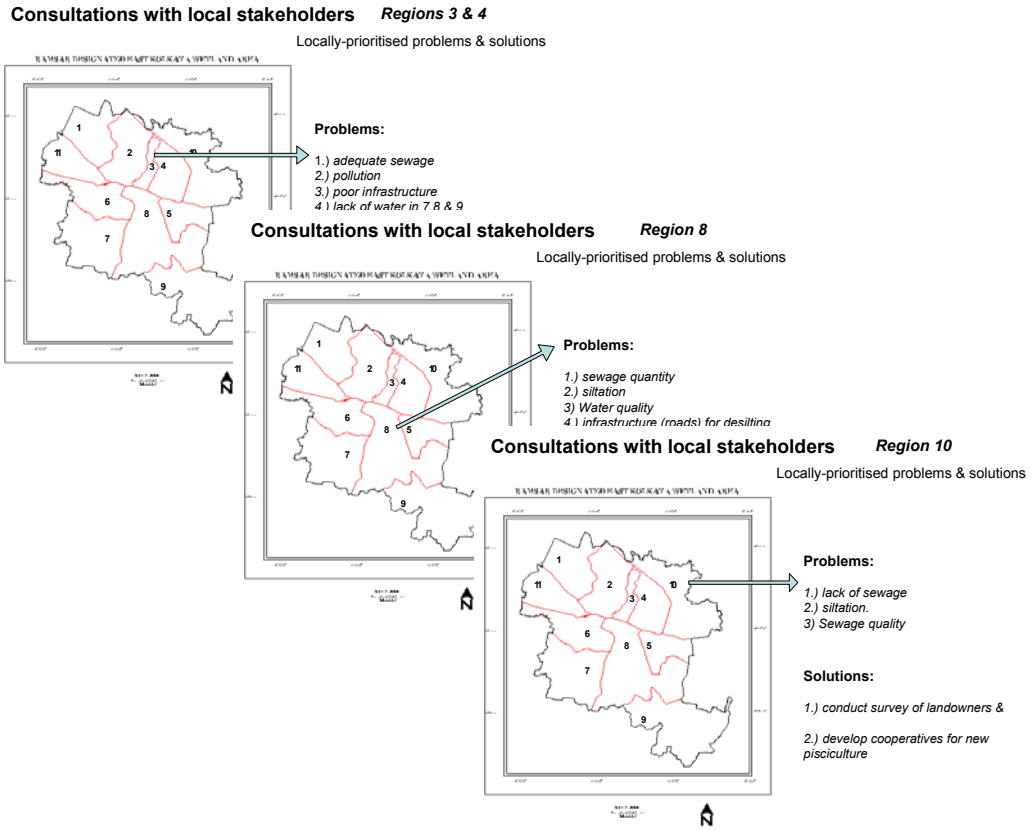
EKW water management action plan and preliminary development activities

Report to be submitted to the EKW Management Committee



Foreword

This report provides a summary of outcomes from a process of extended interaction with stakeholders associated with water management in the East Kolkata Wetlands. The participatory approach adopted for this work ensured that rice, vegetable and fish farmers, together with other community members, were given the opportunity to identify the most pressing constraints concerning water management in the wetlands, propose appropriate solutions, develop and agree upon a plan of action and embark upon the process of implementing preliminary development activities that address some of the most pressing and widely held problems. The objectives of this work, approach adopted and resulting conclusions and recommendations received broad-based support from the stakeholders that participated in the process, including the Save Wetlands Committee, Fish Producers Association, labour unions, Krishak Sabha and Panchayats in the EKW. This report has been reviewed by several key stakeholders associated with water management in the East Kolkata Wetlands, and the planning approach and findings presented have been endorsed by the Institute of Environmental Studies and Wetland Management, Department of Environment; West Bengal Pollution Control Board, Department of Environment; Principal Secretary's Office, Department of Environment.

Glossary

Acronyms and local terminology

ADB	Asian Development Bank
CEMPD	Centre for Environmental Management and Participatory Development
DFID	Department for International Development (UK Government)
DoF	Department of Fisheries, Aquaculture, Aquatic Resources and Fishing Harbours, GoWB
DoE	Department of Environment, GoWB
DoIW	Department of Irrigation and Waterways, GoWB
EKW	East Kolkata Wetlands
FPA	Fish Producers Association
GO	Government Organization
GoI	Government of India
GoWB	Government of West Bengal
IESWM	Institute of Environmental Studies and Wetland Management
KMC	Kolkata Metropolitan Corporation
MIC	Minister-in-Charge
NGO	Non-government Organisation
NRM	Natural Resources Management
NRSP	Natural Resources Systems Programme (DFID funded)
PAP	Participatory Action Planning
PAPD	Participatory Action Plan Development
PS	Production System
PU	Peri-Urban
PUI	Peri-Urban Interface
STEPS	Social, Technical, Environmental, Physical and Sustainability
SWC	Save Wetlands Committee
WB	World Bank
WBSPCB	West Bengal State Pollution Control Board

Bunting, S.W., Kundu, N., Saha, S., Lewins, R. and Pal, M. 2005. EKW water management action plan and preliminary development activities. Report to be submitted to the EKW Management Committee. Stirling, UK: Institute of Aquaculture and Kolkata, India: Institute of Environmental Studies and Wetland Management.

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Executive Summary

Process

- For the purposes of this work the East Kolkata Wetlands were divided in to 11 regions with distinct physical, environmental and social characteristics[1]
- A problem census was conducted in each region to verify the key constraints facing stakeholders living and working in the wetlands
- Workshops were conducted in each of the 11 regions to prioritise constraints and potential solutions
- Workshops were held with key stakeholders, non-government organisations and rural and urban government departments and agencies to raise awareness of the issues, facilitate a constructive dialogue and build consensus on water management issues and potential strategies to resolve the most pressing problems
- Considering the range of potential water management improvements suggested 3 preliminary development activities were proposed for further investigation
- The feasibility of each development activity was assessed in a workshop organised by local stakeholders
- Technical, financial, institutional, environmental and sustainability issues were discussed and conditions and agreements required for implementation identified
- Focus groups are being conducted with women and vulnerable groups who had not been able to participate fully in workshops and user group meetings to check on possible impacts
- Preliminary moves to implement the proposed development activities are ongoing but full implementation depends upon gaining support and approval from the East Kolkata Management Committee

Water management action plan

- Following extended interaction amongst stakeholders an action plan for water management in the East Kolkata Wetlands was formulated
- The plan addresses the major issues highlighted during our discussions and the most promising solutions put forward by stakeholders in the respective regions (the main issues and solutions are presented below)
- Based on the action plan it was proposed that 3 preliminary development activities should be selected and appropriate measures taken to facilitate implementation
- It was anticipated that these preliminary activities would demonstrate that the various stakeholder groups in the EKW are committed to, and indeed active in working together to solve their problems

Preliminary development activities

- The first stage in implementing the water management action plan was to convene meetings of stakeholders, user group representatives and community members from 3 regions to discus proposed preliminary development activities
- The meeting was used to verify the feasibility of undertaking the activity as a pilot project; social, technical, financial, environmental, institutional and sustainability issues were considered
- By selecting ‘feasible’ activities there is more chance of demonstrating quick and beneficial progress that should encourage participants to address more complex issues
- The meeting helped facilitate the structured analysis of the conditions required for implementation and possible problems and bottlenecks
- For each pilot activity several agreements and consents were deemed necessary

[1] These 11 regions were delineated for practical purposes and have no legal or constitutional basis, a similar pragmatic approach is recommended for future planning activities as the wetlands do not constitute a homogenous environment and the demands and expectations of stakeholders throughout the wetland are not always the same

