

Fact Sheet

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The BOP Learning Lab



Photo Credit: Nicolas Pascarel, Reciprocity

The iShack: A business model for incrementally upgrading informal settlements

Despite 3 million low-cost houses being built since 1994, an estimated 7 million South Africans still live in informal settlements, and demand for low-cost housing continues to outstrip supply. As a result, the “incremental upgrading” of informal settlements is attracting increasing interest as a realistic answer to South Africa’s housing shortage.

A promising example of the potential benefits of the incremental upgrading of informal dwellings is provided by the “improved shack”, better known as the “iShack”. It was developed by a team of students and academics at the Sustainability Institute and Stellenbosch University in South Africa. Improving a shack is an incremental process. The iShack concept embraces this notion of incrementalism, and the institute is now implementing a pilot in Enkanini, an informal settlement of about 6,000 people on the outskirts of Stellenbosch, in South Africa’s Western Cape province. This community is typical of many similar informal settlements around South Africa: Hundreds of

shacks are built in close proximity, with little or no access to clean and safe forms of energy, water or sanitation. Here, as elsewhere, authorities are struggling to cope with the challenge of providing basic services to far more people than they have the resources to cater for.

iShack in the Enkanini pilot are fitted with solar home systems (SHS). These systems include solar panels, distribution boxes and batteries. As a result, the first iShacks customers are provided with a clean source of energy for lighting, cell-phone charging and media (eg TVs, computers).

Beyond its technical features, the “iShack” is an enterprise model that recognises that people living in informal housing are able and willing to pay for services such as energy, and seeks to leverage the existing infrastructure and entrepreneurship already present in typical informal settlements¹.

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¹ Damian Conway, Sustainability Institute

² Kermeliotis, Teo, “High-tech shack brings solar power to slums,” *CNN*, January 8, 2013, accessed March 8, 2013. <http://edition.cnn.com/2013/01/08/tech/innovation/iShack-slums-south-africa>.

³ Wessels, Berry, “The iShack: A Socio-technical approach to incremental upgrading.” (FCNSA Workshop, 24-25 November, 2011).

The approach has attracted international attention, and the pilot is being funded by a grant from the Bill and Melinda Gates Foundation.

Context and background

In Sub-Saharan Africa today, approximately 62% of the population live in slums, enduring poor living conditions, lack of security and a lack of essential infrastructure needed to access basic electricity, water and sanitation². Africa has the highest urbanization rate in the world at 3.3% per annum, putting huge pressure on cities, where the infrastructure and facilities are often designed for a fraction of the numbers they need to cater for³. In South Africa alone, an estimated 9 to 14% of households live in informal housing⁴. As has been highlighted in a previous BoP Learning Lab Fact Sheet on housing (“Access to Better Housing” - July 2010), informal housing is not about to disappear in South Africa or elsewhere on the continent any time soon, as demand for formal housing far outstrips supply⁵. While official policy is still focused on providing subsidised formal state-provided housing for the poor, universally known in South Africa as “RDP houses”, there is growing recognition that an effective response to the housing needs of the poor will have to involve a component of incremental upgrading⁶. According to Bonginkosi Madikizela, Western Cape MEC for Human Settlements, the current backlog in the Western Cape alone stood at 500,000 units in 2011, and would take 28 years to clear at current rates⁷. In addition to the logistical and planning challenges, budgetary constraints continue to

hinder housing development, and the process of allocating housing is marred by many reports of irregularities, such as corruption and poor building standards.

In South Africa, the persistence of informal housing is driven by a variety of factors; poverty is only one of them, and not necessarily the decisive element. Millions of people eligible for subsidized housing have been on government waiting lists for years, and naturally need to find solutions in the mean time. Informal housing is often by far the most cost-effective solution⁸, as people try to live as close as they can to jobs, schools, clinics, transport, social networks and other essentials of daily life. Paradoxically, some people earning regular wages, including teachers or police officers, may have few alternatives to opting for informal housing: Despite several state-sponsored programmes to help them, their income is too high to qualify for subsidized housing, and too low to obtain housing loans from commercial banks. Another driver may be the fact that many people who receive a government-provided housing unit opt to rent that unit to others, to extract revenue from their newly acquired asset and continue living in informal housing themselves – a rational choice from an economic perspective, even if the practice is theoretically illegal and officially discouraged.

