Scaling Up Wisewater Management in Marginalized Communities in Madhya Pradesh: Recommendations for Success

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In collaboration with Madhya Pradesh Watershed Management Development Association
Disclaimer

The views expressed in this case study are those of the authors and do not necessarily reflect the policies or the views of UNICEF and the Madhya Pradesh Watershed Management Development Association.
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## Acronyms

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<td>BEO</td>
<td>Block Education Officer</td>
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<tr>
<td>BPL</td>
<td>Below Poverty Line</td>
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<td>CO</td>
<td>Circle Organizer</td>
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<td>DFID</td>
<td>Department for International Development (United Kingdom)</td>
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<td>FGD</td>
<td>Focus Group Discussion</td>
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<td>GBMM</td>
<td>Gram Bharti Mahila Mandal</td>
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<td>GoI</td>
<td>Government of India</td>
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<td>GW</td>
<td>Groundwater</td>
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<td>IEC</td>
<td>Information Education Communication</td>
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<td>ILE</td>
<td>International Learning Exchange</td>
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<td>MP</td>
<td>Madhya Pradesh</td>
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<td>NCHSE</td>
<td>National Centre for Human Settlements and Environment</td>
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<td>NEERI</td>
<td>National Environmental Engineering Research Institute</td>
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<tr>
<td>NGO</td>
<td>Non-government Organization</td>
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<td>NWP</td>
<td>National Water Policy</td>
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<td>O&amp;M</td>
<td>Operation and Maintenance</td>
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<td>OBC</td>
<td>Other Backward Class</td>
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<td>PHED</td>
<td>Public Health Engineering Department</td>
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<td>PLA</td>
<td>Participatory Learning and Appraisal</td>
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<td>PTA</td>
<td>Parent–Teacher Association</td>
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<td>SC</td>
<td>Scheduled Caste</td>
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<td>ST</td>
<td>Scheduled Tribe</td>
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<td>TSC</td>
<td>Total Sanitation Campaign</td>
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<td>TWD</td>
<td>Tribal Welfare Department</td>
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<td>VVS</td>
<td>Vasudha Vikas Sansthan</td>
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<td>WFP</td>
<td>World Food Programme</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>WSC</td>
<td>Water Safety Club</td>
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<td>WSP</td>
<td>Water Safety Plan</td>
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<td>WWM</td>
<td>Wisewater Management</td>
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Foreword

The Knowledge Community on Children in India is a partnership between UNICEF and the Government of India which aims to fill knowledge gaps and promote information-sharing on policies and programmes related to children in India. In 2007, under the aegis of this initiative, 57 graduate students from India and across the world visited and documented projects focused on child rights and development. Their fresh perspectives, commitment and hard work are reflected in this series of case studies, which are published by UNICEF.

The case studies cover key sectors linked to children and development and address important policy issues for children in India. These include: primary education, reproductive and child health, water and sanitation, child development and nutrition, social exclusion and village planning. Based on desk research and field work, these case studies tell the story of innovations in service delivery, what works, why and under what conditions and put a human face to the successes and challenges of development in India.

UNICEF recognises the potential and power of young people as drivers of change and future leadership across the globe. As such, the KCCI Summer Internship Programme also aims to develop a cadre of young research and development professionals with interest, commitment and skills relating to child rights. UNICEF hopes to continue this collaboration with young researchers, the Government of India, and various research partners, so as to bring fresh perspectives and energy to development research and our ongoing efforts towards the fulfilment of rights of women and children in India.

[Signature]
Representative
UNICEF India
Executive Summary

UNICEF and the National Environmental Engineering Research Institute (NEERI), Nagpur have jointly undertaken the Wisewater Management (WWM) project in Madhya Pradesh (MP), which targets the problem of water availability faced by the marginalized, tribal groups in the rural areas of the state. The WWM project promotes water conservation and sanitation among tribal children living in ashrams – free boarding schools established by the Tribal Welfare Department (TWD) for children from the Scheduled Tribes (STs), Scheduled Castes (SCs), and Other Backward Classes (OBCs)\(^1\) – in order to combat the problem of water scarcity and groundwater depletion affecting the rural population, especially tribal people.

This study describes the situation of water scarcity in the rural areas of MP and documents the challenges faced by the tribal population in relation to water availability. It details the components of the WWM project, the different phases of implementation, the strategies adopted, and the role of various stakeholders. The chief aspect of the case study is an assessment of the potential for scaling up WWM and the sustainability of the project. The case study examines the implementation of the WWM project in seven pilot districts of MP based on the parameters of social exclusion, participation, and sustainability, and makes recommendations for the future scaling up of the project as well as for policy inclusion and programme management by the government. The report also assesses the actual impact of WWM in comparison with the intended impact.

In MP, a state in central India, groundwater is depleting at an average rate of 20 centimetres per year. In 45 out of 48 districts, the water level has fallen up to 2 metres over the 1994–2004 period. There are 362 such districts throughout India.\(^2\) The stress on water supply is felt acutely, especially in rural areas, which constitute 73 per cent of the total population of MP. The effect is harshest on those who are already poor and those who are excluded and marginalized from the rest of the community, such as the SC, ST, and OBC communities. The total water requirement for sustaining an individual adult is 40 litres per capita per day, according to the Department of Drinking Water Supply. This amount of water is not available to most tribal families in MP. Additionally, proper hygiene and sanitation is dependent on sufficient water supply. In MP, only 76.1 per cent of households have access to an improved source of drinking water and 30.2 per cent.

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\(^1\) Scheduled Castes (SC), Scheduled Tribes (ST) and OBCs (Other Backward Classes) represent certain classes of disadvantaged social groups that are recognized and protected under the Constitution of India.

cent have toilet facilities. The situation in MP is representative of water scarcity conditions all over India, where the water table is declining at the rate of 1–2 metres every year and where groundwater quality is deteriorating as a result of factors such as fluoride contamination.\(^3\)

In MP, TWD has established free boarding schools for ST, SC, and OBC children, known as ashrams, to address the educational needs of tribal children. In order to promote sanitation and to make more water available to the children living in the ashrams, UNICEF and NEERI launched WWM in March 2005 in seven pilot ashrams across MP. WWM has been implemented in tribal ashrams in an attempt to provide water to the most vulnerable sections, particularly young tribal girls. Hence, the programme targets the most excluded population, which is among the first to suffer as a result of a reduction in water supply.

WWM consists of various components that ensure water quality and quantity. The two major components are:

1. **Greywater reuse system**, which cleans bathwater by directing it through a simple filter system and performing sedimentation, filtration, and aeration functions, so that the water can be used for flush-toilets and for watering kitchen gardens.

2. **Rainwater harvesting**, which collects rainwater from rooftops and stores it in a tank for drinking purposes. This water can also be used for fluoride dilution. Groundwater containing dangerously high levels of fluoride is a major problem in some rural areas of MP, and diluting it with rainwater is one solution.

This case study analyses the WWM programme particularly in the context of the scaling-up phase and also examines the challenges of programme transfer, from transforming a UNICEF pilot into a government-managed programme. The four main research areas investigated here are:

1. the process of advocating WWM for policy adoption and programme inclusion by the government
2. whether WWM is implemented in a participatory manner
3. whether WWM addresses the issue of social exclusion
4. whether WWM is a sustainable programme

The research team collected both qualitative and quantitative information over two months of desk research and during two field trips of 12 days in total. The team observed and interviewed

a large number of stakeholders (more than 300) as well as villagers and children not directly connected with the programme (more than 100). Additional efforts were made to include the views and concerns of all segments (different tribes and castes, different occupations, etc.) of marginalized communities.

This research study has led to the following major findings:

* The key decision makers, such as government officials, have been effectively targeted and have at least some knowledge of WWM, although many primary stakeholders, such as parents, are still relatively unaware of the system.

* Currently, there is not sufficient delegation of responsibility in the government chain of implementation. For example, officials often do not know who is ultimately responsible for ensuring and monitoring the health of children using the WWM system. Which body oversees the regular treatment of the system? Is it the Public Health Engineering Department (PHED) which constructed the system, or TWD which runs the ashrams, or the Ministry of Health and Family Welfare?

* There is a need for further independent evaluations of the pilot over a longer period of time and in multiple regions before scaling up can be completed, especially in order to study social factors that may affect outcomes in various locations.

* With respect to the involvement of stakeholders, some participation (or at least training) takes place during the construction phase in most government- and UNICEF-managed implementations. However, during the design phase, stakeholder involvement occurs only in UNICEF-managed implementations. This is because the government, particularly PHED, does not usually provide mechanisms for stakeholder participation and has a strictly top-down management structure. There is concern that the level of participation will decrease in the future as the WWM programme is scaled up and transferred entirely to the government, thereby hurting programme sustainability. It is imperative that the government should value and appreciate stakeholder participation in order to create ownership of the WWM programme within the community.

* In relation to social exclusion, WWM successfully targets marginalized children in the ashrams where the WWM system has run for some time and where it is working properly. Children are aware of the different (hierarchical) structures in tribal society, but the study findings suggest that social exclusion is not a problem within the ashram regarding WWM. There is concern about the great challenge in reaching the interior ashrams and in ensuring that the people there will actually benefit from the programme (currently WWM is being implemented in well-functioning, well-managed, clean, and relatively more accessible ashrams). Ashrams located in the interior regions, far away from the main roads, and lacking staff, management, maintenance, and facilities are not currently reached by WWM.
In relation to programme sustainability, there is a general lack of demand for water conservation methods such as WWM because of lack of knowledge about water scarcity and depleting groundwater, and also lack of knowledge about mitigation options. The study findings show that demand will be highest in those areas where there is neither too much nor too little water.

Based on these findings, the research team makes the following recommendations:

- **Flexibility**: Ashrams should be allowed to choose the components they want and their inputs should be sought and incorporated into the programme design. The system should be adaptable to the needs and demands of individual environments.

- **Integrated Development**: Progressive scaling up is more likely to lead to success than a blanket approach. Indicators should be developed for identifying the neediest ashrams and those ashrams that can benefit the most from WWM. Then by adopting an integrated development approach, the most vulnerable ashrams can be improved on several levels along with the surrounding villages.

- **Information, Education, and Communication (IEC)**: For better participation, enhanced cooperation of local NGO (non-government organization) motivators and increased IEC exercises for adults should be promoted. Demand for action should be created through a statewide awareness campaign on water scarcity, depleting groundwater, and water conservation.

- **Operation and Maintenance (O&M)**: The responsibility for O&M must be more clearly allocated, with standardized procedures and checklists in place. The government should monitor water quality regularly and ensure that the system is working properly.

- **Evaluation**: A more thorough independent evaluation of the WWM programme should be conducted. In addition, regular surprise checks by the implementing agency should take place. A social context evaluation should also take place in those regions where the system is to be implemented in order to ensure social inclusion.

- **Participation**: All stakeholders should be guaranteed participation in decision-making processes about WWM and in determining whether the programme should be implemented in ashrams or in individual households, and if yes, how this should be done.

Based on the study findings, it is recommended that after large-scale pilot testing, independent evaluation, and the establishment of a proper monitoring chain in the government, the programme should be recommended for policy inclusion.
Introduction

The UNICEF State Office for Bhopal (hereinafter UNICEF Bhopal) in conjunction with NEERI, Nagpur developed the Wisewater Management (WMM) programme in 2005 in order to mitigate fluoride contamination in water, to reduce water scarcity, and to promote sanitation and health facilities in marginalized communities. WMM saves drinking water and makes more groundwater available to ashrams (free boarding schools for SC, ST, and OBC children established by TWD and individual households. It also creates awareness about the importance of water conservation in tribal areas.

The main components of WWM are:

1. **Greywater reuse**: In this process, bathwater is treated through a simple filtering system and is then reused for toilet-flushing and irrigation purposes.

2. **Rainwater harvesting**: This involves the collection of rainwater from a flat, clean rooftop into a water storage tank. The rainwater can then be mixed with pumped groundwater in order to dilute fluoride-contaminated drinking water.

The WWM programme was introduced in 2005 in a few pilot ashrams in Jhabua and Dhar districts of MP. While WWM is intended to increase the available water in ashrams and to support better hygiene behaviour resulting from improved sanitation facilities, additional expected results include raising awareness about the importance of water conservation and improving health and educational indicators.

