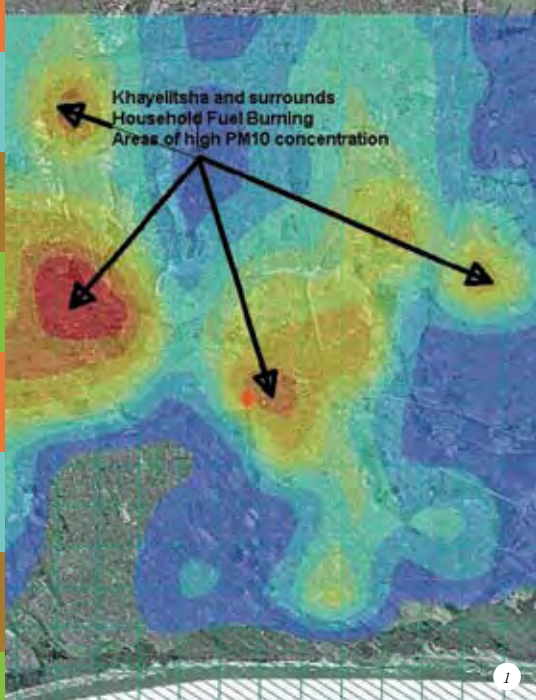




AIR QUALITY

Essentially, the UEMP supports activities related to the implementation of the National Air Quality Management Act at all three government levels. Among the current activities are: the establishment of the South African Air Quality Information System (SAQUIS), capacity building in all spheres of government and a number of specific interventions within municipalities. In particular, the Programme meets the challenges of indoor air pollution which is a major problem in poor communities, impacting on health and causing respiratory diseases. Respiratory disease is the second most frequent cause of death of children (0-5 years) in South Africa.

Air Quality Cape Town IMPLEMENTATION OF AIR QUALITY MANAGEMENT PLAN: STAFF TRAINING



Objective

- To train staff in the operation of the EMITS and ADMS software programmes.

Contact person

Ed Filby 021 590 1419
edfilby@capetown.gov.za

Timeframe

One week

Funding

R142 000

Background

A project known as the Khayelitsha Air Pollution Strategy (KAPS) has enabled the City of Cape Town to acquire an Air Dispersion Modelling System (ADMS) and Emission Inventory Database programme called EMIT. As part of the implementation of its Air Quality Management Plan, the city undertook to train staff in the operation of the EMIT and ADMS software programmes.

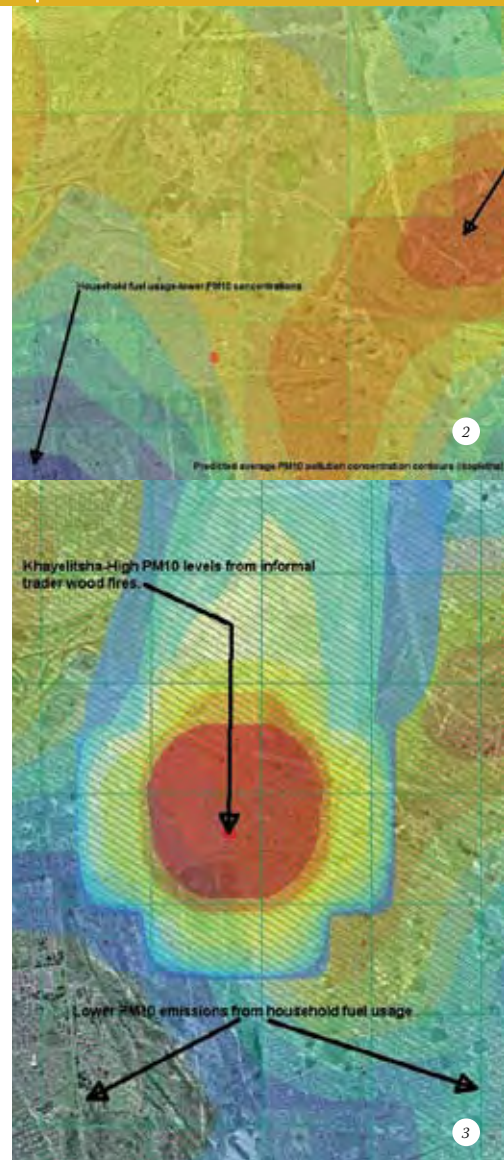
More about KAPS

In 1997, the City commissioned the University of Cape Town to investigate the 'brown haze' phenomenon normally experienced in Cape Town under atmospheric inversion conditions from May until August. The study showed that emissions from informal areas may contribute to the brown haze visible over much of Cape Town, and the report recommended that ambient air quality monitoring be undertaken in these areas.

