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SECURING REGIONAL SUPPLY IN AQUATIC PRODUCTS: PROSPECTS FROM THE FAO POST-HARVEST LOSS ASSESSMENT CASE STUDIES

SUMMARY

This paper provides an overview of the findings of the post-harvest fish loss assessment case studies conducted in Ghana, Kenya, Mali, Tanzania and Uganda. It focusses on issues affecting the availability of fish from a holistic value chain perspective and proposes measures for enhanced marketing of fish food products in the region. The paper notes that a huge part of the landings is lost yearly for consumption (up to 20-40% physical losses). However, quality loss as a result of downgrading the product is a frequent but little acknowledged occurence, with significant financial and monetary impacts as well as food safety concerns. Root causes linked to post-harvest practices are identified, with significant losses incurring due to the upstream and downstream post-harvest practices. While dynamic cross border trade channels are identified, the paper notes that regional trade is also affected by both physical and quality losses, in addition to the multiplicity of checkpoints and inadequate market information. The paper further highlights how policy measures can ensure that the objective of the loss reduction interventions is met. In recalling the necessity of better focussing of already scarce development resources and the impossibility to reach a zero loss status in any fishery, the paper emphasizes that post-harvest losses should be addressed comprehensively and with a more holistic approach. For this purpose, cost-effective interventions should focus on significant losses, which is only possible after they are thoroughly assessed.

INTRODUCTION

1. Small-scale fisheries are commonly said to incur high post-harvest losses. However, though this assertion might be correct, the figures have all the time been estimated and quoted, with data commonly ranging from 15% to 50% and sometimes up to 75%. Yet sustainable loss reduction strategies must be based on accurate and reliable loss assessment data that identifies the source and level of losses, the reason for their occurrence and the socio-economic context in which they occur. It is especially important to better focus already scarce development resources and implement effective measures to achieve enhanced supply in fish and fishery products in the region.

2. In order to provide better insight into these issues, in 2006 FAO initiated a regional programme in post-harvest loss assessment (PHLA) in artisanal fisheries in Africa. During its 18-month implementation, the programme has developed a core of regional expertise, mostly fisheries officers whose capacity has been developed in systematic and practical loss assessment methodologies combined with the identification of effective loss reduction interventions. In addition, the programme has developed tools to be disseminated within the region for broader loss assessment and reduction initiatives: an extension manual, a guide for the fish operators in fish loss assessment and a comprehensive document which compiled the data from case studies in inland fisheries in Ghana, Kenya, Mali, Tanzania and Uganda.

3. The present paper provides an overview of the findings of these studies.

HIGHLIGHTS FROM CASE STUDIES IN GHANA, KENYA, MALI, TANZANIA AND UGANDA

4. Initially 61 fishing nations with important artisanal fisheries sector were selected but only 5 could complete the study. A year-long study was then carried out in selected fisheries with an identified socio economic importance. Two countries, Ghana and Mali focussed their analyses on multi-species fisheries, while the other 3 were limited to single-species fisheries (Lake Victoria Sardine Mukene/Omena/Dagaa and Tilapia). This was the result of a preliminary criteria-based qualitative loss assessment which ranked the identified losses according to their importance. The process was completed with a subsequent quantification of losses. Key characteristics from these studies are summarized in the following paragraphs:

5. In all countries the magnitude of post-harvest losses is considerable. Figures (Table below) of fish lost for consumption typically range from hundreds of tons to more than 10,000 T, with losses of up to 28,000 T (20-40% physical loss) reported, especially in Lake Sardine fisheries. While peak losses were reported to be generally during a glut/bumper fishing season, there are specific occasions where significant losses also occur during a lean fishing season. These losses are also reported to have major, but scarcely perceived financial and monetary impacts.

6. While physical losses are generally low, i.e. less than 5% of the consignments, the quality losses as a result of downgrading the product have been the most frequent, often accounting for more than 70% of total losses.

[1] Ghana, Kenya, Mali, Senegal, Tanzania, and Uganda.