The following are the objectives of the WWM programme:

**Short-term objectives of WWM:**
- Improvement in hygiene behaviour among ashram children
- Increase in water availability
- Reduction in fluoride level in drinking water

**Long-term objectives of WWM:**
- Increase in groundwater level
- Knowledge diffusion from ashram children to their parents and increase in household implementations of WWM system
- Improvement in health status of communities
- Improvement in school attendance and literacy rates
**Intended impact of WWM:**

- Increase in awareness of water scarcity
- Increase in demand for adequate water, health, and sanitation facilities
- Social inclusion of marginalized communities
- Better education of marginalized communities

After the implementation of WWM in the first seven pilot ashrams, UNICEF’s aim is to scale up the programme in MP. The WWM programme has already progressed through field testing and has received both national and international exposure. It is currently in the phase of policy change and inclusion by the Government of India (GoI).

This case study analyses the WWM programme particularly in the context of the scaling-up phase, and also examines the challenges of transferring the programme from a UNICEF pilot to a government-managed programme.

The case study investigates four main research areas:

1. The process of advocating WWM for policy adoption and programme inclusion by the government
2. The extent to which WWM is implemented in a participatory manner
3. Whether WWM addresses the issue of social exclusion
4. Whether WWM is a sustainable programme
In any intervention, it is critical to understand the role and significance of the stakeholders. This section is an introduction to the problem of groundwater depletion and water scarcity in the rural areas of MP. It highlights the severity of the problem faced by the marginalized tribal population in the rural areas of the state, and examines the rationale for setting up the WWM programme in the ashrams established by TWD in MP. This section also discusses the objectives of WWM, the strategies employed, and the role of the major stakeholders in efforts to reduce water scarcity and to promote sanitation and health facilities in the marginalized communities.

Water scarcity in Madhya Pradesh

In many Indian states, including MP, water availability is declining. Groundwater is depleting at an average rate of 20 cm per year, with an average decadal decline of 2 m. With increasing population and growing demand for groundwater for irrigation, the stress on water supply is being felt acutely, especially in rural areas. Tube wells, dug wells, and piped water supply schemes are running dry during the summer months in some locations, sometimes starting as early as January and lasting through to the beginning of the monsoon in the western districts. Moreover, every four or five years the monsoon fails in MP, creating additional water shortages. Erratic monsoons and complex hydro-geological conditions are responsible for poor recharge, which is reflected in the early depletion of the groundwater table.

Water scarcity problems especially affect the rural population, which constitutes 73.33 per cent of the total population of MP. The impact is harshest on those groups who are already poor and socially excluded or marginalized, such as the SC, ST, and OBC communities. The tribal and SC population together make up 35 per cent of the total population of MP. A large percentage of the tribal population is concentrated in western MP, particularly in the districts of Dhar and Jhabua, both of which have a tribal population of more than 50 per cent. Among these tribes, the Bhils, the Bhilalas, and the Pateliyas are the dominant groups.

7 UNICEF, undated.
8 Scheduled Caste and Scheduled Tribe Welfare Department, 2002.
Dhar and Jhabua districts were chosen as locations for the WWM pilot projects for various reasons. First, it was decided to target the neediest groups first; the extreme marginalization of the tribal population makes them highly vulnerable. Second, the tribal population is concentrated in Dhar and Jhabua, which makes it easy to target them. Third, the groundwater situation in many of the blocks in Dhar is semi-critical, while the drinking water in Jhabua contains high levels of fluoride.

Proper hygiene and sanitation are dependent on safe and sufficient water supply, especially since the government is actively promoting flush-toilet usage under the Total Sanitation Campaign (TSC). The total water requirement for drinking, washing, and sanitation is 40 litres per capita per day according to the Department of Drinking Water Supply. This amount of water is not available to most ST and SC families in MP (UNICEF, undated). Almost all areas with a high concentration of SC and ST population have either low rainfall coupled with limited groundwater availability or have heavy iron or fluoride contamination.

MP has shown a consistently poor performance on health, nutrition, and child environment indicators compared to national averages (SRS, undated; DLHS, undated; NFHS, 2006). The mortality rate of children under five in MP is 144 deaths per 1,000 live births, which is 47 per cent higher than the all-India rate of 98 deaths per 1,000 live births. Only 76.1 per cent of households have access to an improved source of drinking water, and 30.2 per cent have toilet facilities (SRS, undated). Studies reveal that the tribal population in MP is lagging by almost three decades in terms of development. The Infant Mortality Rate (IMR) of the tribal population in MP is 155 in comparison to the national average of 106.6. The literacy rate among the tribal population of MP is 41.2 per cent compared to the ST national rate of 47.1 per cent (Census, 2001).

About wisewater management

The WWM programme was developed by UNICEF Bhopal in conjunction with NEERI, in 2005, in order to mitigate fluoride contamination in water, to reduce water scarcity, and to promote sanitation and health facilities among the marginalized communities in MP. The WWM

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9 http://cgwb.gov.in/NCR/GWestimation.htm
10 http://cgwb.gov.in/NCR/sourcefinding.htm
11 The Total Sanitation Campaign was introduced in 1999 by the Ministry of Rural Development. It is “a comprehensive programme to ensure sanitation facilities in rural areas with [the] broader goal to eradicate the practice of open defecation.” (http://ddws.nic.in/tsc_index.htm)
12 According to the World Health Organization (WHO), improved drinking water sources include household connection, public standpipe, borehole, protected dug well, protected spring, and rainwater.
programme aims to save drinking water and to make more groundwater available to ashrams and individual households, while creating awareness about the importance of water conservation in tribal areas.

The National Water Policy (NWP) 2001 of GoI\textsuperscript{14} states

Special efforts should be made to investigate and formulate projects either in, or for the benefit of, areas inhabited by tribal or specially disadvantaged groups such as [the] socially weak, Scheduled Castes and Scheduled Tribes.\textsuperscript{15}

The WWM programme caters to the primary need for safe and sufficient water supply, while targeting disadvantaged groups in accordance with NWP 2001.

The main components of WWM are:

1. **Greywater reuse.** This describes the process by which bath and washing water is treated through a simple filtering system and is then reused for toilet-flushing and irrigation purposes.

2. **Rainwater harvesting.** This involves the collection of rainwater from a flat, clean rooftop into a ferro-cement water storage tank. The rainwater can be mixed with pumped groundwater in areas where fluoride levels are dangerously high in order to reduce the fluoride content in drinking water. It also augments the available water for irrigation purposes and groundwater recharge.

3. **Water Safety Plan (WSP).** WSP is part of the IEC meant for the children. It is depicted as a cartoon drawn on a wall in which the fictional character of the girl child, Meena, informs the children about the risks of WWM and the need for following the correct O&M. WSP should be discussed regularly with the children.

\textsuperscript{14} Ministry of Water Resources. http://www.wrmin.nic.in/writereaddata/linkimages/nwp20025617515534.pdf

\textsuperscript{15} http://www.nih.ernet.in/belgaum/NWP.html
Depending on the particular system design, several additional components can be incorporated to address the specific needs of an ashram. These components are (see Figure 1):

- **Fluoride dilution**
  This involves mixing fluoride-contaminated groundwater with harvested (fluoride-free) rainwater. The groundwater is diluted by an adequate amount of rainwater to bring down the fluoride concentration to an acceptable value. (The guideline value for fluoride is 1.5mg/l according to WHO).^{16}

- **Groundwater recharge**
  In order to mitigate groundwater depletion, harvested rainwater is drained into the soil to replenish the watershed.

- **PlayPump®**
  The PlayPump® pumps groundwater into overhead water storage tanks while children are playing on a merry-go-round or see-saw connected to the pump. This eliminates the need for laborious hand-pumping or electric pumps.

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• **Hand-washing unit**
  
The hand-washing unit helps in improving the hygienic behaviour of children. They are equipped with soap and use collected rainwater (and in certain places pumped-up groundwater) for washing.

All of the above-mentioned components have been used in the pilot ashrams. Some ashrams do not have fluoride-contaminated groundwater, and hence dilution has not been necessary. The hand-washing units were designed later in the project and were not installed in every location.

**Wisewater management in ashram schools**

WWM targets the problem of water availability to the marginalized tribal populations in the rural areas of MP.

UNICEF chose tribal ashram schools\(^\text{17}\) in MP for the initial implementation of the WWM programme, with the view towards later expansion beyond the tribal community to other disadvantaged communities as well as to individual households. WWM has been implemented in tribal ashrams in an attempt to provide water first to the most vulnerable, particularly young tribal girls. The ashrams are designated for STs, SCs, and OBCs, which together represent the lowest social and economic strata of Indian society. Hence, the programme targets the most excluded population, which is among the first to suffer from a decline in water supply. In this sense, it has succeeded in reducing the social exclusion of tribal children in India.

The ashrams also provide an institutional context where the availability of water with reuse potential is the most. Tribal children live in the ashram for about 250 days a year. Because greywater production is high, it is feasible to recycle water from baths and sinks and use it for flush-toilet and gardening purposes.

Additionally, it is expected that the benefits of the programme will percolate to the larger community in the long run. The ashrams provide a captive audience for advocacy on water conservation and sanitation issues, and in effecting various behavioural changes in health and sanitation practices. The WWM programme seeks to exploit the role of ashram children as change-makers; the ashram children would take back the knowledge to their families and eventually to the larger community.

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\(^{17}\) Ashram schools, which are residential schools for children from marginalized communities (in predominantly SC and ST populated areas), generally enrol children from villages located at least 6–8 km from the school. Many parents prefer sending their children to ashram schools since free food, clothing, and boarding are provided. In introducing the WWM project, preference is given to ashrams for girls. According to the Government of Madhya Pradesh, out of 885 ashram schools with a sanctioned strength of 50,270, 473 are for boys (sanctioned strength 25,456) and 412 are for girls (sanctioned strength 24,805).
Wisewater management in households

The greywater reuse system and rainwater collection can be employed in households as well. Several households have built small versions of the treatment system in their backyards, with UNICEF funding and support. The idea is that those who maintain the systems will promote them and will share knowledge of this system with their friends and neighbours, thereby creating and increasing a demand for it. In homes, a treatment system is typically attached to the bathing room to catch and filter bathwater, which is then reused for watering a kitchen garden or is collected for toilet flushing.

Implementation

WWM requires funding, equipment, training, staff, and labour as inputs. The subsequent implementation of WWM in selected ashrams includes IEC sessions for different stakeholders to familiarize them with the concept, approval from the stakeholders, training for the stakeholders, the actual construction of the physical structures, the creation of a Water Safety Club (WSC) for the students, the holding of continuous IEC activities, system maintenance, and O&M. All of these activities are supported by a partner NGO on the ground.

See Appendix F for a complete list of the project sites visited by the team.

Stakeholders and partners

The primary stakeholders are, of course, the children living in the ashrams. They are the ones who are most affected by WWM and water scarcity in their schools. Teachers and wardens also have a large stake in the project. Local partner NGOs work with UNICEF or with PHED to deliver the programme at the schools. TWD oversees the ashrams and has provided funding for the project, but it is not involved in direct implementation. The local village government (panchayat) must be apprised of the project and must approve it before implementation. Many district-level officials also have been approached for their support in order to ensure increased adoption of the WWM project in other areas. NEERI originally partnered UNICEF in designing the WWM concept and in providing technical support.

A complete list of the participating stakeholders is given in Appendix B.