City Health has been monitoring air pollution in Khayelitsha since 2000. Air quality readings here show a high prevalence of PM10 - particulate matter that is less than 10 microns in size. The ADMS model and EMIT software was purchased primarily to build an emissions inventory of local air pollution sources, model the impact of these sources and to evaluate the effectiveness of any air pollution control strategies or interventions to reduce pollution.

More about ADMS and EMIT

EMIT is an inventory database which can be used to store information about the main sources of emissions (such as industrial, volume, area and vehicles) throughout the city. Using information from the database, ADMS provides a forecast of pollution levels in the form of a pollution contour map (much like a weather map). The model assists city managers in conducting investigations,



1. PM10 pollution concentration contours showing household energy use, Khayelitsha
2. Varying PM10 concentrations from household fuel usage, Khayelitsha
3. Elevated PM10 from informal trader wood burning, Khayelitsha

optimising systems and planning for development. For example, no new factories will be approved in areas where high pollution levels are known to exist.

The database and the model are air quality management tools that can be used to support urban planning, decision making and disaster management assessments. The development of the system is in its infancy but once it has been optimised, it will enable city managers to run air dispersion modelling scenarios for the whole of the Cape Town metropolitan area.

The training process

Five volunteers from the City's Air Quality Management and Air Quality Monitoring units attended training to develop the relevant competencies required to operate the systems. The developers of the software dispatched a consultant from their London office to undertake a week of training. The week was split between ADMS and EMIT, with participants receiving training manuals and experience in working through prepared examples.

Although the systems are up-and running, the newly trained staff will spend up to two years validating data, tweaking and optimising the database and model, and testing its accuracy for local conditions. Using KAPS data, the model's outputs will be verified against those from air quality monitors in the area. In the longer term, the model's pollution contours will help staff to review pollution sources

and related emissions datasets. This will support the development of a city-wide emissions inventory and air quality model.

Benefits and outcomes

In the case of the KAPS project, EMIT helped officials to identify a unique source of pollution contributing to the high levels PM10. When emission data for the braai fires of informal traders was excluded from the model, results showed a dramatic reduction in the levels of PM10. This informed a subsequent strategy to reduce the number of braai fires in Khayelitsha.

The newly trained staff are developing the competencies required to operate the system with confidence and, once it is optimised, it will be used to analyse and predict pollution levels from transport, industrial and domestic sources. This will aid urban and transport planning, and help officials to manage traffic routes, informal areas, residential and industrial developments.

The City will benefit from a proactive (instead of reactive) air pollution component that can monitor and question the validity of the various source datasets. An example of this would be the verifying of industry reports, interrogating industry data and comparing it with the City's own data. The current challenge is in the data verification process, which will need to address the gap between British and South African conditions in order to optimise the model.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?			●		
2. Did you have adequate funding for your project?				●	
3. Did you have adequate technical expertise to implement your project?			●		
Total					10

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?				●	
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?				●	
3. Did the project have a higher than expected impact on stakeholders?				●	
Total					12

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?				●	
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?			●		
Total					11

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?				●	
2. To what extent did the project link with other priorities of the organisation?				●	
3. Did the project have higher than expected impact in your organisation?				●	
Total					12

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?				●	
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					15



Air Quality eThekweni

AIR QUALITY MANAGEMENT PLAN

Objective

- To prepare an air quality management plan to ensure that local air quality is adequately monitored, analysed and managed.