- Practical issues such as the need for a feasibility study on the proposed design for Paranchaprasi khal and a hydrological survey (with reconnaissance to confirm the extent and location of settlements on or near embankments) were identified
- Further assessment regarding possible negative impacts on women and vulnerable groups is required in all cases
- During the STEPS workshop it was not always possible to reach agreement on the exact sequence of follow up activities and further work is underway to clarify this; a strategy is also being developed to monitor progress and ensure implementation is adapt and revised as required
- Follow up meetings with stakeholders to discuss issues arising from the 3 STEPS workshop are ongoing
- Dialogue with principal stakeholder groups that participated in the workshops is also continuing and progress with addressing the issues raised in the meeting is being monitored

Outcomes

- The feasibility study reported here was conceived to identify potential preliminary development activities that could be implemented within the lifetime of the current DFID project
- Considering the need for further agreements and consents before desiltation can commence, uncertainty regarding several technical issues and funding sources, and the need for further consultation with vulnerable groups, especially women, none of the proposed preliminary activities are considered feasible within the current project
- In all cases the local agreements required should be pursued, and where necessary appropriate problem solving and conflict resolution strategies, potentially involving external mediation or facilitation, should be invoked
- Clarification is being sought regarding the consents that might be required from DoIW and WBPCB
- Further work is needed to identify vulnerable groups (notably women and people living on or near embankments), to consult with them, and to identify acceptable resettlement strategies or steps to mitigate negative impacts
- This report outlines a participatory planning process and demonstrates that such a process can highlight areas of concern, for example, the need to assess the likely impact on vulnerable groups, and the need for local level agreement between stakeholders (all user groups, Panchayat members, community-based organisations, political parties). Elements that are frequently overlooked in technocratic and comprehensive planning approaches.
- Outcomes of this participatory planning activity will be communicated to potential sponsors of current and future activities, giving them access to a valuable knowledge-base to support implementation of the proposed pilot activities, and evidence that stakeholders in the wetlands are working together constructively to solve problems to encourage future investment for development
- This report constitutes an important output as it will be submitted to the EKW Management Committee so they may draw on the findings presented to target resources at addressing the most pressing issues related to water management in the EKW.
- It is hoped that the EKM will value this work, and advocate and adopt a similar process of participatory action planning in addressing future development activities in support of enhanced livelihoods for people living and working in the wetlands.

Contents

1. Introduction

Horticulture, aquaculture and paddy farming practices exploiting wastewater and garbage resources in peri-urban Kolkata produce significant quantities of fresh market produce, provide direct and indirect employment for, mainly poor, people, and managed wastewater reuse reduces health risks from unregulated discharges and protects downstream environments. These systems are threatened by growing pressure to use their lands for urban purposes at the same time that access to reliable wastewater flows and suitable solid wastes is declining. Building on knowledge generated by a previous DFID NRSP project entitled 'Renewable natural resource-use in livelihoods at the Kolkata peri-urban interface'[2] this project 'Evaluating action planning for enhanced natural resources management in peri-urban Kolkata'[3] was aimed at researching the conditions and methods for achieving successful participatory action planning that benefits poor people in the complex social and administrative context of the peri-urban interface. In particular, it has sought new knowledge about the difficulties of, and opportunities for, effective participation of those poor, whose natural resource based livelihoods are threatened by urbanisation, in developing responses to the threats of urban growth and insensitive waste management policies, in collaboration with both urban and rural government authorities.

Interactions during major meetings and workshops were documented and other events were recorded. Following a review and verification of production constraints identified in R7872, action planning was initiated to address problems concerning water management, which negatively affect poor people engaged in horticulture, paddy farming and fish culture in peri-urban Kolkata. Analysis of an ongoing planning activity involving local stakeholders highlighted key difference between the proposed action planning framework and a locally instigated and facilitated process. The action planning process developed during the project was tailored to suit the complex social, political and administrative context of peri-urban Kolkata and was designed to be responsive to the demands and expectations of stakeholders.

To avoid bias towards one or other area or farming activity the wetland was divided into 11 regions based on the prevailing physical, environmental and social setting. Meetings with community members in each region were undertaken to verify the problems they face concerning access to and management of the natural resources upon which they depend. Bilateral meetings and briefings were held in parallel with government departments, non-government organisations and key stakeholders in the wetlands (Fish Producers Association, Save Wetlands Committee, labour unions) to establish a dialogue, raise awareness and seek support for the proposed action planning process. As a result some stakeholder group representatives (FPA, SWC, labour unions) organised meetings among their members to discuss the proposal and seek widespread backing for continued interaction. Following this consolidation phase workshops were held in the 11 wetland regions to verify and prioritise the proposed strategies to address the major water management issues. A series of workshops bringing together government agencies (KMC, KMDA, KEIP, DoIW, DoE, Nort-24-Parganas, South-24-Parganas), NGOs and other key stakeholders in the wetlands

[2] Previous project website: www.dfid.stir.ac.uk/dfid/nrsp/kolkata.htm
[3] Current project website: www.stir.ac.uk/dfid/nrsp/actionplanning.htm

(SWC, FPA, labour unions, Panchayats) was conducted to build consensus around the proposed plan of action and confirm support for the process and proposal to undertake preliminary development activities; dialogue with external agencies that might also support implementation is ongoing.

The following sections present an overview of the water management action plan formulated for the East Kolkata Wetlands, and recommendations concerning how to proceed with applying the action planning process outlined here to other priorities for stakeholders, especially poor people, living and working in the wetlands.

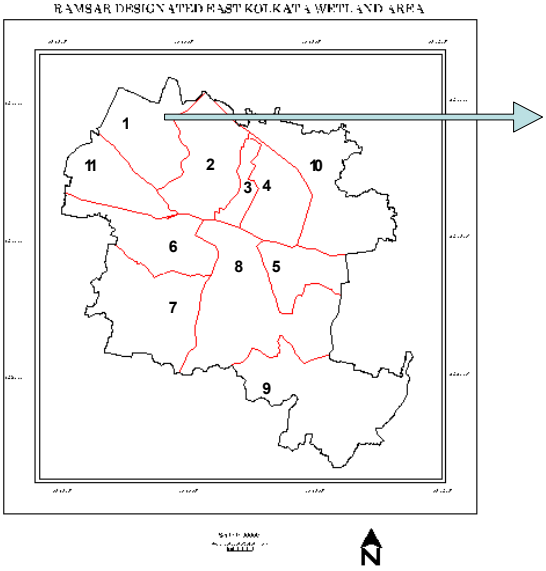
2. Water management action plan

Overview

- Following extended interaction amongst stakeholders an action plan for water management in the East Kolkata Wetlands was formulated
- The plan addresses the major issues highlighted by stakeholders and the most promising solutions put forward by them
- Based on these findings 3 preliminary development activities were proposed for implementation
- An important output of this work is to demonstrate to government and other prospective supporters that the diverse stakeholder groups active in the East Kolkata Wetlands are committed to, and indeed active in working together to solve their problems
- Figures shown below summarise the regional priorities for water management identified by stakeholders participating in the project and solutions they proposed

Consultations with local stakeholders ***Region 1***

Locally-prioritised problems & solutions



Problems:

