

HIGHLIGHTS ON RESEARCH ACTIVITIES AT KMFRI

BY

DR. ENOCK WAKWABI ,

DEPUTY DIRECTOR,

KMFRI INLAND WATERS RESEARCH
DIVISION,

KMFRI HEADQUARTERS, MOMBASA.

KENYA



**KENYA MARINE AND FISHERIES
RESEARCH INSTITUTE
P.O. Box 81651
MOMBASA**

Tel. 254-41-475157

Fax. 254-41-475157

E-mail. director@kmfri.co.ke



KENYA MARINE & FISHERIES RESEARCH INSTITUTE (KMFRI)

KMFRI: Brief History and Mandate

EAST AFRICAN COMMUNITY

East African Marine Research Organization (EAMFRO)

East African Freshwater Research Organization (EAFFRO)

(Prior to 1979)

KMFRI

Act of Parliament, 1979

Mandate: Research on;
Marine and Freshwater Fisheries;
Aquatic Biology;
Limnology;
Environmental Chemistry;
Aquaculture;
Physical and Geological Oceanography.

Vision statement

In 2010, KMFRI developed a “Strategic Plan 2010/15” with a renewed and re-invigorated vision:

“To be a centre of excellence in aquatic research and promotion of wise and sustainable use of marine and freshwater resources in Kenya in order to meet national challenges of food security, poverty alleviation and economic growth”



Mission statement

And mission “To contribute to the management and sustainable exploitation of aquatic resources and thus alleviate poverty, enhance employment creation and food security through multidisciplinary and collaborative research in both marine and fresh-water aquatic systems”.



STRATEGY OF REALIZING THE MISSION

Through:

1. Annual Performance Contracting Targets.
2. Manpower development
3. Development of strategic partnership both locally, regionally and internationally.
4. Development of strategic programs with achievable objectives of national, regional and international importance



ORGANIZATION

◆ **THREE DIVISIONS:**

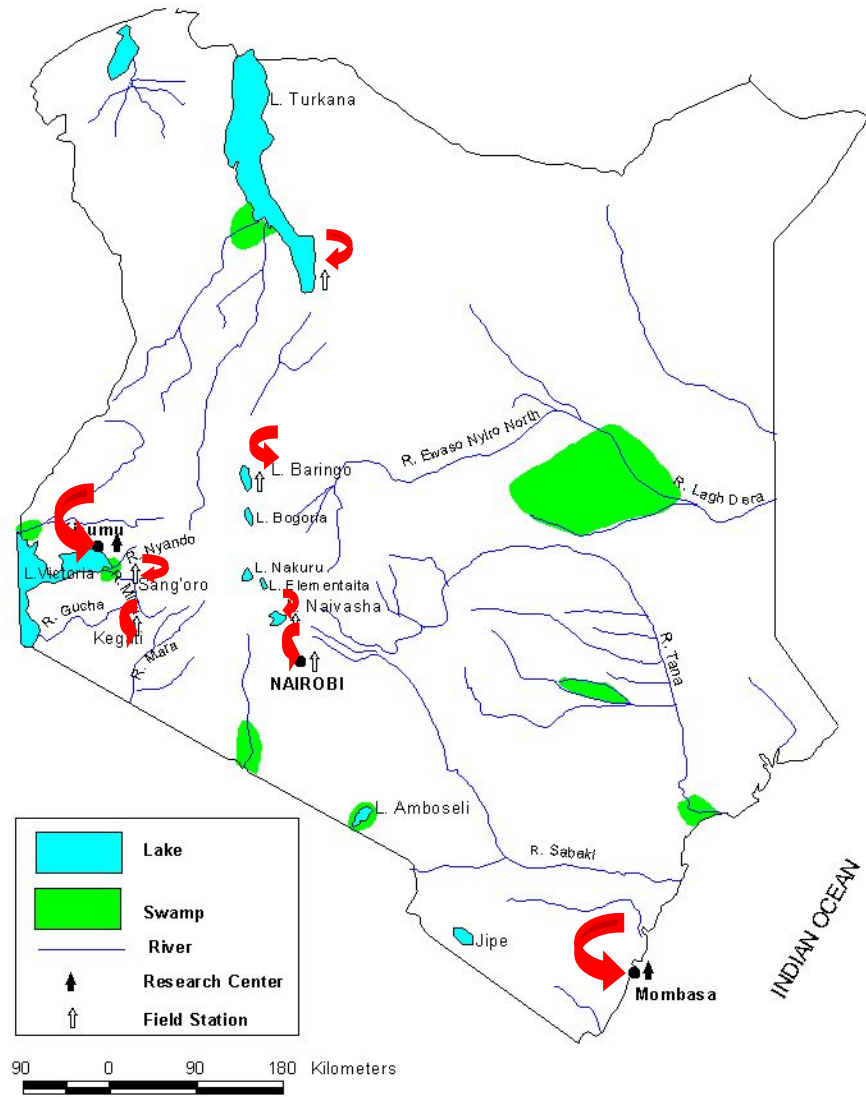
- Marine and Coastal Division.
- Inland Waters Division.
- Aquaculture (Both Inland and Coastal).