Contact person

Siva Chetty
031 311 3690
chetty@s@durban.gov.za

Time frame

1 year

Funding

R500 000

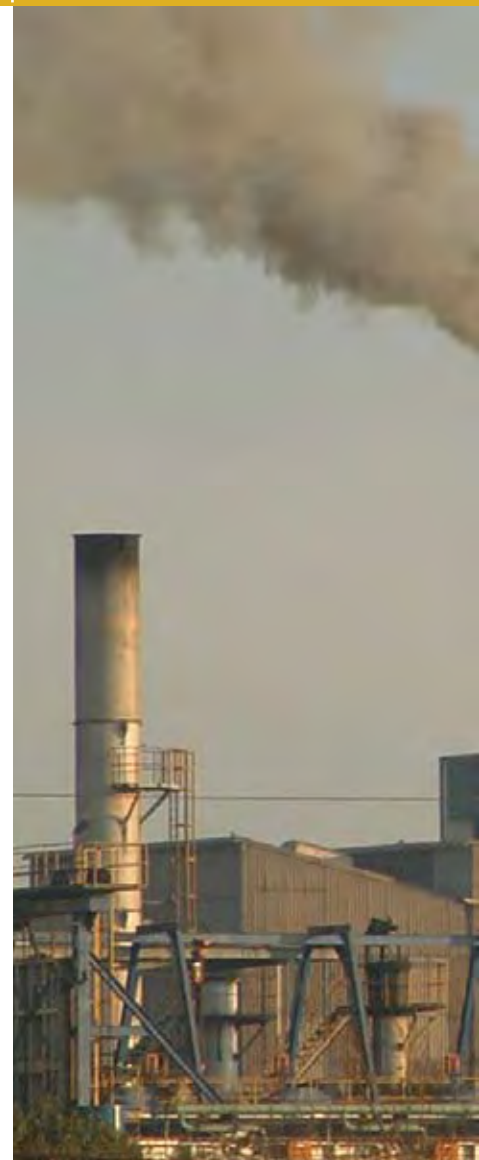
Background

The National Air Quality Act requires each municipality to develop an air quality management plan that addresses environmental health issues within the metropolitan area. eThekweni has a long history of air quality issues, mostly because it lies in a geographic basin and is close to a number of oil refineries. As a result, it has a fairly mobilised group of stakeholders, which contributed to a constructive process and an effective outcome.

Process

The project team established the city's major air quality issues with input from stakeholders and engaged the Norwegian Institute for Air Quality Research to help develop the management plan. A stakeholder seminar was held to present the plan and consult with community groups, government, business and industry. Participants included: South Durban Community Environmental Alliance, civic bodies, community-based organisations, ward representatives, Durban Chamber of commerce, Mondi, Engen, SAPREF and Tongaat-Hulett. The group's intentions were tabled to the political community, and meeting minutes were synthesized into a plan.

The plan's framework comprises several themes that address key areas such as: indoor air quality (of informal settlements), sulphur dioxide emissions, odours, industrial complexes, benzene emissions and vehicle emissions. Practical interventions are specified for sub-managing problems related to each category. Complaints management and by-law procedures are also covered. The plan undergoes minor review twice a year, alongside on-going reporting and stakeholder engagement. A major review will occur every five years.



Benefits

- The process undertaken is robust, thorough, and most importantly: not silo-driven. Complaints and issues were carefully researched to identify causes and problem statements.
- Initial and on-going stakeholder engagement supports buy-in and encourages stakeholders to play a role in implementation.
- The plan incorporates a wide range of input, from European countries and the international community, strong institutions, business, community and social organisations.
- Technical foundations are highly sound, including an excellent reporting and monitoring system for informed decision-making.
- Problems are approached in innovative, with an emphasis on “asking why and why again”.
- The approach seeks to add value by shifting behaviours and contributing to social, environmental and economic change.

Challenges

Developing areas, with growing environmental problems, pose the greatest challenges. Almost three quarters of those in developing areas are living informally, without power supply, and dependent on other forms of energy. Fires in informal settlements are a major issue, causing poor indoor quality and significant health problems. Solutions require a flexible approach to management, with emphasis on raising awareness, empowering and educating communities about safer practices. The plan calls for on-going dissemination of information and knowledge-sharing to help communities reduce their exposure to poor air quality. However, backyard industries remain difficult to police, regulate and control.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?			●		
2. Did you have adequate funding for your project?				●	
3. Did you have adequate technical expertise to implement your project?			●		
Total					10

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?				●	
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?				●	
3. Did the project have a higher than expected impact on stakeholders?				●	
Total					12

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?				●	
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?			●		
Total					11

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?				●	
2. To what extent did the project link with other priorities of the organisation?				●	
3. Did the project have higher than expected impact in your organisation?				●	
Total					12

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?				●	
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					12

Air quality eThekweni

AIR MONITORING INSTRUMENTATION REPAIR TRAINING

Objective

- To train two instrumentation technicians in instrumentation diagnostics and repair.

Contact person

Siva Chetty
031 311 3690
chetty@durban.gov.za

Time frame

1 year

Funding

R100 000

Background

eThekweni Municipality has a sophisticated air quality monitoring system. Historically, when a component of the network breaks-down, international expertise is required to repair it. Consequently, the process takes longer and a single repair job can cost as much as R40 000. In order to minimise the down-time of air quality monitoring instrumentation and reduce costs, the municipality chose to develop local expertise.

Process

Four people were selected for training, with the team comprising a mix of senior, junior, male and female staff. Trainees were involved in sourcing and selecting a service provider, and all were mandated to transfer their skills and train others upon completion of the course. Training took place in London over one week and focused on two types of fairly generic instruments - those measuring particulate matter and those measuring sulphur dioxide. Trainees were taught a logical approach to fault-finding and repair of these instruments.



AIR MONITORING INSTRUMENTATION REPAIR TRAINING

Outcomes

The majority of eThekweni's air quality monitoring instruments are now repaired in-house, with private sector suppliers used only for highly complex problems. The newly trained team is also better at specifying problems and evaluating repair quotes. This has reduced repair costs considerably and helped improve the sustainability of the network. According to project leader Siva Chetty, the project's great benefit is that a critical function has been brought in-house. "By investing in people, we are optimising long term results and sustainability."



