

Comprehensive Assessment Program
International Water Management Institute
(IWMI)

Urban Wastewater
Livelihoods, Health and Environmental Impacts in India

Inception Report
(Draft Version)

by



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Urban Wastewater
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1 THE PROJECT

Since the late twentieth century, management of urban wastewater poses a serious challenge to the planners in the context of rapid urbanization in less developed countries. The large quantities of water that flows out as waste from any urban settlement pose further challenges in the context of the onset of a global water shortage. In addition, third world cities, beset with problems of abject poverty, also exhibit a novel phenomenon whereby a large population ekes out a livelihood from the urban wastewater. This provides much needed employment generation and economic empowerment. As a side effect, such livelihood generation, in close proximity of untreated sewage, gives rise to additional problems of health. Finally, the overall impact of this activity on the local environment also poses further challenges.

The collaborative project **Urban Wastewater: Livelihoods, Environment and Health Impacts in India** is led by Winrock International India (WII) with support from International Water Management Institute (IWMI). Case studies under this project are being conducted in four cities in India—Delhi, Ahmedabad, Kanpur and Kolkata.

2 OBJECTIVES

The project activities began on January 1, 2004 while the contract was signed on February 16, 2004. The completion of the project is scheduled on December 31, 2004.

The goal of the project is food security, sustainable livelihoods and poverty alleviation by mitigating the negative impacts of wastewater use in agriculture. Specifically, the objectives of the project are:

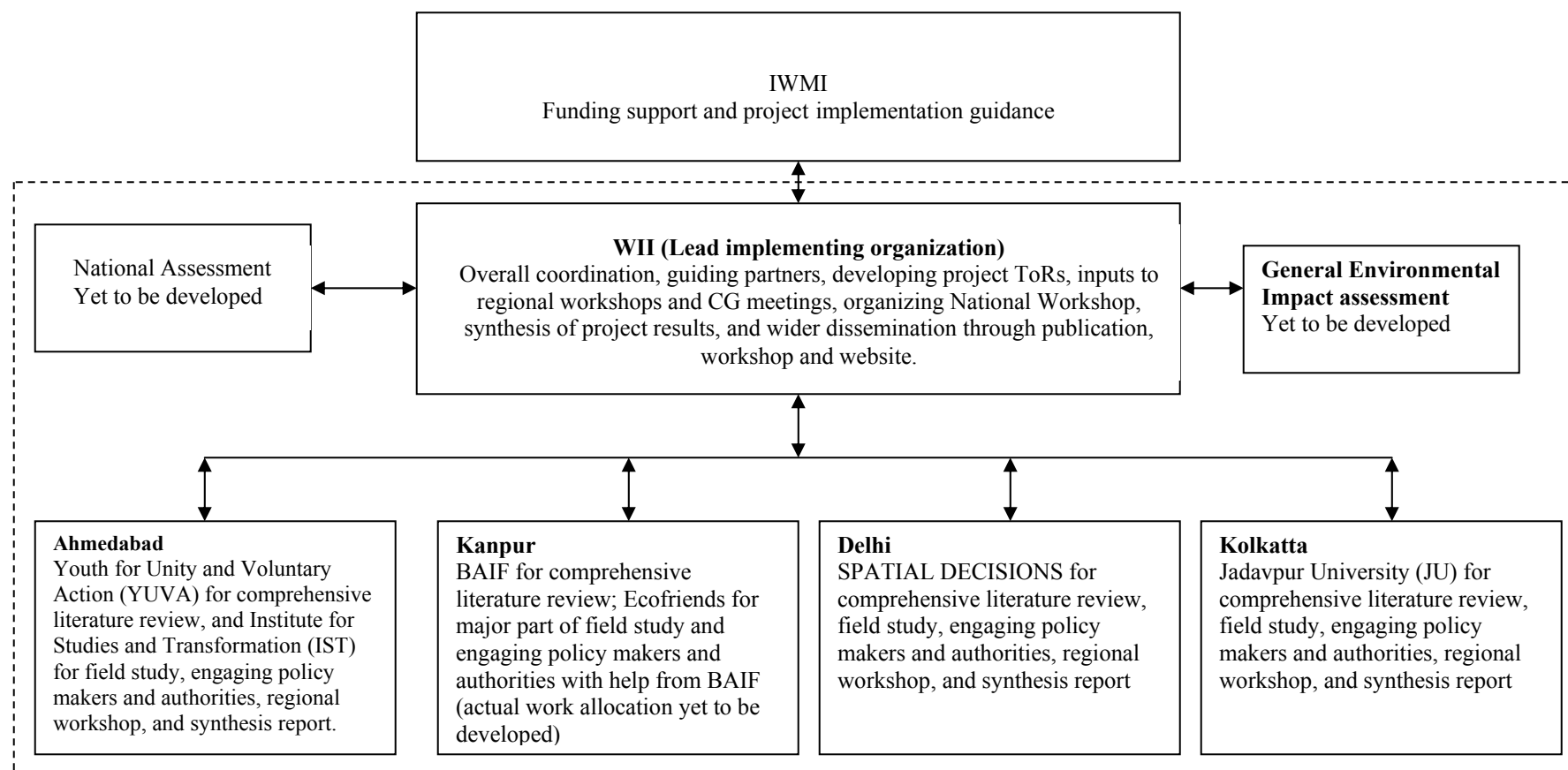
- Contribute to the existing research/knowledge on urban wastewater use for agriculture in India by: (i) undertaking primary research on current practices, costs and benefits of wastewater use in agriculture vis-à-vis social, economic, health and environmental parameters; (ii) identifying best practices for mitigation of negative impacts (iii) assessing the replicability of potential cost-effective technologies in different agro-climatic and socio cultural set-ups (iv) developing the methodology for and carrying out nationwide assessments based on key cities, of the extents and significance of wastewater use in relation to volumes of wastewater generated, volumes used, areas irrigated, families benefited, crops grown, and its impact on the national or local economy.
- Sensitization of stakeholders including policy makers/ officials on findings on negative impacts of urban wastewater use and possible ways of mitigating these to help water users, development/research organizations, governments, local level partners make better investments in water management for agricultural development. The purpose is to facilitate human capacity building to ensure better management of urban wastewater.

