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New Agriculturist



The Global Forum on Agricultural Research (GFAR) brings together all those working to strengthen and transform agricultural research for development around the world. As part of this role, GFAR is working with *New Agriculturist* to showcase and raise awareness of important initiatives and their outcomes, to update and inspire others.

Smallholder aquaculture: sustaining the impact of private investment



Cage culture in Magura, Bangladesh
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The growth of aquaculture - now the fastest growing food production system in the world - is increasingly attracting private investment. Much of this investment, however, is in larger enterprises and input services such as feed, seed and processing. Little is targeted at smallholder farmers who, as a result, continue to face constraints in accessing finance, technology and markets. In 2010, WorldFish set out to explore the business case for investment in smallholder aquaculture by examining several donor funded projects. Research found that investments in smallholder farmers and their organisations can be commercially viable, creating economic as well as social and environmental benefits.

Generating income

Fish remains the most important source of animal protein for 2.6 billion people. Wild fisheries supplies are static or declining in many countries across the developing world and fish-farming, or aquaculture, has become an increasingly important source of fish for human consumption. Nearly 50 per cent of all the fish we eat comes from farms: aquaculture is now the fastest growing food production system. Estimates project that fish supply will need to double in the next 20 years to meet the increasing demand, making aquaculture an important opportunity for many smallholders in Asia and Africa for food, income, employment and farm diversification.

Over 95 per cent of aquaculture farmers in Aceh, Indonesia, are small-scale, owning or operating brackish water shrimp and fish ponds of around one hectare per household. Over three years, donor investments working together helped grow a network of farmers from 47 in 2007 to 2,639 in 2010 and raised net profit per farmer from US\$73 to US\$435 per year. Informal farmer groups have coalesced into a cooperative which is now ready for commercial investment, to scale up the endeavor to reach 50,000 new households.

In India, local service organisations were set up, through donor funding, to assist small-scale, commercially-oriented shrimp farmers to form farmer groups and reduce shrimp disease problems, primarily through adopting simple management improvements. Farmer participants in the project grew from five volunteers in 2002, to 17,147 in 2011.

Financial analysis of the project over the period of 2002-2006 showed that, from an investment of US\$0.3 million, US\$8.9 million of farm gate revenues and US\$3.52 million of profits were created for 730 farmers



Over 95% of aquaculture farmers in Aceh own or operate brackish water shrimp and fish ponds of around 1 hectare
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And in Bangladesh, a USAID-funded project provided US\$0.5 million of technical and organisational assistance during 2008 and 2009 to small-scale shrimp and fish farmers. This investment created US\$52.5 million in income and US\$20.6 million in profits in 2011 for almost 23,000 farmers.

All three cases from Indonesia, India and Bangladesh raised incomes for smallholders, and in two of the countries there was a significant business case for investment at the project level. Key success factors included the setting up of local technical services which improved farmer access to technologies. Strengthening farmer groups or producer organisations also enabled smallholders to obtain other inputs, such as cheaper feed and improved seed, coupled with finance.

Having established the high return from investments into small-scale aquaculture, the next step was to better understand the requirements to turn donor-funded projects into economically and socially sustainable aqua-businesses. The research showed that investment in the development of the capability and capacity of fledgling enterprises, and most importantly their business skills, is critical. The enterprises must also be linked to business services such as microfinance, technical and market development and the collaborative purchasing of inputs. Engagement of all actors along the whole value chain has the potential to deliver higher rewards but care must be taken not to displace traditional actors, such as local traders, by making sure that they continue to draw equivalent value in any changed way of operating. The need for time to build the capacity and networks among smallholders and intermediary organisations is key in establishing new, robust, businesses in the aquaculture sector.

New partnerships for impact

With the increasing understanding of business models for investment, WorldFish has been able to share its research findings with the private investment community. In December 2011, in conjunction with A-Spark Ventures of Utrecht, WorldFish hosted a meeting involving scientists, entrepreneurs, impact investors and other interested parties, which resulted in the establishment of a new investment facility for aquaculture, named Aqua-Spark. An agribusiness 'incubator' - which helps investors develop robust business plans - has been established by WorldFish to build research and development initiatives into investable small and medium-sized aquaculture enterprises.

The Aqua-Spark financing facility opens a new opportunity to connect commercial investment to WorldFish research with aquaculture communities in Bangladesh, India and Indonesia and to create impacts and sustainability at scale, beyond what has been possible in grant-funded projects. New aquaculture businesses are being explored in Cambodia and Myanmar, which have potential for expansion through commercial investment based on aquaculture technologies developed through WorldFish research. In the future, connecting the research of WorldFish more directly to the creation of new business opportunities, and facilitating access to the most appropriate financing, will help to catalyse investment in small-scale aquaculture. This will provide positive environmental, social and economic value for smallholder producers, local services, impact investors, seafood buyers and retailers.

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Investments in smallholder fish farmers can be commercially viable
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