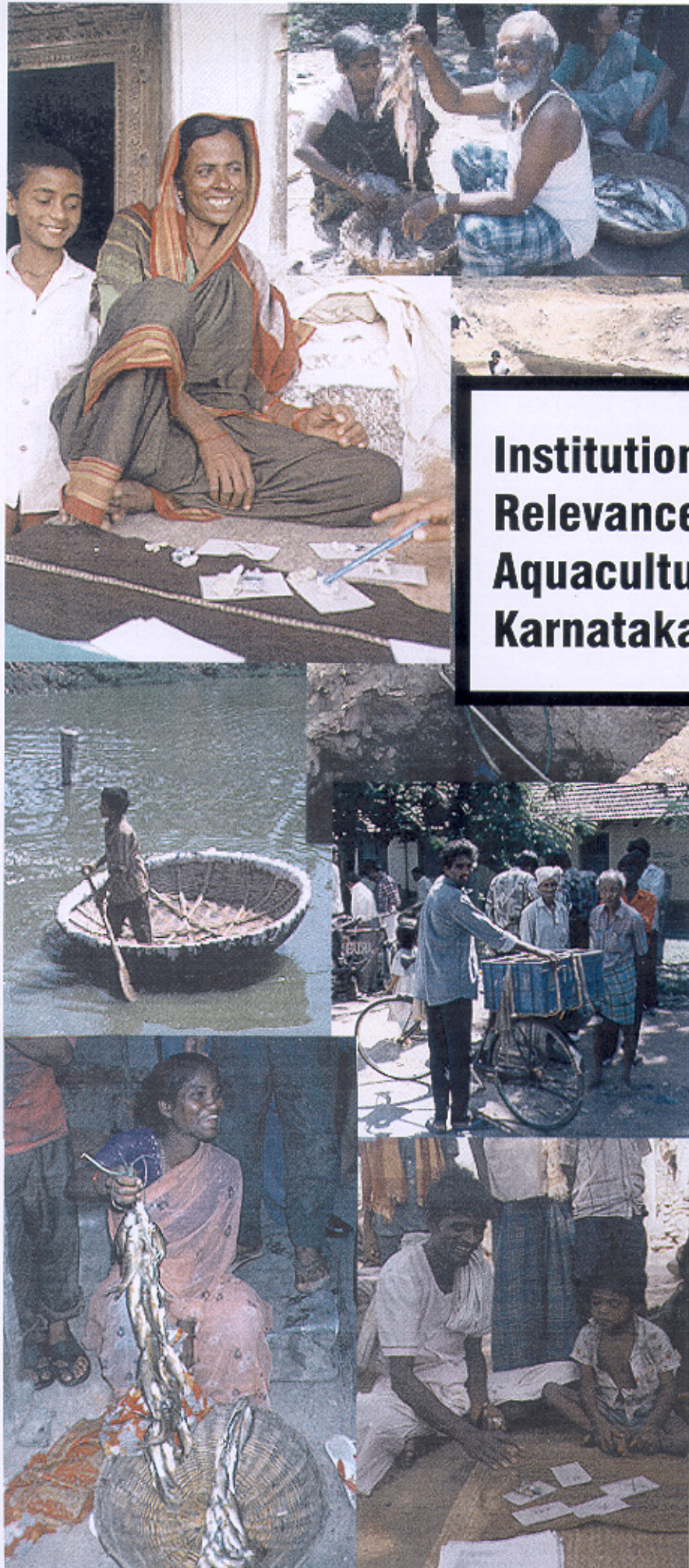


Working Paper No. 9  
(July 1998)

**Institutional Linkages of  
Relevance to Small-scale  
Aquaculture Development in  
Karnataka State, India**

**Aquaculture in  
Small-scale  
Farmer-managed  
Irrigation Systems  
Funded by DFID  
Aquaculture Research  
Programme**

Institute of  
Aquaculture  
University of Stirling  
Scotland, UK



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**Institute of Aquaculture, University of Stirling, Scotland, UK.**

## List of Working Papers

### Project Summary Report

1. Raichur District: Site for a Study of Aquaculture Development in the Semi-arid Tropics
2. Methods for Participatory Information Gathering and Analysis
3. Socio-economic Analysis of Villages in Relation to Aquaculture Potential in Raichur District, Karnataka, India
4. Investigation of Gender Issues in Relation to Aquaculture Potential in Raichur District, Karnataka, India
5. On-farm Resources for Small-scale Farmer-managed Aquaculture in Raichur District, Karnataka, India
6. Inland Fisheries Resources and the Current Status of Aquaculture in Raichur District and Karnataka State, India
7. An Investigation of Aquaculture Potential in Small-scale Farmer-managed Irrigation Systems of Raichur District, Karnataka, India
8. Indigenous Freshwater Fish Resources of Karnataka State and their Potential for Aquaculture
9. Institutional Linkages of Relevance to Small-scale Aquaculture Development in Karnataka State, India
10. Fisheries Marketing, Demand and Credit in Raichur District, Karnataka, India

