

Potential and Challenges of Aquaculture in Promoting Blue Economy in Africa

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Increasing attention on “Blue Economy”

It aims to promote economic growth, social inclusion, & improvement of livelihoods while ensuring environmental sustainability of the oceans and coastal areas



FAO



World Bank



EU



Blue Economy: What does it mean to the Aquaculture sector?

It is an opportunity to attract more
focus and investments in the
aquaculture sector



Some advantages of aquaculture in the Blue Economy

- Use oceans & inland waters as “farm lands” for food production
 - ✓ Planned harvest = stable livelihoods for fishing communities
 - ✓ Low risk activities in inshore areas = women can participate



Some advantages of aquaculture in the Blue Economy

- Harvest size & time can be controlled – market-oriented production
 - ✓ Supply fish for high demand weekend market
 - ✓ Supply fish for high season (Xmas, summer vacation)
 - ✓ Plate size 250g fish for restaurants and hotels



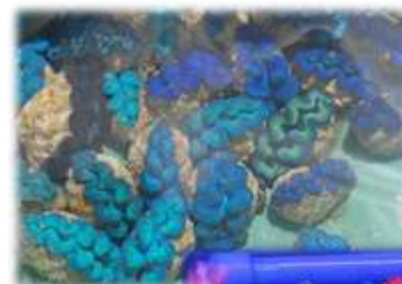
Some advantages of aquaculture in the Blue Economy

- Well integrated with other sectors (e.g. tourism and hobby market)
 - ✓ La Pointe des Almadies, a famous seafood area in Dakar, started from a stall selling farmed oyster
 - ✓ “Clam digging” is a popular tourist attraction in Asia
 - ✓ Ornamental aquatic species fetch high prices



Clam digging by kids

Seafood resto in Almadies



Finding Nimo



Some advantages of aquaculture in the Blue Economy

- **Complementarity with capture fisheries**
 - ✓ By-catch and low value fish can be used for aquaculture feed (with due caution on over exploitation)



Undersized tuna used for grouper culture

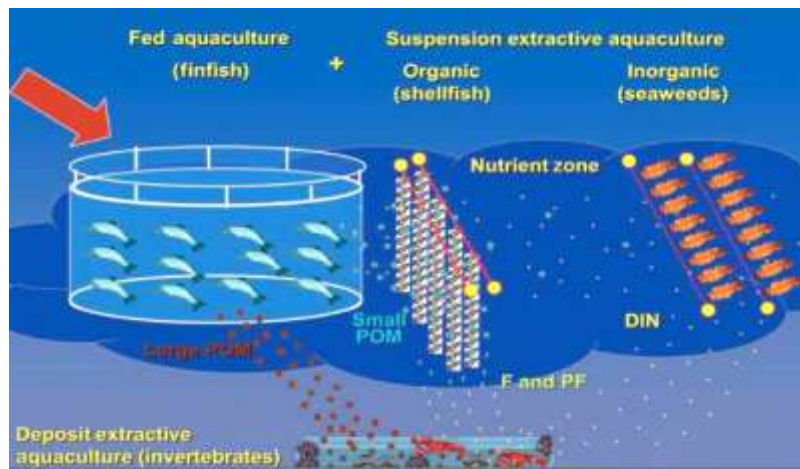


By-catch of trawl fishery used for snapper culture



Some advantages of aquaculture in the Blue Economy

- Possible positive impacts on marine environment & eco-system
 - ✓ Shellfish - organic extractive
 - ✓ Seaweed - inorganic extractive
 - ✓ Multi-trophic aquaculture for environment remediation (bio-mitigation)



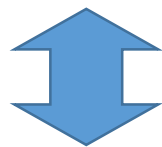
Source: Fitzsimmons



Key challenges of mari-culture development in Africa

➤ Mari-culture in Asian countries

- ✓ Normally practiced in protected areas such as bays, channels, lagoons and tidal zones
- ✓ Easy access to aquaculture facilities
- ✓ Less disturbances for farmed fish and other aquatic species



➤ Mari-culture in Africa

- ✓ Few protected calm water areas
- ✓ Always exposed to strong current & swells
- ✓ Need “tough” aquaculture facilities



