

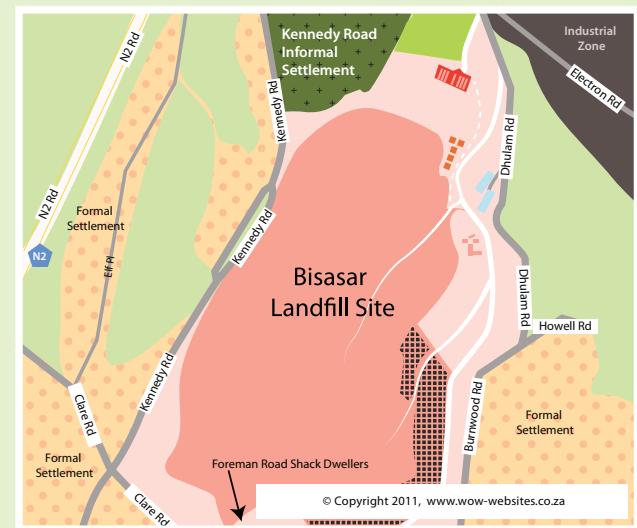
THE BISASAR LANDFILL IN DURBAN, SOUTH AFRICA:

**Carbon Trading
Prolongs Environmental
Racism at Africa's
Largest Municipal
Dump**



The South African government's 'model' Clean Development Mechanism project at the Bisasar landfill is a disappointment for citizens demanding environmental and social justice. Rather than assisting in tackling climate change, the project amplifies local environmental and health risks and undermines livelihoods while rekindling Apartheid-era racial conflicts.

BISASAR LANDFILL



A Toxic Legacy of Apartheid

The Bisasar landfill in Durban, South Africa is Africa's largest formal dump, processing around 5000 tonnes of solid waste a day.¹ Until the late 1990s, it also included a hazardous and medical waste incinerator and there have been previous reports of industrial waste and sewage sludge illegally disposed there.² Neither the incinerator nor the landfill has equipment to control pollution such as dioxins, heavy metals, particulates or noxious gases.³ Local government (Durban Solid Waste - DSW) manages the landfill, which opened in 1980 in the largely Indian⁴ suburb of Clare Estate, displacing a once-tranquil nature reserve. Durban's wealthy, white suburbs such as Umhlanga closed their landfill and re-routed waste to Bisasar.

Under Apartheid, it was standard practice to site landfills in non-white areas but the situation has changed little since then. Local government intended to close the dumpsite in 1987, but extended it by nine years. In the first democratic elections, the African National Congress promised to close the landfill in 1994 and rehabilitate the area as a recreational amenity. Instead, it renewed the landfill permit without local community consultation. The dump was also to be kept below the level of Kennedy Road, but residents who once had a view across the Mgeni estuary to the sea now look out onto a mountain of waste.

Following the relaxing of Apartheid laws in the late 1980s, an African informal shack settlement grew up on Kennedy Road around the landfill. Many of these African residents had been displaced from their ancestral homes due to land taken away from them in 1986 without compensation to make way for the Inanda Dam to supply Durban with water.⁵ These informal residents turned to waste picking off the landfill for recyclable materials due to the high unemployment rate.

Many Clare Estate residents, seeing the landfill's continued operation as an extension of Apartheid-era environmental racism, have been fierce in their opposition to the landfill. Local activist Sajida Khan, who was at the forefront of the struggle to close the dump, passed away on 15 July 2007 from chronic cancer, which Khan, during her struggle against the disease, had no doubt had arisen due to the landfill. During the 1990's, Khan mobilised the local community for action against the landfill with campaign tactics which included placard demonstrations and protests, blockades of the dump, a community-wide petition with 6000 signatures, and securing media attention.⁶

Additionally, in 2002, Khan strategically initiated a lawsuit against the city authorities for failure to close the dump. Yet despite widespread opposition, the Bisasar landfill continues to be an unsightly place of rotting garbage spreading repugnant odours, invasive dust and life-threatening toxins over the surrounding neighbourhood. The landfill has a history of poor operation, which includes toxic leachate leaks and toxic air emissions.⁷ In addition, there is no buffer zone between the landfill and residents, who are located literally within a few meters of the site. Ten public schools are also located within one square kilometer of the landfill.

