NATURAL RESOURCES SYSTEMS PROGRAMME

PROJECT REPORT[1]

DFID Project Number

R8334

Report Title

Promoting pro-poor policy lessons with key policy actors in India. Scientific report. Annex A of the Final Technical Report of projects R8334.

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Acronyms

AICC	Agriculture Information and Communications Centre
ASHG	Aquaculture Self-Help Groups
BFAR	Bureau of Fisheries and Aquatic Resources
BPG	Better-Practice Guidelines
CBP	Consensus-Building Process
CDS	Centre for Development Studies
CFDO	Community Fisheries Development Office
CH	Communications Hub
CHM	Communications Hub Manager
CIFA	Central Institute of Freshwater Aquaculture
CIFE	Central Institute for Fisheries Education
CIM	Conceptual Impact Model
DANIDA	Danish International Development Agency
DARD	Department of Agriculture and Rural Development
DDG	Deputy Director General
DFID	Department for International Development
DFID-AFGRP	Aquaculture and Fish Genetics Research Programme
DFID-NRSP	Natural Resource Systems Programme
DFO	District Fisheries Officer
DoF	Department of Fisheries
DOFD	Department of Fisheries Development
DOWA	Department of Women's Affairs
DPR	Democratic People's Republic
EIRFP	Eastern India Rainfed Farming Project
FAO	Food and Agriculture Organisation of the United Nations
FFDA	Fish Farmers Development Agency
FLD	Farmer Livelihood Development
FSPS	Fisheries Sector Program Support
GO	Government Organization
GoI	Government of India
GoJ	Government of Jharkhand
GVT	Gramin Vikas Trust
ICAR	Indian Council for Agricultural Research
IoA	Institute of Aquaculture
kg	Kilogramme
MINFAL	Ministry of Food, Agriculture and Livestock
M&E	Monitoring and Evaluation
MOFI	Ministry of Fisheries

MFF	Myanmar Fisheries Federation
MMAF	Ministry of Marine Affairs and Fisheries
MSC	Most Significant Change
NACA	Network of Aquaculture Centres in Asia-Pacific
NAFEC	National Fisheries Extension Centre
NAQDA	National Aquaculture Development Authority
NGO	Non-governmental Organization
OAS	One-stop Aqua Shop
OASIS	One-stop Aqua Shop Information Service
OVIs	Objectively verifiable indicators
OWDM	Orissa Watershed Development Mission
PB	Policy Brief
PDA	Personal Digital Assistant
PDR	People's Democratic Republic
PIA	Project Implementing Agency
PMG	Project Management Group
PSU	Project Support Unit
PWG	Project Working Group
RO	Regional Office
RDC	Regional Development Committee
RLTP	Revised Long-term Action Plan
Rs	Rupees
R6759	Integrated Aquaculture in Eastern India
R7917	Self-Recruiting Species in Aquaculture, Their Role in Rural Livelihoods
R8334	Promoting the Pro-Poor Policy Lessons of R8100 with Key Policy Actors in India
R8363	Enhancing Development Impact of Process Tools Piloted in Eastern India
R8100	Investigating Improved Policy on Aquaculture Service Provision to Poor People
SAPA	Sustainable Aquaculture for Poverty Alleviation Strategy
SCS	Significant Change Stories
SHG	Self-Help Group
SJ	STREAM Journal
SRI	Society for Rural Industrialization
SRS	Self-Recruiting Species
STREAM	Support to Regional Aquatic Resources Management
SUMA	Support to Brackish and Marine Water Aquaculture
SVA	Sahabhagi Vikas Abhiyan
TCP	Technical Co-operation Programme
UNDP	United Nations Development Programme
US	United States
VWU	Vietnam Women's Union
WORLP	Western Orissa Rural Livelihoods Project

Glossary

Better-Practice Guidelines (BPGs): Four-page publications with pictures, cartoons and illustrations aimed at a range of stakeholders, including those who work directly with poor people, in plain English and translated into up to 14 languages in Asia-Pacific. They share lessons learned from local practice or from research.

Communications Hub: STREAM Communications Hubs operate in each of the partner countries within the Initiative. Communications Hubs and their managers are usually placed within appropriate government line agencies in each country, following the signing of a Partnership Agreement.

Consensus-Building Process (CBP): A CBP is a tool in support of facilitation of policy change processes which favour poor people. For details see http://www.streaminitiative.org/Library/pdf/pdf-india/IndicatorsOfProgress.pdf

Downloads: The number of times a specified file is downloaded by visitors to the STREAM website [www.streaminitive.org]. If an error occurs during the transfer, it is not counted.

Impact: (within the context of the STREAM Monitoring and Evaluation System) A positive or negative change in the livelihoods of poor and vulnerable aquatic resources users.

Network of Aquaculture Centres in Asia-Pacific (NACA): An inter-governmental organization that promotes rural development through sustainable aquaculture. NACA seeks to improve rural income, increase food production and foreign exchange earnings, and diversify farm production. The ultimate beneficiaries of NACA activities are farmers and rural communities.

NACA Member Countries: Australia, Bangladesh, Cambodia, China, Hong Kong SAR, India, Iran, Korea (DPR), Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

NACA Participating (Non-member) Countries: Indonesia, Iran, Republic of Korea, Lao PDR and Singapore.

One-stop Aqua Shops (OAS): A local institution to provide information, training, fingerlings and access to sources of micro-credit and loans. Previously farmers struggled and engaged in considerable travel to gain access to resources such as quality fish seed and market information and have sometimes been unaware of government, inter-governmental and NGO support, and rural banking services.

One-stop Aqua-Shop Information Service (OASIS): This STREAM service aims to make information available to One-Stop Aqua Shops in India. The information is sourced from farmers and fishers, service providers, news agencies, the internet, academia (including databases of research and outputs from specific research programs), on-line communities of shared-interest groups, and learning from other countries.

Outcome: (within the context of the STREAM Monitoring and Evaluation System) A positive or negative change in the behaviour of an individual and/or the practice of an organization.

Netmeeting: A regular facilitated meeting of Communications Hub Managers conducted in an on-line environment to facilitate regular discussion among Asia-Pacific country partners.

Panchayat: An elected village institution of local self-government and part of the implementation of the Constitution (73rd Amendment) Act, 1992, and the Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996.

Policy Brief (PB): A two-page publication targeting policy-makers, designed to be read quickly to highlight key issues and to lead the way to further information sources.

Scaling-up: Scaling-up aims to provide more quality benefits to more people over a wider geographical area more quickly, more equitably and more lastingly (IRR, 2000). Scaling-up can be a geographical expansion to more people and communities within the same sector or stakeholder group, as well as institutional, involving expansion to other stakeholder groups and sectors.

Self-Help Group (SHG): A way to build social capital, engender mutual support and work together towards a common goal.

Significant Change Story (SCS): A monitoring and evaluation technique to capture unanticipated changes where stakeholders are asked to describe what they think is the most significant change that has happened and to explain why the change is significant. SCSs can complement a Logical Framework's Objectively Verifiable Indicators of changes that we expect to happen.

Support to Regional Aquatic Resources Management: STREAM is a learning and communications initiative designed within the five-year Work Program cycle of the Network of Aquaculture Centres in Asia-Pacific (NACA). It aims to support agencies and institutions to use existing and emerging information more effectively, better understand poor people's livelihoods and enable poor people to exert greater influence over policies and processes that have an impact on their lives.

STREAM Countries: Cambodia, India, Indonesia, Iran, Lao PDR, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Vietnam and Yunnan Province of China.

***STREAM Journal* (*SJ*):** The *SJ* is a quarterly publication to promote participation, communication and policies that support the livelihoods of poor aquatic resources users in Asia-Pacific. The *SJ* covers issues related to people whose livelihoods involve aquatic resources management, especially people with limited resources, and government, non-governmental and international practitioners who work with them in communities. Such issues include learning, conflict management, information and communication technologies, aquatic resources management, legislation, livelihoods, gender, participation, stakeholders, policy and communications. Another equally important purpose of the *STREAM Journal* is to provide an opportunity for seldom-raised voices to be heard and represented in a professional publication that is practical yet somewhat academic.

Visits: The number of times visitors came to the STREAM website [www.streaminitiaitive.org]. If a visitor is idle longer than the idle-time limit, web monitoring software assumes the visit was voluntarily terminated. If the visitor continues to browse the site after they reach the idle-time limit, a new visit is counted. The default idle-time limit is thirty minutes.

1 Background

1.1 Poverty in Eastern India

India is home to around one-third of the poorest people on earth. Many of India's three hundred and twenty million people living below the official poverty line are found in rural areas. India's success in poverty alleviation will significantly affect the overall success of international development targets (such as halving absolute poverty by 2015).

Home to some of the poorest communities in India, the Eastern Plateau region is characterized by poverty and inequality, land alienation, seasonal migration and a population often lacking the means to produce sufficient food. The region has the largest concentration of tribal populations in the world, who under the Indian Constitution are referred to as 'scheduled tribes' or sometimes as *adivasis* (or 'first settlers', somewhat like aboriginal peoples in Australia). Others are designated as 'scheduled castes' and together these groups make up most of the poor and marginalized people in Indian society.

1.2 Typical Livelihoods

Typical livelihoods in this region are characterized by the farming of about 0.4 ha of poor upland, where finger millet may be grown along with about 400 kg of paddy. This is usually sufficient for 2.5 months of consumption by 5-6 family members. Wild fish when and where available is a popular but rare source of vital high-grade protein, polyunsaturated fats, vitamin A, calcium and iron. Without food security, many livelihoods depend on local labouring for better-endowed farmers for supplementary incomes of typically 30 (women) to 50 (men) Indian Rs per day (64-106 US cents/day). Agricultural daily labouring is a common coping strategy, most typically for women; it is highly seasonal and often results in high and socially divisive seasonal migration rates of 40-50%. Whole families or just men tend to migrate after the planting work is over in June, returning for possible harvest work in September-October. Seasonal (urban) labouring opportunities are sometimes available and commonly mediated through a *Sardar* who will often recruit and sell the labour of 30 to 40 people. Piecework, perhaps at a brick-works, enables those labouring long days to earn around 70 Indian Rs/day (149 US cents/day). Power relations are skewed against migrant labourers who report exploitation and underpayment.

1.3 Fish Culture in Eastern India

Freshwater fish culture is an age-old tradition in India, originally confined to the eastern region of an undivided India. It gradually spread to Uttar Pradesh, eastern Madhya Pradesh and some parts of Tamil Nadu, where in the 1930s and 1940s the seed of Indian Major Carps were transported from Calcutta and stocked in ponds, tanks and reservoirs. Research and development of fish production increased in the 1960s with success in the induced spawning of Indian carps. This was followed by success with Chinese Silver Carp and Grass Carp. Since this time the polyculture of Indian Major Carps and Chinese Carps in perennial ponds has been the mainstay of the Indian aquaculture industry with *composite fish culture* the principle extension message. The Government of India (GoI) continues to recognize the need to develop the fisheries sector and in particular aquaculture. To this end, government targets of 7.8 million tonnes/year of fish production based on a per capita requirement of 12 kg/year for fisheries and aquaculture have been identified. The Agriculture Secretary to the Government of Orissa interprets this to require a doubling of fish production in the state.

There are four main reasons why fish culture is a popular livelihood option:

- Livelihood options involving food production are eagerly sought in eastern India. The common view, based on harsh experience (for example the pre-independence Bengal famine), is that food producers have greater food security than those who have to purchase it.
- Small-scale fish production is known to be successful. The favourable results of research on fish culture in seasonal ponds (undertaken with DFID-NRSP funding) are well known, as are the successes of the Self-Help Groups (SHGs) involved. There is evidence that rural banks are now promoting micro-credit preferentially for rural aquaculture.
- Fish is an important part of people's diets and a ready (pond-side) market exists.
- Fishing is a familiar livelihood activity to many and local knowledge is available, providing the basis for taking on new fish culture techniques.

1.4 DFID-NRSP R6759 Integrated Aquaculture in Eastern India

In the early 1990s Indian fish production stood at 5.9 million tonnes/year. Freshwater aquaculture contributed a third of this. While efforts were being made to achieve the planned target of 7.8 million tonnes/year, it was questionable as to how far poor and disadvantaged groups would benefit from existing national and state government schemes.

Fish Farmers Development Agencies (FFDAs) were established in each district, aiming to provide a package of technical, financial and extension support to fish farmers. However, this package was unsuited to the resources and objectives of poor farmers. The level of suggested investment was high and efforts were directed towards maximizing production. Neither of these features fitted well with objectives of poor fishers and farmers. To research new options, farmers worked together with the Institute of Aquaculture (IoA), University of Stirling, Scotland, as part of a DFID-NRSP research project R6759 Integrated Aquaculture in Eastern India from 1996-2000.

This work involved farmers in farm-based trials with integrated on-station research and contextual information collection. Project partners included the DFID Eastern India Rainfed Farming Project (EIRFP) and a supporting team of consultants recruited by the Centre for Development Studies, (CDS) Swansea, the state Departments of Fisheries in Orissa, Jharkhand and West Bengal and the Central Institute of Freshwater Aquaculture (CIFA) in Orissa. Project partners began to select, test and develop integrated aquaculture innovations relevant to the objectives of poor people in Self-Help Groups and to their local conditions.

The basic development approach involved facilitating, with EIRFP, the evolution of Self-Help Groups (SHGs). Many SHGs were interested in raising fish in seasonal ponds but extension technology promoted in eastern India related instead to perennial pond systems, to which most poor farmers and fishers were unable to command access. To resolve this, farmers and other project participants worked together to research the use of seasonal water bodies to support aquaculture-based livelihoods.

A key technique of EIRFP was to build capacity through a local specialist or *Jankar* (in Hindi, literally "one who knows"), usually a representative for a SHG. These representatives received basic orientation about the general principles of raising fish and water quality management and experimented with aquaculture options in seasonal ponds. Institutes such as the Society for Rural Industrialization (SRI) and CIFA participated in this activity and shared their knowledge with the *Jankars*.

At the conclusion of the DFID development project, colleagues who had been part of the EIRFP team, registered as an NGO, the Gramin Vikas Trust (GVT), and continued to support the poorest groups with their activities including aquaculture. In contrast to GoI extension messages, GVT's message

built on the DFID research and involved manipulating the basic productivity of systems rather than aiming to maximize aquaculture production with high levels of inputs.

The combination of participatory group-based approaches and low-input aquaculture applied in seasonal water bodies was shown to yield substantial benefits and led to the emergence of 193 SHGs within the EIRFP project period, comprised mainly of poor and disadvantaged groups from scheduled castes and tribes. A quarter of all these groups were women's groups. More than 4,500 families (22-27,000 people) who were previously unable to access sufficient food now dramatically improved their food security. Aquaculture proved one of the most successful interventions of the EIRFP.

GVT continued to promote low-input aquaculture in seasonal water bodies, finding it to be one of the most successful income-generating options among remote communities in the Eastern Plateau region, transforming livelihoods of poor farmers and fishers. The initial research on the aquaculture of Indian Major Carp species such as Catla (*Catla catla*), Mrigal (*Cirrhinus Mrigala*) and Rohu (*Labeo rohita*) and in particular fingerling production, proved to be successful.

The research also demonstrated a range of constraints to the adoption of contemporary aquaculture technologies and approaches for vulnerable and disadvantaged people in rural areas. Despite the opportunity that aquaculture offered, disputes over access to tanks held up decisions over leasing rights and constrained opportunities to use some water bodies for aquaculture. In addition, those who wanted to raise fish also required access to information and services in support of their efforts. Most districts had professionals who could assist in these issues, such as District Fisheries Officers, rural banks and their managers, and friends and family. However, with just one officer per district there was just not enough support to meet demand.

It was imperative to understand the requirements of poor people more fully and "give them a voice" in suggesting priorities for policy reforms and service provision, and to present these voices to policy-makers.

1.5 Pro-Poor Policy Change

A growing recognition of the need for change is an important prerequisite for nurturing policy change. This was highlighted by R6759 and also increasingly by the Indian and UK governments, and the international community (e.g., NACA/FAO Aqua Millennium Conference, 1999). In July 2000 the GoI set up a Committee of High Level Experts who in May 2001 stated that there was much to be done to popularize aquaculture and to bring benefits to the doorsteps of disadvantaged groups, suggesting the following measures:

- Ensure the timely supply of fingerlings of desired species and of proper size.
- Procedures for financing loans should be simplified and time-bound.
- Lease periods for Panchayat and village ponds should be increased.
- The need for coordination and adequate extension was recognized.

1.6 R8100 Investigating Improved Policy on Aquaculture Service Provision to Poor People

In R6759 farmers played an important role in articulating their objectives and working together to achieve these. To scale-up the approach, STREAM and DFID-NRSP now took an innovative approach. Through a follow-on project, they investigated opportunities for incorporating aquaculture farmers' voices and learning in a broader arena, into policy change processes. Working again with stakeholders in eastern India, R8100 Investigating Improved Policy on Aquaculture Service Provision to Poor People, coordinated by the STREAM Initiative, negotiated a role in the planning and development of the 10th Five-Year Plan. This involved working with farmers and fishers, GVT, CIFA

and national and state line agencies, and negotiating with the Fisheries Commission in Delhi. R8100's objective was to gather recommendations for policy change from the perspectives of those most affected by policy change, rural fishers and farmers themselves. These recommendations were shared with administrators at state and national levels through a semi-anonymous Consensus-Building Process (CBP). The CBP helped to decide which recommendations could be worked into national guidance and state policies; the process was a component part of what became known as *facilitated advocacy*.

A good example of such facilitation was the compacting of the long list of recommendations under main headings (the four headings shown in column 1 of Table 1) and achieving priority setting within these. This manipulation of findings had to be negotiated with the various stakeholders – where the facilitators were soft advocates. During this process, recommendations for improved service provision were sought from farmers and fishers and other stakeholders, including GOs and NGOs, in the three eastern Indian states of Jharkhand, Orissa and West Bengal (Figure 1). Wide-ranging consultations occurred in villages, along with a series of workshops at local and state levels. Detailed case studies, two in each of the three states, were conducted along with personal interviews, film documentaries and a live street-play was commissioned from a tribal playwright. All these highlighted gaps between the support needed by people who are poor in rural areas and that provided. The process generated 42 recommendations for policy and service provision changes that would enable fishers and farmers with fewer resources to take advantage of services provided by the state governments.

1.7 Consensus-Building Process

The recommendations of farmers, fishers and service providers were then prioritized by state and national government line agency staff through a facilitated Consensus-Building Process (CBP). A version of the *Delphi technique* developed by the project was used to avoid hierarchical decision-making and to build consensus about the relative importance of the 42 change recommendations.

Through the CBP, 13 recommendations were prioritized and these were presented to policy-makers in a workshop in New Delhi in April 2003, via statements from farmers and fishers, film and live drama. The workshop was attended by senior planners and policy-makers from the eastern states and the Government of India and also by fisheries research organizations of the Indian Council of Agricultural Research (ICAR), represented at the highest level by its Deputy Director-General (Fisheries).

Table 1 - Pro-Poor Recommendations for Policy Change Prioritized by R8100

Planning	1. Develop infrastructure for timely production of fingerlings at local level
	2. Leases should be given to Self-Help Groups (SHGs) for ten years
	3. Integrated aquaculture may be encouraged and loans and other facilities extended on a priority basis so that farmers may not suffer during aquaculture stress periods
	4. Site selection for pond construction should be given proper emphasis
	5. Timeliness of delivery of services, support and materials
	6. Establishment, defining and identification of model aquaculture villages for benefits to be disseminated to nearby "untouched" villages
	7. Single-point under-one-roof service provision
Support	8. Encourage formation of self-selected Aquaculture Self-Help Groups (ASHGs) based on common interests among farmers and fishers
	9. Insurance schemes for aquaculture
	10. Provide support to establish group savings and micro-credit schemes among Aquaculture Self-Help Groups (ASHGs)
Information and Training	11. Government needs to change how information is made available to farmers, since information on its schemes to support fish culture is required to be known to farmers
	12. Water quality testing equipment (should be provided)
Inputs	13. Procedure should be simplified for getting government schemes and bank loans

The 13 recommendations included the timely supply of fingerlings of the correct species and appropriate size; simple procedures for obtaining bank loans at the right time; long-term leases of Panchayat and village ponds, and adequate extension support through training and demonstrations. This demonstrates some agreement between these suggestions from farmers and fishers and those highlighted by the High-level Committee of Experts set up by the Government of India.

R8100 provided opportunities for the voices of fishers and farmers in tribal communities to be heard regarding their experiences of state and central government service provision around fisheries, aquaculture and aquatic resources management. Their aquaculture service needs were communicated to stakeholders using a range of media and a suite of recommended changes for aquaculture policy and services were agreed under four categories. At the same time, productive links were developed with certain key policy-level personnel at national and state levels which resulted in a strong level of engagement with both the process and the policy change priorities.

Thus while R8100 did not aim to achieve a policy change, it achieved a strong level of sensitisation that might be nurtured or further developed towards pro-poor developmental policy changes in rural service provision.