Typical coast line of Asian countries



Complex shoreline – offers adequate environment for mariculture



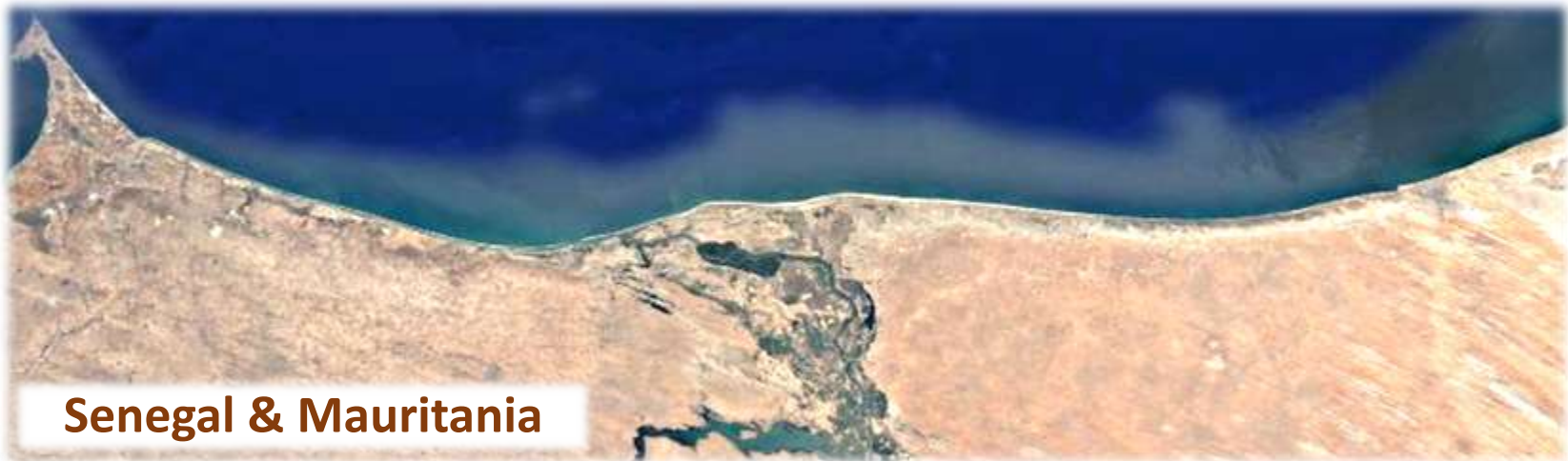
Typical coast line of African countries

Ghana, Togo, Benin & Nigeria



Very flat & smooth shoreline!!

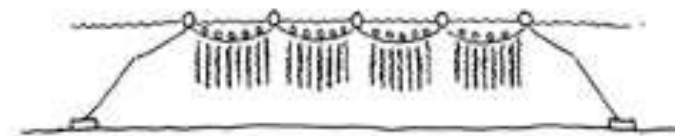
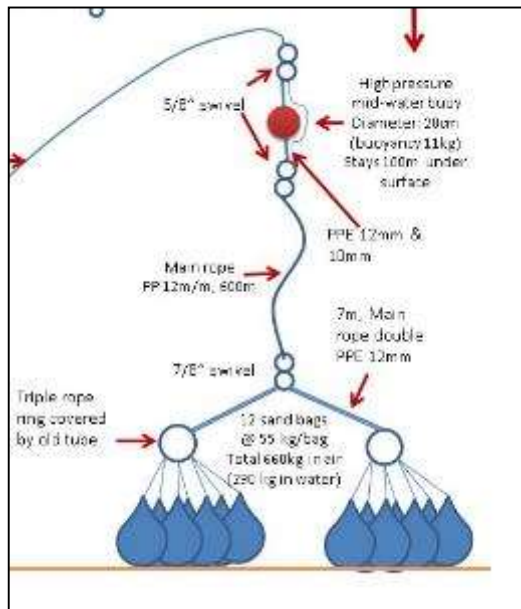
Senegal & Mauritania



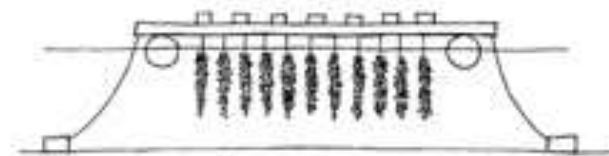
Need for technical break-through

Development of durable aquaculture facility

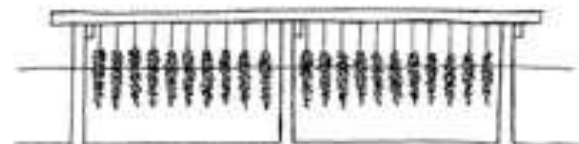
- ◆ **Anchoring system** that withstands strong current & swells
- ◆ **Floating system** that absorb shocks of swells
- ◆ **Culture structure** that support good growth



