Towards a multi-dimensional tool for assessing household water security: understanding vulnerability to WASH security risks in Burkina Faso

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Outline

• Understanding water security
• Measuring water security
• Case study in Burkina Faso
• Towards multi-dimensional tools
What is water security?

• Elusive concept

• Multiple framings e.g. hydro-social cycle, SES

• Multi-dimensional, - aligned with SDG 6 which comprises a more holistic and inclusive agenda
Access to unimproved sources
Unsafely managed services
Ecological dynamics
Social dynamics
Water insecurity
Water security at a micro-level

- Provide dis-aggregated identification of water insecure sub-populations
- Translate complex concepts into practical metrics and approaches
- A number of existing approaches that emphasize lived experience of water insecurity
- Limited use of multi-dimensional approaches
Lessons from food security

- Different tools capture or neglect different phenomena – which can influence prioritization
  - Dietary diversity and food frequency
  - Spending on food
  - Consumption behaviour
  - Experiential measures
  - Self-assessments

- Growing efforts to combine objective as well as subjective measures
Case study – Centre East region

“More studies are needed, especially in developing countries, on the impacts of climate change on water quality, and of vulnerability to and ways of adapting to those impacts” IPCC WGII AR5
Aims

• Case study on gendered vulnerability to water security risks
• Identify indicators to measure water insecurity in the context of social-ecological change using a risk framework
Climatic change
Modifies the frequency and severity of hydroclimatic phenomena.

Phenomena with the potential to cause damage or harm: droughts, floods, inadequate supply/sanitation, harmful water quality

Socioeconomic change
Modifies:
- Hazards, e.g., through catchment modification or discharge of pollutants
- Vulnerability through planned and unplanned adaptations and interventions, such as water infrastructure and institutions
- Exposure through increasing population and activity in hazardous location

People, livelihoods, infrastructure, and social-economic assets that could experience harm from hazardous events

Propensity to experience harm. Capacity to anticipate, cope with, resist, and recover

Garrick and Hall, 2014
Research questions

• Who is exposed to WASH-related hazards? (e.g. extreme events, water scarcity, poor water quality)?

• Who is most vulnerable to household WASH-related hazards?

• What coping and adaptation strategies are used to deal with hazards?
Methodology

• Mixed methods approach
  – FGDs with men and women
  – Household survey of 450 men and women
  – Collection of other data (e.g. water quality, infrastructure audit)
Exposures to WASH hazards

• Inadequate quantities of water during dry season
• Low use of improved sanitation (16%)
• Social and environmental shocks:
  – flooding (11%), low precipitation (26%), erratic precipitation (22%), and elevated temperatures (9%), and drought (6%)
Vulnerability

- Limited affordability for some women
- Larger accessibility burden for women collecting water for multiple uses (household, productive, and livestock)
- Women and men experienced water-related distress
Coping and adaptation

- Range of coping behaviours conducted by men and women
- Limited social capital, access to information
- Limited voice to address local water security situation
Development of a multi-dimensional approach

• Exposure conditions
  – WASH related hazards (e.g. inadequate quantity, quality, poor sanitation) climate events

• Vulnerability conditions
  – Challenges affording and accessing WASH
  – Water-related distress and conflicts

• Coping and adapting strategies
  – Resources and capacities
Exposure

Women

- 0-0.25
- 0.25-0.50
- 0.5-0.75
- 0.75 - 1

Men

- 0-0.25
- 0.25-0.50
- 0.5-0.75
- 0.75 - 1
Vulnerability

Women

Men

- 0-0.25
- 0.25-0.50
- 0.5-0.75
- 0.75 - 1
Adaptive capacity

Women

- 0-0.25
- 0.25-0.50
- 0.5-0.75
- 0.75-1

Men

- 0-0.25
- 0.25-0.50
- 0.5-0.75
- 0.75-1
Challenges

• Assigning cut-off points and thresholds to identify greatest water insecurity
• Cross-cultural comparison versus location-specific criteria
• Accounting for dynamic conditions
Measurement drives diagnosis and response

• Provides insight on sub-national differences and heterogeneous trends
• Directing resources areas of greatest need
• Target specific characteristics of vulnerable households/individuals
Significance

• Assess broader range of outcomes associated with water insecurity
• Better understanding of dynamics in the context of hydro-social change
• Information on disparities relevant for SDG targets
Thanks

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<table>
<thead>
<tr>
<th>Adaptive capacity</th>
<th>Cut-off</th>
</tr>
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<tbody>
<tr>
<td>Listening to radio</td>
<td>Never</td>
</tr>
<tr>
<td>Education</td>
<td>No schooling and no literacy</td>
</tr>
<tr>
<td>Member in an association</td>
<td>Member only listening</td>
</tr>
<tr>
<td></td>
<td>Member speaking</td>
</tr>
<tr>
<td>Use local institutions during shocks</td>
<td>Only friends and family</td>
</tr>
<tr>
<td>Exposure</td>
<td>Cut-off</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Quantity</td>
<td>Adequate quantity during the past 12 months for household use</td>
</tr>
<tr>
<td>Quality</td>
<td>Improved source</td>
</tr>
<tr>
<td>Sanitation</td>
<td>Improved without handwashing</td>
</tr>
<tr>
<td></td>
<td>Improved with handwashing</td>
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<tr>
<td>Climate hazards</td>
<td>Flood, drought or late rainfall in the past 12 months</td>
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<td>Vulnerability</td>
<td>Cut-off</td>
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<tr>
<td>--------------------------------------------------</td>
<td>----------------------------------------------</td>
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<tr>
<td>Accessibility</td>
<td>30 minutes</td>
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<tr>
<td></td>
<td>60 minutes</td>
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<tr>
<td>Affordability</td>
<td>Annual fee paid by female</td>
</tr>
<tr>
<td></td>
<td>Annual fee paid by male HH</td>
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<tr>
<td>Worry about water for drinking or cooking</td>
<td>Yes</td>
</tr>
<tr>
<td>Conflicts with others due to water</td>
<td>Yes</td>
</tr>
</tbody>
</table>