◆ **THREE RESEARCH CENTRES**

- Mombasa.
- Kisumu.
- Sagana.



KMFRI'S CENTERS AND STATIONS



Scientific Manpower

	Marine & Coastal Research Division	Inland water Research Division	Aquaculture Research Division
PhD	14	3	3
Msc	23	24	16
Bsc	10	7	10
Total no. of Scientists = 110			

Infrastructural capacity

◆ 4 Research vessels

- RV Ufumbuzi-15 scientists plus crew
- RV Utafiti-10 scientists plus crew
- RV Omena-6 scientists plus crew
- RV Fuani-6 scientists plus crew

◆ Conference facilities (Mombasa and Kisumu)

◆ Equipped laboratories

◆ Library and Database centres

◆ Aquarium for education and dissemination



Infrastructural capacity (cont.)

❖ Marine service Center (Msa)

Offers:

- Offices for Projects
- Auditorium with catering facilities.
- Marine & Coastal Information services
- Plan to expand for accommodation to visiting scientists and students.

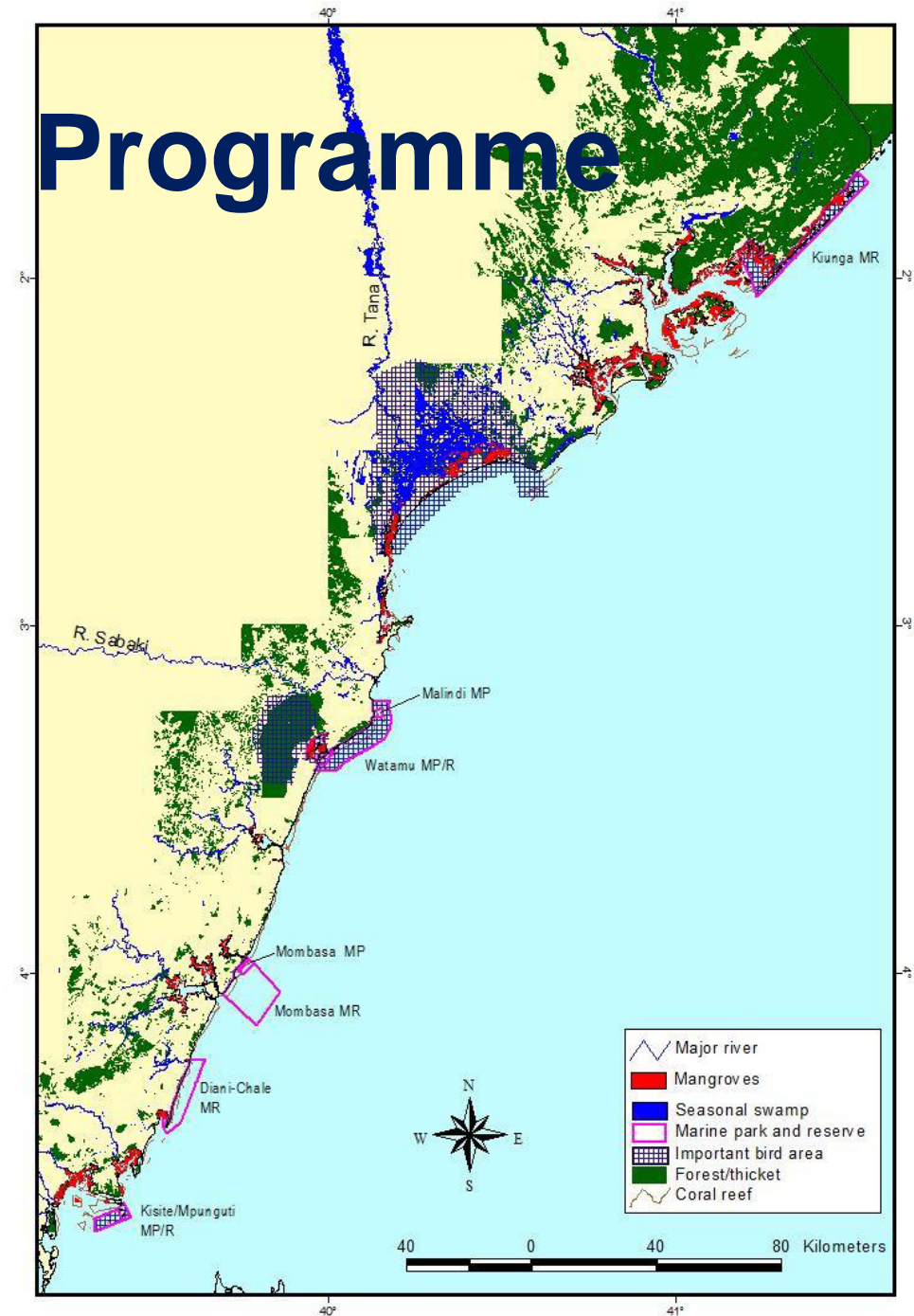
❖ National Aquaculture Centre in Sagana.

