## Section 3

# Improving **Fishers'** Livelihoods:

Better Fisheries Management & Aquaculture

## Household hatcheries are a major breakthrough in small-scale fish farming

**Low-cost household hatcheries for carp and tilapia are helping farmers take up small-scale aquaculture.** Previously, the supply of good quality fish fingerlings was a major hurdle. Central hatcheries couldn't cater to far-flung customers. Now, with just a little training, rural households can learn to raise good quality fish fingerlings. As well as stocking their own paddies and ponds, farmers have young fish to eat or sell.

In Bangladesh and the hilly regions of northern Vietnam, these decentralised household hatcheries have led thousands of rural poor to start small-scale aquaculture in fields, ditches or ponds. The potential for household hatcheries for other species, both freshwater and marine, and for all regions where there are small water bodies, is enormous.

■ Find out more by typing **AFGP01** into the search box on the search page of the CD attached to this booklet.

**Project title:** Partnerships in aquatic seed: Developing quality seed networks for diversified and profitable aquaculture

## Foods from water bodies improve life for the very poor

**Simple new ways of managing wild and cultured fish in paddy fields, ponds and lakes mean that people have more reliable supplies of food, better diets and better nutrition.** For centuries, the rural poor have relied on wild fish, plants, snails and other foods. But these are fast disappearing because of over-exploitation, dwindling flood plains and more intensive farming.

People—especially the poorest—in Northeast Thailand, lowland Cambodia and Bangladesh are already reaping the benefits of these systems and they are being strongly promoted in Vietnam, India, Indonesia and Lao PDR. There is also great potential in hilly agricultural and tropical forest systems where rainfall is seasonal.

■ Find out more by typing **AFGP02** into the search box on the search page of the CD attached to this booklet.

**Project title:** Introducing short-crop aquatic production into agro-aquatic farming systems to increase and diversify output, reduce vulnerability and improve livelihoods

## Huge potential for safe fish and vegetable production in urban areas

**Agriculture and aquaculture in and around cities creates jobs, and can improve the environment, reduce waste and provide good cheap food.** Previously, the risk of contamination from poor quality and waste water posed dangers. But safe ways of producing fish and growing water vegetables around cities are now available.

Techniques for aquaculture and horticulture have been tested near Hanoi and Ho Chi Minh City in Vietnam, Blantyre in Malawi, Phnom Penh in Cambodia, Bangkok in Thailand, Yaoundé in Cameroon, Dhaka and Mymensingh in Bangladesh and Port Moresby in Papua New Guinea. The potential for raising fish and growing vegetables to supply booming urban markets in developing countries is enormous and could have a major impact on improving incomes, food and nutrition.

■ Find out more by typing **AFGP03** into the search box on the search page of the CD attached to this booklet.

**Project title:** Production of safe and nutritious fish and aquatic vegetables at the peri-urban interface …

## Agriculture–aquaculture mix boosts productivity

**Growing crops and fish together raises productivity and helps relieve pressure on land and water resources.** This could help many developing countries where land and water are under extreme pressure. Simple forms of community management make good use of water and nutrients and boost harvests of fish from rice fields, ponds and traps.

Community groups successfully manage integrated systems in central Bangladesh, southeast Cambodia and northeast Thailand. Integrating water use in aquaculture and agriculture is now spreading throughout South and Southeast Asia. In northwest Bangladesh around 30,000 households already produce fry and fingerlings in rice fields. These integrated systems have great potential for improving livelihoods and nutrition for millions of the rural poor.

■ Find out more by typing **AFGP04** into the search box on the search page of the CD attached to this booklet.

**Project title:** Development of diverse and productive agro-aquaculture systems to enhance food production and livelihood opportunities for poorer households and communities

## Combating fish diseases improves farmers' returns

**Practical and cost-effective methods are now available to help farmers detect fish-borne diseases quickly and accurately.** Severe disease epidemics threaten aquaculture, particularly smallholder production. The new methods—and simple management improvements—lower the costs of treating disease and give farmers higher yields of better quality fish.

These easy-to-use practices for safe and healthy production of catfish and shrimp are already widely used in Vietnam, Thailand and India. Six Asian governments are also taking up these methods to improve fish health management services. Because people are becoming more aware of the need for better fish disease control in aquaculture these techniques could have a major impact.

