



**ONE OF THE MOST SUCCESSFUL DEVELOPMENT PROGRAMS IN BANGLADESH**

The Mymensingh Aquaculture Extension Project (MAEP) has had a profound impact in raising the incomes of the rural poor. It has also had a major economic impact on the greater Mymensingh region and Bangladesh as a whole.

Today, nearly four hundred thousand poor rural families (over two million people), make significant earnings from pond aquaculture introduced by the project. Pond aquaculture brings on average 3,600 Taka/year, which constitutes approximately 13% of their income to these poor families. More than 418,000 Greater Mymensingh households (1.8 million persons) would be below the poverty threshold if they had not adopted MAEP-promoted pond aquaculture.

1.4 million Households have adopted pond aquaculture and are earning on average 8,283



Taka per year (\$145)<sup>1</sup>. MAEP efforts have increased annual production by 265,825 tons and regional annual income by 11.6 Billion Taka (\$201 Million). This was accomplished at a cost of \$28 million spent over 14 years. The internal rate of return (IRR) for the MAEP

investments is over 240%. This does not include indirect economic impact, such as the increase in secondary jobs associated with the industry, nor does it include the multiplier impact of increased income available in rural communities.

MAEP is one of the most successful development programs in Bangladesh and stands as an international development achievement off first order.

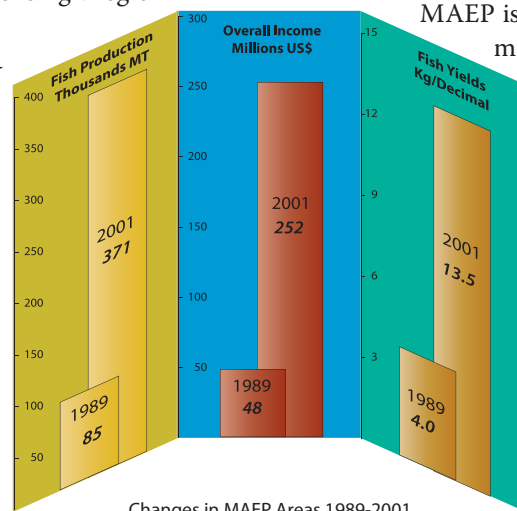
**MAEP ACTIVITIES**

The main MAEP activities included:

1. Development of hatcheries and nursery operations to ensure that farmers have access to quality fingerlings of the appropriate species
2. Extension of the pond polyculture production system approach which includes a combination of stocking of multiple carp species (and other species), pond preparation, pond fertilization, and supplementation feed practices.
3. Support and training to input suppliers including fingerling suppliers, harvesting groups, net making groups, and market development
4. Credit provision linked to training to facilitate adoption through partner NGOs

**DANIDA IN BANGLADESH**

Danida has a long history of cooperation with the Government Bangladesh in the fisheries sector. Danida's cooperation with the Department of Fisheries in Bangladesh began with the Noakhali Project in the mid-70's and continued in Mymensingh in 1977 with the construction of the Aquaculture Experiment Station (AES). That partnership continues to this day in the form of the Patuakhali/Barguna and Greater Noakhali Aquaculture Extension Components as well as the Agricultural Sec-



Changes in MAEP Areas 1989-2001



tor Programme Support (ASPS). Danida assistance was crucial in adapting and widely extending the highly profitable carp polyculture system to rural Bangladesh.

#### QUALITATIVE RESULTS

Participatory Rural Appraisals show that the MAEP has resulted in:

- Improved housing, education and productive investments;
- That aquaculture income is critical to crisis coping strategies;
- Widespread involvement of the private sector linking small producers to inputs and markets;

#### Key Informant Interview On Crisis Coping

10-12 years ago they had a serious food crisis in the lean period of fish catching. Now they can catch fish about 9 months in a year and other employment opportunities are available during the rest months of the year. Now they can afford to send their children to school.

- Women participate successfully in pond aquaculture activities;
- Poor families are able to adopt new practices.

In Bangladesh, almost all culture fish production comes from carp polyculture. Carp polyculture is well suited for smallholders because of low cash costs and high

Some Indicators showing the situation of the Target Population in MAEP areas

Description	Target Group	All Households
HH Pond Area (dec.)	7.9	18.6
Revenue (Tk/Dec.)	566	559
Pond Income	3,596	8,283
Total HH Income/year	27,345	79,122

returns. Many fisheries projects have shown the very positive impacts of carp polyculture on household welfare.

#### PRA Results: Monder Bazaar

Women are now contributing to family income in a more active way. Development of fisheries in the village has created employment opportunities for both men and women. 70% of female family members are directly or indirectly involved in fish culture or fish related activities. Women are generally not involved in fish harvesting or marketing.

#### Improvements for the Rural Poor and Job Creation

The genuinely landless rural poor have generally not benefitted directly from pond aquaculture as primary producers because they lack ownership of ponds and have limited ability to rent ponds. However, they have benefitted greatly from secondary employment. The areas of employment include supplying fingerlings, pond excavation and maintenance, harvesting, market-



ing, transportation, and work in supporting industries such as hatcheries and feed production facilities. The vast majority of these jobs are of a type that benefits the MAEP target group. The largest categories of employment opportunities are *Faria* (small traders), *Beparies* (medium traders), retailers, and unskilled workers hired for fish marketing. Anecdotal evidence from the study, PRAs and key informant interviews, indicate that many poor households have taken advantage of work that has become available in the fishery sector to lift themselves out of poverty. More than 225,000 jobs directly linked to the fishery sector in the Greater Mymensingh area have resulted from the MAEP.