❖ International Centre for Nile Perch Research (Kisumu).



1. Fisheries Programme

- ◆ 96 % of fish landed from L. Victoria (Kenya has only 6%).
- 600km coastline
- ◆ Potential from the coast not yet exploited: 200nM and 150 nM more (UN request)



Challenges Marine and Coastal Fisheries

Mostly artisanal

Unknown Potential near-shore/off-shore



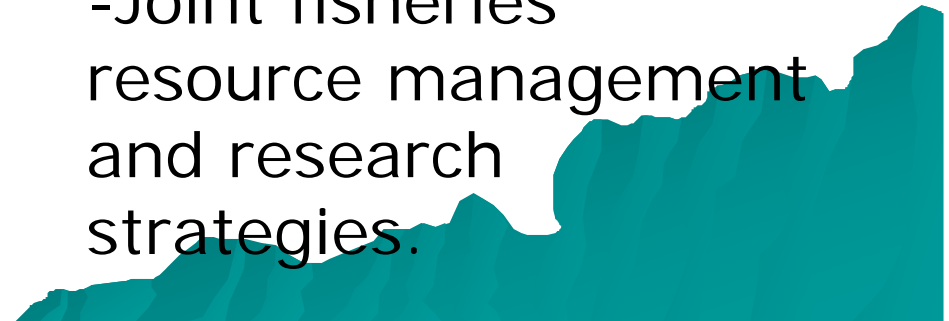
On – going Fisheries research activities in Marine and Coastal

◆ Project areas

- Malindi – Ungwana Bay surveys.
- South coast expeditions.
- South-West Indian Ocean Fisheries Project (SWIOFP)
- CAS

◆ Out – come / out puts

- Resource (specific) mapping.
- Resource (specific) management plans.
- Resources use / user conflicts reduced / resolved.
- Joint fisheries resource management and research strategies.



On – going Fisheries Research in the Inland Waters.

Project areas

- ◆ Fish stocks assessment of Lakes Victoria, Turkana, Baringo and Naivasha.
- ◆ CAS and Frame surveys.