Longline culture



Raft culture



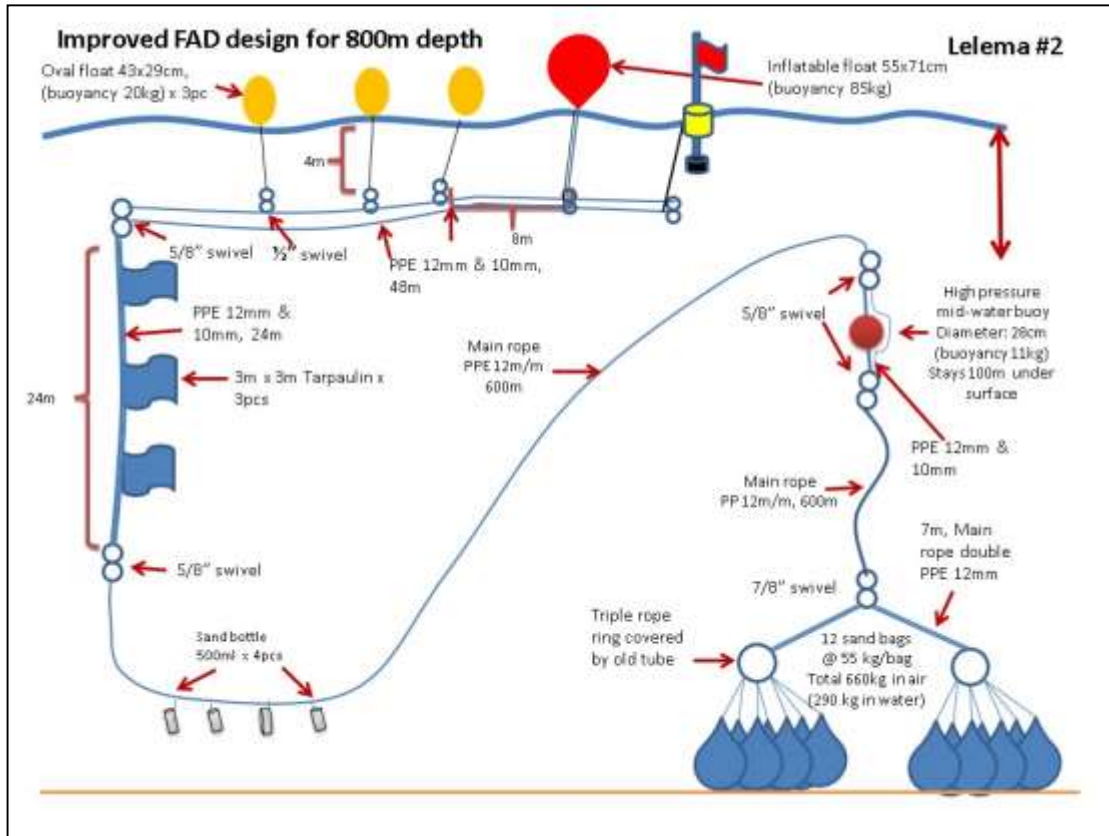
Rack culture

FAO



Possible option: Sandbag anchor system

which is adopted from large-scale set net in Japan



Easily prepared



Deployed by small boat

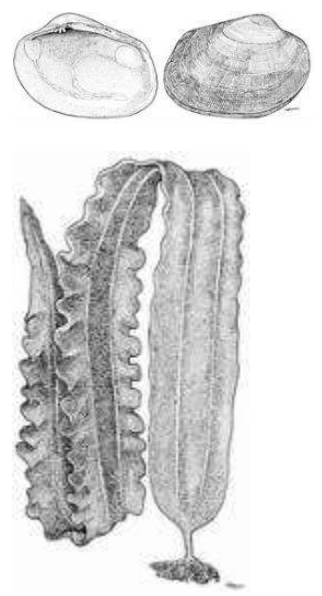
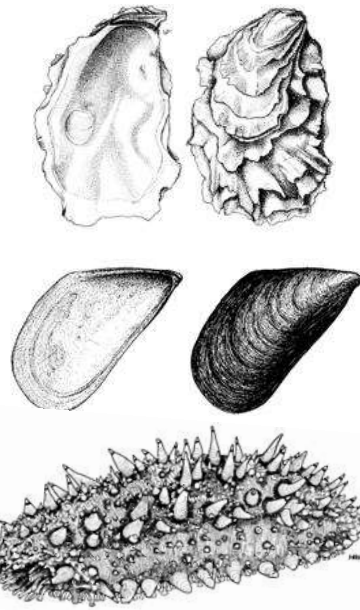
