

Climate Change Mitigation in Low-cost Housing in South Africa



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***Kuyasa: Lessons from the
Developing World...***

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Kuyasa: Some Lessons Learnt so far...

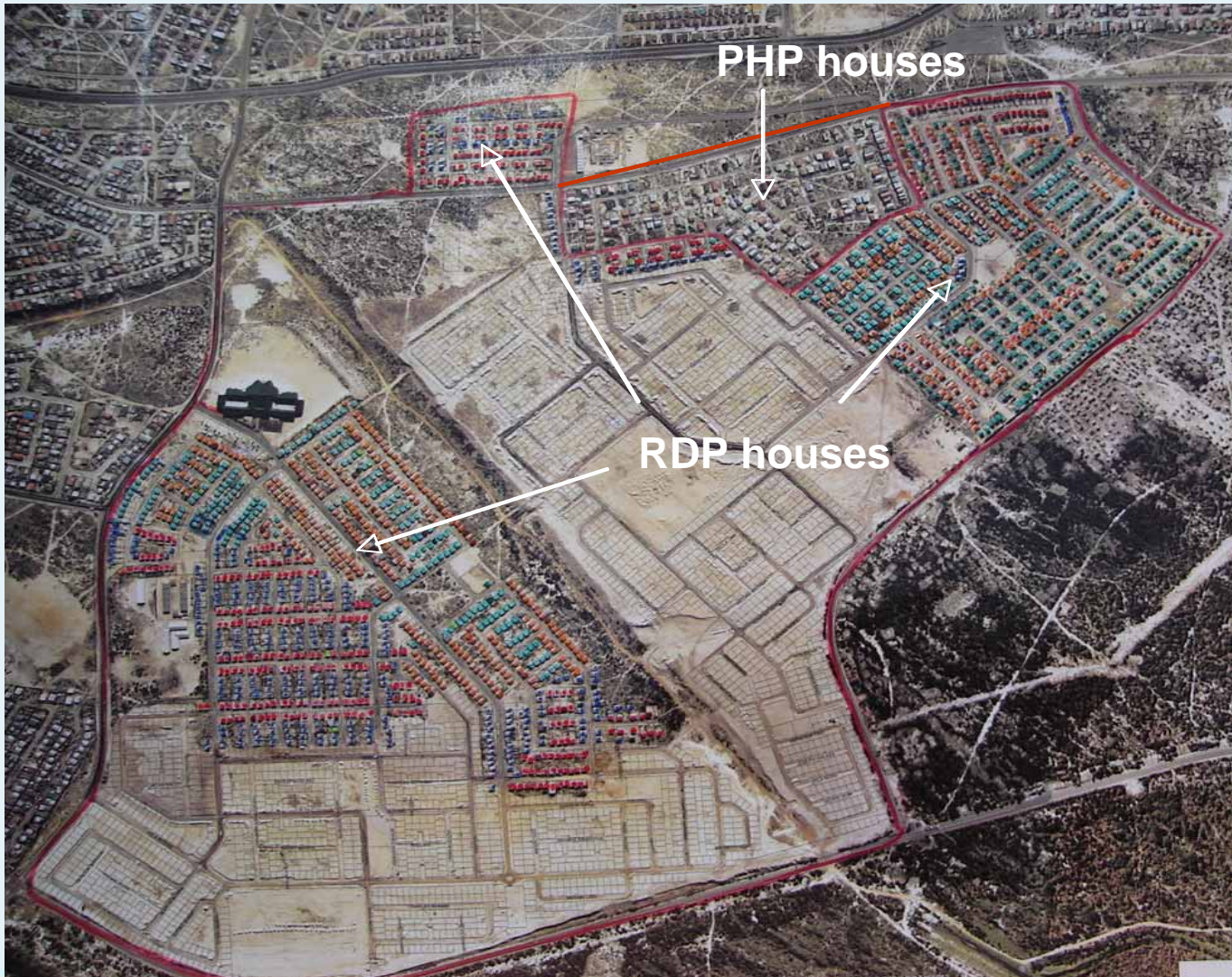
- Development benefits dwarfs other aspects incl. CO₂
- Flagged questions about:
 - CDM's promised development dividends
 - Viability of renewable E & E efficiency in CDM
 - Poor distribution of projects in Africa
 - Dogged tendency of CDM finance to mirror FDI
 - Perceived risk of investing in Africa
 - Resultant high rates of return demanded on such investments
- Baseline development; emissions reduction enumeration & CDM transaction costs are significant for small-scale projects – creative & ambitious institutional frameworks to secure financing



Kuyasa: Location



HLNOS
SOUTH
NORTH



SSNAFRICA

Kuyasa Context...