Country	Fisheries/products	% physical[2] loss; Estimated Tons/ Year	% quality[3] loss; Estimated Tons/ Year	Macro Impact US $
Ghana	Smoked fish	3-17	37.5; 5,206T	60 Million
	Watsa (gillnet) fisheries	16-20	30.7; 5,742T	9.4 Millions
Kenya	*Rastrineobola argentea*/Omena before processing	0-7.5	1.5-18.9 (7); 3,600T/year	350,015
	Jarife (gillnet) fisheries (Indian Ocean)	1-5	28; 33.6T	19,110
	Tilapia traders	Minimal	27; 12.3T	36,760
Mali	Fresh fish	2-3;	7.5-25 (17) ; 1,190 T-6,630T	572,550
	Smoked *Clarias*	1-3	8.5; 327T	364,400
Tanzania	*Rastrineobola argentea*/Dagaa	20-40 14,000-28,000T	20 14,000T	10 -16 Millions
Uganda	*Rastrineobola argentea* /Mukene	26-40 3,400-11,000T	2-5 340-850T	300,000-1.5 Million

7. In the Lake Sardine fisheries, the processing of fishmeal-geared products remains an operation where the threshold of 5% physical losses is far exceeded. There, rather than ignorance or lack of knowledge of good handling practices, it is the indifference and careless habits of the fish operators themselves which make this operation seriously wasteful of resources. It was further demonstrated4 that not only is a significant part of fish food is lost for direct human consumption since quality is not a reference there but also substantial quality nutrients are lost for the poultry industry because of irresponsible practices.

8. Be it in multi or single species fisheries and whatever the products, the delay in the purchase (at landing) and the long bargaining periods under inadequate storage/handling conditions that characterize artisanal fishing sites in general set the stage for increased quality loss.

9. The financial and monetary incidences of quality losses are significant for the national economy and income of the fisherfolk. This eventually adds to the food safety concerns in small pelagic species, which form a noticeable part of the landings in question.

[2] By definition physical loss refers to fish that is thrown away (accidentally or voluntarily) or flushed away by rain , consumed/eaten by animals/birds/insects

[3] Quality loss is when fish has undergone change (due to spoilage or fragmentation) and is sold for a low price. The difference between the potential value of fish or product if no/minimum deterioration had taken place (best quality) and the actual value of the fish gives the extent of quality loss.

[4] Ref. M. Masette, The influence of Dagaa-based poultry feed quality on egg production within the L. Victoria Basin. Expert Meeting in Fish Technology, Utilization and Quality assurance. November 2008, Agadir, Morocco.

10. Considerable losses are incurred by fish processors due to the upstream and downstream post-harvest practices. The studies showed clear cases where the performance of the post-harvest operators is negatively affected as a result of conducive practices during fishing or at products purchasing point/auction market, especially with regard to the upstream segment where high losses have been reported due to lack of control of the cold chain on board fishing canoes or for fish caught by illegal fishing methods. As an indication, records in Ghana revealed that when light fishing combined with dynamite occurs all the consignment is downgraded and this can cause quality loss accounting for millions of Cedis/per operation of a given processor. This raised the question of law enforcement, as such aggregation and use of a noxious harvesting method, yet prohibited in the country's fisheries law are openly used by fishermen within certain gear types i.e. Watsa (purse seine) fishermen.

