

Changing Perceptions of Climate Mitigation Among Competing Priorities: The Case of Durban, South Africa

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1. Introduction

Emissions reduction programs in South Africa's eThekweni Municipality (commonly referred to as the city of Durban) show how mitigation can proceed in a municipality where emissions reduction are secondary to adaptation planning and other more immediate development concerns. Durban's experiences with the Cities for Climate Protection Program (CCP) and the Kyoto Protocol's Clean Development Mechanism (CDM) show how these internationally coordinated mitigation frameworks function within the multi-stress context of municipalities in developing countries.

Durban has also recently been hit by a triple crisis of energy, food and extreme weather related problems. It exemplifies the impacts that climate change may have on developing coastal municipalities. Its experiences highlight institutional barriers to effective mitigation that lie in the structure of municipal departments themselves and the skills, responsibilities, and habits of those involved.

Despite these barriers, Durban has engaged actively in creating municipal mitigation plans, institutional reform, and the integration of climate change policy across various municipal departments. It offers a glimpse of what a developmental local government's earnest attempts at mitigation measures look like. All this outside of the context – common to many cities in developed countries – where mitigation measures are the unquestioned focus of climate change policy and generate significant amounts of political capital for those involved.

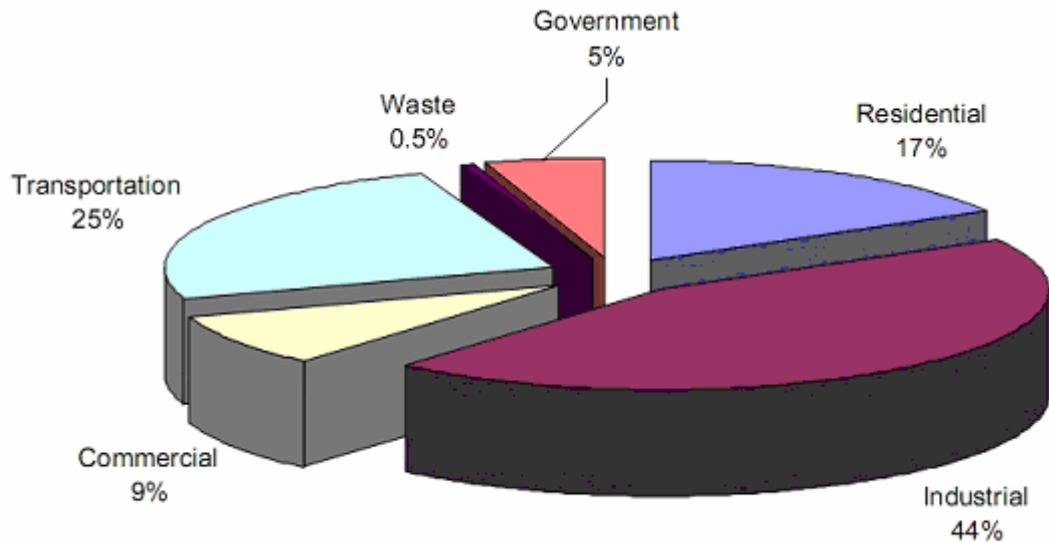
This case study begins with background on eThekweni and then moves on to discuss the municipality's initial mitigation projects. The limited results of these programmes are used as a bridge into a discussion of the political and institutional barriers that block effective mitigation policy. The electricity sector is of particular interest here, both because of the potential overlaps between mitigation in the energy sector and other development goals, and because of the institutional barriers that have slowed effective municipal policy in this area. Approaches to institutional reform that can drive innovation, mitigation, and the mainstreaming of climate policy within municipal structures are then discussed. The case study closes with a brief discussion of the role of non-state actors in supporting and implementing climate change policy.

2. Background

Durban is South Africa's second largest municipality. With over 3 million people, the city is home to the busiest port in Africa and an industrial and chemical sector which is the economic hub of the province of KwaZulu-Natal and the source of 8 per cent of the national GDP (DEAT 2007; eThekweni 2004). This sector includes two petrochemical refineries that produce 60 per cent of the petrol refined in South Africa. The city has also been reshaped by large scale event-led development in preparation for the 2010 football World Cup and a future bid for the 2020 Olympics.

The distribution of the benefits of this economic activity is highly uneven: 27 per cent of Black households live in informal settlements (compared with 0.4 per cent for Whites) and

Figure 1. CO₂eq emissions by energy end-users



Source: eThekweni, EMD, 2007c, p4.