Six out of ten households reported cancer cases . . . Kennedy Road residents suffer severely from asthma, sinusitis, pneumonia and tuberculosis.

Clare Estate is plagued with serious health problems. Six out of ten households living closest to the landfill have reported cancer cases.⁸ Local health workers confirmed that Kennedy Road residents suffer severely from asthma, sinusitis, pneumonia and tuberculosis. The toxic body burden is unknown, but the Cancer Society of South Africa deemed the area a "cancer

hotspot" because of the heavy metals and other dangerous substances that penetrate the water, air and shifting soils.⁹ Although local government acknowledges that the Bisasar landfill can contribute to air pollution when volatile organic compounds (VOCs)¹⁰ such as benzene, trichloroethylene, tetrachloroethylene, methane and naphthalene decompose, having adverse health impacts,¹¹ no attempt has been made to conduct a comprehensive health study to determine the landfill's health impacts on the surrounding community.

In spite of these problems, the dump stays open and continues to operate because it has become a money-maker for local government. Though the municipality promised that the landfill will close around 2013,¹² no immediate plan for closure exists. While one local government source stipulates a planned closure date of 2017,¹³ another local government source notes that Bisasar is expected to serve the waste disposal needs of Durban for another 15 years.¹⁴ In addition, a 2004 project document on the Durban gas to electricity project noted that, considering the high cost of developing new landfill sites, it is not reasonable to expect that local government would close Bisasar before it is full, nor are there any plans for the construction of a replacement site.¹⁵

The Bisasar Landfill Gas to Energy Project

The source of the money is the Bisasar landfill gas-to-electricity project. Although officially launched in January 2010, initial discussions on a CDM project at the landfill began in 2002 when local bureaucrats were persuaded by the World Bank's commitment to invest a US\$15 million start-up grant in a CDM project to convert the landfill's methane emissions into electricity. The project was heavily advertised at the World Summit on Sustainable Development as a demonstration of South Africa's

commitment to sustainable development. After some protracted negotiations in 2003, Durban signed an emissions reduction agreement with the World Bank, which withdrew support two years later due to community opposition (see below).

To capture methane, wells were drilled into the landfill. The wells are connected by pipes to a central collection point where the gas is fed into a spark ignition engine that drives a generator to make electricity, which is then linked to the Durban municipal grid for use by industrial consumers.¹⁶ The project claims two climate benefits: it prevents the release of methane, which is a greenhouse gas 25-72 times more potent than carbon dioxide;¹⁷ and it generates electricity, which supposedly offsets coal emissions from the electricity these industries would have normally used. However, the climate benefits, if any, are offset by increased emissions in the developed countries which buy the carbon credits generated.



Photo Credit: Rehana Dada

Besides struggling for landfill closure, Sajida Khan was also heading opposition to prevent the methane extraction project.



Photo Credit: Llewellyn Leonard, 2011

Khan believed that the landfill gas should be removed via nearby gas pipes, rather than burned on site. Khan's detailed technical submission regarding the project's environmental impact for international legal proceedings scared off the World Bank, which withdrew support from the project in 2005.¹⁸ However, the Bank did offer CDM investment to two smaller Durban landfills at the La Mercy and Marianhill sites, with the former since failing to take off. The local government then sought alternative investors, and in 2006, the French Development Bank pledged US\$8 million to Durban's landfill gas projects, alongside the R6 million (US\$1.3 million) of taxpayer money from South Africa's Department of Trade and Industry.

Environmental and Health Hazards

The Bisasar CDM project poses serious environmental and health hazards: the electric generators are the dirtiest way of burning landfill gas, producing more carbon monoxide

and nitrogen oxides than flaring, with dioxins forming in the generator exhausts and in the flare plume.¹⁹

Due to the methane-electricity conversion, fumes from rotting waste also have a much higher level of lethal chemicals and metals.²⁰ In addition, extracting methane at Bisasar brings leachate toxins up to the surface, with visible overflow of leachate from the wells already having occurred.²¹ Thus, residents now face even worse conditions than they did before the CDM project.

In its first seven years (2009-2016), Bisasar's CDM project is projected to generate €21.6m.