## Project background

The arid and semi-arid tropics are areas in urgent need of development. As a home to a large proportion of the world's poor these regions face a future of scarcity of food and insufficient water for consumption and irrigation of crops. It has been predicted that India and Sri Lanka will face a fresh-water crisis in the near future, and as much water is currently wasted due to inadequate management and conservation practices there is a need for more integrated approaches to water management. The majority of India's surface water bodies are used primarily for irrigation. Although large-scale irrigation systems cover more surface area and supply a greater area of farmland, more farmers are dependent on small-scale systems for their daily livelihood. Irrigation systems are often very inefficient water distribution systems, and studies suggest that the efficiency of water use could be improved. The integration of aquaculture (which can be non-consumptive in terms of water use) has the potential to increase food production and improve the efficiency of the use of small-scale irrigation water resource.

These Working Papers are the first stage of the research project 'Small-scale farmer-managed aquaculture in engineered water systems' (DFID project R7064). The project aims to investigate the potential for integration of aquaculture into small-scale farmer-managed irrigation systems in arid and semi-arid regions of India and Sri Lanka. Intended beneficiaries include the rural poor, which in India belong to the Scheduled Castes (SCs)<sup>1</sup> and Scheduled Tribes (STs)<sup>2</sup>. This part of the project focuses on Karnataka State on the south west of the Indian peninsula.

During the research, the economic and technical feasibility and the social acceptability of the production of fish in such systems of arid and semi-arid regions of Karnataka were investigated. Field research took place from 6 April to 21 May 1998 and included a 'Rapid Rural Appraisal' of four villages in Raichur District, Karnataka, and semi-structured interviews with representatives from the Government Department of Fisheries, marketing organisations, academics and other relevant institutional sectors within the state.

All fieldwork was undertaken in collaboration with the NGO Samuha, an organisation undertaking wide-ranging activities in the arid and semi-arid areas of Karnataka State. Samuha has extensive experience within participatory development and its initiatives range across health, disabilities, women's development, HIV/AIDS, education, animal husbandry, drinking water and sanitation, irrigation and watershed development (Pradeep, 1994). The majority of the work of Samuha is carried out in the districts of Koppal and Raichur with a smaller project in Bangalore. The activities of Samuha are supported by a number of bodies: ActionAid; OXFAM; the Swiss Development Cooperation; the Government of Karnataka and the Government of India as well as individual donors.

The results and analysis are presented in the ten Working Papers listed above. For an overview of the content of each of the Working Papers, see the Summary Report. This series of working papers have been produced principally as a resource for a stakeholder workshop to be held in Coimbatore, 19<sup>th</sup> - 20<sup>th</sup> November 1998. Conclusions and the research agenda are therefore preliminary.

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<sup>1</sup> SCs: lower castes identified by the Indian government as a means of classifying castes for the allocation of benefits.

<sup>2</sup> STs: all tribals. SCs and STs together constitute the 'socially and educationally backward classes of citizens'. The terms form the basis for policies of protection and positive discrimination.

## **Glossary**

CIFA	Central Institute for Freshwater Aquaculture
DDB	Dryland Development Board
DDP	Desert Development Programme
DFID	Department for International Development (formerly ODA)
DPAP	The Drought-Prone Area Programme
GKY	Ganga Kalyan Yojana – Government of India scheme supporting marginal farmers to build irrigation systems
IMC	Indian Major Carp
JRY	Jawahar Rosgar Yojana – ‘million wells scheme’ helping marginal farmers to build irrigation systems
Kanakanala	Samuha watershed development project in Raichur District
KAWAD	Karnataka Watershed Development Project
KCIFF	Karnataka Co-operative Inland Fisheries Federation
KWDP	Kanakanala Watershed Development Project (Samuha project in Raichur District)
Myrada	Mysore Rural Agri-cultural Development Agency
NABARD	National Bank for Agriculture and Rural Development
NADB	National Agricultural Development Board
NCDC	National Co-operative Development Committee
NWDPRA	National Watershed Development Project in Rain-fed Areas
ODA	Overseas Development Agency (now DFID)
PAD	Peninsular Aquaculture division, branch of CIFA
PIA	Project Implementing Agency
PRA	Participatory Rural Appraisal
RDB	Rural development banks
RRA	Rapid Rural Appraisal
Rs	Indian unit of currency
SAT	Semi Arid Tropics
SC	Scheduled Caste
SDC	Swiss Development Corporation
ST	Scheduled Tribe
Taluk	Administrative sub-region
UAS	University of Agricultural Sciences, Bangalore
WDP	Watershed Development Programme
WMA	Watershed Management Association
WMC	Watershed Management Committee (Samuha)
Zilla Panchayat	District level decentralised Government development agency
1ha	2.4 acres