The combination of these factors helps to explain why informal housing is not about to disappear in South Africa, despite the massive allocation of resources by government and years of sustained efforts. There is significant room, in this context, to incrementally

improve the infrastructure already in place instead, and arguably economically more cost-effective to do so⁹. There are significant opportunities in this regard in the fields of insulation, energy efficiency, access to electricity, water and sanitation. Demand in each of these areas can create employment, stimulate entrepreneurship and generate income for people.

The iShack as an example of innovative incremental upgrading of informal housing

The iShack concept is being developed by the Sustainability Institute, following more than three years of cross-disciplinary research by a consortium of academics and students at Stellenbosch University, together with a group of ‘co-researchers’ living in Enkanini. This group continues to look at innovative and radical interpretations of what “incremental upgrading” could be in its most innovative form. The first test case for a range of energy-focused technical upgrades in a shack in Enkanini was developed in 2011 by Andreas Keller while doing his masters in sustainable development. His work became the first technical demonstration of what an ‘iShack’ could be.

At first glance, the iShack looks similar to the corrugated iron shacks typical of South Africa’s informal housing landscape, but it includes sustainable, cost effective improvements¹⁰. Thanks to a specific design and orientation, it provides protection from extreme temperatures. It is also connected to solar-powered electricity and maintains a slanted roof for rainwater harvesting.

⁴ Wessels, Berry, “The iShack: A Socio-technical approach to incremental upgrading.” (FCNSA Workshop, 24-25 November, 2011).

⁵ Ndinda, Catherine, Ufo Okeke Uzodike, and Lolita Winnaar. “The Politics of Housing,” *Human Sciences Research Council* 8 (2010). Accessed March 11, 2013 from http://www.hsrc.ac.za/HSRC_Review_Article-201_phtml.

⁶ Smith, Alex, “iShack - upgrading housing in South Africa,” *The Guardian*, December 25, 2012, accessed March 12, 2013 from <http://www.guardian.co.uk/global-development/poverty-matters/2012/dec/25/iShack-upgrading-housing-south-africa>.



become first and foremost an enterprise model to finance the ongoing maintenance and operations of a range of ecologically sound, incremental upgrade products and services. It is the ongoing maintenance and repairs of any built-environment service that is often its Achilles Heel. The iShack enterprise model, that aims to solve this maintenance and operations challenge by charging residents a fee-for-service, is emerging from the long process of learning and community engagement. The model aims to provide sustainable services that significantly improve comfort levels for shack dwellers, notably through improved temperature control, insulation and more efficient energy use. The approach further allows for access to cleaner energy that will contribute to healthier living and savings on energy expenses, as well as provide opportunities for grass-roots entrepreneurship. Energy-related improvements are just one possible area of upgrading. Products and services for ecological sanitation, water, solid waste, food growing can also be incorporated into this enterprise model for sustainable, incremental services. The Sustainability Institute continues to research appropriate technologies for these broader services. Their aim is to collaborate with technical experts, architects, innovative builders, etc, to bring a range of products on line in the future. The model provides a means for people living in informal settlements to start doing something right away, thereby increasing the value of their homes in ways that do not become

It is north facing with a roof overhang in order to maximize passive heating potential, while also providing shade in the summer. Recycled materials feature prominently: old cardboard boxes are put up against the wall and sprayed with a fire retardant paint to prevent the spread of flames. Long life milk cartons are then placed between the cardboard and zinc sheets to further increase insulation. The floor is covered in bricks, and the walls are made of a mud and straw mixture, which helps to smooth out temperature fluctuations¹¹.

This allows its residents to make significant cost savings on energy, an important benefit when considering that residents of informal settlements typically pay a high share of their income to gain access to sources of energy that are

often dangerous, unhealthy and environmentally damaging. The iShack also includes a photovoltaic (PV) panel on the roof of the shack for two interior lights, a motion sensitive exterior light as well as a cellphone charger¹². The materials chosen for the construction of the iShack were selected based on their affordability, accessibility and impact on thermal comfort¹³. Appliances such as televisions, DVD players, and refrigerators can be added with extra batteries and photovoltaic panels.

