The Waste Management Flagship programme

NAMA: Diversion of Solid waste from landfills in selected municipalities

Waste Summit March 10th 2015

Supported by

environmental affairs
deutsche gesellschaft für internationale Zusammenarbeit (GIZ) GmbH
1. Policy basis
2. Near-Term priority flagship programmes
3. The Waste Management flagship programme
4. The Scaled-up waste management NAMA programme
5. Programme structure
6. Next Steps
The NCCR Policy 2011 objectives:

– To effectively manage the inevitable climate change impacts through interventions that build and sustain South Africa’s social, economic and environmental resilience and emergency response capacity; and

– To make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.
Immediate implementation of Near-term Priority Flagship Programmes comprising of:

- Continued implementation of **existing successful policies and measures** with only policy **alignment and integration** intervention as required;

- **Scaled-up roll-out** of those existing successful policies and measures, which have successfully completed a demonstration phase, where feasible;

- Implementation of **proven “no-regret policies and measures”** in the immediate and near-term (e.g. best available technologies and best practices), particularly those that are well researched or understood, **have socio-economic developmental and job-creation benefits**, and have negative-cost, zero-cost or low-cost implications for the economy and society;
1. The Renewable Energy Flagship Programme
2. The Energy Efficiency and Energy Demand-side Management Flagship Programme
3. The Carbon Capture and Sequestration Flagship Programme
4. The Transport Flagship Programme
5. The Waste Management Flagship Programme
   - Led by DEA

Near-Term Priority Flagships
## Existing studies:

1. Background work
   - Status-quo update (taking inventory)
   - Lessons learnt
   - Municipal waste mitigation potential
   - Future of Waste management in South Africa

### Waste Management Flagship Framework

2. Develop Waste Mngt. Flagship Framework
   - Waste sector GHG emissions
   - Waste management landscape
   - Enabling environment: key issues
   - Flagship definition & mitigation assessment
   - Flagship mitigation Action Plan
   - Monitoring & Evaluation indicators and plan

### Nationally Appropriate Mitigation Action (NAMA)

3. Design of fundable high-impact NAMA programme
   - Identification of project area
   - Project design
   - MRV methodology
   - Funding proposal

4. Source funding for NAMA programme

5. Implement NAMA Programme

### OTHER Mitigation work at DEA

**Approach to Waste Flagship**
The GHG inventory:
Baseline Waste sector GHG emissions

Waste water
Solid Waste

Methane
emissions from landfills
Waste Management practices

Methane from landfills is the largest contributor to waste sector GHG emissions.
PREMISE: GHG emissions in the waste sector mostly arise from landfilled organic waste, hence diverting or minimizing landfilled waste by implementing waste hierarchy is the long-term key to mitigating waste sector GHG emissions.

GOAL 1: catalyse transition to a lower-carbon economy & society

GOAL 2: promote proper waste management practices

GOAL 3: promote optimal contribution of the waste sector to green economy: green jobs, green energy
• Waste-to-energy, especially landfill gas utilization, is the lowest hanging mitigation programmes in existing landfills

• **Diversion of organic waste away** from landfills is the long-term approach to mitigating climate change in the waste sector

• Proper implementation of the waste hierarchy supports climate change response, waste management and sustainable development simultaneously

• There is need to scale up existing response programmes but also to systematically combine various mixtures (combination Mechanical, biological, thermal technologies)
• OBJECTIVE: Main objective is the promotion of diversion of waste (especially organic waste) from landfills to mitigate environmental impacts such as the greenhouse gas effect

• Specific objective is the development of a scaled-up programme to
  • implement the waste hierarchy through appropriate waste treatment technologies in selected municipalities
  • create fundable projects for national and international financing
GOAL 1: catalyse transition to a lower-carbon economy & society

GOAL 2: promote proper waste management

GOAL 3: promote contribution of the waste sector to the green economy: green jobs, green energy, etc.

