

RV Mtafiti scientific strategy for sustainable ocean research



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The Vessel

- **Details of RV Mtafiti and its operational cost:**
 - **Length Overall = 55.6 m**
 - **Beam = 9.0 m**
 - **Draught = 3.65 m**
 - **Power = 1192 KW**
 - **2 engines of 750.080 A**
 - **Maximum speed = 14.5 knots**
 - **Crew size = 47**

Introduction -Why and how KMFRI got to RV Mtafiti

- Prof Mees made a private visit to Kenya, and visited Mombasa with family.
- Meeting at the Hotel (Voyager???) and later at KMFRI. Paid courtesy to Dr. Kazungu, then Director KMFRI.
- Agreed on two things:
 - Draft and share an MOU btwin KMFRI and VLIZ.
 - Possibility to give RV Zeeleeuw to KMFRI.
 - KMFRI to participate at the VLIZ Young Marine Scientists Day (YMSD) on 15 Feb 2013 at Bruges, Belgium.

Introduction - Important steps made

- The KMFRI – VLIZ signed on 19th October 2012.
- KMFRI Delegation of Dr. Ruwa, Dr. Bosire, Mr. Mwanthi, and Dr. Wakwabi to Oostende on 23rd to 27th January, 2012. Discussed progress and priority areas for the signed MOU.
- First visit and view of the RV Zeeleeuw.

Introduction - Photo at Oostende 27 Jan 2012.



Introduction -VLIZ - YMSD

- Dr. Wakwabi, Mr. Emmanuel Mbaru and Mr. Horrace Onyango Owiti of KMFRI participated at the VLIZ - YMSD on 15th Feb 2013.
- The first partnership meeting held on 18th to 20th Feb 2013 at VLIZ Office, Oostende and discussed progress of the MOU and the possibility for KMFRO to take over the RV Zeeleeuw.
- Paid visit to RV Zeeleeuw.

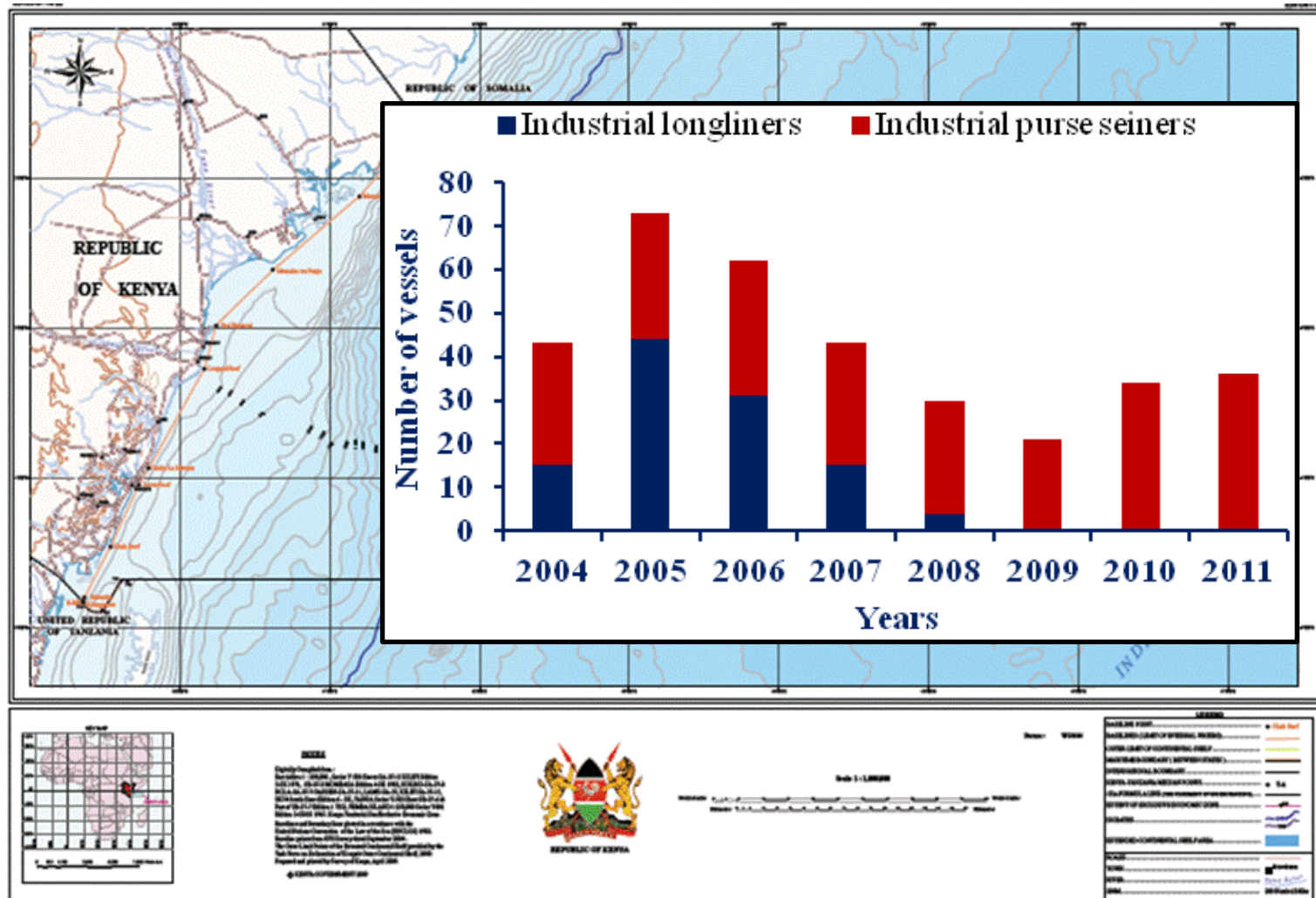
Introduction - Commissioning RV Mtafiti for National Oceanography and Fisheries Research.