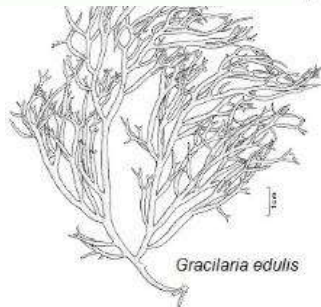
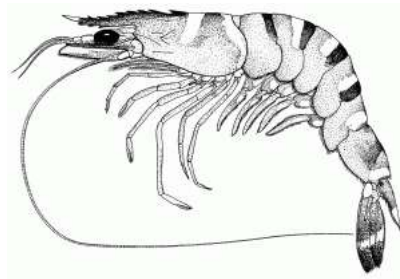
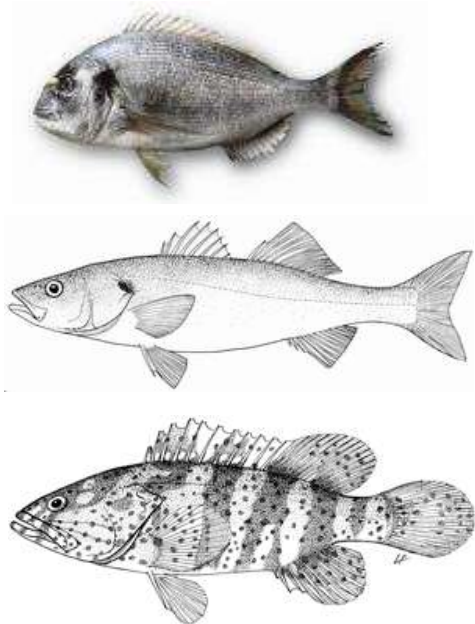


- ◆ Field-tested with fish aggregating devices in the Pacific
- ◆ Proved to be durable enough (withstand a category 5 cyclone)
- ◆ Suited for small scale operators (fisher cooperatives)

