

Planning Africa Conference 2016
3-6 July, 2016 | Sandton Convention Centre (SCC)
Johannesburg | Gauteng | South Africa

The Adoption of Appropriate Technology in Service Delivery in South Africa

Dated: 4 July, 2016

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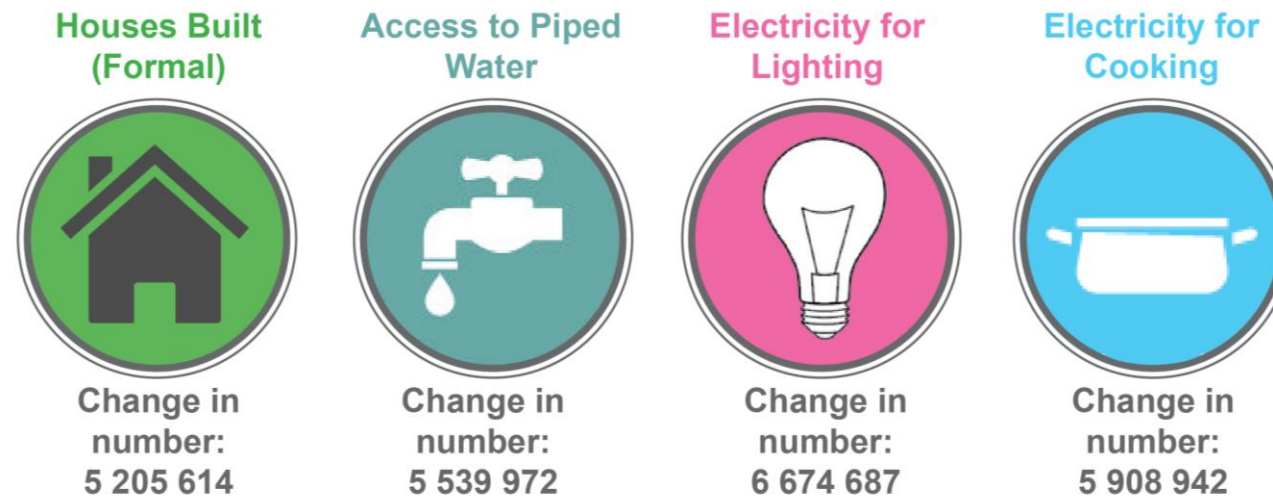
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Background / Introduction

- In response to wide-scale poverty, poor living conditions and lack of access to basic services:



Background / Introduction

- **HOWEVER: It continues - unequal and inadequate access to basic services, infrastructure and resources**

1 in 7 people



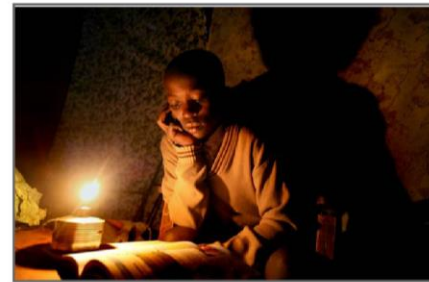
Living in Informal Settlements

37.9 %



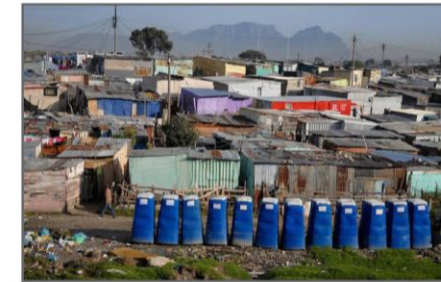
Inadequate Access to Piped Water

43%



Classified as energy-poor

35 %



Inadequate Sanitation

| Top-5 challenges | Main challenge/difficulty in municipality | Number |
|------------------|--|-----------|
| Challenge 1 | Lack of safe and reliable water supply | 2 683 048 |
| Challenge 2 | Lack of or inadequate employment opportunities | 1 963 104 |
| Challenge 3 | Cost of electricity | 1 706 313 |
| Challenge 4 | Inadequate housing | 1 199 692 |
| Challenge 5 | Violence and crime | 867 155 |