In order to achieve the above objectives, the project is structured around the following:

- **Case studies:** In-depth case studies conducted in the above four locations in collaboration with local institutions with focus on (a) quantifying and documenting the impacts and current dynamics of wastewater use and (b) documenting cost effective interventions for wastewater use in agriculture. For each, the current agricultural practices, poverty reduction and livelihood impacts, health risks, environmental impacts, and mitigation strategies will be studied.
- **Consultations with local policy makers/ planning authorities:** In each study site, the research will identify various stakeholders in urban wastewater, to get information from and to share the research findings with, with the view to engage them in the processes and uptake of results of the project.
- **Synthesis document:** The information collected will be synthesized to assess potential health and environmental risk abatement strategies; policy recommendations on urban wastewater use in agriculture, based on a review of local policies and regulations (national level, city level) and identification of barriers for more effective policy development;
- **National assessment:** Using secondary data on both--quantity and quality, of urban wastewater generated and used, and primary data through case studies.

3 PROJECT PARTNERS

A consortium of organizations led by WII is implementing the project in four cities--Ahmedabad, Delhi, Kanpur and Kolkatta. Apart from the organizations mentioned, services of 4-5 accredited laboratories for conducting testing of quality of wastewater, groundwater, milk, fruits and vegetables, crops and soil will be availed.



4 PROJECT IMPLEMENTATION

Implementation of the project is being undertaken through activities organized in twelve activity groupings. These activities are being, and will continue to be, implemented concurrently, as described in Section 6. The activities are grouped as:

- Activity 1: Project planning and inception
- Activity 2: Comprehensive Literature review for Ahmedabad case
- Activity 3: Field study, dissemination and engaging local policy makers and authorities for Ahmedabad case.
- Activity 4: Comprehensive Literature review for Kanpur case
- Activity 5: Field study, dissemination and engaging local policy makers and authorities for Kanpur case.
- Activity 6: Comprehensive Literature review, field study, dissemination and engaging local policy makers and authorities for Delhi case.
- Activity 7: Comprehensive Literature review, field study, dissemination and engaging local policy makers and authorities for Kolkatta case.
- Activity 8: National Assessment of urban wastewater use in India.
- Activity 9: Preparation of mid-term progress report for submission to IWMI.
- Activity 10: General Environmental Impact Assessment in the study sites.
- Activity 11: Wide dissemination of project results widely through publications, national workshop and the web.
- Activity 12: Preparation of final project report for submission to IWMI.

Work has been initiated on Activities 1-8 in the planning phase of the project. The project outputs can be divided into two categories:

1. Products including documentation and publication of select documents; and,
2. Processes— awareness creation and policy influencing.

These outputs are described in the following section.

4.1 **Outputs–Products**

A range of products is planned during course of the project.

This inception report provides a product under **Activity 1** as part of the reporting to IWMI. It presents review of activities undertaken in planning phase, raises project implementation issues and presents a detail work plan.