■ Find out more by typing **AFGP05** into the search box on the search page of the CD attached to this booklet.

**Project title:** New strategies for aquatic animal health management to increase aquaculture productivity …

## Quality networks open markets for fish

**Networks connecting producers, dealers, technical specialists, NGOs, public officials and consumers along fish market chains help people understand the need for quality products and set quality standards.** Without quality standards for products, access to growing national and export markets may be blocked and producers denied higher prices.

The network approach was successfully tested in Vietnam and Bangladesh. In Vietnam, companies processing fish for export set up the market quality network. This involved all those along the market chain working together to improve fish for export. Marketing networks to improve product quality have great potential not only for fish but for a large range of other products too. Not least, poor producers stand to benefit from better prices.

■ Find out more by typing **AFGP06** into the search box on the search page of the CD attached to this booklet.

**Project title:** Promoting domestic and international networks for market quality in aquaculture …

## Helping fishers make smarter decisions

**Market information systems, often based on simple mobile phone and local-centre web access, help poorer groups make smarter decisions.** Although market intelligence systems are widespread globally, they mostly serve large companies in developed countries. Flexible local networks connecting producers, traders, NGOs, the public sector and consumers help them quickly find and use the information they need.

Artisanal fishers have rapidly caught on to using mobile phones to find out where they can get the best prices for their catch. 'One Stop Shops' in Bangladesh, and similar networks in Laos, Cambodia, and Vietnam, also offer fishers cheap local access to market information. These simple systems could have a major impact, particularly in countries where aquaculture is booming.

■ Find out more by typing **AFGP07** into the search box on the search page of the CD attached to this booklet.

**Project title:** Developing market information systems for aquaculture to benefit the aquatic foods supply chain …

## Knowledge brings opportunities in emerging domestic fish markets

**Small producers and cooperatives can take advantage of emerging domestic markets when they know how they work and what consumers want.** Helping producers learn about consumer preferences and the options for selling, processing, transporting and marketing their fish lowers their costs and helps them get better prices.

Producers in Vietnam were able to reorient their products very quickly to the emerging domestic market when the bottom dropped out of the US market for catfish. In Thailand, fish production for the domestic market has nearly doubled over the last decade. Helping producers learn about market chains and domestic demand for fish could have a huge impact wherever there are growing urban centres in Asia and Africa.

■ Find out more by typing **AFGP08** into the search box on the search page of the CD attached to this booklet.

**Project title:** New strategies and approaches for meeting the demand for aquaculture and aquatic products …

## Fish genetic networks boost production

**Networks to promote high-quality breeding fish are the key to profitable aquaculture, especially for poor producers.** In some countries breeding fish for aquaculture is managed so poorly that farmers produce less and less. Breeding quality fish for aquaculture can be highly successful but still has a long way to go in many developing countries.

Networks to improve fish genetics—and thus production—bring together government, university and private organisations locally, nationally and internationally. They are already thriving and, in some cases, expanding in South Africa, Vietnam, Bangladesh, India and Thailand. The various mixes of public, private commercial, NGO and poor producers in these networks show great promise as models for improving not only fish production but also other commodities.

■ Find out more by typing **AFGP09** into the search box on the search page of the CD attached to this booklet.

**Project title:** Networks for genetic management in aquaculture and stocked fisheries for biodiversity …

## Opportunities in sustainable coastal aquaculture for the very poor

**Easy, low-cost methods for adding value to sea foods—fattening low-value soft-shell crabs into high-value hard-shell crabs, producing good quality dried fish, molluscs and seaweed—help the coastal poor enter local markets.** The lives of many poor people in coastal areas who traditionally depended on fishing and foraging are seriously threatened. Now, small-scale producers with very modest assets and skills can produce less familiar but high-value sea foods for both local and export markets.

The very poor in coastal areas in Bangladesh, and also in Vietnam and the Philippines are already seeing quick returns on their investments using these methods. Such ventures have great potential for improving livelihoods in almost all Asian coastal regions.

■ Find out more by typing **AFGP10** into the search box on the search page of the CD attached to this booklet.