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?				●	
2. Did you have adequate funding for your project?					●
3. Did you have adequate technical expertise to implement your project?			●		
Total					12

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?					●
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?			●		
3. Did the project have a higher than expected impact on stakeholders?			●		
Total					13

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?					●
2. To what extent was this project relevant to the targeted beneficiaries?					●
3. To what extent will this project be replicated sustainably in the future?			●		
Total					13

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?			●		
2. To what extent did the project link with other priorities of the organisation?					●
3. Did the project have higher than expected impact in your organisation?				●	
Total					12

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?					●
2. To what extent did you project fulfil its aims?					●
3. Was this project a cost effective response to the problem addressed?					●
Total					15



Air Quality eThekweni

PROTOCOL FOR INDOOR AIR QUALITY AT HEALTH INSTITUTIONS

Objective

- To develop a design and operating protocol for ensuring safe and clean indoor air quality at health facilities, with specific reference to tuberculosis (TB).

Contact person

Siva Chetty
031 311 3690
chettys@durban.gov.za

Time frame

1 year (phased)

Funding

R70 000

Background

The eThekweni Municipality found that clinic patients were contracting air-borne diseases from other infected patients. The propagation of TB was of particular concern. In to minimise the risk of spreading diseases, the City developed a protocol aimed at optimising safe and clean indoor air quality at clinics.

Process

Development of the protocol began with investigating how clinics can be designed to improve circulation and avoid the movement of air in one direction only. Researchers visited clinics and carried out risk assessments at each facility, identifying key areas and related design interventions that can help minimise the spread of TB.

A follow-up study tested for signs of TB in clinic patients, using weight loss as an indicator. The results of the study contributed to identifying focus areas for the protocol.



PROTOCOL FOR INDOOR AIR QUALITY AT HEALTH INSTITUTIONS

Outcomes

The City of Durban has successfully implemented the design and operating protocol. The design component specifies well-ventilated waiting rooms for TB patients, and high levels of indoor sunlight. The protocol's operating procedures include controlling the sputum of patients and monitoring the indoor air quality at clinics.

Part of the project involved ensuring that facilities carry out the protocols in the correct way, however, the success of the protocol in managing airborne disease can only be measured if clinics undertake regular monitoring and maintain accurate patient records.

BALANCED SCORECARD ✱

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?				●	
2. Did you have adequate funding for your project?					●
3. Did you have adequate technical expertise to implement your project?			●		
Total					12

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?					●
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?				●	
3. Did the project have a higher than expected impact on stakeholders?				●	
Total					13

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?					●
2. To what extent was this project relevant to the targeted beneficiaries?					●
3. To what extent will this project be replicated sustainably in the future?			●		
Total					13

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?			●		
2. To what extent did the project link with other priorities of the organisation?					●
3. Did the project have higher a than expected impact in your organisation?				●	
Total					12

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?					●
2. To what extent did you project fulfil its aims?					●
3. Was this project a cost effective response to the problem addressed?					●
Total					15



Air Quality Sedibeng

REQUIREMENTS FOR THE ESTABLISHMENT OF AN EFFECTIVE AIR QUALITY MANAGEMENT SYSTEM IN THE SEDIBENG REGION

Objective

- To undertake a study to identify and assess the resource and operational system requirements for the delivery of an effective air quality management service to the Sedibeng region, by the Sedibeng district municipality.

Contact person

Zies van Zyl
016 427 1015
ziesvz@sedibeng.gov.za

Timeframe

1 year

Funding

R500 000

Background

The Vaal Airshed priority area was the first air quality priority area to be declared in South Africa. Geographically, the Sedibeng district makes up 80 per cent of this area, which also includes parts of the Free State and the City of Johannesburg. The region is marked by poor air quality and its significant effect on health and the environment. One cause of poor air quality at household level is the burning of fossil fuels by local communities. Emissions from industry is another cause, as many of these facilities are old and still use outdated abatement technology. Also, many of the large industries were established when minimal environmental legislation existed.

Under previous legislation, these scheduled trade industries required a permit from the national Department of Environmental Affairs and Tourism (DEAT). New legislation devolves the responsibility and requires the licensing of all listed activities to be undertaken at district and metropolitan levels. Under the legislation, local authorities are empowered to take action to address air quality problems and implement the air quality management plan.

In preparation for the new responsibilities, an Intergovernmental Relations Forum, consisting of the Sedibeng District Municipality (SDM), the local municipalities and the other two spheres of government, was established and Sedibeng initiated a study to identify and assess the operational requirements for effective air quality management.