Activities 2 and 4, and part outputs of **Activities 6 and 7**, provide for four products—one on each case site, presenting the comprehensive review of existing literature. It will highlight findings from the existing research and draws a cross-comparison from literature on three key impact themes—livelihoods, environmental and health. In the

subsequent sections, it presents existing gaps and proposes research needs in the above themes.

Four case study reports, one each as a result of **Activities 3, 5, 6 and 7**, will synthesise the findings on the three key impact themes. It will also include policy analysis vis-à-vis the themes. Additionally, there will be two outputs of **Activity 5** (Kanpur case):

- i. A dissemination leaflet/brochure/flier on *affordable and locally appropriate mitigating measures to address impacts of wastewater on communities*; and,
- ii. A *process evaluation document*, especially describing the effectiveness of CG meetings' process and from their experience of facilitating the affected community to act as pressure group for policy change and participatory monitoring of water quality.

The National Assessment will report on the extent and significance of urban wastewater use, impacts and policies in India and will be produced as a result of **Activity 8**. It will be based on: secondary data on quantities of urban wastewater generated, nature of treatment; and, primary data generated through surveys conducted in case sites.

The output of **Activity 10** will be a report discussing the status of key ecological indicators in the four case sites. This report will present the current state of ecological degradation in the case sites and a (qualitative) long-term forecast of ecological degradation in these sites by taking into account the current rate of growth of wastewater generation and disposal. It will also briefly discuss the possibility of mitigating the incremental adverse ecological impacts in the long-term in the existing policy scenario.

The products of **Activities 9 and 12** will be part of the reporting requirement to IWMI. A peer-reviewed document synthesizing the project results will be one of the outputs of **Activity 11**.

4.2 Outputs–Processes

The processes initiated and promoted in this project offer an excellent opportunity for awareness creation and influencing policies on urban wastewater management for agriculture. Though the project is only of a one-year duration, it will set directions for influencing policies by catalyzing informed debate through generating information and promoting *multi-stakeholder platforms*. **Activities 3, 5, 6, 7 and 11** provide for *consultative group* meetings, one-to-one interactions of partners with policy makers and authorities, regional and national workshops for facilitating such processes.

5 THE PLANNING PHASE (TILL APRIL 2004)

The objective of planning phase was to develop more clarity on approach and methodology for implementing this collaborative project. The following table gives details of activities undertaken in this phase.

Sr.No.	Date(s)	Activity
1	January 1-15, 2004	Initial communications with project partners
2	January 6-8, 2004	Initial visit to Kanpur field project area and meetings with BAIF (for discussing ToR), Kanpur Jal Sansthan, Kanpur Jal Nigam and Ganga Action Plan
3	January 15, 2004	Project planning meeting of WII staff involved in the project
4	February 1-4, 2004	Initial visit to Ahmedabad field project area and meetings with IST for discussing ToR
5	February 17, 2004	Discussions on Urban Wastewater project of WII with Dr. Christopher Scot and Dr. Stephanie Buechler of IWMI in IWMI-TATA Annual Partner's meet.
6	February 20, 2004	Meetings with IST and Environmental Planning Collaborative (EPC), Ahmedabad
7	February 21-22, 2004	Field visit and meetings with JU, Kolkatta for discussing ToR.
8	March 3-4, 2004	Meeting with BAIF for discussing specific ToR on Literature review. Meeting with Ecofriends—another NGO, for exploring partnership and discussing ToR.
9	March 15, 2004	Meeting with Spatial Decisions for exploring partnership and discussing ToR for Delhi case.
10	April 2, 2004	Meeting with Spatial Decisions
11	April 29, 2004	Meeting with Spatial Decisions

The other activities include: finalising ToRs with all the six partners mentioned in Section 3 (with detail plan of activities); providing guidance to partners; commenting on draft literature review report submitted by BAIF; and, collecting literature for National Assessment.

On constitution of the Consultative Group (CG) in each of the partners' location for engaging policy makers and authorities, there was a mixed response from WII's project partners. The approach may not work in all the case sites. In places where it may not work, one-to-one interactions on a continual basis with policy makers and authorities regarding the project developments, seems to be a more effective option. Therefore, the CG approach will be implemented in Delhi and Kanpur case sites only, while in the other two locations—Ahmedabad and Kolkatta, other forms (such as mentioned above) of engaging the policy makers will be explored.