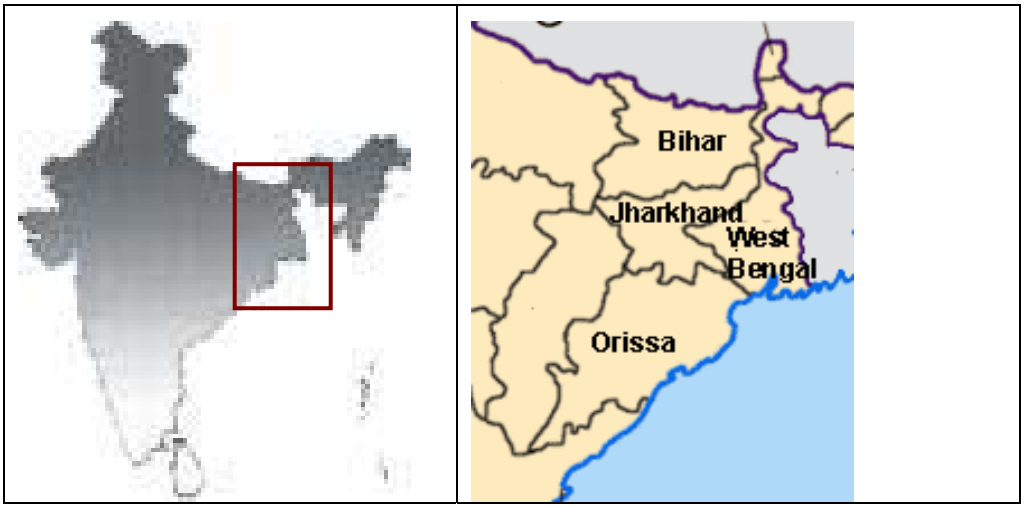


Figure 1 - Eastern Indian Plateau Region

Figure 2 - Seasonal Pond on the Eastern Plateau in Kaipara West Bengal (photo STREAM)

1.8 R8100 Created a Significant Demand at the Policy Level

The multi-level consensus, to which R8100 contributed, also created a demand for improved service provision. The Joint Secretary to the Government of India (Fisheries) acknowledged the importance of the priorities regarding increasing pond lease length to SHGs, emphasizing that extending the length of the lease periods for SHGs was extremely necessary and timely. A directive to the state governments to this effect was circulated on 7 November 2003. During a project workshop, the Commissioner-cum-Secretary, Fisheries and Animal Resources, Government of Orissa, confirmed that he had received the directive and would implement it. During project field visits to Orissa in February 2004, implementation was confirmed at the block administrative level when the Principal Investigator met with Mr Pandey, Daogoan Block Development Officer, the Gram Panchyat Sapanch, Mr Satru Ghana, and the Fisheries Extension Officer, Mr Suratha Naik. They confirmed that the Government of Orissa had launched the so-called Revised Long-term Action Plan (RLTP) that would increase the lease period and that this would include SHGs and would take effect from April 2004, with tanks over 40 ha administered by the Department of Fisheries (DoF) and smaller tanks under local Panchayat administration.

Other outcomes included:

- The Deputy Director General (DDG) of ICAR requested STREAM to collaborate with them on further case studies of service provision to be partly funded by ICAR.
- The Fisheries Commissioner in Delhi requested R8100 to recommend (FFDA) reforms and created a slot in the 10th Five-Year Plan where reforms could be articulated.
- It was suggested that STREAM should work with the central and state-level policy shapers to implement the recommendations arising from R8100.
- The DDG of ICAR requested STREAM to play a role in national policy change processes, which he would actively support with state-level Planning Commissions.
- The Annual Meeting of Secretaries and Commissioners of Animal Husbandry and Fisheries requested STREAM to showcase the Policy Review Process and street-play at Fish Expo India, International Centre, Delhi, in September 2004, later rescheduled to the seventh Indian Fisheries Forum in November 2005.
- Following this in an Official Statement to the NACA Governing Council Meeting, (Yangon, January 2003) the DDG ICAR expressed how STREAM should begin to change the way information was made available to farmers (another priority policy change from Table 1) and recommended a Partnership Agreement between ICAR, GVT, DOF and STREAM to establish a STREAM Communications Hub in Eastern India.

In the context of this stated demand, DFID-NRSP took the decision to fund work that would focus on promoting the uptake of the various findings and products of R8100. This became project R8334.

1.9 Project Purpose

R8334 aimed to *promote pro-poor policy lessons of R8100 with key policy actors in India* in the priority states of Jharkhand, Orissa and West Bengal in eastern India. It was hoped that by project end, originally scheduled for March 2005, stakeholders in state-level institutions and some key national level policy actors would use the knowledge generated by the project in ways that could benefit poor people, specifically, the Consensus-Building Process (CBP) and findings of R8100 being used by institutions for service provision such that farmers recognize favourable changes.

1.10 Project Design

Building upon the relationships created in the previous DFID-NRSP projects, R8334 activities were aimed at bringing state-level stakeholders to a high level of engagement with the policy change recommendations. Key R8334 participants and stakeholders included the Ministry of Animal Husbandry and Dairying, the Fisheries Commission, and the Indian Council for Agricultural Research in Delhi, the Governments and Fisheries Departments of Jharkhand, Orissa and West Bengal, rural banks operating in eastern India, NGOs, federations of Self-Help Groups and farmers and fishers, and the newly-established STREAM Communications Hub in India. The project also continued to work with the communities involved with R6759 and R8100, including Bundu and Silli Blocks in Jharkhand and Jabarrah and Kaipara in Purulia District, West Bengal. A timeline for R8334 is given in Figure 3.

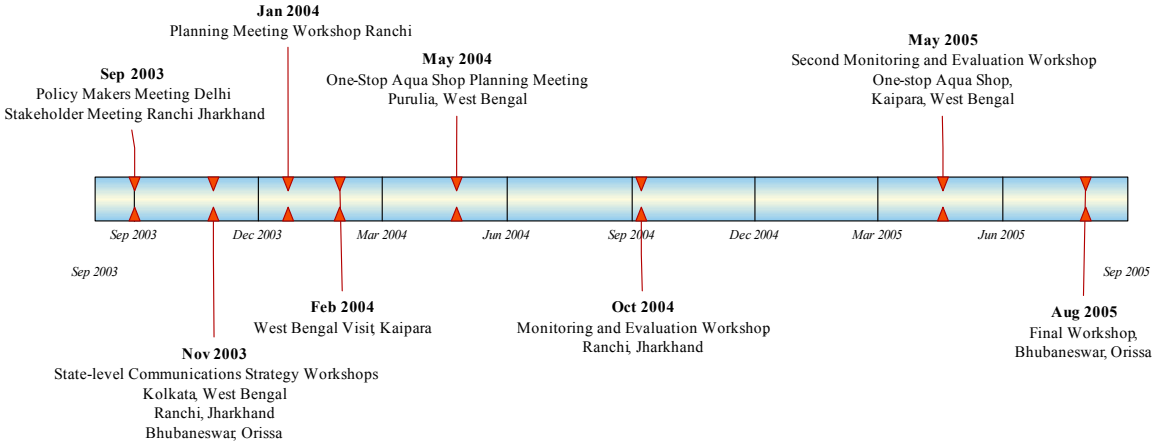


Figure 3 - Timeline of Project R8334 Identifying Key Events

An initial Policy-makers' Meeting was held in the capital Delhi from 15-16 September 2003 and a Stakeholders Meeting was held in Ranchi, Jharkhand in eastern India from 18-19 September 2003. Following the Stakeholders Meeting an exposure visit was organized in conjunction with GVT to the village of Jabarrah, West Bengal, where village members had participated in R6579 and R8100, to raise awareness of pro-poor service provision and the experiences of SHG formation in aquaculture. The experiences were written up as a story which is available at http://www.streaminitiative.org/-Library/pdf/pdf-india/jabarrah.pdf (Annex C).

Based on the discussions at these meetings, State-level Communications Strategy Workshops were held to facilitate the development of communications strategies and generate ideas for a R8334 monitoring and evaluation process. These workshops were held in the three state capitals of Kolkata, West Bengal, from 30-31 October 2003, Ranchi, Jharkhand, from 3-4 November 2003 and Bhubaneswar, Orissa, from 6-7 November 2003 to make it easier for Ministers, Secretaries and Directors to attend. This was followed by a Planning Meeting held in Ranchi from 29-30 January 2004, attended by government and non-government service providers and farmers and fishers. The aim of this meeting was to identify suitable mechanisms for carrying forward the R8100 recommendations for policy change and service provision. The proceedings of all the workshops are provided in Annexes H1 to H3.

In February 2004, following the recommendation for One-stop Aqua Shop (OAS) formation from the communications and planning meetings, STREAM and DoF Jharkhand visited representatives of SHGs in the village of Kaipara, West Bengal, to help them to plan the pilot testing of an OAS. The report is available at http://www.streaminitiative.org/Library/pdf/pdf-india/04R8334WestBengal.pdf (Annex H4).

An OAS Planning Meeting was then convened in Purulia, West Bengal in May 2004 to help to consolidate the relationship between farmers in Kaipara and a range of potential service providers including the DoF, banks, insurance companies, NGOs and fish farmers who would be serviced by the OAS. A report is available at http://www.streaminitiative.org/Library/pdf/pdf-india/05R8334OASPlanningMeeting.pdf (Annex H5).

A proposed fourth output of project R8334 was to support stakeholders in understanding the quality of their performance in pro-poor service delivery. This involved monitoring and evaluation of progress towards livelihoods improvement and the establishment of an R8334 monitoring and evaluation (M&E) system.

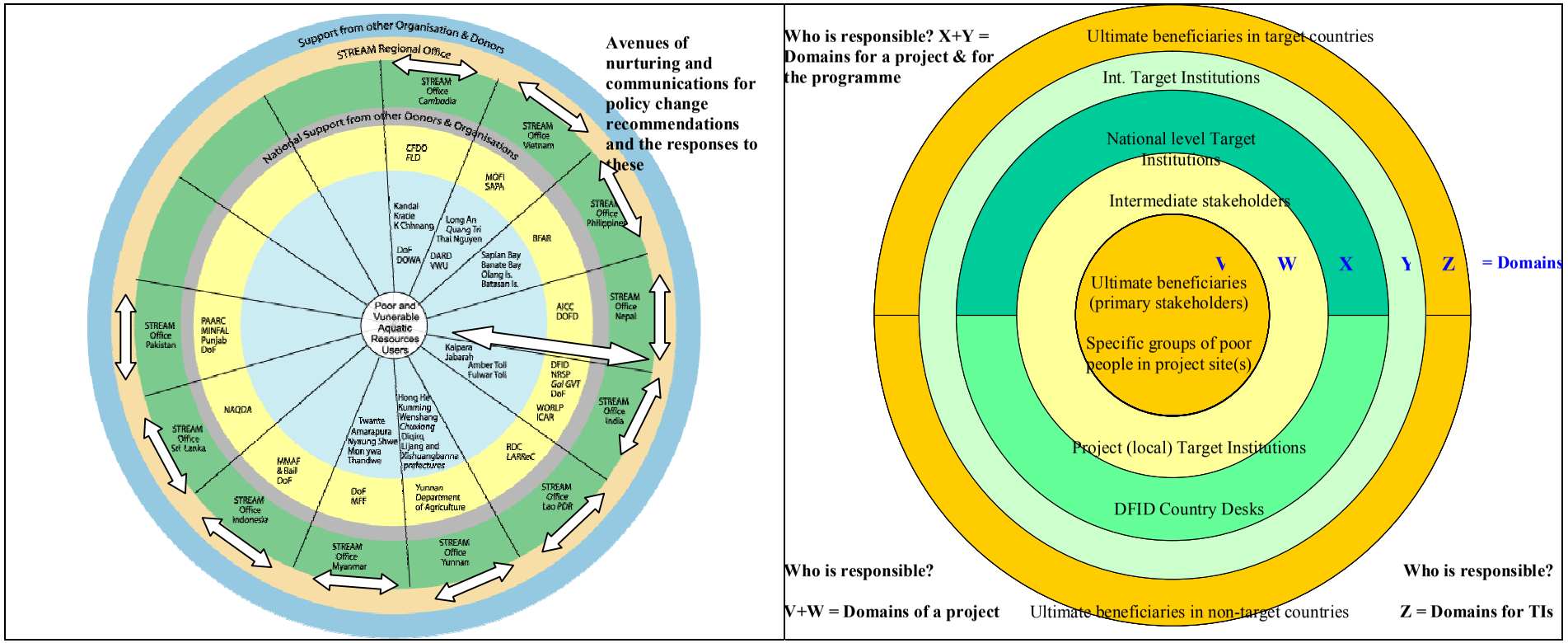
The First M&E Workshop took place in Ranchi, Jharkhand from 7-8 October 2004 (Annex H6), attended by a range of participants from relevant government departments and agencies, non-governmental organizations and communities, who contributed their ideas about how the project might monitor and evaluate. Follow-up actions included a workshop from 17-18 May 2005 in Kaipara, West Bengal (Annex H7), where the early outcomes of M&E were shared and assessed through Significant Change Stories (SCSs). These SCSs were examined in more detail at the final R8334 workshop held from 30-31 August 2005 in Bhubaneswar, Orissa, co-hosted by the Central Institute for Freshwater Aquaculture (Annex H8). The workshop was attended by 55 participants, including senior colleagues from national and state fisheries administrations, communities, government and NGO service providers, and managers of the recently established One-stop Aqua Shops (OASs). The main focus of this workshop was on stakeholder learning and insights regarding the outcomes and impacts from R8334 as well as earlier associated projects R6759 and R8100. Specific issues included a discussion on the recently drafted Policy Briefs "Building-Consensus" and "Livelihoods Approaches" and plans for scaling-up of the OAS service throughout eastern India.

The STREAM India Communications Hub (manager Rubu Mukherjee) linked with the other Communications Hubs within STREAM to promote the sharing of technologies, processes and ways of working developed in India and through other line agencies across Asia-Pacific. It is interesting to examine the stakeholder diagrams of the DFID-NRSP's Conceptual Impact Model (CIM) and that of the STREAM Initiative stakeholders (Figure 4). For the sake of brevity, the Domain V-Z notation is used in the following text when referring to the various types of stakeholders who were involved in R8334 or became engaged with it during implementation. From a comparison of the two diagrams, direct associations between the stakeholder domains of the two organizations can also be made (Table 2) and from this DFID-NRSP Domain type stakeholders in Project R8334 (India) are easily identified.

During the implementation of R8334 a further DFID-NRSP uptake promotion project R8363, Enhancing Development Impact of Process Tools Piloted in Eastern India, began. R8334 and R8363 shared common areas such as the production of a Policy Brief on the CBP and the production of Better-Practice Guidelines (BPGs), but R8363 shared the Indian experiences widely in Asia-Pacific, producing and sharing briefing documents and guidance in fourteen languages.

Table 2 - Comparison of Domains between DFID-NRSP and STREAM

DFID-NRSP CIM	Domain	STREAM R8334 Stakeholders
Ultimate beneficiaries (primary stakeholders) Specific groups of poor people in project site(s)	**V**	Poor and vulnerable aquatic resources users in project site communities in eastern India (Projects R6759, R8100 and R8334)
Intermediate Stakeholders	**W**	Communities, federations of SHGs, representatives and regions identified in each country and the organizations based here
National Level Target Institutions	**X**	National and in this case state-level institutions, (line agencies) in each country (GVT, ICAR, state-level governments)
International Target Institutions	**Y**	STREAM Communications Hubs and TI partners, STREAM Regional Office and Partners
Ultimate beneficiaries in target and non-target countries outside project sites	**Z**	Ultimate beneficiaries in countries outside project sites in eastern India



Avenues of nurturing and communications for policy change recommendations and the responses to these

Who is responsible? X+Y = Domains for a project & for the programme

Who is responsible?

V+W = Domains of a project

Ultimate beneficiaries in non-target countries

Who is responsible?

Z = Domains for TIs

Figure 4 - Comparison between DFID and STREAM Stakeholder Diagrams

2 Output One: Promotion of Process for Pro-Poor Policy Formulation

2.1 Objective

Output One focuses only on the method that R8100 developed and tested, which the project named the CBP. The project aimed, by various means, to stimulate stronger ownership of that method by national and state stakeholders so that they might decide to use it for (pro-poor) policy shaping in the future. Key targets for this aim were that stakeholders should a) develop a policy brief on the CBP, b) use the CBP in other (non-R8334) policy-related work, c) engage with the CBP to a level that they actually take ownership of its promotion, and d) form some kind of policy working group that would monitor progress for a)-c) and have a strategic oversight of work and outcomes of Outputs 2-4.

2.2 Findings

Like R8100, R8334 found that repeated engagement with a wide range of stakeholders was a good approach. Constituting a Policy Working Group (PWG) was a troublesome concept for Delhi stakeholders, which they pointed out, would rightly be constituted by government not by a donor-funded project. The term PWG was unacceptable and an alternative "Project Monitoring Group" was proposed. The PMG term was used to denote the assemblages of stakeholder groups brought together by R8334 that took a strategic oversight of the work and outcomes of the project and whom were also represented in the final workshop in Bhubaneswar. See further (Figure 6) for Jharkhand stakeholders' delineation of the constituency of the PMG.

2.3 Achievements

A communications vehicle was developed by the project in consultation with stakeholders to support engagement with the CBP. This briefing document was designed specifically for sharing approaches with policy-makers – which became referred to as a Policy Brief. The first draft Policy Brief entitled "Building-Consensus" (see Annex B1) outlined the Consensus-Building Process piloted by R8100. This Policy Brief was also shared and developed with communications specialists from eleven other Asia-Pacific countries in conjunction with DFID-NRSP Project R8363. Policy Briefs are short (two-pagers), designed to be read quickly, explain key issues and suggest further information sources.

During 2005 two ICAR-funded so-called "mini research projects" were developed specifying the CBP in their designs.

- The first replicated the CBP itself with communities and service providers in Maharashtra, This mini-project was conducted by scientists at CIFE (Mumbai).
- The second followed up the CBP recommendations regarding single-point under-one-roof service provision to assess its implementation. This research was conducted by scientists at CIFA in Bhubaneswar

Through collaboration with Project R8363, the structure of the PB genre has gradually developed so that busy professionals (for example, in India these might be a District Collector, who takes a guiding role in development policy and implementation for a district) who can engage with them in only one, three or five minutes. Following discussions at the final R8363 workshop in Hanoi, Vietnam, from 17-18 June 2005 (Copley et al, 2005) and the final project R8334 workshop (Annex H8), summary techniques were incorporated into the briefs' design.

2.4 Outcomes

National- and state-level stakeholders from the GO sector engaged with the Consensus-Building Process (CBP) that R8100 had developed. ICAR mini-research projects specified the use of the CBP in their designs and were undertaken by CIFA and CIFE using ICAR funds. Through meetings and workshops they agreed to work together towards promoting the CBP in India. In consultation with communications specialists from ten other Asia-Pacific countries, it was widely shared around the region (for further details see DFID-NRSP project R8363).

2.5 Insights and Learning

Consensus building as part of promoting policy change requires carefully negotiated positioning to provide learning that assists in policy making or changing processes. Policy making as highlighted by the Deputy Fisheries Commissioner in initial meetings is the role of GOI with the role of the project to provide advice and support. Therefore, the efforts of R8334 depended upon creating trust and a familiarity with the project, building upon existing relationships. This nurturing process cannot happen without a commitment to longer-term engagement. It takes time to create an awareness of the policy environment and change recommendations and to formulate and pilot responses to them together. Administration in the government sector in India (and elsewhere) involves regular personnel change so opportunities for multiple engagements are essential. This short project period encompassed three changes in Fisheries Director in Orissa, two in West Bengal, a change of the Orissa Watershed Development Mission Director, and of the Joint Secretary in the Ministry of Animal Husbandry and Dairying.

3 Output Two: Capacity Building for Policy Formulation that Favours Pro-Poor Service Provision, Especially for Integrated Aquaculture

3.1 Objective

Output Two focuses on the potential for implementation of the pro-poor recommendations for service provision identified in R8100. The objective was to further progress these recommendations through institutional capacity-building, including improved sharing of policy-related experiences and promotion of the policy recommendations in relevant government communication channels.

3.2 Findings

Exposure visits such as the one to the village of Jabarrah in West Bengal following the inception meeting raised awareness of national- and state-level stakeholders of ways to sustainably achieve pro-poor changes. This kind of learning can also be shared much more widely via storytelling. The STREAM story called *Back to Jabarrah* http://www.streaminitiative.org/-Library/pdf/pdf-india/jabarrah.pdf (Annex C) has proved a useful mechanism for sharing understanding of issues around livelihoods change in a wide variety of geographic and social contexts.

Stakeholders of each target state developed communication action plans (see Figure 5, Figure 6 and Figure 7) based on adoption of the principle of local service delivery through the provision of OASs (see Outputs 1 and 3).

At project workshops in each of the three states, participants discussed their current communication situations. They highlighted communication shortcomings and discussed procedural reforms for improving communication. These were centred on three main areas of understanding drawn from the recommendations of R8100:

- Building social capital – encouraging the formation of self-selected Self-Help Groups was recognized as a successful entry point. This built on the learning from the East India Rainfed Farming Project and the NGO GVT.
- Access to financial capital – supporting access to financial capital for poor people in rural areas and promoting the effectiveness of group savings and micro-credit among Self-Help Groups as precursors to engagement with the formal credit sector. This built on the learning of the rural banking sector in the provision of financial products.
- Streamlining service provision – supporting potential entrants to aquaculture by streamlining service provision via the development and operation of some kind of single-point under-one-roof provision of services or "One-stop Aqua Shop" (OAS), local to rural communities (see output 4).

Participants also recognized the potential role and opportunity presented by the newly-established STREAM India Communications Hub, formed in collaboration with ICAR and GVT as a support agent in knowledge-sharing through the OAS (see next section and Figure 5, Figure 6 and Figure 7).

3.3 Achievements

Three draft communications strategies (Figure 5, Figure 6 and Figure 7) were produced. Each of these outlined the potential roles of a range of stakeholders in each state in promoting policy change recommendations.