Challenges

- Over –exploitation and declining stocks in the Lakes Victoria, Baringo and Naivasha.
- Resource use / user conflicts.
- Remote and inaccessible L. Turkana.
- Lack of capacity and limited funding.



On – going Fisheries Research in the Inland Waters.

Research actions

- ◆ Resource distribution mapping.
- ◆ Expeditions and Exploration of new resource areas.
- ◆ Ecosystem and Resource specific Management plans, e.g. Lake and species specific.
- ◆ Collaboration.
- ◆ Research Vessel.

Out – come / out puts

- ◆ Fish breeding and stocks distribution mapping.
- ◆ Management Plans.
- ◆ Joint Research and Management strategies.





2. Aquaculture

- ◆ Under-developed: ~ 4.000 MT/a
- ◆ Fish farming as an enterprise– incomes and employment:
 - ◆ Sensitisation and training of farmers.
 - ◆ Aquaculture systems and suitability mapping
 - ◆ Pond construction and management
 - ◆ ***Quality Seed production***
 - ◆ ***Feeds formulation and production***



Aquaculture

Research focus (areas).

- ◆ Quality seed production.
- ◆ Quality affordable feeds supply.
- ◆ Fish husbandry and entrepreneurship.
- ◆ Live feeds (e,g Artemia) production.
- ◆ Sea weed production.
- ◆ Crab farming.

Actions

- ◆ Molecular biology and breeding experiments.
- ◆ Broodstocks management.
- ◆ Feeds formulation and production technologies.
- ◆ Ponds construction and management.
- ◆ Cage farming trials.
- ◆ Farmer training.



Aquaculture

Challenges

- ◆ Very low growth of Aquaculture due lack of certified seed and feeds.
- ◆ No farmer morale.
- ◆ Lack of policy directions

Out –come / out-puts

- ◆ Government stimulus programme with fish ponds and dams countrywide.
 - ◆ Certified hatcheries and fish feeds manufacturers.
 - ◆ Expected clad from farms especially in the non-fish eating communities..
 - ◆ Strategy in place.
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2. Successful Aquaculture

- ◆ Seaweed farming
 - Pioneering nursery trials
 - Commercial farming with local communities
 - ***Value addition: Local Processing to max. benefits***



Seaweed Farming



✓ *Value addition: Local Processing*

Seaweed Farming



✓ *Value addition: Local Processing*

Seaweed Farming



✓ *Value addition: Local Processing*

Seaweed Farming



✓ *Value addition: Local Processing*

Successful Aquaculture (contd)

- ◆ **Artemia production**
 - To support live feeds development programme for both inland and coastal aquaculture.
- ◆ **Tilapia and Catfish production**
 - Especially promoted in the inland and coastal land based aquaculture.



3. Environment and Ecology

- ◆ **Critical habitats:** Research activities mangroves and tidal flats, seagrass beds, coral reefs, benthic ecology, river mouths and wetlands
- ◆ **Water, sediment quality and aquatic productivity:** Comprises environmental chemistry, microbiology and plankton studies
- ◆ **Physical processes:** This unit investigates bathymetry and hydrodynamics, monitors sea level dynamics, and climate change related issues.
- ◆ **Climate Change: Mitigation vs Adoption.**
 - Global warming and sea level rise
 - Carbon markets.
 - Ecosystem services