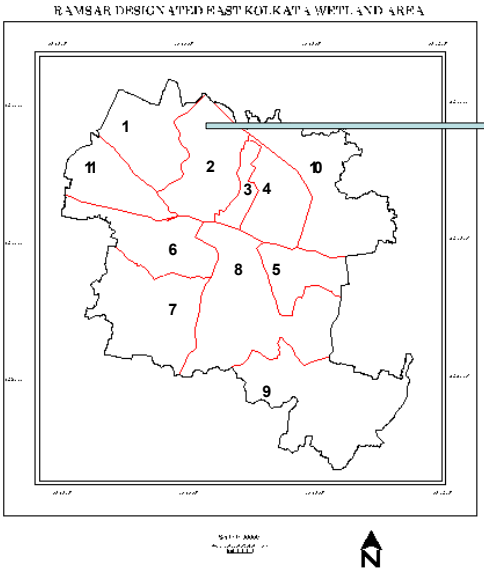
1.) *sewage quality (pollution)*
2.) siltation of fishponds
3) Siltation of canal

Solutions:

1.) *de-silt Khasmasal Canal*
2.) *de-silt outlet pipe*

Consultations with local stakeholders *Region 2*

Locally-prioritised problems & solutions



Problems:

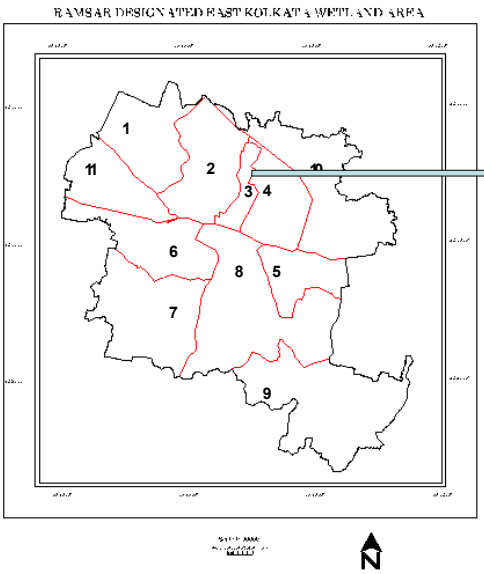
1.) lack of water
2.) siltation of ponds
3.) siltation of feeder canal
4.) sewage quality (pollution)

Solutions:

1) *Desiltation of feeder canal, inlets, outlets and fishponds.*
2) *Improve water distribution.*

Consultations with local stakeholders *Regions 3 & 4*

Locally-prioritised problems & solutions



Problems:

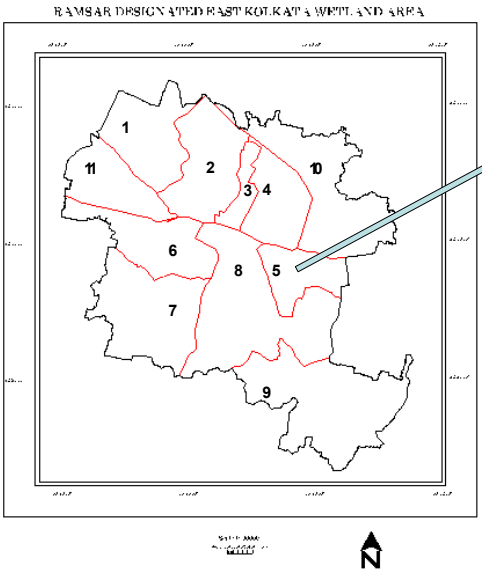
1.) *adequate sewage*
2.) pollution
3.) poor infrastructure
4.) lack of water in 7,8 & 9

Solutions:

1.) *Divert Chowbagha water station water South (via Chak-kolar Khal, Boynala khal, Kheyadaha 1&2 and Bidyadhari)*
2) Desilt Bantala to Tarda, Paranchaprasi khal, Ghosher khal & feeder canal.
3)Bidyadhari must be desilted for 7,8 & 9

Consultations with local stakeholders *Region 5*

Locally-prioritised problems & solutions



Problems:

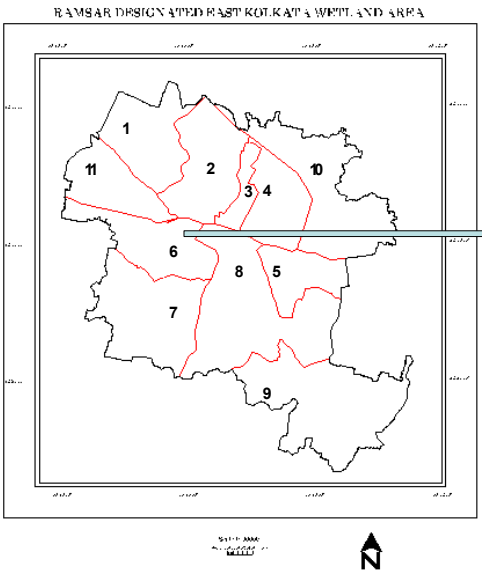
1.) *sewage quality - pollution*
2.) siltation ponds
3) siltation feeder canal
4.) adequate sewage
5.) lack of infrastructure

Solutions:

1.) *prevent tannery influx*
2.) desilt ponds
3.) better sluice gate – gate management at Bantala

Consultations with local stakeholders *Region 6*

Locally-prioritised problems & solutions



Problems:

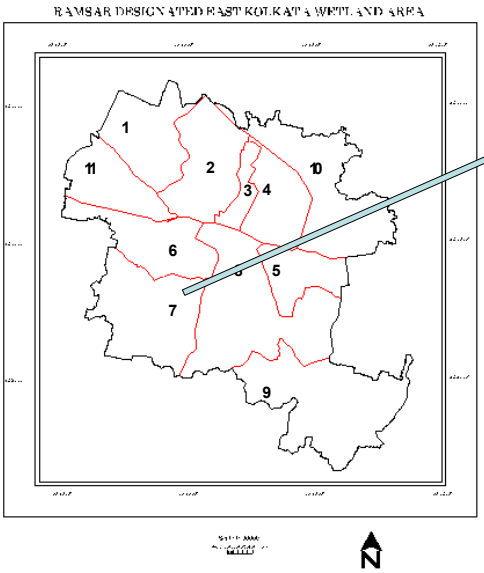
1.) *sewage quantity*
2.) siltation
3.) water quality / pollution
4.) infrastructure problems

Solutions:

1.) *desilt Chowbaga canal (Andanapur canal), Boynala khal*
2.) desilt branch canals (Khayer khal & Dongasara Noror khal)
3.) unblock 2 siphons near Lalkuthi

Consultations with local stakeholders *Region 7*

Locally-prioritised problems & solutions



Problems:

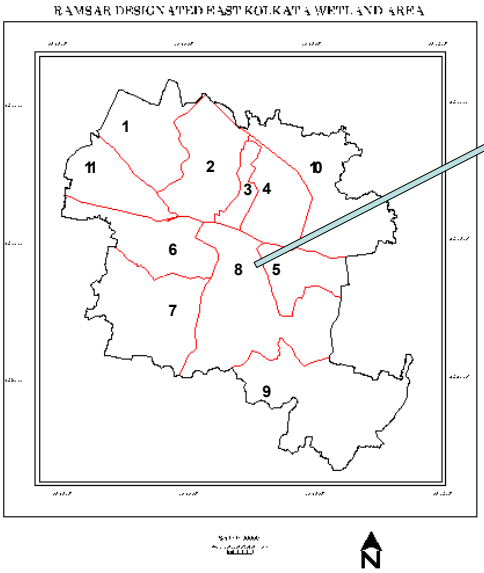
1.) lack of sewage
2.) lack of irrigable water (February-March)
3.) poor quality (cow sheds gone & pollution
4.) poor infrastructure

Solutions:

1.) desiltation
2.) better water flow / increased depth
3.) better water management with Bantala lock gate
4.) stop chemical discharge
5.) health centre

Consultations with local stakeholders *Region 8*

Locally-prioritised problems & solutions



Problems:

