

# The Waste Management Flagship

*Key messages from the flagship framework*



National Climate Change Response Dialogue – 12<sup>th</sup> Nov 2014

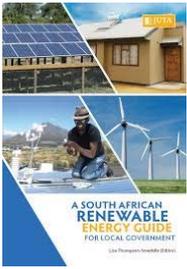


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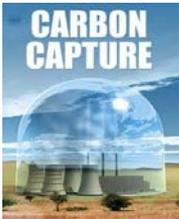
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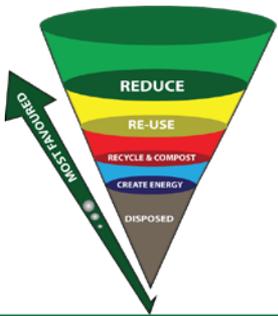
1. The Renewable Energy Flagship Programme
2. The Energy Efficiency and Energy Demand-side Management Flagship Programme



3. The Carbon Capture and Sequestration Flagship Programme
4. The Transport Flagship Programme



5. The Waste Management Flagship programme



- Led by DEA
- Develop an integrated flagship framework



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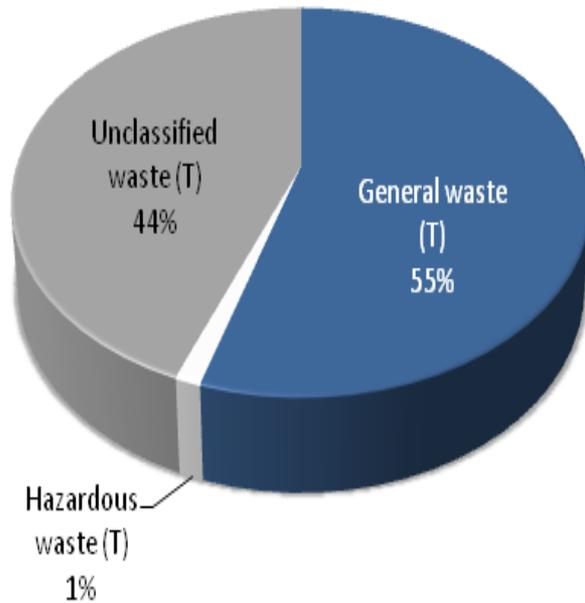
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# Near-Term Climate Change Flagships

