Improved Fish Processing and Loss Reduction among Coastal Fishing Communities in Lagos State – Nigeria

**Summary**

IOI-Western Africa carried out a project on improved fish processing and loss reduction in four Nigerian coastal communities in 2004 and 2005. All four communities were located in the Ibeju-Lekki Local Government Area of Lagos State on the shores of the Atlantic Ocean. While the focal community was Orimedu, the three other communities are in contiguous areas.

The major objectives of the project included reduction of post-harvest loss, especially during the glut season, and the introduction of more efficient smoking kilns.

The project started with a diagnostic socio-economic survey to identify the major socio-economic problems of the communities and the best ways in which the IOI could intervene. The main project activities included awareness-raising programmes for women, training the women in the operations of the kilns, and the construction and donation of contemporary kilns to the communities.
In the course of this project, IOI-Western Africa cooperated with other bodies and agencies. The project benefited immensely from an existing relationship between the Nigerian Institute for Oceanography and Marine Research (NIOMR), the African Regional Center for Technology (ARCT) based in Dakar, Senegal, and the International Development and Research Centre (IDRC) of Canada. The smoking kiln adopted by the IOI for this project is the one developed under an NIOMR/ARCT>IDRC partnership.

A useful relationship has also been established with the Centre de recherches halieutiques et océanologiques du Bénin, arising from the project and in connection with its extension to the Aido-Plage community in Benin. The IOI-Western Africa contact person and two other volunteers from this Centre facilitated and participated in the initial familiarization trips to the Aido-Plage Ouida community.

In conjunction with partners in the project, the benefiting communities were informed about the availability of options to traditional curing methods and trained in the use of contemporary kilns while such kilns were donated to the benefiting communities. The introduction of these kilns was an exercise in community development. In the process, some women were empowered while food security through reduction in post-harvest loss, improved income and better nutrition were promoted.

One of the conclusions after the 2004 exercise was that the project should be replicated in as many other communities as possible. Accordingly, project activities are being replicated in another Nigerian community, Akodo, as well as in Aido-Plage Ouidia, a coastal community in Benin.

For monitoring and evaluation, two principal participatory rural appraisal (PRA) tools were employed: observations and semi-structured interviews during interactive sessions.

Because of the pervasive question of dwindling near-shore resources, future plans for the benefiting communities include the promotion of aquaculture as an enterprise and an alternative vocation during the lull in the fishing season. Other activities based on the philosophy of the Women, Youth and the Sea Programme will still be carried out in these communities depending on the availability of resources. Furthermore, the synergy between the IOI-Western Africa Open Day for women processors and the project will be exploited to full advantage.

The project cost for the four coastal communities was about $8,400.

**BACKGROUND AND JUSTIFICATION**

The project on improved fish processing and loss reduction was carried out in the Ibeju-Lekki Local Government Area of Lagos State in Nigeria on the shores of the Atlantic Ocean. The benefiting communities were Magbon-Alade, Okun-Ise, Orimedu and Osoroko. The focal community was Orimedu, which is located about 55 km east of metropolitan
Lagos. The three other communities are also on the Atlantic coast close to Orimedu.

Earlier, the IOI Operational Centre had implemented projects to empower women and youth in coastal communities around Lekki Peninsula in Lagos State under the IOI Women, Youth and the Sea Programme. The project discussed here was carried out under the same Programme in 2004 and 2005.

Previous studies had established that many coastal communities in the sub-region had livelihoods that revolved around fishing and fish processing. The socio-economic profile of the four communities was typical of that of other coastal communities in the area and, indeed, in the entire West African coastal area. Generally, artisanal fishery is the mainstay of the fishery economy of Nigeria and many other West African States, accounting for 90 per cent of the total fish production in Nigeria. It also supports the employment of a large population comprising the fishermen, processors, traders and transporters. The womenfolk are the processors and their principal tool – the fish smoking kiln – occupies centre stage in the processing activities.

Fishery-related livelihood issues are thus tied to the artisanal sector and any livelihood-related interventions must target this sector, which is characterized by a high incidence of post-harvest loss, especially during the glut seasons. Against an annual demand of 2 million tons of fish, the supply is only about 1 million tons. This deficit of some 1 million tons can be reduced to a great extent if post-harvest losses are minimized.