## Summary

1. Facilitating good institutional linkages to support development is essential to promote sustainability when donors withdraw. Insufficient attention to this aspect can lead to 'enclave projects', which end with the exhaustion of external funding. Such institutions include farmers groups, village / block / District administration, line agencies (e.g. the Department of Fisheries, Agriculture, Extension, etc.), academic training and research institutions, development organizations, financial institutions etc.
2. The Department of Fisheries (DoF) has the responsibility for the auctioning of fishing leases for government owned water bodies, fish seed production, stocking of tanks and reservoirs, and provision of extension services, and administration of subsidies of bank loans (together with implementing banks).
3. In India the Department of Fisheries support available for aquaculture development focuses on the large-scale, semi-intensive, composite culture of fast growing Indian major carps and Chinese carps. Such systems require extensive 'off-farm' inputs to maximize production and tend to exclude other water uses. These culture methods are largely unsuitable for small-scale farmer-managed water resources. Poor farmers must assess the comparative advantage of aquaculture over other production activities in terms of investment of limited resources and seek to optimise resource use in relation to livelihood systems management.
4. The role of Non Governmental Organisations (NGOs) in implementing development programmes (including aquaculture) is becoming increasingly prominent to support effort by government agencies. One of the most successful approaches of NGOs is the mobilisation and empowerment of village-level institutions, which can organize and sustain the development of productive activities within rural communities. NGOs may provide the initial organizational support, credit, training and advice. At their best, such NGOs inculcate a morale and level of commitment to achievement amongst staff which is difficult to emulate in Government organisations. Many however lack federal support.
5. Panchayat Raj institutions are governmental administrative bodies at village, region and district level. Revived after independence, they aim to emulate a traditional decentralised village mode of governance. Their main remit is the implementation of government development programmes in a socially equitable manner. Where their election has been enacted they represent the building blocks for locally based sustainable development.
6. Aquaculture is the main function of the Fish Farming Development Agency (FFDA – a branch of the DoF). Although priority is given to marginal groups the intensive systems promoted are not consistent with the development of small-scale farmer managed aquaculture.
7. Also part of the Department of Fisheries is the Karnataka Co-operative Inland Fisheries Federation (KCIFF), an organisation which attempts to improve the regional fisheries marketing infrastructure through the establishment of a cold chain. This includes cold storage facilities and transport and franchised refrigerated retail outlets. These outlets guarantee a fixed minimum price to both the consumer and the producer and could potentially offer a means for co-operative fishermen to break the traditional debt-bondage exploitation of monopolistic wholesalers. Although still in their infancy such initiatives show promise for future development of markets and aquaculture.
8. Linkages with financial institutions tend to be poorly developed. The availability of micro-credit for aquaculture from the banking sector, for marginal farming groups would benefit small-scale low-input systems development.

# **Institutional Linkages of Relevance to Small-scale Aquaculture Development in Karnataka State, India.**

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## 1 Introduction

One of the most important challenges for maintaining a dynamic and relevant participatory research programme is to establish effective management and a sustainable institutional context (Martin & Sherington, 1996). Ensuring the correct mix of institutional linkages in aquaculture development is essential to ensure sustainability when development agencies withdraw. This includes both process orientated institutional support (aquacultural and agricultural information systems, research bodies and support schemes, policymaking bodies) as well as action orientated support (NGO's, international development organisations, fisheries departments, banking and credit). In this paper the institutional linkages of relevance to aquaculture in small-scale farmer-managed irrigation systems in Raichur District of Karnataka State, India, are outlined. Institutions relevant to aquaculture development are broadly outlined along with a description of their aims. This is followed by a more detailed description of NGOs, district administrative development bodies, initiatives by the Department of Fisheries, and micro-credit schemes and other institutions.

## 2 Institutions in aquaculture development

Some examples of institutions relevant to aquaculture development are listed in Table 1.

The prevailing institutional view of inland aquaculture in India is described in Box 1. The agenda is largely set by Central Institute for Freshwater Aquaculture (CIFA), the governmental organisation with primary responsibility for research (as well as training and extension) for freshwater aquaculture. As can be seen, little consideration is paid to the technical and socio-economic constraints of marginal farmers.

