

Waste Research, Development and Innovation Roadmap



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

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Presentation Outline

- The DST
- Global Change Grand Challenge
- Waste RDI Roadmap





The DST

- **Vision**

- To create a prosperous society that derives enduring and equitable benefits from science and technology.

- **Mission**

- To develop, coordinate and manage a National System of Innovation (NSI) that will bring about maximum human capital, sustainable economic growth and improved quality of life for all.



National System of Innovation



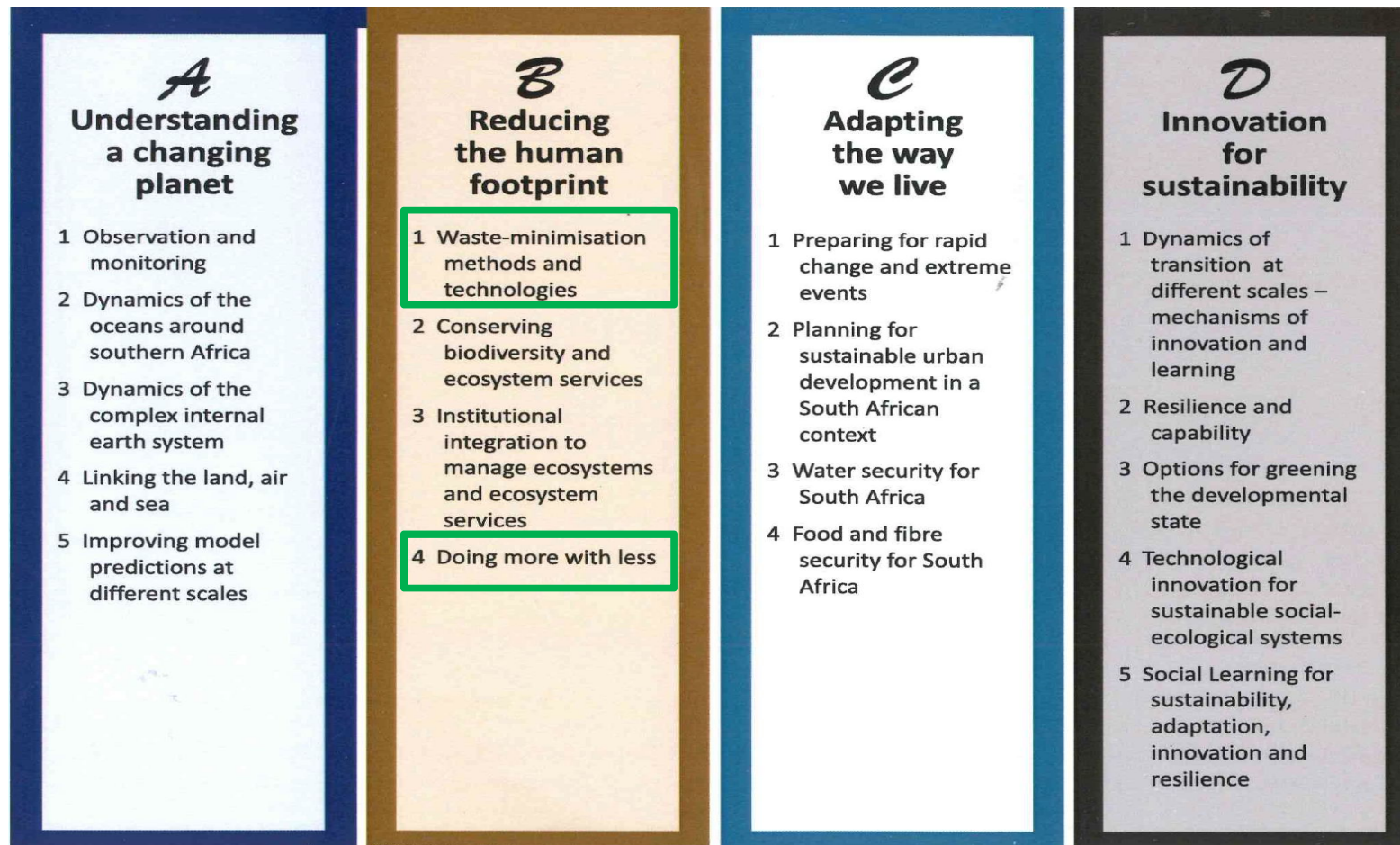


Global Change Grand Challenge





Global Change Research Plan



The Global Change Research Plan identifies four major cross-cutting knowledge challenges and 18 key research themes.



