Water scarcity and its effect on the inhabitants of Xakabantu Informal Settlement in the Western Cape

Analysis of Community Resilience and Drought

The Humlog Challenge: Building Resilient Communities
The Team

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1. Innovative solutions to water scarcity in the Xakabantu Informal Settlement in Cape Town, South Africa.

What is informal settlement:
settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing). This are not infrastructure ready

Characteristics of informal settlement:
• Inadequate access to safe water and sanitation
• Poor quality of housing, overcrowding and
• Insecure residential status.
2. Problem Statement

- No access to electricity
- No access to water
- High Rate of Unemployment
- Lack of access to health care
2.1 Problem outlined

- No municipal intervention to provide water infrastructure
- Community walk long distances to get Access to water
- No toilet facilities in the area and nearby field used in as a toilet
- Long distance from municipal water infrastructure leads to inaccessibility during fire emergency and response
- Inconsistent Access to clean water
- Water infrastructure installed by community member does not provide enough pressure

Giving Hope to the Community of Xakabandu
4. Global Water Risks and Vulnerabilities

• By 2025, there is likely to be, on aggregate, a 13% increase in water consumption (Rosegrant et al, 2003)

• More than 2.8 billion people in 48 countries will face water stress or scarcity conditions by 2025 (UNEP, 2002)

• In low- and middle-income countries, 38% of health care facilities lack improved water source, 19% do not have improved sanitation and 35% lack water and soap for handwashing (Living Water International, 2020)
5. Xakabantu Context
5. Proof of Research

In order for me to have enough water for bathing and cooking I have to wake at 03:00am in order to travel to the only working tap in the community. It often takes me over an hour to fill my bucket. If I do not wake up this early, we will not have enough water for the day. Recently a child burned in a sheek becuase we use flammable liquids.

Meet Thandiwe  a Young Xhosa Female leader from Xakabuntu Informal Settlement.,” I do this becuase I want to make a difference in my community “ we hope that government and other stakeholders will come to our rescue fromour current situation this will restore the dignity of our people”
6. Solution and implementation.... cont
6. Solution and implementation

2 Potential Solution Phases
Phase 1: No governmental support (Short-Medium Term)
Phase 2: Governmental support in form of mainly access and permits (Medium-Long Term)

Components
- 2 50000L Water Tanks with a 2-3m Height difference
- Solar Panels (15-20MW)
- Micro Water Turbine (20MW)

Benefits
1. Water access 24 hours 7 days a week
2. Reduced water vulnerability (1 Week supply)
3. Sustainable electricity access (Solar/Hydro)
4. Increased available free time
7. Feasibility of solution

Water Utilization and Collection
1. 24/7 Groundwater collection → 20000L/day
2. Rainwater Collection → 15000-20000 L/year
   ● 1 Week of water supply in case of drought

Power generation and consumption
Solar → 20 MW
Hydro → 20 MW
Expected consumption: 20-30 MW/day

Expected costs

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Tanks</td>
<td>2</td>
<td>$7,000</td>
<td>$-</td>
</tr>
<tr>
<td>Solar Panels</td>
<td>15-20MW</td>
<td>$2,000</td>
<td>$1,000</td>
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<tr>
<td>Water Turbine</td>
<td>1 (20MW)</td>
<td>$6,000</td>
<td>$3,000</td>
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<td>Connection to municipalities</td>
<td>1</td>
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<td>water system</td>
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<td>Water truck resupply</td>
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<tr>
<td>Total cost</td>
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<td>$15,000</td>
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</tbody>
</table>

Cost per community member: 34 USD
Thanks for your attention
8. References


Living Water International – Health and Hygiene 2020| www.water.cc