Selection criteria for Municipalities

1. Currently 4 local municipalities have been identified

2. Selection of small and medium sized municipalities which shall learn from existing experiences in selected Metros

3. Municipalities shall have significant emission mitigation potential

4. Express strong commitment to implement waste diversion from landfills

5. A certain state of readiness shall be applied in the respective municipalities

6. Municipalities identified as a priority by DEA
NAMA: Fit-for-purpose solution for each Municipality combines various waste & case-specific treatment technologies (mechanical, biological, etc.) to achieve diversion of waste from landfills. **Examples:**

- **Labour-intensive MRF**
- **Mechanised sorting of fine waste**
- **Anaerobic digestion of organics**

### General Waste 1

- **Labour-intensive MRF**
  - Recycling
- **Mechanised sorting of fine waste**
  - 10% : Landfill cover
- **Anaerobic digestion of organics**
  - Biogas

### General Waste 2

- **Highly mechanized MRF**
  - Recycling
- **Mechanised Refuse Derived Fuel production**
  - RDF sold to cement industries
- **Composting**
  - Compost
Programme details – Key steps

1. Confirmation of selected municipalities
2. Setting up of Project Structure (project and municipal steering committees, project management team)
3. Coordination of programme activities with other SWM programmes in the selected municipalities
4. Scope of work:
   • Situational analysis (SWM services, institutions)
   • Assessment of fit-for-purpose waste management solution to divert waste from landfills
   • Identification of the ideal technology combination (waste type & size, off-takers, cost, etc)
   • GHG mitigation potential
   • Monitoring and evaluation method
   • Financial analysis
   • Implementation plan
5. Selection of Consultant to perform the work
6. Develop fundable projects to be presented to financing institutions (NAMA strategy)
7. TA support by German International Cooperation (GIZ) to establish programme
Advanced SWM in South African Municipalities

- **Partnership** KfW Development Bank - Department of Environmental Affairs (DEA)

- **Programme objectives**: Implementation of modern waste treatment technologies to divert waste from landfills and enhance reutilisation and recovery of waste as a resource. Parallely strengthening of municipal SWM to improve the organizational and financial management capacities with the aim to provide better services to the population.

- **Financial support**: Grant funds from German Government.

- **Timeframe**:
  - Preparation of Financing Agreements: 2011 – 2013
Why Solid Waste Management?

- Reducing GHG emissions
- Raw material and energy resource
- Economic development
- Sustainable urban development
- Protecting the environment
- Health

Waste to energy
Recycling
Mitigating methane
What is / what could / what should be ‘State of the Art’

Objectives

- Implementation of integrated SWM systems
- Environmentally sound, sustainable SWM systems
- Avoidance – recycling – environmentally sound disposal

Components

- Horizontal Integration: All municipal waste types included (e.g. commercial, hospital, market, sewage sludge…)
- Vertical Integration: Cover the whole disposal chain
- Waste treatment => Sanitary landfill
- Cost reduction:
  * In particular: Optimisation of collection and transport system
  * Set up / develop independent project implementing agencies
- Cost recovery: Set up / develop tariff system and tariff administration
- Optimise / systematise separate collection – co-operation with waste-pickers
- Public relations, information, promote environmental awareness
- Rehabilitation of dump sites
Principal residual waste treatment strategies

Municipal waste

- Mechanical processing
  - Co-processing e.g. Cement kilns
  - Waste incineration
  - Biological stabilisation
  - Waste fermentation

Sanitary landfill

Energy supply
Advanced SWM in South African Municipalities

Support to DEA

• The Department for Environmental Affairs receives support within the programme to achieve the following:

  – Coordination of activities in the project municipalities
  – Development of a guidance document to assist South African municipalities interested in developing waste treatment projects to divert waste from landfills
  – Streamline of similar activities on national level

• Experiences from the ongoing projects in the projects municipalities shall be used for the development of the guidance document
• Replicable models shall be developed
• Consultancy support is provided until 12/2016
Advanced SWM in South African Municipalities
Rustenburg Local Municipality RLM

Project approach foresees:

› Improvement of municipal capacities in terms of organisational support, financial management, informal sector, recycling

› Implementation of a modern RDF facility to provide secondary fuel from waste for cement kilns in surroundings

› Integration of RDF facility in IWMP which foresees a new sanitary landfill (operational in 2015) with a MRF to separate valuables and provide employment

› Project is highly supported by the RLM administration

› Financing and operation shall be via a MPPP, supported by National Treasury

› Implementation and Transaction consultant is working from 01/2014 until 12/2016 to support realization of project
Advanced SWM in South African Municipalities
Challenges Rustenburg Local Municipality
Advanced SWM in South African Municipalities
Suggested Project RLM

