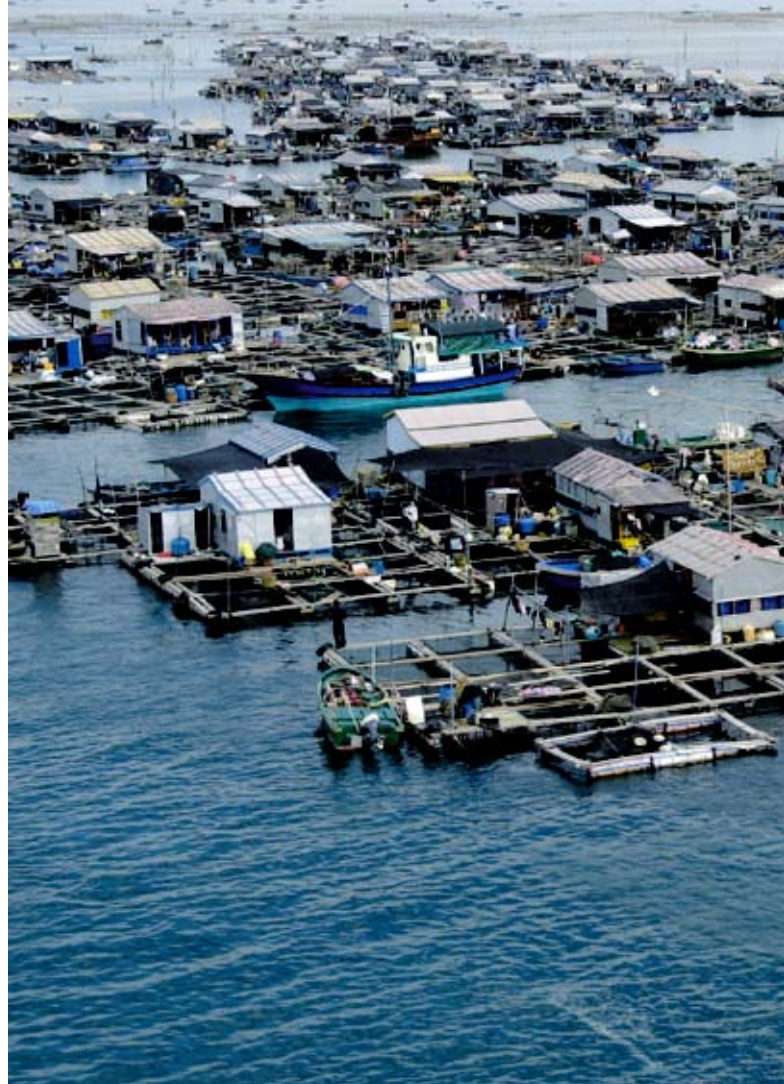


In 2005, the global aquaculture production (including aquatic plants) has been estimated at 62.96 million tonnes and valued at US\$70.38 billion (FAO, 2007)². In 2005, about 28.2 million tonnes or 44.8 percent of total global aquaculture production (exclude filter feeding fish species) was dependent upon direct use of feed either in the form of single dietary ingredient, farm-made aquafeed or by the use of industrially manufactured compounded aquafeeds (Tacon, pers. comm.). Fishmeal and fish oil are two major dietary ingredients used in compounded aquafeeds. It is estimated that in 2006 the aquaculture sector consumed about 3.06 million tonnes or 56.0 percent of world fishmeal production and 0.78 million tonnes or 87.0 percent of total fish oil production (Tacon, 2007)³, while aquaculture's share of global industrial feed output was only four percent (Gill, 2007)⁴. In 2006, total global industrial feed output exceeded 635 million tonnes (Gill, 2007). In addition to fishmeal and fish oil, the so-called low value fish or 'trash fish' are used in different parts of the world as a complete or supplementary feed for farmed fish, crustaceans and a few mollusc species. It is generally estimated that an approximate 5 to 6 million tonnes of low value/trash fish As used as direct feed in aquaculture (Tacon, Hasan and Subasinghe, 2006)⁵.

Even if capture fisheries has contributed significantly to the growth of aquaculture production, questions are often raised about its long-term sustainability and whether it is ethically correct to feed fish with fish when these are considered to be suitable for direct human consumption. From the information generated in Asia and Africa, it is seen that small-pelagic fish are an important component of the diet of lakeside and coastal communities. In several countries for which examples could be found, the increasing demand for pelagic fish by the animal feed industry is reducing the availability of fresh fish for poor communities and this has a negative impact on food security. Nevertheless, it has also been shown that reduction fisheries and downstream animal production activities contributes to employment generation and eventually lead to improved living standards and food security (Hecht and Jones, 2007)⁶. The situation in Europe and Americas, however, is very different from that in Africa and Asia. The various reduction fisheries targeted for fishmeal and fish oil in Europe have little alternative uses (Huntington, 2007)⁷. Further, there are issues related to the long-term ecological sustainability of reduction fisheries.