### **Box 1: The prevailing institutional view of aquaculture in India (after Haylor, 1997).**

- Focus on semi-intensive composite culture of fast-growing Indian and exotic major carps.
- Large-scale with concentration on large perennial water bodies.
- Aim to maximise production using off farm inputs.
- Concentrate on systems that exclude other water users and uses i.e. non-integrated.
- Develop via Transfer of Technology mode of extension after on-station trials.

The uptake rate of aquaculture is low, especially by poor farmers, and yet fish production may be one of several production activities undertaken by poor producers. Farmers must therefore assess the comparative advantage of fish culture in terms of investment of their capital, time and labour resources. In West Bengal, the most productive state for aquaculture, traditional practices are based on locally accessible resources. Farmers tend to stock with large quantities of whichever species are available at low cost, at the times when these are most available. Similarly, fish are fed on whatever sources of feed are available and can be afforded. In this way investments are regulated by the expectation of the return, a technique which reduces risks and provides a limited return for a minimal investment. In the peninsular region of India the Peninsular Aquaculture Division (PAD) is investigating the potential of endemic species for aquaculture and integrated aquaculture in irrigation tanks. The research is still in its infancy and receives minimal funding (CIFA, 1996).

**Table 1: Support for aquaculture in Karnataka.**

Type of organisation	Principal role with relevance to aquaculture
<b>National and local line agencies (26 in total):</b> Department of Fisheries (DoF)  Fish Farmers Development Agency (FFDA) Karnataka Co-operative Inland Fisheries Federation (KCIFF)	Seed production, stocking of major tanks and reservoirs. Supporting aquaculture enterprise through training and subsidy. Support of fishermen's co-operatives and development of a cold chain.
<b>Other line organisations</b> Major and Minor Irrigation Departments, Public Works Department, etc.	Maintenance of tanks. Construction of hatchery facilities.
<b>Indian Council for Agricultural Research Fisheries Institutes:</b> Central Institute for Freshwater Aquaculture (CIFA) Peninsular Aquaculture Division of CIFA (PAD)	Aquaculture research.  Development and extension of intensive composite carp production technologies. Evaluation of indigenous species for aquaculture. Fish culture in irrigation tanks.
<b>Academic research</b> University of Agricultural Sciences, Bangalore	Carp inbreeding breeding programme.
<b>Panchayat Raj organisations</b>	Decentralised development and social justice, including watershed programmes.
<b>NGOs</b>	Watershed development e.g. Samuha.

Source: semi-structured interviews.

### 3 NGOs

The primary role of many Non-Governmental Organisations (NGOs) in India is poverty alleviation through development work in areas of credit, health promotion, water and sanitation, income generation, non-formal education, family planning, agriculture and institutional support (ODA, 1995).

One of the most successful approaches adopted by NGOs to benefit those with few assets or little land, is the establishment of their own informal institutions (such as savings and credit groups). After groups are established they are helped to undertake productive activities. This approach has increasingly been applied to fish culture in the region (O'Riordan, 1993) where organised groups are encouraged to invest in fish-based enterprises and NGOs provides organisational support, credit, training and advice. NGOs are commonly interested in stimulating fish production because of the perceived benefits of enhancing food security and potential income generation. Most NGOs promote production in ponds, based on a mixture of local and exotic species and rely on the same technical support as the Department of Fisheries. No NGOs currently support aquaculture alone but it is often a component of watershed development.

Table 2 lists NGOs active in watershed management within the Karnataka region. The role of Samuha as the major watershed development Project Implementing Agency (PIA) in the Raichur area is discussed in Appendix 2.



**Table 2: NGOs active in watershed development in the Karnataka region. WDP: Watershed Development Programme; PIA: Project Implementing Agency; SDC: Swiss Development Corporation; KWDP: Kanakanala Watershed Development Project (Samuha project in Kushtagi taluk, Raichur District); DDP: Desert Development Programme.**

NGO	WDP activities
<b>Samuha:</b> 'organisation' in Sanskrit. Founded 1990 Head office Bangalore, Karnataka Secretary: Mr. Pradeep	18 projects working in 6 geographical areas of Karnataka. Activities include integrated rural development, watershed development, rural water and sanitation, primary health care, education and HIV/AIDS projects. 2 major watershed development programmes implemented under the DDP.
<b>Myrada:</b> the Mysore Rural and Agricultural Development Agency Founded 1988 Head office: Bangalore, Karnataka Director M. Fernandez.	Currently 11 projects in Karnataka, including 2 WDPs. PIA for successful Indo-Swiss SDC WDP completed in Gulbarga (this is the model for the current Indo-Swiss projects including KWDP).
<b>BIAF:</b> Bharathiya Agro-Industrial Foundation Founded 1969 Head office: Pune Maharashtra. Director Dr. N.G. Hegde	Working in 5 states with one WDP in Karnataka
<b>BIRD-K. BAIF Inst. of Rural Development – Karnataka</b> Head office: Tipatur. Hassan District.	Undertaking watershed projects in 10 districts in Karnataka. 125ha watershed demonstration farm at Lakkihalli.
<b>HRDS, JANECHETANE, INGRID</b>	Three small NGOs each undertaking two WDPs under the DDP in Raichur district.