Post-harvest fishery losses also translate into huge financial losses and reduction in the quantity of available protein. Thus, there is a need to reduce post-harvest loss occasioned and exacerbated by weak infrastructure and poor handling and processing facilities. Cost-effective loss reduction would improve income and contribute to poverty eradication and improved food security. Such a need for loss reduction had been advocated in the past and is also highlighted in the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization of the United Nations.

Cold storage was one option for preventing post-harvest loss. However, cold rooms and ice-making plants required a regular, inexpensive and steady supply of electricity and the energy supply was grossly inadequate in these respects. In addition, cold storage necessitated heavy investment. The more realistic and preferred option was smoke drying, which had always been and remained the principal traditional method.

The most common method of processing was smoke drying using traditional kilns built from mud or cut-out 200-litre metal drums. Fuel (usually firewood) was burned to generate heat and smoke, which were directed onto the fish in a grill above. There was no chimney of any sort. This method was characterized by drudgery; long batch processing time due to inefficient heat transfer; uneven and
haphazard heat distribution, necessitating laborious rotation of fish; and the unpleasantness of smoke in the eyes. The attention that the method demanded left little or no room for the women to concentrate fully on other household chores. Thus more effective smoking kilns were needed.

**Objectives**

The project was concerned with women’s empowerment and food security. Its major objectives were to:

- generate awareness of the merits of contemporary methods of curing fish;
- reduce post-harvest loss, especially during the glut season;
- promote better nutrition through the greater availability of animal protein; and
- introduce more efficient smoking kilns.

**Project Planning**

The project was preceded by a diagnostic survey, which resulted in the compilation of a socio-economic profile of a typical coastal community. This study identified the major socio-economic problems of the communities and the best ways in which IOI could intervene.

The project itself started with the establishment of a rapport with, and familiarization on the part of, members of the community and their leaders. In addition, interactive sessions were held to verify the needs assessment. Subsequently, awareness sessions were held for the women to develop an appreciation of the benefits of contemporary fish-drying kilns.

**Project Activities**

The main activities were:

- awareness-raising programmes for the women;
- training for the women in the use of contemporary smoking kilns; and
- the introduction and setting up of such kilns in the communities.

Contemporary smoking kilns such as the one designed under an NIOMR/ARCT project and adopted for this activity have features that avoid most of the shortcomings of the traditional kilns. The novel features of the NIOMR/ARCT kiln include more efficient heat transfer and distribution such that fish rotation

Introduction of the contemporary fish-processing kiln.
becomes unnecessary, removal of other drudgery associated with traditional methods, saving of time for other household chores, and elimination of the problem of unpleasantness resulting from smoke in the eyes.

**Achievements**

The achievements of the project were:

- Women fish processors were informed about the availability of alternatives to the age-long traditional methods of drying.
- Awareness was generated regarding the benefits of contemporary kilns.
- Women fish processors were trained in the use of such kilns.
- A contemporary kiln was donated to each of the four communities.

The introduction of these contemporary kilns was an exercise in community development. In the process, the women were empowered while food security was promoted through reduction in post-harvest loss, improved income and better nutrition.

The reduction of post-harvest loss was not quantified. However, according to the women, improved quality of the product resulted in better market pricing and improved income, which translated into a reduction in economic loss. Further, thanks to the training, the women recognized speed and good hygiene as important factors in handling and processing.

**Monitoring and Evaluation**

For monitoring and evaluation, two principal participatory rural appraisal (PRA) tools were employed: observations and semi-structured interviews during interactive sessions.

**Partnerships**

The partners in the project included the following:

- the IOI Operational Centre-Western Africa;
- the Nigerian Institute for Oceanography and Marine Research;
- the African Regional Center for Technology (ARCT) based in Dakar, Senegal; and
- the International Development and Research Centre (IDRC) of Canada.

The smoking kiln adopted by the IOI for this project was actually the one developed under an NIOMR/ARCT/IDRC partnership. A useful relationship has also been established with the Centre de recherches halieutiques et océanologiques du Bénin as a result of this activity and in connection with its extension to the Aido-Plage Ouida community in Benin. The Benin contact person of the IOI Operational Centre-Western Africa and two other volunteers from this Centre facilitated and participated in the initial familiarization trips to
Aido-Plage Ouida community. The fostering of partnership was encouraged as much as possible as a matter of deliberate policy during the life of the project.

