

LINKING FISH TO FOOD AND NUTRITION SECURITY: SWOT ANALYSIS OF TRADITIONAL FISH PROCESSING PRACTICES IN NIGERIA.

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Introduction

- **In Africa.....**
- Fish and fishery products contribute more than 30% of the total animal protein ingested (Kawarazuka, 2010).
- More important West and Central coastal states with large and rapidly urbanizing settlements (Gordon et al., 2013, Ibrahim et al., 2011; Zhou and Staatz, 2016).
- More attention to fish in lieu of short supply and high cost of other animal proteins with increase in human population.

Introduction

- **In Nigeria, fish.....**
- Commonest, cheapest and most frequently consumed of animal protein.
- Invisible component of food strikingly missing in the positive FNS discourse (Allison et al. 2013; Bene et al., 2016).
- Availability is constrained by prevailing fish supply deficit and significant post-harvest losses.
- Consumed and traded fresh, salted, sun-dried, fermented and smoked (ICSF, 2002).

Introduction

Problem Statement

Traditional Fish Processing.....

- Solution to challenges of post-harvest losses, protein malnutrition and pathway to value-addition.
- Women – sphere; Excluded in the food and nutrition schemes (Akintola and Fakoya, 2016);

By 2025, Nigeria will require at least 4.32 million m.t. of fish (FDF, 2008).

- Post-harvest fish losses not sufficiently reduced.
- Nutritional security is vaguely addressed by prevalent levels of fish processing technology.
- Women's knowledge widely ignored by development planners and decision-makers.

Introduction

Goal

Way Forward ?

- Critical assessment of production patterns, problems and prospects of traditional fish processing (Adeparusi et al.,2003).
- Policies to deliver achievable impacts on FNS.
- Innovative interventions to achieve policy changes. (FAO, 2017).

Introduction

Objectives

General Objective:

Exposition on traditional fish processing (TFP) technologies and linkage to fish in FNS discourse.

Specific Objectives:

Fish supply-demand scenario in Nigeria

Fish in the FNS context.

Internal and External Factor Evaluation of TFP as key determinants of FNS outcomes.

Scoping of the TFP governance structure inclusive of a gender lens.

Fish supply, demand and consumption

- Global fish consumption systematically increased.
- Per capita fish consumption in Africa stagnated and declined particularly in the last decade.
- Greater consumption and growing demand for food fish anticipated in Sub-Saharan Africa (SSA) (FAO, 2016a).
- Nigeria is the largest fisheries producer (>1 million m.t.) and largest net fish importer (1 million m.t.) in SSA.
- Deficit fish supply and poor fish intake. In 2013, per capita/year (13.3 kg) versus 19.7 kg (global average) (FAO 2016b).
- SSF PHL exceed 30% of total catch (Bene and Heck, 2005; FAO, 2007).

Fish supply, demand and consumption

What is the supply projection ?

- Natural fluctuations in the productivity of capture fisheries are poorly understood;
- Poor fishery management regimes, yet to adopt ecosystem – based approach in capture fisheries
- Increasing aquaculture growth rate; insufficient to bridge fish supply deficit
- Impacts of greenhouse gas emissions, which potentially affect both fisheries and the supply chain management that affects post-harvest losses have not been adequately addressed.

Contribution of fish in the FNS debate

- FNS important to the achievement of the post-2015 SDGs
- Nutritional insecurity results in micronutrient deficiencies, inclusive (Fanzo, 2012).
- Next to South Asia, SSA suffers from a tremendous burden of under-nutrition especially among children (FAO, 2016a).
- Anthropometric indicators as proxies of nutritional status and well-being.
- Decreased stunting, worsened wasting and underweights in pre-school age children.
- Prevalence of iron deficiency anaemia, folate , vitamin A and zinc deficiencies (Fanzo, 2012, Kawarazuka, 2010).
- Nigeria failed to achieve eradication of poverty and hunger in context of the MDG One target.

Contribution of fish in the FNS debate

- Fish is nutrient-dense; containing all essential amino acids (EAA); unsaturated fats, sulphur, calcium and iron, as well as vitamins (Falaye, 2008; Ovie and Raji, 2006, Adeniyi et al., 2012, Thilsted et al, 2014).
- Well documented as a food-based approach to solve under-nutrition in Asia and Africa (Kawarazuka, 2010).
- Benefits of fish to health and nutrition largely outweigh the potential negative effects associated with contamination or safety issues (Gaviglio et al., 2014; FAO, 2016a).

Traditional fish processing practices in Nigeria

'Traditional Knowledge' (TK)

- Knowledge systems, creations, innovations and cultural expressions transmitted from generation to generation.
- Preserves fish by increasing shelf life to achieve household food security and ensure value addition to penetrate new markets.
- Most common methods are by drying: smoking, sun – drying; and salting; fermentation, boiling and frying are less popular.