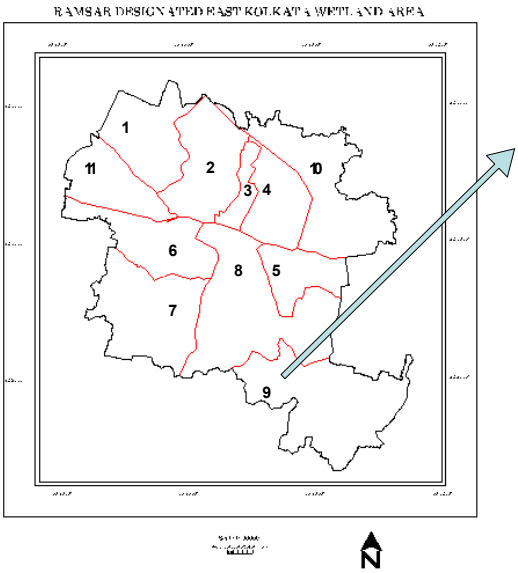
1.) sewage quantity
2.) siltation
3) Water quality
4.) infrastructure (roads) for desilting

Solutions:

1) Desilt canal.
2) Proper monitoring of sluice gate.
3) Pump sewage from main canal.
4) Environment dept. should act'
5) Excavate a new canal.

Consultations with local stakeholders *Region 9*

Locally-prioritised problems & solutions



Problems:

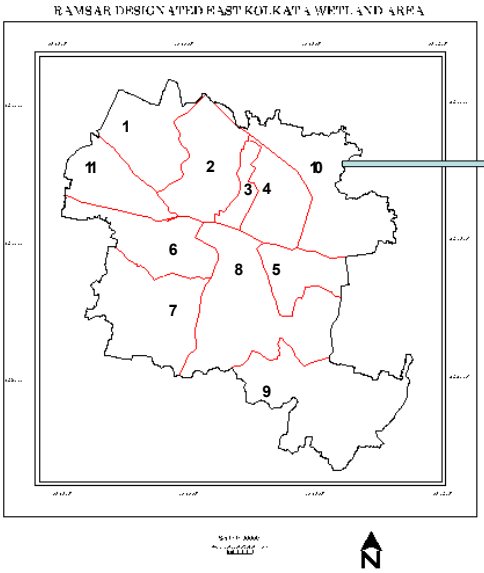
1.) lack of irrigable water
2) siltation.(bidyadhari cana
3) infrastructure
4) Sewage quality.

Solutions:

1.) "Link to channel sewage from Chowbaga to south?"

Consultations with local stakeholders *Region 10*

Locally-prioritised problems & solutions



Problems:

1.) lack of sewage
2.) siltation.
3) Sewage quality

Solutions:

1.) conduct survey of landowners & explore diversification
2.) develop cooperatives for new pisciculture

3. Preliminary development activities

As has been shown in other settings it is important to ensure that outcomes of an action planning process are adopted and implemented so that trust is built between the participants and key stakeholders and to ensure that future planning and development activities are more likely to find widespread support. Several indicators can be identified to monitor and evaluate adoption and implementation: action by participants to address the development activities identified would indicate a commitment of resources and degree of trust in the process; institutional and organisational change to permit the implementation of development activities would demonstrate a commitment on behalf of the relevant bodies to adopting the findings and facilitating implementation; institutionalisation of the process would show the findings and plans are valued and approach deemed suitable for other settings; successful outcomes and application of the process by participants to other issues would provide clear evidence of development impact and uptake. However, based on findings from other action planning initiatives and considering the nature of the action plan developed here and the complex physical, social and institutional setting of peri-urban Kolkata it was anticipated that implementation and adoption would only proceed if the proposed preliminary development activities showed promise.

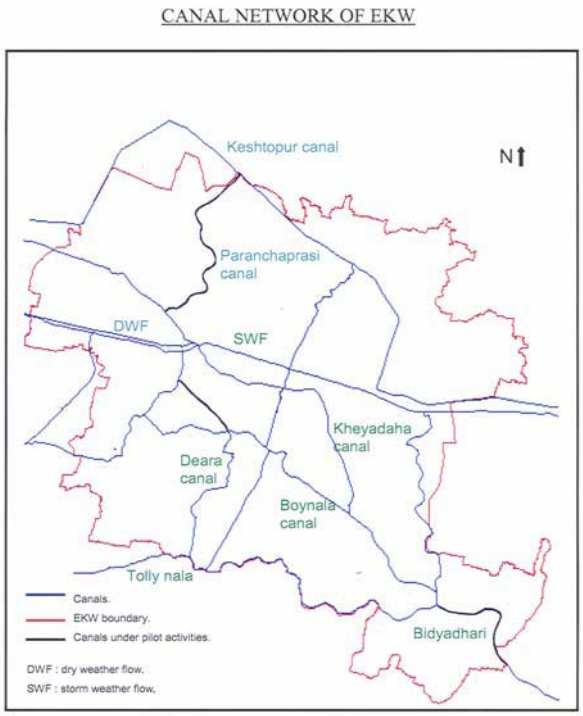


Figure 1. Canal network in the East Kolkata wetlands showing secondary canals assessed as preliminary development activities.

The initial selection of potential preliminary development activities was guided by some well defined criteria and it was proposed that the activity should: benefit several stakeholders, preferably from different user groups, simultaneously; be politically feasible, requiring permission from limited agencies; be technically and financially

feasible; not impact negatively on others. A problem common to most stakeholders in several of the regions was the need to coordinate and carry out the desiltation of the feeder canal supplying their farms. Consequently, preliminary canal desiltation activities were identified in 3 different regions; Paranchaprasi khal supplying fish farms in the northern half of the wetlands; Boynala connecting canals supplying fish farms in the south; Bidyadhari canal which once served rice and fish farms in the south-east (Figure 1). In each case a workshop was arranged with stakeholders in the region and discussions guided by the STEPS methodology (Appendix 1) undertaken to explore the technical, financial, institutional, environmental and sustainability issues and conditions and agreements required for implementation. The following sections outline the key findings from this process and subsequent analysis.

3.1. Paranchaprasi khal desiltation

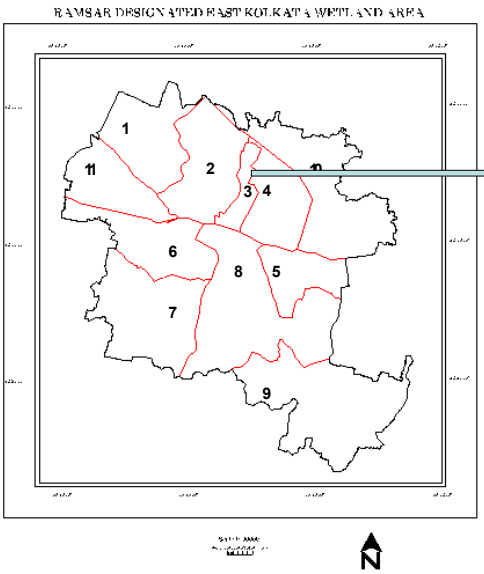
The workshop to discuss the initial stages of desilting the Paranchaprasi khal was conducted at the Khashmahal sporting club and was attended by 30-40 stakeholders; a more detailed report on the meeting is provided in Appendix 2.