#### Productivity and New Practices

MAEP has provided direct training to more than 100,000 households with incomes less than Taka 40,000 per year. The results clearly show a very substantial pro-

ject impact. Average yield in the Greater Mymensingh has risen from 4kg/Dec (1mt/ha) to 13.5kg/Dec (3.3mt/ha) during the project period.

The study results show widespread adoption of the



MAEP recommended practices including stocking recommendations with at least 68% of respondents using

#### PRA Results: Longair on Sustainability

Fish culture is gradually increasing in the area. People have not faced any problems so far, so were unable to comment about threats concerning sustainability. However, they identified a need for additional support regarding fish culture. The NGO's provide micro-credit and social services, but they are not strong in fishery related expertise. Fish farmers mentioned also that they do not get support or technical advice from the Upazila Fishery Officer.

manure, 72% using fertilizer, and 72% using lime. A recent survey conducted in the autumn of 2003 by the MAEP areas show an impressive increase in societal welfare as measured by annual total economic surplus<sup>2</sup>. Eco-



nomie surplus has risen from Tk. 4.2 billion in 1989 to 15.8 billion in 2001 or in USD terms from 74 million in 1989 to 276 million in 2001.

#### SUSTAINABILITY

Farmer-to-farmer transmission and the role of input suppliers (hatcheries, nurseries, and fry traders) have been very important for the wider dissemination of carp polyculture. Carp polyculture is sustainable for the long term because:

- The general cultivation practices are well known in rural communities;
- The inputs needed for carp polyculture are widely available from a vibrant private sector input supply chain and
- The demand for fish continues to grow and local outlets are available for the rural poor to sell their production.

MAEP has achieved sustainability through the widespread adoption and knowledge of carp polyculture technology and the establishment of a private sector supply chain including hatcheries, nursery operations, and fry traders.



The importance of fish culture is continuing to increase in the MAEP area. People have not faced major problems that would threaten the sustainability of MAEP results. However, one program that the study identified as having a strong positive impact is micro credit linked to fishery training targeted to the rural poor.

**A survey conducted in the autumn of 2003 by the Asian Development Bank in Kishoreganj District, independently confirms the impact and spread of MAEP technologies and further bears out the effectiveness of the overall approach of the MAEP. (ADB 2004, Special Evaluation Study on Small-Scale Freshwater Rural Aquaculture Development: Country Case Studies Bangladesh, Philippines and Thailand. Manila).**

#### Footnotes:

<sup>1</sup> 1 US\$=58 Taka

<sup>2</sup> Economic surplus is a measurement of societal well employed by economists that incorporates changes to both producer and consumer welfare.



### SUMMARY OF MAEP IMPACTS

- ▣ 1,4 million households have adopted pond aquaculture and are earning on average Tk. 8,283 per year (\$145);
- ▣ More than 418,000 Greater Mymensingh households (1.8 million people) would be below poverty threshold of Tk. 40,000 per year if they were not engaged in MAEP promoted pond aquaculture;
- ▣ Average yield has risen from 4kg/Dec (1mt/ha) to 13.5kg/Dec (3.3mt/ha); Total yield in the 7-District area has risen from 85 thousand metric tons in 1989 to 351 thousand in 2002;
- ▣ Danida target households report higher yields than non-target, wealthier pond owners, indicating the suitability of the MAEP approach for smallholders; 40% of Bangladesh's aquaculture production comes now from 10% of country's area (7 Districts of Greater Mymensingh);
- ▣ Annual revenue from fish cultivation has risen from US\$ 48 million in 1989 to US\$ 252 million in 2001;
- ▣ At least 68% of farmers use manure, 72% use fertilizer and 72% use lime in their ponds; 61% are stocking 4 or more of the recommended species;
- ▣ Net Present Value (NPV) of the project investment is US\$ 386 million;
- ▣ Benefit to Cost Ratio = 27:1;
- ▣ Internal Rate of Return = 242%;
- ▣ Economic surplus has risen from Tk. 4.2 billion in 1989 to 15.8 billion in 2001;
- ▣ Consumer surplus decreased by about 25%.

### THE MAEP IMPACT STUDY BY WINROCK INTERNATIONAL

Winrock International was commissioned to assess the impact of the MAEP. Winrock International is an INGO dedicated to poverty alleviation that works in Bangladesh and over 60 developing countries across the world in agriculture/fisheries/livestock development, natural resource management, gender, and clean energy. For the MAEP study Winrock was tasked to assess the wider program impact in the Greater Mymensingh area including:

- ▣ The technical aspects of fisheries such as adoption of new technologies, changes in yields and productivity, constraints, sustainability of new technologies and quality of extension services;
- ▣ Changes in household welfare in the context of the livelihoods approach, such as income levels, spending patterns, poverty levels, household assets, crisis coping strategies and gender relations;
- ▣ Economic impact including economic welfare as measured by economic surplus, and the Internal Rate of Return (IRR) for project investment.

The study also addressed the issues of sustainability of results to assess strategies for assuring that changes introduced by the project and specifically Extension Systems will last beyond the life of the Project.

A number of activities were carried out as part of the MAEP programs impact evaluation study. These activities included:

**Household Survey** – A stratified random survey of 600 households in the seven districts of Greater Mymensingh area was conducted;

**Participatory Rural Appraisals** – The study team designed and implemented PRAs to assess household level qualitative impact of MAEP activities and interventions;

**Economic Analysis** – A number of analytical methods were applied to assess MAEP impact including development of partial enterprise budgets, development of economic surplus models to measure economic surplus, estimation of IRR for project investment;

**Specialized Surveys** – Key informant interviews for assessment of benefits to input suppliers (hatcheries, nurseries, fry traders) and marketers.