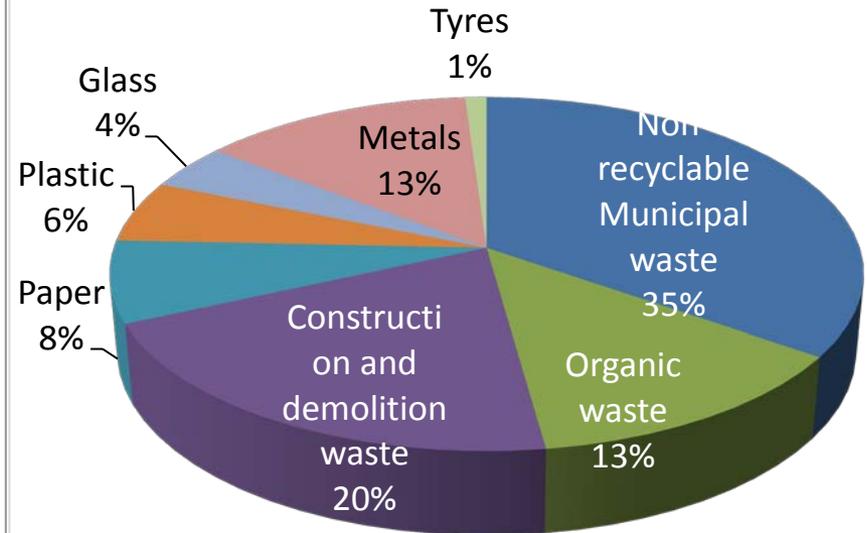


# Summary of Waste Management in SA

## Waste Composition, 2011



## General waste composition, 2011

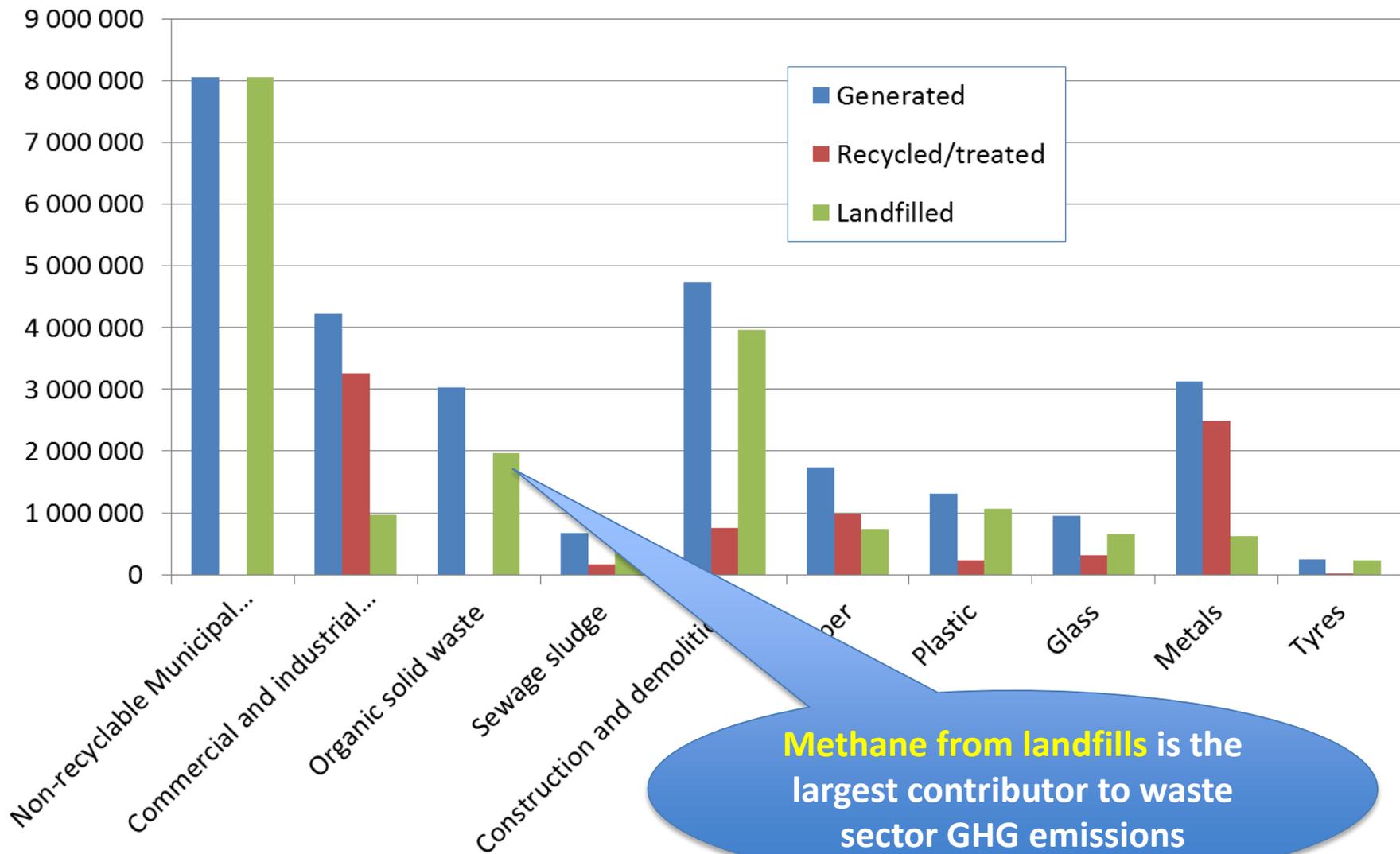