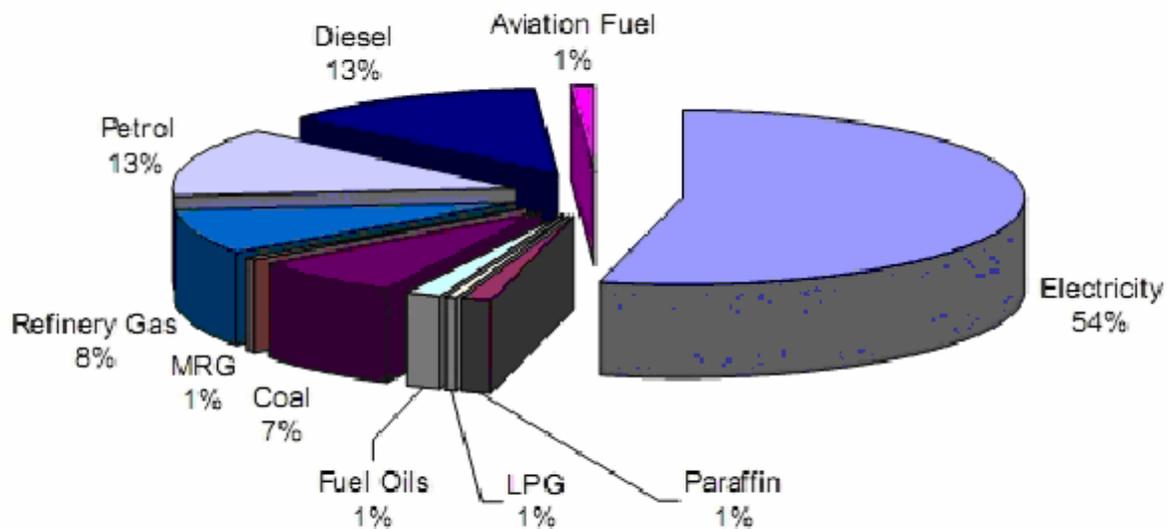
over 50 per cent of the Black and Coloured population is unemployed. Access to key infrastructure like sewerage, running water and electricity follows similar patterns (Statistics South Africa 2001). There are also serious health challenges, with an AIDS infection rate of over 34 per cent and concerns over TB, diarrhoea, and the potential spread of malaria (eThekweni 2005, p38). The responsibility for addressing these problems rests largely on the municipality. While development targets are set by national government, responsibility for meeting them is devolved to local governments. Each year, for example, Durban builds over 16,000 houses, to help meet the national target of eliminating informal settlements by 2014 (Goldstone 2007).

In terms of CO₂ emissions, industry accounts for 44 per cent of the city's overall emissions of 23 million tons/year (eThekweni, EMD, 2007a).¹ Transport related emissions account for 25 per cent, while household emissions account for 17 per cent (see Figure 1). The bulk of both household and industrial emissions come from electricity use. Approximately 90 per cent of South Africa's national electricity supply is generated by coal-fired power plants (ESKOM, 2009). By energy type electricity accounts for the majority of emissions in all but the transportation sector and is the source of 54 per cent of Durban's total emissions (see Figure 2).

These more general attributes form the backdrop for a triple crisis of energy shortages, food price hikes and extreme weather that have hit the city. In January 2008, the combination of a decade of rapidly growing electricity demand and no growth in generation capacity pushed the national grid into collapse. Plant failures spread uncontrolled blackouts across the country. In the month that followed, a schedule of managed rolling outages (load shedding) was put in place. Electricity cuts affected everyone from residential users to merchants and large

1. This level of emissions is comparable to those of similar sized cities in North America. Vancouver, for example, emits approximately 17 million tons/year. Exact comparison is not possible because of the fact that North American inventories tend to include a group of greenhouse gasses, whereas Durban has only inventoried CO₂. In Vancouver, non-CO₂ emissions accounted for roughly 10 per cent of total 2005 GHG emissions (Metro Vancouver, 2007).

Figure 2. Percentage CO₂ emissions, by energy type



Source: eThekweni, EMD, 2006a, p17.

industries. The total losses to the South African economy are estimated at R50 billion (\$US 5.6 billion) and thousands of jobs were lost. Electricity prices shot up by 26 per cent and labour protests spread throughout the country (SAPA, 2007). This occurred in the context of a global food price crisis and rapid increases in the cost of other fuels. In South Africa the cost of staple foods like bread and cornmeal rose by 25 per cent during the first 6 months of 2008, the cost petrol rose close to 16 per cent, and inflation hit 11 per cent (a five year high, Hurd, 2008).

One year earlier a major coastal storm severely damaged both municipal infrastructure and private property. Costs of repairing infrastructure damage for Durban and the surrounding province of KwaZulu Natal were estimated at R2.4 billion (\$US310 million (Mail & Guardian, 2009)). In addition, record rainfall caused several major floods, hitting informal settlements and poor communities particularly hard. Neighbourhoods built on slopes and near river banks suffered severe damage. Six people were killed, 1000 displaced and roads, bridges and other infrastructure damaged (de Costa et al, 2008).

