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Fish Farming Improves Household Nutrition and Food Security in Ghana and Tanzania

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AquaFish research pinpoints key infrastructure for increasing dietary diversity



An AquaFish researcher surveys local Ghanaian women to determine their household's level of food security (Photo courtesy of Akua Akuffo).

The African continent has abundant marine and freshwater fisheries resources, and yet some African nations have the lowest per-capita rate of fish consumption in the world. Fish can provide an affordable and nutritious source of protein for the rural poor, and can help improve dietary diversity, an important step towards achieving food security. Though many factors contribute to this disconnect (including the export of fish to foreign markets), rates of fish consumption in rural Africa are largely limited by access issues, such as high transportation costs, inefficient market distribution and infrastructure systems and availability issues, such as insufficient supply and lack of post-harvest storage systems.

Fish can provide micronutrients that are crucial for healthy functioning and development, especially in children. Dietary diversity is important to ensure nutritional completeness, and households that diversify their diet by consuming fish are more likely to be food secure than those that do not.

In the East African nation of Tanzania, poverty is widespread and food security is elusive for many of the nearly 50 million people who live there. Even though fish are widely available near production centers in coastal areas, remote inland populations have fewer options for purchasing and consuming fish products. In order to improve access to fish products in remote areas, there must be adequate infrastructure - namely, good roads and ample electricity for the delivery and storage of fish products.

Food security is also a pressing issue in the West African nation of Ghana, though the per capita consumption of fish for the average Ghanaian is about 25kg per annum, which is one of the highest in Sub-Saharan Africa. People living in the coastal regions of Ghana consume more fish than those in the inland regions due to availability in local markets. In some Ghanaian cultures, certain types of fish are considered taboo to consume.

In order to better understand the role of aquaculture in helping to address these challenges, researchers from the AquaFish Innovation Lab investigated the impact that access to fish and availability of fish products can have on food security in Ghana and Tanzania. Dr. Kwamena Quagraine of Purdue University led a team of scientists from Kwame Nkrumah University of Science and Technology in Ghana and Sokoine

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University of Agriculture in Tanzania to identify the key determinants of fish consumption among rural, urban, and peri-urban households in these two African nations.

In Tanzania, the AquaFish IL examined the impact of key infrastructure on seafood accessibility in rural, urban, and peri-urban households. In urban areas, access to transportation was a primary determinant for household accessibility to seafood. In recent years, the expansion of public transportation buses has increased access to seafood for peri-rural households by helping to reduce transportation costs and traffic congestion. Researchers also found that, in addition to good transportation networks, electricity and communication technologies were important to improving access to seafood through improving storage options for perishable fish products, pricing, and the availability of information for consumers.

In Ghana, diet diversity and seafood consumption were examined using the food consumption score (FCS), a measure of the nutritional quality of household diets and food security.

The study showed that fish-farming households are often more food secure and have more diverse diets than non-fish-farming households. Rural populations in Northern Ghana stood to benefit the most from implementing small-scale aquaculture operations, and women-led households in this region that start fish-farms had a 96% higher probability of achieving food security.

AquaFish IL findings from Ghana and Tanzania demonstrate the positive impact that small-scale aquaculture can have on food security and nutrition in rural households. Findings also emphasize the potential benefits for food security of investing in critical infrastructure, including electricity, communication networks, cold chains, and transportation.