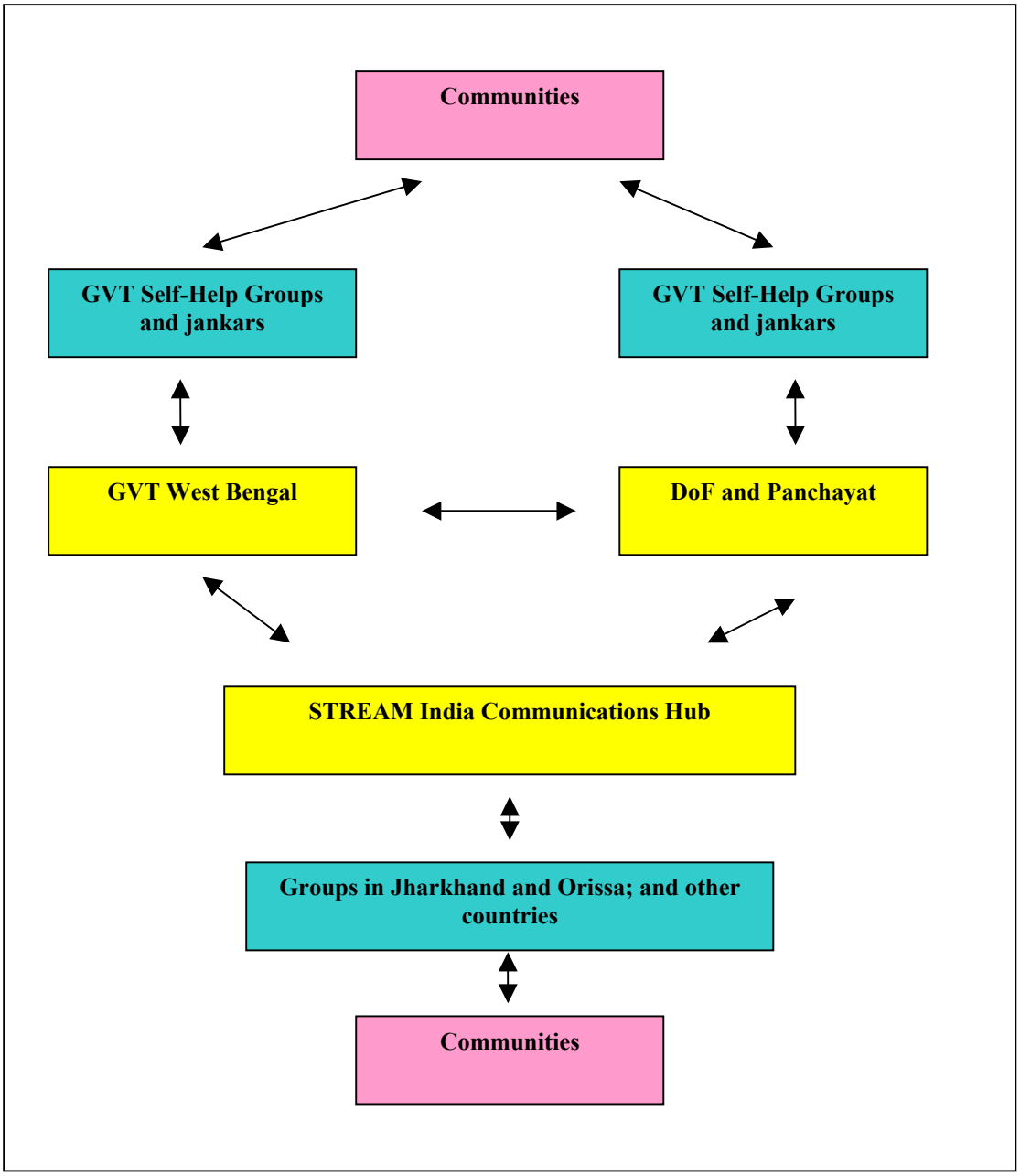
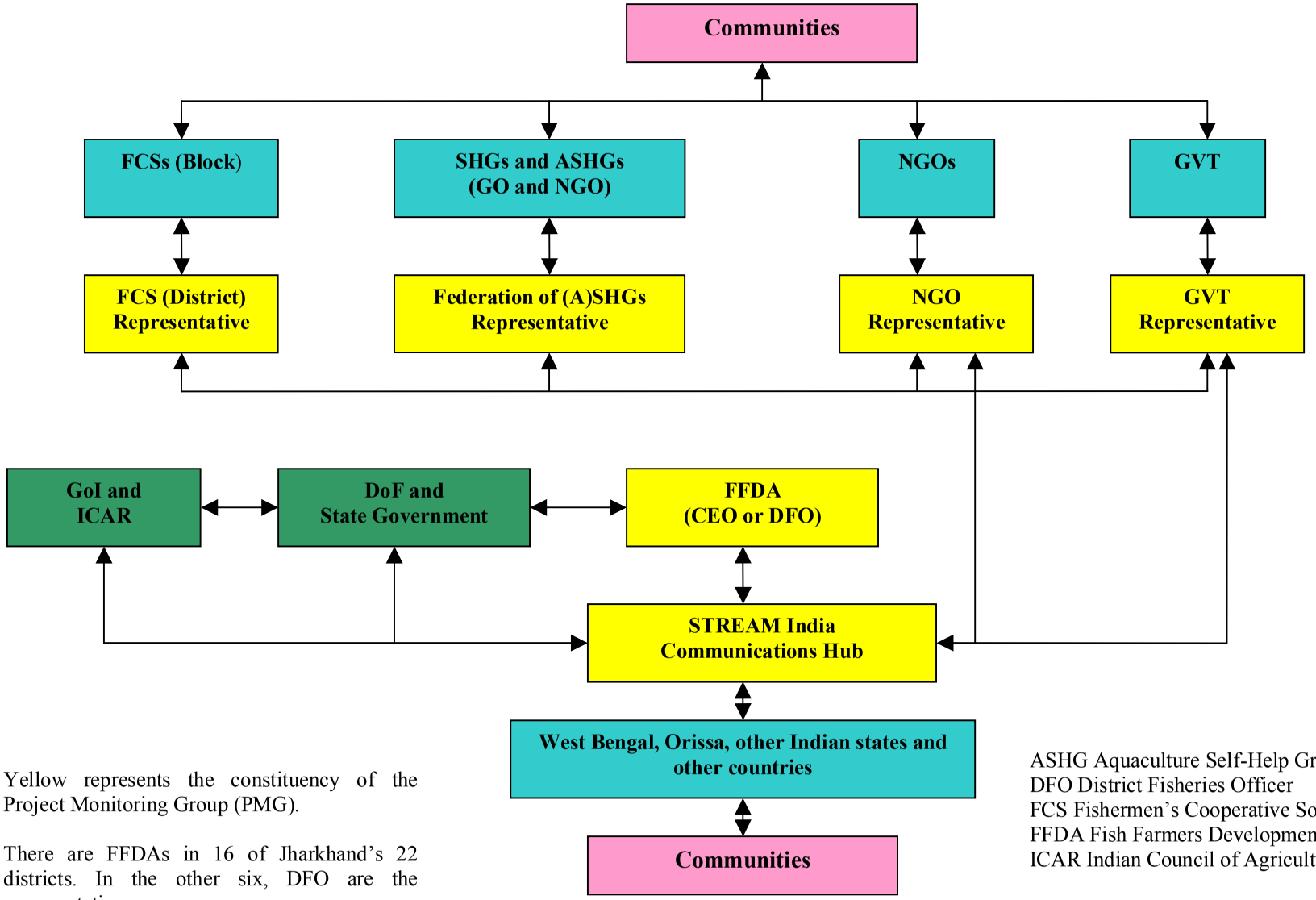


Figure 5 - Draft Communications Strategy West Bengal



Yellow represents the constituency of the Project Monitoring Group (PMG).

There are FFDAs in 16 of Jharkhand's 22 districts. In the other six, DFO are the representatives.

ASHG Aquaculture Self-Help Group
DFO District Fisheries Officer
FCS Fishermen's Cooperative Society
FFDA Fish Farmers Development Agency
ICAR Indian Council of Agriculture Research

Figure 6 - Draft Communications Strategy Jharkhand

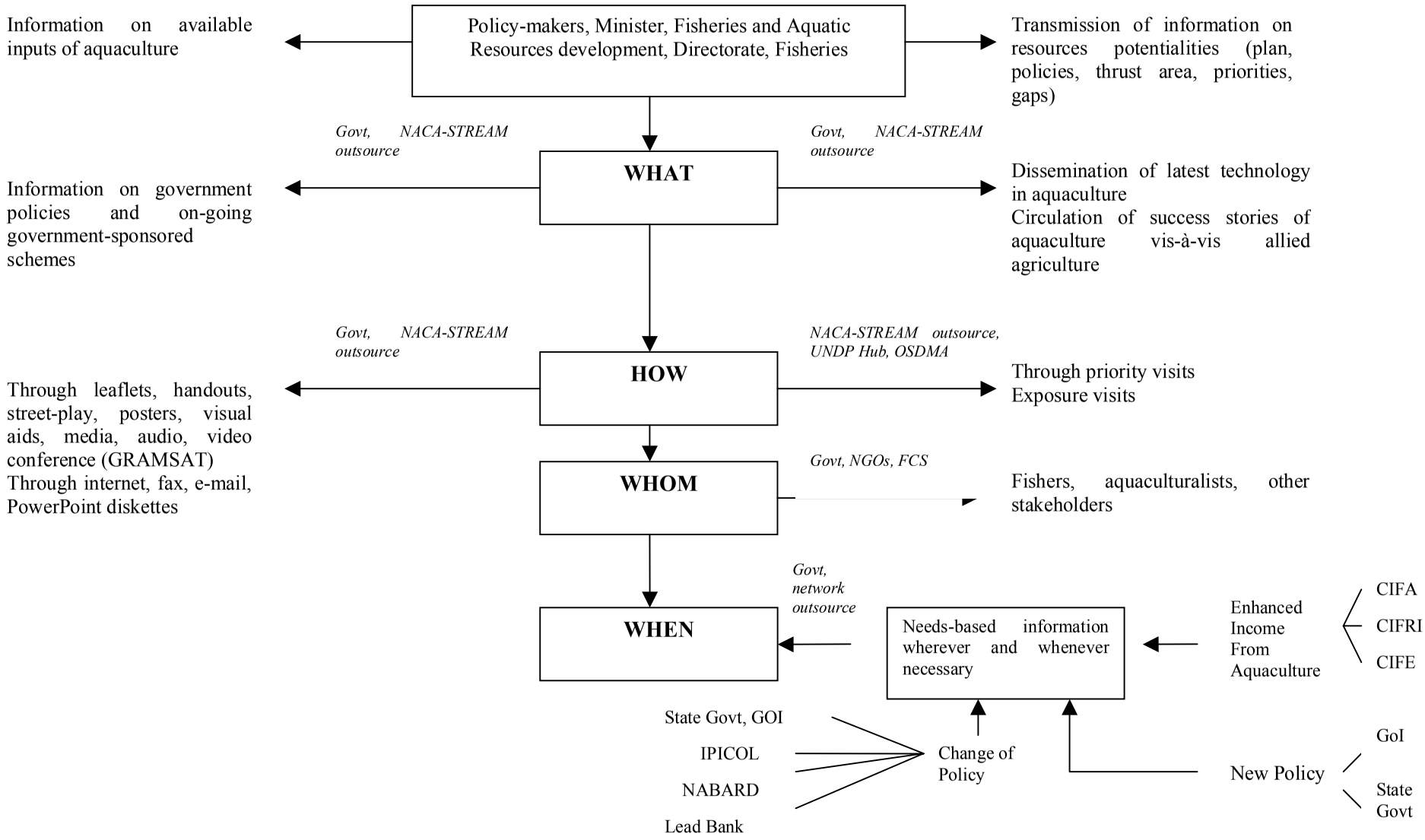


Figure 7 - Draft Communications Strategy Orissa

3.4 Outcomes

Through the agreement on communications strategies and the production of a Policy Brief concerning the Consensus-Building Process, state- and national-level policy 'shapers' began to share a common vision on how to further advance R8100's pro-poor policy change recommendations into formal policy channels. The genre proved useful and by June 2005 a second Policy Brief entitled "Livelihoods Approaches" was also made available (Annex B1 & B2).

The Joint Secretary of the Department of Animal Husbandry and Dairying, Ministry of Agriculture, Mr Pattanaik shared the whole "facilitated advocacy" process with other Asia-Pacific fisheries officials at the United Nations Food and Agriculture Organization Fisheries Committee, Asia-Pacific Fishery Commission (APFIC) meeting in Chiang Mai, Thailand.

STREAM special advisor, Dr S D Tripathi, shared the policy change lessons learnt through R6759, R8100 and R8334 in an invited presentation at an inception workshop on the Development of Strategies for Enterprise Promotion and Sustainable Livelihood in the Fisheries Sector in Orissa. The workshop was organized jointly by the Orissa DoF, UNDP and DFID and was attended by 70 participants including ICAR Fishery Institute Directors, Dr Shaktivel, the president of the Aquaculture Foundation of India, M. M K Nair, the Fisheries Development Commissioner, former directors of fisheries in Orissa and a number of state directors and secretaries.

3.5 Insights and Learning

Brokering advice and support to policy-makers and facilitating engagement with communities requires trusting relationships and familiarity with the policy change environment. In this case, the 10th Five-Year Development Plan was the time window which led to engagement with the ministry. With ministry commitment, it was possible to engage more easily with state-level actors, who were encouraged to do so by the Fisheries Commissioner in Delhi. The instigation of change at state level (the level at which fisheries is administered in India) follows from identification of the need for change (in this case through brokered dialogue with communities and consensus-building about change recommendations) and direction received via memos from the national fisheries administration (in this case the Joint Secretary and Fisheries Commissioner).

Implementation then follows through a well established and functioning bureaucracy in India. The success of implementation of change rests heavily on such a functional bureaucracy, which is less well developed in many other countries in the region. Even then, nurturing is crucial to overcome inertia and resistance to change at different levels with the hierarchy of the system. The clarity of policy changes and momentum towards their implementation can be diminished by changes in key personnel (see 2.5 above for evidence of how widespread this phenomenon is). The common means of communication of policy change is by government memo, which depending on the skill of the author may be more or less ambiguous. Workshops which supplement understanding of the origin of the change and underline its essence are an important part of nurturing. They are also a public platform for demonstrating shared commitment to changes which can empower change agents to act on government memos. The communication strategy diagrams derived from state-level workshops reflect a desire for expanded communication (Figure 5, Figure 6 and Figure 7).

4 Output Three: Capacity Building for Transforming Policy Recommendations into Pro-Poor Service Provision (Learning-by-Doing)

4.1 Objective

Output Three focuses on building state-level capacity to provide pro-poor services that support peoples' livelihoods. This was to be achieved through stakeholders designing and pilot testing revised procedures and institutional arrangements for service delivery. Revised procedures and institutional arrangements for service delivery centred on taking action on the prioritised recommendations arising from R8100 (refer to Table 1).

4.2 Findings

This output aimed to nurture pro-poor service provision through action research (learning-by-doing) based on the prioritized policy change recommendations of R8100. During the course of the R8334 project, six of the recommendations of R8100 were implemented, these were as follows:

Recommendation 1 – Develop infrastructure for timely production of fingerlings at local level

The Government of Orissa undertook experiments in Nuapara district on fingerling production and one community-based OAS in West Bengal acquired access to ponds for fingerling production and commenced a fingerling supply service.

In western Orissa the supply of fingerlings is one of the key constraints to aquaculture development; much of the government hatchery infrastructure for local seed production has fallen into disrepair and there is also limited human and physical capacity for nursing seed to fingerling size (the most valuable stage for poor farmers with seasonal water bodies), (Haylor et al 2003; Guha et al 2006). The experiment involved modern, inexpensive, plastic-reinforced fibreglass hatching and spawning tank designs that were tested by a previous CIFA "Plastics in Aquaculture" project but which had not yet emerged from on-station trials. It was undertaken by a watershed Project Implementing Agency (PIA) of the Western Orissa Rural Livelihoods Project (WORLP) and the NGO Sahabhagi Vikas Abhiyan (SVA), with STREAM providing hatchery design and training to operate the system for spawning Indian Major Carps and Common Carp.

In addition, SVA and STREAM worked together to plan and operate a network of SHGs, each with suitable small shallow water bodies, to nurse the seed from the hatchery to fry (25-30 mm) and fingerlings (100-150 mm) in time for stocking both seasonal and perennial water bodies. It is important to link nursing management with hatchery management. This is because it takes longer to prepare a pond to produce an abundant crop of natural feed, to receive first-feeding spawn, than to spawn seed for stocking. Scheduling pond preparation and spawning is a crucial issue for success, with implications for communications and management of nursing networks. One small hatchery with a 3-m spawning tank and 3 x 2 m hatching tanks can service 100 SHGs with fish seed over its 30-day period of operation during the rainy season, with a pay-back period (based on capital and operating costs) of two seasons. Each SHG (with on average 3 x 0.02-ha nursery ponds around 1.5-m deep) can realize an operating profit of around $1,000 over a two-month nursing period. One hundred SHGs produce collectively enough fingerlings to stock around 2,000 ha of water area (several meters deep) with a production capacity of around $1 million of marketable fish at local rates. In the context of western Orissa, this is an attractive income-generating option for NGOs operating hatchery modules, with interest also from the small-scale private sector,

SHGs within a nursing network, and government who wish to increase fish production to match state demand.

The federation of SHGs that operates an OAS in Kaipara Village, West Bengal, has taken ponds for fingerling production on lease, acquired fishing nets and other equipment, which it leases to SHGs. They have commenced a fingerling supply service which satisfies a local demand and provides a return to support the operation of the OAS.

Recommendation 2 – Ten year leases for ponds for SHGs

As a result of positive follow up at national and state levels on the R8100 recommendation, the pond lease period was increased to 5 years in Orissa, West Bengal and Jharkhand.

Each of the three eastern Indian states has changed the lease period from 1 to 5 years and efforts are under way to make it easier for SHGs to bid for the leases on their local tanks, for example through facilitation by WORLP PIAs in watersheds in western Orissa. There is evidence emerging that the new arrangement is more attractive to SHGs than the annual lease, and that taking on such leases can be beneficial to the improvement and stability of rural livelihoods. An example of a group responding to this change, in a non-project location, is described in the STREAM story *The Khandkhlegaon Story* [see http://www.streaminitiative.org/-Library/pdf/pdf-india/jabarrah.pdf].

A Government of Orissa Directive issued from the Orissa Watershed Development Mission (Letter No 144, P K Jena) requests PIAs to dialogue with SHGs and to enable SHGs in large numbers to avail themselves of water bodies on long-term leases. There is no preference given to local SHGs; the lease auction system remains an open bidding process with the lease going to the highest bidder. The change is that SHGs are being encouraged to bid, are becoming better informed about the timing of auctions and, as demonstrated by Significant Change Stories (see further, especially Output 4), are more organized, more empowered and are developing greater resolve to win auctions.

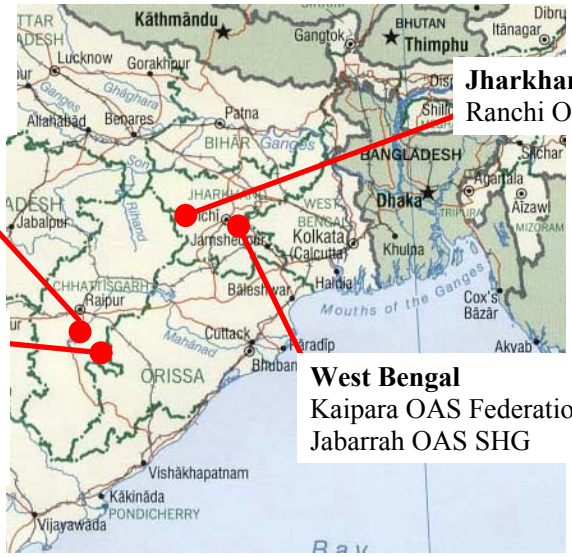
Recommendation 7 – Single-point under-one-roof service provision

During the life of the project, a total of nine OASs were established independently of project funding. Different OAS models emerged: an experiment in the reform of the Fish Farmers Development Agency (FFDA) in the GO sector of Jharkhand; developments by NGOs in Orissa; and community-based service provision enabled through a federation of SHGs in West Bengal.

The project role here was again one of nurturing. Through large-scale workshops in Ranchi (Jharkhand), Bolangir and Nuapara (Orissa) and Kaipara (West Bengal), hundreds of stakeholders were brought together to discuss and plan One-stop Aqua Shops. Discussions and planning were with service providers in fisheries and rural banking, with individuals, SHGs, NGOs, government officers and watershed Project Implementing Agencies. A further component of nurturing that the project played (a communications and brokering role) was to hold follow-up meetings with Secretaries and Directors for Fisheries and Watersheds across the states, sometimes carrying "Statements of Intent", as the outcomes from workshops to senior officials in state capitals. By these means, a considerable momentum was built to move to operating OASs by SHGs, NGOs and also within the government sector. Fisheries Extension Officers, e.g., Damodar Sahu, Nuapara OAS Manager, Nuapara District, Orissa, and Sailesh Rath, OAS Manager Khariar, Nuapara District, Orissa, report that the OAS supports their work, and that the 95,000 Better-Practice Guidelines so far distributed to OASs in Orissa are proving popular. The locations of nine OASs developed during the course of the project are shown in Figure 8 below.

Western Orissa (Nuapara)
Nuapara OAS DoF-WORLP
Khariar OAS DoF-WORLP
Bilanjore OAS SVA-WORLP

Western Orissa (Bolangir)
Bolangir OAS DoF-WORLP
Pathnagarh OAS DoF-WORLP
Kandhkelgaon OAS SVA-WORLP



Jharkhand
Ranchi OAS DoF FFDA

West Bengal
Kaipara OAS Federation of SHGs
Jabarrah OAS SHG

Figure 8 - Locations of OASs

Recommendation 11 – Change how information is made available to farmers

Linked with OAS development, STREAM launched a One-stop Aqua Shop Information Service (OASIS), based in Orissa, to enable sharing of knowledge. OASs recognised the relevance of BPGs and through their link with OASIS, they made them available to poor fishers and farmers (also see Output 2).