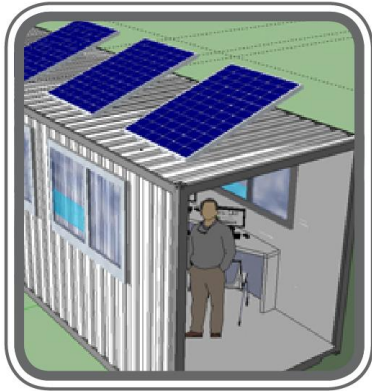
Five leading challenges facing the municipality as perceived by the household, CS 2016



Background / Introduction

- RESPONSE: Alternative / innovative / appropriate technologies developed by private / NGO / research organisations / universities / international donors / development institutions

Solar Powered Technologies



Raspberry Pi
Computer

Innovative Water Solutions



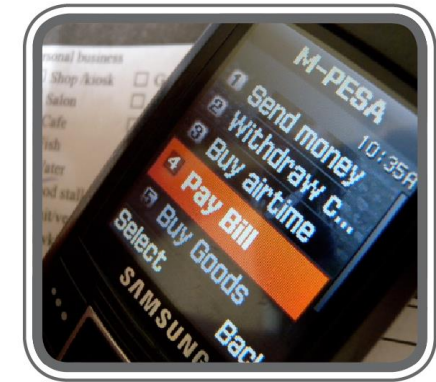
Kick Start Agri
Pump

Alternative Building Technologies



Concept Plastics Block -
Low Cost Housing

ICT 4 Development



M-PESA
Mobile Money
Transactions

- RESULTS: **Affordability** | **Access** | **Socio-economic benefits** | **Environmentally conscious**

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Problem Statement

- Current state service delivery
 - Not adequately responding to the need – if you google the search phrase “service delivery south africa” images and articles on protests appear.
 - Inefficiencies in government delivery processes
 - Unauthorised expenditure
 - Unsustainable and outdated technologies delivered
 - E.g. 32% of all electricity delivered by City Power Johannesburg lost to theft and non-payment
- **No evident link between the provision of basic services (energy, water, sanitation and housing) by the state and the appropriate use of innovative technologies**



Research Aims & Objectives

- RESEARCH AIM: The aim of the paper is to investigate the adoption of appropriate and innovative technologies into service delivery processes for poverty-stricken South African human settlements.
- RESEARCH OBJECTIVES:
 - **Current status of technology adoption** in state service delivery programmes in response to South African informal settlements
 - **The potential of technology adoption** in the delivery of housing and informal settlement upgrades in the context of South Africa
 - The potential benefits of delivering **solar powered, home-lighting units in informal settlements**
 - What the adoption of appropriate technology in state service delivery programmes means for **government institutions and future planning**



Literature Review – Key Findings

TECHNOLOGY

APPROPRIATE

ADOPTION

CURRENT SERVICE DELIVERY in IS

E-government
M-health
Solar powered geysers (RDP)
Communities of practice (online knowledge platforms)
Green Fund
Technology for Sustainable Livelihoods (DST)

Outdated / inappropriate technologies used in settlements
SIMPLE E.g. communal stand pipe – used 50 times a day, yet inappropriate tap used to withstand usage
Lack of innovative + long term thinking
Back to Basics programme should not discount technology

Time: 9 year wait for upgrade in sub-standard living conditions
Cultural barriers affect adoption (for instance waterless toilets) **Insufficient link between the provision of basic services and technology (Policy, planning and implementation)**

POTENTIAL FOR SERVICE DELIVERY in IS

Existing technologies – provision of basic services in IS
Solar-powered home lighting units with an associated pre-paid system
M-KOPA and iShack Project

Responds to issue of affordability by low income households
Responds to off grid access
Responds to demands for energy
Flexible payment for poor households
Responds to climate change – clean energy
Tested in one South African community