Objectives

The objectives of the WWM programme are to reach the most excluded sections of the community, to raise awareness about the importance of water conservation, to improve educational indicators, and to demonstrate that UNICEF is able to leverage government funds for the implementation of innovative concepts and projects (see Figure 2).
The following are the detailed objectives of the WWM programme:

**Short-term objectives of WWM:**
- Improvement in hygiene behaviour among ashram children
- Increase in water availability
- Reduction in fluoride level in drinking water

**Long-term objectives of WWM:**
- Increase in groundwater level
- Knowledge diffusion from ashram children to their parents
- Increase in household implementations of WWM system
- Improvement in health status of communities
- Improvement in school attendance and literacy rates

**Intended impact of WWM:**
- Increase in awareness of impact of water scarcity and increase in demand for adequate water, health, and sanitation facilities
- Social inclusion of marginalized communities
- Better education of marginalized communities

**Wisewater management in Madhya Pradesh: Current status**

After the implementation of WWM in the first seven pilot ashrams (details given later) in Dhar and Jhabua districts, UNICEF’s aim is to scale up the programme in MP. Figure 3 depicts the development of the WWM programme from the initial technical proposal, through the field-testing phase and through both national and international exposure, towards the current policy-change phase. Crucial events during this development process were the cooperation agreements signed in July 2005 between UNICEF and NEERI as well as between UNICEF and local NGOs. Evaluation by the World Health Organization (WHO), Geneva (hereinafter WHO, Geneva), a perception study on water reuse by the Department for International Development (DFID), United Kingdom (DFID, 2006), and the creation of a guidance manual on WWM by NEERI resulted in the evincing of government interest in the programme in 2006 and a technical proposal by the PHED for collaboration in the construction of new WWM systems. By 2006-end, the programme was the subject of an International Learning Exchange (ILE) programme and was visited by international experts from Africa, Europe, and the Middle East.

At this stage, the WWM project has been transferred primarily to PHED and TWD for the construction and implementation of new sites. This has taken place in conjunction with the local NGO partners.
These events led to a major change at the national level with the inclusion of WWM in the Solid and Liquid Waste Management technical guidelines of the GoI (Solid and Liquid Waste, undated). The proposed scaling up of WWM will include all ashrams in MP and will be done in cooperation with TWD and PHED, involving the full transfer of the programme to the state government. It will also potentially include support from the World Food Programme (WFP), which expressed interest in WWM in early 2007. Later a project was also sanctioned by the State Level Coordination Committee, Forest Department, with WFP support, for the construction of a WWM system.\footnote{Forest Department, Madhya Pradesh. http://www.forest.mp.gov.in/worldfood.html}
This would be a notable joint effort by different UN agencies. Currently, TWD has sanctioned 100 ashrams in MP for the construction of WWM systems, while PHED has separately sanctioned 300 systems (TWD letter, 2007).

Figure 4: Timeline of the WWM programme (crucial events are accented in green)
Research questions

As discussed, the WWM project is currently in the phase of policy change and inclusion by the Government of India (GoI).

This case study analyses the WWM programme in regard to the scaling-up phase in particular, and also examines the challenges of programme transfer from a UNICEF pilot to a government-managed programme.

The study analyses the success or failure of UNICEF’s WWM programme by investigating the following research questions:

1. **Policy and programme inclusion by the government:** What is the process through which the WWM programme has gone, in moving from UNICEF policy to government management and policy inclusion? Ideally, what steps should be taken for scaling up this programme and other similar implementations?

2. **Participation:** Does WWM involve the community in the process of implementation? The community may include wardens, other school employees, parents, children, and villagers from the local area.

3. **Social inclusion:**
   - **At the macro or state level.** Does the WWM programme actually reach the most vulnerable and the most socially excluded groups in MP? Are the neediest ashrams being targeted successfully?
   - **At the micro or ashram level.** Within each ashram, how does the WWM system interact with existing social hierarchies such as class differences between various tribes or castes?

4. **Sustainability:** Is WWM being used properly and effectively? Is it sustainable in the long run in terms of demand for the system, social acceptability, O&M, and resilience to institutional shifts and stakeholder turnover?
Methodology

This section describes the geographic coverage of the field research, the research methodology, the various tools used for collecting data and information, and the target population. It identifies gaps in the research and lists the possible areas of bias that could have influenced the outcomes.

To answer the research questions, the team worked for two months on desk research and conducted two field visits to five districts of MP: Jabalpur, Chhindwara, Betul, Dhar, and Jhabua.

The 12 days of fieldwork were divided into two field trips (1–5 July 2007 and 11–17 July 2007). The team visited 23 ashrams in 23 different villages, both with and without individual household implementations. In addition to this, government officials, TWD representatives, and NGO personnel were interviewed in seven districts: Jabalpur, Chhindwara, Betul, Indore, Dhar, Jhabua, and Bhopal. The team collected data by taking field notes as well as by making audio and video recordings. An overview of the qualitative and quantitative research methods and the sample size is given in Appendix A. An overview of the participating stakeholders is given in Appendix B.

Focus group discussion

In the field, the research team held 12 focus group discussions (FGDs) with groups of 4 to 20 students at the ashrams. FGDs were also held with village women. The FGDs concentrated on issues of water scarcity, awareness level about the WWM system, and system usage. The FGDs also examined the perception of roles and responsibilities, especially those concerning the O&M of the WWM system. The discussions focused on the actual benefits experienced by the group members and their concerns about the WWM system. The FGDs also explored the extent of knowledge dissemination from ashram students to other children, parents, and the community; the participation of different stakeholders in the WWM programme, especially the role and participation of women in the community and in the larger society; aspects of social inclusion; and suggestions for improvement of the WWM programme. All FGDs were conducted in Hindi by a translator, who was, wherever possible, a member of the intern team.

Participatory learning and appraisal exercise

Participatory Learning and Appraisal (PLA) methods are used for allowing people to make decisions regarding their own lives rather than having the interviewer offer solutions. The method is effective when working with children; methods such as drawing and ranking are often used.
Children often have difficulty answering direct questions about their feelings or opinions about an issue. An important feature of PLA is triangulation, which means cross-checking information by posing the same question to at least three different categories of sources, and doing this while working in a multidisciplinary team.

Figure 5: Map of the region
The objective of the PLA exercise in the context of WWM was to solicit the opinions of different people, and at the same time encourage them to reflect on their situation and consider the possibility of influencing the programme. It is UNICEF’s aim to ensure that WWM is a participatory programme, and hence one of the issues investigated was whether this was actually happening successfully. The research team used the PLA approach to check if people close to WWM were used to participating and whether they felt confident about expressing their views and opinions.19

Two participatory tools were used: drawing and ranking exercises with the ashram children, and social mapping in the villages.

**Drawing and ranking exercise in the ashram**

Drawing and ranking exercises with students were used to examine their attitudes towards WWM in general. The drawing exercise attempted to bring out the children’s ideas about water and the use of water in their daily lives in order to discover whether and how they were affected by water scarcity. The children were asked to draw pictures of themselves and show how they got and used water on a daily basis. In the ranking exercise, the children were asked to rank their least favourite and their most favourite activities out of ten options. Some of the activities were already defined, but blank papers were also given to them for filling out. Included in these activities were water-carrying and water-related actions.

**Figure 6: Drawing exercise with children**

Social mapping exercise in the village

In villages, social and resource mapping exercises were conducted with children and with other villagers to get an overview of who was living where and to learn where the water sources were located. The participants were asked to draw a map of the village on the ground, using sticks and stones to illustrate houses, people, and water sources. This exercise was conducted in order to understand if certain people were excluded from water sources, and hence to assess the potential social impact of water projects. Children were asked to describe where people of different castes lived and where they went to collect their water. This allowed the researchers to involve the community in the task of understanding potential social exclusion from water resources and to determine the relationship between the ashrams and the surrounding villages.

Figure 7: A social mapping exercise with children
**Interview**

Semi-structured interviews were conducted with school staff, government officials, and NGO members. The interviews with school staff and NGO members mainly covered the same topics as the FGDs. In addition, the interviews questioned the respondents about the differences between UNICEF and governmental implementations. Government officials were asked questions about policy implications, aspects of scaling up, and the roles and responsibilities of the various players, stakeholders, and participants in the WWM programme.

Interviews with villagers, both with and without household implementations, covered the topics of water scarcity, system usage, knowledge dissemination, affordability, and social inclusion. Interviews were conducted in Hindi, and wherever possible in English. (see Appendix E).

**Survey**

A household survey (see Appendix E) was conducted in Kokawad, in Jhabua district, of houses with and without private implementations. The purpose was to investigate the social acceptance of greywater reuse, the extent of social exclusion in the village, the demand for WWM, and the extent to which the WWM concept had been accepted by the villages surrounding the pilot ashram location. The team asked members of every household the same fixed questions; additional questions were asked wherever necessary.

**Population and sampling**

The sample population was as follows:

**Semi-structured interviews:**
- 21 government officials
- approximately 241 other stakeholders (village residents, ashram staff, ashram students, NGO staff and volunteers, self-help group members).

**Focus group discussions:**
- approximately 85 stakeholders (village women, students)

**Ranking and drawing exercises:**
- 32 students

**Social mapping exercises:**
- approximately 40 village residents

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20 See Appendix A for more details.
Data analysis

Data were analysed qualitatively by the research team. The analysis was based on the background knowledge gained from the literature, from interviews held with all the stakeholders at every level, and from the team’s collective knowledge based on education and experience.

Limitations and sources of bias

To minimize bias, questions were cross-tabulated by asking different people the same questions. The research team ensured that the voices of stakeholders at all levels of WWM were heard and that people from all levels of society were interviewed. However, the conclusions of this study are, to some degree, restricted by certain limitations and biases.

The important limiting factors are as follows:

- WWM is, in most areas, a new concept. Hence, its full impact cannot yet be assessed completely.

- The research team collected data at the beginning of the monsoon season when the period of water scarcity was ending or had just ended. The perception of greywater is likely to be different during the dry summer months.

- To a certain extent, a selection bias was present (in the selection of schools and interviewees) since the stakeholders (NGOs) facilitated the research process in the field and thereafter. These NGOs have a vested interest in presenting the best side of their work in order to continue to receive support from the GoI and from UNICEF in this endeavour. Additionally, they may want to “impress” their international visitors.

- The shyness of students and villagers was a limitation in terms of the insights that they could offer during the field study, given the relatively short period that the team stayed in each place. It is pertinent to note that these children (students being the primary stakeholders in the WWM) are not used to being asked for their opinion.

- Interviewees and respondents may have had different motivations for giving the responses they did, and may not always have told the whole truth, a, . School wardens, for instance, have an incentive to present their ashrams in a positive light.

- The field visit took place towards the end of the school vacation and immediately after school started. Only a limited number of students were present in the places visited, which created a selection bias. In some schools, there were no students present at all.
The field visits were mostly announced beforehand, which allowed the staff and students to be prepared and be ready to impress the visitors. In such cases, the assessment of the ashram environment in terms of cleanliness, maintenance of the WWM system, and awareness about WWM was likely to have suffered from bias compared to the findings made during unannounced visits.

While a research team member was able to translate most of the time, the interviewers occasionally used a translator who was a member of an implementing NGO or who belonged to another interested party. This may have resulted in improper communication and exchange of information during the interview, resulting in a bias in the findings and hence in the final analysis.

It was difficult to gain the trust of the children and to coax them to express their thoughts instead of having them tell us what they thought we wanted to hear. In the case of FGDs, the most dominant women tended to talk the most. The FGD coordinator had to ask all of them direct questions, which curtailed the smooth flow of the discussion.
In this part of the research study, in-depth interviews were conducted with many government officials and stakeholders, such as NGO staff, parents of tribal children, and the children themselves, to determine both the actual steps that WWM had taken so far during the scaling-up process as well as the ideal pathway that a programme like this should take on its way to becoming government policy. Based on the team’s study of the WWM experience in MP, outlined below are the recommended steps for scaling up in an ideal action plan. The team has also made recommendations for the future policy incorporation of the WWM programme by the GoI.

Scaling up: Proposed steps

There are several essential steps through which a concept should travel before it can be recommended for policy incorporation in the Indian government system (see Appendix D).

Step 1: Concept development

In the first step of concept development, the agency partners with reputed research institutions for technical modelling. Here the agency should involve NGOs that understand the local conditions and that have a grass-roots presence in developing proposals and for advice on construction and management details. At this stage, it is recommended that the agency should commission a sociological study by an external research institution in order to develop a pilot for optimum social inclusion and for acceptance by the target groups. This will help increase the likelihood of success of the programme beyond merely the technical parameters.

