The Health Benefits of Water Supply and Sanitation Investments

A review of the World Bank WSS Portfolio and Summary of Impact Evaluation Findings

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IEG’s Health Focussed WSS Portfolio Review FY97-06

To what extent:

- are WSS projects justified by health benefits;
- do WSS contain explicit health objectives;
- do WSS projects invest in environmental improvements likely to improve health;
- do WSS projects target investments towards the poor;
- did expected health benefits materialize
All WSS projects approved between FY97-06 reviewed

<table>
<thead>
<tr>
<th>FY of approval</th>
<th>Active</th>
<th>Closed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY97-01</td>
<td>33</td>
<td>29</td>
<td>62</td>
</tr>
<tr>
<td>FY02-06</td>
<td>55</td>
<td>0</td>
<td>55</td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
<td>29</td>
<td>117</td>
</tr>
</tbody>
</table>
Distribution of the project sample by region (n=117)

- East Asia: 23%
- Africa: 21%
- MNA: 11%
- LCR: 15%
- South Asia: 9%
- ECA: 21%
Half of WSS projects were justified with health benefits, FY97-06...

<table>
<thead>
<tr>
<th>Types of Health Benefits</th>
<th>Percent of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total justified by health benefits</td>
<td>50</td>
</tr>
<tr>
<td>Reduction in waterborne diseases</td>
<td>31</td>
</tr>
<tr>
<td>Gen'l health benefits</td>
<td>22</td>
</tr>
<tr>
<td>-Improved well being</td>
<td>8</td>
</tr>
<tr>
<td>Lower morbidity/mortality</td>
<td>4</td>
</tr>
</tbody>
</table>
But only one in 10 has explicit health objectives.

- Total with health outcome objectives: 10
- Health objectives targeting the poor: 3
- Improve health: 5
- Improve well-being: 3
- Reduce disease: 2
- Raise living-standards: 1
- Improve health productivity: 1

Specific Health Outcome Objectives
The share of WSS projects with a health focus has been declining over the past decade.
Yet most WSS projects support improvements that could provide health benefits.
Only about a third target behavior change

Proposed Activities to Promote Behavior Change

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percent of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total w/behavior change</td>
<td>36</td>
</tr>
<tr>
<td>Among the poor</td>
<td>9</td>
</tr>
<tr>
<td>Hygiene education</td>
<td>25</td>
</tr>
<tr>
<td>Sanitation education</td>
<td>15</td>
</tr>
<tr>
<td>Promotion of specific behaviors</td>
<td>10</td>
</tr>
<tr>
<td>School based hygiene promotion</td>
<td>2</td>
</tr>
</tbody>
</table>
Although only 10% have health objectives, 20% plan to collect health outcome data.

![Bar chart showing the percent of projects for different health indicators.](image)

- **Total - any health indicator**: 19 percent
- **Among the poor**: 3 percent
- **Disease prevalence**: 17 percent
- **Behavior change**: 2 percent
26 closed WSS projects were assessed to see whether they...

- Achieved their explicit health objectives
- Implemented environmental improvements likely to provide public health benefits
- Collected data on health outcomes
- Demonstrated improvements in health outcomes
Seven of 26 closed projects had a health objective, planned to collect health data or actually collected it:

<table>
<thead>
<tr>
<th>Projects with explicit health objectives</th>
<th>Projects with no health objective but planned to collect health data anyway</th>
<th>Projects with no health objective or plan to collect data but collected it anyway</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Kazakhstan Atryau Pilot WSS (1999-2005)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Turkmenistan WSS (1997-2004)</td>
<td></td>
</tr>
</tbody>
</table>
Four WSS projects collected health data; all demonstrated improvements

<table>
<thead>
<tr>
<th>Project</th>
<th>Improvements in Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco Rural WSS (1998-2003)</td>
<td>24% reduction in reported cases of diarrheal diseases in young children between 1995-2000. Significant drop in cases of other water borne diseases and no cases of cholera in recent years. (ICR, p. 5)</td>
</tr>
<tr>
<td>Nepal Rural WSS (1997-2004)</td>
<td>Decrease in the prevalence of water and fecal borne diseases from 83% to 13%, including diarrhea, as reflected in Impact studies. (ICR, p. 38)</td>
</tr>
<tr>
<td>Kazakhstan Atryau Pilot WSS (1999-2005)</td>
<td>Reduction in the incidence of water borne diseases 1999-2002; dysentery reduced from 83 to 8 cases; typhoid from 83 to 0; intestinal infection from 930 to 394; hepatitis A from 230 to 52. (ICR, p. 18)</td>
</tr>
<tr>
<td>Madagascar Rural WSS (1998-2005)</td>
<td>Water-borne diseases reduced between 2002-2004: cholera by 100%; bilharzias by 43% and diarrhea by 8%. Reduction in disease is not attributable only to rural water supply and sanitation. ICR suggests more proximate indicators, such as hand washing and safe storage of drinking water, would have been better. (ICR, p. 5)</td>
</tr>
</tbody>
</table>
What does impact evaluation tell us about benefits of WSS projects?

- IEG reviewed over 100 impact evaluations of WSS interventions across the developing world, NOT limited to Bank projects

- Questions asked:
  - What evidence is there for the multiple acclaimed benefits of WSS interventions?
  - What evidence is there on cost-effectiveness of interventions?
  - What are the information gaps?
What evidence base is there?

- Considerable evidence of positive health impacts of certain WSS interventions
- Lack of evidence of other acclaimed WSS benefits, including time savings (esp. for sanitation) education, environmental health, income poverty reduction
- Limited evidence on cost-effectiveness of WSS interventions
- Absence of CBA taking into account multiple benefits
Health Benefits of WSS Interventions

- Evidence is strongest for health impact of household interventions in water
- Hand washing, sanitation, household and point of use treatment all have positive health outcomes
- Source treatment and community connections show little effects on health outcomes, but may generate other benefits
Health Benefits of WSS Interventions

- Limited available evidence does not point to stronger health impact of combined WSS interventions

- Some evidence of inter-sectoral complimentarity: e.g. impact heterogeneity - those with better education are better able to attain health benefits of improved water
Cost Effectiveness of WSS Interventions

- Limited evidence base suggests that most cost-effective WSS interventions for improving health outcomes are:
  - Hygiene and sanitation promotion
  - Point of use water treatment

- Improved water and sanitation facilities are less cost-effective if only household level health outcomes are considered.

- Considering additional benefits (time savings, environmental health, convenience etc) requires more solid evidence base and cost-benefit analysis.
Conclusions

- WSS interventions can lead to significant improvements in health outcomes
- Limited and declining attention of Bank funded WSS interventions to health outcomes are cause for concern
- Attribution of health improvements in recently evaluated Bank financed WSS projects is weak
- Considerable gaps and weaknesses in evaluation design remain
Conclusions

- Most significant gaps:
  - impact of sanitation interventions
  - source water treatment interventions
  - lack of information on scalability and sustainability of what appear cost effective interventions
  - virtual absence of cost-benefit analysis, limited cost-effectiveness analysis