Traditional fish processing practices in Nigeria



Galvanized iron sheets oven



Extended drum oven

**TRADITIONAL
SMOKING KILNS
OF GALVANIZED
IRON SHEETS,
DRUMS AND CLAY
(MUD) .**



Circular red clay ovens

Governance Structure in TFP

- Fish value- chains reproduce complex power relations among different socioeconomic categories of men and women (FAO 2013).
- Women dominate fish processing and trading.
- Little focus and policy attention to the gender dimension.
- Governance structure is a descriptive and adaptable framework which underscores the importance of gender dimensions.
- Access to fish after harvest is determined by the relative socio-economic status, often modified by social capital and scale of operation of women involved.

Governance Structure in TFP

- Producer-Processor group: fishers' wives, fish mammies.
- Large - scale processors.
- Processor-Sellers/ traders form another category of women who combine functions of processors and marketers.
- Wholesalers or retailers sell via commission agents or brokers to different market intermediaries.

SWOT ANALYSIS

(Internal Factors)

STRENGTHS

- Major contributor to food security.
- Cheap, nutrient – dense food to combat under-nutrition.
- Source of livelihoods and income to women
- Value addition deepens choice, acceptability and improves price.
- Low barriers to entry, low skill and labour intensive provide jobs for the poor

WEAKNESSES

- Losses in quality and quantity.
- Time –consuming, laborious, low capacity and fuel inefficient.
- Product contamination by bacteria; exposure to pests, insects etc.
- Lack of basic infrastructures in processing sites.
- Lack of quality standards; poor understanding of hygiene.

Fish smoking in household kitchen.



Smoking on wire grid.



SWOT ANALYSIS

(Internal Factors)

WEAKNESSES

- Stings, minor cuts, and scrapes.
- Redness/swelling of the eye, poor vision.
- Respiratory ailments - asthma, chronic obstructive pulmonary disease (COPD) and lung cancer etc.
- PAHs increase risks of cancer and non-cancerous diseases.

WEAKNESSES

- Poorly organized cooperatives; highly informal.
- Inadequate availability of capital increases risks of informal lending.
- Bad road conditions, remote fishing settlements, increase costs of transportation and product damage from overloading.

SWOT ANALYSIS

(External Factors)

OPPORTUNITIES

- Strong demand for smoked fish locally and in the diaspora.
- Strong potential for women and youth employment; micro-enterprises.
- Possibilities to increase nutritional and economical value of fish products.

THREATS

- Climate change and firewood utilization cause fisheries and livelihoods to decline.
- Lack of government institutions for inspecting fish and fishery products.
- Low –adoption of modern kilns increases likelihood of high post-harvest losses.

SWOT ANALYSIS (External Factors)

A constructed modern kiln
relatively expensive for local
fish processors.



An example of a
modern smoking kiln that
uses only charcoal as fuel.

SWOT ANALYSIS

(External Factors)

OPPORTUNITIES

- Possibilities for fish processors to increase income and profit.
- Possibilities to evolve locally adaptable innovations as coping strategy to climate variability and change.
- Possibilities to deepen value-addition and develop new products.

THREATS

- Poor market conditions; informal market arrangements.

SWOT ANALYSIS (External Factors)



Local adaptation in fish smoking.

Policies and Interventions

Operational Considerations

- Pre-drying and temperature control to prevent fragmentation, case hardening and PAHs accumulation.
- Encapsulate heat and smoke.
- Tray ovens and hanging fish from metal rods for easier arrangement; increase capacity, higher fuel efficiency, greater ease of manipulation.
- Washable packaging materials to prevent contamination.

Policies and Interventions

Socio-economic considerations

- Foster linkages among stakeholders (the State, NGOs, academia/ research community and local fish processors) to create an enabling environment.
- Valorization of women fish processors.
- Focus on gender transformative and social – equitable approaches to promote development.
- Through PAR in VCA identify options for intervention.
- Build on the strengths of the disadvantaged and the opportunities that surround them.

Policies and Interventions

Socio-economic considerations

- Inclusion of women processors in fisheries governance, in the making of local innovations and culturally appropriate processing technology.
- Provide basic infrastructures and social amenities to improve livelihoods, alleviate poverty and give fishers and communities equity and social justice within the Nigerian entity.
- Train women in areas of health, hygiene measures, environment record keeping, workings of co-operatives, and marketing strategies.
- Guidelines and monitoring on sanitary and hygiene standards in fish processing and storage.

Policies and Interventions

Socio-economic considerations

- Promote zero-interest credit schemes, loans and microfinance, savings, insurance and other services.
- Promote local development of value –added fish products by switching to other preservation methods. Fish kilishi, a form of spiced, sun-dried finger-licking snack is developed locally.
- Set a national policy on dietary food intake in favour of fish products by means of establishment of Expert Consultative Forum on fish and fishery products to promote consumption.

Policies and Interventions

Environmental considerations

- Participatory zoning for strict protection against tree logging to enhance carbon stocks, controlled harvesting regime and small-scale reforestation and afforestation.
- As contained in the National Energy Policy, the establishment of community woodlots for supply of fuelwood in the short term and production of renewable energy devices and systems.
- Alternative energy sources. New technologies need to fit into the available labor supply and be affordable.



**THANKS
FOR
LISTENING!**