Source: Government of India, 1998; Pradeep, 1994; Myrada & IIRR, 1997.

#### 4 Panchayats

Panchayats are another main Project Implementing Agency (PIA) of watershed development. These are decentralised local administrative bodies at village, taluk<sup>3</sup> and district level. Their main remit is the implementation of Government development programmes in a socially equitable manner. Elections for the Panchayats are held every five years, and one third of seats are reserved for women whereas seats for SCs and STs are reserved in accordance with their proportion of the population. The Panchayats (Extension to Scheduled Areas) Act 1996 extended the Panchayat Raj to areas inhabited by SCs and STs.

Government development schemes of relevance to aquaculture development include the Jawahar Rosgar Yojana (JRY – 'million wells scheme') and the Ganga Kalyan Yojana (GKY). The JRY, which was launched in 1988, provides subsidies to SCs and STs and other marginal farmer for the construction of irrigation facilities. The GKY started in 1997 and aims to provide irrigation through exploitation of ground water (ground and bore wells) to marginal farmers (50% SC / ST reservation) through subsidy and credit available from financial institutions. The Drought-Prone Area Programme (DPAP) and the Desert Development Programme (DDP) are other government projects promoting integrated development of natural resources. The DPAP has a special emphasis on disadvantaged groups such as women and landless, and the DDP aims to prevent desertification by integrating other central and state government projects. For further details about these schemes, see Working Paper 1.

<sup>3</sup> Taluk: Administrative sub-region.

## 5 The Department of Fisheries (DoF)

The DoF is responsible for the development of marine and inland fisheries. The inland sector of Karnataka State is divided into seven administrative zones, each with a Deputy Director (districts are headed by a Senior Assistant Director). Raichur is included in the Bellary administrative area. Their responsibilities include the auctioning of leases to Government water bodies, fish seed production, stocking of tanks and reservoirs, financial incentive administration and provision of extension services.

- **Fishing rights:** The DoF allocates fishing rights in all Government-owned water bodies greater than 40ha (those below 10ha are the responsibility of the FFDA and those between 10-40ha by the local Zilla Panchayat<sup>4</sup>). Reserve prices depend on the historic productivity of the tank. Those valued over Rs 25,000 are given 3-year leases, others 1 year. Priority is given to co-operative fishermen and after these graduates from fishery-related degree programmes. If these groups do not apply, private bids are invited. The most productive tanks tend to be minor (40-70ha water surface area).
- **Seed production:** Seed production (bund breeding) in Karnataka is still extremely centralised and a primary responsibility of the DoF. Last year the DoF reported a deficit in the seed production of the district of 650,000 seed. This was largely compensated for by imports from Andhra Pradesh.
- **Marketing:** Though the DoF does not have any direct involvement in marketing, it has provided a Rs 50,000 loan to over 60 co-operatives or Panchayats to develop local (hygienic) markets. Half of this sum can be kept as a subsidy if the remaining balance is paid in one year. The loan normally enables the establishment of two to three permanent stalls to replace roadside vending (which is only possible on major routes).
- **Training:** Under the tribal sub-plan (a government scheme aimed at improving the conditions for tribal people) tribals are given fish culture training, subsidised materials, seeded tanks and subsidised licences for three years. This was not operational in Raichur where training, materials and organisational support is given to help the establishment of co-operative fishermen's societies.
- **Other subsidies:** Excavation subsidies of 10,000 Rs per ha (the cost of 1ha excavation is estimated at Rs 40,000) have been available for the last 20 years (this function now overlaps with the FFDA). The Zilla Panchayat can offer Rs 5,000 for smaller 0.5ha ponds. The FFDA offers Rs 25,000 per ha.