The learning from this technical embodiment of the iShack concept was immense. However this was never meant to be a blueprint for a final set of technical features of an iShack. The technical ideas are still being developed as a collaborative process with a range of experts. The iShack concept has evolved to

⁷ <http://www.politicsweb.co.za/politicsweb/view/politicsweb/en/page72308?oid=244275&sn=Marketingweb+detail&pid=90389>

⁸ Tuxford, Kirsty, "Housing in South Africa: Why are People Still Living in Shacks," *Cape Chameleon*, 2011, accessed March 8, 2013 from <http://www.capechameleon.co.za/printed-version/issue-13/human-rights3/>.

⁹ Kermeliotis, Teo. cf above .

¹⁰ Thompson, Desmond. "iShack a bright idea." *University of Stellenbosch*, April 4, 2012. Accessed March 9, 2013. <http://thehopeproject.co.za/hope/blog/Lists/Posts/Post.aspx?ID=54>.

¹¹ *ibid*.

redundant or worthless when infrastructure and formal services are eventually installed.¹⁴

Incremental upgrading as a conduit for entrepreneurship and income generation for communities

Thus, beyond its technical features, the iShack is an innovative enterprise model that takes into account two factors. First, that people living in poor communities are willing and able to pay for incremental improvements to their homes at their own pace, and in a manner that suits their individual needs and preferences. Second, that local entrepreneurs have an incentive to develop the ability to provide such services. This might also be a far more desirable alternative for the beneficiaries compared to the option of being relocated to a standard, one-size fits all 40m² RDP housing unit, sometimes at the cost of uprooting a community and housing people further away from places of work, schools and points of access to health care.

The iShack model also has at its heart

the idea that physical and social capital value is already present in informal settlements, and can be leveraged successfully¹⁵.

Residents of Enkanini are being trained to install, operate, maintain as well as repair the solar panels. The aim is for them to become energy entrepreneurs and service providers for the entire community¹⁶. They would be the first of many small energy enterprises run by community members that will have a substantial economic impact, providing employment and income.

Conclusion

One the main characteristics of incremental upgrading is that it allows for people to improve their living conditions in a manner that responds better to people's individual means, needs and preferences than top-down one-size-fits-all approaches. In this regard alone, incremental upgrading presents a more viable, sustainable and realistic long term solution than the ambition to clear the formal

housing backlog by building millions of additional RDP units.

Incremental upgrading is not about stopgap or temporary solutions. It is an inherently flexible process, that can shift as people's aspirations grow and their options evolve. A solar home system, for example, can be augmented by a grid connection for the household when (and if) such a connection is provided. The same can apply to water connections and sanitation, for instance.

The example of the iShack shows that technology and innovation, combined with the leveraging of local talent and entrepreneurship, can bring significant improvements to people's lives in informal housing environments. In addition, incremental upgrading can create sustainable work and income opportunities. As the pilot project in Enkanini scales up, the iShack presents huge potential for improving the lives of millions of shack dwellers around the world.

Ethan Green, Reciprocity

¹²Thompson, Desmond. see above.

¹³Smith, Lewis, "The iShack: The simple, solar-powered home that could transform life for slum-dwellers." *Mail Online*, January 8, 2013. <http://www.dailymail.co.uk/sciencetech/article-2259075/Slum-dwellers-South-Africa-given-taste-mod-cons-introduction-environmentally-friendly-iShack.html>.

^{14, 15, 16} Damian Conway, Sustainability Institute

Your Contacts at the BOP Learning Lab in the Southern Africa:



Reciprocity
Nicolas Pascarel
T: +27 (0) 21 424 4488
M: +27 (0) 82 319 8404
E: info@reciprocity.co.za
W: www.reciprocity.co.za



Damian Conway / Andreas
Keller / Berry Wessels

T: +27 21 881 31 96
Damian@sustainabilityinstitute.net

Sustainability Institute