- Kenya Government Delegation of Principal Secretaries (Fisheries, Treasury and Defense) including Director KMFRI and Kenya Navy Officers travelled to Belgium to confirm the availability and status of RV Zeeleeuw.
- Kenya Government provided Budget and crew (of the Kenya Navy) to service / repair the vessel and sail her to Mombasa.
- The RV Zeeleeuw is renamed RV Mtafiti before departing Oostende for Mombasa.
- His Excellency Uhuru Kenyatta, the President of the Republic of Kenya launched RV Mtafiti for National Research in the Kenyan Territorial and EEZ Waters.

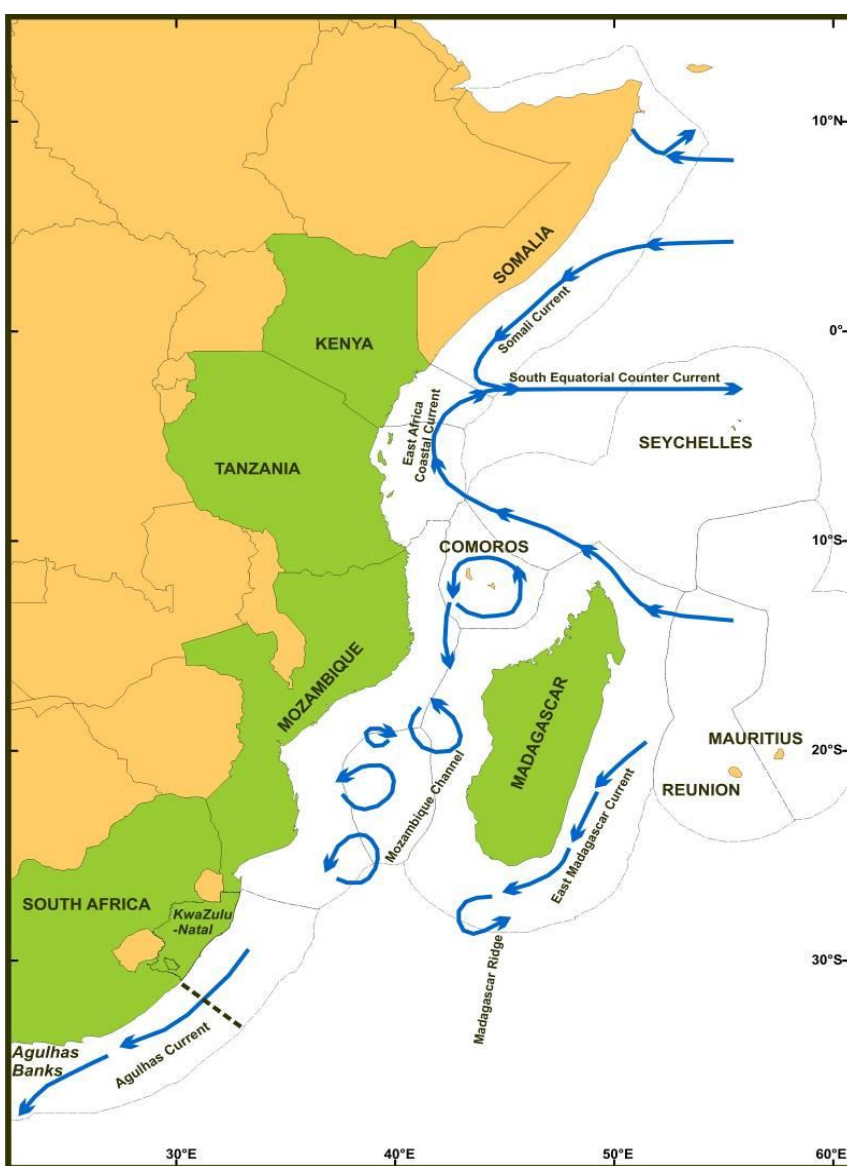
Introduction - Vision and Mission for RV Mtafiti

- An excellent research vessel for undertaking National and Regional Oceanographic and Fisheries surveys to enhance management of coastal and marine resources and support sustainable livelihoods.
- To Undertake Research and Resource Surveillances in the Kenya and WIO waters and ensure sustainable exploitation and security of the fisheries and other marine resources.

Cognizance of the marine zones: Internal waters, Territorial waters, Contiguous zone, Archipelagic waters and the Exclusive Economic Zone (EEZ) under the Geneva Convention and United Nations Convention on the Law of the Sea (UNCLOS)