Waste RDI Roadmap



How can DST respond to NWMS

- **Goals 1 and 3**

- Waste minimisation provides considerable opportunities for research, innovation and technology development and implementation; especially in technologies appropriate for South African conditions. **By developing innovations to address waste minimisation, re-use and recovery the DST can contribute to growing the waste sector's contribution to the Green Economy.** Waste minimisation is a recognised area for job creation, given labour intensive technology options.

- **Goal 5**

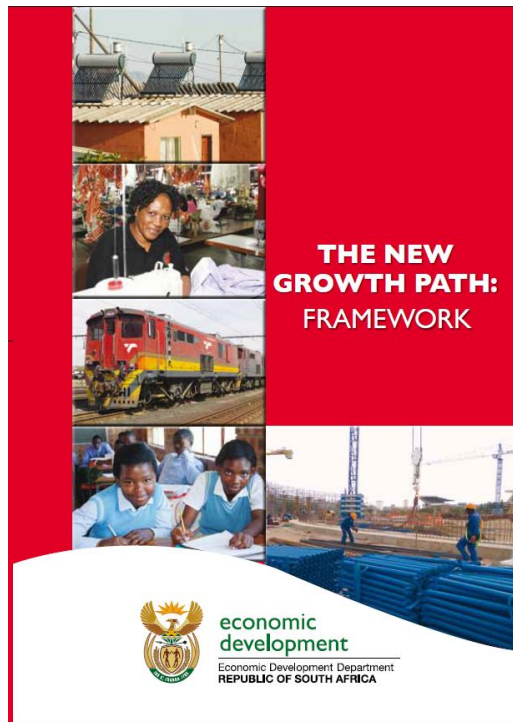
- Integrated Waste Management Plans, if based on sound scientific principles is the only way to achieve Sustainable Development in the long run. **The DST is currently developing a Waste Research, Development and Innovation Roadmap that will encompass a skills development component by engaging with tertiary institutions and a research, development and technology component that will direct research efforts to address priority needs and emerging areas of waste innovation.**

- **Goal 7**

- Bioremediation (the use of micro-organisms to remediate land and water) is an important aspect of contaminated land. **The DST will also benefit from this as it will stimulate the bioeconomy as microbes and enzymes make environmentally friendly catalysts for the breakdown of pollutants.**

Background to the Study

Government is committed to developing a green economy



- New Growth Path
 - Green economy is one of 10 jobs drivers
 - 300 000 green jobs by 2020
 - Natural Resource Management (green technologies)

Background

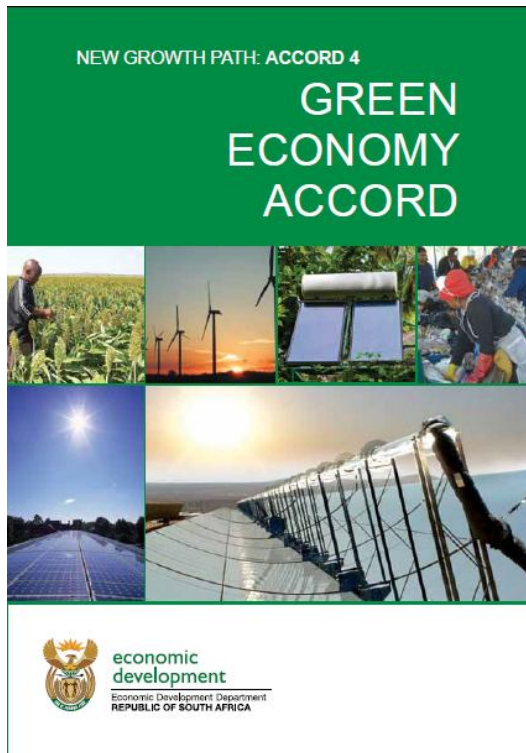
Government is committed to developing a green economy



- New Development Plan
 - The transition will require careful phasing of:
 - Strategic planning
 - Evidence gathering
 - Investment

Background

Government is committed to developing a green economy



- Green Economy Accord
 - Government, business and labour
 - Waste recycling, reuse and recovery
 - Government commits to finalising a Waste Innovation Programme