Step 2: Evaluation

The evaluation phase may comprise two sub-phases:

i. Field testing: In the first sub-phase, the agency should develop a model based on field testing at sites that meet certain selection criteria (see discussion under Findings and Recommendations below). The model thus developed should be refined continually as more information is gathered during the field testing and as feedback from users is incorporated.

ii. Large-scale evaluation: The second sub-phase should be a large-scale evaluation of the model, both on technical and social aspects, in highly diverse areas. This is important for ascertaining how far the model can incorporate a variety of different socio-economic realities
that exist in different parts of the country. This large-scale evaluation should include a neutral third-party evaluation, specifically examining the pilot for any potential deficiency or gap.

**Step 3: Policy and programme inclusion**

If the pilot project is evaluated positively during the large-scale evaluation discussed above, and if the feedback received during this process is incorporated into the project design, the next step is scaling up the pilot project. This step should not be taken lightly or too quickly. In addition, it should not be considered a failure if it is determined that a pilot is better suited to a specific regional environment and deemed unsuitable for country-wide implementation. Different physical and cultural environments require tailored solutions for specific conditions, especially in the area of water management.

A programme is generally considered to be larger in scope than a project, and may incorporate several projects. Becoming a government programme means that the government actually implements the project throughout the country. Inclusion into government policy lays the groundwork for this to happen by entrenching the concepts behind the project into the official policy of the country. For instance, in the case of WWM, the government may take up the responsibility for the full operation of WWM and may construct, manage, and maintain the system (along with partners), while simultaneously including the reuse concept in the official water policy of the country.

If it is determined that the pilot should become a national programme and policy, the concept has to travel through two paths simultaneously to reach the goal of policy adoption and programme inclusion by the government, in order that it might be taken to citizens all over the country:

1. **Towards policy adoption**: The agency should make efforts to include all the components of the concept in the policy framework. For example, all the previous elements of the WWM programme should be included in the NWP of the GoI.

2. **Towards scaling up**: In tandem with efforts aimed at policy and programme inclusion, the agency should make efforts to scale up the pilot to a national-level programme. UNICEF has made considerable efforts for this very purpose. After regular interaction with senior MP officials from PHED and TWD, the proposal was put forward for consideration before the GoI. A major step in this direction was the inclusion of WWM in the Solid and Liquid Waste Management technical guidelines of the GoI.

These two developments need to go hand in hand, so that the policy inclusion facilitates the actual implementation of a large-scale programme on the ground. In order to achieve this goal,
the agency should identify the key individuals in the government system who can influence the adoption of both programme and policy, and provide them with the appropriate advocacy materials and technical reports emerging from the evaluation phase.

In the case of the WWM programme, the suggested steps for policy adoption and programme implementation have been outlined in Figure 4. The process begins after a thorough evaluation of the system, both technically and socially. After due consultation with the Secretary, Rural Development, GoI, the proposal for policy incorporation is sent to all states for review. After receiving the reviews, a national commission is set up to interact with stakeholders throughout India. The final step is the preparation of a policy document incorporating all unanimous views. After policy formation, if the GOI wants to establish a national programme for implementing this policy, then the entire process of reviewing the national programme structure will have to be repeated in a similar manner.
UNICEF has executed an excellent communication and exposure campaign for WWM within the MP government. Frequent meetings have been held with government officials, especially within PHED and TWD, to inform them about the programme and to garner support. UNICEF has also provided extensive exposure and training for these officials and also for groups ranging from international delegations to ashram staff. Some of the crucial events that resulted in the expression of governmental interest in the WWM programme in 2006 were: evaluation work by WHO, Geneva; a perception study on water reuse by DFID; and the creation of a guidance manual on WWM by NEERI.

This pilot emerged as part of government programming within two years of implementation. Two sub-concepts of WWM – rainwater harvesting and fluoride dilution – already find mention under different sections of NWP (NWP, 2002) before the start of WWM. With the inclusion of certain components of WWM in the Solid and Liquid Waste Management technical guidelines of the GoI (Solid and Liquid Waste, undated), the process of including the other components of WWM into NWP has begun. The proposed scaling up of WWM will include all ashrams in MP. It will be executed through TWD and PHED, and will involve a full transfer of the programme to the state government. It will also potentially include support from WFP, which expressed interest in WWM in the spring of 2007. Currently, TWD has sanctioned 100 ashrams in MP for the construction of WWM systems. In addition, PHED have sanctioned 300 systems (TWD letter, 2007).

To ensure the success of the WWM programme, several steps need to be taken. Some of the recommendations are:

- **Longer-term evaluation:** A longer-term evaluation of the programme based on the diverse cultural, social, and economic realities of the country has not yet been completed. While thorough technical assessments of the initial pilots included in the first sub-phase of evaluation have been completed, it is critical that the programme should now be assessed, during the period of usage, by a third party in multiple regions. During the current phase of scaling up, each new construction should be carefully evaluated to identify any barriers that may prevent the correct and consistent usage of the WWM system and to refine the choice of location for new construction.

- **Better delegation of responsibility within the government:** Responsibility for all aspects of WWM should be delegated more clearly within the government so as to replicate the successes of the UNICEF pilots in governmental implementations.
• **Emphasis on greywater reuse:** As outlined above, all components of the project should be included in the policy framework. Should the project be evaluated positively in a more thorough study as mentioned above, efforts will then need to be made to give more emphasis to greywater reuse in NWP. Currently, greywater reuse is referred to in the NWP only tangentially. After the inclusion of the entire concept of WWM in the NWP, UNICEF could begin to advocate for the implementation of a national programme on WWM.

• **Continuous advocacy and communication:** Policy incorporation and national programme implementation would then follow the path shown in Figure 4. The first step has already been taken as WWM has been included in the Solid and Liquid Waste Management technical guidelines of the GoI. UNICEF needs to continue communicating the concept, accompanied by proper evidence-based documentation, to the critical people at each step of the process. For example, many engineers of PHED responsible for the construction of these systems are still not convinced of the usefulness of the WWM system.

• **Phased scaling up:** The programme should be scaled up in a phased manner. For example, the programme currently targets tribal girls, with the goal of reaching the most marginalized and the most vulnerable first. However, further details can be included in the process of site selection to ensure success. Ashrams can be chosen on the basis of relevant criteria (both technical and social) such as those suggested below. Using reports based on a sociological evaluation of diverse regions, the WWM model can be adapted to meet the requirements of each region, and targeted IEC campaigns can also be created. This would lead to better and more efficient training of all stakeholders as well.

The following selection criteria are also recommended for ashrams:

**i. Technical parameters:** The available water supply in the ashrams should be within the minimum/maximum limit, areas where groundwater recharge on its own is not optimum, long distance from water sources during water-scarce months, prevalence of chemical problems such as fluoride contamination in the available water supply, and optimum maintenance of the other ashram tangible (buildings, etc.) and intangible (teaching quality, etc.) components (or in conjunction with a programme for improving these components; see section on social inclusion below).

**ii. Socio-economic parameters:** High percentage of below poverty line (BPL) population in the region, high percentage of marginalized communities (ST, SC, OBC) in the region, and willingness of the officials or people’s representatives to undertake the experiment.

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21 For further discussion on the difficulties encountered in the selection process, see pp. 51–52.
Figure 8: From evaluation to policy
Potential Challenges in Scaling Up

The WWM project targets the problem of water scarcity faced by marginalized tribal populations in the rural areas of MP. This section examines the critical issues during the scaling-up phase of the WWM programme. It studies the social impact of the WWM programme and highlights the extent to which WWM has been able to address the issues of community participation and social inclusion on the ground. It also reviews the WWM programme from the perspective of sustainability. This section identifies gaps in the programme, and also makes recommendations for filling these gaps, in order to inform future scaling-up efforts based on the lessons learnt and the best practices identified from the WWM project. Finally, it presents an actual impact model that projects the findings of the research study and gives a situation analysis vis-à-vis the intended outcomes.

Social impact

UNICEF’s development programmes are designed to have a significant social impact and to bring maximum benefit to those most in need. In relation to WWM, it is important to study the social impact of this programme as it is scaled up. The social impact is studied by analysing aspects of participation and social inclusion.

Participation

Participation is one of UNICEF’s values, which is defined as follows:

[Participation is] the process of sharing decisions which affect one’s life and the life of the community in which one lives. It is the means by which democracy is built and it is the standard against which democracies should be measured. . . . [It is] the “right” of all children to have their opinions taken into account when decisions are being made that affect them (SOWC, 2003).

“A participatory process is, in brief, the transfer of information from one who knows (insider, local) to one who does not know (outsider, expert)” (Karunan, 2005). In development programmes, a participatory approach helps in creating sustainable change at the grass-roots level, and hence is considered good practice. When used in the right manner, it can create ownership, build capacity, ensure the relevance of a project, and empower the people involved. Many development scholars argue that top-down policy, meaning policy planned from the outside without input from the local community, rarely meets the needs of the targeted people, and hence is regarded as weak and inadequate in revealing local complexities (Gosling and Edwards, 2006).
The Government of MP has been experimenting since 1994 with the participatory approach. This approach was introduced in the watershed programme run by the Rural Development Department. In the beginning, the government was not sure about the strength of the approach and the ability of the communities to handle the complex programme in which high-order technology was essential for implementing and sustaining the programme and for carrying out its O&M work. The experience showed, however, that people have strong common sense and exceptional intelligence when it comes to handling technical programmes. This experience was used by the Government of MP in many other departments for implementing various programmes, for example, joint forest management is an instance of community involvement for protecting forests. Thus, community involvement has become a powerful tool in the hands of the Government of MP in implementing programmes that were earlier in the domain of government officers alone.

However, PHED has not embraced participatory approaches wholeheartedly, and most water projects are still being carried out in a top-down manner.

In the context of the WWM programme, participation should mean the inclusion of all relevant stakeholders from the beginning and at every step of the process. As the primary stakeholders, students and ashram staff should be given a chance for their voices to be heard before any major decision concerning a WWM project is taken. This includes input on the construction, design, and implementation of the process.

**Findings**

The WWM sites have been implemented in various ways. In the beginning, the initial sites were managed closely by UNICEF and the day-to-day operations were conducted by a local partner NGO. Later, during the preliminary stages of involving the Government of MP, PHED began to build and manage the systems at individual ashrams, with some input from UNICEF, TWD, and local NGOs. These are referred to below as government implementations.

With respect to participation, the team found differences between UNICEF’s original pilots and the governmental (PHED) implementations. Overall, the government has not involved the stakeholders in the project, although some training has been conducted.

Participation will be looked at during three different stages: the design phase, the construction phase, and the post-implementation phase.

- **Participation during the design phase:** This was only found in UNICEF/NGO implementations. A positive example of early participation comes from the NGO Vasudha Vikas Sansthan (VVS) in Dhar district. VVS engaged in six months of participatory exercises leading up to the construction period in which stakeholders such as schoolchildren, teachers,
and parents were introduced to the system, shown drawings of the system design, and asked to suggest changes and make decisions about the system. In addition, the National Centre for Human Settlements and Environment (NCHSE) in Jhabua and the Gram Bharti Mahila Mandal (GBMM) in Betul arranged for substantial participation of staff and children prior to implementation. With regard to many governmental implementations undertaken by PHED in the Jabalpur area, wardens, students, and parents were not informed about what was being implemented until the time of construction. IEC exercises in these places were supposed to take place after the construction phase.

- **Participation during the construction phase**: During their investigation, the team found evidence of some participation during the construction phase in most governmental as well as UNICEF/NGO interventions. This included the training of wardens and other ashram staff to understand the benefits and operation of WWM and some hands-on experience with the working of the WWM system. However, in government implementations this did not include any joint decision making.

The team believes that training is important but not sufficient if the goal is to empower the stakeholders. It may be difficult to incorporate inputs once the system is already in the process of construction, and at that point the implementer has already missed a crucial opportunity for involving stakeholders actively in deciding whether they want this system and in suggesting context-relevant changes. Hence, it is critical to initiate stakeholder participation before construction, and indeed before the final decision to build is taken. This will ultimately result in a sense of ownership on the part of the ashram staff, children, and parents.