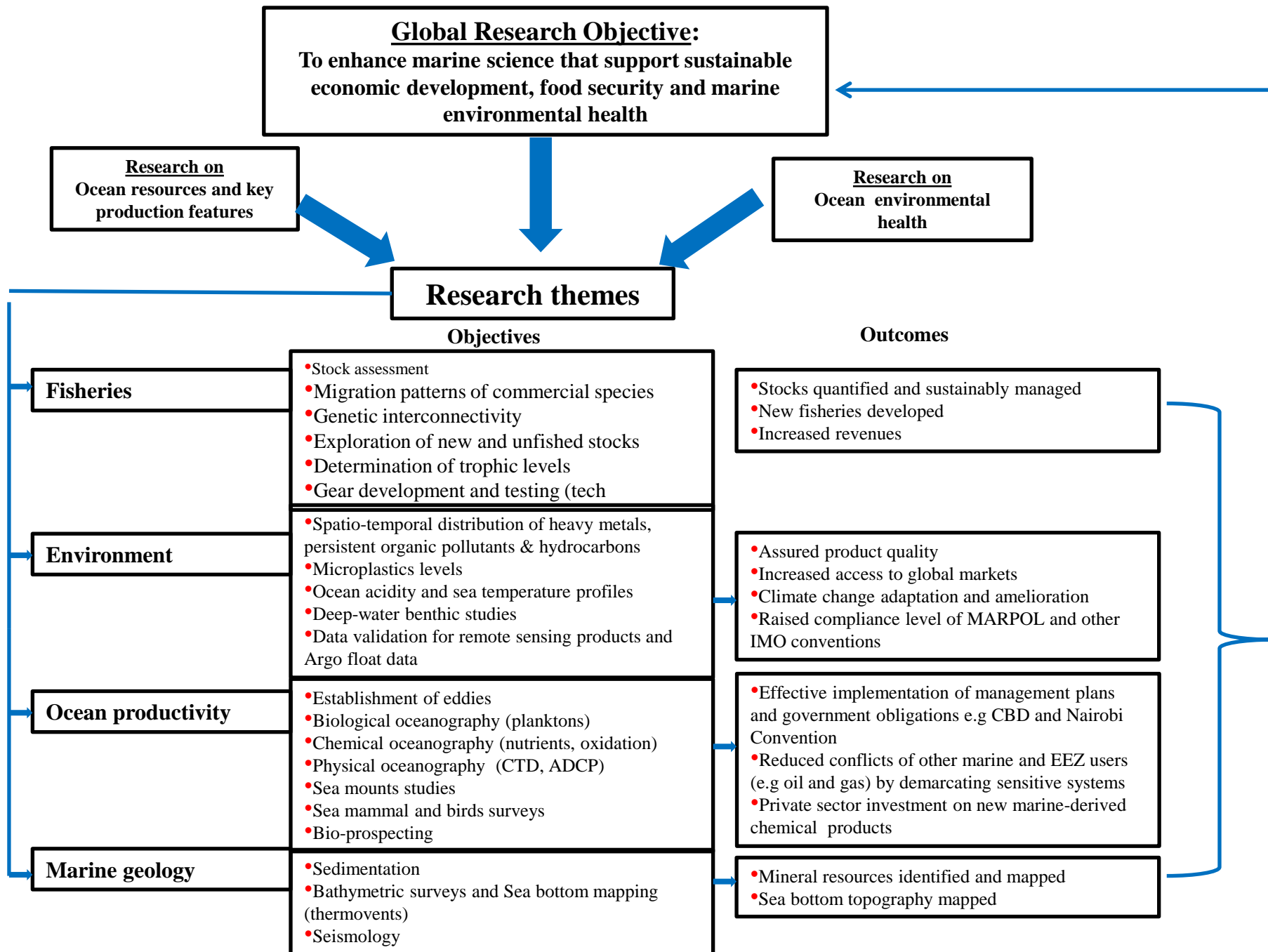


Dominant off-shore currents.



- Gives the potential of the territorial waters and the EEZ in terms of fisheries production 150 000 – 300 000 MT annually.
- Potential of USD 150 Million (KES 12 Billion) annually.
- Kenya's EEZ considered second most productive for tuna fishery after Somalia

RV Mtafiti Global Research Objective and Thematic areas.



RV Mtafiti Research Objective and Research Themes cont.

Fisheries

- **The importance of marine fisheries: Economic and food security**
- **The need to carry out stock assessment for management and to increase investment**
- **Offshore fisheries in territorial waters and EEZ have not been studied – Straddling and migratory stocks**
- **There is little offshore fisheries data in Kenya and the WIO region at large**

RV Mtafiti Global Research Objective and Research Themes cont.

Ocean Environment

- **Vulnerability of the world oceans to anthropogenic sources of pollutants:**
 - **Upstream agriculture**
 - **Sea transport**
 - **Domestic effluents/urbanization**
 - **Industrialization**
- **Emerging pollutants such as plastics are non-biodegradable**
- **Inshore marine waters have been relatively studied but offshore marine environment is barely known.**

RV Mtafiti Global Research Objective and Research Themes cont.

