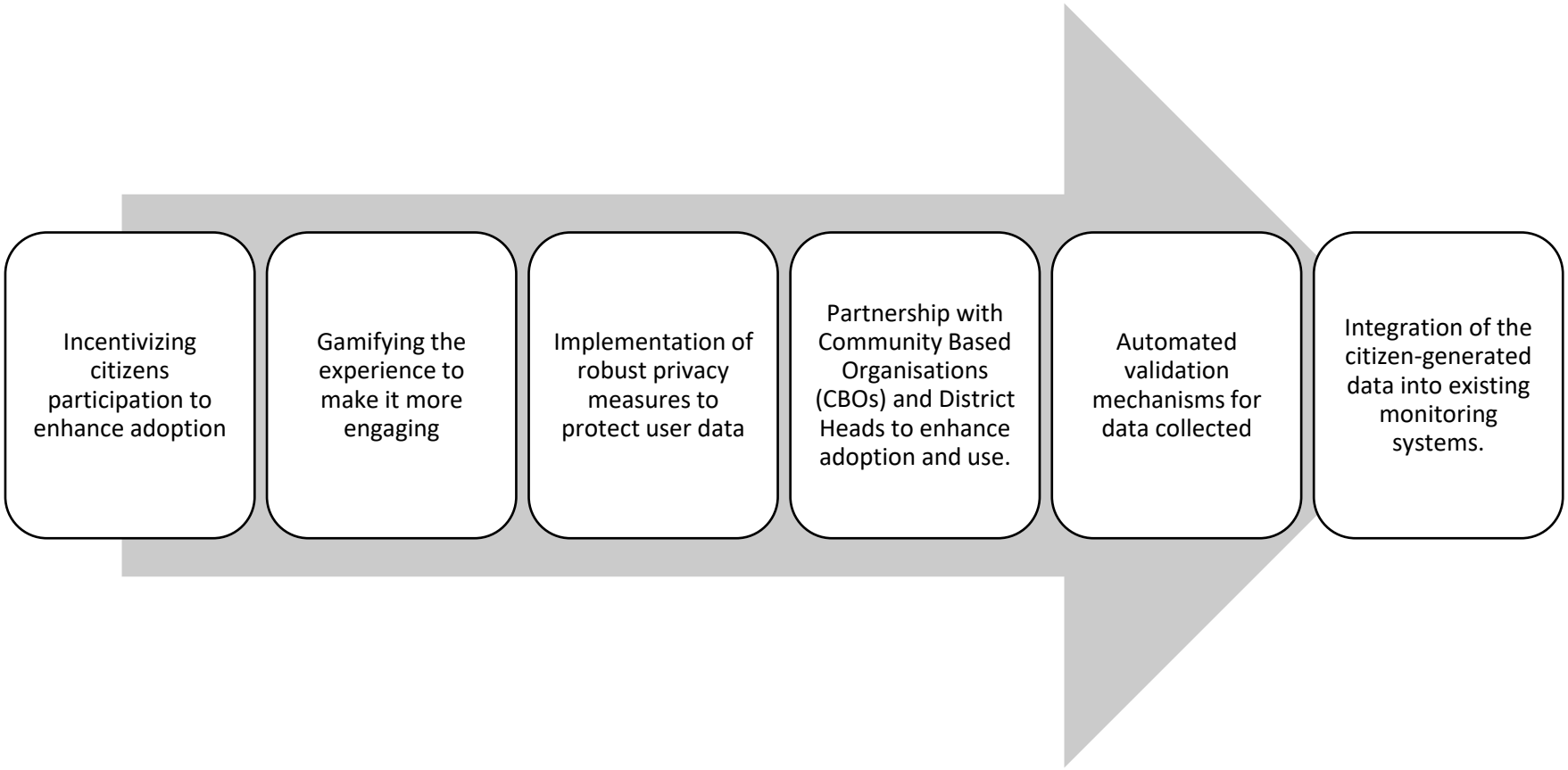
Difficulty in obtaining USSD codes in most countries for SMS services

Limited penetration of service beyond National focal point institutions

Beneficiaries not effectively communicating service needs

Limited engagement of users on some services since main information outlet (geoportal) is being upgraded

↘ Ways forward



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Thank You