**Innovations**

One innovative aspect of the project is the introduction of improved smoking kilns. The design includes heating by radiation, conduction and convection during smoking, and provision of a heat reflector, all of which are combined to produce uniform drying without the need for the laborious rotation of fish trays. The reduction in the attention needed means that the women have time for other household chores. The presence of a chimney facilitates easy evacuation of moisture-laden smoke, which obviates the unpleasantness of smoke in the eyes.

Another innovation is that the kilns are located in the compounds of the respective women head processors by consensus and in consultation with the respective traditional rulers. Based on previous experience, it was decided that the kiln would be put in the custody of a particular woman rather than making it centrally available to everyone since the latter arrangement had usually resulted in chaos with regard to use and maintenance.

Other women have access to the kilns at the discretion of the woman leader. They pay for the services in kind, usually through a combination of fuel wood and labour.

**Sustainability**

With sustainability in mind, a related activity also under the Women, Youth and the Sea Programme needs to be mentioned. The community members were encouraged to form themselves into viable cooperative societies while some were granted loans. The idea was to empower them financially so that they could help themselves by, among other things, sustaining all initiatives introduced in connection with the project.

**Replicability**

One of the conclusions after the project was that it should be replicated in as many other communities as possible. In line with this thinking, the foregoing activities are being replicated in another Nigerian community, Akodo, as well as in a coastal community in Benin. The Akodo community is in the Orimedu axis around which other communities have benefited while the community in Benin is the Aido-Plage Ouida community on the coast close to the Togolese border.

The replication involves the same essential elements: the establishment of rapport with the target community, sensitization to the problems of traditional methods and the merits of contemporary methods, training in the operations of the contemporary kiln, and finally construction and donation of the kiln.
DIFFICULTIES AND LESSONS LEARNED

The principal constraint was that the extent of the intervention provided by the project was limited by available funds. Other constraints included mass illiteracy, making it more difficult for members of the community to appreciate and embrace new ideas even as the use of an interpreter was imperative. The weak financial situation of community members also militated against any arrangements for quick marketing since some capital was needed to transport the processed products to the major urban and lucrative markets. This made loss inevitable in some circumstances.

Because of pervasive poverty and poor financial status, community members were dependent solely on the assistance provided and could make few or no material inputs.

One hard lesson learned concerned security consciousness while working with local communities and sensitivity to local politics and sentiments. For example, the project team did not anticipate the communal strife at Okun Itamarun, which necessitated the relocation of the activity initially destined for this community to Osoroko.

CONCLUSION

The project was highly beneficial to the communities. Its strength stemmed from the fact that the compilation of the socio-economic profile of the typical coastal community and the interactive sessions with the community clearly identified the issue of post-harvest loss as a pressing one. Community members therefore naturally embraced measures to address the problem.

FUTURE PLANS

Because of the pervasive question of dwindling near-shore resources, future plans for the benefiting communities include the promotion of aquaculture as an enterprise and as an alternative vocation during the lull in the fishing season. Other activities based on the philosophy of the Women, Youth and the Sea Programme will still be carried out in these communities depending on the availability of resources. The IOI-Western Africa Open Day for women processors will be used as a forum for revising the needs assessment of the women and revisiting the Women, Youth and the Sea Programme.

PUBLICATIONS


**Contact**

E. Olusegun Oyewo  
Director  
IOI-Western Africa  
Nigerian Institute for Oceanography and Marine Research (NIOMR)  
P.M.B. 12729  
Wilmot Point Road  
Victoria Island, Lagos  
Nigeria  
Tel.: +234 (1) 261 7530 / 7535 / 7540 / 7543 / 7544  
E-mail: niomr@linkserve.com.ng, oyewo2000@yahoo.co.uk

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**Translations of the Comments of Two Women Beneficiaries**

“We have benefited a lot from the ‘Open Day’, which is a follow-up to the programme on improved fish processing. In addition to better knowledge on fish processing, I have been exposed to alternative enterprises such as aquaculture that can be combined with our regular trade. This is the first time that I am seeing fish fries. Before now, I only thought about fish as grown ones. Seeing eggs, fries, fingerlings and adults is very interesting for me indeed.”

“We have always depended on marine species for our trade. Introducing the production of freshwater fish will give us something to do during the lean season for our regular type of fish. We, however, implore you to assist us by building at least one fishpond for our community.”