Ocean Productivity

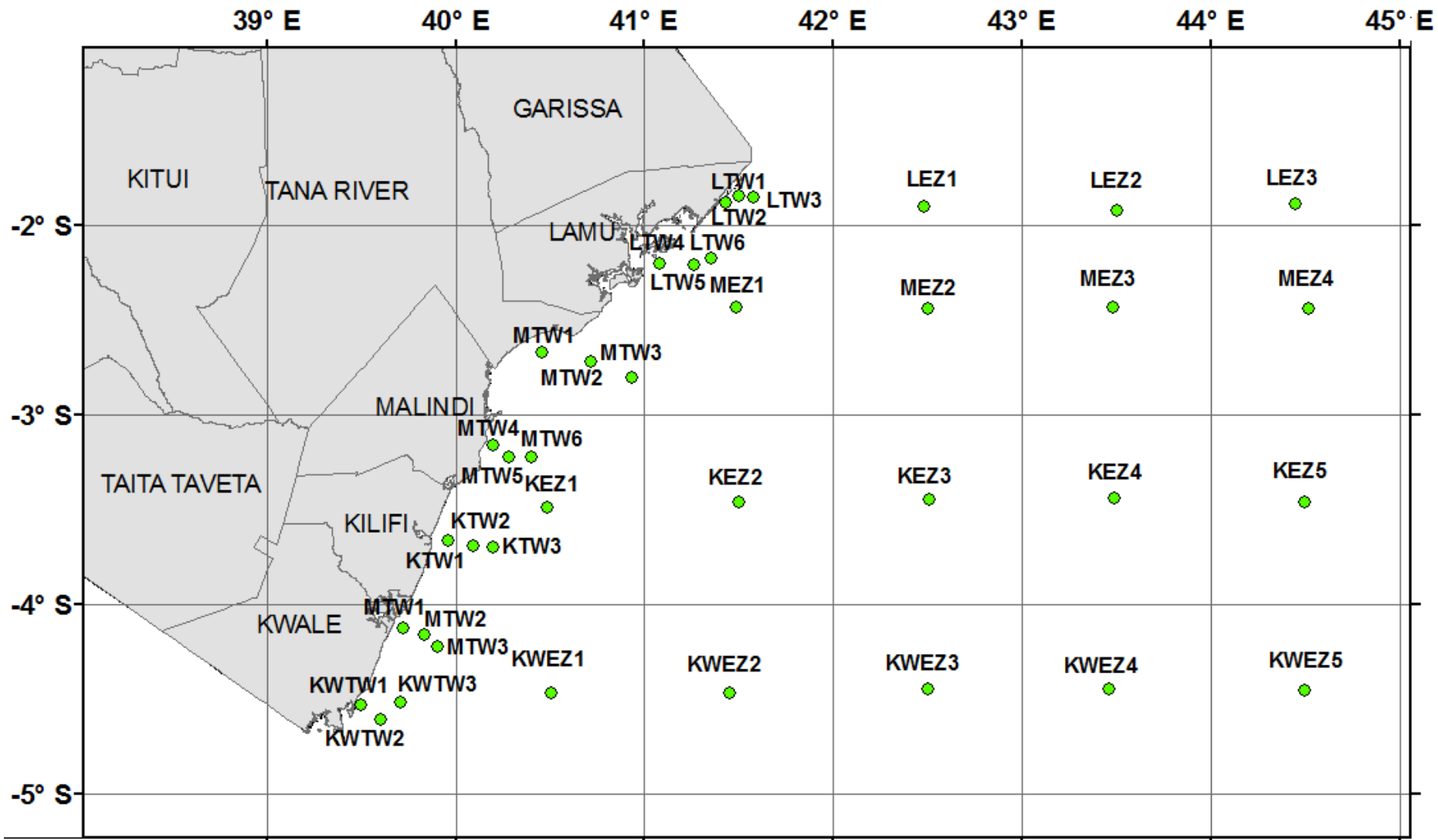
- **Ocean productivity is affected by nitrogen and the monsoons**
- **The importance of plankton in the food web and energy transfer**
- **Inshore marine areas of the north and south coasts have been relatively studied compared to the offshore waters**

RV Mtafiti Global Research Objective and Research Themes cont.