- **Participation after the implementation phase**: So far this is assessable only for UNICEF/NGO interventions because the governmental interventions are too recent. VVS incorporated the suggestions made by wardens and the parent–teacher association (PTA) into ongoing design innovations. For instance, a project was initiated in Ganganagar in which the girls made their own sanitary napkins (they had previously reused a cloth) and an incinerator was built for destroying the used napkins in response to the girls’ concerns about menstrual blood entering the greywater reuse system through bathwater. In addition, NCHSE incorporated the suggestions of students and ashram staff during the initial phase of troubleshooting, such as the replacement of the water-in-a-bucket method with flush-toilets. This led to the setting up of well-functioning systems in the ashrams in Kokawad and Jakehla (Jhabua district). The team found that improvements in WWM made by the local NGOs, however, were not applied to older implementations and that these improvements did not spread to the new implementations, but only to the ashrams associated with that specific NGO.

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22 Certain implementations were carried out by the Gram Bharti Mahila Mandal, an NGO, before the partner NGO was changed.
It is likely that this initial high level of attention to participation will decline after the pilot phase, when the most NGO and UNICEF visits to schools take place in order to troubleshoot the pilot system and to demonstrate its achievements to visitors. Indeed, a difference in the levels of participation between the first implementations and those that followed is already visible, as evidenced by the decreased attention to participation during the design phase, as cited above. The first implementations were built after talking to people connected with or affiliated to the ashram, while the later implementations were first built and explanations about their functioning followed thereafter.

Additionally, it was found that the surrounding community had never participated in any stage of the project, except for the locations where household systems were also being piloted (Salaiya by GBMM). In most cases, the local people had no idea what was being built in the nearby school, or worse, they did know and were upset about it given their own water scarcity problems.

The failure to adopt participatory methods on the part of the government can be attributed to several factors, such as the hierarchical structure of PHED, which tends towards strictly top-down processes; its lack of experience with participation as both a concept and an ideal; and the sheer lack of human resource capacity required for administering such vast geographical areas in this way. Hence, it is not surprising that several government officials interviewed by the team insisted that NGOs needed to take on the responsibility for this aspect of WWM.

Primary and secondary stakeholders alike should be involved systematically in the process – right from the decision whether to implement WWM in a particular ashram and through the construction, implementation, and usage phases. This involvement will lead to a higher degree of ownership and interest in the system. A case in point is Ganganagar in Dhar district (described above), where the likelihood of usage and sustainability is high. Proper stakeholder involvement will require additional resources, both human and financial. It will require partner NGOs and/or government employees to conduct visits to the proposed WWM sites and to introduce the concept and the system to ashram students and staff, allowing them to make their individual choices regarding WWM. The research study revealed the existence of significant gaps, particularly in human resources, in accomplishing this goal. PHED does not have enough manpower to organize frequent visits to each and every site location, especially if WWM were to be scaled up and if it were to include full participation as a priority. This was made clear during a visit to a building site near an urban area where the team spent time in the nearby community. The local residents were deeply upset by a broken water pipe system about which they had complained to PHED several times. PHED officials, when questioned, reported that they often cannot respond quickly to such complaints because of limited human resources.

It is not clear whether or not negligence was also involved, but it is clear that the geographic area covered by each official and the high population density make it difficult for PHED to work
closely with ashrams. It is also difficult under the current hierarchical structure for PHED to build close personal relationships with stakeholders in the manner that small local NGOs can—and often do. PHED and other governmental departments would need to hire additional staff to accomplish this goal, and then train them in participatory techniques.

**Recommendations**

Based on their research and field observations, the team makes the following recommendations:

- **Local NGO motivators:** PHED has neither the tradition nor the required capacity to make WWM participatory. Support from local NGOs for this process is necessary. It would be helpful if the government were to revise their attitude towards participation and to sensitize their staff about the potential of this approach. Whether or not they choose to pursue community-driven policies on a large scale, the staff of PHED and other departments should be made aware of the benefits of participatory methods and should make room for community input into WWM. The government can learn from the NGOs in this regard. However, as long as the government does not have the capacity to implement the participatory method, the team recommends handing over activities aimed at grass-roots motivation and participation to select local NGOs. There is also a need for improving the skills and efficiency of NGOs, because it will be difficult to manage the application of a time-consuming community-participation approach in the field while scaling up WWM. One solution to this problem could be choosing a motivator at the village level. This person—(for example, a religious head or another respected local person)—could be the link between people at the grass-roots and the implementers, and could make sure that information travels both ways.

The team suggests that the motivator should be chosen through the designated NGO responsible for a particular block in a particular district. GBMM has, for example, successfully used motivators to promote household greywater reuse systems. The following model has been suggested: local leaders can be identified through the NGO and possibly provided some compensation in exchange for building the system in their homes, receiving training at the ashram on the WWM system, and facilitating communication between the NGO and the local village. A small cluster of villages can be created, with one motivator being responsible for all the villages. This individual would go from house to house and introduce the concept to the people individually and also demonstrate its potential usefulness. Significantly, if WFP or TWD could provide subsidies for building the system at the household level, it would be possible to create a much broader impact.

A motivator will also be able to act as a link between the community and the service provider, notifying them of any problems with the system and initiating demand creation in the community. The motivator could be affiliated with the government instead of an NGO; at this stage, however,

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23 Both said that this may be possible in the future.
as indicated above, the government is not close enough to the community to manage this relationship effectively.

- **IEC exercise for adults:** The team found that IEC for children in relation to WWM has proven to be highly successful, but there is still a lack of proper IEC for adults. IEC for children usually included a detailed mural on the wall of the ashram with attractive images, explaining the caretaking and safety procedures of the system; picture books with similar information; regular lessons by the NGO about the need for conservation, use, and maintenance of the system, safety procedures, etc. IEC for adults should be directed towards the creation of environmental awareness, knowledge about the need for water conservation in the future, as well as the specifics of WWM. This approach would be helpful because many adults did not seem to regard water scarcity as a dire issue; they need to understand that the problem goes beyond a lack of enough wells. All stakeholders should receive IEC that has been designed specifically for them. This means more technical IEC for engineers and a more basic education for villagers and the ashram staff. The information should be presented as part of an awareness campaign at the grass-roots level, perhaps in conjunction with *Jalabhishek* (this is a decentralized water-harvesting scheme in the overall watershed development programme of the GoI) or TSC. More than this, at the government level, there is a need for more convincing programme documentation and statistics. Our study findings show that many officials seemed only partially aware of the benefits of the programme, and had no reports, evaluations, or documents at hand.

**Social inclusion**

Social inclusion is a major aspect of UNICEF’s policy under the agency’s country programme for India 2008–2012. UNICEF defines social inclusion as follows:

> Social Inclusion is one of UNICEF’s central areas of work. [ . . . ] [UNICEF must ensure] that all our policy and programme actions are fully informed of the dynamics of social inclusion that result in persistently unequal outcomes for different groups disadvantaged by caste, tribal, religious and other identities, as well as by geography and other circumstantial factors (UNICEF India Representative, 2006).

Both the concept and the practice of social exclusion exist widely in Indian society. The SC, ST, and OBC are defined as excluded groups, and are regarded as most vulnerable. Within each of these groups, children, especially girls, are particularly vulnerable. To ensure maximum social benefit, the WWM programme should target the most vulnerable sections of society, thus leading to more social equity.

Social inclusion in the context of the WWM programme should be analysed both at the district and ashram levels. At the district level, the research team examined whether the most excluded
or the most vulnerable ashram was receiving the benefits of the programme. At the ashram level, the team studied the differences between tribal and non-tribal students and inmates to assess whether the WWM system exacerbates existing social tensions within the ashram.

Because the programme is intended to have a broader social impact, involving the dissemination of the WWM concept from ashram children to their families and communities, the team also presents here certain aspects of household implementations and of the ashram–community relationship.

Findings and recommendations

Given below are the team’s findings and recommendations concerning the ashram (both at the district and the individual ashram levels) and household implementations.

Ashram setting

- **Reaching the most excluded:** WWM has been implemented in tribal ashrams in an attempt to provide water to the most vulnerable sections, particularly young tribal girls. The ashrams are designated for ST, SC, and OBC children only. Hence, the programme targets the most excluded population which is among the first to suffer from a reduction in water supply. In this sense, it has succeeded in reducing the social exclusion of tribal children in India.

However, WWM has so far been implemented primarily in well-functioning ashrams close to the district centre or the main roads (see map in Appendix C). During the pilot phase, this was done in order to establish demonstration schools that could be used for exposure visits. UNICEF’s implementation ashrams were found to be clean, well-managed, and in good condition, with strong leadership provided by the warden and the functioning PTAs. Interior ashrams (where the WWM programme was not implemented), located far away from the main roads, were found to be in poor condition and in need of repair; they lacked reliable staff, boundary walls, sanitation facilities, and water sources. Because the programme in the long run is supposed to cover 100 per cent of the ashrams in some districts (such as Jhabua), WWM is intended to eventually reach the distant ashrams.

There will be challenges in reaching this goal. Some wardens in the more remote areas of Jhabua stated that their first priority was fencing in the ashram and the toilets, which will be needed before the WWM construction. In addition, interviews with NGO members and government officials revealed that there is resistance to the idea of providing the interior regions with services. Officials rarely visit these remote areas, and any assignment in the tribal region is widely known as a ‘punishment posting’ for an official. In the case of NGOs, the team found that some NGO members were unwilling or unable to travel for hours on dirt roads to get to these ashrams. Indeed, initially some were even reluctant to accompany the research team to the ashrams. In addition, there is risk of violence and robbery in the remote tribal regions of MP.
However, these regions are truly the most vulnerable, and hence must be included in the scale-up plan in a manner that enables WWM to properly function and to bring about the desired impact.

Reaching the most excluded groups is not an easy task, and it should be carefully considered before social inclusion is made a top priority. The goal should not be to implement WWM in every ashram in every state, but rather to focus on those ashrams where the project would really benefit those who need it the most. Very often, the people who need WWM the most might not be able to benefit from the programme before their other needs are targeted and met. This factor should also be taken into consideration in the selection of ashram sites for WWM programme implementation.

The team recommends that the WWM programme should be combined with other welfare programmes dealing with tribal areas to ensure that the system will be available and functional in the most excluded regions of MP. This could be done within an integrated development framework, where all aspects of ashrams and villages are developed simultaneously, thus ensuring that coordination of effort is achieved. The National Rural Employment Guarantee scheme\textsuperscript{24} is one such scheme where labourers from the marginalized communities could be paid for constructing the WWM system, which would in turn also benefit children from these communities.

- **Social exclusion within tribes and castes:** Although most ashrams where WWM was implemented had residents and staff from different tribes, which do have hierarchies in village society, social exclusion within the ashrams seems not to be a major problem. The students had a very clear idea of who belonged to which tribe, and told us that there were some differences between them. The parents of children in the ashrams also stated that these differences existed. For example, two Bhil women in Jhabua said that Bhils are different from Patelias because Bhils are not educated. A Patelia couple in the same village did interact with Bhils, but did not eat with them nor would they let their children marry them. They stated that they (Patelias) did not have the same bad habits as Bhils, such as smoking, eating meat, and being less clean. They wanted to maintain their difference. In the ashrams, nobody was excluded from playing games, nor destined to do specific kinds of work. Students as well as wardens stated that all children played with each other and claimed that there were no major problems of social tension.\textsuperscript{25} The social situation in the ashrams can be monitored by a warden by assigning various tasks in the school to mixed-tribe groups, such as running the WSC.

\textsuperscript{24} Under the National Rural Employment Guarantee scheme, a minimum of 100 days of paid work is guaranteed for people in rural areas. These people are often employed as labourers for developmental and infrastructural projects and activities.

\textsuperscript{25} There may have been underlying tensions that could not be assessed within the scope of this study.
However, during the scaling-up phase, if the project is pursued in more heterogeneous settings, WWM is likely to engender social tensions among the castes. While WWM has to date been limited to tribal ashrams, where caste- and tribe-based discrimination with regard to water usage and sanitation facilities was found to be minimal (although still existing in villages), if it is pursued outside of these environments in the rest of rural India, it is likely that caste issues may affect usage. Some implementation areas in eastern MP (where more SC children attend ashrams) are already confronting such issues. Wardens in Jabalpur reported that upper-caste parents refuse to allow their children to clean the WWM system because that work is traditionally meant for the lower castes. In addition, different castes often use different water sources in rural India, and WWM mixes bathwater from all students together, a practice that may be unacceptable in other communal environments or at the village level. An aggressive IEC campaign aimed at both parents and students would be necessary to combat these prejudices, even if the number of cleaning tasks meant for students were to be reduced in the future. New implementations in these areas should be closely monitored for signs of discrimination along caste lines, and a social evaluation should be performed in mixed-caste settings.