At the planning meetings involving government, inter-governmental and NGO service providers, STREAM agreed to support One-stop Aqua Shops through the provision of an information service called the One-stop Aqua Shop Information Service (OASIS). The service aims to make available information from farmers and fishers, service providers, news agencies, the internet, and academia (including databases of research and outputs from specific research programs, on-line communities of shared-interest groups), as well as learning from other countries. The information service is made available from the STREAM Initiative through the national Communications Hub in Bhubaneswar linking with the OAS (see Annex D).

This is being undertaken in such a way that it encompasses the fourth recommendation about changing the way in which information is made available to farmers and fishers through new communication vehicles such as Policy Briefs and Better-Practice Guidelines. The Jharkhand government, with project support, is piloting a village poster campaign to advertise the OAS (Annex F). The Orissa Watersheds Development Mission (OWDM) is supporting the development and distribution of BPGs in Oriya through OASIS (see under recommendation 7 above).

Recommendations 3 and 13 – Encourage integrated aquaculture including simplified procedures for accessing government schemes and bank loans

Extension agencies and financial loan services have recognised the value of OASs as a focal contact point. They are beginning to use OASs for meeting with poor clients and potential poor borrowers.

The State Bank of India encourages the rural banking sector to offer targeted financial services, through local branches, to people who are poor. Extremely well targeted micro-credit is at its heart because of the business opportunity perceived by the bank and excellent repayment rates by small-scale entrepreneurs they have experienced. Rural banking sector micro-credit providers, like, for example, Mallyabhum Gramin Bank in West Bengal (who have played an active role in R8100

and R8334) have welcomed the launch of OAS to help to share information about and opportunities to access their products. Mr Bipra Das Midya, Area Manager, and Mr Ajit Banerjee of Mallabhum Gramin Bank, Purulia (see *Back to Jabarrah* story and other project reports for the history of the bank's connection with DFID-NRSP aquaculture research), provided the following ledger data (Table 3) to the STREAM Communications Hub Manager to back up their recently adopted policy of preferential consideration for loans to SHGs choosing to adopt rural aquaculture.

Table 3 - Loan Details for Self-Help Groups

Activity for which bank loan has been given to SHGs	No of SHGs who have taken loan	No of SHGs who repay loan	Repayment (%)
Agriculture	42	33	78.5%
Aquaculture	32	32	100%
Livestock	24	14	58.3%
Constructions (e.g., well construction, agriculture field bunding)	6	3	50%

Data source: Mallabhum Gramin Bank, Purulia (2005)

Nineteen Better-Practice Guidelines for integrated aquaculture have been produced through support from the OWDM, (Government of Orissa). To date 5,000 copies of each number have been printed and distributed to six OASs in Bolangir and Nuapara districts. These complement and significantly develop the way that information is made available to farmers and fishers. Titles include:

BPG No 1 What is Fish Culture?
BPG No 2 Pond Construction: Selecting good places for ponds
BPG No 3 Pond Construction: Design and layout of ponds
BPG No 4 Broodstock Collection, Transport and Maintenance
BPG No 5 Spawn production in *hapa*s
BPG No 6 Spawn production in hatcheries
BPG No 7 Spawn production of common carp
BPG No 8 Fry production: Nursing spawn
BPG No 9 Fast fingerling production: Nursing spawn in ponds
BPG No 10 Fingerling production: Nursing fry in ponds
BPG No 11 Fingerling production: Nursing spawn and fry in pens
BPG No 12 Advanced fingerling production: Seasonal ponds
BPG No 13 Advanced fingerling production: Perennial ponds
BPG No 14 Packing and transport of fry and fingerlings
BPG No 15 Marketable fish production: Seasonal ponds
BPG No 16 Marketable fish production: Perennial ponds
BPG No 17 Recognizing and managing common fish diseases
BPG No 18 Marketing and hygiene
BPG No 19 One-stop Aqua Shops (OASs)

4.3 Achievements

The modular approach to developing hatchery infrastructure and an associated network of nursery pond operators (mainly Self-Help Groups), based on the experiment conducted in western Orissa, has been adopted by the Government of Orissa, Orissa Watersheds Development Mission, as a development plan for improving timely production of fingerlings at local level in its five-year plan (2006-10).

The OAS concept has been carefully nurtured and its implementation is being successfully piloted by different stakeholders in all three states. NGOs have been especially receptive and have developed good facilities. The SHG federation in Kaipara, West Bengal, is using the OAS to draw down the support they need and has implemented many innovative income-generating ideas, providing goods and services for aquaculture locally as well as a source of revenue to sustain the OAS. The developments within the government sector are visible to government and are being monitored; because government outlets are essentially seen as cost-centres, they do not share the flexibility of the voluntary or private sector to become financially self-sustaining. The concept of local-level institutions like OASs generating their own income is testing the government bureaucracy and its implementation. However, the commitments of staff, infrastructure and materials from different sectors within government have given rise to sustained opportunities for the implementation of the OAS concept. Orissa will be using the monitoring and evaluation system developed by this project (over the next five years) to monitor, evaluate, learn and adapt what they do (see output 4).

Each of these models functions under the guiding principle of a "single-point under-one-roof provision of services", a priority recommendation of R8100; a summary of the services each provides is given in Table 4.

Table 4 - Initial OAS Models and the Services They Offer

OAS Location	Co-ordinators	Services Offered
OAS Ranchi, Jharkhand (Est. 7 May 2004)	Operated by DoF/FFDA	– A fisheries extension officer – Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Kaipara, West Bengal (Est. 1 June 2004)	Operated by a federation of 20 SHGs	– Taking on the role of local quality fry production aiming to meet 50% of local fry demand – Information, stories and case studies
OAS Kharair, Orissa (Est. 1 May 2005)	Operated by OWDM/DoF	– A fisheries extension officer – Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Bolangir, Orissa (Est. 1 May 2005)	Operated by OWDM/DoF	– A fisheries extension officer – Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Patnagar, Orissa (Est. 1 May 2005)	Operated by OWDM/DoF	– A fisheries extension officer – Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Nuapara, Orissa (Est. 1 May 2005)	Operated by OWDM/DoF	– A fisheries extension officer – Information on aquaculture technologies – Grants and loans sources and application forms

OAS Location	Co-ordinators	Services Offered
		– Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Bilanjore, Orissa (Est. 9 May 2005)	Operated by the NGO SVA	– Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing
OAS Jabarrah (in early stages of development)	Operated by local SHGs	– Information on aquaculture technologies
OAS Sintela, Orissa	Operated by the NGO SVA	– Information on aquaculture technologies – Grants and loans sources and application forms – Hatchery addresses – Feed supply details – Technical literature in local language – Facilities for water and soil testing

Following the R8334 Planning Meeting and subsequent discussions between the Assistant Director of Fisheries, Jharkhand State, the Director of Fisheries and the District Fisheries Officer (DFO)-cum-CEO of the Ranchi Fish Farm Development Agency (FFDA), the OAS Ranchi was officially opened on 7 May 2004 by the FFDA-DOF. The OAS is based in the DoF and allows farmers access to aquaculture expertise in the form of a government Fisheries Extension Officer and information on aquaculture technologies, feed and seed suppliers as well as sources of micro-credit. The first OAS in India opened for business (Figure 9); to the Ranchi administration it represented a new approach for the FFDA.

OAS Ranchi Run by DoF


R8334 Planning Meeting 2004

Figure 9 - OAS Ranchi, Jharkhand

After receiving notice of the planning meeting where the OAS concept was to be discussed, the secretary of the federation of SHGs called a preliminary meeting of SHGs to discuss the concept of the federation hosting its own OAS. After agreement among the SHGs, this proposition was then shared at the R8334 Planning Meeting. As a result, STREAM and DFID-NRSP agreed to support a workshop to be hosted by the federation in Kaipara to help to mature the relationships between the federation, banks and other agencies. At that workshop (Annex H5), the secretary, Kuddus Ansari, highlighted and championed how the OAS would change the way that information was made available to farmers and make the process of starting aquaculture more efficient. Participants could see how this would involve less travelling, better information on fish culture and improved access to suppliers, government schemes and micro-credit. Support agencies could also see how this could make their efforts more efficient, and began to pledge their support. One month later, the Steering Committee of the federation passed a resolution that launched the OAS

in Kaipara with the facility officially opened in June 2004 (Figure 10). SHGs each had invested Rupees 2,000 (about US$ 27) from their group funds to provide operating capital for the OAS. This embryonic 'home-grown' support infrastructure is the subject of an R8334 story entitled *The Kaipara Story* (Annex C).

OAS Kaipara Run by Federation of Self-Help Groups

At the One-stop Aqua Shop in Kaipara

Figure 10 - OAS Kaipara, West Bengal

In another unexpected instance, Mr Sahu, the Director General of Fisheries in Orissa, requested STREAM if he might join the Planning Meeting in Ranchi (Jharkhand) in October 2004 (Annex H3). It is unusual for inter-state interactions to be initiated from state government officials, and even difficult sometimes for staff from one state to attend workshops and meetings in another. He had heard of the work through R8100 and was interested to promote the OAS concept in Orissa. During the meeting he commended the concept and requested that it take shape in Orissa. He offered to provide manpower for up to four OASs in Orissa, provided that other government sources outside of the DoF could support infrastructure.

Following negotiations between STREAM and the Government of Orissa, OWMD, and the DFID-funded Western Orissa Rural Livelihoods Project, a one-and-a-half-day workshop was held, supported by Natural Resources International (NRI) on behalf of DFID and facilitated by STREAM. This workshop hosted 70 persons from Bolangir and Nuapara districts of Orissa, as well as a number of out-of-state resource persons. The objective was to share the concept of the OAS, to discuss how they might contribute to an OAS in each local area, and how everyone's own work might benefit. Each colleague received an eight-page story about the OAS recently developed in Kaipara Village. Interestingly, on 7 May the first OAS to be inaugurated in Orissa was established not by government but by the NGO SVA in Bilanjore, western Orissa. The opening ceremony was attended by representatives from local government, service providers, farmers, NGOs and STREAM.

The NGO-run OAS at Bilanjore in Nuapara district offers the same information services as other OASs, but in addition it possesses training and lodging facilities, feed manufacturing equipment and, in a further collaboration with STREAM, a hatchery. This new carp hatchery has already been successful in spawning several batches of Mrigal (*Cirrhinus Mrigala*), Rohu (*Labeo rohita*) and Common Carp (*Cypinus carpio*). Through continued collaboration, SVA, WORLP and STREAM have implemented a nursing network, planning the spawning and nursing of carp seed through a network of 54 farmer SHGs from Bolangir, Nuapara, Kalahandi and Bargarh districts.

In September 2005, the facility was visited by Sir Gordon Conway, Chief Scientific Advisor to DFID and his team (Figure 11), whereupon Dr S D Tripathi, STREAM Special Adviser, and Jagadish Pradhan, SVA President, described the process of the development of the portable

hatchery and OAS facility and revealed that this partnership has now led to the transfer of appropriate fisheries technology to about 117 SHGs which are now managing 140 fish ponds.

Inside the OAS Bilanjore

Sir Gordon Conway, Chief Scientific Advisor to DFID, Visits the OAS and Hatchery in September 2005

Figure 11 - OAS Bilanjore, Orissa

To support these facilities, in particular with the media required to fulfil their communications role, the STREAM India Communications Hub responded with the launch of OASIS, the One-Stop Aqua Shop Information Service (Annex D). Like the OAS concept, OASIS intends to support changes to the way that information is made available to farmers and through the OAS network offer the following services, to:

- Enable farmers to learn from each others' experiences and share these with other primary stakeholders throughout Asia-Pacific via the *STREAM Journal* which is available in local languages at OASs
- Find out who is who from a contacts database including details of One-stop Aqua Shops, banks, departments of fisheries, NGOs, Panchyats, SHGs, insurance providers and input suppliers
- Enable farmers to gain access to information such as the STREAM and NACA Virtual Libraries through links to the web
- Enable farmers to ask aquaculture-related questions and receive feedback via the NACA web-based discussion forum
- Offer farmers Better-Practice Guidelines on aquaculture and improved service delivery
- Offer farmers stories to provide rich livelihoods-focused information about recent interesting developments
- Offer awareness-raising in aquaculture through documentaries, films and drama, and
- Offer exchange visits with successful aquaculture operations within the local area.

Following the initial OASs, by May 2005 the Government of Orissa established a further four in Nuapara and Bolangir districts, with interest at state government level to consider block level OAS development in coming years, possibly encouraging the private small-scale sector model. The most recent OAS developments are through SVA, with the NGO establishing a second OAS in the non-target village of Sintela, and the SHGs in Jabarrah working towards opening their OAS with support from Kaipara OAS.

4.4 Outcomes

In an age where previously unprecedented levels of communication are becoming possible even in the most remote of Orissa's rural districts, the OAS has became a focus of improved service provision and is changing the way that information is being made available, which is what farmers and fishers originally requested as a R8100 service provision priority. The OAS enables service providers to get 'closer' to communities through the development of information and service focal points.

As part of the discussions among senior government officials in Orissa concerning the next five years of the Western Orissa Rural Livelihoods Project (WORLP), Dr S D Tripathi and G Haylor (STREAM), Mr Reddy (Watershed Mission for Orissa) and Mr D Gandhi (WORLP support team) made a presentation to the Commissioner, Fisheries & Animal Resources Development Department, Government of Orissa, India, on the ongoing aquaculture activities within WORLP, including the OAS concept. The secretary plans to double aquaculture output within the state and expressed interest in the expanding the OAS service.

Public-private partnerships are being considered by the Orissa government with the OAS seen as potential micro-enterprises of SHGs, NGOs or individuals with support from the DoF. Through the OAS outlets, an array of media are being distributed, all intended to encourage and facilitate the discussion and formation of SHGs and OAS. They are likely to lead to an increased demand for these approaches from partner and other organizations. These media include copies of street-plays and dramas produced in local languages by R8100 and R86759 which can be viewed and discussed at the OAS. Other examples include simple and colourful BPGs produced in association with R8363, stories and various OAS workshop reports and 19 BPGs on integrated aquaculture produced in association in with WORLP. OAS managers are also available to discuss these materials further.

4.5 Insights and Learning

Successful pilot responses to six of the original 13 priority recommendations of R8100 have been implemented during the period of the R8334 project. Many of the changes build on one another with communications and organisation facilitated by local-level social capital at the heart of the changes. Nurturing, especially through communications and networking, has played an important role, and in the context of the India fisheries administration, this role can be successfully fulfilled by outsiders such as the NACA-STREAM Initiative with DFID-NRSP support, providing there is significant investment in time and effort to build relationships of trust. In terms of relationship-building, the personal and interpersonal attributes of key actors are not inconsequential. Outside of the government sector, the OAS formation in Kaipara, championed by Kuddus Ansari and the Federation of SHGs there, has helped create a sustained source of community pride, outlined in *The Kaipara Story* (Annex C), particularly following the rapid and unexpected withdrawal of support from the NGO GVT, as highlighted in SCSs (see Box 1 and Annex G). Rather than representing a culture of dependency, this perhaps reflects the great strides that remote communities can take with minimal, yet somehow essential nurturing, perhaps even validation from outsiders. (Please note that the brackets inserted through the following SCS were added by the project.)

> "Though the group formation work (in Kaipara village) has been initiated by GVT their sudden departure made us upset. But still I do hope that I shall succeed in my life and my efforts are important for me.
>
> The launch of OAS here and villagers are responsible for its management. STREAM has given recognition to this village. People from different countries are coming to this village and sharing their knowledge and this is a blessing for us. For continuation of this activity the literacy level should be improved and we hope STREAM can guide us in this aspect also i.e. how to improve the literacy level. We hope STREAM will not upset us." - *Chakra Dhar Mahato from Kaipara*
>
> "Within the last one year visitors from different countries like Bangladesh and Australia visited the OAS and appreciated its activity. And people from different villages have also started to come to the OAS. Now people can understand the need of OAS initiated by STREAM. The activity of OAS include raising fry from spawn, renting fishing net, Handi (a vessel to carry fry), distributing newsletters, pamphlet regarding fisheries, and if farmers are facing any problem regarding fish culture then OAS is also giving solution to them, thus fish culture is now becoming a part of their livelihoods. Jobless young men and women are getting training on fish culture from OAS and applying for FFDA (Fish Farmers Developmental Agency) scheme and now housewives are contributing in their household income by doing fish culture. Again, those who have formed groups, are strengthening their group earnings by doing aquaculture. People are also telling their group members about the activity after getting the advice from local NGOs or clubs. Now through OAS people are getting all the benefits under one roof regarding aquaculture." - *Kuddus Ansari from Kaipara*

Box 1 – Excerpt from Significant Change Story, Kuddus Ansari & Chakra Dhar Mahato (Kaipara)

The suite of projects R6759, R8100 and R8334 have operated as learning and communication opportunities closely integrated within the existing institutional structure. The projects made a commitment to working repeatedly with the same stakeholders, wherever possible building upon and strengthening relationships. It is perhaps important to emphasise the enormous rewards (and motivation) that this approach brings to researchers and development actors who are able to know and appreciate the changes in people's lives with whom they share their time in villages.

5 Output Four: Assessing Progress towards Livelihood Improvement of Target Groups

5.1 Objective

The objective of Output Four was that GO and NGO stakeholder understandings of the quality of their performance in pro-poor service delivery and requirements for pro-poor services are further improved through assessment of emerging trends in changes in livelihood circumstances of the poor people targeted in this project. Therefore the aims were two-fold:

- To assess the progress made towards improving the quality of pro-poor service delivery, and
- To learn, and share this learning, about the processes and techniques for improving the quality of pro-poor service delivery.

Monitoring and Evaluation System for R8334

The project used a system of monitoring, evaluation and learning that is integrated into the whole planning and project delivery process. This enables assessment against *a priori* logframe indicators, many of which are process- rather than outcome-oriented. To complement the logframe indicators, unanticipated changes are captured through the collection and assessment of Significant Change Stories. **Error! Reference source not found.** Figure 12 outlines the process in diagrammatic form.

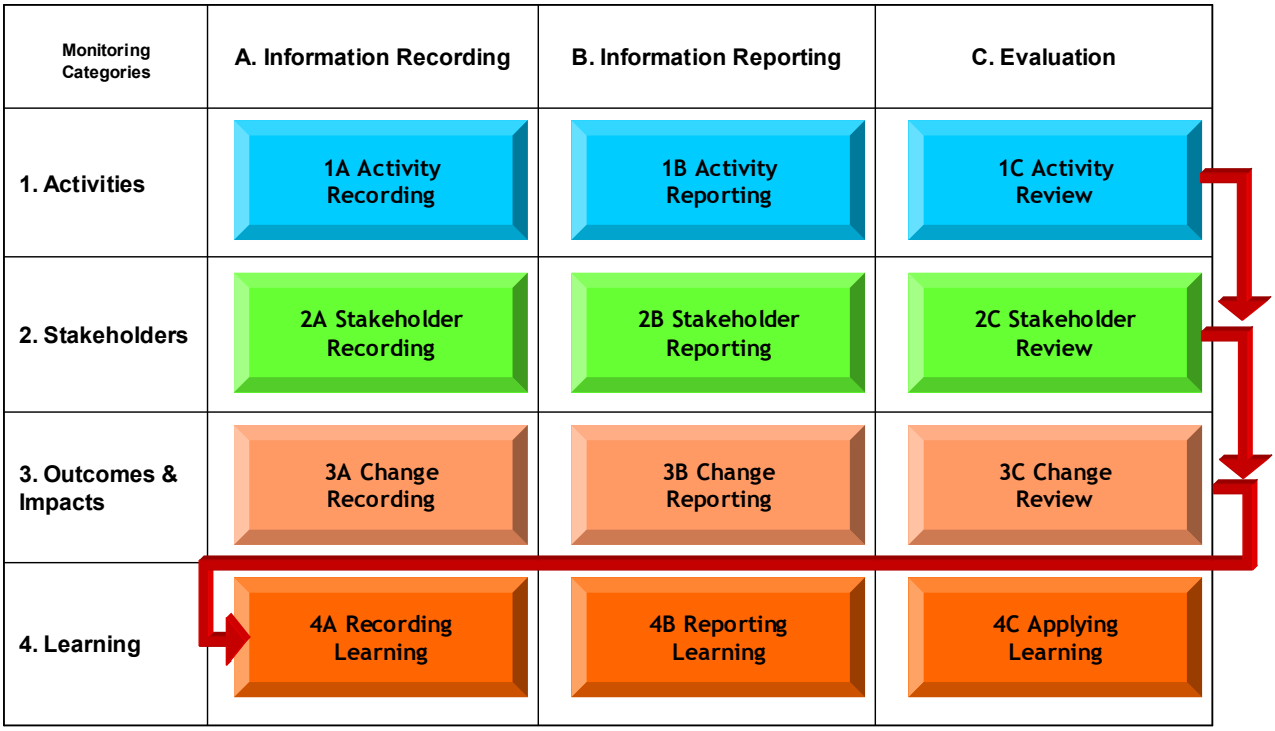


Figure 12 - Monitoring and Evaluation System Used for R8334

Components of "Most Significant Change" (MSC)

Most Significant Change is a participatory monitoring system, first developed by Rick Davies working with an NGO in Bangladesh, which can deal with the unexpected. It draws meaning from actual events, rather than being based on indicators set in advance. The method involves systematically collecting stories which are then analyzed, discussed and verified. The stories capture changes in the lives of beneficiaries, and changes observed by those working with them. The method also helps to identify why changes have happened. Figure 13 outlines the process that was developed to collect Most Significant Change Stories based on the project monitoring and evaluation system, which was also adapted and adopted by the Orissa Government. The acronym DO refers to District Office of the Orissa Watershed Mission and PSU to Project Support Unit of the Western Orissa Rural Livelihoods Project. In the original design by the STREAM Initiative, these roles were played by the STREAM Communications Hub and the STREAM Regional Office respectively.

