

Case Study

EKURHULENI METROPOLITAN MUNICIPALITY PROJECT:

MUNICIPALITY-DRIVEN ENERGY EFFICIENCY AND REFURBISHMENT



Overview: The Ekurhuleni Metropolitan Municipality has a stepped tariff system. NERSA allowed the municipality to raise its tariffs a little bit more and to keep that money raised in a separate account – a ringfenced fund for EE refurbishment. The regulator authorised the levy on condition that an external audit is carried out to prove that the money was only spent on the functions specified. A second fund was also developed to focus on energy efficiency specifically. There is thus a form of cross subsidy happening - rich households use more electricity, the revenue collected from wealthier areas is greater than from poor households (as there is an increase in tariffs after a certain threshold electricity consumption). A small percentage of the overall revenue is ring fenced, and thus a proportion of wealthier household income sustains energy-efficiency practices, such as solar water heater roll out, in poorer areas.

Tariff and metering system: Ekurhuleni has implemented an aggressive tariff structure for upper end users. The more electricity is used, the more is paid per kWh. A high penalty of R1.50 per unit is applied for residential users consuming over 2500kWh per month. Network Access Charges and surcharges were also introduced for commercial and industrial consumers. The tariffs are designed with an element of seasonality, whereby one pays more for winter consumption. A lifeline tariff was introduced, whereby 100kWh of free units, limited at 20 Amps, are available to certain low-consumption users. An Internet metering system has also been implemented whereby commercial and light industrial consumers, as well as council-owned buildings, have their energy use metered via the Internet. Consumers and officials are able to check their live consumption data, which is updated every 30mins. Consumers can set their own consumption limits and gain access to advice on reaching the 10% savings national target. The switch to internet metering is fully funded by the municipality; at no cost to the consumer. A resolution was passed by council to have conventional meters converted to prepayment meters at 20% of the actual cost, which works out to R340/meter.

Energy-saving retrofitting of public buildings: Implementation of cost- and energy-saving measures took place in municipal buildings. The Germiston Civic Centre (GCC), the East Gauteng Service Council (EGSC) buildings and the Edenvale Civic Centre (ECC) were identified as the initial targets. Measures implemented in the GCC and EGSC included replacement of incandescent lights with CFLs, replacement of cool-beam down lighters with LED lights, replacement of urns and kettles with hydroboils, and the installation of geyser and lighting timers. An Energy Management System was installed in the ECC to record and monitor energy consumption. A full energy audit took place; followed by the installation of various energy efficient measures, which included SWHs, reflective roof surfacing, geyser timers, energy efficient lighting, night time solar-based lighting, motion sensors in common areas, and electronic ballast on fluorescent lighting, upgrading to an energy efficient air conditioning system, revamping of electrical wiring, and the sealing of windows and doors. A 53% savings was realised, with over 320 000 kWh saved per year. CO₂ was reduced by 308 tonnes/yr. The payback time was 1.2 years. Currently 5 civic centre complexes and 20 depots have been retrofitted, with roll-out planned for 200 other municipal buildings

Energy-saving technology for new buildings: The Chief Albert Luthuli Housing project is a mixed-income development, featuring both bonded and government-subsidised houses, as well as amenities such as

parks, clinics, schools and police and fire stations. Over 8300 rental and subsidised units will be provided. The buildings are passively heating/cooling, have ceilings and insulation, SWH will be installed and CFLS used for lighting. This project will be energy audited, including the calculation of the carbon emission reduction

Solar water heaters for mid- and high-income residents: The Ekurhuleni Metropolitan Municipality (EMM) has recently signed an agreement with the Central Energy Fund (CEF), allowing the latter to run a solar water heater (SWH) rollout programme in the Metro aimed at mid- to high-income residents. The agreement allows CEF to approach creditworthy customers on the EMM database and offer them a choice of attractive financial solutions for a range of SWHs. EMM is also partnering with Sustainable Energy Africa (SEA) in an effort to develop and implement a low-income SWH solution. SEA will also be assisting the Metro in investigating the possibility of an energy efficient water heating bylaw, which will ensure all new houses built in the Metro have to install a SWH or a heat pump instead of an electric geyser.

Summary: The Ekurhuleni municipality has been able to provide finance for energy efficiency and renewable energy, clearly demonstrating its public benefit to the municipality.

The questions below provide some guide to determining if the project could be classified as successful or not, and what led to its success or downfall.

SECTION 1: PARTICIPATION

1. Did the project arise due to local needs?

Yes, in 2005, when maintenance and refurbishment of electricity assets were very much under the political spotlight due to increased power shortages, the Municipality decided to request that the National Energy Regulator of South Africa allow them to include a maintenance levy in their tariffs.

2. Was the project initiated by NGOs, development partners or government?

The project was initiated by the municipality –local government.