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## Waste Composition





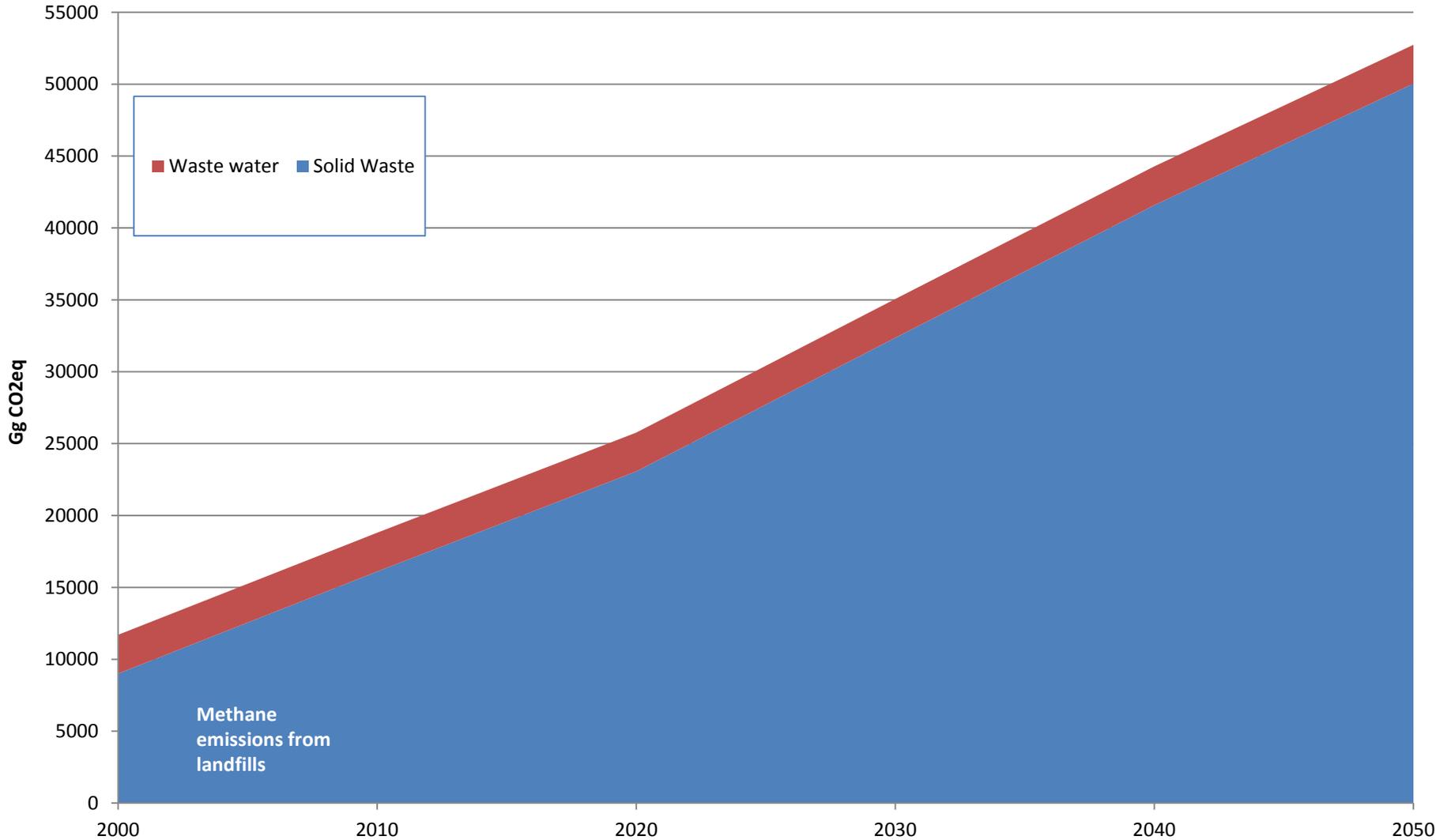
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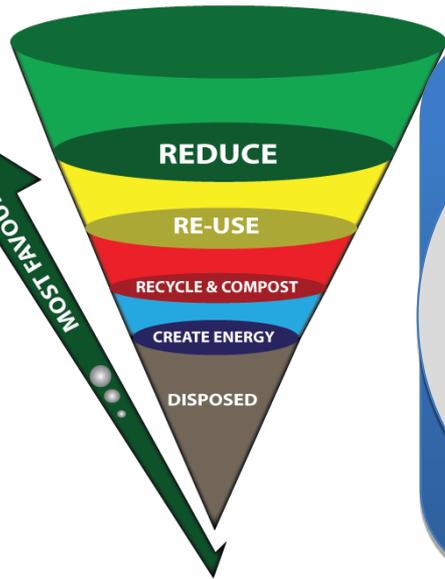
# Waste Management practices