Potential for collaboration
Move away from emphasis on welfare to entrepreneurship
Provides an option for the provision of energy in IS that is affordable for both supplier and user
iShack developed a sustainable social enterprise model to deliver affordable, incremental services to residents of IS

Approach & Methodology

| Research Method | Content Explored |
|--|--|
| Literature / policy / programme review | <ul style="list-style-type: none"> • Status of technology adoption in the provision of housing and IS upgrading in SA • Potential of technology adoption in the delivery of housing and informal settlement upgrades in South Africa |

| | Case Study 1: M-Kopa Solar | Case Study 2: The iShack Project |
|--|--|---|
| Discourse review/ literature review | <ul style="list-style-type: none"> • Description • Origin, functionality, customer payment model and impact | <ul style="list-style-type: none"> • Description • Origin, functionality, customer payment model and impact |
| Qualitative interviews | <ul style="list-style-type: none"> • Lessons learnt • Potential to collaborate with state • Experiential business considerations (tools of the trade) | <ul style="list-style-type: none"> • Lessons learnt • Potential to collaborate with state • Personal / academic experiences • Community participation |

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CASE STUDY

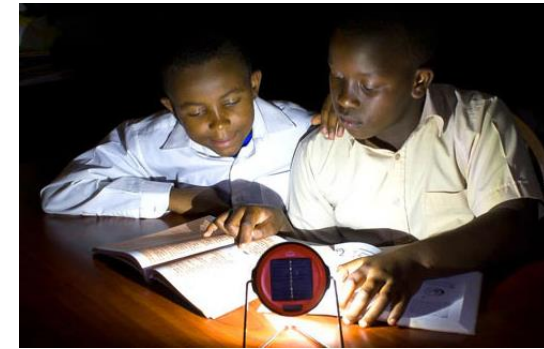
Pay-as-you-go Solar Powered Home Lighting Systems that allow effective and affordable access to clean energy



Credit: M-KOPA



Credit: Sustainability Institute



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CASE STUDY



“Imagine for a moment, that our economy would prosper by creating environmentally friendly products that assist poor communities to sustain themselves...”

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Research Analysis & Findings

- **Current:** Inadequate link between appropriate technologies and the provision of basic services – in terms of policy and budget allocations
- **Potential:**
 - Technology impact:
 - Range of benefits from solar powered units (increased exam pass rates, increase in income, feeling of safety, job creation, thermal comfort, social mobilisation for services)
 - Increased economic activities like knowledge exchange and monetary transactions had positive spin offs for existing businesses and creates economic opportunities
 - Opportunity for in-situ and incremental IS upgrading
 - The importance of an effective network of well-intentioned contributors in the delivery of basic services
 - The importance of core business concerns such as intelligent marketing, distribution, and branding when adopting new technologies.

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Discussion & Concluding Remarks

- Not a solution. But offer an effective service delivery mechanism alongside other mechanisms in the collective response to achieve sustainable human settlements
- Innovative technologies as a driver of change within state processes
- Structure and practice of planning in South African informal settlements does not lie solely in the hands of the state - **most effective through the co-generation of knowledge and capabilities**
- Alternative approach to service delivery that is **affordable and financially sustainable** for both supplier and user
- **Green fund used by the iShack Project** - a fundamental break from the traditional state welfare approach or the traditional donor-funded approach towards the co-provision of services



Research Contributions

- PAYG solar power in poor communities can contribute to such government objectives as;
 - Localisation of energy production
 - The equitable distribution of resources
 - Increased opportunities for the poor and inclusive economic growth
 - Environmental conservation
 - Community empowerment
- Redefining previous conceptions of planning and who is responsible for initiating change
- Introduces a move away from disconnected welfare systems towards a comprehensive engagement of government with market-related opportunities for social justice and equitable growth
- Introduction of innovation into the way respond to service delivery

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“The future is already here...it’s just not evenly distributed”
William Gibson

THANK YOU

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