. Environment and Ecology

Ecosystem Research



. Environment and Ecology

Ecosystem Research



. Environment and Ecology

Ecosystem Research



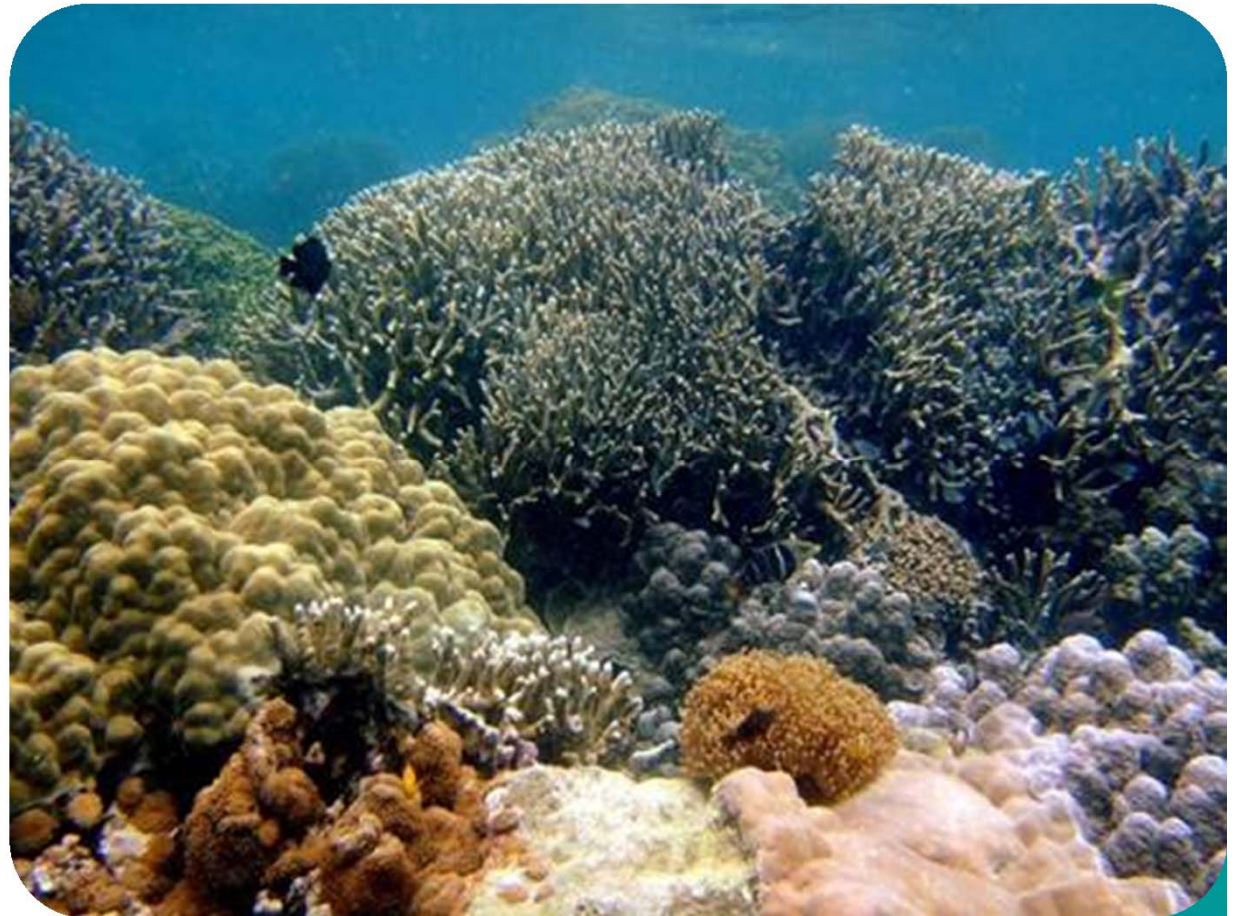
. Environment and Ecology

Ecosystem Research



. Environment and Ecology

Ecosystem Research



Ecosystem connectivity

Isotope analyses –specialized lab.