Marine geology

- **The extent of sedimentation research in Kenyan marine environment**
- **The importance of marine geological mapping in the discovery of ecosystems and marine resources**
- **The importance of bathymetric data for habitat characterization**

General Cruise Plan



Cruise plan

County	Territorial waters			County	EEZ Waters		
	Station	Long	Latitude		Station	Long	Latitude
LAMU	LTW1	41.416	-1.907	LAMU	LEZ1	42.482	-1.872
	LTW2	41.504	-1.8406		LEZ2	43.422	-1.872
	LTW3	41.569	-1.865		LEZ3	44.468	-1.872
	LTW4	41.071	-2.21	MALIN DI	MEZ1	41.475	-2.44
	LTW5	41.262	-2.21		MEZ2	42.502	-2.44
	LTW6	41.353	-2.167		MEZ3	43.48	-2.44

Cruise plan

MALINDI	MTW1	40.455	-2.667		MEZ4	44.517	-2.44
	MTW2	40.718	-2.727	KILLIFI	KEZ1	40.487	-2.486
	MTW3	40.934	-2.807		KEZ2	41.494	-3.457
	MTW4	40.207	-3.173		KEZ3	42.512	-3.447
	MTW5	40.266	-3.243		KEZ4	43.49	-3.437
	MTW6	40.401	-3.227		KEZ5	44.498	-3.457
KILIFI	KTW1	39.959	-3.668	KWALE	KWEZ1	40.506	-4.465
	KTW2	40.093	-3.69		KWEZ2	41.455	-4.426
	KTW3	40.183	-3.695		KWEZ3	42.512	-4.465

Cruise plan

	Territorial waters				EEZ Waters		
MOMB ASA	MTW1	39.728	-4.125	MOMB ASA	KWEZ4	43.461	-4.445
	MTW2	39.838	-4.16		KWEZ5	44.498	-4.455
	MTW3	39.908	-4.21				
KWAL E	KWTW 1	39.503	-4.535	KWAL E			
	KWTW 2	39.598	-4.615				
	KWTW 3	39.708	-4.51				

Basic Equipment and type of Data to be collected on Board.

Gear	Data/Samples
CTD	Conductivity, temperature, PH
Sediment grab	Collect sediment samples
Rosette sampler	Nutrient samples
Zooplankton net	Zooplankton samples
Phytoplankton net	Phytoplankton samples
Long Lines	Fish samples
Drop lines	Fish samples
Salinometers	Calibration of CTD
Hand held GPS	Geographical Location

15 day Cruise Operational costs (lower capacity)

[illegible]

Road map for achieving the RV Mtafiti Global Objective.

15 day Cruise Operational costs (Full capacity)

[illegible]

Road map for archiving the RV Mtafiti Global Objective.

1. National and County Governments funding

- **Budget allocation from the National Government.**
- **Budget allocation from the Riparian Counties.**

2. Anticipated for Public-Private Partnership Initiatives

- **Development of collaborative programs with fishing companies for deep-sea fisheries resources.**
- **Development of collaborative programs for marine environmental assessment and pollution monitoring with oil and gas companies.**

3. Planned Regional Projects and Initiatives

- **IOC-UNESCO Indian Ocean Expedition Project – 1 year duration.**
- **GEF UNDP SAPPHIRE Project – 5 year duration.**

Road map for archiving the RV Mtafiti Global Objective.

