

# AN OCEAN LIKE NO OTHER

## 6.1 INTRODUCTION TO THE NORTH KENYA BANKS FISHERY – DOES THE MYSTERIOUS UPWELLING EXIST? VIDEO DURATION– 06:59

In this lecture we will introduce you to the Kenyan marine fisheries; to the challenges facing Kenyan artisanal fishermen, to the economic potential of the North Kenyan Banks; and to the research questions which need urgent answers in order to make this new emergent resource exploited sustainably in the face of the growing threat of the climate change.

This lecture was written by Dr. Joseph Kamau, a senior scientist at the Kenya Marine and Fisheries Research Institute, and an expert in oceanography and sustainable development of the living marine resources.

On Africa's Indian Ocean coast, just south of the equator, lies the Kenyan coastline. It is home to millions of people who are culturally and spiritually linked to the ocean. A rapidly growing population on the Kenyan coast relies heavily on marine resources for food and income, which puts a lot of the marine ecosystem in danger of over-exploitation.

In 2016, the marine fisheries sector employed about 27,000 fishers, 13,000 of which are artisanal. The number of people supported indirectly by the sector as traders, processors, input suppliers, merchants of fishing accessories, or providers of related services, is considered much higher. The fisheries sector is critically important not only for food security of the coastal population, but also for the preservation of culture and national heritage, including related industries such as tourism, and for recreational purposes.

Kenya's marine fisheries are mostly artisanal and subsistence in nature. It is estimated that approximately 80 percent of the total marine products come from coastal waters and reefs, and only 20 percent is from offshore fishing.

The artisanal fishing boats are small and propelled by sail, outboard motors, and paddles. As such, artisanal fishers are mostly restricted to reefs, estuaries and lagoons, and near-shore waters, which are now being exploited beyond sustainable level. Off-shore fisheries on the other hand remain largely underexploited, at least by the local fishers.

And yet just off the Kenyan coast, in the vicinity of Lamu, lies the North Kenyan Banks, a shallow expansion of the otherwise very narrow continental shelves.

This is a highly productive area which sustains a rich and diverse ecosystem and is seen by the Kenyan government as the new frontier of the Food security for the growing Kenyan population.

Here is the Lamu County fisheries Chief Officer speaking about the country's ambition to empower local fishermen to unlock the potential of the North Kenyan Banks.

“Our plan is: (1) We need to increase production and productivity of our waters, which means that we have to access where the fish, and access the fishing counts, and do so we need to modernise our fishing fleet. Now this calls for improving our boat building industry, procuring engines so we can make nicer boats, (we have procured over 200 outboard

engines), procuring fishing lines, snorkels, GPS, to enable the fishermen to access those counts.

In this country [Kenya], we need to be food secure, and fish is part of that food. But can we now realise the economics: [ie] can we have a living, can we see employment in the fisheries sector, can we see money in the fishery sector, can people actually embrace fishing and say that it is an occupation better than other occupations that people may have been thinking about?"

The North Kenya Banks fishery resource is not a new discovery; its productivity potential was highlighted back in 1959 in a letter to the editors of the world leading scientific journal Nature:

"A bank off the northern Kenya coast is acquiring significance. Its presence is unique along the coastline of tropical East Africa, and it is of considerable interest as an abstract marine problem of this region and as a likely boost to local fishery resources".

In spite of this early discovery, very little is still known scientifically about the North Kenyan Banks ecosystem; about environmental factors which control its high productivity, and how the accelerating impact of climate change may alter its dynamics. Many factors have conspired here. Kenya's turbulent history has limited research by local scientists, while issues of maritime security and risk of piracy from adjacent Somali waters slowed down international research expeditions to these waters. Additionally, the proximity of a famous Somali upwelling – a much more pronounced dynamic feature, has distracted the attention of international modelling and remote sensing research communities.

However, research interests on the North Kenyan Banks is rising on the agenda. The Government of Kenya recognises the value of its marine resources, and the need for more effective management and protection. It identifies the agriculture, livestock, and fisheries sector as a priority sector, and highlights the importance of the country's marine resources and fisheries for local employment, income generation, and livelihoods of coastal communities. Sustainable exploitation requires a solid knowledge base about the marine environment and the scientific challenge in case of the North Kenyan Banks is considerable.

The North Kenyan Banks is influenced by two powerful ocean currents – the Somali current and East African Coastal current. Under the influence of the East African Monsoon, the Somali current reverses its direction twice a year. For a few months each year, its path collides with the East African Coastal Current. Both currents deflect away from the coast, causing a strong, but highly variable and a short-lived upwelling system bringing waters rich in nutrients to the ocean surface and initiating massive blooms of the phytoplankton which lies at the base of all marine food webs.

Of crucial importance is whether this upwelling is the key feature sustaining the rich ecosystem of the North Kenyan Banks, or, whether the input of nutrients and organic matter from the powerful Tana river is key? Of equal importance is whether this upwelling system changes from year to year and does it always occur at the same place? Does this feature sustain both: the breeding and feeding grounds of the main commercially important fish species or it is mainly migratory fish species which come here for the rich feeding grounds? What will be impact of the climate change on the upwelling, on the key fish species and on the plankton, which sustain the local food webs? These are the questions which scientific community begin to address and which we will cover in the next lectures.