

SANEA Energy Rendezvous

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Power to the People – Off grid and mini-grids Pros and Cons – Benefits & Challenges

Speakers

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INTRODUCTION

Key issues shaping off-grid in SA:

1. The cost of grid electrification is going up (R21 000 per connection – blended between rural and urban). R21bn is needed to remedy.
2. Number of households is growing
3. Universal access to electricity is being delayed
4. Problem: No policy and no concerted effort. There is no network master plan. There is no predicting where the grid will go and when, which creates uncertainty for off-grid.
5. Opportunities: Dept of Energy (DOE) to look at off-grid management authority. DOE is aware that this needs to be managed.

The iShack Model and how it works.

1. Technology has been challenging, but the social, political, regulatory and financial challenges are often greater.
2. South African National Policy for upgrading informal settlement ("Breaking New Ground")?
 - 2.1. Take an existing settlement and try to upgrade the space. Assumes conventional services
 - 2.2. People wait decades for that upgrade.
3. iShack uses renewables (which are modular, portable, unencumbered by regulation) to provide an interim relief service while people are waiting for conventional services.
4. Households opt-in voluntarily for solar systems that are sufficient to run low energy devices (lights, cellphone, media, TVs)
5. The model is evolving as adaptations are needed to cope with changing circumstances. The principle is that the household pays something – either something every month or on ad-hoc basis when the system needs maintenance or repairs.
6. Once initial requirements [lighting, entertainment etc] are met, the question quickly becomes - how can this relief service unlock other job or money making opportunities in the community?
7. The likely longer term solution is micro-grids. However, there are issues around land rights, selling electricity, distributing electricity.
8. Right now, the systems are low cost, portable, household based units.

QUESTIONS, ANSWERS AND COMMENTS: MODERATOR WITH THE PANEL MEMBERS

1. Off grid and mini grid is sometimes perceived as a second class service.
 - 1.1. There are expectations of service delivery.
 - 1.2. If we compare off-grid to micro-grid, off-grid costs you more. Needs a different marketing strategy.
 - 1.3. Need to get more awareness of the health and safety issues.
 - 1.4. Should never claim it is as good as being on the grid. It is a commercial option to fill an interim gap.
 - 1.5. Grid connection is the gold standard and one should strive for that.
 - 1.6. While people are waiting, the couple of watts a day are significant.

2. Financing – off grid v mini grid
 - 2.1. East African projects are bankable.
 - 2.2. In SA it is more difficult because it is not clear who is paying. Municipalities are subsidising electricity costs so the end user should not be paying for off-grid.
 - 2.3. The real challenge is the business model. These projects are not likely to be financially sustainable. So it is about getting municipalities to make operational subsidies available as Free Basic 'alternative' energy. The money is there.
 - 2.4. Getting the agreements signed and getting people to accept that this is the way forward is challenging.

3. What is the effect of the change in urban environment as more people install PV cells?
 - 3.1. PV anywhere will cut into distributor revenue.
 - 3.2. As the PV prices come down, more large industries and communities will adopt that system. So it could threaten the financial viability of Eskom and Municipalities.
 - 3.3. What will their response be? Should Eskom and Municipalities be selling PV panels and batteries?
 - 3.4. As the situation evolves, municipalities will adapt and get their revenue by increasing rates.

QUESTIONS, ANSWERS AND COMMENTS: AUDIENCE WITH THE PANEL MEMBERS

1. How many people in SA don't have access to electricity?
 - 1.1. 3.2 million households don't have access. 2.2 million being rural.

2. Is there a market for micro-grids in SA since generally proximity to the grid kills the economics?
 - 2.1. In Gauteng, 55,000 households are receiving free basic electricity from solar.
 - 2.2. In rural areas, the numbers are greater but households are more scattered. Better chance for household systems.
 - 2.3. The two micro-grids in the Eastern Cape have so far been unsuccessful.
 - 2.4. Johannesburg is running a pilot to have grid tied mini grids for RDP housing. There are hybrids that are interesting to municipalities.

3. How will the consumption of electricity by the wealthy change?
 - 3.1. If a customer finds that he is on a high tariff, then a gas stove becomes more economic and then a solar heater is installed etc. This then reduces income for municipalities which in turn means less funds to cross-subsidise free electricity.
 - 3.2. Another consideration is the benefits of pre-paid electricity for the Municipalities. The customer buys R1000 electricity and the municipality sits with this cash in their bank account for 2 months before having to pay Eskom. Municipalities should strive to do more prepaid electricity.
4. Prepaid is one of the best business models because you have no bad debt. Municipalities have a problem with non-paying customers. By installing prepaid meters, you are solving a number of problems.
 - 4.1. There was a study done in connection with paying customers going off the grid. It was found that only 5-10% will do so. There are a number of factors (quite complex) that contribute to people going off-grid. One factor is the operating aspect. If you are on grid, when something goes wrong, the municipalities fix it. Off grid systems have to be maintained by the individual owner. Essentially the discussion around going off-grid comes back to who maintains and who pays.
5. Panel identified the issue of sustainability and lack of payment levels as issues. What must be done, from a planning and marketing point of view to fix that issue?
 - 5.1. It's a political question. Services must be paid for - that must be the requirement.
 - 5.2. You have to work with the people, to build the business-to-customer relationship, etc.
6. Please comment about AC or DC.
 - 6.1. The problem with DC is that you are constrained with a choice of appliance.
 - 6.2. The AC mini-grid can compete with ordinary grid quality wise, but the issue is price.
 - 6.3. If people want dependable power, you need to do the engineering properly.
 - 6.4. Backup might be worth your while. It depends on what you pay for electricity.
7. What are Customers considerations re staying on grid?
 - 7.1. You will always have that challenge in urban environment.
 - 7.2. In Parkhurst, Johannesburg, they are looking at getting themselves off the grid. Maybe they can.
 - 7.3. Fibre to Home is another model. This is a business model that has nothing to do with government. The people that use the service pay to install and maintain it.
 - 7.4. Getting electricity from a private service provider is also an option.
 - 7.5. There may be court challenges.
 - 7.6. There is also the efficiency angle to consider. By increasing household energy efficiency one can reduce power costs without going off the grid.
 - 7.7. Very few people will pay extra to have green electricity. The only way to sell it is that it must be more cost effective and more reliable.
 - 7.8. Consider how our electricity supply system has changed in the last 5 years. Then we had a security of supply issue and today we have excess capacity. There are always new things happening.

8. Is financing in this sector an opportunity?
 - 8.1. Commercial banks are excited about this space in the rest of the continent. The future for them is in pay-as-you-go. De-risk. Developing industry outside SA. On the rest of the continent it is a game changer.
 - 8.2. It is an unsettled finance space. Impact investors, angel investors, equity, etc. The regular finance institutions are struggling to find their space.

9. Government has committed to providing electricity for everyone in SA. Why should a rural person have to settle for second class services?
 - 9.1. We need high level policy and clear commitment on where the grid will go. Indicate which areas can be connected by mini-grids so we can determine where it will be more expensive.
 - 9.2. Perhaps an off-grid IPP would be a cheaper option.
 - 9.3. It's about planning but it is a difficult task. The DOE has been recommended to do the grid master plan.