# The GHG inventory: Baseline 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*

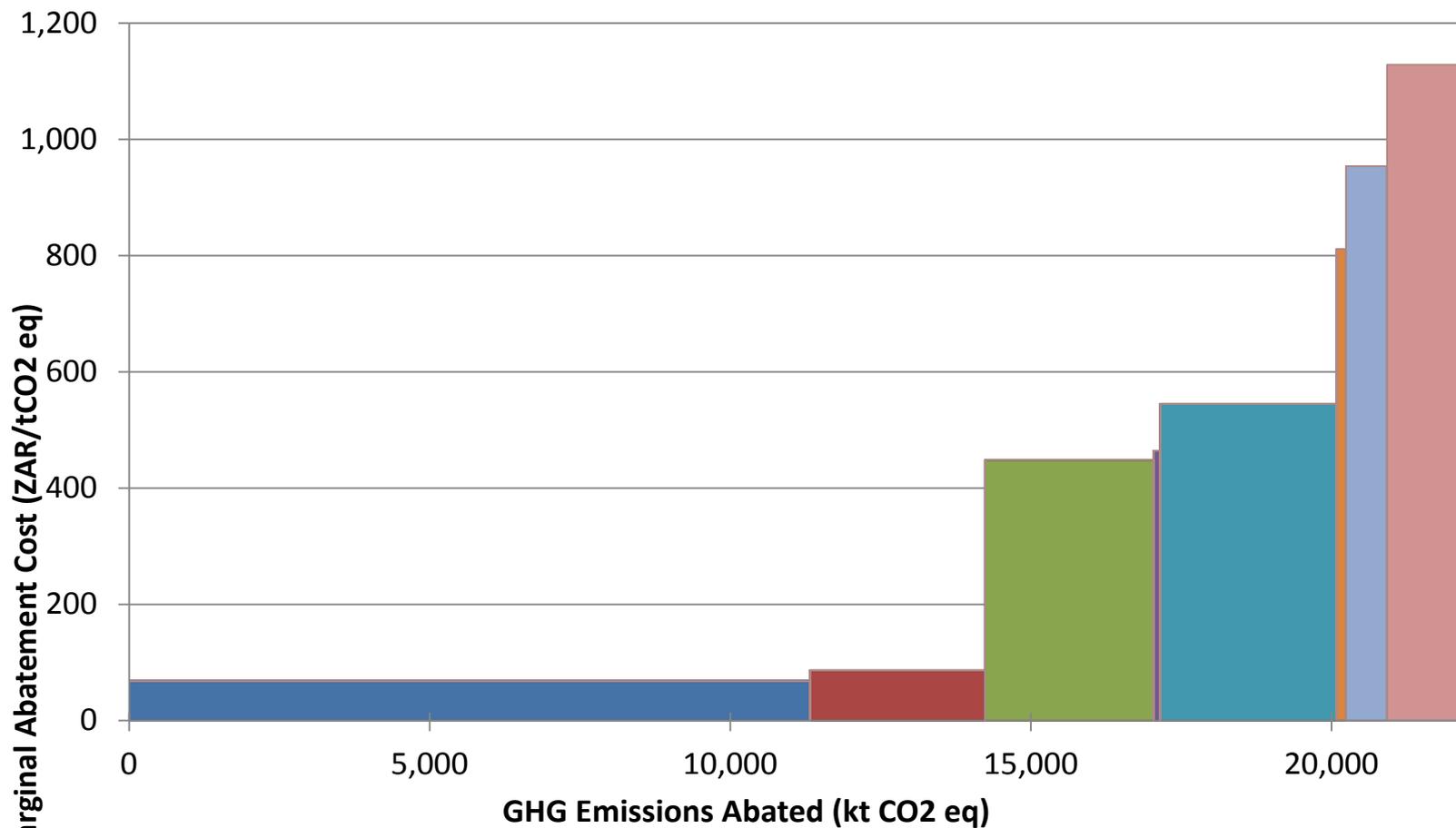
**GOAL 3:** promote optimal contribution of the waste sector to green economy: **green jobs, green energy**



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# Waste Management Flagship Framework