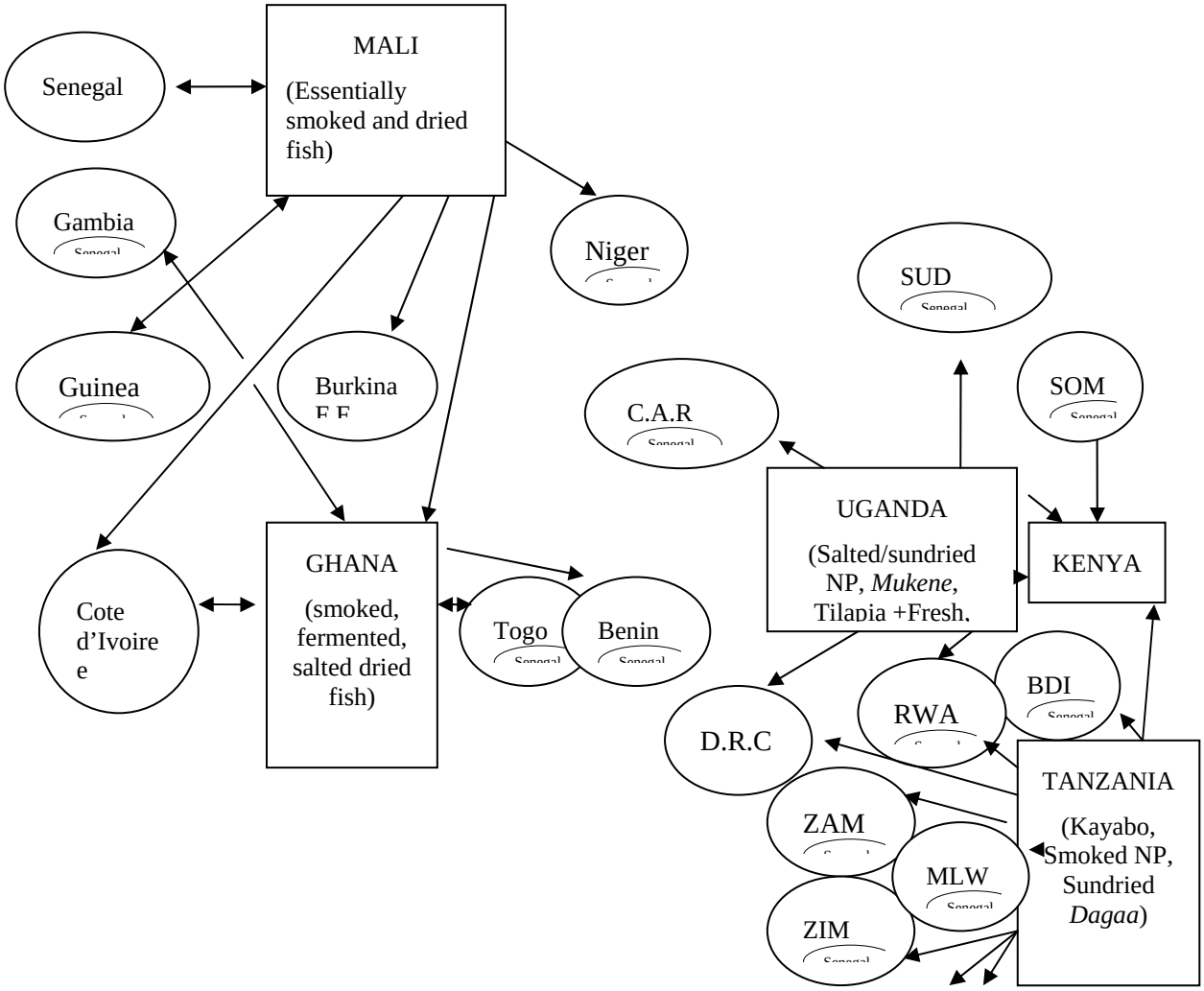
11. The socio-economic context within the fisheries has a significant impact on marketing and thus the return to the operator. It is commonly assumed that technical interventions to reduce losses in fresh fish will ensure quality preservation, therefore increasing the price of the fish and income of the operator. However, field figures highlighted that the improvement in the return was not systematic since any quality-rewarding development is intimately linked to the critical issue of purchasing power of the fishmonger, fish processor or the final consumer. It was indeed stressed that such good quality fish is denied to the smallest operators who in certain communities form the major part of the buyers. As an alternative, even considering the negative effect of time/temperature on the quality of raw material (hence a lower value end product), these operators refrain from buying (or intentionally delay the transactions) until the seller/fisherman, in a desperate search for customers, is forced to cut down the price in order to get rid of a deteriorating consignment..