Process

The licensing of listed activities is a new function for local government. The study's aim is to identify the requirements for the establishment of an air quality authority in the SDM and delivery of an effective air quality management service to the Sedibeng region.

1. Secondary emissions from a steel industry in Meyerton

2. Emissions from a power station

3. Stack emissions from an industry in Meyerton

4. Vanderbijlpark, June 2006



Consultants were appointed and a project team established (comprising local, provincial and DEAT members), led by a steering committee. Background documents were collected and legal input gained to clarify roles and responsibilities. A scoping workshop was held with all role players and politicians at municipal level, to gain input on issues which will be captured for inclusion in the draft report. The final report will contain action-plans, recommendations and a five-year finance plan.

Outcomes and benefits

The project shows numerous outcomes and benefits:

- The SDM has established a Sub-Directorate for air quality management within the Environmental Management Section.
- A new, full-time manager of air quality has been appointed.
- Two additional new posts have also been approved for the Section.
- A utility is likely to be established to manage air quality for the entire district.
- Further Institutional restructuring will occur, based on the study's recommendations.
- Initially there was confusion around the roles and responsibilities for the rendering of air quality services other than the licensing function. The study is helping to clarify these and identify possible interventions by the district in terms of the air quality legislation.
- Ultimately, the project will improve the district's environment and the lives of its inhabitants.

Challenges

The project's main challenge was gaining political and staff buy-in. A dedicated project officer and effective communications system helped to alleviate this. Clarifying national, provincial, district and local roles and responsibilities also presented a significant challenge. The project's scoping workshop helped to clarify legal requirements and locate services at the various authorities.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?			●		
2. Did you have adequate funding for your project?				●	
3. Did you have adequate technical expertise to implement your project?			●		
Total					10

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?				●	
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?		●			
3. Did the project have a higher than expected impact on stakeholders?					●
Total					11

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?			●		
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?					●
Total					12

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?				●	
2. To what extent did the project link with other priorities of the organisation?					●
3. Did the project have higher than expected impact in your organisation?					●
Total					14

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?				●	
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					12



Air quality DEAT
**AIR QUALITY
 GOVERNANCE LEKGOTLA**

Objective

- To facilitate intergovernmental air quality management cooperation and coordination.

Contact person

Agnes Phahlane
 012 310 3730
 aphahlane@deat.gov.za

Time frame

1 year

Funding

R500 000

Background

The Air Quality Act of 2005 created a need for national, provincial and municipal government departments to co-ordinate closely to effectively implement the new policies and regulations. The Air Quality Governance Lekgotla provided the means for air quality officials to congregate and discuss problems and solutions around air quality.

Process

Hosted by the Department of Environmental Affairs and Tourism (DEAT), the event was held at a conference venue in the Drakensburg over three days in October 2007 and attended by 145 delegates. The DEAT team met monthly to organise and plan the event, simultaneously developing a database of all officials involved in air quality.

Themed as "Air Quality Interventions Now", the event included 16 presentations by attendees, illustrating actions and plans that have a positive impact on air quality. Two days of plenary presentations were followed by a knowledge-sharing workshop to discuss current perceived needs. An important project presented at the conference is the South African Air Quality Information System (SAAQIS). The broad purpose of SAAQIS is to provide stakeholders, officials, researchers and



AIR QUALITY GOVERNANCE LEKGOTLA

academics with access to accurate, relevant, current and complete information pertaining to national air and atmospheric quality, to facilitate informed decision-making around South African ambient air quality objectives. The needs of the various user groups, in relation to the system, were workshopped. A proposed list of activities and associated emission standards were also presented for review and feedback.

Outcomes

According to project manager Agnes Phahlane, the conference had three important outcomes:

- An improved working relationship between three spheres of government, national , provincial authorities and local municipalities.
- Joint collaboration and improved coordination between local municipalities, especially in relation to sharing resources and skills for air quality projects.
- Creation of a platform for informing government tiers about projects and enabling feedback from them.
- The main constraint reported is under-resourced municipalities being unable to attend the conference. In future, it is suggested that the areas with the most severe air quality problems are prioritised and event funds used to ensure attendance by representatives from these municipalities.



BALANCED SCORECARD ✱

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?				●	
2. Did you have adequate funding for your project?			●		
3. Did you have adequate technical expertise to implement your project?				●	
Total				11	

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?					●
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?				●	
3. Did the project have a higher than expected impact on stakeholders?				●	
Total				13	

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?			●		
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?				●	
Total				11	

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?					●
2. To what extent did the project link with other priorities of the organisation?				●	
3. Did the project have higher than expected impact in your organisation?				●	
Total				13	

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?				●	
2. To what extent did you project fulfil its aims?					●
3. Was this project a cost effective response to the problem addressed?				●	
Total				13	



Air Quality DEAT

THE BASA NJENGO MAGOGO AWARENESS CAMPAIGN

Objective

- To develop a strategy and awareness campaign addressing air quality and pollution in low income communities in the National Priority Areas, Vaal Triangle Airshed Priority Area and Highveld Priority Area.