### 5.1 Fish Farming Development Associations (FFDAs)

Fish Farming Development Associations (FFDAs) were set up in the areas perceived to have greatest potential for fish farming development. Set up in 1987, Raichur FFDA was the first to be established in Karnataka. The central function of the FFDAs is to encourage the development of intensive inland fish farming, particularly amongst rural poor. This is part of the Central Government's Scheduled Caste (SC) and Scheduled Tribe (ST) reservation policy. The FFDAs offer training, technical assessment and endorsement for credit facilities and provide subsidies. As well as encouraging pond construction, they have development rights on all Government water bodies of less than 10ha. Allocation priority on these water bodies is given to unemployed youth and poor professional fishermen. After these groups, priority is to Panchayats, then SC and ST organisations. The first two groups are encouraged to form co-operatives through the National Co-operative Development Programme (NCDC). The NCDC is based in Mysore with a sub-office in Raichur. Leases on water bodies are provided free for the first five years, but tanks must

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<sup>4</sup> Zilla Panchayat: district level decentralised Government development agency

retain water for at least 10 months (short season tanks are outside their initiative). Where these tanks also have public access, production must be extensive. Other activities are as follows:

- **Training:** Species identification, pond and water quality management, de-weeding, harvesting, health, nutrition, and marketing. Focus is on intensive composite culture of major, common, grass and silver carps. Training courses are 15 days, with Rs 25 paid in subsistence to individual farmers per day.
- **Tank and pond input subsidy:** Rs 4,000 per ha is provided for; seed, fertiliser (cow and chicken dung, superphosphate and urea). This is available for one year. Spawn and fingerlings are supplied to rearing<sup>5</sup> farmers and culturists respectively.
- **Excavation subsidy:** Rs 20,000 per ha (plus the above input subsidy) is provided, to a maximum of 10ha. Integrated production activities are encouraged such as bund horticulture (growing of cash crops e.g. mangoes on the tank bunds, also acts to stabilise bunds)..
- **Grass removal subsidy:** Rs 8,000 per ha (once only).
- **Aeration subsidy:** Rs 10,000 per ha (25% of total cost) for ponds producing over 3mt per ha to encourage productivity.

In the last ten years FFDA's have trained 700 farmers and leased 320 small water bodies within Raichur. Advertising to interested parties is through the local Panchayat or through block extension workers.

FFDA's are the organisational structures with the greatest potential for assisting implementation of aquaculture activities in small-scale farmer-managed water bodies. However the association is skeptical of the viability of aquaculture in small water bodies, mainly because they consider the potential for commercial outputs rather than production for increased food security. The FFDA was not aware of the successful irrigation tank experiments (Dr. Kumaraiah, PAD, pers. com.) carried out by the Peninsular Aquaculture Division (PAD) of CIFA, and their view typified the institutional view of aquaculture outlined in Box 1.

Raichur has the largest fish farming private sector in the state, and thus one would expect the contribution from the FFDA to be substantial. However, opinions were divided in the field. Many of the Bengali farmers interviewed (with water bodies of 1-3ha) in the Bengali refugee camp in southern Raichur had applied for the various subsidies outlined above. The training component was usually received, but promised excavation and input subsidies only came after great delay, and left many farmers in debt. Elsewhere in Karnataka the FFDA have their own seed production facilities, but in Raichur all Government production is through the DoF.

The DoF states that in practice there is no minimum reserve on the quantity of cultured seed that could be caught by farmers. Good links exist between Samuha and the DoF in the district. The possibility of establishing a fishermen's co-operative in Jumlapur project village to exploit a local tank (Khillaritti tank of 398ha) is currently being investigated.

## 5.2 The cold chain and the KCIFF

Based in Mysore and under control of the DoF, the Karnataka Co-operative Inland Fisheries Federation (KCIFF) has established a marketing infrastructure consisting of cold storage facilities and 70 franchised refrigerated retail counters in the Mysore area. Here fish are sold at a fixed rate (Rs 33 for carps, Rs 12 for tilapia). Fish is also wholesaled to other marketing federations within

<sup>5</sup> The Indian Department of Fisheries (DoF) use the following terms 'seed production' and 'rearing production' to describe the production of fry and fingerlings respectively. Farmers subsequently on-growing to harvest are known as 'culturists'.

the state. Further expansion is taking place in Bangalore (11 counters and 50mt of storage) and there are plans to open cold stores throughout the major cities of the state after sufficient regional cold storage has been created. As part of this scheme a 5mt per day ice plant with 10mt cold storage has just been opened in Raichur, and another is planned for Havari in Dharwad. The cold storage scheme should become effective in Raichur in 1998. The KCIFF has two 2mt capacity refrigerated trucks which are used to purchase fish from freshwater co-operatives throughout the state. Rs 22-27 per kg is paid (for carps only), depending on transport costs, and during the low season Rs 28 per kg is paid to Andhra farmers to fill any deficit. Although this initiative started nine years ago, substantial growth only began two years ago. Production rose to 300mt in 1996-97 and to 501mt last year.

The KCIFF has also leased over 80 tanks or reservoirs (20-1200ha) which they sublet to fishermen's co-operatives. They provide seed and help buy material through loans, share capital and subsidy. Training is also provided through KCIFF and FFDA centres. Last year they received a 50% grant from the Ministry of Food Processing to utilise trash fish (mainly for fertiliser and chicken feed).



