

Don't Just Teach Them To Fish" Program

Through QSL Development Solutions, LLP, we are honored to submit this application to the SID Washington Innovation Challenge fund for our **Don't Just Teach Them To Fish Program**. We have already assisted impoverished Nigerians to become successful aquaculture farmers facilitated by the use of digital technologies through a home-based business that increases income. We believe that our market proven "Fish-Farm-In-A-Box"TM (FFBX) from our partner Aquada Development Corporation's self-assembly technology, combined with digital technology, is both an innovative and practical way to increase fish farm families' incomes, and meet Nigeria's ever increasing demand for nutritious food.



Our successful private sector technology demonstrates an innovative technology combined with support services and a buy-back option. Our program is a blend of:

- an easily shipped and assembled pondacle to raise fish
- the use of our Nigerian partner's Oyivo tablets with aquaculture development apps to facilitate technical support and training to monitor fish production through sales, which are supported by
- the Oyivo PowerLocker^[TM] and Oyivo SunTrap^[TM] hardware to deal with unreliable power, which is a major problem throughout Nigeria.

Development Problem: The Government of Nigeria's policy to reduce poverty below 90 million people by diversifying the economy beyond petroleum includes expanding agriculture and aquaculture. Nigeria imports upwards of 60% of locally consumed fish, draining foreign reserves, while local needs could be met by widespread know-how in aquaculture.¹ Over the past 20 years, cell phone use in Nigeria has been growing and now provides a platform for internet access. Some Nigerians, particularly women, face unique challenges to invest in smartphones because of mistaken views that they have limited economic benefit. Tying smartphones to people's livelihoods is a rapid way to increase income and digital participation.

Our Innovation Objective: The **Don't Just Teach Them To Fish Program** blends aquaculture technology with access to digital information. In this program, QSL and our Nigerian business partners are facilitating Nigerian men and women's access to a HOME BASED aquaculture technology to improve

¹ (<https://www.vanguardngr.com/2017/12/fg-intensifies-effort-reduce-annual-fish-import-bill/>)



their income by assisting them to obtain and use digital technology to enable access to information and knowledge. QSL plans to expand the use of remote training and digital extension platform to successfully install or construct fish ponds combined with service support. Over the next 18 months, at least 1,000 Nigerian men and women will be regularly using this new innovative digitally integrated technology to obtain extension services for their aquaculture investments. This could reach 10,000 Nigerians in five years. Don't Just Teach Them To Fish will create jobs and build tangible, sustainable and substantive wealth for Nigerian men and particularly for women who form the critical tether of the social and economic fabric of Nigerian, indeed, African society.

QSL believes Nigerian men and women's access to digital technology achieves development objectives. One of the most powerful drivers of access to digital technology is when fish farmers employ the technology for income generation, and increased income and access to digital information facilitates Nigerian men and women finding information about other business practices plus health and education.

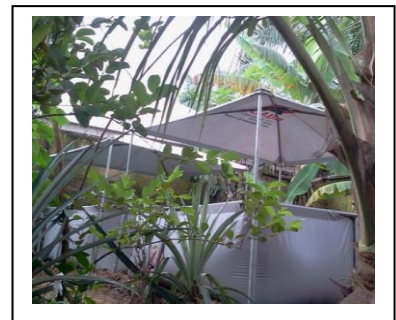
The Detailed Innovation

QSL plans to expand the current level of aquaculture investments to develop a cadre of Nigerian fish farmers who are well-trained in managing and growing aquaculture businesses as well as in evaluating and monitoring the performance of their enterprises, have access to expertise and technical support when needed, and use the digital platform to expand their sales and marketing outreach. Our program focuses on three aspects: (i) Outreach to potential fish farmers to bring the FFBX opportunity to their attention, (ii) Expansion of the pool of training material deployed in the Oyivo tablet to general business skills, bookkeeping and areas to support their business development skills, and (iii) Delivery of the training material to local trainers who will provide the ongoing support to local fish farmers. A SID Washington Innovation grant will enable us to expand the digital element of this system.

Management: QSL is the lead organization for the Don't Just Teach Them To Fish Program. Our Nigerian partnership includes Aquada Development Corporation (Aquada), which developed the FFBX and aquaculture supporting technologies with IDMANN Institute for training and human capacity building.