**Project title:** Promoting opportunities for sustainable coastal aquaculture production …

## Best practices for fisheries

**Decision makers responsible for fisheries now have best practices to help them change fisheries policies and regulations for the better.** Competing demands, environmental degradation and climate change mean that fisheries are among the most difficult resources to manage. The best practices help planners to realise the potential of fisheries to reduce poverty while maximising economic benefits in the long term.

Many problems with fisheries have non-fisheries causes—social and policy issues need to be taken into account along with resource concerns. Drawing together best practices is strengthening the growing global call for better fisheries management and influencing policy change throughout East Africa and South East Asia. Already, planners have used these practices to revive fisheries in post-tsunami India and develop fisheries in Sierra Leone.

■ Find out more by typing **FMSP02** into the search box on the search page of the CD attached to this booklet.

**Project title:** Improving policy for fisheries management …

## Lessening risks for fishers in climate-change hot spots

**A new approach pinpoints places where climate change is likely to affect fisheries most.** As well as fishers' lives, climate change will affect trade, economies and jobs. 'Vulnerability mapping', as it is called, alerts people to climate-change hot spots where action is urgently needed.

Communities can use this approach to help prepare for climate change. Fishing groups in Malawi have now included migration and other ways to adapt to climate change in their plans. Benin, Malawi, South Africa, Cambodia, Indonesia, Malaysia, the Philippines, Brazil, Chile, Italy, Finland and the UK are also using vulnerability mapping. It has great potential for lessening the risks of climate change throughout Central and West Africa, tropical coastal areas in South America and South East Asia.

■ Find out more by typing **FMSP03** into the search box on the search page of the CD attached to this booklet.

**Project title:** Vulnerability of fisheries and fisher communities to climate variation …

## Learning-by-doing in fisheries management

**Collective learning is helping communities make the most of small fisheries.** Often, these fisheries are open to all and so, ideally, all stakeholders need to be involved in managing them. But stakeholders often don't understand all the issues that need to be considered and how changes in the way they do things—new technologies or management strategies—will benefit them. The learning-by-doing approach helps those with interests in the fishery share information, plan, manage, adapt and reap the benefits of working together.

Co-management and learning-by-doing approaches have already proven successful in rice–fish systems in India and Southeast Asia. They could have a major impact on poor producers' livelihoods—benefiting not only fishers but also those depending on other common-pool resources.

■ Find out more by typing **FMSP07** into the search box on the search page of the CD attached to this booklet.

**Project title:** Adaptive co-management: Supporting co-managed fisheries

## Computer game strengthens control of foreign fishing

**A new computer game is helping fisheries managers learn how to control foreign ships fishing in their exclusive economic zones.** The game lets them experiment with control measures such as licence fees, fines for illegal fishing and the costs of law enforcement, to get the maximum social and economic benefits from the fishery. Many less-developed coastal countries have little expertise in these areas and this game helps fisheries managers and policy makers understand the issues they need to address.

The model underlying the game has been tested in the Seychelles and Indian Ocean where it helped decision-making on fishing licence fees and fishing legislation. It has great potential for helping managers select and apply suitable tools to control foreign fishing.

■ Find out more by typing **FMSP08** into the search box on the search page of the CD attached to this booklet.

**Project title:** Optimal control of foreign fishing through improved fisheries governance

# Floating traps help small fishers catch large fish

**High-value ocean fish such as tuna have previously been difficult or impossible for Pacific, Indian Ocean and Caribbean islanders and coastal fishermen to catch.** But the near-shore reef fisheries on which these fishers depend are overexploited. Now, floating traps help them catch deep-sea fish and tap into under- or less-exploited resources.

The traps withstand strong ocean currents and are widely used in the South Pacific, East Africa, Seychelles, Comoros, Mauritius and Reunion. Governments in several South Pacific states and Zanzibar, and development agencies in Tanzania now include these traps in their development plans. Sport fishing and organic trade organisations have also shown interest, and the use of traps is expected to spread, potentially benefiting many more fishers and coastal communities.

■ Find out more by typing **FMSP11** into the search box on the search page of the CD attached to this booklet.

**Project title:** Fish aggregating devices (FADs) for enhancing coastal artisanal fisheries