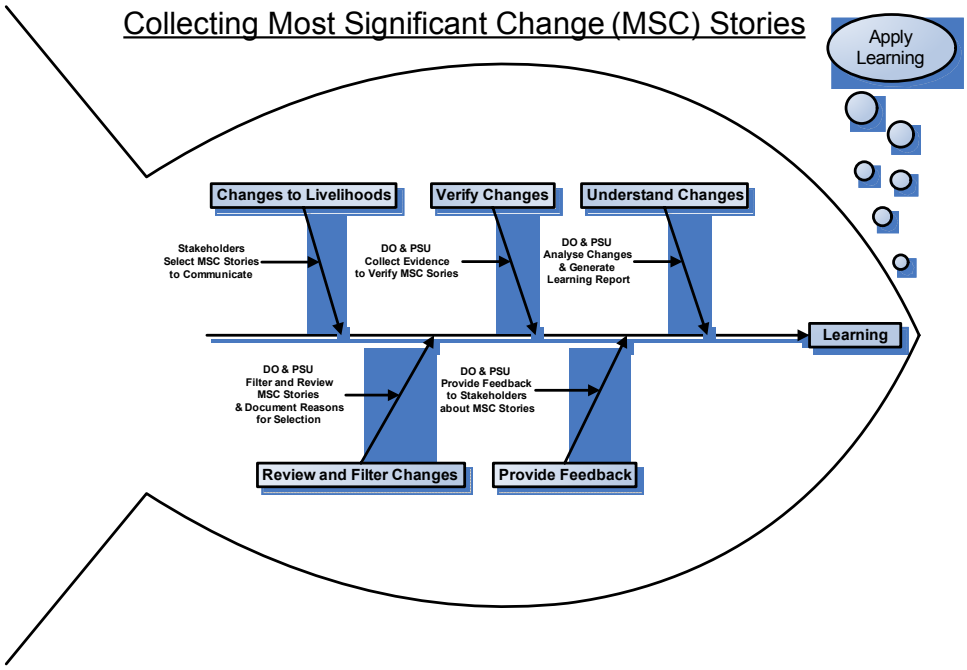


Figure 13 - Capture and Selection of Most Significant Change Stories

5.2 Findings

Following the method outlined in Figures 12 and 13 the two project monitoring and evaluation workshops held in Ranchi Jharkhand and Kaipara, West Bengal (Annex H6 and H7), R8334 were able to facilitate the collection of SCS stories from stakeholders (Annex G). These provide initial indicators of positive change from individual's perspectives that can be attributed to R8334 and its precursors. Examples of these are used to illustrate the following sections. The collection of SCSs will also continue post-project through the mechanisms put in place by R8334 and STREAM partners in the region. In the medium term more general changes will be identified through the implementation of a SCS collection and review protocol which will be finalized at the STREAM Regional Conference in June 2006.

5.3 Achievements

Within the life of the project, cost efficient delivery systems for provision of better access to knowledge and services in integrated rural aquaculture for *adivasi* peoples and scheduled castes in eastern India have been established. Especially important is the adoption by government, NGOs and people's organisations of a modular production system linking stakeholders for the production of seed, fingerlings and fish and the associated network of OASs, thus local delivery outlets are improving the delivery of financial, knowledge and input services.

It is also a significant achievement that project stakeholders have chosen to understand the quality of their performance in pro-poor service delivery and requirements for pro-poor services through the use of the monitoring, evaluation and learning system developed and shared by the project. Two specific ways in which intermediate stakeholders have internalized the project feedback are:

Government of Orissa has adopted R8334 M&E system:

- The monitoring and evaluation system designed for R8334 was adapted and aopted by the Orissa Watersheds Development Mission to monitor their five-year Aquaculture Development Plan (2006-10).

Kaipara OAS has trialled a bar-code system for tracking distribution of media:

- An ancillary project was initiated to improve the collection of information about interactions that stakeholders have with the OAS. This involved cataloguing all resources available from the OAS, providing people with bar-coded membership cards and keeping records of which 'members' use what resources.
- As of October 2005, the bar-coding pilot trial at Kaipara has been running for three months. We will report on the effectiveness of bar-coding in media tracking after a 12-month trial period.

A particular impact of the suite of projects (R6759, R8100 and R8334) relates to seasonal migration – a long standing, and much disliked *coping strategy* of poor people – and the potential alternative of fish nursing. Seasonal migration has featured in several of the significant change stories told throughout this project. *The Pond of the Little Fishes* by Rakesh Rahman is a play used for awareness-raising. The play was inspired by farmer-scientist research conducted in the late 1990s in villages in West Bengal, including Jabarrah, about people in remote rural villages in eastern India. It highlights a possible role for fish seed production in small water bodies adapted for the purpose during the dry season, instead of having to migrate seasonally for work. The play was an output from the DFID-NRSP project R6759, which is currently available on DVD for viewing at OASs.

During a monitoring field visit to Jabarrah in 2004, villagers explained how they are improving the natural pond infrastructure that they have within the village, just as described in the play, with support from a Food-for-Work Program administered by the Panchayat Samiti.

Community members from Jabarrah (who played a role in R6759 and R8100) have also developed a keen interest in establishing an OAS. This interest arose from intermittent contact with the project (R8334), their relationships with Kaipara and other villages, and being able to pool their information and experience through the social networks and Self-Help Groups that they had developed.

In Kaipara Village, the community has developed pride in their achievements, a strong sense of identity and a raised profile among neighbouring villages. This change in outlook has been in part due to the sense of 'significance' that has come with people taking interest in their lives, their livelihoods and their opinions.

- People have developed connections with neighbours in India and some in other parts of the world. They now feel less at the mercy of short-term assistance.
- Recent SCSs have articulated difficulties in understanding the recent fairly sudden disappearance of long-running support from the NGO Gramin Vikas Trust which has had to contract its operations due to funding constraints. This project's involvement in their community has been important in maintaining their confidence.

The manager of the OAS already established in Kaipara, Kuddus Ansari, has collected over a 110 stories from his fellow villagers, which represent the different experiences of change that they expressed to him. This represents over 30% of people who have so far used the OAS (Annex G).

Evidence of impacts on the lives of people who are poor has emerged through monitoring via stories (see example stories from Jabarrah and Kaipara in Annex C). *Back to Jabarrah* illustrates

substantially the benefit of revisiting communities periodically to understand the long-term and unanticipated impacts of change.

5.4 Outcomes

Significant Change Stories (Annex G) from the first Monitoring and Evaluation Workshop held in Ranchi from 7-8 October 2004 (Annex H6) refer to uptake of and success with fish nursing.

> "Women's and men's groups started developing fingerlings from seed in the seasonal tank. They got success with it and earned some money from this. For the group members the rate for fish is cheaper than for outsiders. They saved some money from their earnings and from that they arranged the education for their children." – *an impact reported by Shkyo Singho Mahoto, Jabarrah, in "Contribution of STREAM and GVT for the Improvement of Livelihoods"*

Box 2 – Excerpt from Significant Change Story, Shkyo Singho Mahoto

There is evidence from the stories produced (Annex C) that people have responded to a changed policy environment in ways that have given rise to tangible livelihood benefits. This indicates that the projects R6759, R8100 and R8334 taken together have reached H on the DFID A-H scale of research uptake. These benefits have not been confined to project sites and villages but also include non-target locations. For instance, poor people in Kandhkelgaon Village, Bolangir District, Orissa (a non-target village), heard about the pond lease change and took action themselves on this (see *The Kandhkelgaon Story* in Annex C). This is also noted by the OAS Manager in Nuapara, who reports that interest in taking ponds on lease has grown substantially because of the change in the length of the lease period (Damodar Sahu, personal communication, February 2006).

Through support to planning and capacity-building, the work has contributed to the development of institutions to address the objectives of farmers and fishers who are poor, including the evolution of local institutions which are helping farmers and fishers to draw down the services they need.

> "For my livelihood I know in which pocket I have to spend which money. We know that if we invest in a project now we can gain a lot of benefit later and that in the future these will come up in a nice way and generate employment in the village. If we talk about activities, so much has changed in the way we do activities. Initially we were not using our time all year but in instalments, but now we are using our time all year round for our livelihood. We try to earn regularly by crop rotation, and try to arrange the work for the whole of the year so that earning will be a continuous process. I have seen this improvement in my village and in my own life." – *an outcome reported by Nityo Gopal Mahato, Jabarrah, in "Capacity through Awareness"*

Box 3 – Excerpt from Significant Change Story, Nityo Gopal Mahato

At the Final Project Workshop in Bhubaneswar (Annex H8), following the reporting of activities (row 1 in figure 12), the stakeholder (row 2 in Figure 12) participants were asked to identify outcomes and impacts (row 3 in figure 12) that they had experienced during this project and then

to provide evidence supporting them. This resulted in wide-ranging discussion and some lively debate.

When initially asked "What outcomes and impacts have you experienced during this project?," many participants cited general changes such as "improved livelihoods" or "better opportunities". As the discussion progressed and more questions were asked, people started thinking more deeply about the causes of these changes. If livelihoods had indeed improved, what had triggered these changes? If there were more opportunities in communities, what are they and what has made them possible?

Some time was spent speaking generally about the difference between outcomes and impacts. Peoples' understanding of this definitional context was instrumental in drawing out their stories and experiences of change. People distinguished between long-term livelihood improvements and the tools by which these improvements are achieved and how they can lead to meaningful change in peoples' lives. For example, through discussion it became clear that changes in government policy or the introduction of more accessible credit were outputs which were only of relevance if they positively impacted on the lives of individuals. Table 5 summarizes the findings and the discussion that occurred.

Table 5 - Outcomes and Impacts of R8334 from Stakeholders' Perspectives

Stakeholder	Activity	Change		Evidence
		Outcome	Impact	
Community (Jharkhand & Orissa)	SHG	Improved Financial Services		Bank accounts and loans (see Table 3)
		Can produce more seed Farmers are able to better stock ponds	Greater profit margin	Cost is lower for seed and we are now able to sell fish at higher rate
		Children can now attend public schools		Children are attending school
		Better able to make voices heard by policy-makers		Broad awareness of R8100 and the six implemented changes
		Improved services from other government departments		Hundreds of members of OASs and demand for BPGs, requests to purchase these
Community (Kaipara, Kandhkelgaon & Jabarrah)	SHG	Government and banking services improved		Loans and insurance now available, increasing preference given to aquaculture by rural banks More people coming to village (Kaipara)
		Woman are able to form SHGs and gain access to government services	Greater equality of women Greater independence of women	Mixed gender meetings More discussions with government and bank manager Able to sell fish at good profit Able to provide support to family Opened bank account for women's SHG Able to get loan from bank (no longer expensive loans from moneylenders)
		Training Fresh fish seed	Raising income levels Improved relationships with other institutions Improved food security	Interview with community finding improved: - loans from bank - individual and group savings - food habits - now able to eat fish - profit from the sale of fish - make repayments - improved relations with bank
	OAS		Has started recently, SHG has been running for longer Cannot yet see impact	
OAS Manager	OAS & SHG	New local institutions operating	Raising income levels	Interviews about profits from nursing fish seed
Bankers	SHGs	Banks consider aquaculture to be worthy of micro-finance Local government is now inviting	Groups savings are higher and payback % high Creation of assets	Communities with aquaculture activities have: - better repayment than others - higher monthly repayment amounts

Stakeholder	Activity	Change		Evidence
		Outcome	**Impact**	
		SHGs to provide training and guidance	No longer reliant on money lenders No longer have to rely on labour in other areas	- higher return rate Before there were large debts to moneylenders Moneylenders can no longer get business from village
GVT	CBP	Pond lease period increased	Increased income for groups	Increased leasing period of five years and groups are benefiting by being able to continue activities
Government (GOO)	SHGs	Technical Committee on inland aquaculture are incorporating OAS into new policy (New Orissa Fisheries Policy)		
		Banks are now financing high value projects		
		Reservoir leasing policy change		
		Changing of pond leasing policy	38 SHGs have made significant profits from nursing	Prioritization of pond lease applicants
CIFA	Parallel Project (WORLP)	Dissemination of portable hatchery information and technology	Too early to see impact Actions have only recently been implemented	More popular: requests from organisations, institutions, farmers for similar information and equipment Individual farmers report fish nursing as most profitable venture available
Government (GOI)	CBP	Action on policy recommendations	Too early to see impact Actions have only recently been implemented	Seed production has increased within private sector Lease length has increased from 1 to 5 years Making available soil and water testing kits Circulars were used to encourage these changes
Government (GOJ)	CBP	Action on policy recommendations	Too early to see impact Actions have only recently been implemented	Demand for services: number of people approaching for water testing is increasing Pond leases are changing: government pond was being used by powerful man; group organized to self-manage the pond Pond lease given to a women's group to provide a source of livelihood Circular produced, introducing mandatory site selection protocols

Stakeholder	Activity	Change		Evidence
		Outcome	Impact	
				25 farmers travelled from Jharkhand to Andra Pradesh on study tour Cleaning of large pond in Jharkhand undertaken

5.5 Insights and Learning

To clearly define changes and the level at which changes are occurring, a distinction can be drawn (as in the current M&E system) between beneficial outcomes and impacts. These are defined as follows:

- *Outcome*: a positive change in the behaviour of an individual and/or the practice of an organization, and
- *Impact*: a positive change in the livelihoods of poor and vulnerable aquatic resource users.

> "I remember that in an open meeting one of the political leaders not only criticized my work with Self-Help Groups but also instructed the Panchayat head not to sign any of my applications. At that time I thought whether there was anything wrong with my work; am I cheating people? But still I have continued my work with will and self-confidence. And now I am surprised to see that the same political leader is giving speeches on group formation. Favourable conditions are coming and every organization (GOs and NGOs) is talking about group formation." – *an outcome reported by Kuddus Ansari, Kaipara in "Will and Self-confidence Show the Way of Victory"*

Box 4 – Excerpt from Significant Change Story, Kuddus Ansari

It is difficult in practice to monitor the distribution of materials from local institutions like OAS. In December 2004, discussion began within the STREAM Initiative about how best to track so-called extension media, of which a considerable amount is produced and shared. Web logs were already being used to monitor downloads from the STREAM website, but tracking the distribution of hard copies was proving to be more difficult as these publications are distributed across Asia-Pacific through a complex network of national offices and OASs.

Learning from previous projects in local development contexts suggested that written logs in local offices, transcribed elsewhere in the system into electronic data files, are time-consuming and error-prone. An opportunity to implement a more effective system for tracking this media was identified. The use of point-of-service-technologies for data entry and tracking extension media was decided upon. As this project is still in its infancy many of the impacts are preliminary, and will be tested over time. An initial short communication on the project learning from initiating this approach has been developed (Appendix I).

People sometimes discuss the power of telling stories. Within STREAM, we have come to believe that the importance of stories rests less on their being told, than on their being listened to[1]. When we listen to other people's stories, we are demonstrating that we value what they have to say. When we act on what people are telling us, we are showing that we believe they know what is best for themselves. This requires us, however, to re-imagine how we view ourselves in our relationships with the people with whom we work. This kind of thinking is also shared by others. "If talking openly means being willing to expose to others what is inside of us, then listening openly means being willing to expose ourselves to something new from others."[2]

[1] Copley, Haylor and Savage 2005 Telling Stories, Understanding Lives, Working toward Change. SPAFA Conference presentation, November 2005, Bangkok.
[2] Kahane, Adam 2004 *Solving Tough Problems: An Open Way of Talking, Listening, and Creating New Realities*. San Francisco: Berrett-Koehler Publishers, Inc.

We have listened to and documented a variety of story types. People have told us about their successes and failures, changes that have happened, past events, whether a particular aquaculture technology works or not. Stories are being used to understand how people live, the significant changes that take place in their lives, the impact that conflict has on individuals and communities, and how to enable people to realize their right to be heard.

By spending time with people, by valuing their lives and stories, we are able to document with them their perspectives of the realities of their lives, as in the following excerpts from a story written by Dr Satyendra Tripathi, told to him by Ms Thanda Mahato, of Jabarrah Village in West Bengal, India who when we first encountered her was indebted to moneylenders.

We discussed the changes in her livelihood. During our last visit she had a bank deposit of Rs 40,000 but now she was left with only Rs 5,000 owing to various expenses which she had to incur during this period.

She was herself involved in selling fish as in the past, purchasing it from Purulia or Lalpur markets and then selling it from door-to-door in villages around Jabarrah, which fetches her anything from Rs 30-100 per day. However, this work is limited to winter months only as fish preserved in ice fetches a low price and gets spoiled by noon if ice is not used. She sometimes suffers a loss too.

Her husband, Mr Kalipada Mahato, goes for harvesting fish but has to hire a net that costs him Rs 200 which he pays after selling the catch (30% of the fish caught) himself or through his wife, Thanda.

She has recently constructed a house on the land that belongs to her husband, spending Rs 70,000 for which she had to get the bricks for Rs 21,000, pay labour charges for five persons and two masons with food and also contribute two labourers from the family. A neem tree that she had was cut to be used for beams and other purposes.

An unexpected problem faced by her was the premature birth of her grandson who weighed only 1.9 kg. She had to run to Purulia and keep her daughter-in-law in the hospital and spend Rs 12,000 in just one month. To meet these expenses, she sold 14 goats at Rs 500 each, about 1,400 kg of rice which she had collected in lieu of the wages for grazing the village cattle for one year, 200 pairs of cow dung cakes for Rs 1,000, and birds for Rs 300, besides using another Rs 1,000 received from the salaries of her two sons.

Of her four sons and one daughter, the eldest son and her daughter have been married. Her daughter has been widowed and has a school-going boy, who now stays with her. A total of 11 relatives stay in her house. Her youngest son and her grandson (daughter's son) go to school. She borrowed Rs 1,500 from a school teacher to put the two boys in school.

Thanda works hard from daybreak to dusk and has been such a great support to her family. It was her planning and savings that helped her save the life of her grandson and build a house for them all.

Box 5 – Excerpt from Significant Change Story, Thanda Mahato

Significant Change Stories are not only a mechanism for capturing but also for understanding change[3]. The following story by Mr Kuddus Ansari, of Kaipara Village in West Bengal, is highly revealing about the insightful perspectives and motivations of someone who has been exceptionally effective as a local agent of change, it is called "Will and Self-confidence Show the Way of Victory."

"My house is in a remote village but I dream to make my village recognized among the other five villages where I live. Before knowing others, I try to know myself. By looking in the mirror frame of pictures of Swami Vivekananda [a disciple of Ram Krishna] and Bidya Sagar [a social revolutionary engaged in educational reform], I try to judge myself from the inside.

Three years back I did not have this thinking, but now I think of how to improve my locality with my livelihood. Three years back when I used to visit different villages to help to make groups, I remember that women could not come out of their houses. Political leaders were difficult to approach; it was difficult to make them understand what, where and how development was needed.

I remember that in an open meeting one of the political leaders not only criticized my work with Self-Help Groups but also instructed the Panchayat [local government] head not to sign any of my applications. At that time I wondered whether there was anything wrong with my work; am I cheating people? But still I have continued my work with will and self-confidence. Now I am surprised to see that the same political leader is giving speeches on group formation. Favourable conditions are coming and every organization (GOs and NGOs) is talking about group formation.

One of the disadvantages of groups formed by government projects is their instability. No one is responsible for keeping records and information. Once the government money gets exhausted everyone leaves the group, and vulnerable people are not able to know about the development process.

Demands of people are growing now. They are no longer talking about hunger and food but about electricity and paved roads. We also want that and also the sustainability of each and every activity. Though government organizations are talking about different job opportunities, we are not sure about their applicability and effectiveness.

In the last year, through our efforts, we have established a One-stop Aqua Shop (OAS). We will see in a few years if this is working. People who are helping us are a long way off but still we know they can help. We are not having many funds but still we are thinking how we can help communications. STREAM has supported us by providing information, organizing exposure visits, and loaning fishing nets and *hundies* [fish transport containers].

Through the work of the last year we have realized that we can do something better for ourselves. We know that government will not help us much but the Federation of Self-Help Groups we have established will help us in our development. We do not have structural support but we are having will power, and we can do it. We will win."

Box 6 – Excerpt from Significant Change Story, Mr Kuddus Ansari

[3] Copley, Haylor and Savage 2005 Telling Stories, Understanding Lives, Working toward Change. SPAFA Conference presentation, November 2005, Bangkok.

Kuddus Ansari highlights the value of self-selected SHGs (not those established by outsiders). He reflects on the changes in people's expectations, which are perhaps in themselves indicators of progress. He also reveals a long-term perspective on expectations of impact (which is not constrained by project timeframes). His story affirms his own empowerment and a depth of commitment to overcome the poverty into which he was born on behalf of himself and others.

During a storytelling session in the project, significant change stories were presented in Bangla by nine participants. STREAM colleagues asked questions about the particulars of the stories, especially those which related to how people perceived the changes they expressed. It became apparent as we listened to the significant change stories that the storytellers were also speaking as if in response to a question like "What do people in the village talk about?" and that this might also be a useful way of asking about changes in people's lives and livelihoods.

One frequent issue that was raised through the collection of significant change stories was women and their role in communities. Experiences in both Jabarrah and Kaipara (see the Jabarrah and Kaipara stories) demonstrate some changes in the roles played by women. A question posed to men and women at the project Kaipara M&E workshop was "What factors do you see that have allowed for these changes to happen in women's lives?"