Key challenges of mari-culture development in Africa

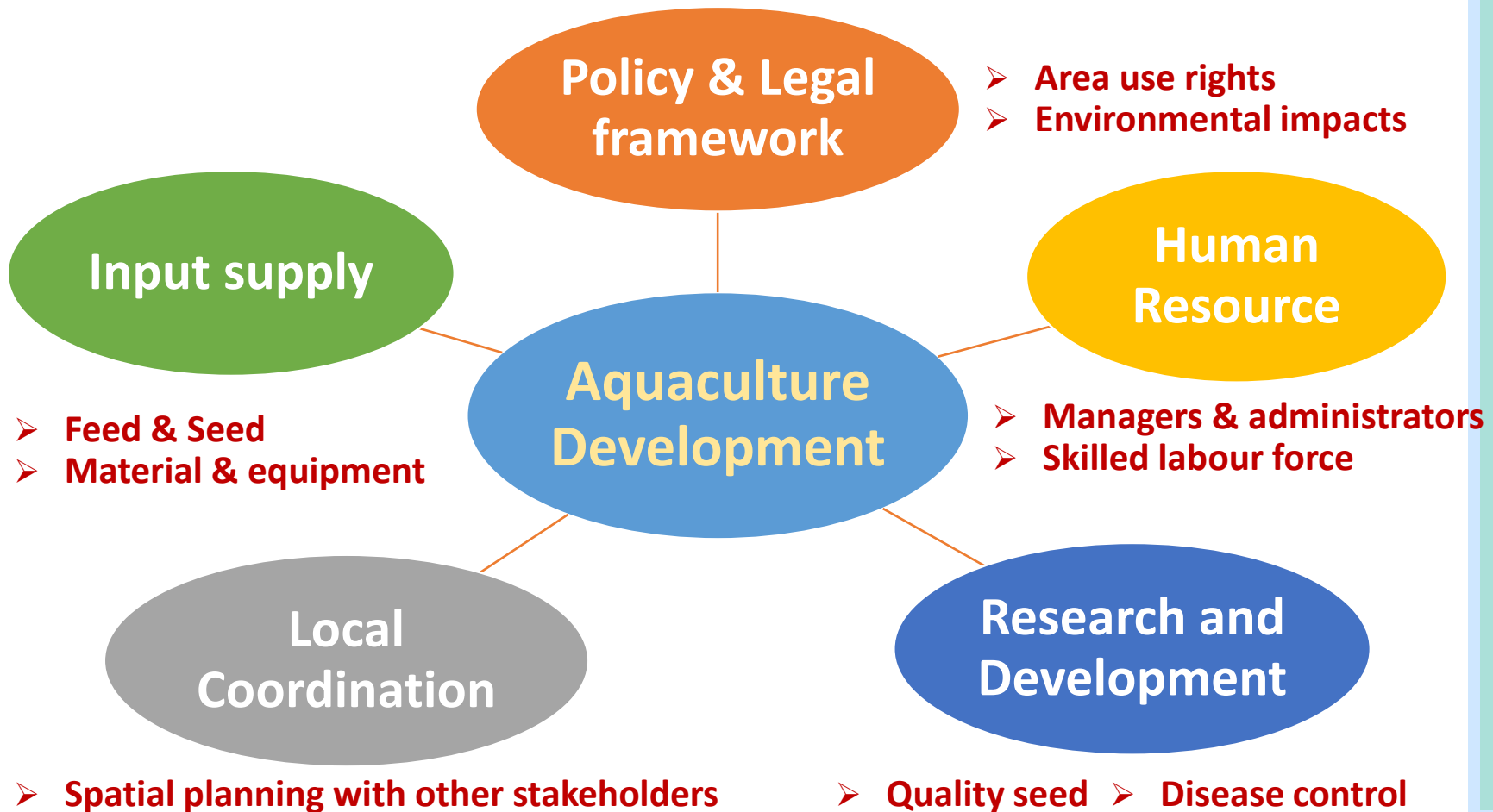
➤ What species to culture?

- ✓ Finfish ?
- ✓ Crustaceans?
- ✓ Shellfish ?
- ✓ Seaweeds?
- ✓ Other invertebrates?



Key challenges of mari-culture development in Africa

Essential conditions are met?



Key challenges of mari-culture development in Africa

Stable supply of quality seed & feed alone may not be easy (in particular, for fish culture)



Availability of formulated feed

Competition with food use



Concern for growth overfishing



Availability of seed

Bio-security



Research capacity



Key challenges of mari-culture development in Africa

Is it profitable?