12. In addition to this common feature to all the studied fisheries, other sources of losses have been identified in isolated and remote fishing grounds/landing sites mostly in inland fisheries (in some parts of Lake Victoria and in the Manantali dam in Mali) that are related to non- transparent trade practices. The unfair and complex arrangements with dealers (traders, truck owners) made it difficult to appraise the profit margins of the actual fishworkers but they were also found to be measures which make it difficult to break out of the poverty trap.

13. Some noteworthy coping strategies have been reported to control losses, especially during processing. In particular, techniques such as the prevention in Ghana of insect infestation during fermentation and the use of bird repellent ghost in Tanzania to reduce physical loss during natural drying of Dagaa should be disseminated in other countries experiencing similar losses.

14. Various cross border trade channels have been identified, beyond the sub-region or shared water bodies. The main products involved are sun dried Lake Sardine, Salted Nile Perch, smoked Nile Perch, smoked and fresh Tilapia, smoked Clarias, dried, and smoked anchovies.

15. Importing countries of the region concerned by these transactions are DRC Congo, Central African Republic (CAR), Rwanda (RWA), Burundi (BDI), Malawi (MLW), Zambia (ZAM), Zimbabwe (ZIM), Togo, Benin, Cote d'Ivoire, Niger, Burkina Faso, Guinea and Gambia. Cross border trade is also undertaken between the countries participating in the PHLA study. The key trade flows appear in this figure.



16. Patterns identified as affecting regional trade were both physical and quality losses of initially improperly packaged product, adulteration caused during delay of the consignment for a multitude of customs, police and health checkpoints (some are said to be unregulated points for both revenue collection and size/quality checks), and inadequate market information i.e. the potential supply and demand countries, the pricing status/value of fish, etc. While substantive information on local and international fish trade on which decisions could be based to appropriately develop the trade is available, information on regional fish export is elusive or lacking and where available, it has not been adequately documented.

17. These field data have been found to be a powerful tool in raising awareness of the fish operators, fisheries officers and especially in convincing development institutions to support loss reduction programmes. Data have been particularly instrumental in Tanzania, where the qualitative fish loss report has served to attract funding from the Overseas Fisheries Cooperation Foundation (OFCF) of Japan, with a provision of equipment and training for value-added fish production from low-value species and a commitment for a processing plant.

SUGGESTED ACTION BY THE COMMITTEE

18. Development resources are already scarce; there is a need to focus their use in a rational manner. Additionally, it is unanimously acknowledged that not all losses can be addressed and that a status of ZERO Loss is definitely not reachable in small-scale fisheries (not even in more structured fisheries businesses/the industrial sector). This calls for cost-effective interventions on significant losses, which is only possible after they are thoroughly assessed. Therefore, it is fundamental to complement this initiative of the PHLA programme for broader assessments where small-scale fisheries play a noteworthy role. This is also important, as experience has shown that real field data are more expressive, thereby more likely to convince development practitioners and raise awareness of fish operators in supporting or implementing loss reduction measures. Relevant actions could entail:

- the wide dissemination of the loss assement methodologies tools developped and encouraging fish oprerators in assessing themselves the losses they are incurring;
- actual law enforcement/effective measures in the upstream segment to deter bad practices in order to reduce the likelihood of losses during subsequent operations;
- a thorough value chain analysis and strategies for fair distribution to fishwokers of benefits where unfair practices have been reported. In addition a meaningful investigation in the production and marketing of small pelagics to ensure that the quality is recognized in fismeal product;
- where the relevance of technological solutions is acknowledged, coping srategies which have been proven to be effective should be exploited;
- owing to the socio-economic context whitin the fisheries, policy measures are necessary to ensure that the objective of the loss reduction intervention is met by setting up a framework to address the purchasing power/create the demand and by ensuring that the right to food of all is met by making available a cheaper source of protein to compensate for the fish not affordable to this stratum of the population. Policy actions are also necessary in issues relating to improved regional trade i.e. alleviating the unecessary multitude checkpoints, collecting, processing market information and making them readily available at exit/border points as well as institutional dissemination means.

The Sub-committee is expected to discuss these points and make recommendations. In particular it may wish to emphasize the practical means to address issues raised and capitalize on assets identified for secured regional supply in aquatic products.