- Mr Nityo Gopal Mahato said of his village, Jabarrah, that awareness among women has been raised through training and education, especially literacy, and that this in part has come about because of independence and freedom given by the men.
- Mr Kuddus Ansari said that in Kaipara many women are not able to attend meetings as they have children to care for and household tasks. Even this meeting held in Kaipara village is mainly attended by men. Men who share well the outcomes of meetings with their wives help a lot.
- Ms Thanda Mahato said that financial independence from their husbands, from paying for snacks at group meetings to having savings and bank accounts, brought benefits to women and men.
- Mr Nityo Gopal Mahato agreed, saying every man and woman has his or her own talents and if they all do not get the opportunity their talents will be wasted.

Generally the desired outcome of uptake promotion projects is for research to be made accessible and used by the intended audience. This is often attempted by developing various media products and promoting appropriate methods for dissemination. However, no matter how well this outcome is pursued, uptake relies on the capacity, opportunity and willingness of intended users to take advantage of what is available. It is crucial to allow sufficient time for this. While the uptake promotion objectives of each output may be realistic within the timeframe of the project, stakeholders have their own pace for handling change (see Kuddus Ansari's story above and also the impact of the awareness-raising film *The Pond of the Little Fishes* six years after it was produced and four years after the project concluded).

At a government institutional level there are various factors that can disrupt uptake promotion work and the ability to respond flexibly is crucial. During the delivery of R8334 new relationships had to be frequently cultivated to ensure that momentum in institutional learning was not lost due to senior staff changes in key institutions and government elections.

The uptake promotion work in R8334 required constant attention to building and rebuilding relationships and nurturing stakeholders towards action, in accordance with the policy priorities of poor people articulated through the preceding project, R8100. There is also a need for flexibility to maintain a capacity for responsiveness to promotional opportunities as they arise. Uptake promotion work has to accommodate the day-to-day realities of the project's target communication stakeholders

– both the institutions and the individuals within them. This will vary from a low-key support role to taking an initiative for action when an opportunity arises.

R8334 was designed to promote the findings of the preceding project (R8100) in three target states in India with uptake promotion links to relevant national target institutions (ICAR-Fisheries, CIFA and CIFE). In this sense, it had a narrow focus on achieving uptake in certain target areas within India. However, as the project proceeded, STREAM responded to opportunities that became available to promote the findings of R8100 internationally at various events.

The outputs of R8334 have been promoted during the course of the project through media (listed in section 8 below) as well as a series of local and regional planning events, seminars and conferences including:

- Invited participation in the Workshop on Indigenous Participation in Aquaculture – the Pacific Experience that was held as a day-and-a-half session in the *Australasian Aquaculture 2004* conference at the Sydney Convention and Exhibition Centre, Darling Harbour, on 27–28 September 2004. Graham Haylor presented the work of R8334 with indigenous communities in eastern India.
- Dr. S.D. Tripathi presented the paper "People and Policy Changes in Indian Fisheries" by Tripathi, Haylor and Savage at the 7th Asian Fisheries Forum in Penang, Malaysia (30 November-4 December 2004) with support from DFID-NRSP.
- Invited participation in the Committee to discuss Orissa policy formulation issues on freshwater fisheries January 2005 at Cuttack DoF Offices. Dr. S.D. Tripathi highlighted local infrastructure development for fingerling production, the One-stop Aqua Shop (OAS) service within Orissa, the provision of leases to Self-Help Groups (SHGs) and for the lease period to be increased to more than one year, changing the way in which information is made available to farmers and fisher, and simplified procedures for accessing government schemes and bank loans.
- Invited participation in the Consultation Workshop on Development of Strategies for Enterprise Promotion and Sustainable Livelihoods in Fisheries Sector in Orissa held at Bhubaneswar on 29-30 August, 2005. Dr. S.D. Tripathi highlighted R8334 approaches and outcomes.
- An invited contribution to a meeting of senior government officials in Orissa concerning the next five years of the Western Orissa Livelihoods Project (WORLP). Dr. S.D. Tripathi and Graham Haylor made a presentation on 1st September 2005 to the Commissioner, Fisheries & Animal Resources Development Department, Government of Orissa, India on the on-going aquaculture activities derived from R6759, R8100 and R8334. The secretary plans to double aquaculture output within the state in relation to demand and government nutritional objectives and expressed interest in expanding the One-stop Aqua Shop (OAS) service within Orissa, to provide those interested in aquaculture with information about government schemes, aquaculture techniques, sources of micro-credit and information about local suppliers of fingerlings and other inputs.
- An invited presentation to the seminar of the Department of Fisheries, Government of Chhattisgarh State, India Chhattisgarh, November 2005 entitled – THE HEARTLAND OF AQUACULTURE highlighted local infrastructure development for fingerling production, the One-stop Aqua Shop (OAS) service within Orissa, the provision of leases to Self-Help Groups (SHGs) and for the lease period to be increased to more than one year, changing the way in which information is made available to farmers and fisher, and simplified procedures for accessing government schemes and bank loans.
- The display, discussion and distribution of project media by Paul Bulcock and Bhawani Panda at the 7th Indian Fisheries Forum held at the University of Veterinary and Agricultural Sciences, Bangalore, Karnataka state November 8th to 12th and organized by the Asian

Fisheries Society, Indian branch with the event attended by over 600 delegates from across India and overseas with support from DFID-NRSP.

An insight from this international work is that it has assisted uptake promotion with the Indian target institutions of the project at both national and state levels. The papers that were presented attracted favourable comments and interest from participants that are international peers of the stakeholders of R8334. The spin-off from this international recognition of achievements was that it supported and re-enforced the will of the Indian stakeholders to be active in the uptake of R8100 policy recommendations. In this way, uptake promotion in Domains outside of India supported uptake promotion domestically.

The final stage of the M and E system - translating the learning from SCS and monitoring against Logframe indicators into planning and action is a process which is on-going within STREAM. The 2006 Regional Conference planned for June will be carrying this task further. It is expected that the conference will crystallize a process for capturing and selecting SCS in ways that lead to useful reporting learning and further planning.

6 Cross-cutting Reflections

6.1 Overview

The sustainability of Project R8334 objectives and approaches ultimately depends on the continued acceptance of the need for pro-poor service provision at the state level and the willingness of intended users to take advantage of the services provided in response. Though there is no guarantee that this will continue, there are reasons why this is thought likely. First, R8334 was responding directly to the needs and priorities of poor and vulnerable aquatic resource users identified by R8100. These priorities emerged from widespread consultations and consensus-building with farmers, fishers, state and national fisheries policy-makers, shapers and implementers. Therefore, a significant demand already existed for these services within Domain V, W and X stakeholders, one to which R8334 could respond quickly. The rapid uptake of approaches such as the OAS indicates that such approaches are fast becoming a standard way of working for STREAM partners such as departments of fisheries, federations of Self-Help Groups and WORLP, with stories and locations such as those from Kaipara and Kandhkelgaon acting as beacons where others can observe the advantages of improved service provision. Exposure visits will continue through the STREAM India Communications Hub, and it is hoped that this will lead to the continued proliferation of the approaches piloted.

The incorporation of these approaches into the production of communications such as Policy Briefs and Better-Practice Guidelines aimed at a range of stakeholders both locally and nationally will also help to create further awareness in improved service provision both in India and through dissemination and discussion within the NACA-STREAM network with a wider Asia-Pacific audience. Please see Appendix II for a detailed summary of all achievements against the Project's Objectively Verifiable Indicators.

6.2 Unanticipated Impact and Change

One of the key insights from the consideration of M&E within this project was that there must be a real focus on the acknowledgment of, and capitalizing on, unexpected opportunities. Project R8334 was concerned with instigating a process of building awareness and discussion with state-level policy-makers and Domain V stakeholders on the ways to move the priority recommendations for improved service delivery into actual policy. Stakeholders will naturally have their own opinions and institutional and policy experience and therefore significant opportunities that were not originally planned at the outset of the project will be presented. This can often lead to unexpected products which complement or add value to those originally planned by the project.

Such instances within Project R8334 are the production of farmer-authored BPGs and aquaculture-focused BPGs in conjunction with WORLP, outlining technical aquaculture-based interventions. Producing BPGs and PBs has also become a standard way of working for STREAM and is incorporated into several other projects. Future BPGs were also planned at the STREAM Regional Conference in 2005, entitled Advocacy, Changing Attitudes, Cross-learning, Policy Development, Stakeholder Relations and Storytelling, to be produced by working groups within STREAM.

Finally, R8334 was designed to promote the findings of the preceding project (R8100) in three target states in India, with uptake links to relevant national target institutions (ICAR-Fisheries, CIFA, CIFE). In this sense, it had a narrow UP objective focused on achieving uptake in certain target areas within India. However, as the project proceeded, STREAM responded to opportunities to promote the findings of R8100 internationally at various events. A finding from this international work is that it has assisted UP with the Indian target institutions of the project at both national and state levels. As papers that were presented in international fora attracted favourable comments and interest from participants that are the international peers of the Domains W and X stakeholders of R8334. The spin-off from this international recognition of achievements was that it supported and re-enforced the will of the target (Indian) stakeholders to be active in the uptake of R8100 policy recommendations. In this way, UP in Domain Y supported UP endeavours in Domains W and X.

6.3 Lessons Learnt on Uptake Promotion

A key learning regarding uptake promotion revealed by R8334 is that there is a common comprehension that people working with government agencies, NGOs and development projects are experts whose job is to tell people living in villages what to do and how to improve their livelihoods. In reality, it is fishers and farmers who have the expertise created through their own life experiences, they know about their own situation and what they think needs to be done to change it. Therefore, when institutions adopt a listening role they can learn from them. This may require institutions to reconsider how they behave in their relationships with stakeholders to understand and learn from the livelihoods contexts of others. Related to these behavioural changes is the need to embark on policy development approaches that are founded on the negotiation of a commitment from policy-makers to build an understanding of the aspirations and complex livelihoods strategies of recipients, i.e., poor women, men and youth, including tribal and other disadvantaged and marginalized groups. This need not be complicated as simple activities such as case studies, when told through the lives of fishers and farmers, allow projects to have this deeper understanding of the realities of people's lives and provide a rich source of material for further policy debate. In essence, they offer a practical entry point for thinking about policy change.

It is important to recognize that policy is usually the current expression of efforts to manage conflicting agenda of a variety of stakeholders. Every effort should be made for all stakeholders to understand the existing policy-making processes that are in place and to engage with policy-making in a spirit of tolerance. An inherent conflict is the diversity of ideological principles and professional stances of a range of stakeholders, of languages and life experiences. Therefore, to promote tolerance

amid diversity requires services and resources for coping with difference. Rights-based approaches (in this case, enshrined in the Indian constitution) have an important role to play here in establishing the principle of recognizing and working with diversity.

The uptake in responses for improved service provision in non-target countries such as Vietnam also holds lessons for those projects concerned with maximizing uptake. When working on an uptake promotion project for a relatively short project, it is best to work within an existing institutional infrastructure rather than creating new ones. These build an enabling and nurturing structure through which a range of stakeholders' opinions and feedback can be elicited and incorporated into the development of final products quickly and at low cost. This can lead to added value in the form of unexpected change and can also help ensure post-project sustainability by being incorporated into the institutions' or networks' standard ways of working.

Finally, one of the most important insights into this process, and one that crosses all four of the outputs, is that it can take time to come to a consensus and develop appropriate responses to the prioritized policy recommendations. However, the time invested can be valuable in enabling consensus to be reached, and unexpected and unanticipated change identified and a focus placed on successful interventions such as the implementation of OAS and the extension of pond leases. Therefore, when dealing with an uptake project such as R8334, an acceptance of the investment of time is needed by participants, including donors, and an acceptance that responses may not occur in short project timeframes.

7 Appendix I – Short Communication

Investigating the Use of Point-of-Service Technologies in Tracking Extension Media

Chris Keating, Rubu Mukherjee, Kudus Ansari, and Graham Haylor

A communications and learning initiative in Asia-Pacific describes here the use of point-of-service technologies, including bar-coding, to track media as part of an information management system. The paper describes the identification of needs in multiple environments, and the selection and use of available software to establish systems for sharing knowledge that people find meaningful. Importantly, these systems can evolve through continuous feedback and interactions with stakeholders.

Purpose

The Support to Regional Aquatic Resources Management (STREAM Initiative) is an Asia-Pacific regional communications and learning initiative. In December 2004, discussion began within the STREAM Initiative about how best to track so-called extension media, of which a considerable amount is produced and shared. Web logs were already being used to monitor downloads from the STREAM website, but tracking the distribution of hard copies was proving to be more difficult. These publications are distributed across Asia-Pacific through a complex network of national offices called "Communications Hubs" and local access points for farmers and fishers called "One-stop Aqua Shops".

Learning from previous projects in local development contexts suggested that written logs in local offices, transcribed elsewhere in the system into electronic data files, are time consuming and error prone. This paper attempts to explain the purpose, the process followed and the early lessons learnt from experimenting with the use of point-of-service-technologies for data entry and tracking extension media. As this project is still in its infancy many of the observations are preliminary, and will be tested over time.

Background

There are significant barriers to farmers in India who are interested in developing livelihoods which include aquaculture. Farmers must be aware of the various government, inter-government and non-government organisations offering support, be familiar with rural banking services and have access to technical advice and inputs. To access these inputs farmers often must travel substantial distances, which is a costly and time consuming exercise**.**

From 2002 to 2005 a series of collaborative projects[4] supported by the UK Department for International Development Natural Resources Systems Program (DFID-NRSP) worked with farmers and fishers to look at how to improve aquaculture services to poor people. Many proposed policy changes emerged from the early consultations; those involving knowledge sharing included:

- changing the way information about fish farming, government schemes and bank loans is made available; and specifically
- piloting "One-stop Aqua Shops" (OASs) to provide single local locations for farmers and fishers to access information, training, resources, sources of micro-credit and details of

[4] Involving farmers and fishers across eastern India, the Indian Council of Agricultural Research (ICAR), the NGOs Gramin Vikas Trust (GVT) and the Network of Aquaculture Centres in Asia-Pacific (NACA) Support To Regional Aquatic Resources Management (STREAM) Initiative.

government schemes, which might reduce the transaction costs associated with participation in fishing and aquaculture.

Catalyzed by the DFID-NRSP research and promotional work, the concept of the OAS proved a popular one. Within months various models[5] emerged and nine local access points developed supporting farmers and fishers across the north eastern Indian states of Jharkhand, Orissa and West Bengal. The STREAM Initiative agreed to support these One-Stop Aqua Shops through the provision of an information service - the One-stop Aqua Shop Information Service (OASIS). The service aims to make information available from farmers and fishers, service providers, news agencies, the Internet, academia and on-line communities.

Collecting Information

There are early indications that people are using the services and resources of the OAS, including OASIS, cultivating new skills and relationships and most significantly improving their own livelihoods. Policy-makers are displaying genuine interest in this method for information dissemination, with the likelihood being that similar models will be used in other settings.[6]

To monitor and improve the service it is necessary to 'collect information' from the variety of interactions that stakeholders have with the OAS. In this instance, 'information' is taken to be data that have been transformed through interpretation into a form useful for drawing conclusions and making decisions

STREAM is already capturing substantial amounts of qualitative information through the collection of 'Significant Change Stories'[7] from stakeholders. These personal accounts of changes that people find significant provide a rich resource for understanding how individuals' experiences are shaped by, and help shape, initiatives such as the OAS.

In addition to this important information resource, STREAM also wants to improve its collection of quantitative, systemic data about the usage of extension media. This information could be as simple as numbers of people frequenting the OAS or the popularity of publications, through to capturing socio-economic changes, identifying patterns of learning or better understanding the needs of differing stakeholder groups. This type of information would enable service providers to be more effective in the production and sharing of extension materials and better equip local institutions like the OAS to manage their supplies of resources.

To this end STREAM recently initiated a project aimed at improving the collection of this type of information. Coined the "barcode system project", this has involved cataloguing all resources available from STREAM and the OAS, providing people with membership cards and keeping records of which "members" use what resources. Point-of-service-technology is being used to input information into an electronic database via barcodes and barcode scanners. The basics of the system are shown below:

[5] Models so far being piloted include one by a federation of Self-help Groups set up by local fish farmers (in a rural part of West Bengal), another by a centralized government service provision site run by the state Fisheries Department in Jharkhand and a third by a state government project in several poor districts of Western Orissa.
[6] OAS were introduced in June 2005 as a part of the FSPS (Fisheries Sector Program Support) project funded by the Danish International Development Agency (DANIDA) in Quang Ninh and Nghe An provinces, Vietnam
[7] Most significant change is a participatory monitoring system deals with the unexpected. It draws meaning from actual events, rather than indicators. The method involves systematically collecting stories which are analysed, discussed and verified

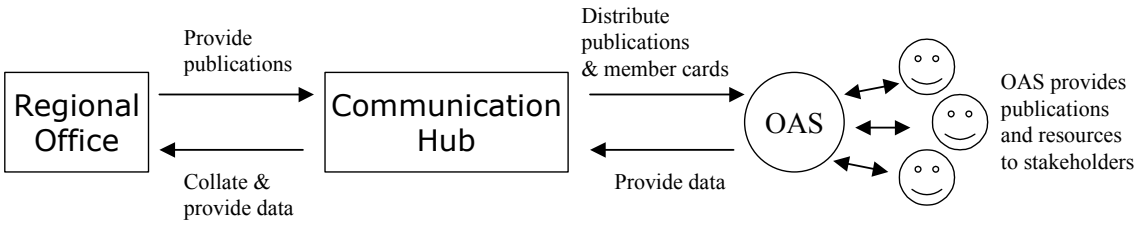


Figure 14 - Information Flow

The system developed is very similar to what one would find in a school library, albeit a school with a very large, multi-lingual, geographically dispersed population! Every person who uses the OAS is registered, some key personal information is recorded and they are provided with a membership card. When an OAS member takes a publication or other resource from the OAS the manager only has to scan the barcodes found on the publication and membership cards to capture all necessary data. Collected over time these data will provide the organization with a fantastic resource for better understanding the people that use the OAS and what impact the OAS have on their lives. Most significantly, the numerous OAS will be able to use this information to continue improving the services they provide to local fishing and farming communities.

The guiding principles behind this project were that it should:

- *make the information collection process easier not more onerous*.
  This is crucial as the aim of OAS is to improve livelihoods NOT create administrative overheads for users. Any solution developed should do the same;
- *collect information that is useful rather than simply easy to collect*.
  There is a tendency to collect large amounts of data merely because it is possible to do so. Given the dynamics of the environment it is considered essential to run a lean system that will adequately capture key information and no more;
- *provide information that enables a "big picture" view.*
  The information produced should enable better decision making about the direction and sustainability of OAS and elements of the STREAM Initiative. This information should be available in any meaningful category; and
- *be flexible enough to be used in multiple regions and countries.*
  Whilst the initial stage of this project is being conducted in India, any system developed must be equally suitable for use in the rest of Asia-Pacific. Therefore, consideration is being given to language, country specific information, differing hardware and software, scalability and varying levels technical capability.

The Environment

To properly plan the development of this system, it was necessary to consider the environment in which it will operate. There are three distinct settings that must be accommodated:

1) One-stop Aqua Shop

There are currently nine OAS spread out through Orissa, Jharkhand and West Bengal, each of them very different. Some are based in Government offices and are relatively well equipped with access to computers and consistent power, others are in remote villages with access to very little.

The OAS that piloted the 'bar code' system is in Kaipara Village, which lies in the rural Barabazar Block of Purulia District in West Bengal State. About 1,200 people live in Kaipara in nearly 200 households, while another 80 households live in neighbouring hamlets (or tolas). Literacy skills are limited. There is electricity but it is not reliable. There is one telephone line, no internet access and limited transport options.

2) Communication Hub

The STREAM India Communications Hub is in Bubaneswar, Orissa, approximately 8 hours travel from the Kaipara OAS. It has a well-established office, with computer literate staff and has transport available to reach the OAS when required. There is internet access through a dial-up connection, which is not suitable for large volume data transfers.

3) Regional Office

The Regional Office in Bangkok, Thailand is where the majority of publications are generated, but from where there is little direct interaction with the eventual users of the publications. There is an acknowledgment within the Regional Office that information systems for the OAS should continue to improve, and it was from there that the 'barcode system project' arose. There is limited budget and technical expertise available.

Therefore, key issues influencing the design of the system are:

- multiple tiers of users, each with different requirements;
- limited information technology expertise within STREAM for ongoing development;
- unreliable power supply at OAS;
- periodic visits to OAS (approximately monthly); and
- restrictive internet connection at OASs and Communications Hubs.

Developing the Solution

The following 5 steps describe our efforts to adapt the use of point-of-service-technologies for tracking information for fisheries and small-scale aquaculture development for people who are poor.

1) Identifying the project resources

Project resources were requested from DFID-NRSP for media tracking purposes, to enable STREAM to pilot a system to assess what information is being used and to tailor future supply to the direct requirements of the farmers and fishers. This was accepted and it was on this basis that the project proceeded.

2) Consultation with end users

The three major user categories for this system are the OAS, STREAM Communications Hubs and the STREAM Regional Office. Initial discussions were held with Regional Office and Communications Hubs staff to establish the scope of work. Later ideas were shared with the OAS in Kaipara village. All this involved considerable debate regarding the potential breadth and flexibility of the eventual system, and resulted in some novel solutions to issues. The most productive part of the consultation involved using a prototype of the eventual system. Users found it easier to discuss issues when they were faced with a starting point, rather than a "blank page".

3) Determine the information collection process

A large part of consultations with users involved understanding their data needs and what was acceptable in terms of timeliness of information. For the OAS, it was not essential for all data to be up to date. The clear focus was ease of use. Monthly visits from the Communications Hub to update information would suffice.

Given the relatively poor internet connection available at the Communications Hub it was considered necessary to have a standalone local system rather than a central online system. Emailing a simple data file periodically between the Regional Office and the Communications Hub was considered to be a suitable solution. There was agreement that when internet access improved it would be more effective to move to a central online system. This will be particularly necessary when there are a large number of Communications Hubs with constantly changing data.