The issue of social inclusion will need to be addressed differently in each implementation because of demographic differences (variations in population size and composition, particularly in terms of tribes and castes). This challenge needs to be addressed during the scaling-up phase.

- **Knowledge dissemination:** Knowledge dissemination about WWM from the ashram students to their home villages is an important part of the WWM programme. In this way, knowledge about options for conserving and saving water will reach outside the ashram to a larger marginalized population.

Ashram-to-village knowledge dissemination has not yet succeeded. While a few children stated that they had told their parents about WWM and claimed that their families had shown an interest in building the system in their homes, this was not the general practice. It also seems that they are not being given specific encouragement or IEC in this area. Additionally, in most villages, people living close to the ashrams had not heard of WWM or had no knowledge of the system. Some people complained that the ashrams received better water facilities than the villages and said that they were not allowed into the ashrams to collect water (the ashrams are closed to outsiders because of security reasons). There is sometimes a perception among villagers that the water supply of the village is neglected by PHED and that, at the same time, the department is showcasing WWM at the local ashram. The team encountered this belief in two villages, Katiyaghat and Padariya (both in Jabalpur district), with new implementations.

The relationship between the ashrams and the surrounding villages seemed to be very limited. In this regard, the team suggests that the WWM programme should strive for parallel and simultaneous development of both the ashram and the village communities and should promote
sharing of knowledge and benefits. At a minimum, villagers should be included in IEC plans for the ashram. Wherever possible, water should be shared with the village through a simple pipe. In one ashram (Kamala Nehru Girls Ashram, Betul), the team found that the relationship with the village was quite good. The ashram was selling some excess water to the village, which in turn took care of the school electricity bill. However, not all schools have excess water. In this case, it is likely that water is particularly scarce and hence tensions may be high. Hence, PHED should strongly consider improving water sourcing for the village simultaneously with implementing WWM. In general, communication between the government and the community was very weak, leading to frustration.

Additionally, IEC work with the students should encourage them to think about their own families, homes, and villages. A specific set of materials meant for sharing with their families should be developed.

Private household setting

- **Reaching the most excluded groups:** The private household implementations are not affordable for the poorest and the most excluded groups in the community. A household greywater reuse system can be built for Rs. 845. This is equal to about half a month’s salary of a landless Bhil labourer. Hence, it would not be possible for most of these families to have WWM in their homes at their own cost; they would need the government to subsidize the cost.

In Kokawad, in Jhabua district, the household survey found that most of the villagers had heard of the household greywater reuse system. However, some people from the Bhil tribe stated that they could not afford the system, although they were interested in having it. Subsequently, they expressed a wish for some financial support from either the government or NGOs. The system found in Kokawad households is very simple and is used mostly for gardening. It consists of four very small chambers, which are easy to clean and maintain. The bath and the system are situated right next to a big garden, and the water from these is used mostly to water it. This is a good example of the flexible application of the greywater reuse design, which can be adopted by the community more easily, provided that financial support of some kind is available.

- **Social exclusion within tribes and castes:** Social distinctions are more marked and the potential for social exclusion between tribes is far greater in the hometowns of the ashram children and in the communities surrounding the ashram than these are in the ashram setting. The team found that the children of one tribe would not play with or speak to the children of other tribes. Household interviews showed that this tribal distinction or consciousness was

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26 Most households could not even afford to have a toilet without a full subsidy.
widespread among adult villagers. Bhils, for example, are considered to be subordinate to Patelias and Bhilalas. Furthermore, they are considered by others (and to some extent even by themselves) to be less clean, more illiterate, and more prone to habits that were considered undesirable such as drinking alcohol and eating meat. In the village context, the selection of recipients for any financial support for the installation of individual household greywater reuse systems may lead to jealousy and exacerbate social tensions. The implementing agency should attempt to select grass-roots motivators and other workers (labourers, etc.) from different tribes in order to avoid this result. In one instance it was found that construction workers selected for building the system were held to be chosen unfairly (although not simply for tribal reasons).

- **Knowledge dissemination:** Knowledge dissemination from private household implementations to other houses in the same village was successful overall. In the implementation villages, all interviewees, including villagers who did not have a WWM system, knew about the household greywater reuse system and said that they wished to have one. This was in some cases due to the employment of a local motivator (paid by an NGO), who installed the system in his or her own house and then informed neighbours of its benefits.

Where knowledge dissemination has been successful, it has been facilitated by IEC activities and motivators, but not directly by the ashram children. This is an interesting development as it contradicts the theory of child-to-parent knowledge dissemination and transfer, where information from children is expected to trickle down to their parents and families, and thus reach the larger community. This theory currently forms the basis of the objective of knowledge dissemination under the WWM programme. In relation to private household implementations, at this point, the most vulnerable sections will be able to benefit from WWM only if they get some kind of financial help. For this purpose, the team suggests that additional IEC exercises should be carried out in the villages. In addition, subsidies for BPL households should be offered and economical design options should be made available. It was found that the simplest designs were the ones most likely to be used by those who were not paid to implement the system.

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27 For example, the case of implementation in Kokawad (Jhabua) with the partner NGO, NCHSE.
Sustainability

There are several indicators that can be used to measure the sustainability of a project over the long term. The team has based the following indicators for the sustainability of the WWM programme on the World Bank’s evaluation indicators (OED, online). While this is in no way an exhaustive study of sustainability, these criteria are essential for evaluating the proper functioning of the system during the current scaling-up phase and also well into the foreseeable future.

These indicators are:

- demand and need for the WWM system should be high;
- social acceptability of the WWM programme should be sufficient;
- responsibility for the O&M of the WWM system should be clearly defined and should be duly followed;
- responsibility for regular monitoring should be clearly defined and should be allocated to competent authorities and departments; and
- the WWM programme should show resilience to institutional shifts and stakeholder turnover.

Findings and recommendations

Based on the above indicators as well as on the team’s research findings, the team makes the following findings and recommendations regarding the sustainability of WWM:
• **Demand:** Water scarcity must reach a sufficiently critical level to make users feel a need for water reuse. It is only then that the WWM system can remain in use. In one ashram, greywater was simply being washed out into the ‘garden’ – consisting of some trees near a lake – because the ashram had actually no need for the implementation. This ashram seemed to have an ample water supply already. Another ashram planned to run the system only during the water-scarce months of the year and otherwise leave it turned off, because they often had a regular tap water supply. While this may be a practical way of using the system, it is not intended to be used in such a manner, and this would preclude the possibility of groundwater recharge through water saving throughout the year. In another ashram, some staff members stated that the WWM system was only turned on when visitors came. However, with too little available water in the ashram, reuse becomes unfeasible on its own, and hence must be combined with rainwater harvesting (as per the WWM model). For example, without rainwater harvesting, younger students may be forced to bathe at a local hand pump instead of at the ashram, as in Geru Ghati (Jhabua). The same is true for the potential of greywater reuse in private households. Families who have so little water at home that they are forced to go to the nearest water body to wash and clean do not produce sufficient greywater at their houses to keep the reuse system in operation.

Plans for WWM should be established in concordance with water availability. There should be a range for water availability – both a lower and an upper limit – within which the usage of the WWM system becomes most likely. This will prevent the use of precious resources in implementing systems that will not or can not be used.

Demand is also a factor in the awareness of water scarcity and in the recognition of the usefulness of WWM in alleviating water shortage problems. According to several officials interviewed, the water supply is meant to be demand driven. The team, therefore, suggests that villagers and ashrams should express a demand for the WWM system if they wish to receive it. An effective IEC campaign becomes important here. Demand can be generated as a result of exposure visits to those ashrams where the WWM system is already in place. However, in the first place, the population must be sensitized to the threat of water scarcity. Many people are not aware that the problem cannot be resolved simply by drilling more and more wells, or that it is likely to get worse each year in some districts. As pointed out earlier, a comprehensive awareness campaign dealing with water scarcity, safe water, and sanitation issues should be launched in conjunction with the TSC campaign, or through *Jalabhishek*, or as part of any other programme that the government may introduce in the future. The campaign, which should be statewide, should inform people about the dangers of depleting groundwater

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28 The names of some ashram locations have not been given here in order to protect the confidentiality of those interviewed.
and explain why drilling more tube wells will not necessarily provide more water in the long run. The campaign should also discuss the potential for rainwater harvesting and greywater reuse, both at the household and institutional levels.

- **Social acceptance:** While a complete study of social acceptance was outside the scope of this research study, the results of the team’s informal interviews and household surveys on the acceptance of greywater reuse are presented here.

The results indicate that there is some resistance to using greywater. In some cases, there is extreme resistance, to the extent that one respondent stated that a parent would remove the child from the ashram if greywater was being used there. It is pertinent to note, however, that the most resistant individuals also had not been exposed to the WWM system, and hence might not be able to judge the level of acceptability through imagination alone.²⁹

In November 2006, DFID conducted a survey on user perception of greywater in Dhar and Jhabua (DFID, 2006). The DFID team findings agree with the main findings of this report, which state that greywater reuse is more likely to be accepted in the following contexts: when there is an actual water scarcity; when the cost of the system is affordable; when there is minimal human contact with the water; when maintenance is simple; when the community feels the need for water conservation; and when there is awareness of the health risks associated with greywater disposal.

To increase social acceptance, the programme should also target the most influential people in the village through its IEC campaign. In the case of tribal communities, this is often not the village *sarpanch* (the democratically elected village leader) but the *tadvi* (religious head) whose voice is more widely respected.

- **Operation and maintenance:** Our field visits showed that some ashrams are hiring extra labourers for the maintenance work on the WWM system rather than having the children do the cleaning. In some ashrams, children were found to be cleaning with the help of ashram staff or outside labourers. Additionally, in Jabalpur district, the team was informed that TWD was restricting cleaning by children and was providing additional funds for hiring sweepers for the job.

Some NGO members and government officials stated that it is essential for children to maintain the system as this engenders a sense of ownership among them, and claimed that this is helping in making the WWM system sustainable in the long run. One solution could be to train the

²⁹ In the household survey in Kokawad, where experience with WWM was among the longest, the impression was more positive and knowledge of greywater reuse was high.
children in system maintenance and to continue to involve them in the process but without giving them full responsibility for cleaning. The research team found that this already was happening in several locations. The regular and proper maintenance of the system is crucial to its functioning. Hence, the team recommends that the responsibility for this task should be allocated clearly and duly carried out. A well-trained water-supply employee or sweeper can do this task if he or she is compensated appropriately.

- **Monitoring:** Water quality is perhaps the most critical element in ensuring children’s health, and hence also in the sustainability of WWM. In addition to the monitoring of O&M, monitoring of water quality is also equally important. The research team encountered different opinions among ashram staff and government officials about who was supposed to do the monitoring. In addition, the research team did not find documented monitoring results anywhere. This gap must be addressed urgently.

The monitoring of water quality is also a task that the children are supposed to perform through turbidity testing using the Water Safety Kit. However, at certain places the research team found that the rainwater tank was not being cleaned regularly and the chlorination was not being performed in any scientifically specified quantity. There was also no consistency in the frequency with which monitoring was being done.

The responsibility for regular monitoring should be clearly allocated. This will help in avoiding any lapse or negligence by non-professional people like children and wardens. The first line of responsibility for the maintenance and cleaning of the WWM system rests with the warden. A regular assessment of the system should also be included in the checklist tasks of the Block Education Officer (BEO) or the Circle Organizer (CO) in TWD, in addition to random (but less frequent) PHED testing procedures. This should also form part of the standard reports submitted to the district administration.

While a Water Safety Kit has been provided to each ashram for self-testing of water, more thorough chemical and biological tests should be conducted regularly for collected rainwater. PHED has set up laboratories in most districts of MP for such testing. Testing is currently being performed at some locations, but is not a standard practice.