3.1.1. Technical and financial considerations

- Estimates by the participants indicated that 10 fisheries covering an area of 1,000 acres, and the families that depend on them, would benefit from this work
- Conduct hydrological survey (possibly with support of DGPS from IESWM) to ensure canal configuration proposed and agreed in STEPS workshop is a viable proposition
- Verify design proposal to operate canal to promote sedimentation prior to entering the fishponds is compatible with anticipated flow rates, and estimate time before re-excavation is required (this should help guide the level of funds collected from the fisheries)

Consultations with local stakeholders ***Regions 3 & 4***

Locally-prioritised problems & solutions



Problems:

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3)Bidyadhari must be desilted for 7,8 & 9

- Verify that drainage arrangements serving the fisheries are sufficient to cope with additional water
- Approach potential sponsors of this activity to meet full / partial costs of the work (IESWM agreed to approach EKW Committee)
- Desiltation should be prior to the monsoon

3.1.2. Institutional considerations

- Get agreement from DoIW to retain/reduce money paid for irrigation system maintenance for use by fishermen (EKW Committee)
- Get agreement from DoIW that they are agreeable to proposal (IESWM to facilitate)
- Consultation with all fisheries affected to verify their agreement
- Agreement amongst the farmers on how to set up a joint fund to use for future canal maintenance
- Prepare and submit report on proposed activity to EKW Committee
- Seek agreement of Panchayat
- Make arrangements with wage labourers to desilt
- Get agreement with potential silt buyers

3.1.3. Social considerations

- Seek agreement of people living on/near embankments to relocate
- Make provisions for more employment
- Asses possible change in public health risks
- Assess impact on: poorer consumers; women; day labourers; people downstream; residents in Kolkata
- Assess impact on social capital of group formation

3.1.4. Environmental considerations

- Assess potential localised environmental impacts of desiltation
- Assess the requirements for disposing of silt potentially contaminated with metal with WBPCB
- Assess likely improvement in the environment downstream
- Assess possible changes to environmental & animal health risks

3.1.5. Sustainability considerations

- Agree on organisation and remit of 4 users groups with one representative from each fishery to coordinate management and maintenance of the respective canal
- Agree on composition and remit of higher level committee taking representatives from all fisheries supplied by the 4 canals to oversee all activities
- Seek agreement from EKW Management Committee on mechanism to achieve formal links between higher level fisheries committee and proposed EKW Management Board

3.1.6. Feasibility assessment

The feasibility of desilting the canal is dependent on achieving agreement concerning specific aspects from several agencies including the Panchayat, DoIW, farmers not represented at the meeting, and significantly people living on or near the canal embankment. The intention of the fish producers to retain the payment they are supposed to make to the DoIW for the wastewater they receive to pay for the future maintenance of the canal appears to be a possible area of conflict.[4] The possible need to relocate or resettle people living on or near the embankment also constitutes a potentially controversial issue.[5] Although not raised in the meeting, during subsequent discussions it was questioned whether special arrangements would be required to dispose of the silt from the canal if it were contaminated with heavy metals or chemicals; IESWM undertook to investigate what legislation is in place and what implications this may have. Several practical issues also presented themselves during the meeting, a proposal was put forward to re-engineer the canal in such a way as to promote the settlement of silt here, before it entered the fishponds, it was acknowledged that the canal would require more frequent desiltation but this was considered preferable to permitting silt to enter the ponds. Although the proposal received widespread support the feasibility and recurring cost associated with such an approach should be assessed in more detail. With an expected increase in the flow of wastewater down the canal following desiltation this also raises a question as to whether there is sufficient capacity downstream to drain away this excess water; altering the hydrology of this area, even restoring flow rates to what they were may have an impact on communities and user groups downstream and this should be assessed prior to implementation.[6] Another practical consideration is the need to conduct the desilting work prior to the monsoon; due to the timing of the STEPS activity no physical works will be possible until early next year, but this does provide an opportunity to ensure that all the issues raised are fully considered and addressed beforehand. Funding to implement the desiltation work is also required, as it would take the farmers several years to build up the necessary reserves.[7] Despite the attendance of three women at the STEPS workshop they were generally unwilling to discuss issues of importance to them in front of the male participants, some of whom were their employers. To ensure their voices were heard it was decided to conduct a separate workshop with women to discuss issues specific to the proposed desiltation work.[8]

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[4] A subsequent meeting arranged between the IESWM and DoIW clarified that the withholding of payment by the fish farmers for the sewage they receive (fixed at Rs 500 per acre for 6 months) has been ongoing for almost twenty years; a nominal amount of around Rs 5000 is collected annually. The DoIW indicated that there is little they can do in practice to persuade the farmers to pay.

[5] Discussion with a Panchayat member in region 4 suggested that the Panchayat could assist in relocating people from the canal embankment; resettlement of people from the larger canal embankments within the EKW under a ADB funded initiative has proved controversial and difficult, especially as ADB guidelines advocate resettlement within close proximity, but this is practically impossible in the EKW where development of new settlements is prohibited

[6] IESWM are currently conducting a hydrological survey of the entire EKW and the results from the work will be crucial in assessing the feasibility of the planned desiltation project and the likely impacts on downstream communities, users and environments

[7] During the government stakeholders workshop the Principal Secretary, DoE and leader ADB TA both mentioned that if suitable plan were forthcoming it may be possible to allocate some funds to support the desiltation of canals in the EKW. IESWM made an undertaking to investigate further these and other potential funding sources on behalf of the participants at the workshop.

[8] A focus group with women was undertaken in region 4 to discuss the proposed desiltation

3.2. Boynala connecting canals desiltation

The workshop to discuss the initial stages of desilting the Boynala connecting canals was conducted in Bajbarontala and was attended by 15 stakeholders. Originally the workshop was intended to focus on desilting the Boynala khal, but following an early project meeting work had already been initiated by the local stakeholders to desilt this canal. A more detailed report on the meeting is provided in Appendix 3.

3.2.1. Technical and financial considerations

- Desiltation will benefit areas of agricultural land and numerous fisheries
- A hydrological survey is required to establish the extent of the work required[9]
- During the discussion it was suggested that two branch canals should be desilted in conjunction with the proposed work
- The hydrological survey should cover the downstream system to ensure the drainage infrastructure is adequate
- The source of funds to conduct this work was not identified
- Desiltation should be prior to the monsoon

3.2.2. Institutional considerations

- Consent is required from the Panchayat
- Consent is required from cooperatives and others who manage other fishponds in the area
- Confirmation from DoIW that they are agreeable to proposal (IESWM to facilitate)[10]
- Ensure arrangements are made with wage labourers from outside EKW to desilt
- Get agreement on how to dispose of silt outside EKW

3.2.3. Social considerations

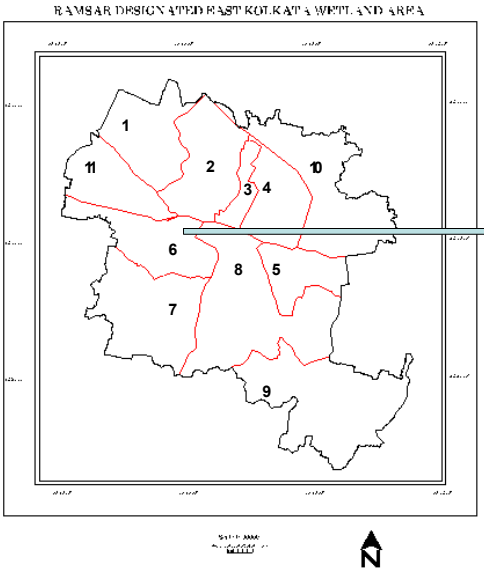
- The impact on local communities will be significant, higher rates of fish production will help safeguard employment in the EKW
- Possible impacts on women, vulnerable groups and communities downstream should be given consideration
- Health risks to workers, and possibly consumers, may change when more wastewater is used, measures should be taken to monitor this and act accordingly