- LFG recovery and generation
- LFG recovery and flaring
- Paper recycling
- Home composting
- Energy recovery by incineration
- Windrow composting
- In-vessel composting
- food waste biogas to electricity



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# Near-term mitigation options



# Projects ready for implementation

RESPONSIBLE ENTITY/ PROJECT OWNER	NAME OF PROJECT/ PROGRAMME	TYPE	DETAILS	STARTING DATE OF OPERATION	Type of energy output	ENERGY OUTPUT
City of Johannesburg	Alternative Waste Treatment Technologies	Biogas to electricity	<ul style="list-style-type: none"> <li>Diverting waste from landfills (about 500,000 tons per year), digesting it anaerobically and producing biogas</li> <li>Biogas is then used for electricity generation</li> </ul>	2017	Electricity	40 MW
	Robinson deep LFG project	Landfill gas to electricity	<ul style="list-style-type: none"> <li>Project appointed as part of the REIPPP by Dept. of Energy</li> <li>Gas flaring started in 2012</li> </ul>	2014	Electricity	5.5MW
	Marie Louise LFG project	Landfill gas to electricity	<ul style="list-style-type: none"> <li>Project appointed as part of the REIPPP by Dept. of Energy</li> <li>Gas flaring started in 2012</li> </ul>	2014	Electricity	6.6MW
	Linbro Park LFG project	Landfill gas to electricity	Project in the pipeline; appointed as IPP by Dept of Energy	2015	Electricity	3.3 MW
	Goudkoppies LFG project	Landfill gas to electricity	Project in the pipeline; appointed as IPP by Dept of Energy	2015	Electricity	3.3.MW
	Ennerdale LFG project	Landfill gas to electricity	Project in the pipeline; appointed as IPP by Dept of Energy	2015	Electricity	0.5MW
Johannesburg Water	Northern Works WWTW CHP	Combined Heat and Power	<ul style="list-style-type: none"> <li>Biogas production from wastewater treatment</li> <li>Biogas produces combined heat and power that is used onsite</li> </ul>	Nov 2012	Heat and electricity	1,1MW
	Driefontein WWTW CHP	Combined Heat and Power	<ul style="list-style-type: none"> <li>Biogas production from wastewater treatment</li> <li>produces combined heat and power that is used onsite</li> </ul>	July 2014	Heat and electricity	0.76 MW
	Bushkoppie WWTW CHP	Combined Heat and Power	<ul style="list-style-type: none"> <li>Biogas production from wastewater treatment</li> <li>Biogas produces combined heat and power that is used onsite</li> </ul>	2015	Heat and electricity	2.1 MW