Copies of these water quality reports should be provided to the ashram warden, so that progress can be verified by surprise checks. If the warden has been given the responsibility of accounting for regularly conducted test results, he or she might be motivated to get the water tested. There should also be annual random testing of ashrams by the Department of Public Health and Family Welfare in order to cross-check the reports from PHED on water quality as well as to examine the children’s health.
• Resilience to institutional shifts and stakeholder turnover: It is difficult to make the project sustainable when wardens, politicians, and NGO staff are shifting positions regularly. Many government officials interviewed by the team had only recently taken up their positions, and hence lacked sufficient knowledge of WWM, especially concerning responsibility for O&M, monitoring of water quality, and programme evaluation.

To ensure programme sustainability, it is necessary to avoid or reduce dependence on individual personalities among the stakeholders. During the scaling up of the WWM programme, attention should be given to compiling more documentation – on the IEC processes, delegation of responsibility, repair processes, and health guidelines – especially for the benefit of those people who are new to the process. The maintenance checklist created by NCHSE in Jhabua should be distributed to all ashrams where WWM is being implemented, and must be used diligently and responsibly. O&M manuals should be in the hands of all key stakeholders and should be updated regularly. A safe usage manual should be developed for system users such as ashram staff. Higher-level officials should receive project evaluation and health reports so that they can be convinced that the system is being implemented successfully.

Actual impact model

The intended impact model (see Figure 2) was modified to describe the actual status of the programme’s impact, based on the team’s findings in the field.

Findings and recommendations

The actual impact model of the WWM programme (see Figure 5), differs to some extent from the intended impact model (Figure 2). As the WWM programme is still young, it cannot have made the intended impact yet. As the programme is scaled up (so that it will eventually cover all the ashrams in MP), it should be developed and improved along the way.

All elements that are not in accordance with the intended model are emphasized in bold in Figure 5. The team has identified these areas in the earlier chapters and has made recommendations for improving WWM in order to achieve the intended impact. While much of the original intended impact model has been adhered to, the team has identified several gaps in the efficiency and sustainability of the WWM programme. At this point of the programme’s life, it is not possible to thoroughly assess the long-term results, and hence this must remain a matter for future evaluation. To improve the critical aspects, the team has referred to the recommendations made earlier, which will be summarized at the end.
Figure 10: Actual impact model of UNICEF’s WWM programme
Overview of Major Recommendations

Based on the analysis of the main research findings, the team makes the following recommendations for the future scaling up of the WWM programme:

**Flexibility**

- A selective, phased approach for scaling up will be more successful than a blanket approach for implementing WWM in all the ashrams at the same time.

- Provide all or most ashrams with the option of adopting only the rainwater-harvesting system. The greywater system should be provided only to those ashrams with a high demonstrated need for the system and those that have the motivation necessary for implementing it.

- At the household level, a simplified system – such as the one employed in Kokawad’s individual households, and which proved to be popular – should be implemented. Flexible options should be provided to individuals as well as to ashrams.

- The programme must be responsive to ongoing feedback from users so that necessary changes can be made to the system along the way. Technical improvements made to the system at one place should be added to every old location as applicable.

**Integrated development**

- Before implementation, PHED should assess the water needs of the villages surrounding the ashram and provide a water strategy for them as well, or make accommodations for them to access the water of the ashram.

- The development of the ashram should take place in the context of a development plan for the entire community. The WWM programme should combine its efforts with those of other welfare programmes dealing with the tribal areas (such as TSC, but also infrastructural and economic development plans) in order to ensure that the system will be functional in the most excluded regions.

**Information, education and communication (IEC)**

- Concept diffusion: Develop a full-scale awareness campaign about water scarcity in MP and the need for water conservation. This could be done in conjunction with TSC or Jalabhishek. This campaign should also be extended to all levels of government officials,
NGOs, and other players, so that they are sensitized to the reasons behind the development and adoption of the WWM system and do not acquire mere technical knowledge of the system.

- Incorporate a ‘motivator’ at the village level: A motivator at the village (or village cluster) level may be hired through the responsible NGO partner for ensuring community participation, overseeing concept diffusion, and for providing basic technical support to the project. Religious heads have more influence in the village than the sarpanch, and hence they must be involved in the IEC process from the very beginning.

- A social study should be conducted in each major region (perhaps by a local research institute) before implementation to ascertain the level of acceptance of greywater reuse and to find out what kinds of IEC methods will work in the specific location. Furthermore, social problems that could arise in regard to the system, such as caste discrimination, should be assessed especially for the mixed-caste regions. The research institute selected could work in conjunction with the NGO partner for this purpose if necessary.

**Operation and maintenance**

- Allocate maintenance tasks clearly to ashram staff members to ensure that the systems are maintained regularly. Some caretaking tasks can be performed by children under the supervision of the warden, but the full load of maintenance should not fall upon the children. If the water supply employee or the sweeper is used for this task, care should be given that he or she is remunerated accordingly.

- Monitoring of water quality by an appropriate authority (PHED, etc.) should be done regularly and should be built into the programme in a standard fashion. It should not be left entirely up to the warden and the children to check water quality, including rainwater, although it is considered safe in rural India. Responsibility for monitoring should be established, including regular visits by the relevant government officials. The Water Safety Kit will allow for more frequent and informal testing. PHED officials should also check the results of these tests while gathering their own laboratory samples.

- The checklist for maintenance tasks created by NCHSE in Jhabua should be distributed to all WWM locations and its use should be a requirement.

**Evaluation**

- A systematic annual evaluation of the system should be carried out by a lead agency (such as UNICEF) covering the entire state. Unannounced visits are best for determining if the
system is operational and being used properly.

- Further independent evaluation is also recommended for assessing the overall impact of WWM and for determining whether it is providing enough water (or saving enough water) to offset the cost of the programme.

**Participation**

- All stakeholders (including children) should participate and have a voice in the decision-making process. Decisions should not be taken without the knowledge and consent of the stakeholders. Local NGOs or motivators should be involved in making the WWM programme participatory at the grass-roots level. The government should make all necessary efforts to ensure this participation and to sensitize its own employees as to the intrinsic benefits of participation for the achievement of development goals.
Conclusion

This study focuses on the WWM programme, particularly during the scaling-up phase, and examines the challenges of transferring the programme from a UNICEF pilot into a government-managed programme. The four areas of investigation are policy inclusion, participation, social inclusion, and sustainability.

During the pilot phase, the WWM programme was entirely supported by UNICEF, both financially and organizationally. UNICEF chose local NGOs for performing IEC activities and for overseeing the field-level needs of each ashram. These ashrams were then used as demonstration units for visitors from other ashrams, government officials, NGO representatives, and development workers interested in replicating the programme in their areas.

Hence, it makes sense that the schools chosen for the WWM programme should be well run, that the school inmates (children, staff, and other personnel) should be enthusiastic, that the school should be located near a major city, and that the school should have a relationship with local NGOs that can assist them. However, the team found that as the programme grew, it became more difficult for the smaller NGOs to maintain the same standards of support in every ashram. This problem will undoubtedly deepen as the handover to the government is completed. At this point, PHED and TWD do not have the requisite manpower for visiting each ashram on a weekly basis, nor can they perform future implementations in a participatory manner.

It was also found that the level of motivation for using the WWM system is greatest in areas with high levels of water scarcity.

A combined reading of these two findings indicates that a blanket scaling-up approach to WWM will not be successful. This suggests that energies and resources should be concentrated first on those ashrams where WWM is likely to be successful.

However, the goal of the programme is to provide every needy child enough safe water, focusing first on the most vulnerable. The problem is that under the prevailing conditions, the most vulnerable children are unlikely to gain the most from WWM.

If the neediest ashrams are to be reached first, a general and concerted effort must be made to improve the overall quality of the ashrams under the WMM programme. The scaling-up process also necessitates that attention should be paid to the surrounding village communities and to their water needs. If the ashram is developed in isolation from the local villages, it can become a
source of resentment and thus defeat the objectives of participation and social inclusion that are critical for long-term project gains.

It is, therefore, suggested that the programme should be situated within an integrated rural development framework. The entire village should be developed in conjunction with the WWM programme. This would allow the programme to be implemented in the neediest schools without ignoring the needs of the other stakeholders.

To carry out this mission successfully, WWM should become a community-driven movement. While this is the intention of WWM, several more steps are needed for the realization of this goal. The team found that one NGO, GBMM, is using the grass-roots motivator model for spearheading household implementations of the WWM system. Such a motivator at the village level may be needed not only to act as a leader in disseminating the technology and the concept of WWM, but also in addressing any technical problems that may arise. Training should be given to the motivator for carrying out minor repairs. This individual could also streamline the process of repair and maintenance. This would not only ease some of the burden faced by the NGO but would also allow the WWM project to reach more distant and interior regions.

The motivator can also ensure that community meetings about the project are held and that villagers as well as ashram staff and children are able to make an informed choice about implementing the WWM system in their area. The motivator can propose suggestions for improvements, ensure that water quality tests are reported properly (and indeed are actually being carried out), and serve as a link between the ashram and the local community. The Rural Development Department should be involved in the project, and should also coordinate project activities with the motivators, because these people have an important grass-roots presence and are already involved in the TSC programme. Meanwhile, UNICEF should actively promote increased social sensitivity among the various government departments, particularly PHED.

The problem of reaching the target beneficiaries – the most vulnerable children in terms of water scarcity and social exclusion – is a serious matter when it comes to UNICEF’s mission in tribal ashrams. While it is a laudable goal to try to provide water to such children on a large scale by involving the Indian government, the GoI will fail to achieve this aim if it does not follow a model that can be tailored to meet local needs and demands and if there is not enough community support for the project in the local area. The government, then, needs to work while keeping in mind the requirements of people at the grass-roots level instead of simply constructing the WWM systems in a social vacuum.
References


## Annexure I

### Research methods

<table>
<thead>
<tr>
<th>Qualitative method</th>
<th>Target group</th>
<th>Sample size</th>
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</thead>
<tbody>
<tr>
<td>Formal semi-structured interview</td>
<td>TWD officials</td>
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</tr>
<tr>
<td></td>
<td>PHED officials</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Other MP government officials: IAS officers and local government officials</td>
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<tr>
<td>Informal semi-structured interview</td>
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<td>NGO members</td>
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<td>PTA members</td>
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<td></td>
<td>Students</td>
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</tr>
<tr>
<td></td>
<td>Ashram staff: warden, peon, water supply employee, cook</td>
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<td>Ashrams with implementation</td>
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</tr>
<tr>
<td></td>
<td>Ashrams without implementation</td>
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<td></td>
<td>Households with private WWM systems</td>
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<td>Focus group discussion</td>
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<td></td>
<td>Students</td>
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<tr>
<td>Ranking (PLA)</td>
<td>Students</td>
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<tr>
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<tr>
<td>Observations</td>
<td>All</td>
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<table>
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<th>Target group</th>
<th>Sample size</th>
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<td>Villagers</td>
<td>15 households</td>
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<td>Statistical mapping</td>
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<td>TWD data from 4 districts</td>
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</table>

1 An employee of the ashram whose job it is to fetch water from nearby sources for daily use.
## Annexure II

### Stakeholder analysis

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Activities and responsibilities</th>
</tr>
</thead>
</table>
| UNICEF Bhopal                                         | Main stakeholder of initial implementations  
Provide technical support to new implementations    |
| Local NGOs                                             | IEC activities with children and ashram staff                                                  |
| Children at ashram                                     | Maintain and clean the greywater reuse system as required. Monitor water quality through turbidity test.  
Participate in IEC activities. Join Water Safety Club as members. |
| Water Safety Club (select group of 5–20 children)      | Meet regularly with NGO representative to learn about WWM-related topics such as health and proper use of the system.  
Lead maintenance and IEC activities of the WWM among ashram children |
| Panchayat and Sarpanch (elected village leadership council) | Approve all projects in the village, including construction of WWM                             |
| Public Health and Engineering Department (PHED)        | Responsible for construction, monitoring, and carrying out repairs as needed                    |
| Tribal Welfare Department (TWD)                        | Provide funds                                                                                   |
| National Engineering Research Institute (NEERI)        | Develop technology and concept of WWM in conjunction with UNICEF                                |
| Warden at ashram                                       | Oversee entire operation of each ashram. Monitor water quality and O&M of system                |
| Water supply employee, cook, peon                      | Monitoring and cleaning                                                                          |
| Parent Teacher Association (PTA)                       | Monitoring and cleaning                                                                          |
| Parents of children at ashram                          | Passive receivers of knowledge about WWM                                                         |
| Villagers in surrounding area                          | Passive receivers of knowledge about WWM                                                         |
Maps of Jhabua and Dhar Districts: Ashrams and economic status of villages