[9] The coverage of the hydrological survey being conducted by IESWM will be modified to ensure it provides the information required prior to desilting; if feasible the canal design, that accommodates silt deposition, proposed by participants in the Paranchaprasi canal workshop may also be relevant

[10] Following discussion with the DoIW it appears consent from the DoIW is not necessary; written confirmation regarding the responsibilities of DoIW for canals in the EKW has been requested by IESWM on behalf of the participants and other stakeholders

Consultations with local stakeholders ***Region 6***

Locally-prioritised problems & solutions



Problems:

1.) *sewage quantity*
2.) siltation
3.) water quality / pollution
4.) infrastructure problems

Solutions:

1.) *desilt Chowbaga canal (Andanapur canal), Boynala khal*
2.) desilt branch canals (Khayer khal & Dongasara Noror khal)
3.) unblock 2 siphons near Lalkuthi

3.2.4. Environmental considerations

- Localised environmental impacts of desiltation will be minimised through removing the silt from the EKW
- Check that the contractor is responsible for making the appropriate arrangements for transporting and disposing of potentially contaminated silt with WBPCB

3.2.5. Sustainability considerations

- Agreement needs to be reached concerning the composition and function of a committee that was proposed to oversee the operation and maintenance of the canal
- Broad consensus that canal desiltation and maintenance should be paid for in proportion to the area served was reached, but a formal agreement should be made; it was envisaged that desiltation would be required again in 5 to 7 years

3.2.6. Feasibility assessment

Agreement is still required from other farm managers and cooperative leaders that were not represented at the meeting; consent for the proposed works from the Panchayat is also required. Both agreements should be possible at the local level without external facilitation. Written clarification is being sought by IESWM regarding the jurisdiction of the DoIW and whether their consent is required (Appendix 5). Formal agreement among all users is required regarding the collection of payments for the work. Information from the hydrological survey being conducted by IESWM should be useful in assessing the likely impact of the proposed desiltation work on communities and the environment downstream. Although not raised as an issue in the meeting, an assessment of settlements on or near the embankments could be undertaken in conjunction with the planned hydrological survey. A focus group

with women should also be undertaken prior to commencing work to verify that any potential negative impacts are fully assessed and appropriate action taken.

3.3. Desiltation of the southern Bidyadhari and associated branch canals

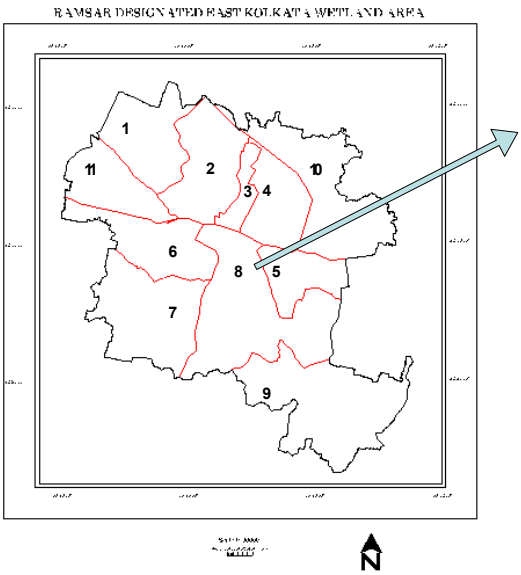
The workshop to discuss the initial stages of desilting the southern Bidyadhari and associated canals was conducted at Pratapnagar; a more detailed report on the meeting is provided in Appendix 4.

3.3.1. Technical and financial considerations

- Estimates suggested that farms covering over 1,000 acres and supporting several thousand livelihoods would benefit from this work
- A hydrological survey is required to establish the extent of the work required[11]
- During the discussion it was suggested that two branch canals and associated culverts should be renovated in conjunction with the proposed work
- The hydrological survey should cover the downstream system to ensure the drainage infrastructure is adequate
- Soil excavated from the canal will be sold to the new town developers or used to consolidate low-lying land nearby
- The source of funds to conduct this work was not identified

Consultations with local stakeholders ***Region 8***

Locally-prioritised problems & solutions



Problems:

1.) sewage quantity
2.) siltation
3) Water quality
4.) infrastructure (roads) for desilting

Solutions:

1). Desilt canal.
2). Proper monitoring of sluice gate.
3). Pump sewage from main canal.
4). Environment dept. should act'
5). Excavate a new canal.

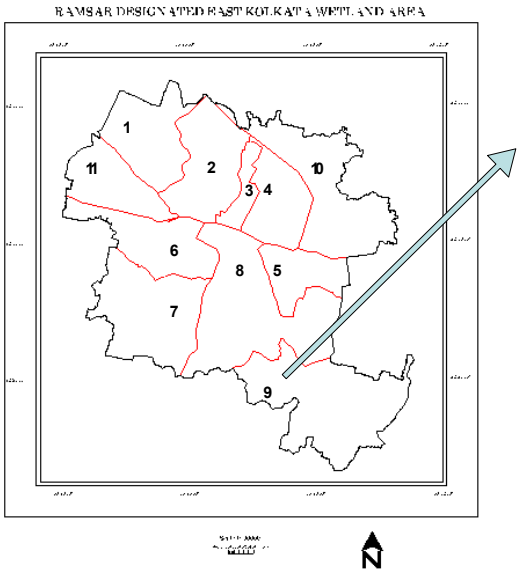
[11] The coverage of the hydrological survey being conducted by IESWM will be modified to ensure it provides the information required prior to desilting; if feasible the canal design, that accommodates silt deposition, proposed by participants in the Paranchaprasi canal workshop may also be relevant

3.3.2. Institutional considerations

- Consent and assistance is required from the Panchayat and other farmers not represented at the meeting
- Confirmation is required from DoIW that they are agreeable to the proposal (IESWM to facilitate)[12]

Consultations with local stakeholders ***Region 9***

Locally-prioritised problems & solutions



Problems:

1.) lack of irrigable water
2) siltation.(bidyadhari canal)
3) infrastructure
4) Sewage quality.

Solutions:

1.) "Link to channel sewage from Chowbaga to south?"

3.3.3. Social considerations

- The impact on local communities will be significant, higher rice and fish production will help enhance livelihoods in the southern EKW
- Possible impacts on women, vulnerable groups and communities downstream should be assessed
- Health risks to workers, and possibly consumers, may change when more wastewater is used, measures should be taken to monitor this and act accordingly

3.3.4. Environmental considerations

- Localised environmental impacts of desiltation will be minimised through removing the silt from the EKW; where local disposal is required it should be ensured that no water-bodies are affected
- Check that the contractor is responsible for making the appropriate arrangements for transporting and disposing of potentially contaminated silt with WBPCB

[12] Following discussion with the DoIW it appears consent from the DoIW is not necessary; written confirmation regarding the responsibilities of DoIW for canals in the EKW has been requested by IESWM on behalf of the participants and other stakeholders

3.3.5. Sustainability considerations

- Agreement needs to be reached concerning the composition and function of a committee that was proposed to oversee the operation and maintenance of the canal
- It was envisaged that desiltation would be required again in roughly 10 years; a mechanism is required to ensure that the users have access to sufficient financial reserves to ensure operation and maintenance in the future
- The need for greater awareness in the local community concerning the importance of maintaining the canal infrastructure to safeguard the wetlands was highlighted; IESWM undertook to arrange for local signboards to be erected to raise awareness[13]

3.3.6. Feasibility assessment

Consent is required from the local ruling party, Panchayat and other local stakeholders; these agreements will require a degree of negotiation but should be possible with limited external facilitation. As with the Paranchaprasi khal and Boynala connecting canal, written clarification is being sought by IESWM regarding the jurisdiction of the DoIW and whether their consent is required (Appendix 5). Agreement will also be required among all users regarding the formation of a users committee and basis and collection of payments for the work and future operation and maintenance. Information from the hydrological survey being conducted by IESWM should be useful in assessing the likely impact of the proposed desiltation work on communities and the environment downstream. Although not raised as an issue in the meeting, an assessment of settlements on or near the embankments should be undertaken in conjunction with the planned hydrological survey. Focus groups with women and vulnerable groups should also be undertaken prior to commencing work to verify that any potential negative impacts are fully assessed and appropriate action taken.