The government is clearly set on securing profits via the CDM despite the social and environmental risks associated with Bisasar and the CDM project. For John Parkin, Deputy Head of Engineering at DSW, the prospect that the CDM presents to make the city money is very important, with local government

taking this opportunity.²² In its first seven years (2009-2016), Bisasar's CDM project is projected to generate 2.4 million certified emissions reduction credits (CERs) worth €21.6m at today's low prices.²³ The project will also be eligible to apply for another seven years of CERs after 2016. This is in addition to the money the municipality makes from selling the electricity. But much of the benefit may be flowing into private pockets: the former mayor, Obed Mlaba, has been linked to a R3 billion alleged tender corruption for the conversion of waste to electricity at the Bisasar landfill, with twenty percent of the firm bidding for the tender owned by the Mlaba Family Trust.²⁴

Feeding off Class Disparities to Push through Carbon Trading

Community opposition to the Bisasar landfill and the CDM initiative was fractured, and local government strategically exploited class differences to pit residents against each other. While Indian, middle-class residents have pushed for landfill closure due to health concerns, African residents have resisted this due to livelihood concerns. The Kennedy Road shack dwellers welcomed the chance to have a few of their members recover recyclable materials from the landfill.

Faced with the opposition of Clare Estate formal residents, the city officials and their international partners cultivated the support of the shack dwellers, with the formal residents viewing this as a divide and rule tactic. DSW presented false promises to the informal settlement of benefits derived from the CDM project. This included promises that the CDM project would secure fifty engineering scholarships and two hundred formal jobs. The reality, according to journalist Rehana Dada, was "... six jobs and five bursaries over twenty-one years for residents of eThekweni, Durban..."²⁵

According to the African shack dwellers, DSW also promised that they would receive cheap or free electricity; and that five

to ten percent of the profits were to be used for community development. But the shack dwellers still have no electricity, even though the Department of Energy announced a free basic electricity policy in 2003 to provide "electricity to all"²⁶ – and the US\$760,000 that was also to be paid into a Social Benefit Fund to be used for Durban as a whole was withdrawn due to the World Bank's departure.²⁷ When Clare Estate residents protested against the project, city officials provided free buses to shack dwellers to protest in favour of the CDM project to counter those opposed.²⁸

DSW eventually limited access to the dump due to safety and health concerns, especially after one of the recyclers was killed by an onsite compactor. Waste picking is only permitted at Bisasar landfill after 16h30 daily, when operations on the site have ceased,²⁹ affecting the waste pickers' livelihoods. But in the absence of other alternatives, the Kennedy road settlement is convinced that the continued operation of the landfill offers them an opportunity to address livelihood concerns, however limited. They do acknowledge that local government used them to support the CDM project and lied to them about benefits that would be derived.³⁰

An Alternative to CDM Gimmickry

Better opportunities were once on the table. In 2004, the shack dwellers proposed their own alternative to the CDM project: the creation of a Resource Recovery Facility (RRF) by city authorities. A RRF combines recyclable materials drop-off with collection and resale of used goods, having the potential to create markets for buyers and sellers. Such a facility is designed to facilitate the recovery of useful discards and provide formal jobs with benefits for the community.

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According to informal leader Sbu Zikonde, "...The [RRF] proposal has been put forward to government...There has always been engagement around this... But in terms of development and really recycling that has not happened, and we know how effective that could be, because every little material that means nothing would be something...it's about the dump being run by the community...for better benefits instead of it being run by Durban Solid Waste...[who] is also making a living out of the expense of the poor and those that dump there..."³¹

In 2007, South African environmental justice NGO groundWork, together with the informal settlement, drew up a more formal RRF proposal to present to city officials. Just a few hours before the scheduled presentation, the city cancelled the meeting. At this time, city officials were six years into planning the CDM project. Clearly, a RRF would have disrupted CDM profits, since it would reduce the amount of waste being landfilled.

The climate benefits of increased recycling greatly outweigh the electricity offsets from landfill gas-to-energy.