Contact person

Agnes Phalane
012 310 3730
aphalane@deat.gov.za

Timeframe

Project: 2 years

Funding

R1.5-mil

Background

The Vaal Triangle and the Highveld were declared the priority areas as they exhibit significantly high levels of air pollution. Baseline studies conducted in the Vaal Triangle Airshed Priority Area show that most of the pollution comes from residential suburbs. As part of a national initiative, this project aimed to mobilise public and private partners to develop a strategy addressing air quality and pollution in the National Priority Areas residential areas.

The strategy targeted areas with a high incidence of coal-burning (used for cooking and space heating) and its Basa Njengo Magogo campaign introduced an alternative way to start a coal fire - by igniting coals from the top instead of the bottom. This scientifically proven method reduces ignition emissions by a massive 80% and, although carbon dioxide is still released, the amount of smoke is greatly reduced.

Implementation

The campaign focused on teaching communities the new method and illustrating its positive impact on respiratory disease and asthma.

The process began with the drafting of a business plan and establishment of a campaign management team to carry responsibility for the campaign. The campaign management team includes representation from the national Departments of Environmental Affairs and Tourism, Health, and Minerals and Energy, which have combined interests in indoor air quality and cleaner fuels supply. Other important partners are: Eskom, Sasol, Anglo Coal, Central Energy Fund, City of Johannesburg, Sedibeng District Municipality, Ekurhuleni Metropolitan Municipality and Jupiter Municipality.

The campaign management team commissioned Jupiter Drawing Room to develop a suite of communications materials including: radio and newspaper advertisements, billboards, posters and flyers. Promotional items included beabies and gloves. Running over a three-month period in (July-September



Photographs courtesy: Ekurhuleni Metropolitan municipality; VEB Cele and Associates Consortium

THE BASA NJENGO MAGOGO AWARENESS CAMPAIGN



2008), the campaign ran advertisements in two languages, focusing on teaching communities the new method and illustrating its positive impact on respiratory disease and asthma. Project partners held practical demonstrations in Witbank, Alexandra, Soweto, Springs, Benoni, Germiston, Boksburg, Kempton Park and Zamdela. Within

these communities, two or three families were gathered together and shown the Basa Njengo Magogo method and its effects.

The names of people who attend public demonstrations are recorded so that teams can follow-up with demonstrations at their homes. To date, 6400 households have been reached and 1530 public demonstration held for a minimum of 45900 people.

Impacts

Although its too early for accurate results, monitoring procedures are in place to measure the impact of the campaign, and monitoring stations are positioned to measure any reduction in smoke. Research study to evaluate the target market's response to the advertisements has been completed and the results were presented to the management team in October 2008. The findings indicated that the campaign was moderately well-received.

According to project manager, Agnes Phahlane, initial feedback indicates that the campaign has successfully reached many people and effectively branded smoke as a 'silent killer'. "We are getting positive feedback about people converting to the new method of making fires and others mentioning that they have heard about the campaign on the radio." One clear lesson from the pilot suggests that further rollout will need to cover at least 60% of spoken languages in an area.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?					●
2. Did you have adequate funding for your project?					●
3. Did you have adequate technical expertise to implement your project?				●	
Total					14

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?				●	
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?				●	
3. Did the project have a higher than expected impact on stakeholders?				●	
Total					12

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?				●	
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?				●	
Total					12

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?			●		
2. To what extent did the project link with other priorities of the organisation?				●	
3. Did the project have higher than expected impact in your organisation?			●		
Total					10

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?			●		
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					11

COMPILATION OF AN EMISSION INVENTORY DATABASE

Objectives

- To determine the spatial distribution of pollutants for KwaZulu-Natal.
- To collect information necessary for decision-making.
- To maintain an on-going database of the spatial distribution of pollutants.

Contact person

Jay Puckree
033 355 9145
puckreej@dae.kzntl.gov.za

Time frame

2 years

Funding

R300 000 UEMP
R200 000 KZN Province

Background

Existing national pollution data is narrowly focused on point-source emissions (like smoke from stacks), with no reference to area-based emissions (like burning sugar cane fields), mobile sources (like cars) or stationary sources (like train stations). This project aimed to develop an emission footprint for KZN, based on accurate data, to help ameliorate arbitrary and subjective assessments of emission levels. Armed with objective information, officials would be able to successfully target areas with particularly high levels of emissions.