[13] In total 7 signboards will be erected throughout the EKW to raise awareness in the local communities as well as informing those from outside the wetlands of their importance and status, in particular land developers and speculators

4. Conclusion

During this work the aim was to allow everyone involved in sustaining the wetlands a voice in its future management through action planning, providing an opportunity for the Government, landowners, labourers and others to meet together and agree upon a set of actions that will benefit all concerned. This is not just be a list of hopes, but sets out clear steps by which these ideas can be implemented. Previous project findings resulted in the action planning process focusing on water management in the East Kolkata Wetlands, a key constraint affecting the majority of poor people whose livelihoods depend either directly or indirectly on horticulture, paddy farming or aquaculture. In the future it is hoped knowledge of action planning from the East Kolkata Wetlands will be useful in addressing broader issues such as livelihoods diversification and service provision here and in other peri-urban and wetland areas.

Appendix 1. STEPS workshop methodology and guidance

Arrange a meeting at a convenient and neutral place for all with a stake in the proposed activity.

Explain the objectives of the proposed activity; that the outcomes of this activity should demonstrate to Government agencies and potential sponsors that EKW stakeholder groups are committed to, and active in working together to solve problems; and that by starting with 'feasible' activities there is more chance of demonstrating quick and beneficial progress.

Explain the more detailed objectives of the task, thus:

- test the feasibility of proposed pilot activities (using STEPS)
- develop a better knowledge and data base to assist implementation
- reach agreement on what happens next (when, how, why, who is responsible) and how to monitor progress and revise the plan as required
- explain the role of the research team: facilitation / documenting

Request the stakeholder groups to introduce themselves and state their interest in the proposed pilot activity, also identify missing groups. Then request the stakeholders to form groups based on the region(s) in which they have a stake and then their interest in the pilot activity. During the group discussion make sure to get information on:

- past planning initiatives on this topic (especially failures and conflicts)
- existing plans or ongoing work regarding this topic
- associated data that could be used to support implementation

Remember to keep the discussion focused on the pilot activity and related matters.

Then, mapping in groups, ask participants to:

- draw an outline map showing where the planned work is to be carried out, and provide notes to annotate
- include physical change required & technical/financial inputs needed
- identify institutions and social groups that need to be involved or consulted or will be positively or negatively impacted, explore why and where to locate them
- specify the location of 'biodiversity' rich areas that should be considered or monitored during implementation and other potential positive and negative environmental impacts as a direct or indirect result of implementation
- identify the extent of threats to continued usefulness and how to overcome

Make sure each group gets a chance to present a summary of their deliberations or using the map, provide feedback to the other groups on their behalf. Only permit others to make comments at the end of the group feedback session. Note any

discussions and try to resolve any differences. Highlight areas of agreement or breakthroughs. Note new issues arising that should be added to the STEPS analysis.

Participants should agree what needs to be done urgently, is needed in the short-term, or required long-term (note any reasoning given and highlight potential bottlenecks); decide how to do these things, giving a broad perspective; agree about who will take responsibility for each task; agree on when these things should be completed; agree how to monitor their progress and revise the plan as required.

Following this stage agreement should be reached with the participants about what the project team should do to help facilitate implementation and how we will document the process.

Appendix 2. STEPS workshop report for Paranchaprasi khal desiltation

Date: 07.06.05
Place: Khashmahal sporting club.
GP:
Pilot Activity: Desiltation of Paranchaprasi / Nerini canal.

Stakeholders present and attendance: there were nearly 35 people present in the workshop. Three women were also present. Most of the people who were present were from the fishing community.

Key representatives: Mr S D Ghosh was a key representative; he is the leaseholder of a big fishery.

Discussion:

- promoting a pilot activity in zone 2
- selecting a particular canal for desiltation
- agreement about its 'would be' condition after desiltation
- technical details of desiltation
- possible outcome after desiltation

The area: The Paranchaprasi khal flows north from the main DWF canal. This canal connects the DWF to the Keshtopur canal. On both sides of this canal there are waterbodies, with larger fishponds occurring to the east. Wastewater from the canal is used in fishponds to both the east and west.

Major issues: Roughly 2,000 acres around the Paranchaprasi and Nerini canals suffer due to a lack of wastewater. The Nerini canal has not functioned for several years. It is almost entirely silted up and no action has been taken to renovate it. The bed of the Paranchaprasi khal has also risen due to siltation and as a consequence total fish production in this area has apparently decreased over recent years.

Steps taken so far: The Panchayat have been considering desiltation of the Paranchaprasi khal for sometime but no action has been taken. The stakeholders thought both the Paranchaprasi as well as Nerini canal need to be desilted simultaneously to get better result for the whole area.

Pilot activity: According to participants, of the three pilot activities described to them, desiltation of Paranchaprasi and Nerini canals should be given preference as they serve a huge area of the East Kolkata Wetlands.

Technical details: A 5km long section of the Paranchaprasi canal needs to be desilted so that it is 1.7m deep and 4m wide. According to local stakeholders no external technical expertise is needed for desiltation of the canal. However, outside labours should be involved in the desiltation work. Participants also suggested using the standard payment mode used by the Irrigation Department, where the rate is calculated per acre of ponds served.

Economic aspect: The DoIW and DoF are entitled to take a recurring fee from the fish farmers every six months. It was collected until a few years ago, but now people don't pay it as they feel they don't get any service from these departments. After they stopped paying the Departments no action was taken against them. If desiltation is done properly the local stakeholder would be willing to pay these fees again.

Social aspect: Several water bodies used for fish culture including Natar bheri, Sardar bheri, Sahebmara bheri, Chaker bheri, Barogop, Chhotogop, Narkeltala bheri, Patrabad 1, Patrabad 2, Patrabad 3 and Diller bheri, with a total area of roughly 950 acres will benefit from desiltation of Paranchaprasi and Nerini canals. Around 800 acres will benefit greatly as currently they get very little sewage. Improved sewage availability should enhance production significantly. The problem regarding the coordination of inlet and outlet operation will also be solved following desiltation. The local people stated that they are ready to take care of the canal after desiltation and have come up with the idea of a canal maintenance committee which they will form. Some families will need to be resettled to allow for canal desiltation work but according to participants this can be done easily.

Appendix 3. STEPS workshop report on desilting Boynala connecting canals

Date: 15.06.05
Place: Bajbarontala
GP: Kheyadaha 1
Pilot Activity: desiltation of Boynala feeder canals
Stakeholders present and attendance: there were nearly 15 people present in the workshop, five of whom were women. Most of the people who were present were from the fishing community.

Key representatives: Mr Badan Mandal was the key representative as he is the leaseholder of a big fishery.

Discussion:

- promoting a pilot activity in zone 7 & 8
- selecting a particular canal for desiltation
- agreement about its operation and maintenance after desiltation
- technical details of desiltation
- possible outcome after desiltation

Area: The area lies to the south of the DWF canal; the Boynala khal supplies wastewater to a large area of agricultural land and several fishponds in this region, however, water from the DWF must first pass through a feeder or connecting canal prior to reaching the Boynala khal; agriculture and fish farming constitute two of the main economic activities in this area.