Durban authorities clearly did not weigh the benefits of a RRF and broader cleaner production methods against the CDM project at Bisasar. With a RRF, the community would be able to recover and utilize the full value of natural resources and full utility of products and materials that would otherwise be lost in a landfill. This would in turn assist in reducing the need to continually mine and refine virgin resources for product production. The climate benefits of increased recycling greatly outweigh the electricity offsets from landfill gas-to-energy.³²

Setting up for CDM Failure

Under the CDM, landfill projects have a history of "underperformance" – meaning that they extract less methane than anticipated. This may be because less methane is produced in the landfill than models predict, more of it breaks

down or leaks out, the collection equipment is ineffective, or a combination of all these factors.

In 2010, a Methane Blue Ribbon Panel of leading climate scientists, clean energy finance specialists and global governance experts appointed Norwegian consultants to conduct a risk assessment of methane projects. It was found that there are uncertainties in methane emission estimates at landfills due to the lack of information about the waste management practices employed at various sites, the portion of organic waste that decomposes, and the extent to which these wastes will ultimately decompose. Many methane projects are never able to prove that emissions reductions actually took place, and consequently do not generate the estimated credits.³³ The World Bank's CDM project at nearby La Mercy landfill failed to secure the required methane yield and was partially dismantled.

It is unclear what proportion of the gas from project wells is either flared or utilized.

Potential problems with methane yield predictions at Bisasar landfill, including issues with maintenance and monitoring, threaten the flow of carbon credits. As a 2006 local government Monitoring Plan Report for Bisasar revealed, the methane calculation system is complicated by the fact that engines and flares combust landfill gas with different efficiencies and it is unclear what proportion of the gas from project wells is either flared or utilized. In addition, the efficiency level of the engines converting methane into carbon dioxide may drop if poorly maintained or not operated at optimal load factor, e.g. in times of fuel shortage. Although the real operating hours of the flare will be subject to monitoring, not all methane collected will be converted into carbon dioxide; a portion will be emitted as methane into the atmosphere.³⁴

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As the report by the Academy of Science of South Africa (2011) commissioned by the municipality revealed, 'Bisasar Road landfill produces a high flow of landfill gas, in excess of 7000m³ per hour...that is neither extracted nor utilised...Approximately 2500m³ of landfill gas per hour...is captured on a continuous basis...'³⁵ In other words, more than 60 percent (i.e. 108,000m³ per day) of the methane produced is escaping unburnt, in addition to an unknown proportion which is captured but released into the atmosphere. This suggests that keeping the landfill open and continuing to dump waste there is actually increasing overall greenhouse gas emissions.

Bisasar landfill gas statistics

Gas generated per hour	7000m ³
Gas captured per hour	2500m ³
Gas escaping per hour	4500m ³
Gas generated per day	168,000m ³
Gas captured per day	60,000m ³
Gas escaping per day	108,000m ³

More than 60 percent of the methane produced is escaping unburnt.

Whitewashing Failure

The flow of money from the CDM seems to have blinded South African officials to the reality and lost opportunities of Bisasar. As the Minister of Energy, Dipuo Peters, noted in a speech at the official launch of the Bisasar CDM project in January

2010, "The project will generate electricity from waste. This means that it will reduce waste accumulation, whilst at the same time generating electricity and reducing green house gas emissions."³⁶

Apart from the ludicrous assertion that landfilling reduces waste accumulation, what the government fails to acknowledge is that the continued operation of the landfill and its extended lifespan by the CDM actually encourages greater waste generation in order to generate methane for carbon credits. The Bisasar community is paying for this waste of resources with its health and lost livelihoods.

The continued operation of the landfill and its extended lifespan by the CDM actually encourages greater waste generation.

End Notes

¹ House of Commons – Environmental Audit Committee: The voluntary carbon offset market. Sixth Report Session 2006-07. Parliament, Great Britain;

also www.groundwork.org.za/Publications/gWReport2008.pdf

² www.carbontradewatch.org/pubs/CDMsouthafrica.pdf

³ Bond, P. and Dada, R. (2007) A death in Durban: Capitalist patriarchy, global warming gimmickry and our responsibility for rubbish, Agenda, Volume (73), 46-56

⁴ The Apartheid system enacted a nation-wide social policy of separate development. The Population Registration Act in 1950 classified residents into four racial groups: "black", "white", "coloured", and "Indian". The Group Areas Act in 1950 assigned different regions according to different races. Clare Estate was designated an Indian area. Indian in this article refers to a person of Indian origin, but not necessarily a citizen of India.