- Low-income housing (state subsidised) settlement in Khayelitsha
- Houses (30m²) have:
 - electricity but no hot water storage services
 - no ceilings / insulation
 - limited lighting with incandescent bulbs
- High Unemployment
- Expensive Energy and Health costs



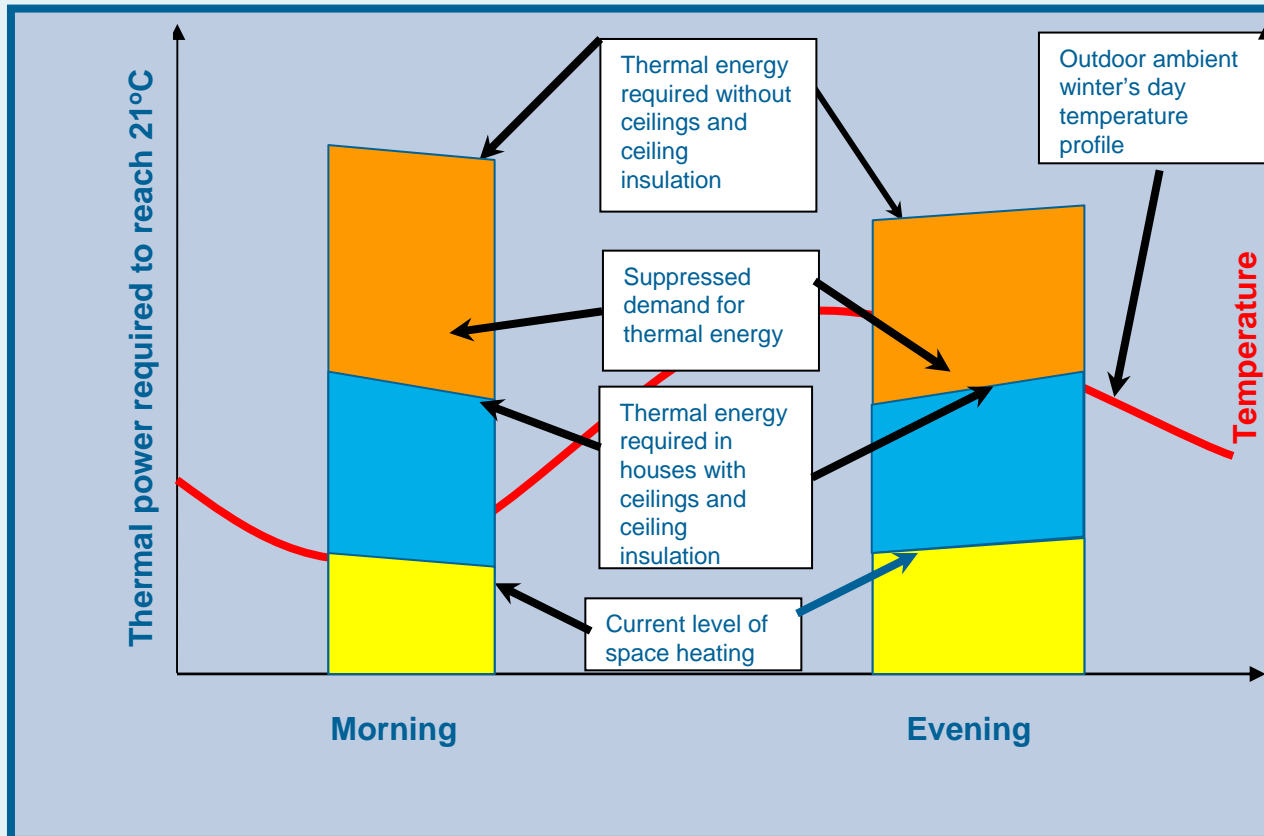
Rationale: Suppressed Demand



- CDM Methodology used is an interpretation of UNFCCC
- Allows for crediting of GHG reductions against baseline that is equivalent to a *PROJECTED* level of Energy service rather than *CURRENT* level of Energy poverty
 - *Energy poverty can be understood as limited access to and/or affordability of E services thus affecting both E choices and consumption patterns of poor households*
- The demand for energy services in these households is said to be “**suppressed**” because energy service levels are below those that would otherwise have been consumed
- Thus, rather waiting for them to become ‘dirty’, they are ‘leap-frogged’ to cleaner technologies through CDM thus **linking Climate Change to Poverty Alleviation**