3. Initial Mitigation Efforts

Durban appears as a model city when it comes to mitigation. The municipality was one of the first African cities to participate in ICLEI's Cities for Climate Protection (CCP) programme. It conducted its first CCP-guided corporate inventory in 2003 and its first community inventory in 2007. Two reports followed on the impacts of and potential responses to climate change within the city (eThekweni, EMD, 2006b; 2007a). Responding to climate change is also a major focus of the city's commitment to sustainable development. This commitment is written into the municipality's Integrated Development Planning process (IDP). The IDP processes involves yearly public consultations to steer the city's development goals and seeks to mainstream a set of key priorities – including sustainable development and greenhouse gas (GHG) mitigation – across previously separated municipal departments. Discussion of climate change responses also forms a key part of an extensive participatory long term visioning programme known as "imagine Durban," which is run in partnership with the International Centre for Sustainable Cities (ICSC), a Canadian NGO.

Overall, the municipality's approach to the creation of mitigation plans follows many of the accepted international best practices promoted by ICLEI and the ICSC.

The most significant emissions reductions have come from three landfill gas to electricity systems operating at three landfill sites. Run by the Durban Solid Waste department, the projects generate over 10 MW of electricity (enough to power 18,000 households). Combined reductions from avoided methane emissions and displaced grid electricity equal 362 thousand tons CO₂ (CO₂eq) per year (2 per cent of total annual emissions), or 7.6 million tons CO₂eq over the project's expected 21 year lifespan. Two of the projects are CDM approved, and they constitute the largest CDM project in Africa (eThekweni, EMD, 2006a, p44). Given that these reductions are being sold on the CDM market, they do not technically count towards local emissions reductions.

The second largest emissions reductions have come from changes to the management of municipal buildings. Like many municipalities, Durban has engaged in an energy audit of municipal buildings. It was found that reducing the use of air conditioners and fans, changing lighting technology and modifying building management systems could reduce building energy consumption by over 15 per cent at little or no cost. Annual reductions for 11 municipal buildings in 2006 were estimated at 914 tons of CO₂ (eThekweni, EMD, 2007a, p28).

The city also co-hosted the 2010 FIFA World Cup. Following FIFA's "Green Goal Initiative" that began in 2006, the municipality pursued a self imposed goal of hosting a carbon neutral World Cup. Most event-related emissions were offset through biogas projects at two municipal sewage treatment works and a community landfill reforestation project sponsored by the Danish International Development Agency (DANIDA). Given that this project offset additional emissions generated by the World Cup, it had no direct impact on overall emissions within the city. Plans have been made to use the World Cup projects as catalysts for further action within the city. At the time of writing, attention was focused on extending biogas to electricity projects at municipal waste water treatment facilities.

So far these familiar projects have had little overall impact on the more general course of urbanization in Durban. One area where more locally specific and far reaching efforts can be seen is in the area of land use planning. The municipality's Environmental Management Department (EMD) maintains a protected municipal open space system (DMOSS) within the municipal boundaries. The open space system consists of over 74,000 hectares, or 23 per cent of municipal area, within which there are significant (if contested) controls over development.

The open space system was created because of Durban's location within one of 34 global biodiversity conservation hotspots. These hotspots, all heavily threatened by development, account for 50 per cent of the world's plant species and 42 per cent of all terrestrial vertebrates (Conservation International, 2009). The open space system was geared to protect municipal portions of this highly diverse ecosystem. In 2006, a carbon inventory found that the DMOSS contained the equivalent of 24.3 million tons of CO₂ – roughly one third more than the municipality's total annual emissions – and sequestered 31 thousand tons of CO₂ (0.2 per cent of annual emissions (eThekweni, EMD, 2007a)). Preventing land use change from becoming a major source of emissions has therefore joined biodiversity preservation as an explicit goal of the protection and expansion of DMOSS (eThekweni, EMD, 2006a, p25). Though important, this does not reduce the municipality's existing emissions.

These early mitigation projects served to get the ball rolling within the municipality, but their actual impact on local emissions was slight. Discounting the reductions sold as CDM credits, we are left with the annual building efficiency reduction of 914 tons of CO₂eq, 0.005 per cent of total annual emissions. The main sources of eThekweni's emissions – the industrial and

commercial sectors, and electricity use more generally (see Figures 1 and 2 above) – were essentially left untouched in this phase of mitigation projects.

4. Initial Barriers to Mitigation

These initiatives – and those that would follow them – owe their existence to the perseverance of one or two key individuals and the small groups of local staff, consultants, and international partners who supported them. The landfill gas to electricity projects were made possible by an engineer within the Department of Cleansing and Solid Waste (DSW) who designed the complex methodology needed for gaining CDM accreditation and vetted the final agreements. For the rest, the prime movers have come from EMD, most particularly its head, Dr. Debra Roberts. Her experiences illustrate the highly politicized nature of both climate change and sustainable development at the local level.