Process

A consultant was contracted to draw-up details for the study, including the database design, methodology and questionnaires. Information on all sources of emissions was progressively obtained and captured into a defined template. Data sources included:

- Available data from the National Department of Environmental Affairs and Tourism.
- Industrial permitting records.
- Solicited information gathered directly from industries (and in confidence).
- Municipalities
- Questionnaires sent to all industries.

A standard set of statistics was gathered into spreadsheet format and this informed the development of emission control strategies. Spatial distributions were calculated and mapped to indicate areas of concern, and graphs developed for every pollution parameter. The study details emanations for each district and quantifies them in terms of an emission profile.

Outcomes

Key findings of the study include:

- Significant compatibilities and correlations with the national data framework, in terms of perceived air quality problems, point-source emissions and areas of high pollution.



COMPILATION OF AN EMISSION INVENTORY DATABASE

- Areas perceived to not have problems, show significant area-based emissions, for example, Ladismith.

Challenges and successes

KZN is the first province in the country to populate ambient air quality in an emissions inventory database. The study identifies target locations for ambient air quality monitoring systems, as well as the type of air analyser required in each area. Baseline air quality information is now available where there was none previously. Details like emission types and amounts, wind directions, migration patterns and air-dispersion modelling are helping to educate and inform decision-makers.

Gleaning data from industries was difficult. Some industries did not disclose any information, while others needed assurance that the information would remain confidential and out of the public domain. This scepticism is attributed to the legislative and legal reform of national processes oc-

curing at the time of the study. Industries were afraid that disclosure may impact on legislation.

Nevertheless, project staff have high confidence in the accuracy of the study due to its highly co-ordinated approach, which encompassed an average of five municipalities in all 10 provincial districts. Industries supplied sufficient point-source data from their own monitoring systems to contribute to the study.

Although the project presented a learning curve for everyone involved, including the environmental consultant, a high-calibre report has been produced. Peer-reviews have been undertaken by a leading UK university (on the initiative of the consultant) as well as provincial staff, with favourable feedback from all.

The report has been presented at a national level and will contribute to generic policy. At a provincial district level, the report will aid in the compilation of municipal air quality management plans that are required in terms national acts.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?			●		
2. Did you have adequate funding for your project?			●		
3. Did you have adequate technical expertise to implement your project?				●	
Total					10

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?				●	
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?			●		
3. Did the project have a higher than expected impact on stakeholders?				●	
Total					11

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?		●			
2. To what extent was this project relevant to the targeted beneficiaries?				●	
3. To what extent will this project be replicated sustainably in the future?					●
Total					11

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?					●
2. To what extent did the project link with other priorities of the organisation?					●
3. Did the project have higher than expected impact in your organisation?				●	
Total					14

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?					●
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					13



Air Quality NOVA Institute
**AIR POLLUTION IN LOW
INCOME DENSE COMMUNITIES**

Objective

- To consolidate all existing research on air pollution in dense low-income communities in South Africa with the aim of drawing up a strategy and action-plan for addressing air pollution in these areas.

Contact person

Christian Pauw
044 6950 942
christiaan.pauw@up.ac.za

Timeframe

8 months

Funding

R500 000

Background

National research on air pollution has been sporadic, piece-meal and narrowly focussed, motivating the need for an overview that consolidates existing work and helps inform government strategy and related action plans.

Process

Project staff assembled a team of specialists in the field air quality, specifically related to: pollution, monitoring, health impacts, housing implications and interventions in low-income communities. A full-time librarian also joined the team, to undertake a comprehensive literature overview and consolidate available research. The team scoped an outline of the work required, conceiving the number of chapters and establishing a broad content profile. The resulting two-page summary relates directly to the original brief requirements.

Literature collection followed, taking a few months and requiring consolidation of different data formats. Local information sources included the Departments of Environmental Affairs and Tourism (DEAT), Minerals and Energy, Medical Research Council, the Paraffin Safety Association, National Economic Development and Labour Council, specialised libraries, internet and academic institutes. International sources included the World Health Organisation (WHO) specifically its health guidelines related to air quality. Data and research was also gathered from annual conferences of the National Association for Clean Air. Journal articles, academic abstracts and report bibliographies were reviewed for relevant information and usable data. In some cases, au-





A demonstration at TechnoEx, Zamdela. Improved method on the left, conventional method on the right.

thors were tracked down and contacted directly for more specific information. Where necessary, and because of time and budget, information sources were prioritised according to the relevance of material.

With resource material gathered, the authors convened for a number of initial workshops to finalise report structure and resolve conceptual issues before embarking on the detailed work. Close contact with DEAT was maintained throughout the process, with regular progress meetings and presentations by authors and specialists. A peer review process facilitated authors to discuss each other's work, after which report sections were submitted and compiled by an editor into a coherent piece, in line with the structural concept. A draft report was submitted for comment and a workshop held to collect feedback before finalisation of the 320 page document, which includes an action-focused executive summary.