An aerial view of cage culture practices in XinCun Bay, Hainan Island, China. Each cage, although small, collectively produces over 100 000 kg of low value fish/trash fish

FAO Expert V use of wild fish and/or other aquatic its implications to food secu

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With funding from the Government of Japan, the Aquaculture Management and Conservation Service (FIMA) is implementing a project *Towards Sustainable Aquaculture: Selected Issues and Guidelines* (GCP/INT/936/JPN). Of the five key thematic areas identified for targeted action under the above project, Component 4 of the project is addressing the issue of "Use of wild fish and/or other aquatic species to feed cultured fish and its implications to food security and poverty alleviation".

Under this component, four regional reviews (Latin America and North America, Europe, Africa and the Near East and Asia and Oceania)



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land, PR China, where 570 families conduct marine cage farming, tonnes of high value marine finfish, almost all of which are fed

Workshop on ic species to feed cultured fish and urity and poverty alleviation

8 November 2007

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and a number of country-specific case studies have been carried out in Asia and Latin America. The reviews and case studies have specifically addressed the role to which reduction fisheries and feed fish (fish and other aquatic species as fishmeal, fish oil and low value/trash fish) may play on food security and poverty alleviation in these four regions and elsewhere including sustainability of these finite resources and the environmental implication of direct use of fish as feed.

To broaden the horizon of the consultative process and to review and analyze critical issues related to the use of wild fish to feed

aquaculture species, a targeted workshop on "Use of wild fish and/or other aquatic species to feed cultured fish and its implications to food security and poverty alleviation" is being organized in Kochi, India, 16-18 November 2007 preceding the 8th Asian Fisheries Forum, 20-23 November 2007. The objectives of the workshop are: (i) to review and analyze the status and trends of reduction fisheries and low value/trash fish in aquaculture production (with particular reference to fish and crustacean species that feed on aquafeeds) and (ii) to identify key issues and challenges on sustainability of these fisheries in relation to food security, poverty alleviation, long-term ecological sustainability and environmental impacts.

The workshop will consist of selected presentations of regional reviews and case studies. A global synthesis prepared on the basis of four regional reviews and five case studies will be presented to analyze the status, trends, issues and challenges on a global perspective. The workshop will address the following thematic areas and other issues of significance emerging from the regional reviews and case studies:

- ◇ ecological sustainability of feed/reduction fisheries
- ◇ alternative use of feed/reduction fisheries and the related impact on food security and poverty alleviation
- ◇ impact of reduction fisheries and low value/trash fish use in aquaculture
- ◇ low value/trash fish circle in Asian mariculture and the way forward.

Based on the review and analyses, the workshop will identify relevant management options/ measures to address these issues and recommend strategies and policy guidelines to implement the management options/ measures. It is expected that the outputs thus generated will eventually facilitate and enable policy makers at the global and regional levels to develop and implement improved aquaculture systems using wild-caught aquatic resources when appropriate and optimize social and economic benefits derived from utilization of aquatic ecosystems. The workshop proceedings including the working group discussions and recommendations, regional reviews, case studies and global synthesis will form the basis of two major documents:

- ◇ FAO Fisheries Technical Paper "Fish as feed inputs for aquaculture and its implication



Soft shell crab farm in Myanmar showing individual holding facilities and preparation of low value/trash fish to be fed. It is generally estimated that globally an approximate 5 to 6 million tonnes of low value/trash fish are used as direct feed in aquaculture and many of the low value/trash fish used in aquaculture are often of food-grade and are generally suitable for human consumption



- for food security and poverty alleviation” including guidelines/recommendations and
- ◇ Technical Guidelines on “Use of wild fish and other aquatic species to feed cultured fish”.

The workshop will bring together acknowledged international experts in relevant fields including authors of regional reviews, case studies, global synthesis and experts from international and regional organizations. FAO has limited funds to support selected experts and authors who are directly involved in the process. Invitation is, however, open to self-funded participants who are interested to attend the workshop and willing to contribute to the process.

Further details about the workshop can be obtained from FIMA Officers via e-mail, Matthias Halwart at e-mail: Matthias.Halwart@fao.org or Mohammad R. Hasan at e-mail: Mohammad.Hasan@fao.org

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²FAO. 2007. FAO Fisheries Department, Fishery Information, Data and Statistics Unit. Fishstat Plus: Vers. 2.30 (available at www.fao.org/fi/statist/FISOFT/FISHPLUS.asp)

³Tacon, A.G.J. 2007. Meeting the Feed Supply Challenges. Paper presented FAO Globefish Global Trade Conference on Aquaculture, Qingdao, China, 29 – 31 May 2007.

⁴Gill, C. 2007. World feed panorama: bigger cities, more feed. *Feed International*, 28 (1): 5-9.

⁵Tacon, A.G.J., Hasan, M.R. & Subasinghe, R.P. 2006. Use of fishery resources as feed inputs for aquaculture development: trends and policy implications. FAO Fisheries Circular. No. 1018. Rome, 99 pp.

⁶Hecht, T. & Jones, C.L.W. 2007. The use of wild fish as feed in aquaculture and the implications for food security and poverty alleviation in Africa and the Near East. Review prepared for FAO Rome, FAO. 66 pp.

⁷Huntington, T. 2007. Regional Review for Europe: Use of wild fish and/or other aquatic species to feed cultured fish and its implications to food security and poverty alleviation, Review prepared for FAO Rome, FAO. 66 pp.