# Projects ready for implementation

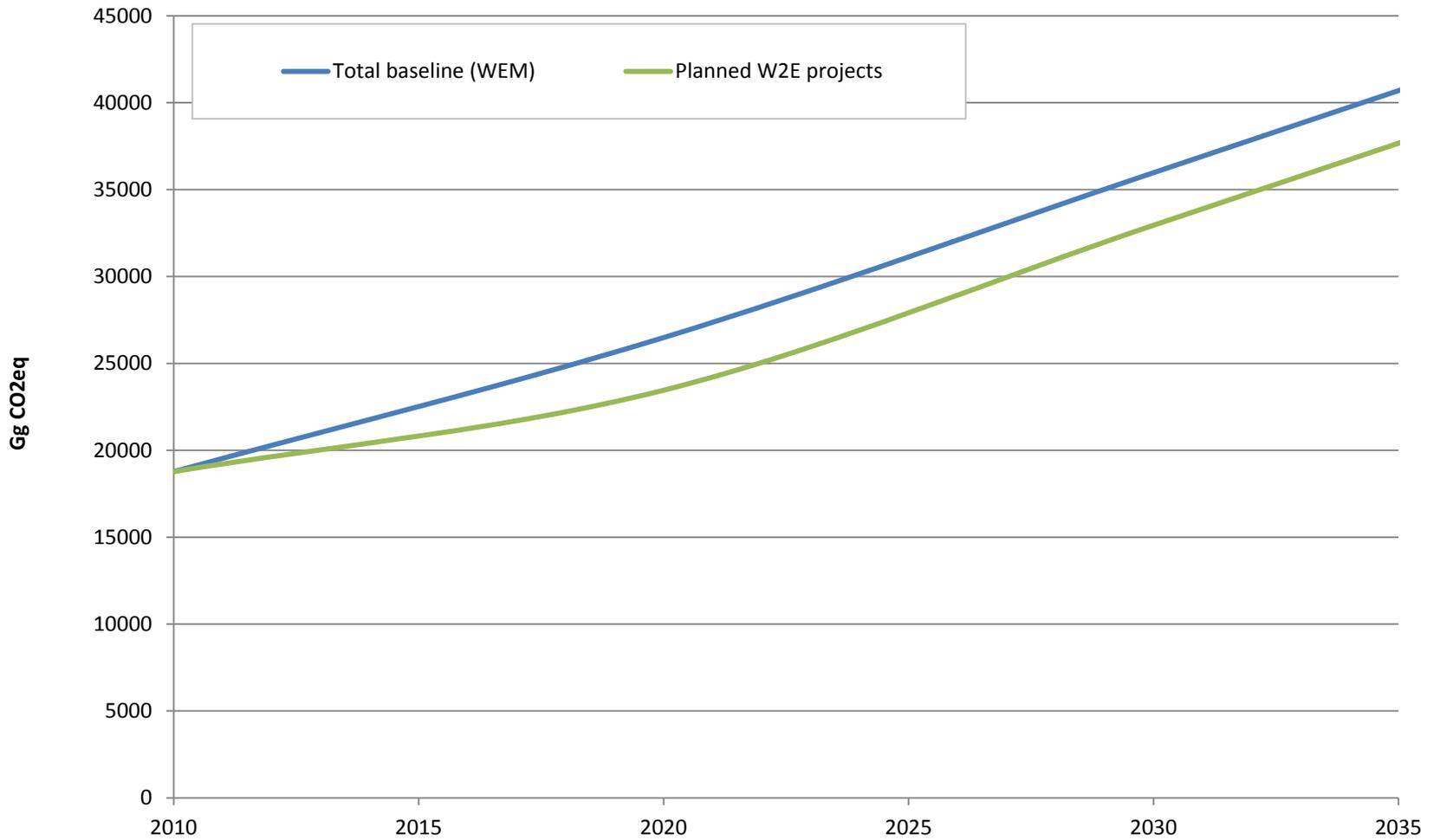
RESPONSIBLE ENTITY/ PROJECT OWNER	NAME OF PROJECT/ PROGRAMME	TYPE	DETAILS	STARTING DATE OF OPERATION	Type of energy output	ENERGY OUTPUT
eThekweni Metro	Bisasar Treatment of Green waste	Biogas to electricity/ biodiesel	<ul style="list-style-type: none"> <li>Collection of biodegradable waste throughout the city, about 40 00 tons per annum</li> <li>Biogas digestion of the waste followed by electricity production</li> </ul>	late 2014 or 2015	Electricity or biodiesel	2 MW
	BuFFELSDRAAI LANDFILL	Landfill gas to electricity	Typical LFG to electricity plant	Mar 2016		8 MW eqt
City of Cape Town	Landfill Gas Extraction And Utilization Programme of Activities (PoA)	CDM Landfill gas programme of activities	<ul style="list-style-type: none"> <li>Programme of activities being registered under CDM – final registration stage</li> <li>Project registered as Coastal Park LFG</li> </ul>	Unknown at this stage – estimated at 2017	Electricity	2MW eqt
Ekurhuleni	Ekurhuleni LFG programme – 5 Sites	Landfill gas to electricity	<ul style="list-style-type: none"> <li>Landfill gas-to-electricity programme in 5 landfill sites</li> <li>To be implemented in stages</li> <li>Gas flaring in one site started in 2012, electricity generation from 2014</li> <li>Others to run only from 2016</li> </ul>	1.1 MW from 2014; the rest from 2016	Electricity	6 MW total
	Sebenza LFG to Biofuel	Landfill gas	Operational			



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# Mitigation impact of planned projects



- **Scaling up:** *increasing the uptake of currently on-going projects & increasing impact of these types of projects in cc mitigation*
- **Mixing measures:**
  - Promoting implementation of the waste hierarchy
  - Going beyond waste-to-energy in waste mngt
  - Moving from flagship to implementing overall mitigation mix of measures