Figure 1: Shimoga fisherman with fish transport system, courtesy of the KCIFF.

## 6 Micro credit and the banking sector

The availability of credit at favourable rates is essential for the initiation of enterprise and the generation of wealth amongst marginal communities. Currently much lending takes place informally at village level at elevated interest rates (see Working Paper 3). Villagers commonly do not know how to apply for credit, and banking institutions are often reluctant to lend because of extremely poor repayment records in the marginal agriculture sector and the perceived high risk of aquaculture. Commercial banking in India has been heavily nationalised as all major banks were nationalised during several rounds of legislation (Government of India, 1998). Lending in this sector is the preserve of three types of banking institutions; the commercial banks, rural

development banks (RDBs) and co-operative banks who all have a requirement to lend a fixed amount for rural development. Although each has defined operational roles in this respect, in reality significant overlap was found in the activity of these banks. The RDBs and the co-operative banks offer slightly preferable interest rates. The National Bank for Agricultural Development (NABARD), refines loans made by the RDBs and the commercial banks and it is this underwritten capital that constitutes the main pool of credit available to the sector.

## **7 Other institutions**

**NCDC:** The National Co-operative Development Committee offers help to all agri-sectors including fisheries by assisting co-operatives through loans and subsidies. Loans are at given at 14.5% p.a. and subsidies are offered for materials, training and equipment. Share capital is given to societies generating profit only.

**NADB:** The National Agricultural Development Board: provides loans to inland fisheries by subsidising loans through financial institutions.

## **8 The creation of linkages with this research project**

The project has developed links with many of the organisations indicated in this working paper. Activity 2.3 of the project logframe is to conduct a workshop in the region, involving institutional stakeholders in aquaculture development. One of the outputs of this workshop should include an assessment of the potential linkages, research partners and uptake pathways and the nature of the relationships involved.

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## **Appendix 1: Samuha and watershed development**

Samuha is operating two watershed development programmes in the study area, currently covering 41 villages. The watershed development programmes are called Akanksha and Kankanala. The projects are directed by Mr Raghu Kumar (to be replaced by Mr G. Janardhan in the autumn of 1998) and Mr Channaiaswamy respectively.

### **The Kankanala Watershed Development Project (KWDP)**

Kankanala is the name of a mini-watershed in Kushtagi taluk, Raichur. This is one of five Indo-Swiss participatory watershed development projects recently initiated in Karnataka. Samuha is the project-implementing agency (PIA) with 70% funding from the Swiss Development Corporation (SDC) and 30% from the State Government Dryland Development Board (DDB). The larger Akanksha project has access to substantially higher levels of funding than the KWDP, and emphasis is on construction of communal and individual silt and water harvesting structures. In Kankanala much greater emphasis is placed on the self-help components of watershed management (Kankanala has 78 self help groups and Akanksha 54). Samuha is applying a village institution developed in other (non-watershed) projects to 11 villages with micro-watersheds in the Kankanala mini-watershed (another 10 villages will be included in the second phase of the project). As successful development depends on the integrated management of whole watersheds, all the villages occupying one micro-water shed are targeted simultaneously. KWDP can select its own villages within the project area, unlike Akanksha, where project villages are determined by the local Zilla Panchayat (district level decentralised Government development agency).

Women's groups are organised into street groups (woni gumpus), which are apexed into village Gram Samuhas, and take up development activities including credit and savings groups, tree nurseries etc. Men from the same village who own land in contiguous blocks within a single micro-watershed are grouped together. These groups are apexed into micro-watershed Sanghas (committees) for the purpose of taking up all watershed-based activities. Whereas Akanksha can provide substantial revolving funds, KWDP beneficiaries are encouraged to save by the provision of matching loans into community funds.

The Gram Samuha and the Jan Samuha meet once per month as a Gram Sabha to review and plan development activities. The Gram Sabha is the key unit in this institutional model. Samuha believes that all the groups undertaking different activities must be accountable to only one base unit to avoid fragmentation and non-integration of efforts. Since 1993, Samuha has focused specially on women's groups for development. This was part of the response to a crisis in the organisation when it was realised that many village programmes were becoming unsustainable aid distribution systems rather than promoting equitable participation. The role of men's groups was reviewed and, as they expressed more interest in implementing the physical structures of watershed management, this is now the focus of the Jan Samuha groups. Members are being assisted to access loans for open wells with Jan Samuhas taking responsibility for correct implementation. Diesel pumps belonging to Jan Samuhas as community economic assets are hired to members with un-energised wells.