4.1. The politics of mitigation and development

The stated mandate of the EMD is limited to biodiversity protection. In 2004, Dr. Roberts completed an environmental management programme at Brown University in the United States. In-depth coverage of the science of climate change prompted her to establish a Municipal Climate Protection programme. Since then, the EMD has been the centre for almost all explicitly climate change related activity in the city. In 2007 Dr. Roberts got approval to create the Climate Protection Branch with the department, but its core mandate remains biodiversity protection. The branch continued to be led by the head of the EMD however, given that the assigned salary for the branch manager has been too low to attract adequate candidates. Although the situation seems to be improving, climate change work for many years was done “*after hours and on weekends*”.² International funders like DANIDA and the Rockefeller Foundation are essential to the financial viability of the department’s climate programmes.

The emissions inventory, and the idea of mitigation more generally, initially had very little political support. The initial corporate inventory excluded community and industry emissions because of a lack of reliable data and the fact that the municipal government was simply not ready to accept mitigation targets in those highly politically charged sectors. There was little interest in mitigation within the municipal council or among higher municipal employees. This is in contrast to cities in developed countries, where the establishment of mitigation targets has been used as a way of generating positive media coverage and political capital for municipalities and municipal leaders. During reports on later work, EMD staff involved reported that it was made clear that under no circumstances should addressing climate change interfere with economic development and that priority should be placed on responding to potential local impacts.

This conflict between adaptation, mitigation and development goals is in part what the CDM system was designed to address. The municipality’s experiences with the CDM have been mixed. Despite the success of the landfill gas projects, administrative staff felt that CDM certification imposed a heavy burden. Some staff who developed expertise in dealing with the process subsequently left their positions in the municipality and moved to higher paid positions working with consulting firms. Interviews with members of the upper management in the municipality revealed scepticism about the potential benefits of CDM; some openly recommend avoiding the process altogether.

2. Interview, Debra Roberts 26 April 2008.

4.2. Institutional inertia in the electricity sector

Prior to the crisis, the EMD had already identified the energy sector as an area where concrete action could begin that would raise the understanding and acceptance of mitigation within the municipality. It hired two local consulting companies to prepare a State of Energy Report (eThekwini, EMD, 2006a), a catalogue of local renewable energy potential (eThekwini, EMD, 2007b) and a Municipal Energy Strategy (eThekwini, EMD, 2008). Across these documents, multiple developmental co-benefits of local renewable energy are discussed: local renewable sources improve energy security by reducing the municipality's dependence on an unstable national grid and volatile international petrol prices; they address issues of energy poverty and health by offering poorer households accessible, clean sources of fuel; and renewable energy technology is a potential driver of green economic growth and job creation (eThekwini, EMD, 2006a, pp33–34; 2007b, p42).

Couched in the context of these multiple synergies, the Energy Strategy proposed a plan to reduce the 2006 CO₂ emissions by 27.6 per cent by 2020. It set out detailed action plans for the transportation, residential, municipal, and industrial sectors. Key actions included: the promotion of public transportation, the use of bio-diesel and bio-ethanol in the local transportation sector; the creation of residential green energy tariffs and the implementation of a subsidized residential solar hot water programme; increases in efficiencies within municipal buildings and infrastructure, municipal green power generation and purchasing programmes; and encouraging industrial efficiencies through the development of complementary eco-industrial clusters, energy efficiency regulations, and the encouragement of local energy service companies.

Implementing the Energy Strategy would demand cross-cutting action across many municipal departments as well as private partners. Given its limited (biodiversity focused) mandate, this was not something that the EMD could coordinate. Considering the emphasis on efficiency gains and renewable energy in the Energy Strategy, eThekwini Electricity (EE, the municipal electricity distributor) was seen as a key partner in this process. EE saw things differently. As a middleman buying electricity from the national grid and selling it on to local customers, the utility resisted any involvement with implementing the Energy Strategy. They argued that local renewable energy generation was not within their mandate.

After the energy crisis, this did not change. EE limited its responses to running the local roll-out of nationally designed energy efficiency programmes and targets. The national Energy Supply Commission (ESKOM) had set targets and implemented a variety of incentive programmes to reduce electricity demand by 3,000 MW by 2012 and 5,000 MW by 2025. Also following ESKOM's lead, EE began research into ways of implementing a smart-switching system. Smart-switching would allow for finer grained load shedding, right down to the ability to turn off large appliances within individual households. Smart-switching is often a component of larger smart-grid systems that also allow for two-way billing to encourage local households to feed small-scale renewable energy (roof-top solar for example) back into the grid. Here again, the utility chose to exclude that technology, citing the fact that it was not within their mandate to encourage local energy generation.³

The energy crisis redefined EE's role. Typically, its focus was to sell electricity and to keep all parts of the local grid up and running. With the energy shortages, it was required to encourage consumers to use less and to regularly shut off large sections of the city to help stabilize the national grid. But unlike renewable energy, these techniques were already part of

3. Interview, Deena Govender, Manager of Commercial Engineering, eThekwini Electricity, 12 March 2008.

the utility's established relationships to suppliers, consumers and the local infrastructure. Smart-switching is an extension of neighbourhood scale switching systems that EE already used to manage the grid and perform maintenance on a regular basis. Helping industrial customers increase their efficiency was one way that the EE convinced them to switch to electricity from other energy sources.