3. What local need does the project satisfy? How was that need identified?

The need for low cost electricity and free basic electricity for low-income residents would be satisfied, as well as the municipality's aim to adopt a more energy efficient system.

4. How were locals informed, or educated about the benefits of the project?

In terms of the retrofitting of public buildings, an Energy Management Organisation was established to drive an energy efficiency awareness campaign.

5. Was the promise of employment used to get buy-in for the project?

No, but the targets were directly linked to the municipality staff's performance bonuses and so staff have motivation to find ways to achieve their targets

6. Was any local training carried out? Did this training enable local communities to sustain the projects or was the local employment only for labour for the duration of the project?

Not known at time of writing

7. Were there local champions who were passionate about the project? Did this have an impact on the success of the project?

The municipality was the main driver.

8. What is the standing of the project partners in the community? Did this have an impact on the success of the project?

The standing was not relevant to the success of the project.

9. What is the relationship of local community with Eskom (or African equivalent)? How did this impact?

Not relevant

10. What is relationship of local community with government/ political leaders - how did this impact?

Not known at time of writing.

SECTION 2: INSTITUTIONAL ARRANGEMENTS

11. Did the existence or lack of a national/provincial or local policy framework hinder or facilitate the success of the project?

Various policies informed the projects initiation, including the municipality's:

State of Energy Report: The State of Energy Report was prepared in order to obtain a situational assessment or "baseline information analysis"

Energy and Climate Change Strategy: The Strategy aims to integrate and entrench sustainable energy approaches and practices at the local level, through the prioritization and co-ordination of energy and climate change activities. The Strategy provides a framework for the Metro to take decisions on energy and environmental issues in a logical manner.

Ekurhuleni also used the **Energy Efficiency in Council Buildings and on Council Premises policy**, a policy identified as necessary by the Department of Municipal Infrastructure. The policy aims to

optimize the use of resources in municipal buildings and to reduce the amount of waste produced. The Directorate of Electricity wrote and developed the policy.

12. If there was a policy framework, which aspects of the policy were important?

The Energy Strategy has 6 core intervention areas, which were applicable in this project:

1. Integration of grid and non-grid technologies
2. Provision of renewable energy
3. Introduce solar passive building design at a national level.
4. Implementation of a long-term national solar water heaters (SWHs) programme.
5. A national public education, training and marketing campaign on renewable energy
6. Renewable energy targets and resource assessment and feasibility studies have been undertaken on clean and renewable energy technologies.

Targets included in the Strategy:

- All houses are to have ceilings
 - All low income houses built with ceilings from 2010 onwards
 - Retrofit of all existing houses by 2015
- All incandescent lighting in buildings to be replaced by CFLs by 2010.
- Reduce municipal energy consumption by at least 5% by 2010

13. Did legislation/ or regulations impact on the success of the project?

The targets set by the local government for renewable energy implementation are also captured in the Service Delivery Budget Implementation Plan. The targets are perfectly measurable and are set in order to reduce or eliminate the city's backlogs in the area of solar water heating or renewable energy and thus contributed to the successful measurement of the project. The service delivery budget implementation plan is reviewed quarterly at the highest level in the city and furthermore the targets are also directly linked to performance bonuses. Therefore municipal staff have motivation to achieve their targets.

Financially, no legislative or bylaw amendments were necessary in order to circumvent any other financial legislation. Instead existing legal mechanisms that allowed a separate fund to be created through approaching the regulator were used.

14. Was a government department involved in the project - local, provincial or national level?

Yes, it is a municipality-based project. In terms of the retrofitting of public building the Departments involved were Environment and Tourism, the Municipal Infrastructure department, and Transport and Civil Works.

15. What role did international partnerships play in the initiation of the project?

Funding came from DANIDA for the installation of SWH (R3750 per unit) in the Chief Albert Luthuli building project (R7.5m) and for the Installation of the energy efficient system in Germiston Civic Centre and Edenvale Civic Centre.

16. Were there capacitated people driving the project: a) at government level; b) at project level; c) at recipient level?

Yes, capacitated people played a role at the project level (within government).

17. What role did political will play in the initiation of the project - if any?

The high profile of the topic and political will, combined with an insight into the problem, assisted in getting the concept implemented.

18. How was the project structured - cooperative, private company, ppp, government roll-out, donor project, home owner?

The function was located within the municipality and given status through the creation of a separate but equally important directorate within the electricity department. A director of Energy was created on an equal level to the three other directorates in the Electricity and Energy department. There were also various task teams formed to oversee the project, including:

City Energy Strategy (CES) Committee

The CES Committee oversees the implementation of the city's Energy and Climate Change Strategy. Meetings are held every second month.

Internal Energy Task Team

The Energy Task Team consists of representatives working in various departments and on various projects, including Environment and Tourism, Municipal Infrastructure, RTCW, Health and Social, Development Planning, IDP, Communications and Marketing, and LED.