Key findings

The report makes a number of important findings:

- Air pollution in dense low-income communities is a

massive problem with drastic health impacts for large numbers of the population, especially poor people.

- Wood-burning is the single most important contribution to the health impact of air pollution .
- Domestic sources produce of pollution has a higher health impact than do industrial sources.
- Although there is no detailed data available on air pollution related to wood-burning in rural areas, estimates show that 90% of wood burning takes place in rural areas. It was also found the the size of a settlement does not have such a large impact on air quality as is generally supposed. That means the even small settlements where wood is used may present a potential health risk.
- The highest recorded personal exposure to particulate pollution (outside of occupational exposure) in the country was in a village on farm consisting of 34 houses (exposure refers to the number of particles breathed in over a certain period, usually measured in micrograms per hour).
- Indoor exposure to pollutants from wood- and coal-burning in households that use these energy carriers



A demonstration of the improved top-down ignition method, Ratanda

is much greater than ambient air pollution levels, and much higher than acceptable WHO levels. When the scope of the problem is taken into account, very little research has been done on indoor pollutant levels in South Africa.

- The main driver of wood and coal-burning is space-heating in thermally inefficient houses, like informal and subsidy houses.

Key recommendations

The report's recommendations are organised into a hierarchy of possible solutions, categorised as follows:

- Readiness to implement and potential for high impact: examples include the top-down ignition method for coal fires; energy efficient housing solutions with off-the-shelf technology; and safer paraffin appliances designed to SABC standards.
- Interventions that have been validated on a small scale that need to be piloted, like solar-cookers. Research shows that owners of solar cookers use them to prepare a third of all meals, however, there are currently no local manufacturers of solar cookers.

- Evaluated solutions: these look promising but need improvement and validation, for example domestic biogas (derived from anaerobic fermentation).
- Evaluation, validation, piloting and massification required: technology that is freshly out of the research stage and still needs to be evaluated, like new generation, energy-efficient houses; biomass gasification stoves (using solid biomass which is gasified); and gel-fuels (evaluated but requiring improvement and re-evaluation).
- Indications for research: finding of new solutions, like top-down ignition of wood fires (which requires manual chopping and has uncertain impacts at this stage).

Challenges

The project presented a number of challenges:

- The sheer volume of material and the sifting of vast amounts of information.
- The extensive nature of the topic, encompassing sociology, anthropology, social psychology and technology.
- Co-ordinating specialists from a wide range of disciplines.

AIR POLLUTION IN LOW INCOME DENSE COMMUNITIES

- The need to be selective about which information to include.
- Striking a balance between detail and coherence, that is, ensuring that the report makes sense and the underlying detail is credible.
- Research gaps, for example, the unknown number of people burning wood indoors. These gaps need to be followed up in the future.

Impacts

Most importantly, the Workshops were well-attended by DEAT and presentations were made to sub-committees on housing. The project terms of reference are well-orientated in the recommendations and there is a strong focus on taking action. The content is especially useful for environmental officers of metropolitan councils and has also gained the attention of senior government officials. The final report is published on the internet at <http://www.saaqis.org.za/filedownload.aspx?fileid=121>.



BALANCED SCORECARD *

1 – inadequate, 2 – needs improvement, 3 – adequate, 4 – good, 5 – excellent

INPUT	1	2	3	4	5
1. Did you have adequate internal resources to implement your project?				●	
2. Did you have adequate funding for your project?				●	
3. Did you have adequate technical expertise to implement your project?				●	
Total					12

EXTERNAL	1	2	3	4	5
1. To what extent did the project impact on vertical national - provincial - municipal linkages?			●		
2. To what extent did this project improve linkages (horizontal) with similar UEMP partners?			●		
3. Did the project have a higher than expected impact on stakeholders?			●		
Total					9

UEMP VISION & GOALS	1	2	3	4	5
1. To what degree did your project have a focus on poverty reduction?					●
2. To what extent was this project relevant to the targeted beneficiaries?					●
3. To what extent will this project be replicated sustainably in the future?			●		
Total					13

INTERNAL	1	2	3	4	5
1. Did you have adequate support from management to implement this project?				●	
2. To what extent did the project link with other priorities of the organisation?				●	
3. Did the project have higher a than expected impact in your organisation?				●	
Total					12

OUTPUT	1	2	3	4	5
1. To what extent did your project have tangible benefits?				●	
2. To what extent did you project fulfil its aims?				●	
3. Was this project a cost effective response to the problem addressed?				●	
Total					12