Encouraging renewable energy, however, would require new relationships: clients could also become producers and the utility would need to adapt to a two-way flow of both power and information. Overall, this would be a profound challenge to the way EE is used to doing business. It would reshape its organizational culture and the way it envisioned its relationships to suppliers and consumers. All this occurred at a time when EE was significantly understaffed, and when low morale and HIV/AIDS related health problems affected performance and workforce stability across the municipality. The key barriers to their involvement in local renewable energy efforts were therefore primarily institutional, not technical.

5. Institutional Approaches to Mitigation

Mitigation (as well as adaptation) crosses established institutional silos and fits poorly into the mandate of any one department. While innovative responses do happen, they are particularly difficult when departments are already short of staff and resources to accomplish their core responsibilities. All of this points to the fact that significant successes in mitigation (beyond the preliminary projects touched on above) are as much an institutional challenge as a financial or a technical one. In what follows, we will look first at departments where innovation has taken place and then at institutional reforms which attempt to support the mainstreaming of mitigation efforts within the municipality.

5.1. Drivers of municipal energy innovation

There are a variety of local renewable energy projects being run elsewhere in the municipality. These range from in-pipe hydro and micro hydro in the city's water reticulation system, to biodiesel from algae projects and the methane gas capture projects covered above. All but the later are being run by eThekweni Water and Sanitation (EWS).

In terms of energy yield, EWS' flagship programmes are a complementary pairing of biogas and hydro power projects that could criss-cross whole sections of the city. The city's hilly terrain generates excess pressure within the fresh water distribution system. Water from dams descends into the city building pressure that needs to be mechanically reduced by as much as two thirds in some parts of the system.

To make better use of it, hydro and micro-hydro generation turbines are being integrated directly into the piping system. In total they will yield enough power for between 10,000 and 30,000 low-cost houses (7–22 MW) depending on the extent of the roll out. The main yield will come from one large turbine that was integrated into the design of a new western aqueduct.⁴ EWS also has plans to upgrade and expand the existing electricity generation systems that capture gas produced by sewage bio-digesters. As well as continuing to meet the needs of the treatment works themselves, the plants will store biogas and use it to generate electricity at peak times, when it can be sold back to the grid. In partnership with AGAMA energy, a private energy consulting firm, they are also putting in place smaller scale applications of the same system in peri-urban communities. These setups effectively combine

4. Interviews, EWS: Speedy Moodliar, Manager of Planning, Water and Sanitation, 26 March 2009; Neil MacLeod, Head, 27 March 2009.

developmental and environmental goals. They both make it possible to provide low-cost waterborne sewage, to treat effluent on site, to produce gas that can be used for cooking and to generate a high grade fertilizer that can be used for local agriculture.

More interesting than the projects themselves, is how a department – also with no mandate to generate energy – came to see these opportunities and act on them. In interview, Neil MacLeod, the head of EWS, made clear that EWS was managed very differently from a standard municipal department. At an individual level, employees are pushed to see their job descriptions as the minimum level for their work. Beyond that the organizational culture of the department encourages employees to think critically about how to achieve their objectives and address problems:

“... you are expected to take responsibility and to challenge everything that you do about your job. If you see an opportunity for innovation but can't initiate the solution yourself then come and talk to me and let's find a way to break down the walls out there that are stopping you from achieving it. ... There's something else, I always tell people 'don't come with a problem, come with a solution'.”⁵

Similar principles are applied across the organization as a whole. Cross-level meetings bring staff together to share challenges that they have yet to solve and collectively brainstorm solutions: *“we get everyone from clerical staff right up to senior management in the same room looking at the same problem and bringing their own perspectives in”*.⁶ EWS also holds a monthly sustainability lecture series. The informal gatherings encourage open discussions and brainstorming, which has given rise to the algae-to-biodiesel project and other potential initiatives.

Officially, senior management justifies all of this by pointing to their bottom line. Their energy projects reduce their electricity bills; the associated mitigation benefits are seen as incidental. Synergies between these projects and broader municipal objectives in areas of economic development, improved health and quality of life are also emphasized. Just below the surface, it is clear that senior management are motivated by the rewards of innovation itself. The challenges of going beyond their core mandate also seem to motivate staff, and the department reports few problems with finding and keeping the personnel they require.⁷

In context, these projects represent only a small portion (1.4 per cent) of Durban's total electricity use (a maximum of 154.2 GW hours out of 11,000 GWh). As innovative as EWS's projects may be, the department has neither the position nor the ambition to coordinate a larger scale transformation in the municipality's electricity system.