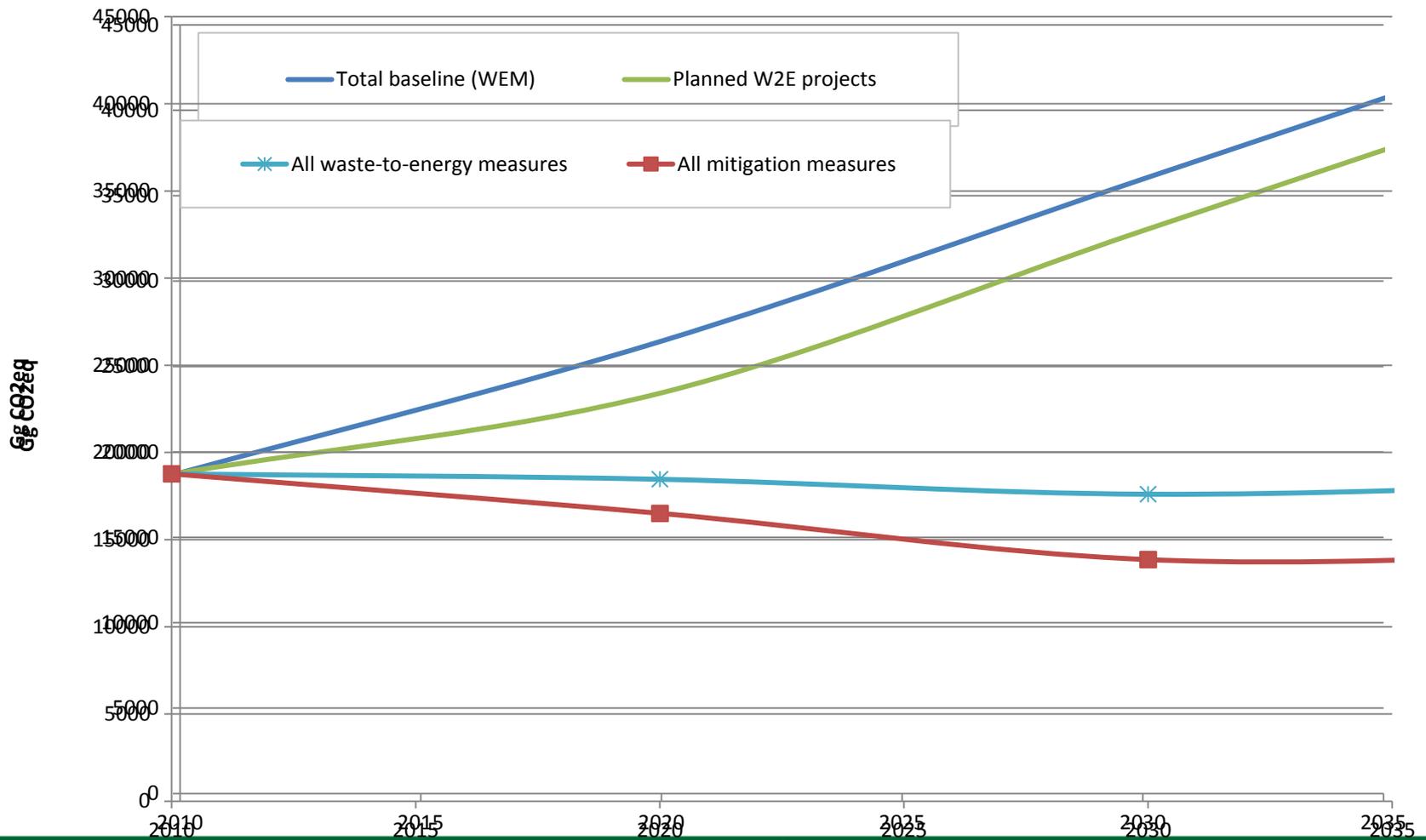


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**Long-term mitigation options**





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# Mitigation impact of scaling up and mixing measures



- Waste-to-energy, especially landfill gas utilization, is the lowest hanging mitigation programmes in the short-term
- 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 (e.g Mechanical biological treatment approach)



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## Key messages from the Framework



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Thank You



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## **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**



# **Flagship Framework: Annotated Outline**

