Equity is where the smart money is

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You’ve heard this story...

Source: UNICEF 2010
So what –
We’re building toilets aren’t we
Disparities matter
The poor have, and always will, get screwed

It’s not fair but is it smart?

Do the poor differ in relation to sanitation?
Should the poor be served at the same rate?
Should the poor be served first?
Regionally
Administratively
Rural and urban
Sanitation Disparities: Risk, Burden and Impact

Rationale

- Increasing attention to disparities in access to sanitation and performance of investments
- Where is the greatest health burden associated with poor sanitation?
- Where is the greatest impact of sanitation improvement?
1. Use existing household data (DHS) to estimate the relative distribution of sanitation-related exposure, risk and burden for 10 countries; nationally representative but may under-represent certain groups (e.g. informal settlements).

2. Model the impact of providing sanitation to different populations (wealth quintile, urban/rural, regional).

3. Corrected Wealth Index calculated without water and sanitation as assets, and urban and rural quintiles separated.

4. Unit of analysis is children under-5 not household to mitigate potential under-estimation.
Conceptual Model

- Sanitation Service and Infrastructure
- Sanitation Exposures
- Disease Susceptibility
- Risk / Burden / Impact
- Socio-Economic
- Geographic
- Policies and Practices
Conceptual Model

**Sanitation Service and Infrastructure**
- Improved Facility
- Sharing
- Community Coverage
- Pop density w/o Sanitation

**Disease Susceptibility**
- Nutritional Status
- Diarrhoeal Treatment

**Risk / Burden / Impact**
- Risk Index

**Policies and Practices**

**Socio-Economic**
- Wealth

**Geographic**
- Urban / Rural
- Spatial Region
Methods: Developing an Exposure Index

Defined per child, 3 components:

1. **Any facility** - Improved facility (including shared)
2. **Private facility** - Improved sanitation (excluding shared)
3. **Community coverage** - Population without sanitation per km$^2$

Methods: Health risk & burden

Health Risk:
Exposure Index * Susceptibility Index = SANITATION RISK INDEX

Health burden:
• National estimates for diarrhoeal mortality (Liu et al 2012)
• PAF for mortality (exp = JMP and RR of 35% sanitation)
• NOTE: other health effects are not included
Results: Exposure Index

Highest exposures among poorest children.
Urban poor often but not always hit hardest (most exposed)
Results: Susceptibility Index

Highest among the poorest children
Rural often higher but not always (more susceptible)
Consistently greatest risk among the poorest children
Greatest disparities often for poor urban children
What does this mean for the distribution of disease burden (diarrhoeal mortality) and potential impacts?
Urban: up to 65 times greater burden among the poorest children

Rural: Up to 8 times greater burden among the poorest children
Estimating potential health impacts

1. Estimate national health burden from sanitation, DALYs / 1000 children (WHO/CHERG 2010 mortality estimates)

2. Distribute deaths based on sanitation risk index

3. Simulate providing complete coverage to each quintile separately

4. Recalculate exposure and risk indices based on complete coverage

5. Recalculated DALY burden by quintile based on complete coverage
Potential impact estimates

Urban: 2-17 times greater impact in most settings
Rural: 2-5 times greater impact in most settings
Why does pro-poor sanitation have a greater impact?

1. Poor households have more children under-5
2. More likely to go from no sanitation to improved, rather than shared to improved
3. Children in poor households are more vulnerable (low weight for age and less access to prevention and treatment)
4. Poor household improvements reduce exposures for neighboring households with vulnerable children
5. How important is population density without?
Does it matter who benefits from sanitation improvements?

1. Consider alternative profiles of which quintiles receive benefits over time
2. Profile 1 and 2 based on UNICEF analysis of specific countries
3. Profile 3 is a pro-poor distribution

![Distribution of Sanitation Improvement Beneficiaries for Alternative Scenarios](image-url)
Implications: for the sanitation sector

1. **Planning & Investment** - Identify and target high risk areas with the greatest burden and potential impact

2. **Urban and rural disparities** – greatest risk may be urban poor but often lower priority for aid and national financing

3. **What counts?** - Indicators and incentives need to align with impact and burden (focus on poor, at risk children)

4. **Integration** – quantitative means to link sanitation to other health sectors and broader human development (LiST)

5. **Research** – Need to build our understanding of the relative importance of exposure variables (population density without sanitation) and susceptibility factors; and predicative power