The experiences with innovation in Durban's energy system show that opportunities exist for significant emissions reductions. Renewable energy can also be coupled with increases in energy security, energy affordability, and a more cost-effective roll-out of municipal services. But projects have been held back by questions of who has the resources, and the jurisdiction, to implement them. Those perhaps best positioned to act, EE, are constrained by established procedures and relationships. Those with the best understanding of the issue, the EMD, lack both the resources and the mandate to act on that knowledge. And those quickest to act, the EWS, while effective in making change in their own systems, do not have the desire or the reach to catalyse broader changes.

5. Interview Neil MacLeod, 27 March 2009.

6. Interview Neil MacLeod, 27 March 2009.

7. Interviews: Speedy Moodliar 26 March 2009; Neil MacLeod, 27 March 2009.

5.2. Institutional and organizational innovation

In the months that followed the publication of the Energy Strategy (eThekweni, EMD, 2008), and the onset of the energy crisis, it was clear to city officials and the consultants who had worked on the report, that neither EMD nor EE were the appropriate home for a more far reaching plan for the city's energy use.

With the backing of the municipal manager, the treasurer and the head of procurement and infrastructure (three of the most powerful individuals within the city bureaucracy) a special 6 person Energy Office was launched in February of 2009. Its mandate is to centralize and accelerate the roll-out of energy efficiency and renewable energy activities within the municipality. More specifically, the office has been tasked with studying and implementing efficiency and renewable energy projects, as well as sourcing funding (from the CDM as well as other sources), to raise awareness, and to train energy professionals.

Also in 2009 the EMD received funding to create two junior posts to begin staffing their internal Climate Change Branch. In the future, the Energy Office will take on responsibility for mitigation efforts and GHG inventories and the Climate Change Branch will focus on adaptation efforts.

The creation of these new offices represented important institutional reforms within the structures of the municipality. At the time of writing however, the new Energy Office is understaffed and it appears that will only be able to act as a coordinating body for projects already being undertaken by other agencies. Given that no other departments have the mandate to engage with renewable energy projects, it is unlikely that the new Energy Office will find many partners unless more agencies like EWS are willing to go beyond their formal mandates.

5.3. Mainstreaming climate mitigation

One possible catalyst of more widespread mitigation efforts could be the integration of climate change as a component of the municipality's development objectives. The municipality, conforming to national requirements, already produces integrated development plans (IDPs) every five years. IDPs are directly linked to the role that South African cities play in repairing apartheid era backlogs in essential service delivery while also managing economic growth in the context of globalization (Ballard et al, 2007).

Participatory plan reviews are conducted every year and bring together representatives from civil society, local communities, and local businesses. The aim is to collaboratively define the municipality's development goals and apportion the municipal budget, not by department, but according to each department's contribution to meeting cross-cutting municipal goals. The process aims to set a course for the city, and to build bridges across departmental silos as a way of achieving its objectives as effectively as possible.

In the second IDP, released in July of 2006 (eThekweni 2006), the sustainability of the natural and built environment became the municipality's top priority. Echoing the now iconic language of early writing on sustainable development (see WCED, 1987), the city committed to balancing social, environmental and economic goals, and to addressing the potential impacts of climate change on the municipality (eThekweni, 2006).

As proof of this commitment, the 2006 IDP points to policies and programmes aimed at preventing sprawl, providing public transit, maintaining functioning local ecosystems, and managing waste methane (eThekweni, 2006). However, mitigation measures are conflated with air quality issues and no clear targets have yet been adopted for municipal emissions.

The city's commitment to financial transparency has led to the publication of the budget expenditure in the IDP document itself. However, despite the prioritisation of environmental goals on paper, the budget for environmental programmes is a small fraction of what has been set aside for other areas (Aylett, 2010a).⁸

Many mitigation goals can be achieved through planning in other sectors and do not require a dedicated budget, but such low levels of spending call into question the city's commitments. Here the city may be following the national model: while South Africa has some of the world's most progressive environmental legislation, it is poorly enforced and has little effect on the government's industrial policies (Wiley et al, 2002). Researchers argue that despite ambitious commitments, environmental goals are often trumped by "a neo-liberal paradigm, which dominates society and the economy" (Scott and Oelofse, 2005, p446).

As the IDP process becomes established, it appears that initial resistance to silo-breaking efforts is waning. The close link between the municipal budget, senior management's performance management contracts and IDP objectives also pushes departments to align themselves with it. As such it could well become a powerful vehicle for mainstreaming climate change considerations. However, the IDP coverage of climate change and sustainable development still needs to be made more detailed and concrete.