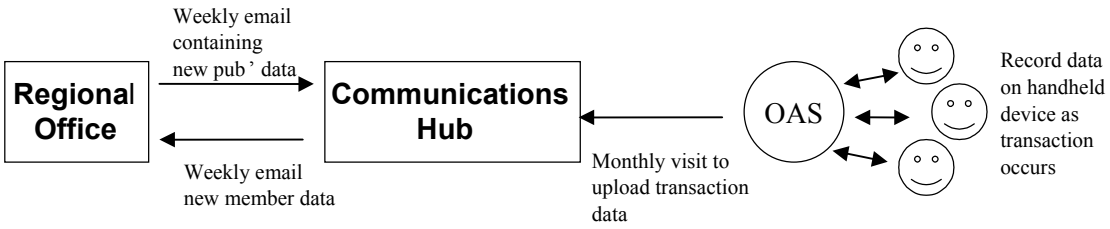


Figure 15 - Information Collection Process

4) Researching "ready made" software options

To reduce the costs of system development, it was pragmatic to look at existing software solutions that might meet the needs of the organization with minimal modifications.

Our major requirements were that the system should:

- have minimal cost;
- be open source, to allow us to modify as required;
- require minimal modifications;
- be MS Windows compatible;
- operate in diverse settings and environments;
- have a simple intuitive user interface;
- be scalable enough to eventually allow large numbers of users;
- to be deployable both on desktops and on the Internet;
- be stable; and
- operate with limited technical support.

Library software was an obvious choice because of the apparent similarities between the OAS and a library; both involve members using books or other resources. Another benefit is that library software is developed primarily for educational or non-profit organizations and that, given this audience, there exists free (or limited cost) software solutions.

The biggest area of difference is that many library packages focus heavily on classification schemas, requiring detailed bibliographic information that is neither available not particularly necessary in this system. There are also often large sections devoted to monitoring lateness of books, fines, member suspensions and library finance. All these components meant that any library system would require substantial modification before it is suitable.

Business inventory software was a less obvious choice but actually had many features in common with our needs. We were interested in how many publications went where, to whom and when, rather than the detailed movements of each copy of a publication. All these things could be captured by a reasonably simple business inventory package.

The major drawback of all business inventory software was that they are primarily financial accounting systems. With large components dedicated to ordering, purchasing and profitability of various products.

In the end there were suitable options from both types of software. The fundamental difference between the two options however was cost. Library software developed for educational institutions or other non-profit organizations is free (or limited cost) whilst open source business software was inadequate for our purposes and other business options were prohibitively expensive.

With the decision made that library software was the closest fit for our needs we began researching and testing various options. Five options were considered[8]. All of these were developed with open source, non-proprietary systems and languages[9]. All were free systems that required moderate to high levels of technical skills to modify to suit the requirements.

A decision was made to use software[10] that was developed for a school library. It is a well-designed, elegant system that will run on a Windows environment and the Internet and is suitably flexible for our purposes. Substantial modification was required, but it was considered to be a suitable starting point.

5) Researching and testing available hardware

For the Regional Office and the Communications Hub adding a bar-code reader as an input devise to existing hardware was simple and cheap. For the OAS the most suitable solution was not immediately clear. All involved agreed that hardware purchased criteria should be:

- ease of use;
- ability to operate with unreliable power source; and
- efficient data collection;

The eventual solution for the OAS involved using self-contained handheld devices with built in barcode scanner, commonly known as a Personal Digital Assistant (PDA). These have a good battery life, are easy to operate and make data entry error free through the barcode scanner. This, coupled with all documents having barcodes inserted electronically and members of the OAS having bar-coded membership cards, made the collection of data at the OAS dramatically easier.

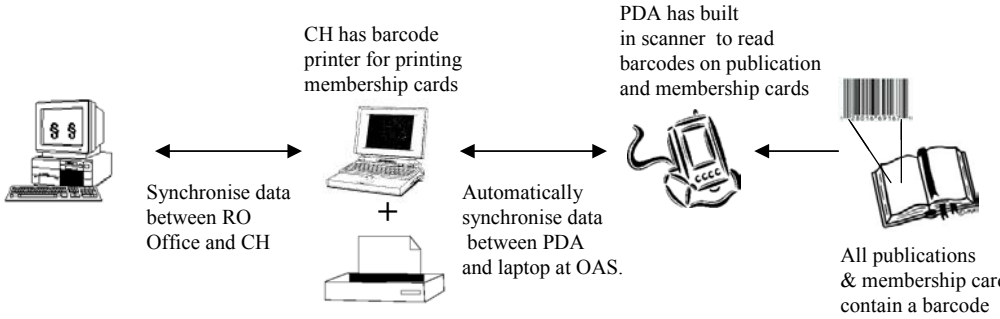


Figure 16 - Hardware Setup

Lessons Learnt

The STREAM communications and learning initiative evolves through continuous feedback and interactions with stakeholders. So far, much effort has focused on sharing information in appropriate media. STREAM now produces large amounts of information that is disseminated electronically and in hard copy. A comprehensive website (www.streaminitiative.org) provides a repository for publications and media for a range of stakeholders. It is easy to use and popular. A network of STREAM communication specialists across Asia-Pacific is becoming successful in sharing information with end users in local languages and suitable formats.

The development of a new system component, in this case for tracking media, is fertile ground for lesson learning. There are many approaches to be considered, unexpected issues which arise, and decisions to be made - these are discussed below.

[8] Greenstone, Doha, Emilda, myLibrary and OpenBiblio.
[9] PHP for server side scripting, a mySQL database, and running on an Apache webserver
[10] OpenBiblio

1) Prioritize information management issues

Initially the barcoding system was pursued as a discrete software and hardware project. Attempting to capture detailed information about interactions between diverse actors requires structured information about them. Much of this information did not already exist and required decisions to be made about the best way to record it.

As the system progressed it became apparent that many of the issues raised were relevant to the broader organization and should be considered in this context. Understanding and documenting the relationships and divisions between stakeholders, organizations, publications, projects, impacts, outcomes, funding bodies, countries, languages, communication media and staff held relevance for more than just the barcoding system.

The concept of establishing meta-data, or information and rules about information, appears daunting and complex. In reality most organizations do it continuously, just not very systematically. To communicate effectively most organizations define common concepts and rules for sharing information that are clear, sensible and flexible enough to be used in a wide variety of contexts. Seemingly trivial things like agreeing the format with which to record the date, author or subject of a publication, what is meant by the terms "impact" and "outcome" or the difference between a stakeholder's profession and their livelihood, is creating meta-data.

This process of classification and documentation within the STREAM Initiative had happened fairly organically as by-products of other projects. There were subject areas that were richly documented and others where there had been little attention. The absence of cohesive meta-data posed a problem to this project and, as outputs continue to increase, would have begun to plague the organization more generally.

Whilst it is not possible to have a perfectly articulated strategy for addressing all your current and future information management needs, it is important to make information management a priority. It is good to invest the time and effort to ensure that decisions are made considering the bigger, longer-term picture. When there is agreement on a concept it is good to make sure that it is documented. Try to classify broad ambiguous categories into distinct manageable groups. Agree conventions for recording simple information. Such information management decisions will help to streamline systems and are essential for software projects that cannot exist without them.

2) Separate the project goal from the implementation strategy

For any project, in theory one would clearly define the goal, identify options for achieving it, and then spend ample time assessing these options on their relative strengths and weaknesses. Finally, when satisfied that a single option meets your needs, you would commence the development of your implementation strategy.

From early in this project there was substantial overlap between the goal and one specific method of implementation i.e. to *implement a point-of-service system that will improve information about the OAS*. This is very specific and neglects other potentially valid options such as certain paper based transaction systems, surveys of representative samples or focus groups. A broader consideration of *ways to improve the collection and usage of information about sharing materials* would encourage consideration of a wider range of options for achieving this.

3) Understand the implications of choosing open source software.

Open source software is increasingly deployed in commercial and particularly in non-profit sectors, especially where budgets are limited and flexibility a premium.

The common perspective of open source software is that it is attractive simply because it is cheap or free. In reality the benefit is that it is "open". Being open means that it can be programmatically manipulated to suit the user's specific purpose as required. To do so often requires substantial technical expertise. This expertise inevitably has an associated cost. By selecting an open source

option an organization may make itself more reliant on having in-house technical expertise, making any potential cost savings questionable.

Most organizations still have a strong preference for operating in a Windows environment. This is primarily due to familiarity. Running most open source options in a Windows environment will limit the options available and can make further development substantially more complex.

Open source software experience would suggest that bugs occur more frequently and are slower to be resolved than with commercial software[11].

None of the above is a reason not to consider open source software, although there is a strong suggestion that a decision to use it should be based on more than cost considerations alone.

4) Consider using existing standards rather than developing user specific standards.

In this work there was a choice between cataloguing all of our existing publications using an existing yet complex library schema or developing a simpler purpose built schema. It would have been easier to develop our own, but eventually we decided to use a complex but more flexible, universally accepted standard, compatible with other institutions and library collections to make information sharing significantly easier. The benefits of this decision should prove worthwhile in the long term, despite the work and time in the short term.

Conclusion

STREAM is a small initiative of an Asia-Pacific intergovernmental organization that has been successful in setting up communication networks, sharing knowledge and advocating on behalf of poor people, all with the aim of supporting people to make improvements that they seek within their livelihoods. As the organization grows there is an acknowledged need to improve the processes by which it delivers its services, and to better understand the impact of these services. This will enable a more effective and efficient targeting of effort and resources.

Knowledge sharing amongst heterogeneous stakeholders calls for highly relevant messages from multiple sources in a variety of media. The medium used must be appropriate to its purpose and in tune with the needs and opportunities of colleagues who chose to use it. To further improve the effectiveness of these messages it is important to understand the processes by which they are communicated.

The majority of the STREAM Initiative's networks are people based. The most crucial of these networks are relationships with poor people throughout Asia Pacific. The basis of these relationships is that they are adaptable, responsive and very personal. These qualities are essential if we are to learn and communicate successfully, but they make for a substantially more complex flow of knowledge.

To continuously improve these communication networks, an ongoing investment in information management is required. The objective is to establish systems for sharing knowledge that people find meaningful and which evolve through continuous feedback and interactions with stakeholders. The ongoing challenge is to effectively implement, monitor, evaluate and learn how knowledge sharing might best be achieved. Investigating the use of point-of-service technologies in tracking extension media is a small step towards investigating this. As of October 2005, the bar coding pilot trial at

[11] For example, without going into technical detail, the software used for automatically connecting the database to other applications is failing. This meant that automatic synchronization between the application on the PDA and the database was not possible. A work around had to be developed that was more difficult and less efficient than anticipated.

Kaipara has been running for 3 months. We will report on the effectiveness of bar coding in media tracking within the NACA STREAM Initiative in due course, after a 12 months trial period.

8 Appendix II – Project Impact

A critical assessment of project impact and supporting evidence

Narrative summary	Objectively Verifiable Indicators	Supporting Evidence
Goal		
Strategies to provide specific groups of poor people with better access to knowledge that can enhance their decisions on management of natural capital, developed and promoted	By 2005, integrated natural resources management strategies adopted by target institutions in at least two target countries that include cost efficient delivery systems for provision of agricultural services (inter alia marketing, input supply, mechanisation, storage, financing)	Within the life of the project cost efficient delivery systems for provision of better access to knowledge and services in integrated rural aquaculture for *adivasi* peoples in eastern India have been established. Especially the adoption by government, NGO and people's organisations of a modular production system linking stakeholder for the production of seed, fingerlings and fish and the associated network of local delivery outlets improving the delivery of financial, knowledge and input services.
Purpose		
Mechanisms for the delivery of improved rural services (critical to the development of rural livelihoods of poor marginalised people with complex and diverse livelihood strategies) **developed and promoted** at state and national levels in India, with priority given to three target States in eastern India	By Sep 2005, evidence that stakeholders in at least two state-level institutions and some key national level policy actors are using the knowledge that the project has generated in ways that can benefit the poor, and specifically:	The national level Fisheries Commission in Delhi used the outputs of R8100 to help frame leasing recommendations to state governments, which were implemented by Jharkhand DoF and Orissa DoF. This took place in 2004 and 2005.
	– The consensus-building process (CBP) used in at least two target States and one apex national organisation towards pro-poor policy formulation.	Two institutes of the Indian Council for Agricultural Research (ICAR), the Central Institute for Freshwater Aquaculture (CIFA) and the Central Institute for Fisheries Education (CIFE) launched policy-related mini-projects, initiated by DDG-ICAR Fisheries, which specified the use of CBP in their designs.
	– National and state level policy-related action has made use of the findings of R8100 – At least two state institutions for service provision begin to act on the policy recommendations for service improvement that the stakeholders of project R8100 identified	Six of the recommendations of R8100 were implemented. These included*:* – experiments in developing infrastructure for timely production of fingerlings at local level by the Government of Orissa in Nuapara district (rec 1); – a policy of providing leases to Self-Help Groups (SHGs) and for the lease period to be increased to more than one year in Orissa (rec 2); – the development of 'Single-point under-one-roof service provision' pilots in Orissa, West Bengal and Jharkhand, by federations of SHGs, the NGO SVA and the state government Fisheries Departments of Jharkhand and the Orissa Watershed Development Mission and the Fisheries Departments of Orissa (rec 7); – changing the way in which information is made available to farmers and fisher through nine One-stop Aqua Shops (OASs) and the launch of an information service (OASIS) (rec 11); and – simplified procedures for getting government schemes and bank loans (especially through the rural bank Mallyabhum Gramin Bank in West Bengal) (recs 3 & 13).

	– Farmers in at least one State recognise favourable changes for them regarding the Government's service provision	Evidence of impacts from these changes in Government's service provision on the lives of people who are poor emerged through monitoring via stories (especially from communities in Jabarrah, Kaipara and Kandhkelgaon) including participatory monitoring through Significant Change Stories. Experiences from eastern India were shared with eleven other countries in the region, giving rise to**:** – an OAS in Vietnam through the DANIDA-funded 'Support to Brackish and Marine Water Aquaculture' (SUMA) project; – sharing of CBP in Pakistan by the FAO funded 'Support to Fisheries Sector Policy and Strategy Formulation' TCP/PAK/3005 (A); and – new communications vehicles developed by the project were translated and shared through out the region and Policy Briefs and Better-Practice Guidelines were taken up by other projects and organizations

Outputs		
1 Promotion of process for pro-poor policy formulation		
Building on the findings of R8100, key national and state level stakeholders brought to a level of engagement with, and sense of ownership of, the Consensus-Building Process (CBP) and its pro-poor features that could engender sustained pro-poor policy formulation, particularly as it relates to the use of water bodies for livelihood enterprises	By Dec 2003, agreement obtained and meeting held of some kind of a Policy Working Group (PWG)	Stakeholders engaged with the Consensus Building Process through meetings and workshops occurring before December 2003. There was an agreement to work together towards promoting the CBP. These workshops and meetings included the Ministry of Animal Husbandry and Dairying, Fisheries Commission, ICAR (Delhi), Governments and Fisheries Departments (Jharkhand, Orissa and West Bengal), Rural banks, NGOs, Federations of Self-Help Groups and farmers and fishers.
	By April 2005, a CBP Policy Brief available in draft	A communications vehicle was developed by the project to support engagement with the CBP. This briefing document was designed specifically for sharing approaches with policy-makers. The first so-called Policy Brief (see Annex B1), was produced and tested in India and with input from communications specialists from ten Asia-Pacific countries.
	By Sept 2004, at least two policy-related mini-projects, initiated by DDG-ICAR Fisheries, have specified the use of CBP in their designs By Dec 2004, stakeholder awareness is optimal for policy-favourable use of the CBP for pro-poor outcomes	During 2005 two ICAR-funded mini research projects were developed specifying the CBP in their designs. – The first aimed to further develop the concept of the One-stop Aqua Shop by working with Jharkhand Fisheries Department in Ranchi and a federation of Self-Help Groups in rural West Bengal (see further Output 3). This project was conducted by scientists at CIFA. – The second replicated the CBP itself with communities and service providers in Maharashtra, This project was conducted by scientists at CIFE (Mumbai). – Both projects within the government system, with ICAR funds raise awareness for policy-favourable use of the CBP for pro-poor outcomes in India. Through STREAM the same awareness has been raised outside of India resulting in the adoption of CBP in Pakistan.

2 Capacity building for policy formulation that favours pro-poor service provision, especially for integrated aquaculture

Potential for implementation of the pro-poor recommendations for service provision that R8100 identified further progressed through institutional capacity–building, including improved sharing of policy-related experiences and promotion of the policy recommendations in relevant government policy-related communication channels	By Mar 2004, state and national-level policy 'shapers' share a common vision on how to advance R8100's recommendations into formal policy channels By Jul 2005, draft policy briefs available for the suite of pro-poor service priorities of R8100	"Facilitated advocacy" as a mechanism to give farmers and fishers a voice in policy making processes and the "consensus-building process" (CBP) to help to build consensus within line agencies around change priorities has subsequently taken place in three states in eastern India. Policy Briefs and several other specific communications vehicles were designed and used to share the process of building consensus: – The story telling genre was adopted to provide a medium for sharing rich understanding of the use of water bodies for livelihood enterprises and the many impacts which aquaculture has had in the lives of farmers and fishers (see Output 4). – Through workshops the project catalysed the development of communications action plans. These were different for each state but included a commitment to the development and promotion of policy briefs on the R8100 recommendations and changes to how information is made available to farmers through the establishment of 'single-window' local service delivery outlets or One-stop Aqua Shops (OAS).
	By Jun 2005, evidence from an improved system of quantitative and qualitative monitoring of where and how the Communications Hub has assisted pro-poor policy dialogues	Through the development and distribution of media in English, Bengali, Hindi and Oriya, (see quantity and quality of media developed and distributed in Appendix III) and through a close working relationship and capacity building with the NGO GVT, the DoF Jharkhand, the SHG Federation in Kaipara West Bengal, the Western Orissa Rural Livelihoods Project and its project implementing agencies the India Communications hub has greatly assisted pro-poor policy dialogue.

	By Jun 2005, evidence of use of information in the R8100-related policy briefs by apex-level policy-makers at national and state levels	As an uptake and promotion project - building awareness and capacity was undertaken through **workshops, exposure visits and training programs** using project funds but also leveraging funds from other sources especially the DFID WORLP (e.g. for: an OAS planning workshop with 70 stakeholders, training for aquaculture service provision 'training of trainers' series, aquaculture for irrigation engineers workshop, aquaculture monitoring and evaluation workshop). In 2005, the NACA STREAM Initiative **launched a One-stop Aqua Shop Information Service** (OASIS) (see further Annex D) to supply communications materials, including Policy Briefs (see above) and other communications vehicles developed for sharing learning with service providers working directly with farmers and fishers who are poor. These include the genre know as **Better-Practice Guidelines** which are 4-page lively documents with pictures, cartoons and simple text. These are published in English, Oriya, Bengali and Hindi. They have subsequently been translated and shared in ten other Asia-Pacific languages through DFID-NRSP project R8363. **Wider dissemination of the Policy Brief and Better-Practice Guideline concepts** has occurred through sharing and developing the genre with other organizations. Additional Policy Briefs include one on '*Livelihoods approaches*' produced by the FAO-funded Technical Cooperation Program "Assistance in poverty alleviation through improved aquatic resources management in the Asia-Pacific", one on "*Self-recruiting species in aquaculture, their role in rural livelihoods*" under DFID-NRSP R7917 coordinated by AFGRP at the University of Stirling. Additional draft BPGs have emerged as a mechanism of sharing knowledge from local farmers to a wider audience, so-far these include one authored by Kuddus Ansari, the secretary of Kaipara OAS, with the support of the STREAM Communications Hub Manager, entitled "The One-Stop Aqua Shop" – about how to set up and run an OAS (which has generated significant interest from other SHGs in West Bengal, including in Jabarrah) and one about "Buying Fish Seed" co-authored by Ras Bahari, a Jharkhand farmer and fish seed trader and the STREAM Communications Hub Manager. This includes a practical low-tech method to identify if the seed of Catla (a fish species highly prized by farmers) is included in consignments of India Major Carp seed (which are notoriously difficult to differentiate at this stage by conventional methods), which are traditional marketed collectively (Annex E2). The DFID-funded Western Orissa Rural Livelihoods Project (WORLP) have adopted the BPG genre for their aquaculture communications strategy developing a flexible project manual as 19 BPGs on rural aquaculture in a folder which displays the calendar of aquaculture activities throughout the year in Orissa (Annex E3). The DFID Chief Scientific Advisor, Sir Gordon Conway, who visited the project 25-27 August 2005, was particularly interested to see links with other DFID-funded research projects featuring aquaculture. He promised that this would be reflected in the emerging DFID Science and Innovation Strategy that he is leading.