Suppressed Demand: Thermal Performance





HLNOS
SOUTH
NORTH

Background

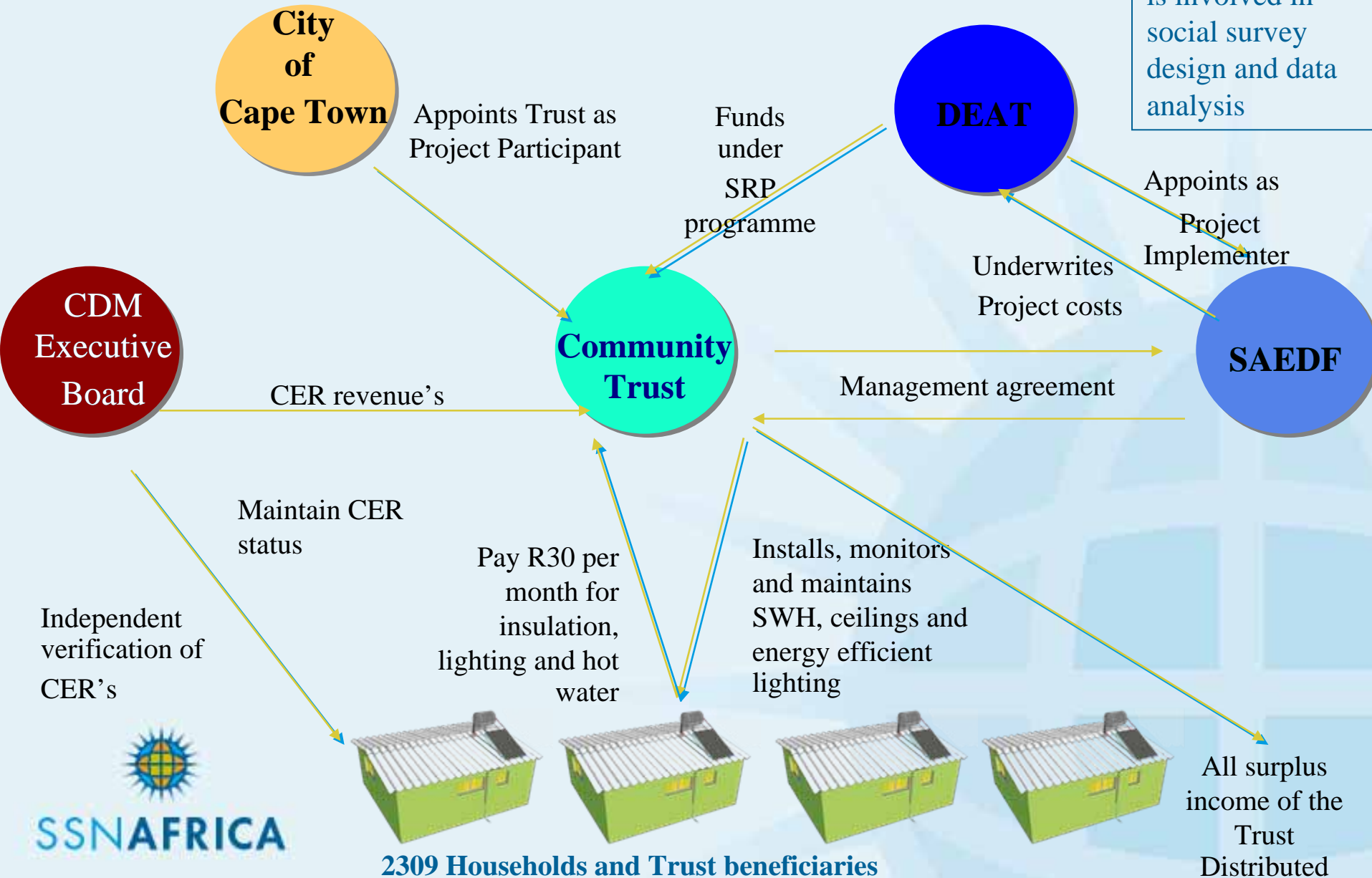
- Initial pilot (10 houses) implemented in (2005)
 - SSN; City of Cape Town; Kuyasa Community; Agama Energy
 - Retrofit existing low-income houses
 - SWH's, insulated ceilings and energy efficient lighting
- First registered CDM project activity in Africa – Aug 2005
- First Gold Standard CDM project in the World
- Full Project rollout to 2299 houses by SAEDF – now (2008) to end 2009
- Emissions savings = ~ 2.85tonnes CO₂ /hh/year – over 21 year crediting period
- City has obligations to sell first 10 000 CERs to UK Government



SSNAFRICA

CURRENT KUYASA PROJECT PARTICIPANTS

Tyndall Centre together with Kuyasa & SSN is involved in social survey design and data analysis



The Community...