Imported Seed



Imported Feed



Imported Material

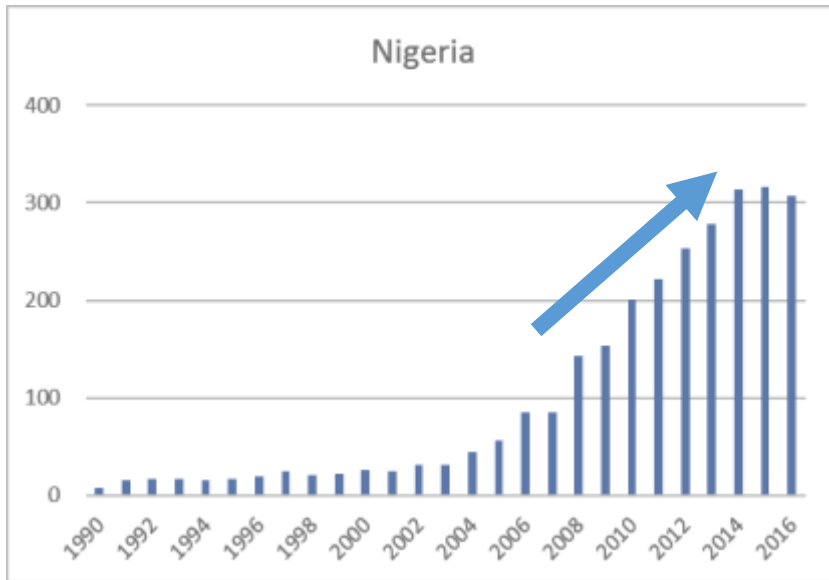
To compete with



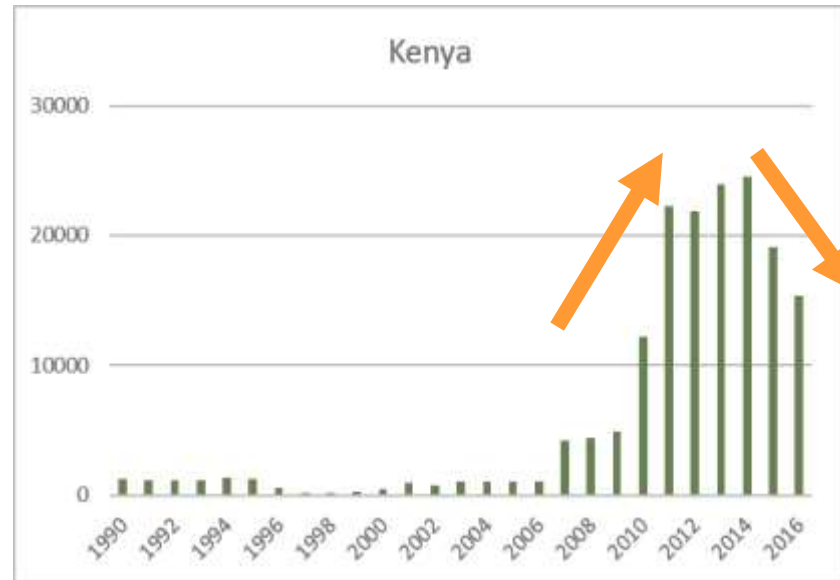
Reasonably priced imported fish



Trend of aquaculture production in Nigeria and Kenya



X 1000



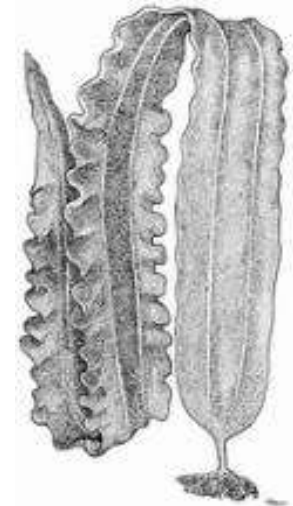
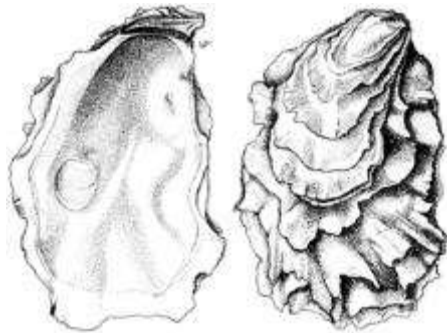
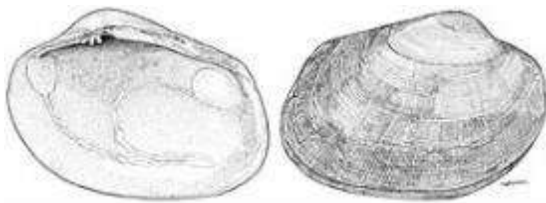
FAO

Aquaculture production exhibited a steady growth. Import of foreign tilapia and catfish is banned in Nigeria to facilitate domestic production

Aquaculture production once showed strong growth but then decreased while import of fish has been increased (reached 23000 ton in 2014)



Possible option: Shellfish and seaweed culture



Advantages of shellfish & seaweed culture

- **Initial investment is low** ⇒
Only simple structure is needed
- **Extensive culture** ⇒
no feeding required
- **Easy access to seed**
⇒ Natural spats/seedstocks can be used
- **International commodities** (stable demand)
⇒ Oysters, mussels and clamshells
⇒ Agar, Carrageenan, Alginates, Alginic acid)



Advantages of shellfish & seaweed culture

Socio-economic significance

- Small –scale operations by community groups
- Women’s participation



Rural
Development

- Less perishable- easily transported
- Complementary means of livelihoods

Shellfish &
seaweed culture



Marine
environment &
ecosystem

- Improvement of water quality
- Stock enhancement (sedentary species)

Economic
contributions

- Creation of ancillary activities (processing)
- Export of products



Concluding remarks

- The setup of the Blue Economy may bring a new opportunity to attract more focus and investments in the aquaculture sector
- Aquaculture has a variety of advantages in the context of the Blue Economy and hence high potential
- However, serious challenges remain, in particular with marine finfish culture
- Shellfish & seaweed culture may be a practical way forward