6 WORKPLAN

Based on discussions with the partners and other organizations/ individuals, and from preliminary review of existing literature, it is found that there is good literature available on environmental and health impacts of urban wastewater use in the project's four case sites, and hence primary research may not be required on these two themes. This will need to be cross-checked from the final literature review documents, which are in a draft form for Kanpur and Delhi (undergoing commenting and revisions), while for Ahmedabad and Kolkatta, it will be ready by end of May 04. This is very critical for apportioning of resources—funds and time, between field surveys and promoting processes (that create awareness and influence policies). Therefore, for Kanpur and Delhi, a better implementation strategy will be to devote more resources for promoting

processes while having some minimal allocation for field surveys for assessing livelihoods impacts.

The work plan for each of the case sites followed by a comprehensive work plan for the project is presented in the following sections.

6.1 Ahmedabad

Part I: Comprehensive literature review (Activity 2) by YUVA, Mumbai

The task will be completed in 40-days beginning from May 1, 2004 to June 10, 2004. Out of these 10 days (20 person days) will be spent on field and 25 days will be spent on the non-field component. The work plan details are given below.

a) Field Component

Data Collection in Ahmedabad:	7 days
Data Collection in nearby areas:	3 days

b) Non-Field Component

Literature review/reading	13 days
Liaison (with organizations/individuals working on similar issues)	4 days
Data analysis and interpretation	10 days
Reporting and Documentation	10 days

c) Reporting to WII

Submission of the draft report	May 31, 2004
Submission of the final report	June 10, 2004
(Incorporating the suggestions/changes)	

Part II: Field study, dissemination and engaging local policy makers and authorities for Ahmedabad case (Activity 3) by IST

Sr.No	Activity	Time Frame
1	Personal contact with Consultative Group (CG) members for meeting & meeting arrangements. Field trip, pre-WII visit. Collection of data on: <ul style="list-style-type: none"> • Primary data on panchayat villages along both banks of the Sabarmati River • Regulations of GPCB and WSSB • Inflow of water after Vaasna barrage & outflow from Ahmedabad • Wastewater inlet points into the Sabarmati in Ahmedabad 	February 2004

2	<p>Contact government/government certified laboratories. Literature collection. 5 village meetings for discussions prior to survey instrument finalisation (villages: Fatehwadi, Vautha, Gyaspur, Rasikpura, Rinza- taken from different talukas) Collection of samples:</p> <ul style="list-style-type: none"> • Vataman: Sabarmati water • Vautha: Sabarmati+Vatrak - outflow Panchayat borewell • Sahij: Sabarmati water Soil Standing wheat sample • Gyaspur: Sabarmati water Panchayat borewell Soil Milk Vegetables • Vaasna Barrage: Sabarmati water AEC: Discharge water • Hansol: Sabarmati (flowing) • Khambat: Sabarmati estuary <p>Tag, register and send samples for analysis. Keep in touch with CG members.</p>	March 2004
3	<p>Prepare and share draft survey instrument and finalize to include:</p> <ul style="list-style-type: none"> • Health (human and cattle) related to water-borne diseases. • Livelihood - changes in crop patterns, particularly scale, chemical fertilizers used, migration due to degradation of land and water source. • Land tenure arrangements. <p>Finalize list of villages to be surveyed. Compile data on analysis received - organic and inorganic. Keep in touch with CG members.</p>	April 2004
4	<p>Conduct detailed survey in selected villages. Tabulate data received.</p>	June-July 2004
5	<p>Synthesise: Socio-economic data Analysis</p>	July-August 2004
6	<p>Draft case report for submission to WII Regional Dissemination workshop</p>	September-October 2004
7	<p>Contribute to WII's project synthesis document and National Workshop</p>	October-November 2004

The detailed field survey and synthesis report for the Ahmedabad site are planned during May-August 2004. The design of field surveys—relative emphasis on environmental, health and livelihoods themes, will be arrived at through a meeting between WII, IST and YUVA in early June 2004, based on findings of literature review report prepared by YUVA, Mumbai.

6.2 Kanpur

Part I: Comprehensive literature review (Activity 4) by BAIF

BAIF has prepared the draft report and submitted to WII, which has been commented upon and sent back to BAIF for revision. The same is also shared with Ecofriends.