. Environment and Ecology

Physical processes



. Environment and Ecology

Physical processes



. Environment and Ecology

Physical processes



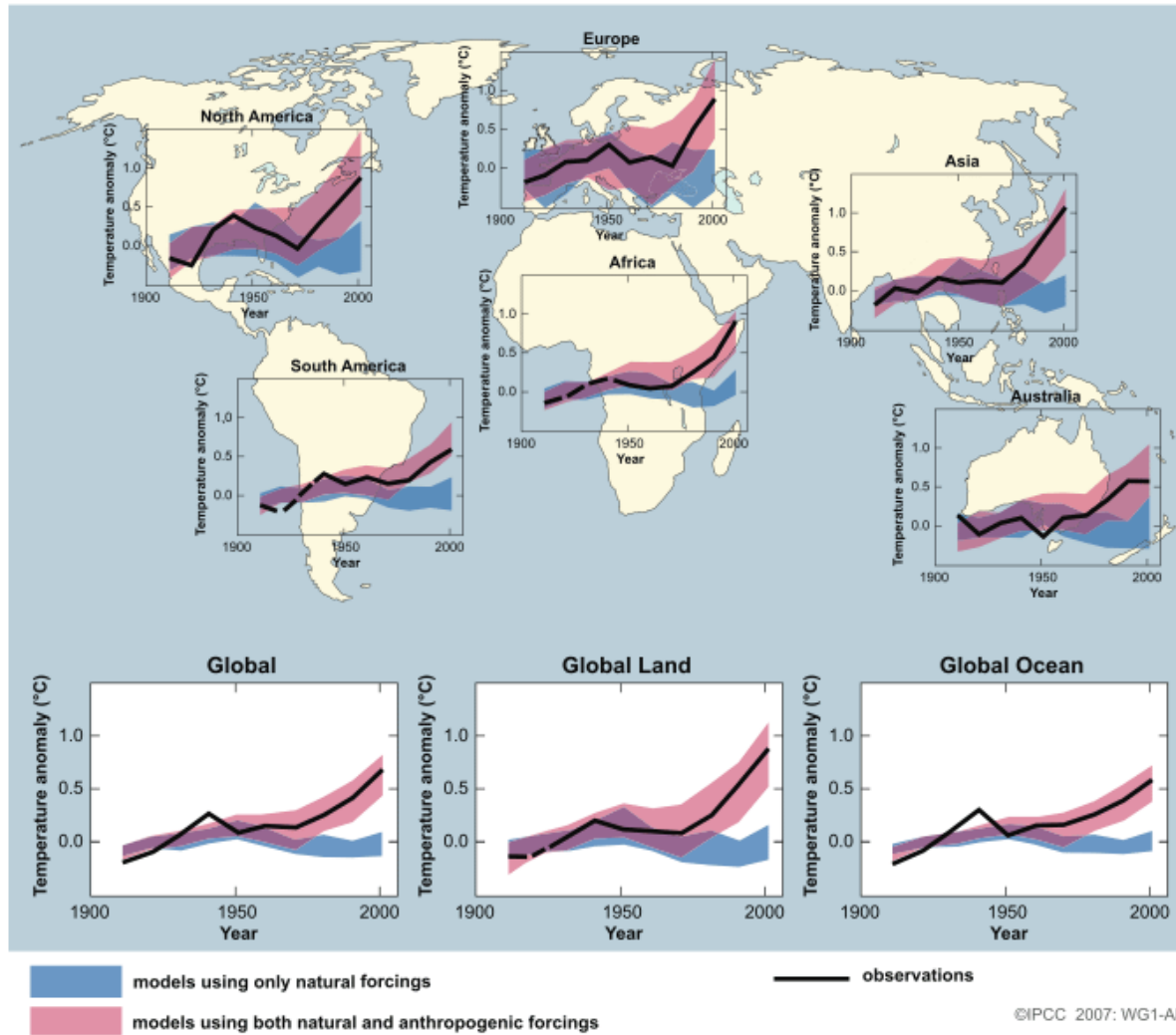
. Environment and Ecology

Physical processes



Climate Change

GLOBAL AND CONTINENTAL TEMPERATURE CHANGE



Climate Change



Climate Change



. Environment and Ecology

Water quality

- Beach water quality
- Freshwater quality
- Use of mangroves as bio-filters.
- Water & Sediment quality.



4. Natural Products and Post-harvest Tech



❖ ***Natural Products: Not developed***

4. Natural Products and Post-harvest Tech



❖ ***Natural Products: Not developed***

4. Natural Products and Post-harvest Tech



❖ *Natural Products: Not developed*

5. Socio-economics



5. Socio-economics



5. Socio-economics



THANK YOU