⁵ <http://www.ccs.ukzn.ac.za/files/Durban%20protests%202009.pdf>

also www.abahlali.org/files/RREPORT_VOL106_PITHOUSE.pdf

⁶ www.carbontradewatch.org/pubs/CDMsouthafrica.pdf

⁷ http://www.carbontradewatch.org/index.php?option=com_content&task=view&id=180&Itemid=36

- ⁸ Lohmann, L. (2006) *Carbon Trading: A critical conversation on climate change, privatization and power* (special issue of *Development Dialogue*), Uppsala: Dag Hammarskjold Foundation.
- ⁹ <http://www.durbanclimatejustice.org/articles/'false-solutions'-to-climate-crisis-amplify-eco-injustices.html>
- ¹⁰ VOCs are organic chemicals that easily vaporize into the air. They are invisible but can cause cancer and other health problems if exposed over a long period of time.
- ¹¹ Local government: <http://www.ceroi.net/reports/durban/issues/waste/impact.htm>
- ¹² Interview with John Parken – Deputy Head Plant and Engineering at DSW, 14 June 2007, 14:30pm
- ¹³ Local government: <http://www.durban.gov.za/durban/services/cleansing/gastoelec/disposal>
- ¹⁴ Local government: <http://www.durban.gov.za/durban/services/cleansing/gastoelec/landfill>
- ¹⁵ <http://carbonfinance.org/pcf/Router.cfm?Page=Projects&ProjectID=3132#DocsList>
- ¹⁶ <http://free.financialmail.co.za/report08/green08/qgreen.htm>
- ¹⁷ Global warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere. A substance's GWP depends on the time span over which the potential is calculated. Thus methane has a potential of 25 over 100 years but 72 over 20 years.
- ¹⁸ Vedantam, V. 'Kyoto credits system aids the rich', *The Washington Post*, 12 March, 2005, A12.
- ¹⁹ www.groundwork.org.za/Publications/gWReport2008.pdf
- ²⁰ Bond, P. 'Durban's waste of energy', *The Mercury*, 2 February 2010
- ²¹ Ibid. Bond, P. and Dada, R. (2007)
- ²² Interview, 14 June 2007, 14:30pm
- ²³ The revised project design document, available at <http://cdm.unfccc.int/>, projects 2,398,935 CERs over 7 years; third-quarter 2011 CER price is taken to be €9 <http://tinyurl.com/bs93cs5>
- ²⁴ <http://www.iol.co.za/news/south-africa/kwazulu-natal/mlaba-and-the-tender-hijack-1.1041199>
- ²⁵ Interview , 25 May 2007, 14:00pm
- ²⁶ www.earthlife.org.za/.../Free-Basic-Electricity-Final-Low-res.pdf (A minimum of 200kWh per household per month is required to have any meaningful changes to people's lives)
- ²⁷ www.durban.gov.za/durban/services/cleansing/gastoelec/.../report accessed:October 2011
- ²⁸ www.groundwork.org.za/Publications/gWReport2008.pdf
- ²⁹ <http://www.ceroi.net/reports/durban/issues/waste/recycle.htm> also www.worldbank.org/urban/solid_wm/erm/.../uwp3.pdf
- ³⁰ www.groundwork.org.za/Publications/gWReport2008.pdf
- ³¹ Interview, 8 May 2007, 10:00am
- ³² Cushing, L. (2010), *Waste-to-energy or wasted opportunity? Informal sector recycling for climate change mitigation in India*. Energy and Resources Group, University of California, Berkeley.
- ³³ www.globalmethanefund.org/20100506-report.pdf
- ³⁴ www.netinform.net/KE/files/pdf/BisasarMPApr06_v01.pdf
- ³⁵ <http://assaf.co.za/wp-content/uploads/PDF/LCC.pdf>
- ³⁶ <http://www.info.gov.za/speech/DynamicAction?pageid=461&sid=6754&tid=6899>



Global Alliance for Incinerator Alternatives
Global Anti-Incinerator Alliance

GAIA is a worldwide alliance of more than 600 grassroots groups, non-governmental organizations, and individuals in over 90 countries whose ultimate vision is a just, toxic-free world without incineration.

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