**Table A1: The framework for KWDP watershed management.**

Pre-project	Project outputs
Upper watershed levels Overgrazing Soil wash off	Reforestation Silvipasture with social fencing Silt harvesting structures
Middle levels Gully erosion on wastelands Other soil loss	Field bunding Contour ploughing, terracing
Lower levels Land siltation Groundwater depletion Seasonal flooding	Agro-forestry Nala training
<b>Integrated watershed activities result in sustainable increase in agricultural productivity</b>	
Socio-economic Social disintegration Self-interest Marginalisation of poor, women, lower castes No livelihood perspectives	Increased community spirit Self-managed and financed Sanghas representative of all groups in society. Conflict, negotiating skills and self-initiative. Construction and maintenance skills Investment in non-farm activities.
Seasonal migration	Local on- and off-farm employment generation

Source: Pradeep, 1994.

### **The Samuha Akanksha Watershed Development Programme**

Akanksha (Sanskrit for 'aspirations') is part of the Desert Development Programme (DDP) scheme (refer to Table 2) with 75:25 Government of India : State Government funding. Under the new watershed guidelines implemented in 1995, new projects must be participatory regardless of whether the PIA is governmental or an NGO. Akanksha was launched in the six non-irrigated taluks of the (then) Raichur district in August 1995. Funding was available for the development of watersheds (each around 500ha at Rs 4,000 per ha per year) of six villages in each taluk i.e. 30 villages. Each project is to last approximately four years, so Samuha's involvement in many of the original villages is nearing completion. Another six project watersheds in Raichur taluk were allocated to three small local NGOs. Though technically not a desert-prone area, Raichur was allowed to qualify for funding under the drought-prone area criteria including receding groundwater levels, increased moisture stress and lack of vegetative cover.

Within NWDPR guidelines local people must be effectively and totally involved in the planning of watershed development through the initiation of a Watershed Management Association (WMA). This comprises all the adults residing in the watershed area. An executive committee (Watershed Management Committee or WMC) of 10-18 members includes landowners and landless, women's group members, 1-2 village Panchayat members and one member from the Watershed Development Organisation. The Association has access to 75% of the funds allocated to the project to be used for construction works. This sum also includes Rs 10,000 revolving fund to provide low interest loan to members, maintain community structures and fund administration after Samuha withdrawal. Such credit facilities are normally denied to marginal farmers, who usually have to borrow at high rates from local lenders. Women's and landless self-help groups with 15-20 members are involved in tree nursery, health, non-formal saving and savings and credit programs.

In Akanksha villages farmers are eligible for subsidy on the construction of farm ponds. Thus ST and SC farmers need only pay 5 and 10% of the total Rs 3,000 cost respectively (this money is deposited in the revolving fund).



A Samuha team leader is responsible for six villages in each of the five project taluks. Responsible to the team leader are an office manager, a women's organiser, and a technical manager. The team leader is also represented on the 18 member Watershed Management Committee in each village. Decisions made by these committees must be unanimous, ensuring representation of all groups on the committee whatever their size.

Table A2 summarises the institutional structure employed in the Samuha village development model.

**Table A2: List of village organisational bodies in Samuha project villages.**

<b>Institution</b>	<b>Description</b>
<b>Woni (street) Gumpu (group)</b>	Each household in a street select a female representative and these together form the Woni Gumpu.
<b>Grama (village) Samuha</b>	All Woni Gumpu members in a village.
<b>Grama (village) Samiti (committee)</b>	Each Woni Gumpu elect one representative into the Grama Samiti. Each Grama Samiti thus represents one street or 5 to 15 households if the street has more than 15 households. The Grama Samiti makes decisions regarding funds.
<b>Jana (people) Samuha</b>	All farms in the village are represented by one male each in the Jana Samuha.
<b>Jana (people) Samiti (committee)</b>	Each group of 5 to 15 farmers selects one representative in the Jana Samiti. The Jana Samiti makes decisions regarding crops and farming.
<b>Watershed Implementation Committee (WIC)</b>	Elected members from the Grama and Jana Samitis. Numbers from each vary from village to village, but generally the ratio is about 3:8 (Grama:Jana Samiti).
<b>Community Economic Asset Committee (CEAC)</b>	Two elected members from each of the Grama and Jana Samitis. The CEAC is responsible for the collection of money from the villagers and using them for agricultural items.
<b>Village Health Committee</b>	Elected representatives from the Grama and the Jana Samitis (normally in the ratio of 9:2 Grama:Jana Samitis).
<b>Village animators</b>	Individuals selected by the Watershed Management Committee in Kanakanala villages. Duties include note-taking and reporting to Samuha on the meetings of the Grama and Jana Samitis.
<b>Team leader and team secretary</b>	Samuha staff in charge of Samuha activities in Akanksha project villages.
<b>Village volunteers</b>	Similar function to Village animators above, but for Akanksha villages.

Source: semi-structured interviews with Samuha staff.