Report on RE4Food Research project workshop held on the 29 October 2013 at the EFA learning center Banga Farm in Sussex. By Andrew kallon.

EXECUTIVE SUMMARY:

RE4Food research project workshop held on the 29th October 2013 was a knowledge gathering event in line with **task 4.2 (Hold multi-stakeholders network knowledge gathering event).**of the project calendar of activities. The workshop involves a number of energy users from the major fishing communities within western Area Rural district, among them were, Tombo, Sussex and Godrich Community respectively. Among those attended the workshop were twelve fishermen, nine fish mongers, five wood cutters, two harbor masters and six local authorities drawn from the above communities. The two major project issues discussed were,

- Energy use and
- Post harvest losses in the fishing industry

To achieve the above, the workshop was split into two sessions, the first session highlight the issues of energy utilization while the second session dealt with fisheries postharvest losses. The workshop ended with a clear view to RE4Food about energy sources, utilization, and demand as well as postharvest losses causes and effects to the fishing industry.

ENERGY SOURCES:

It was discovered from the workshop that, energy used in the fishing industry varies depending on the fishing process. However, the major sources of energy highlighted were,

- Fire wood
- Fossil fuel (petrol & kerosene) and
- Solar energy (use for specific species)

The use of fire wood in the fishing industry is limited to processing and preservation specifically smoking. Though all types of wood are used in fish smoking, however, the most preferable ones are,

- Plum wood and
- Mangrove wood

The reason for their preference is due to the fact that, they have high heat energy to dry up fish of all sizes within a short period of time.

Fire wood use by Tombo fish processors for fish smoking were harvested from a buffer zone in the western area peninsula forest reserve established by welt Hunger Hilfe (WHH) a local

nongovernmental organization working in the western area forest edge communities. Information from the workshop further shows that, fire wood as a source of energy use in fish processing is also acquired from wood traders from the provinces.

Fossil fuels such as petrol, is another important source of energy used in motorized engines for fishing. Petrol is acquired from local fuel dealers in the community.

ENERGY CONSUMPTION:

Information gathered from fish mongers during the workshop shows that, the consumption of energy during fish smoking is influenced by the following factors,

- The nature of fire wood
- Seasonal variation (rainy & dry season)
- The condition of the fish (weak or fresh)
- Fish species to be process and
- Distance covered by the fisher men.

According to the participants, fire wood use as a source of energy for fish smoking is measured in bundles hence there is no international standard of measurement used.

For smoking of herring fish with farm wood, it was revel by fish mongers that, for every one thousand dozens of fish smoked, one hundred and fifty bundles of fire wood is used. Fire wood such as plum and mangrove woods are high heat producers as such, relatively less quantities are require to smoke a significant quantity of fish. Also, the consumption of fire wood for fish smoking increases when wood of smaller sizes are use.

It was also discovered that, the condition of fish brought from sea and that of the drying unit influence the consumption of fuel wood. Drying units constructed with clay bricks retains high heat energy with small quantities of wood. On the other hand, drying units constructed with corrugated metal drums has low heat retention capacity and required more fire wood to supply the required energy needed for fish drying.

High fuel wood energy consumption also occurs when fish sticks brought ashore by fisher men are week and in poor condition. To prevent such fish stocks from not getting rot, more heat energy from fire wood has to be supplied, this eventually increases the quantity of fire wood consumption.

Testimonies gathered from various participants also revealed that, the consumption of both fossil and fire wood fuels for fishing and fish processing increases in the rainy season. The amount of heat energy generated by fire wood in the rainy season is less as most fire wood are soak while some stems are raw. During rainy season, the quantity of wood energy consumed

for fish smoking is proximate to one hundred bundles for every one hundred dozens of herring smoked. These figures are subject to further research. It was also discovered that, the consumption of fossil fuels (petrol) in outboard engines for fishing increases tremendously during the rainy season. Bad weather and rough waters at sea lead to more fuel consumption.

The workshop also revealed that, about twenty five gallons of petrol is normally consumed for every seventy two hours (ie three days) of fishing trip. This pattern of consumption is specific to snapper fishing. The total number of men in a boat for snapper fishing is normally six with fifteen bags of ice, thirty gallons of fresh drinking water and unquantifiable stocks of solid foods are supplementary sources of energy for each fishing trip.

Scarcity of fossil fuel has an effect on energy supply, fish catch and price of fish in the market hence affect business. The consumption of fuel by motorized fishing engines is minimize locally running the engines at low speed.

Fishermen, fish mongers, and local harbor masters confirm that, the consumption of both fire wood and fossil fuels energy in fishing and fish processing is further influenced by the type of fish targeted and processed. It was revealed that herring requires huge heat energy from fire wood to be smoke dry than all other species of fish, the reason been, herring is packed very close to each other on the drying platforms and hence high heat energy is required to penetrate them. On the other hand, fish species such as snappers, mackerel etc, requires relatively less heat energy to be smoke dry due to its size and manner of arrangement in the drying platform.

The consumption of fossil fuels by outboard engines during fishing is also known to be influence by the type of fish targeted. Fish species such as, mackerel, snapper often takes more time to be catch in large quantities, to maximize catch rate, more time has to be spent in the sea and hence more fossil fuel energy is consumed. Distance covered in fishing also determines the quantity of fuel energy consumed.