Major issues: Lack of sewage is the main problem in this region. The reason behind inadequate sewage supply is siltation in the Boynala khal and its two feeder canals; fishponds in the area also suffer from siltation. The uneven slope of the area is also responsible for lack of sewage supply in agricultural fields, obstructing the flow of water into the fields under gravity. Lift irrigation was put forward as a potential solution.

Steps taken so far: The Panchayat Samiti of Kheyadaha has taken the initiative of desilting the Boynala khal. In December 2004 when the research team attended the regional workshops the panchayat did not have any plans to desilt the canal as they lacked funds. Desiltation work had been ongoing for two months and the soil removed during desiltation had been dumped beside the embankment.

Pilot activity: Desiltation of Boynala khal alone will not alleviate the problem of wastewater supply in the region. It will also be necessary to desilt the feeder canals which connect the Boynala khal to the DWF channel. This feeder canal serves a huge area of ponds managed for wastewater aquaculture. There are two branch canals from this feeder canal which supply sewage to fishponds which are distant from the main canal. There are two culverts joining the branch canals to the feeder canal, but these culverts need upgrading to ensure a better flow of sewage to the fishponds.

Technical details: The feeder canal which connects the DWF to the Boynala khal is approximately 3 km in length, 25" wide and 20" deep. Considering the two branch canals, one is approximately 1km in length, 15" wide and 10"-12" deep and the other is approximately 500m in length, 5" wide and 8" deep. There is a culvert connecting the feeder canal and branch canal consisting of a cement pipe 4" diameter; this pipe is not sufficient for the inflow of sewage required to supply the fishponds. The pipe should be replaced with another which needs to be 8" in diameter and 30" in length. These technical details were provided by the stakeholders. Mr. Badan Mandal lead the discussion but all the other participants in the workshop agreed with him. Labourers needed for desiltation will come from outside the wetland area and there is a fixed wage rate for this kind of work. Sometimes it is done on the basis of a daily wage, and sometimes based on the area. While discussing this issue almost all the participants agreed to fund the desiltation work by paying on the basis of area served. According to the participants all the canals in EKW are under the Irrigation Department, Govt of West Bengal and before starting any desiltation work their permission is necessary.

Social aspect: participants began by nothing that only if all 3 canals are desilted will the area be truly benefited. Desiltation of Boynala khal (which is ongoing) will not be fully effective unless and until these three branch canals are desilted. Before work can commence consent from the local stakeholders is necessary. There is a cooperative named "Bajbarontala Matsya Samabay Samiti" which cultivates fish in some big waterbodies. The cooperative take sewage from Boynala feeder canal and two other branch canals and hence desiltation of Boynala feeder canal will help the cooperative and a large number of its members and their families. Some individually owned fisheries will also be benefited, namely: 4 no. Chaser Khal, Ajoy Sankar Ray fishery, Tapan Ganguly's bheri, Banamali, Bimal Kar's bheri, Pulin Naskar, Nira Mondal and Dulu Naskar bheris. Taken together the area of bheris and agricultural land that would be benefited from the proposed work extends to 1000 bighas. At the moment, as sewage is scarce, farmers are unable to cultivate crops throughout the year. When the canals are desilted this problem will be solved and the fish farmers will be able to experiment with the culture of some new carp species.

Environmental aspect: The proposed desiltation work will not affect the environment; mud arising from the desiltation work will be used to build embankment. Where a significant amount of silt is to be generated it will not be possible to dispose of this locally and prior to the start of desiltation work arrangements will be made to dispose of the silt elsewhere. Following desiltation, the flow of sewage will increase and this will be used by farmers for both agriculture and aquaculture. This increased use by farmers means more sewage will be treated in the wetlands, thus contributing to improved environmental protection downstream of Kolkata.

Appendix 4. STEPS workshop report on desilting the southern Bidyadhari and associated branch canals

Date: 29.06.05
Place: Pratapnagar GP.
GP: Pratapnagar
Pilot Activity: Desiltation of part of the Bidyadhari canal and two feeder canals.
Stakeholders present and attendance: There were nearly 35 people present in the workshop; two women were present. Most of the people present were from the fishing community.

Key representatives: Mr. Bishwanath Baidya was the key representative as he is the Panchayat Pradhan of Pratapnagar Gram Panchayat.

Discussion:

- promoting a pilot activity in zone 9,
- selecting a particular canal for desiltation,
- agreement about its "would be" condition after desiltation,
- technical details of desiltation,
- possible outcome after desiltation.

Area: The Bidyadhari canal runs through the south-eastern part of the EKW area. Pratapnagar is situated at the extreme southeast part of the EKW; two other mouzas namely Garal and Samukpota use water from the Bidyadhari canal for productive activities. There are also a few feeder canals in this region that supply sewage from the Bidyadhari to village ponds and agricultural fields in the area. This area is predominantly under agricultural production but some fish culture is undertaken.

Major issues: This general area is suffering from a lack of sewage water, and consequently the entire agricultural production is affected. An important reason for the limited sewage availability is the poor condition of the culverts in the canals.

Steps taken so far: No desiltation work has been done over the past few years. It is believed that the Kolkata Municipal Corporation has a plan to desilt the Bidyadhari desiltation, but so far desiltation has not started. The local Panchayat is very conscious of the siltation problem in the canals and is considering desiltation work in the near future. However, due to a lack of funds this work has been delayed.

Pilot activity: Participants considered the desiltation of a part of the Bidyadhari canal and two feeder canals and rehabilitation of associated culverts as a useful pilot activity for the region as a whole. However, the work would primarily benefit three mouzas: Pratapnagar, Garal, and Samukpota. The potential of this activity was highlighted during household surveys and at the regional workshop.

Technical details: This canal requires desiltation and there is a need to restore some culverts. Approximately 5km of the Bidyadhari which runs from Samukpota to Sangur needs to be desilted, maintaining a depth of 20" and width of 30". There are

several pipes which act as culverts on the main canal as well as feeder canals. The pipes are generally 2' to 3' in diameter and 20"to 25" in length. The existing pipes should be replaced with bigger pipes. The feeder canals should be desilted in such a way so that the depth and breadth can be increased. Following desiltation the resulting mud should be disposed of properly. It was emphasised that the Bidyadhari is a big canal and only a part of it which runs from Samukpota to Sangur is being proposed under this pilot activity. Furthermore, there are many branch canals connected to the Bidyadhari but only two near Pratapnagar are being considered under this pilot activity.

Environmental aspect: This desiltation work should not negatively affect the environment. Mud from the desiltation work can be used to build embankments and the remaining silt can be deposited outside of the EKW where it can be used as fill or to improve the condition of marginal agricultural land. However, before desiltation work starts appropriate arrangements are required. If desiltation is done properly local stakeholder will be able to improve their productive activities and as a result that will ensure the betterment of livelihood. It was noted that only part of the main canal would be desilted under the proposed pilot activity and it remains unclear what benefit this might have on some user groups. It was suggested that after desiltation, other parts of the canal which are not desilted, but which were getting some sewage, may face difficulty.

Social aspect: It was noted that three mouzas namely Samukpota, Garal and Pratapnagar dominated by agriculture would benefit from the pilot activity. The area currently suffers from a scarcity of irrigation water; it is only possible to cultivate one crop a year. Shallow irrigation is not possible as this is an arsenic affected area. Consequently, the only source of water in this area is canal water. If the feeder canals as well as main canal function properly then the whole area will have good crops the year, improving incomes, generating employment and enhancing livelihoods.