3 Capacity building for transforming policy recommendations into pro-poor service provision (learning-by-doing)

State-level capacity to provide pro-poor services for livelihoods improved through stakeholders designing and pilot testing revised procedures and institutional arrangements for service delivery	By Feb 2004, key GO and NGO stakeholders in at least one state agree on prioritised plan to test revisions in service delivery By Jun 2005, stakeholders assess progress and evaluate their experiences in pilot testing of revised service delivery By Jul 2005, at least three stakeholders in service provision communicate their experiences to apex-level policy actors	State-level capacity to provide pro-poor services for livelihoods was improved by the findings of R8100 in the following ways: Recommendation One, the development of infrastructure for timely production of fingerlings: – A WORLP project implementing agency, the NGO SVA was provided with a hatchery design and trained by STREAM to operate the system for spawning Indian Major Carps and Common carp – A modular approach to developing infrastructure based on a model developed by NGO SVA and STREAM working with a network of SHGs, has been adopted by the Government of Orissa, Orissa Watersheds Development Mission as a development plan for improving timely production of fingerlings at local level in its five year plan (2006-10). – Modern, less expensive hatching and spawning tank designs have been tested in the field by the CIFA Recommendation Two, to instigate a policy of providing leases to Self-Help Groups (SHGs) and for the lease period to be increased to more than one year: – Adopted and implemented by the government of Orissa. – The Joint Secretary to the Government of India (Fisheries) circulated a directive to the state governments stating that extending the length of lease periods for Self-Help Groups was necessary. – The Commissioner-cum-Secretary for Fisheries and Animal Resources, Government of Orissa, confirmed that he would be implementing the directive. – Administrators at the block level confirmed that the Government of Orissa had launched the so-called Revised Long-term Action Plan (RLTP) that would increase the lease period and that this would include Self-Help Groups and would take effect from April 2004. Recommendation Three, the development of a 'Single-point under-one-roof service provision': – Nine One-stop Aqua Shops (OASs) are being piloted in Orissa, West Bengal and Jharkhand, by a federation of SHGs, the NGO SVA, the state government Fisheries Departments of Jharkhand and Orissa and the Orissa Watershed Development Mission with support from NR International Ltd and STREAM (7). Recommendation Four, changing the way in which information is made available to farmers and fisher through nine One-stop Aqua Shops (OASs): – New communication vehicles such as Policy Briefs and Better-Practice Guidelines developed and implemented – Launch of an information service (OASIS) (11). – Simplified procedures for accessing government schemes (3) and bank loans (13) through making these locally accessible. – The Jharkhand government with project support is piloting a village poster campaign to advertise the OAS – Rural banking sector micro-credit providers have welcomed the launch of OAS to help to share information about and opportunities to access their products.

4 Assessing progress towards livelihood improvement of target groups of the poor		
GO and NGO stakeholder understanding of the quality of their performance in pro-poor service delivery and requirements for pro-poor services further improved through assessment of emerging trends in change in livelihood circumstances of the poor people targeted in this project	By Jun 2005, 'significant change' assessed in at least one target state with a sample of at least 30% of the men and women exposed to the project's pilot testing By Aug 2005, findings on 'significant change' communicated and implications discussed amongst intermediate stakeholders	Mr Kuddus Ansari the manager of OAS in Kaipara village has collected over a 110 stories from his fellow villagers which represent the different experiences of change that they expressed to him. This represents over 30% of people who were involved in the OAS. (Annex G) The following 'significant changes' were communicated discussed with intermediate stakeholders in the form of 'significant change stories': *Jabarrah Village establishes an OAS* – Community members from Jabarrah developed a keen interest in establishing an OAS. This interest arose from intermittent contact with the project (R8334), their relationships with Kaipara and other villages, and being able to pool their information and experience through the social networks and Self-Help Groups that they had developed. *Providing Hope* – Kaipara village the community has developed pride in their achievements, a strong sense of identity and a raised profile amongst its neighbouring villages. This change in outlook has been in part due to the sense of 'significance' that has come with people taking interest in their lives, their livelihoods and their opinions. – People have developed connections with neighbours in India and some in other parts of the world they are now feel less at the mercy of short term assistance. – Recent SCSs have articulated difficulties in understanding the recent fairly sudden disappearance of long running support from an NGO Gramin Vikas Trust which has had to contract its operations due to funding constraints. This project's involvement in their community has been important in maintaining their confidence. *The Power of Telling Stories* – Evidence of impacts on the lives of people who are poor emerges through monitoring via stories (see for example stories from Jabarrah, Kaipara and Kandhkelgaon). The Jabarrah Story illustrates substantially the benefit of revisiting communities periodically to understand the long-term and unanticipated impacts of change.

	By Aug 2005, evidence of at least two ways by which intermediate stakeholders have internalised the project feedback	Two ways by which intermediate stakeholders have internalized the project feedback are: *Government of Orissa adopts R8334 M&E system.* – The monitoring and evaluation system designed for R8334 was adopted by the Orissa Watersheds Development Mission. – The technique of Significant Change Stories applied by R8334 was adopted by the Orissa government in the monitoring of their five year plan (2006-2010). *Kaipara OAS has trialled a bar code system for tracking distribution of media.* – An ancillary project was initiated to improve the collection of information about interactions that stakeholders have with the OAS. This involved cataloguing all resources available from the OAS, providing people with bar-coded membership cards and keeping records of which "members" use what resources. – As of October 2005, the bar coding pilot trial at Kaipara has been running for 3 months. We will report on the effectiveness of bar coding in media tracking after a 12 months trial period

Uptake Promotion		
		There is much that is being done through the regional STREAM Initiative network to promote the experience and learning of R8334 in other domains. – work for possible incorporation into their Hunger Eradication and Poverty Reduction Program. An OAS has been established in Vietnam through the DANIDA-funded 'Support to Brackish and Marine Water Aquaculture' (SUMA) project. This arose from a workshop based on the learning of R8334. Exposure by STREAM – piloting with donor support – visibility to national government and an existing development framework into which it could be incorporated provides a promotion pathway. – Development Mission (OWDM) has already incorporated all of the key findings that emerged from R8334 into its' five-year plan. The GoO OWDM which receives DFID development support is highly visible to Government of India policy processes and provides a promotion pathway for the incorporation of aquaculture components into its watersheds approach to development nationwide in India**.** "Facilitated advocacy" as a mechanism to give farmers and fishers a voice in policy making processes and the "consensus-building process" (CBP) to help to build consensus within line agencies around change priorities has subsequently taken place outside of India during 2005. – Pacific countries met at a CBP workshop and developed the Policy Brief in nine languages and shared them through Asia-Pacific. – to know of the approach of R8100 through STREAM and with the support of an FAO funded 'Support to Fisheries Sector Policy and Strategy Formulation' TCP/PAK/3005 (A) project and the STREAM Initiative the process was implemented in the development of "National Policy Framework and Strategy for Fisheries and Aquaculture

		Development in Pakistan".

9 Appendix III – Publication Dissemination

Downloads of R8334 documents from the STREAM Virtual Library **http://www.streaminitiative.org/Library/VirtualLibrary.html** and hard copies distributed

Title	Date	Downloads	Hard Copies Distribution [12]
Journal articles			
Peer reviewed and published			
Savage, W (ed) 2003 *STREAM Journal Volume 2 Number 4* STREAM, Bangkok, Thailand 18 pp. ISBN 1685-4012	May 2004	944	529
Savage, W (ed) 2003 *STREAM Journal Volume 2 Number 4 (Ilonggo)* Bangkok, Thailand 18 pp. ISBN 1685-4012	July 2004	372	5
Savage, W (ed) 2003 *STREAM Journal Volume 2 Number 4 (Khmer)* STREAM, Bangkok, Thailand 18 pp. ISBN 1685-4012	July 2004	188	71
Savage, W (ed) 2003 *STREAM Journal Volume 2 Number 4 (Oriya)* STREAM, Bangkok, Thailand 18 pp. ISBN 1685-4012	May 2005	17	250
Savage, W (ed) 2003 *STREAM Journal Volume 2 Number 4 (Vietnamese)* STREAM, Bangkok, Thailand 18 pp. ISBN 1685-4012	July 2004	576	38
Haylor, G, Savage, W & Tripathi, SD 2004 *People and Policy Change in Indian Fisheries, Fishing Chimes, Volume 25. No. 1.* pp 66-68.	May 2005	150	/
Institutional Report Series			
Haylor, G, Tripathi, SD, Savage, W, Ansari, K, Dutta, G & Yadba, SA. 2005. *Empowerment is a laudable term-Here's an example of what it can look like,* DFID-NRSP Annual report 2004-2005 Part1-Success Stories. DFID-NRSP. (SS-i-SS-iii).	July 2005	49	/
Haylor, G, Savage, W & Tripathi, SD. 2004. *Responding to the Voices of the Poor-pro-poor change for aquaculture in eastern India* DFID-NRSP Annual report. 2003-2004 Part 1-Success stories. DFID-NRSP (SS-xi-SS-xii).	June 2004	207	/
Haylor, G, Tripathi, SD, Satpathy, BK & Behara, D. 2005. *The Kandhkelgaon Story (English).* STREAM 5pp.	May 2005	256	50
Haylor, G, Tripathi, SD, Satpathy, BK & Behara, D. 2005. *The Kandhkelgaon Story (Bengali).* STREAM 5pp.	July 2005	34	/
Haylor, G, Tripathi, SD, Satpathy, BK & Behara, D. 2005. *The Kandhkelgaon Story (Oriya).* STREAM 5pp.	July 2005	42	250
Haylor, G, Tripathi, SD, Savage, W, Ansari, K, Dutta, G & Yadav, SL 2004. *The Kaipara Story (English*) STREAM 8pp.	April 2005	172	/
Haylor, G, Tripathi, SD, Savage, W, Ansari, K, Dutta, G & Yadav, SL 2004. *The Kaipara Story (Bengali)* STREAM 8pp.	May 2005	115	250
Haylor, G, Tripathi, SD, Savage, W, Ansari, K, Dutta, G & Yadav, SL 2004. *The Kaipara Story (Hindi)* STREAM 8pp.	Nov 2005	/	200
Haylor, G, Tripathi, SD, Savage, W, Ansari, K, Dutta, G & Yadav, SL 2004. *The Kaipara Story (Oriya)* STREAM 8pp.	May 2005	62	250
Tripathi, SD, Haylor, G, Savage, W, Gangwar, S Sing, V, Dutta, G & Pathak, PK. 2003. *Back to Jabarrah (English)* STREAM 7pp.	Feb 2004	562	/
Tripathi, SD, Haylor, G, Savage, W, Gangwar, S Sing, V, Dutta, G & Pathak, PK. 2003. *Back to Jabarrah (Bengali)* STREAM 7pp.	July 2005	168	250
Tripathi, SD, Haylor, G, Savage, W, Gangwar, S Sing, V, Dutta, G & Pathak, PK. 2003. *Back to Jabarrah (Hindi)* STREAM 7pp.	Nov 2005		200
Tripathi, SD, Haylor, G, Savage, W, Gangwar, S Sing, V, Dutta, G & Pathak, PK. 2003. *Back to Jabarrah (Oriya)* STREAM 7pp.	May 2005	58	250

[12] Documents produced and being distributed through Communications Hubs, OAS network and at workshops and conferences such as the 7th Indian Fisheries Forum

Title	Date	Downloads	Hard Copies Distribution [12]
Haylor, G, Tripathi, SD, Savage, W, Gangwar, S, Sing, V, Dutta G & Pathak, PK. 2003. *Jabarrah---Beginning of a New Era (English)*. GVT. 7pp**.**	Feb 2004	254	/
Haylor, G, Tripathi, SD, Savage, W, Gangwar, S, Sing, V, Dutta G & Pathak, PK. 2003. *Jabarrah---Beginning of a New Era (Bengali)*. GVT. 7pp	Feb 2004	143	/
Haylor, G, Tripathi, SD, Savage, W, Gangwar, S, Sing, V, Dutta G & Pathak, PK. 2003. *Jabarrah---Beginning of a New Era (Hindi).* GVT. 7pp**.**	Feb 2004	154	/
Haylor, G. 2003 *Investigating Improved Policy on Aquaculture, Rural Aquaculture. Vol 5. No. 2***.** GVT (6-7)**.**	Feb 2004	566	/
The Telegraph Newspaper India *One Stop Aqua Shop News Report**; 7 June 2004*** 1pp.	Aug 2004	79	/
Symposium, conference and workshop papers and posters			
Tripathi SD *Chhattisgarh-The Heartland of Aquaculture**:*** Department of Fisheries seminar for the Government of Chhattisgarh State, India November 2005**.** 7pp**.**	Nov 2005	/	/
Haylor, G. 2004*. Adopting a STREAM approach to inland fisheries management: participatory approaches in reservoir fisheries management: Issues, challenges and policy**, October*** 4-6th 2004 at the Culture Club Resort, Dambulla, Sri Lanka**.** NAQDA. 10pp**.**	Sept 2004	326	/
Tripathi, SD, Haylor, G, Savage, W, Gangwar, JS, Singh, V, Dutta, G & Pathak. 2004. *Back to Jabarrah. Session 1: best practice for establishing sustainable aquaculture ventures in indigenous communities of the 'Indigenous participation in aquaculture: the Pacific experience,'* Australasian Aquaculture 2004 conference, Sydney Convention and Exhibition Centre, Darling Harbour on the 27-28 September 2004 ACIAR. 7pp**.**	Sept 2004	520	/
Tripathi, SD 2005. *Inception Workshop on Development of Strategies for Enterprise Promotion and Sustainable Livelihood in the Fisheries Sector in Orissa***.** 6pp**.**	May 2005	254	/
Newsletter articles			
Haylor, G. (ed) 2005 *STREAM Update Issue 11 June 2005***.** STREAM 4pp**.**	August 2005	74	80
Haylor, G. (ed) 2004*. STREAM Update Issue 10 **December 2004.*** STREAM 4pp**.**	June 2005	56	101
Haylor, G. (ed) 2004*. STREAM Update Issue 9 September 2004***.** STREAM 4pp**.**	Dec 2004	155	226
Haylor, G. (ed) 2004*. STREAM Update Issue 8 June 2004***.** STREAM 4pp**.**	July 2004	243	139
Haylor, G. (ed) 2004*. STREAM Update Issue 7 March 2004.* STREAM 4pp.	April 2004	247	255
Haylor, G. (ed) 2004*. STREAM Update Issue 6 November 2003***.** STREAM 4pp.	Nov 2003	307	99
Haylor, G & Bulcock, P. 2004*. OASIS: The One-Stop Aqua Shop Information Service (English)***,** NACA Newsletter August 2004 NACA 4pp.	July 2004	453	55
Haylor, G & Bulcock, P. 2004*. OASIS: The One-Stop Aqua Shop Information Service (Bengali)***,** NACA Newsletter August 2004 NACA 4pp.	July 2005	36	20
Haylor, G & Bulcock, P. 2004*. OASIS: The One-Stop Aqua Shop Information Service (Oriya),* NACA Newsletter August 2004 NACA 4pp.	May 2005	46	45
Policy Briefs			
Building Consensus			
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Bahasa)*. STREAM Bangkok, Thailand 2pp.	Aug 2005	43	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Bengali)*. STREAM Bangkok, Thailand 2pp.	Aug 2005	30	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (English)*. STREAM Bangkok, Thailand 2pp.	July 2005	52	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Hindi)*. STREAM Bangkok, Thailand 2pp.	Aug 2005	20	100

Title	Date	Downloads	Hard Copies Distribution [12]
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Ilonggo).* STREAM Bangkok, Thailand 2pp.	Aug 2005	21	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Khmer).* STREAM Bangkok, Thailand 2pp.	Aug 2005	24	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Myanmar).* STREAM Bangkok, Thailand 2pp.	Aug 2005	15	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Nepali).* STREAM Bangkok, Thailand 2pp.	Aug 2005	24	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Oriya).* STREAM Bangkok, Thailand 2pp.	Aug 2005	16	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Sinhala).* STREAM Bangkok, Thailand 2pp.	Aug 2005	21	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Urdu).* STREAM Bangkok, Thailand 2pp.	Aug 2005	9	100
Haylor, G. (ed) 2005 *Building Consensus Version 1.0 (Vietnamese).* STREAM Bangkok, Thailand 2pp.	Aug 2005	38	100
Livelihoods Approaches			
STREAM (eds) Haylor G 2005 *Livelihoods Apporaches Version 1.0 (Bahasa, Indonesia).* STREAM Bangkok, Thailand 2pp.	Aug 2005	126	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (Bengali).* STREAM Bangkok, Thailand 2pp.	Aug 2005	25	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (English).* STREAM Bangkok, Thailand 2pp.	Mar 2005	152	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (Hindi).* STREAM Bangkok, Thailand 2pp.	Aug 2005	23	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (Ilonggo).* STREAM Bangkok, Thailand 2pp.	Aug 2005	27	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (Khmer).* STREAM Bangkok, Thailand 2pp.	Aug 2005	34	100
Haylor, G. (ed) 2005 *Livelihoods Apporaches Version 1.0 (Myanmar).* STREAM Bangkok, Thailand 2pp.	Aug 2005	21	100
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Manuals and guidelines			
Better-Practice Guidelines			
Ansari, K and Mukherjee, K. 2005 *Kudus Ansari's Guide to the One-stop Aqua Shop. (English)* STREAM Bhubaneswar, India 4pp.	Nov 2005	/	/
Bahari, R and Mukherjee, R 2005 *Ras Bahari's Guide to Buying Fish Seed. (English)* STREAM Bhubaneswar, India 4pp.	Nov 2005	/	/
Copley, K, Haylor G and Savage, W. (eds) 2005 *Consensus-Building Process. Version 1.0 (Bahasa Indonesian).* STREAM Bangkok, Thailand 4pp.	July 2005	249	200
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Copley, K, Haylor G and Savage, W. (eds) 2005 *Consensus-Building Process Version 1.0 (Vietnamese).* STREAM Bangkok, Thailand 4pp.	July 2005	77	200
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Pond Construction: Design and Layout of Ponds (Oriya).* WORLP 4pp.	Dec 2005	/	5,000
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Broodstock Collection, Transport and Maintenance.* WORLP 4pp.	July 2005	138	/
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Broodstock Collection, Transport and Maintenance (Oriya).* WORLP 4pp.	Sept 2005	27	5,000
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Spawn Production in Hatcheries.* WORLP 4pp.	July 2005	143	/
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Spawn Production in Hatcheries*. (Oriya). WORLP 4pp.	Sept 2005	22	5,000
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Spawn Production of Common Carp (Oriya).* WORLP 4pp.	Sept 2005	25	5,000
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Fry Production: Nursing Spawn (Oriya).* WORLP 4pp**.**	Sept 2005	28	5,000
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Fast Fingerling Production: Nursing Spawn in Ponds.* WORLP 4pp**.**	July 2005	119	/
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Fast Fingerling Production: Nursing Spawn in Ponds (Oriya).* WORLP 4pp**.**	Sept 2005	23	5,000
Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *Fingerling Production: Nursing Fry in Ponds.* WORLP 4pp.	Nov 2005	/	/

Title	Date	Downloads	Hard Copies Distribution [12]
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005 *Packing and Transport of Spawn, Fry and Fingerlings.* WORLP 4pp.	Nov 2005	/	/
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005 Marketable *Fish Production: Seasonal Ponds.* WORLP 4pp.	Nov 2005	/	/
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Copley, K, Haylor, G, Savage, W. and Tripathi, S.D. (eds). 2005. *One-stop Aqua Shops (Oriya).* WORLP 4pp.	Dec 2005	/	5,000
Project technical reports including project internal workshop papers and proceedings			/
Haylor, G, Keating, C, Mukherjee, R, Savage, W & Tripathi, SD. 2005. *Publication 9 Research Learning and New Thinking* STREAM 30pp.	Nov 2005	/	/
Haylor, G, Keating, C, Mukherjee, R, Savage, W & Tripathi, SD. 2005. *Publication 8 Final Workshop Report Bhubaneswar Orissa 30-31 August 2005* STREAM 28pp.	Nov 2005	/	/
Haylor, G, Keating, C, Mukherjee, R, Savage, W & Tripathi, SD. 2005. *Publication 7: Second Monitoring and Evaluation Workshop at the One-stop Aqua Shop in Kaipara, West Bengal 17-18 May 2005.* STREAM 28pp.	June 2005	167	241
Haylor, G, Keating, C, Mukherjee, R, Savage, W & Tripathi, SD. 2005 *Publication 6: Monitoring and Evaluation Workshop, Ranchi, Jharkhand 7-8 October 2004*. STREAM. 30pp.	Nov 2004	532	184
Haylor, G & Savage, W. 2004 *Publication 5: One-Stop Aqua Shop Planning Meeting, Purulia, West Bengal, 26 May 2004*. STREAM 9pp	August 2004	587	5
Haylor, G & Copley, K. 2004. *Publication 3: Planning Meeting Workshop, Ranchi, 29-30 January 2004*. STREAM 25pp	July 2004	526	153
Haylor, G, Savage, W &Tripathi SD 2003. *Publication 2: State-level Communications Strategy Workshops, Kolkata, West Bengal 30-31 October 2003; Ranchi, Jharkhand, 3-4 November 2003; Bhubaneswar, Orissa, 6-7 November 2003*. STREAM. 21pp.	Jan 2004	1086	143

Title	Date	Downloads	Hard Copies Distribution [12]
Haylor, G, Savage, W &Tripathi, SD. 2003. *Publication 1: Stakeholders meeting, Ranchi, Jharkhand, 18-19 September 2003*. STREAM. 41 pp.	Nov 2003	594	198
Kumar, A & Mukherjee, R. 2004 *Publication 4: West Bengal Visit Kaipara, 25-28 February 2004*. STREAM 5pp.	July 2004	630	5
Total		**14,980**	**104,342**

10 Appendix IV – References

Copley, K, Haylor, G, Ponglumyai, S and Savage, W. 2005. *Better-Practice Guidelines Workshop - Hanoi, Vietnam 17 to 18 June 2005.* STREAM. 22pp.

Guha, R, Haylor, G Sudin K, Khandagiri, P, Kr Mahaptra, S, Mukherjee, R, Patel, A, Paul, Singh, SN and Tripathi, SD. 2006. *Joint Review Mission Report* OWDM/nr international/STREAM/WORLP 61pp

Haylor, G, Tripathi, SD, Savage, W, Gangwar, S, Sing, V, Dutta, G and Pathak, P K. 2003. *Jabarrah -- Beginning of New Era.* GVT 7pp.

IIRR 2000. *Going to scale: Can we bring more benefits to more people, more quickly?* International Institute for Rural Reconstruction (IIRR), Silang, Cavite, Philippines