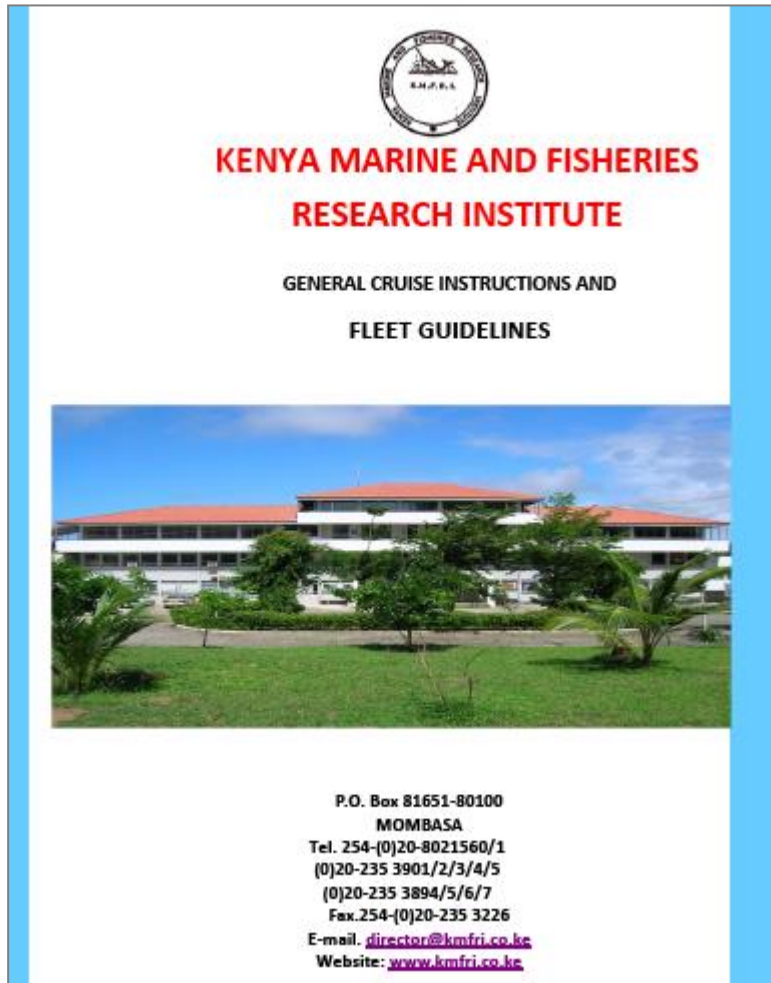
4. Capacity Building and Training in Marine Sciences

- **Collaborative educational cruises**
 - **Need to Develop marine training modules in collaboration with Universities, and other institutions (eg., VLIZ, IOC, etc).**

5. KMFRI project proposal development and partnerships with PPP collaborations

- **The RV Mtafiti stakeholders' consultative meeting and Open Day.**
- **Collaborative mapping of new fishing grounds with fishing companies.**

Procedure for providing ship time for scientific work



Standard Operating Procedures (SOPs) of the ISO 9001:2008 quality management systems (KMF/QMS/OP/MC/01)

Procedure for providing the vessel for scientific work

The vessel docks at the Kenya Navy Base, Mkunguni

Boarding and disembarking of scientists will be conducted at the Wanainchi Marine Products berth, Liwatoni.

Modification and equipping RV Mtafiti with appropriate working equipment

Pelagic fish surveys

- **Acoustics – For biomass estimates**
- **Long lines**

Benthopelagic fish surveys

- **Mid-water bottom trawl nets**

Demersal fish and crustacean surveys

- **Bottom trawl nets**
- **Drop lines**
- **Bottom traps**

Expected cruise out puts

- The expected deliverables for research will include:
- A status report on the research equipment and the vessel
- A total of 21 drop line and long line hauls over a period of 7 sampling days;
- Effort, catch, biological and environmental data captured onto paper datasheets and excel database
- Biological samples collected as per requested;
- Frozen or chemically preserved whole specimen samples as per needed;
- Training and capacity building of scientists research gear and equipment operations;

Expected cruise out puts

- Marine mammals, sea-birds and turtles occurrence / sighting reports.
- CTD profiles, bathymetry maps of Kenyan coastline, oceanographic cruise data report.
- Productivity maps as informed by nutrients levels and plankton biomass / densities.
- A data base to assist in identifying and mapping temporal upwelling sites.
- Cruise summary reports within 1 month of the survey (Cruise Leader).
- Full Technical report within 3 months of the cruise.

Thanks for listening

Any comments and/or inputs?