High level Benefits of Kuyasa Project



Social

- Respiratory health burden reduced
- Provision of hot water – health / comfort
- Household cost savings due to energy efficiency
- Employment opportunities - > 50,000 job days created

Economic

- Peak demand reduced – defers new installed capacity
- Leadership for low cost housing / energy industry
- Entrepreneurial opportunities



High Level Benefits of Kuyasa Project

Environmental

- Largest project of its kind in Africa - Leadership
- City SWH target – 10% by 2010 (i.e. 80 000 houses)
Project assists this target
- Implementing global commitments

Governance

- Local participation and decision-making

Replication

- Potential for Kuyasa to be a model for installation of energy efficiency intervention in other low cost houses (1,5million!), benefiting millions and unlocking other funding sources.

Legacy

- SHF - Saneri/DBSA/National Housing Finance Corporation
- Mitchell's Plain greenfields project



Green power to the people

A Cape Town housing project is bringing home the benefits of energy efficiency

Lester Malgas

Elsie Tabalaza is a 70-year-old pensioner who lives in Kuyasa, Khayelitsha, outside Cape Town, in a house that sports a recently installed solar water heater, an insulated ceiling and energy-efficient lighting.

Tabalaza could never have contemplated buying these energy-saving items with her R600-a-month income, but she is one of 10 beneficiaries of a pilot 10-house demonstration project in Kuyasa. The project improves the energy-efficiency and thermal comfort of basic Reconstruction and Development Programme houses, and also reduces emissions of the greenhouse gas carbon dioxide.

This project is part of a partnership between the city of Cape Town and SouthSouthNorth, a non-profit developmental organisation that helps build capacity for sustainable development and promotes clean development projects.

SouthSouthNorth is promoting the Kuyasa project, which, in limiting greenhouse gasses, will help South Africa comply with the Kyoto Protocol. The project mitigates climate change by preventing nearly 3 000 tons of car-

bon dioxide from being released into the atmosphere each year.

The benefits of the technology are already evident. "Things are much better," said Tabalaza. "Since the ceilings have been installed, it is much warmer and more beautiful than it was before."

Her house is consistently 5°C warmer than her neighbours' homes and she saves up to 40% on her electricity bill.

Household dust has also been reduced because of the insulated ceiling.

The improved ambient temperature of the house this winter has reduced the need for paraffin stoves and other heat sources that entail a fire risk and contribute to respiratory disease.

Neighbours have shown increasing interest in the energy-saving measures and frequently visit the beneficiaries' homes. Many now look forward to the implementation phase of the project, when similar technology will be provided to 2 309 houses in Kuyasa. The project has thus increased awareness of energy efficiency and its relationship to affordability in the community as well as among local politicians.

The Kuyasa project will showcase best practices in housing, said Gawa Samuels, Cape Town's executive councillor for housing, at the recent



Elsie Tabalaza's house in Kuyasa is warmer than her neighbours' homes and she saves up to 40% on her electricity bill

launch of the programme. Activists hope it will help persuade decision-makers in the government to incorporate energy efficiency and environmental concerns in their policies.

Activists identify three main approaches to energy efficiency. The first relates to energy practices and behaviour, such as cultivating the habit of switching off lights in rooms

that are not being used. The second involves energy-efficient appliances and technologies, the most common example being fluorescent light bulbs that use five times less electricity than normal incandescent ones and last up to 10 times longer.

The third approach involves infrastructure and development, such as improved building practices. Orient-

ing a house towards the sun and insulating it properly reduces the need for heating.

The Kuyasa project improves energy efficiency in each of these areas. Beneficiaries have been taught about the use of energy; the technologies employed have been proven to reduce energy consumption; and the example Kuyasa provides will certainly be taken into account in future housing developments.

The Kuyasa project also shows the link between global environmental concerns and improving the quality of life locally.

South Africa produces electricity mainly from cheap coal, which makes it relatively inexpensive compared with other countries. Cheap energy provides South Africa with one of its few international competitive advantages, which has allowed energy-intensive aluminium smelters to proliferate along its coast. The result is that local industry tends to be energy intensive and contributes significantly to pollution and global warming.

Activists want to raise awareness of energy use in the industrial sector, which is responsible for the bulk of electricity consumption. According to the Sustainable Energy and Climate Change Partnership, electricity consumption in South Africa could be cut in half through the effective implementation of energy efficiency measures.

Though an emphasis on industry is a key part of any plan to reduce energy consumption, general consumers must also be made aware of energy efficiency issues.

Energy accounts for as much as 30% of the running costs of low-income households, so energy savings deliver immediate benefits to the local – and global – community.

July 21 to 25 marked National Energy Efficiency Week, hosted by Eskom and the Department of Minerals and Energy, with the support of the National Energy Regulator and private and public-sector partners