Part II: Field study, dissemination and engaging local policy makers and authorities for Kanpur case (Activity 5) by Ecofriends

The plan of activities being implemented by Ecofriends is:

Sr.No.	Activity	Timeframe
1	Contribute to preparation of project inception report Assist BAIF with comprehensive literature review through sharing reports and other secondary material relevant to the project	March –April 2004
2	Organise minimum five CG meetings	April-September 2004
3	Enhance awareness of the affected due to wastewater use, directly or indirectly, and facilitate the affected in working as a “pressure group” for policy change and participatory monitoring of water quality etc.	April – September 2004
4	Undertake agreed components of research on impacts of urban wastewater use, including designing questionnaire/ checklists etc. for the same, from the research gaps identified through comprehensive literature review conducted by BAIF	May-July 2004
5	Prepare (in electronic version only) dissemination material on affordable and locally appropriate mitigating measures to address impacts of wastewater on community (printed by WII)	July 2004
6	Prepare a <i>process evaluation documentation</i> , especially of 2 & 3 above	September 2004
7	Organise one regional level dissemination workshop	October 2004
8	Prepare a project document synthesizing key results, learning and experiences from Kanpur	October 2004
9	Contribute to project-ending National Dissemination Workshop	November 2004

In this site also, the details of field surveys will be finalized in a meeting of WII, Ecofriends and BAIF in May 2004. The field surveys and synthesis report are scheduled for completion by August 2004.

6.3 Delhi

Comprehensive Literature review, field study, dissemination, and engaging local policy makers and authorities for Delhi case (Activity 6) by Spatial Decisions.

Sr.No.	Activity	Timeframe
1	Literature Review	March-May 2004
2	Field Reconnaissance	First half of April, May and June 2004
3	Consultative Process	April-June 2004
4	Documentation & Report Writing	April-July 2004
5	Regional Workshop and Dissemination Efforts	August-October 2004

Reporting to WII

- Interim Report: April 2004
- Draft Report: May 2004
- Pre-final Report: June 2004
- Final Report: July 2004
- Copies of literature collected: May 2004 and supplementary by July 2004
- Contribute to project-ending National Dissemination Workshop (November 2004).

6.4 Kolkatta

Comprehensive Literature review, field study, dissemination, and engaging local policy makers and authorities for Kolkatta case (Activity 7) by JU.

I. Project Planning (February to April 2004)

- Constituting local Consultative Group (of policy makers, planning authorities, government and non-government agencies, primary users) in Kolkatta;
- Organize meeting of CG for Kolkata in February 2004;
- Design survey instruments for information collection from relevant CG members; and,
- Contribute to preparation of inception report.

II. Field study in Kolkata (May to September 2004)

- Conduct literature review
- Prepare and present detailed map of the study area.
- Undertake field studies to assess social (incl. health and livelihood) impacts of wastewater use, and institutional research (by use of participatory techniques, key informants, structured interviews, focus group discussions, institutional and stakeholder analysis, as appropriate);
- Assess economic impacts through field studies;
- Organize for scientific assessment of environmental impacts and toxicity involving collection of samples of groundwater, surface water, soil (NPK and metals),

agriculture and vegetable produce and fish by involving Agriculture Universities/
Relevant testing laboratories;

- Assess innovative approach to minimizing adverse impacts of urban wastewater use in Kolkata including innovative farming practices; and,
- Synthesize the findings in a case study report.

III. Dissemination and policy influencing (October-December 2004)

- Facilitate engagement of CG in all the processes of the project—planning, implementation, monitoring and uptake of project findings;
- Conduct dissemination workshop in Kolkata in October 2004 involving local stakeholders; and,
- Contribute to project-ending National Dissemination Workshop (November 2004).

Reporting to WII

- Submission of mid-term progress report by August 30, 2004
- Submission of case study synthesis report by September 30, 2004
- Submission of project report by November 30, 2004

6.5 Revised Project Workplan

Sr.No.	Activity	Year 2004											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Activity 1 (Planning phase)												
2	Activity 2 (Comprehensive Literature review for Ahmedabad case)												
3	Activity 3 (Field study, dissemination and engaging local policy makers and authorities for Ahmedabad case)												
4	Activity 4 (Comprehensive Literature review for Kanpur case)												
5	Activity 5 (Field study, dissemination and engaging local policy makers and authorities for Kanpur case)												
6	Activity 6 (Comprehensive Literature review, field study, dissemination and engaging local policy makers and authorities for Delhi case)												
7	Activity 7 (Comprehensive Literature review, field study, dissemination and engaging local policy makers and authorities for Kolkatta case)												
8	Activity 8 (National Assessment of urban wastewater use in India)												
9	Activity 9 (Preparation of mid-term progress report for submission to IWMI)												
10	Activity 10 (General Environmental Impact Assessment in the cases)												
	a) Starting and facilitating an e-group for brainstorming on key indicators and identifying institutions/ individuals												
	b) Impact assessment work by selected partner(s)												
11	Activity 11 (Dissemination of project results widely through publication, national workshop and web)												
	a) Peer reviewed document												
	b) Publication												
	c) National Workshop											(1)	
	d) Web dissemination												
12	Activity 12 (Preparation of final project progress report for submission to IWMI)												