Fish-Farm-In-A-Box™

The Fish-Farm-In-A-Box™ (FFBX) is a highly engineered but remarkably simple solution that helps people with NO prior aquaculture experience or training, to effectively enter the business. It is commercially viable having been tested with 550 fish farm families over the past year. It is intended to enable people start small, typically *in their own backyards*. FFBX is literally a wooden box, which Aquada ships to customers. Instead of having to construct a concrete pond which is expensive and somewhat permanent, customers unpack the contents of the FFBX and simply follow the instructions to connect a set of engineered metal tubes and a UV-stable high-tensile plastic tarp to form a sheltered fish pond (pictured). It is intended to enable people start small, typically *in their own backyards*. FFBX is literally a wooden box which is shipped to customers from Aquada. Instead of having to construct a concrete pond which is expensive and somewhat permanent, customers unpack the contents



of the FFBX and simply follow the instruction to connect a set of engineered metal tubes and a UV-stable high-tensile plastic tarp to form a sheltered fish pond (picture). Those who prefer can have the installation done for them for a small fee.

UV stability is critical since the fish tank will be exposed to the sun virtually every day. The operational characteristics of the plastic enclosure are important because failure of this plastic (due to sub-standard material) will result in mechanical failure and loss of the fish stock. This unique design by Aquada, which includes controlled inlet and drainage controls of the pond and integrated shelter from the rain and a sunshade to ensure comfort of the fish all-year-round, is called a 'pondacle'™. The pondacle™ provides the environment for the growth of the fish stock, with appropriate shelter, water supply and nutrients necessary for rapid growth.



After the installation, all that is required is a connection to water from the local supply (which can be done with flexible water hoses) and an outlet that drains water when required. The outcome is a functioning sheltered fish tank that can hold 1,000-1,500 fish. The opening stock of fish in FFBX is typically catfish. The fingerlings, the feed, pond management equipment, and a TABLET DEVICE that helps operators to record their activities and track the growth of their stock are included. Since fingerlings are live, they are shipped in carefully controlled containers (separate from the FFBX) after the operator confirms the fish pond has been set up properly.

The most exciting aspect of this approach is that Aquada provides a **buy-back option to qualifying FFBX buyers** after the fish reaches a certain size. This means operators who buy qualifying FFBX installations from Aquada can sell the fish back at a MUTUALLY agreeable price when the fish reaches maturity. The operator is NOT compelled to sell to Aquada and Aquada does not HAVE to purchase the mature fish from the operator. There is room for agreement once the seller is ready to sell. However, operators can rest assured that there is a buyer available for their mature stock of fish. Clearly different operators will price their fish differently based on their differing cost structures (local labor costs, water, overhead, etc.). Operators can now focus on managing their farms knowing there is a buyer available to buy back the fish once they reach maturity and as long as they are competitive in pricing. This is a far cry from the prevailing situation in which many farm owners have no guarantee of a sale and fish farmers may need to hold their inventory for very long periods increasing their risk of loss.

Telephone, SMS and e-mail customer support is included so new entrants into the aquaculture enterprise are confident that help is available. This is in addition to operational documentation and training material we will be providing in the near future. **It is in this 'upskilling' and 'ongoing support' that we see a unique opportunity to deploy digital technologies in support of new fish farmer entrepreneurs.**

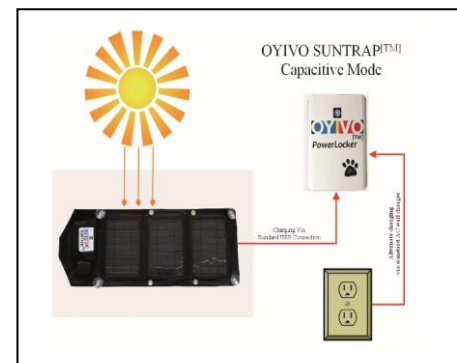
Enabling Digital Technologies (Oyivo SunTrap & Oyivo PowerLocker)

Recordkeeping is extremely critical in aquaculture. It is relatively easy when one has a few dozen fish in stock. With thousands, the documentation of their progress is essential in determining when to feed,

when to sort, when to sell and when to restock. To facilitate this process, Aquada developed an app (available only on Android devices currently) which helps operators to maintain accurate records based on the pond, stocking date and so on. The idea is that every operator should know when it is time to sell, and also when the fish is doing well (or not). This app comes preloaded on an Oyivo tablet which is included free with the *FFBX* offering. This is a very helpful tool for operators especially those just beginning. Considerable effort is required in the training of new operators in appropriate recordkeeping to support their enterprises. This training process provides a solid foundation for participants, particularly poorer women, to gain facility in their tablet devices *as business tools*. The added communication capabilities provides a critical lifeline to available supportive resources.

The *FFBX* app enables data export to an Excel spreadsheet so operators can integrate the output from the farm operations into other spreadsheet operations or even accounting and financial software. The software is easy to use. From experience, the typical operator needs about four sessions of 20-25 minutes of orientation to gain good facility with the app and to fully integrate it with their aquaculture operations. Furthermore, the output from the app is invaluable for remote support. This is because the output can be sent to Aquada for analysis. The digital devices facilitate the discipline to maintain ALL relevant records electronically.