19. Has the success of the project had any impact on national policy or national implementation? If so, why and how? If not, why not?

Not yet

SECTION 3: FINANCES

20. What was the cost of the project? Include a breakdown if possible: project management/ external consultants/ capital costs/ maintenance and operations provision. Was it a loan or grant funding? How was it financed? What other factors influenced the success of the project?

Funding Models:

- *Albert Luthuli Project:*
 - R7.5 M DANIDA - R3750 per unit
 - Eskom Incentive - R1500
 - possible ABSA investment -R1000
 - Avoided Cost of an Electric Geyser -R2000
- *Energy Management System for 2 public buildings:*
 - DANIDA funded the Energy Management system - R7.5 M
- *Retrofitting & energy efficiency of public buildings:*
 - Retrofitting: A ring-fenced fund from increased tariffs (authorized by NERSA) provided initial refurbishment costs. This levy was set at 0,8% (for the opportunity to learn and set up resources to manage), with an external audit report. The next year saw the levy rise to 2% and the following year to 3%. These increases in this ringfenced allocation were all accommodated inside tariff increases. The current year had a budget of R170,000 for refurbishment and added to the usual maintenance allocations, is helping dramatically with backlogs. The payback time for refurbishment of the 3 public buildings was 1.2 years.
 - Energy efficiency fund: NERSA was approached again and a 0,25% levy of total electricity income expected, was ringfenced. The amount expected depends on electricity income, but may be in the region of R11-15m this year. The current financial year, as well as the next have capital amounts allocated totalling about R8m, which is in addition to the R11 – R15 million.

21. Cost of energy: R per installed MW equivalent and Rc per kWh equivalent.

Households consuming more than 2500 kWh units per month, pay R1,50 for the additional units consumed over the threshold of 2500. Consumers on this tariff do not receive free basic electricity. Tariff A – lifeline and Tariff A give a 100 free units to all residential customers every month.

22. Was the cost benefit analysis shared with the recipients? Did it influence them to buy in?

Not relevant

23. Were environmental costs /benefits quantified? Provide data. If not quantified, are there any environmental benefits and did the knowledge of these play any role in the decision to go ahead with the project? Which decision-makers were influenced by which factors?

In terms of the Albert Luthuli Project, carbon dioxide emissions reduction will be calculated and project registration for CDM funding will be still be investigated.

24. What role did large funding institutions play in the success of the project?

DANIDA provided funding only for the installation of SWH in the Chief Albert Luthuli Project (R7.5m) and for the installation of the energy efficient system at two public buildings (R7.5m).

25. If subsidies were provided, what was their contribution towards the success of the project?

ESKOM SWH subsidies will be used in the installation of SWH into the Chief Albert Luthuli project and in retrofitting council houses.

26. Was carbon financing involved? Explain how this impacted on financial viability and timeframes of the project

Not yet (see 23 above)

27. Was the project expanded (developed) without further financial intervention? Give reasons.

A mechanism was also found to transfer any funds left over to the next financial year, and the levy was increased each year, so there was further financial intervention, but this is by nature sustainable as it is a fund from tariffs already in place.

28. Was local economic development stimulated by this project? Give concrete examples, results.

Local service providers were used in the development of the energy efficiency system.

29. Were local business opportunities created directly from the intervention (e.g., operations/ maintenance/ further sales)? Were there local business opportunities created solely due to the energy provision (and would have been equally possible with another intervention that provided equivalent energy)?

Unknown

30. What financial mechanism is in place that ensures maintenance and ongoing operations?

NERSA authorized the establishment of a levy from electricity income generated by increased tariffs, allowing continuation of the project. Furthermore a mechanism was found to transfer any

funds left over to the next financial year. The condition set by the regulator, that annual audits must be done, as well as the integration of the targets into the performance management of the staff (through the link to their performance bonuses) provides a monitoring and verification process that is externally auditable.

SECTION 4: TECHNICAL INFORMATION

31. How much energy was produced/saved - equivalent to MW installed and kWh's equivalent?

A 53% savings was realized in the retrofitting project, with over 320 000 kWh saved per year. CO₂ was reduced by 308 tonnes/yr.

32. Is it replicable technically? Are there barriers to large-scale roll-out

It is replicable, provided there are large and capacitated municipalities to carry it out.

33. Are there sufficiently technically able people to continue with operations and management within the local community or are they reliant on outside help for maintenance support?

There is a DANIDA operative in the Energy Management Project, but otherwise there are sufficient technically able people to carry the project on.

34. Did the project meet the technical expectations of the local target audience - homeowner, local community, government, etc?

Yes

35. Has the project led to an increased demand for energy services (either similar or for a different need) in the community? How has this been met?

Unknown

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