Recycling Facility

Mechanical Biological Treatment
Advanced SWM in South African Municipalities
uMgungundlovu District Municipality (UMDM)

› Project approach foresees:
  › Improvement of municipal capacities in terms of organisational support, financial management, informal sector, recycling within a regional approach (7 local municipalities)
  › Implementation of a selected set of technologies for different waste kinds (composting for green waste, MRF to separate valuables and provide employment, biodigestion for organic waste from households, restaurants, market and agriculture)
  › Investigation of waste-to-energy for special waste types (Msunduzi LM)
› Project is highly supported by the UMDM administration
› Financing and operation to be developed
› Implementation and Transaction consultant is working from 07/2014 until 12/2016 to support realization of project
Programme Governance Structure

**Project Steering Committee (PSC)**
- 2x DDG (CD)
- 4x Municipal Managers (or delegate)
- GIZ
- Other key stakeholders

**Executive Level, project oversight, decision making body**

**Project Management Team**
- 4x Municipalities
- Consultant
- COGTA
- SALGA
- 4x Provinces
- DEA officers
- GIZ

**Day to day business, implementation focus**

**Munic 1 PSC**
- Province, DEA rep, GIZ, consultant, other stakeholders

**Munic 2 PSC**
- Province, DEA rep, GIZ, consultant, other stakeholders

**Munic 3 PSC**
- Province, DEA rep, GIZ, consultant, other stakeholders

**Munic 4 PSC**
- Province, DEA rep, GIZ, consultant, other stakeholders
## Workplan and Timeline

### Time schedule of implementation

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<tr>
<th>Date</th>
<th>Event Description</th>
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<tr>
<td>Jan. 15</td>
<td>Programme Preparation</td>
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<tr>
<td>Feb. 15</td>
<td>Setting up of PSC and PMT</td>
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<td>Mar. 15</td>
<td>Engagement with Municipalities (MSC)</td>
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<td>Apr. 15</td>
<td>Contracting of consultant for project development</td>
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<td>May 15</td>
<td>Implementation of Programme</td>
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<td>Jun. 15</td>
<td>Development of projects in municipalities (Consultant)</td>
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<td>Jul. 15</td>
<td>Coordination of results with DEA and municipalities</td>
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<td>Aug. 15</td>
<td>Meeting with funding institutions</td>
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<td>Sep. 15</td>
<td>Study Tour</td>
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<td>Oct. 15</td>
<td>Conclusions for Strategy and Replication</td>
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<td>Nov. 15</td>
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<td>Dec. 15</td>
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### Meetings

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<tr>
<td>PSC Meetings (quarterly)</td>
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<td>PMT Meetings (monthly)</td>
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<tr>
<td>MSC (monthly)</td>
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1. Formal confirmation of selected municipalities
2. Setting up of Project Structure (project and municipal steering committees, project management team)
3. Finalization of the Terms of Reference for the consultant
4. Appointment of consultant
PROJECT TEAM

Mamosa Afrika: mafrika@environment.gov.za
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Thapelo Letete: tletete@environment.gov.za
Anben Pillay: Apillay@environment.gov.za
Prema Govender, Annelie Janz & Gwendolin Aschmann – GIZ
Near-term mitigation options

- LFG recovery and generation
- Paper recycling
- Energy recovery by incineration
- In-vessel composting

- LFG recovery and flaring
- Home composting
- Windrow composting
- Food waste biogas to electricity

**GHG Emissions Abated (kt CO2 eq)**

**Marginal Abatement Cost (ZAR/tCO2 eq)**
1. Introduction

2. Waste management practices and landscape in South Africa

3. Waste sector emissions

4. Enabling Environment for sustainable mitigation in the Waste sector
   • Waste policies, laws, norms & standards, licensing process
   • Technology selection tools: e.g. Waste Type-to-Technology
   • Institutional arrangements and governance
   • Financing of waste mitigation programmes
   • Practical guidelines for undertaking Waste-to-Energy Projects

5. Programme of Implementation
   • Ready-to-go programmes with high & direct mitigation potential
   • Scaling up and mixing measures – enabling programmes

5. Monitoring and reporting plan
Mitigation impact of implementing the waste hierarchy