6. Engagement with Non-State Actors

Not only do mitigation projects need to cross many internal barriers within the municipal administration; they also entail involving a broad coalition of actors within the local community. Only 5 per cent of total local emissions come from activities directly controlled by the municipal government. To reach the other 95 per cent of domestic, industrial and transport related emissions, users need to be brought on board. The city manages two participatory processes for engaging with a broad range of local community members. There are also many active civil society groups within the municipality and several property development companies that have taken an interest in climate related issues.

The primary vehicles for official interaction with local communities are the IDP consultations mentioned above. In these forums, discussions of climate change have been very limited. Community members are often primarily concerned with local environmental health and environmental justice issues – particularly in communities within industrial areas. Although participants receive information on a variety of local development indicators, none of these allow for a detailed discussion of potential mitigation efforts. As such climate mitigation does not figure at all in the recommendations that communities present to the municipality. For example, while the percentage of households connected to the electricity grid in any given community is covered in development indicators, per capita electricity use is not. This masks the deeply uneven resource use within the city and misses a valuable opportunity to help communities to discuss possible mitigation measures (Aylett, 2010a).

The ImagineDurban long-term visioning programme is another area of municipal engagement with the public. Begun in 2006, the programme is similar to programmes like imagineCalgary, or Portland's VisionPDX (Calgary, 2009; Portland, 2009). Through a variety of public engagement processes, ImagineDurban involved over 4500 residents in generating a vision and goals for the city's development, both near and long-term, and the strategies, plans and projects necessary to start meeting them. The results of the process are intended to guide

8. A total of R 6 million (US\$0.8 million) over three years is earmarked for sustainability related programs. The next lowest is for Celebrating Cultural Diversity (R 12.7 million; US\$1.6 million) and the highest is for Housing (R 6302.4 million; US\$834 million (eThekweni, 2006)).

the IDP process. Responses to climate change have been one of the key themes covered in the programme's talks and public meetings. ImagineDurban also created a public relations campaign to celebrate energy efficiency leaders in the retail and tourism sectors. The aim was to use tangible local experiences to make mitigation efforts concrete and encourage mainstreaming among local businesses. While the impacts of these programmes are difficult to measure, they contribute to creating public support and an understanding of climate change issues.

Like municipal agencies, local NGOs are struggling to integrate climate change into their mandates. Organizations originally set up to address issues of biodiversity loss or environmental justice are aware of the overlaps that exist between their core concerns and climate change. Their ability to transform that understanding into concrete local action and support for mitigation efforts has been limited, however. For example, the South Durban Community Environmental Alliance (SDCEA), one of Durban's most outspoken environmental NGOs, began climate related campaigns in 2008 (following the receipt of a UNICEF project grant). SDCEA established its reputation by leading an organized campaign against industrial air pollution. Its balance between vociferous protests and expert participation in official processes provided the impetus necessary for the city, along with national counterparts, to drastically improve the monitoring and enforcement of air quality standards.

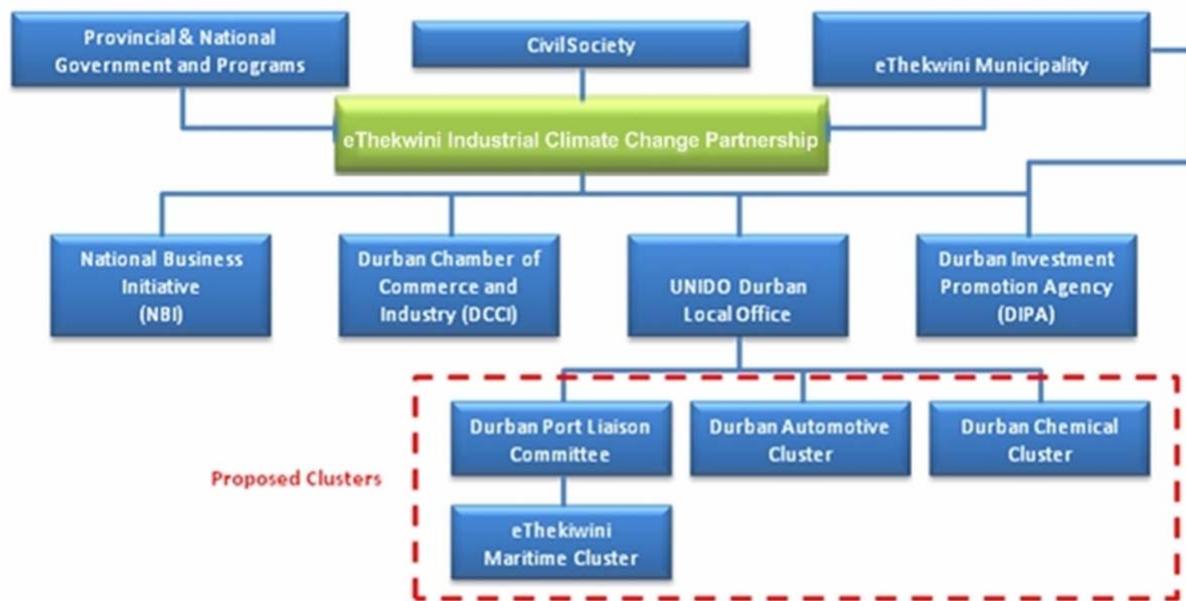
Campaigning against GHG emissions is a natural extension of their campaigns against other industrial emissions. With the help of international partners they have created an education programme based on a locally relevant understanding of the impacts and causes of climate change. But they have yet to translate this engagement into partnerships with local authorities and seem uncertain about exactly what their role could be in this area. Climate change has proven to be a slippery issue because it lacks the concrete focus provided by the immediate health effects of local air pollution. Also, given an oppositional relationship between the municipal government and many local NGOs, little has been done so far to encourage or support their engagement with climate change (Aylett, 2010b).