POST HARVEST LOSSES IN FISHING AND FISH PROCESSING

Post harvest losses among fishermen and fish mongers in the fishing communities of western area rural district was one of the major issues deliberated in the workshop held on the 29th October 2013. Fish postharvest losses and related issues like causes, effects and remedies were highlighted by participants. Fishermen, fish mongers, and harbor masters attested to the fact that fish postharvest losses is a major threat to their line of business. Sources from the workshop revealed that, fish post harvest losses occur both in the hands of fisher men and fish mongers themselves.

CAUSES OF FISH POST-HARVEST LOSSES FROM THE POINT OF VIEW OF FISHERMEN

Information gathered from fishermen shows that, the major causes of fish post harvest losses includes,

- Distance of fishing; Distance covered by fishermen on fishing trips is a major contributing factor to postharvest losses. Fish stocks earlier caught by fishermen during fishing trips are normally kept in the boat while hunting for other stocks. Such fish stocks normally starts to deteriorate as they stay in the boat for a prolong period of time. Equally, when distance covered during fishing trips is long, fish stocks most times goes bad before arrival on shore. These according to the fishermen are major causes of fish postharvest losses.
- Again, fish postharvest losses were also known to occur when fishing boats are not properly attended to especially after fishing trips. The presence of fish remains from previous catch can contaminate new stocks hence, fish postharvest losses starts from that point. Such contamination can either cone from untidy fishing boats or nets as the case maybe.
- Postharvest losses in the fishing industry also occur when fishing boats are not sea worthy. The free flow of sea waters in to fishing boats during fishing trips often create an enabling environment for fish decay at sea.
- Also, hot weather conditions at sea especially during the months of February, March, and April increases sea water temperature. High sea water temperature has a direct effect on the health of fish stocks already catch and is also known to be a cause of fish postharvest losses

CAUSES OF FISH POSTHARVEST LOSSES FROM THE POINT OF VIEW OF FISH MONGERS

From the point of view of fish mongers, fish postharvest losses is mostly common to specific fish species such as, Spanish, crocus, groper, and long neck while species like cuter, snapper, white and kite fish cannot easily perish or deteriorate. However, some of the common ways through which postharvest losses occur to fish mongers are,

- Scarcity of fire wood at the time when fish stocks are brought from sea. Such scarcity can lead to inadequate supply of heat energy required for the drying of fish, and can lead to fish decay hence postharvest losses.
- Delay in fish price negotiation between fishermen and fish mongers. Delay in such negotiations expose stocks to flies and other environmental pathogens that can initiate the process of fish decay which if not carefully handled can lead to fish rot and losses.

- Poor cold storage facilities are among the causes of fish postharvest losses. Sources from workshop revealed that, lack of such facilities in fishing and processing communities increases the possibility of fish rot especially when there is a large catch or scarcity of fire wood. In the absence of cold storage facilities and fire wood, fishmongers have no alternative but to accept the losses.
- Inadequate transport facilities from processing units to fish marketing centers are also a known problem leading to fish postharvest losses. Most transports used are public vehicles with limited capacities. Smoked or dried fish transported in such vehicles often got fragmented due to congestion. Inadequate transportation can also lead to losses when non-road worthy vehicles fall in accident or break down on their way to market centers.

EFFECT OF POSTHARVEST LOSSES TO BOTH FISHERMEN AND MONGERS

Facts and data gathered highlighted a number of negative effects that are often associated with postharvest losses both to fishermen and mongers. They includes,

- Loss of business capital of fish mongers.
- Collapse of fishing activities due to inability to secure fishing equipments by boat owners.
- Fishermen also loss customers when fishing trips are not regular.
- Postharvest losses can also leads to breakdown of families especially with single parent families managed by women. This happened when fish mongers cannot pay back their creditors due to massive fish rot.

HOW TO MINIMISE POSTHARVEST LOSSES

Several local attempts have been made by experienced fisher men and mongers to minimize postharvest losses at local level. Some of these measures include,

- Avoid wasting time at sea after fishing
- Fishing boats are service on a regular basis to prevent inflow of sea water in to the boat during fishing.
- Fish processing materials such as, fire wood, fresh water and man power must be ready before the arrival of fishing boats.
- Fishermen to be honest enough to tell mongers the status of fish so as to know the type of treatment suitable to prevent fish rot and losses.
- When fish rot beyond human consumption, their remains were often sold to pig and poultry farmers to minimize capital loss.

HOW RE4Food MIGHT HELP?

This question was answered by all who attended the workshop in a form of recommendations as illustrated below,

- That cool rooms be constructed to aid fish processing and preservation.
- Appropriate and improved fishing gears be provided to fisher men.
- Improved and modern fish processing centers are establish.
- Training of fishermen on modern methods of fishing and fish handling.
- Refrigerated trucks for fish mongers.
- Train fishermen on search and rescue operations at sea.
- Provide rescue boats for fishermen.
- Facilitate the importation of first grade outboard engines that are more durable.
- Empowerment training programs be organized on a regular basis.
- Establish wood lots and agro forestry.
- Provide vehicles for the transportation of wood.
- Construction of improved oven for fish smoking.
- Provision of appropriate transportation for fish mongers
- Improve water dam
- Solar driers to be provided.
- Provide seeds of fast growing trees to undertake reforestation.
- Provide tools to clean beaches.
- Provide motor-Bikes to harbor masters to effectively coordinate fishermen's activities.
- Improve boat landing sites.
- Provide improve materials for boat construction.