The *FFBX* is a well-engineered solution to address power reliability, which is a problem throughout Nigeria. To ensure power failure is NOT a problem in the use of the tablet, Aquada developed the Oyivo PowerLocker™ and Oyivo SunTrap™ which are a power bank (11,000MAh) and portable (monocrystalline) solar panel respectively. The SunTrap™ comes with suction pads to attach to a window to charge the power bank as well as the tablet. In our experience MANY operators find this combination useful as they can use it to charge ALL their portable devices including phones, other tablets, mp3 players, etc. ANYWHERE. The combination of the Oyivo PowerLocker™ and Oyivo SunTrap™ ensures that fish farmers have available power to operate the devices. The power devices are shown in the figure to the right. It should be pointed out that these devices can be used with ANY standard portable electronic device (phones, tablets, etc.). They are engineered for use in a great many devices. Many *FFBX* clients have purchased them not just for business but also for their personal use and for gifts to family that suffer from the (reliably) unreliable power supply in Nigeria. This is a solution that works – *FFBX* + *FFBX* App + Oyivo Tablet + Oyivo SunTrap + Oyivo PowerLocker.



Training provides a solid foundation for participants to gain facility in their tablet devices *as business tools*, fostering communication in SMS, email, and downloadable training videos. Training will be expanded to new participants to use the data gathered by the easy-to-use software so operators can integrate fish production data with accounting and financial software. Short duration training will be provided to gain facility with the app and integrate it with their operations. The app is invaluable for remote support.

Digital technology: Smartphones and online services will help Nigerian men and women expand their home-based aquaculture enterprise. Smartphones and low-cost tablets with internet access enables participants to receive ongoing remote training in aquaculture and aquaculture management, technical support for their growing fish stock, and an interactive platform for engaging buyers and sellers to expand their market. This inextricable interlinkage between commercial interests and the digital facilities is the key to uptake and maintenance of these capabilities by Nigerian fish farmers. Supporting their entrepreneurial and financial aspirations is the fastest way to support families while enhancing their uptake of digital technologies.

Capacity Building: Our expanding focus will be on capacity building to ensure that the physical FFBX is utilized effectively to create a new class of Nigerian men and women entrepreneurs. **This requires training and capacity building, which is the core of our new program.** IDMANN Institute provides the training and digital infrastructure, by establishing the computer based network, computing capacity, and storage functions that project and future participants need for the successful delivery of applications and services. IDMANN Institute will provide formal based training based on QSL's remote access curriculum and presentations. Major topics range from introduction to fish farming, use of digital devices in data collection, communication, fish production management and tracking, sales, disease prevention, record keeping and farm economics. Training will be advertised in Nigerian newspapers, cell phones, social media, through the internet and radio stations. Live remote training will be provided twice a week for three times and once a month in Nigeria. Seminars will be available on-line for participants to review so that rural Nigerian men and women can access the information to fit their schedules. To overcome the lack of digital technology, we would like to provide 500-1,000 Oyivo tablets and supporting power devices to new Nigerian men and women participants who do not own mobile devices. Participants will pay their own monthly service costs.

Sustainability: We strongly believe in market driven solutions to income generation, poverty reduction, and commercialization of new and innovative technology. Our business plan includes advertising and networking about our Don't Just Teach Them To Fish technology, market outreach to interested buyers, and providing technical support and training for the use of the complete FFBX technical package. We are also assisting potential buyers find local sources to finance their purchases through our extensive business contacts with several key Nigerian banks. We and our partners have several offices in Nigeria offering a range of services for many economic sectors in addition to aquaculture and we plan to expand these offices. Our partner the IDMANN institute is training hundreds of future entrepreneurs. Finally, we are engaged in seeking clients outside of Nigeria for future development of the FFBX market.

Challenges-what can work better and lesson learned: Any new technology faces challenges to enter in to the market place. The technical and knowledge constraints faced by fish farmers are enumerated above and have been addressed by the FFBX program. One lesson learned is that staff capacity to provide training and fish farmers' access to funds to purchase the FFBX are slowing a more rapid expansion of the program to meet the growing demand. To expand our training and technical support we need to increase the use of digital based remote training for fish farmers using the Oyivo Tablets. Additional access to capital will be helpful to accelerate the rate of spread of the technology. We are considering expanding our extensive network with Nigeria's banking sector and donors to improve access to commercial financing and help potential fish farmers to prepare business plan and documents for financing.