Jhabua
Both maps are based on data from the 2001 Census.
From pilot to evaluation

1. Feasibility discussion and proposal after discussion with experts with shortlist of pilot regions
2. Discussion with higher UNICEF offices
3. Partner with reputed research faculty for sociological study
4. Partner with reputed national-level research institutions in the field (NEERI) for local conditions
5. Partner with NGOs of the shortlisted regions
6. Interactions with Secretary, Rural Development, GoI for letter of cooperation
7. Interactions with Chief Secretary, MP
8. Letters of Cooperation

For IEC campaign:
- Preparation of social & technical aspects
- Technical mock preparation
- Model testing under similar conditions
- Evaluation reports
- Feedback from experts and NGOs
- Draft shortlist of test villages based on social & technical parameters

For pilot:
- Technical, social, and health evaluation reports for different test conditions
- Selection of villages
- Technical, social, and health evaluation reports
- Pre-test feedback
- Technical, social, and health evaluation reports
- Evaluation & testing phase to begin
- Shortlist of test villages based on social & technical parameters
- Final feedback

For evaluation:
- WWM trainings and exposure visits
- Technical, social, and health evaluation phase
- Technical, social, and health evaluation
- WWM trains and exposure visits
- WWM system installation

For feedback:
- Go back to previous stages where changes are necessary and go through the process again until the results are positive
Annexure V

Survey sample questions

District collector

1. What are the problems faced by the marginalized communities in the district?
2. What are the schemes run by various departments for the welfare of marginalized communities (women, children, SC/ST)?
3. What is the number of NGOs in the district?
4. What size are the NGOs?
5. How often do panchayats meet?
6. How often do the district officials and the NGOs meet?
7. Is community management of the local water supply part of the government water policy?
8. How exactly did you involve the community in the project at each phase? Please describe any further meetings held, who attended, etc. Were any women present at these meetings? What about ST representatives or SC representatives?
9. Can you describe the WWM project in detail? y/n
10. Who is responsible for the O&M of the WWM project?
11. Are there any problems in making the benefits reach the desired recipients?
12. How does communication take place through the chain?
13. Do others in the community also struggle with water needs?
14. How did they manage their water needs traditionally or before this programme?
15. Were any traditional local solutions considered prior to being included in WWM?
16. Does the community benefit from the system right now? If so, how?
17. Is there a way that the benefits could reach more people?
18. How will this be incorporated into the long-term plan of the government?
19. Are the maintenance funds allocated indefinitely into the future?
20. Is there a difference between NGO implementations and government implementations?
21. Would you pay for this service at your house?

Engineers PHED: Executive engineer, assistant engineer, sub-engineer

1. Can you describe the WWM project in detail? y/n
2. How often do the district officials and the NGOs meet?
3. Is there local administration of the WWM system (O&M)?
4. Are skilled maintenance workers and supplies easily available locally?
5. If available, then who trained them and how long did it take to train them?
6. Who do you choose to train locally? Is there an opportunity for women to be trained?
7. What is the process that you go through while assessing the need for the construction of WWM systems?
8. When a system breaks down, how do you find out?
9. How exactly did you involve the community in the project at each phase? Please describe any meetings held, who attended, etc. Were any women present at these meetings? What about ST representatives or SC representatives?
10. Are there any women’s self-help groups in the region? Are you involving them? If yes, how?
11. Is participation important? If yes, why?
12. How is participation implemented in the WWM programme?
13. Who has the actual power to influence decisions, before, during, and after implementation?
14. Do you talk to people in the villages (women, children, PTA members, landless labourers) before making recommendations?
15. Were the plans modified for different localities? If yes, how?
16. Did you find any difference in the ways of working of NGOs and UNICEF, on the one hand, and those of your own, on the other hand?
17. Can you describe the operating procedure of the system?
18. Were you involved in creating these procedures?
19. How did you learn them?
20. How will these procedures be incorporated into the long-term plan of the government?
21. Does your department run a campaign to showcase the benefits of WWW? If yes, in what way?

**Pradhan of panchayat**

1. How many meetings does the panchayat organize throughout the year apart from the four compulsory meetings?
2. How many people usually attend the panchayat meetings?
3. Do people from all communities (SC/ST) and women attend the meetings? Who comes?
4. Can you describe the WWM project in detail? yes/no
5. Do you know who is responsible for maintenance? yes/no
6. For the implementation of any project in the ashrams, what is the process that is generally followed? Does it necessarily have to pass through the panchayat?
7. What is participation? Why is participation important?
8. How is participation implemented in the WWM programme?
9. How do the villagers manage their water needs?
10. Has the panchayat on its own come up with any proposal for the implementation of the scheme by the district authorities?
11. Did the departmental engineers come and talk to you before implementing the WWM in the school villages?

**NGO leader**

1. Could you describe the WWM project in detail? yes/no
2. Could you describe the operating procedure of the system? yes/no
3. Were you involved in creating these procedures? How did you learn them?
4. How do you define participation?
5. What is the training frequency for each group (masons, district collectors, wardens, parents, children, etc.)?
6. How is participation implemented in the WWM programme?
7. Is there a general awareness in the community and among NGOs of the opportunities for participation?
8. Who is chosen to participate and why?
9. Is the WWM programme sensitive to feedback from the local residents and other stakeholders (before, during, and after implementation)? Please give examples.
10. Do the children have a say? Can they influence the decisions? Please give examples.
11. How would scaling-up be done in relation to participation?
12. How often do the district officials and the NGO representatives meet?
13. How will this be incorporated into the long-term plan of the government?
14. How exactly did you involve the community in the project at each phase? Please describe any meetings held, who attended, etc. Were any women present at these meetings? What about ST representatives or SC representatives?
15. Who do you choose to train locally? Is there an opportunity for women to be trained?
16. What is your opinion about the potential of local governments to manage the WWM system themselves?

**Women’s focus group**

1. Do you as women feel that you have influence and that your participation can be equal to that of men?
2. How often does the panchayat meet?
3. How many people usually attend the panchayat meetings? Do you go too?
4. Do you know that there is a scheme called WWM that is implemented by the government in the ashram schools? yes/no. If yes, can you describe the scheme?
5. Do you know who is responsible for maintenance? yes/no
6. Do others in the community also struggle with water needs?
7. How did they traditionally manage their water needs before this programme was introduced?
8. How many meetings are arranged by the panchayat during a particular period?
9. Did the departmental engineers come and talk to you before implementing the WWM in school villages?
10. When a system breaks down, how do you manage it? Do you inform the officials? How much do they take care of your complaints?
11. Would you pay for this service at your house? If yes, how much?

Warden/teacher/caretaker

1. What is the stated number of pupils enrolled in the school?
2. What is the usual dropout rate by the end of term?
3. Can you describe the WWM project in detail? yes/no
4. Do you know what participation is?
5. Do you think it is important to participate? If yes, why? If no, why not?
6. Do you discuss matters with the PTA before suggesting any project for implementation in the school?
7. Do the parents come up with suggestions for bettering the school that they might have seen elsewhere?
8. Do you feel that you have participated in the WWM process? If yes, how?
9. Do you attend meetings related to WWM? If yes, which meetings and how often?
10. Do you feel that you have the power to influence and change the situation?
11. Does everyone in the village have the opportunity to participate?
12. Is there local administration of the system (O&M)?
13. Are facilities and people for maintenance easily available locally?
14. What is the training frequency for each group (masons, district collectors, wardens, PTA members, etc.)?
15. Do you know who is responsible for maintenance? yes/no
16. How does the WSC work? What is its purpose?
17. Do you see increased enthusiasm on the part of parents in sending children to the ashram, and on the part of children in going to the ashram, after the installation of WWM and the implementation of a project for solving the problem of water scarcity?
18. What was the biggest problem faced by children when they went out for fetching water and for defecation?

Children

1. Can you describe the WWM project in detail? yes/no
2. Can you describe the operating procedures of the system?
3. Were you involved in creating these procedures? How did you learn them?
4. Have you made any suggestions about WWM? If yes, to whom and when?
5. Who are members of the Water Safety Club (WSC)?
6. Are you a member of the WSC? Is it fun? Would you like to be a member of the WSC?

7. Have you participated in the WWM project? If yes, how and when?

8. When water is not available in the toilets for flushing, where do you go?

9. Did you face any problems when you had to go outside for defecation or urination? If yes, what problems were these?

10. How often do you go out of the ashram? Do you interact with other village children?

11. What is the WSC doing?

12. How often does the WSC meet exclusively? Do they hold trainings or meetings with all the students or with only groups of students? If yes, how often?

13. How do the WSC members train others about sanitation and WWM?
Annexure VI

**Locations visited**

(Note: Some ashrams with no plans for implementing the WWM programme were nevertheless visited for comparison purposes.)

<table>
<thead>
<tr>
<th>Date visited</th>
<th>Intervention status</th>
<th>Name of school</th>
<th>Name of district</th>
<th>Implemented by</th>
<th>Funded by</th>
<th>NGO affiliated</th>
<th>Completed at time of visit?</th>
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<td>Intervention</td>
<td>Katiyaghat Girls Ashram</td>
<td>Jabalpur</td>
<td>PHED</td>
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<tr>
<td>16 July 2007</td>
<td>Intervention</td>
<td>Adiwasi Balak Boys Ashram</td>
<td>Jhabua</td>
<td>PHED</td>
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</tr>
<tr>
<td>Date visited</td>
<td>Intervention status</td>
<td>Name of school Ashram</td>
<td>Name of district</td>
<td>Implemented by</td>
<td>Funded by</td>
<td>NGO affiliated</td>
<td>Completed at time of visit?</td>
</tr>
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<td>Kalidevi Boys</td>
<td>Jhabua</td>
<td>UNICEF</td>
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<td>Ringnod Girls</td>
<td>Dhar</td>
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Background Note on the Internship Programme

UNICEF India’s Knowledge Community on Children in India (KCCI) initiative aims to enhance knowledge management and sharing on policies and programmes related to children in India. Conceived as part of the Knowledge Community on Children in India, the objectives of the 2007 Summer Internship Programme were to give young graduate students from across the world the opportunity to gain field level experience and exposure to the challenges and issues facing development work in India today.

UNICEF India hosted over 57 interns from India, Germany, Denmark, Bolivia, Japan, U.S., U.K., Australia, Ireland, Norway, Finland, Bangladesh, Canada, Italy to participate in the 2007 Summer Internship Programme. Interns were grouped into teams of 3-4 and placed in thirteen different research institutions across eleven states (Andhra Pradesh, Bihar, Jharkhand, Maharashtra, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal) studying field level interventions for children from 4 June to 8 August 2007.

Under the supervision of partner research institutes, the interns contributed a combination of desk research and fieldwork, the end result of which were 15 case studies of UNICEF assisted Government programmes and other interventions aimed at promoting the rights of the children and their development. Six of these are supplemented by short films capturing the reality of children and their families. The case studies cover key sectors linked to children and development in India, and address important policy issues for children in India. These include: primary education, child survival, health, nutrition, water and sanitation, child protection and village planning.

Another unique feature of this programme was the composition of the research teams comprising interns with multi-disciplinary academic skills and multi-culutural backgrounds. Teams were encouraged to pool their skills and knowledge prior to the fieldwork period and to devise a work plan that allowed each team member an equal role in developing the case study. Group work and cooperation were key elements in the production of outputs, and all this evident in the interesting and multi-faceted narratives that these case studies are on development in India.

The 2007 Summer Internship Programme culminated in a final workshop at which all teams of interns presented their case studies and films to discuss the broader issues relating to improvements in service delivery, elimination of child labour, promoting child rights and decentralization and village planning. The KCCI Internship case studies series aims to disseminate this research to a wider audience and provide valuable contributions to KCCI’s overall knowledge base.