Following the release of the Energy Strategy, the EMD gained funding from the Danish International Development Agency (DANIDA) to establish two energy efficiency clubs. One club was focused on the Mariannhill industrial area and involved a range of local businesses. The other focused on Durban's automotive sector. Over the clubs' first 12 months, participants were introduced to techniques for energy management and auditing, monitoring and targeting, carbon footprint calculations, and making power conservation plans. Members who implemented efficiency measures reported savings of up to R220 000 (\$US28,000) for the 1st quarter of 2009, and the concept of "clubs" was generally well received by the industries. Not all major players participated fully, however – Toyota for example pulled out after the initial two meetings (eThekweni 2009).

In June of 2009, the Municipality signed a partnership declaration with local and national business leadership in conjunction with UNIDO to promote climate change mitigation and adaptation. Known as the Durban Industry Climate Change Partnership, at the time of writing the partnership was still in its early stages.⁹ It aims to develop sector specific partnerships within the city to set and meet emissions reduction goals (see Figure 3). The primary approach is to use the experiences of efficiency leaders in each sector to mainstream efficiency and mitigation measures across each sector.

9. The programme was set to run until June 2010.

Figure 3. Schematic diagram of Durban Industry Climate Change Partnership



Source: personal communication Durban Industry Climate Change Partnership 2009.

7. Conclusions

Durban’s experiences show that mitigation measures have a different political currency outside of developed countries. Developing cities have legitimate reasons for prioritizing adaptation, given both their vulnerability and the slow pace of international mitigation efforts. But missing the opportunity to build mitigation into Durban’s development plans would leave the municipality poorly prepared for a carbon constrained future and overlook opportunities to explore synergies between mitigation, adaptation, and other development goals.

In this context, international funding and partnerships were key to initiating climate change programmes in general and to promote mitigation efforts more specifically. Their support to individual local leaders and the small teams they work with made Durban’s climate change initiatives possible. But programmes like the CCP and the CDM impose heavy administrative costs on under-resourced local departments. At the same time, these programmes ignore key barriers to action imposed by existing municipal structures and power relationships. The cross-cutting nature of climate change challenges many established relationships and priorities, and it can easily be perceived as a threat to municipal development goals.

Beyond that, even when events (like a national electricity crisis) create an opening for innovation, action can be blocked by the organizational culture and siloization of municipal departments. In the case of Durban’s energy sector understanding of the issue, capacity to implement projects, and jurisdiction to create systemic change were split across three separate departments. Specific programmes, like EWS’ energy projects, show that innovation is possible – particularly in settings where employees are encouraged to be creative and take risks. Integrated energy, waste processing and agricultural systems show that mitigation efforts can also help meeting developmental goals of energy affordability, food security and cost-effective roll-out of basic services. Mainstreaming, however, requires a more fundamental coordination across municipal silos.

Durban's experiences with integrated development planning show that structures to encourage integration can be put in place. Linking these to departmental budgeting and performance management procedures makes them a powerful lever. But until the content of planning documents includes concrete climate change goals and approaches, the effect will be limited.

The recent engagement with private industry represents a fundamental change in the way that mitigation is perceived in the municipality. At the time of the city's initial CO₂ inventory, discussions of emissions were perceived as a potential threat to local industry and the city's economic development. Under the new industrial climate change partnership efficiency, innovation and the "green" sector are seen as potential drivers of future growth.

Durban is an example of how mitigation measures, and climate change initiatives more generally, happen in a city with multiple competing development priorities and no strong leadership on the issue from municipal politicians. Many innovative programmes are being led by champions within individual departments. They are linked to national and international networks of funders and practitioners, but have only limited ability to influence the priority given to climate change measures within local politics. The expertise derived from these more limited projects, however, puts them in a position to capitalize on opportunities that appear as the political landscape evolves. Large scale events, such as the World Cup or the national preparations for the 2009 climate change negotiations in Copenhagen, seem to have helped win over political support. Many of the recent developments covered above are examples of the intersection between already established departmental leadership and newly available political interest.

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