Access to Water, Women’s Work and Child Outcomes

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World Bank
February 2010
Women’s work and development

It is widely believed that greater participation by women in market based activities produces desirable development outcomes

Yet:

• In many poor countries women’s off-farm labor force participation remains low.
• Women are busy with domestic & childcare activities
• Rural women also spend substantial amounts of time collecting water & firewood
Infrastructure and women’s work

• Concerns that public decision-making about basic infrastructure provision undervalues women’s time in domestic labor & hence places inadequate weight on implications for women.

• Thus, women spend too much time in domestic labor & too little in other productive tasks.

• This has led to calls for better tailoring infrastructure to women’s needs to reduce the time needed for such chores.

• Women’s freed up time could then be used in income generating activities & they could better contribute to growth.
Implications for children?

- Women’s increased control over income could enhance child welfare
- Or, greater female labor force participation (LFP) may reduce the care poor children receive at home
- Also possible impacts of higher female LFP on child schooling and health:
  - **Income effect** makes schooling and health care more affordable.
  - Potential offsetting **substitution effects** in time allocation
    - teenage girls are taken out of school to look after younger children or do domestic chores, or
    - if chores are shared with children, enhanced productivity of domestic labor may liberate them to attend school, with no effect on mothers’ LFP.
This study

Focus: water infrastructure in rural areas of 9 developing countries

- Does better water infrastructure increase poor rural women’s participation in income earning (market based) activities?
- What are the impacts on the health and education of children?
## Rural access to water

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>% HH with water in home/garden</th>
<th>Average minutes (SD), walking one-way, to water</th>
<th>% adults aged 15+ who collect water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yemen</td>
<td>2005</td>
<td>34.1</td>
<td>20 (16)</td>
<td>58</td>
</tr>
<tr>
<td>Morocco</td>
<td>1998-99</td>
<td>21.0</td>
<td>21 (28)</td>
<td>-</td>
</tr>
<tr>
<td>Uganda</td>
<td>2005-06</td>
<td>5.0</td>
<td>33 (28)</td>
<td>68</td>
</tr>
<tr>
<td>Madagascar</td>
<td>2005</td>
<td>3.9</td>
<td>25 (25)</td>
<td>-</td>
</tr>
<tr>
<td>India</td>
<td>1998-99</td>
<td>21.2</td>
<td>10 (12)</td>
<td>84</td>
</tr>
<tr>
<td>Nepal</td>
<td>1995-96</td>
<td>41.3</td>
<td>14 (15)</td>
<td>79</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1991</td>
<td>68.6</td>
<td>42 (48)</td>
<td>61</td>
</tr>
</tbody>
</table>
What does the evidence suggest?
What does the evidence suggest?

- Little rigorous empirical evidence on these issues
- The question left begging: to what extent is infrastructure a key binding constraint to women’s LFP?
  - Literature points to many potential reasons for low female LFP that have nothing to do with infrastructure
- Difficulties in estimation: within a given area, wealthier households will also be more likely to have access to water, and schooling and employment opportunities in these households may be greater
- This paper offers a new approach: exploit geographic differences in outcomes, as well as placement of water infrastructure
Data

• Data from rural areas of 9 countries:
  – Yemen (2005); Morocco (1998)
  – Malawi (2004); Uganda, Madagascar (2005); Rwanda (2000)

• Outcome variables:
  – whether women 15+ participated in any off-farm market work in past year;
  – whether a girl/boy 5-19 attended school last year

• Water access: household time to walk to nearest water source
**Impacts**

- No significant impacts on women’s off-farm work; positive effects on children’s schooling in some countries

<table>
<thead>
<tr>
<th></th>
<th>Share of rural children 5-19 in school</th>
<th>Impact of a 1hr reduction in time to water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>Yemen</td>
<td>0.36</td>
<td>0.63</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.30</td>
<td>0.58</td>
</tr>
<tr>
<td>Uganda</td>
<td>0.76</td>
<td>0.78</td>
</tr>
<tr>
<td>Madagascar</td>
<td>0.68</td>
<td>0.69</td>
</tr>
<tr>
<td>India</td>
<td>0.59</td>
<td>0.69</td>
</tr>
<tr>
<td>Nepal</td>
<td>0.41</td>
<td>0.59</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.28</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Sizeable impacts in places where enrollments are low overall, and gender gaps are pronounced (Yemen, Morocco, Nepal, Pakistan)
Conclusions

• No evidence that improved access to water leads to greater off-farm work for women.
• In countries where substantial gender gaps in schooling exist, both boys' and girls' enrollments improve as a result of a reduction in time to water.
• Some signs of impacts on child health.
• Suggests that women’s allocation of time to market work is not the main channel linking this aspect of infrastructure to child welfare.
• The more direct channels linking access to water to child outcomes, such as through women’s time for child care, child labor in the home and water quality, appear to be more relevant.