Aim

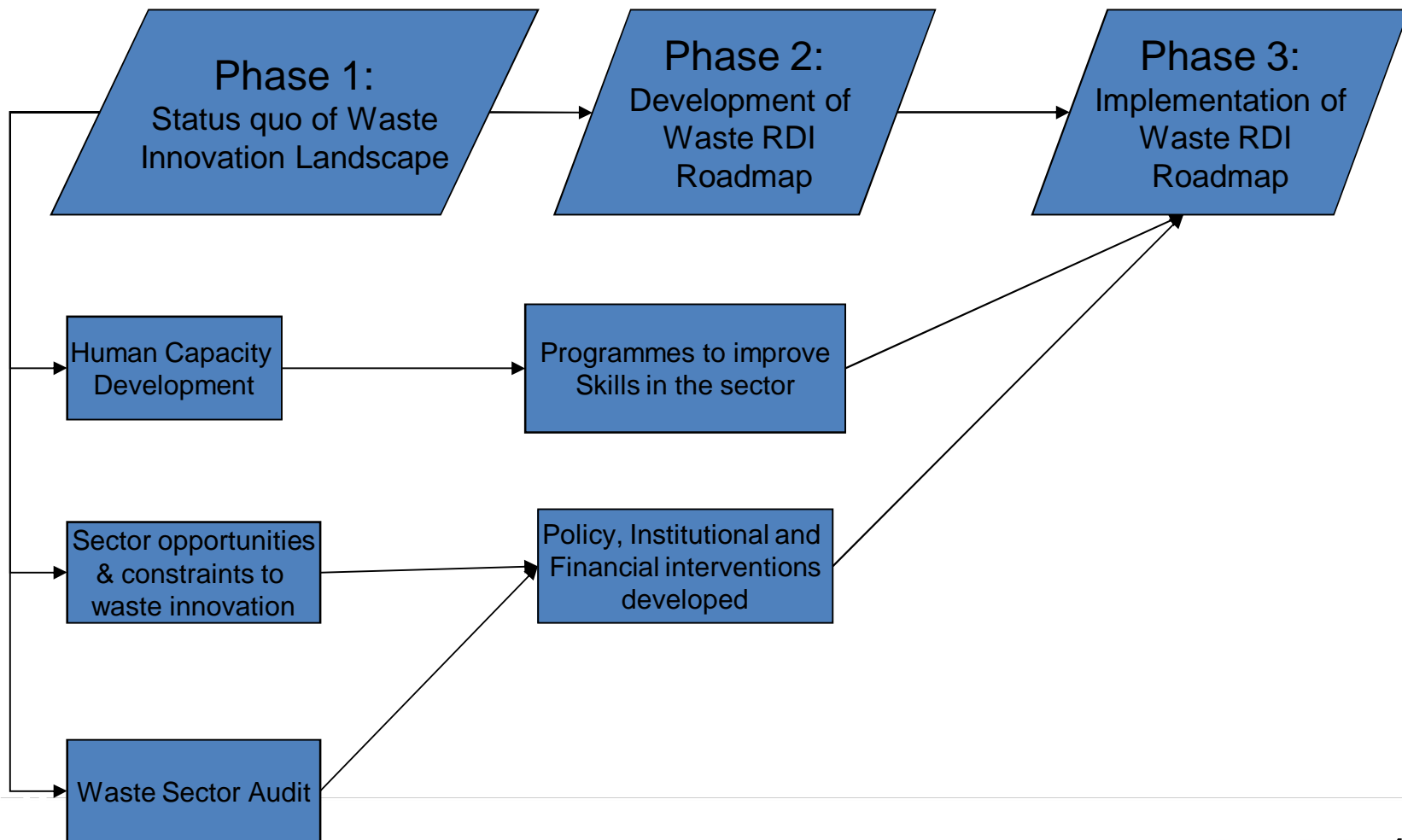
- To establish a National Waste R&D and Innovation Roadmap for SA
 - Product
 - Process
 - Organisational innovation



Goal of the Waste RDI Roadmap

- Acknowledging the goals of the NWMS, the DST believes that ***“the South African waste sector can achieve a 20% reduction (by weight) in industrial waste and a 60% reduction (by weight) in domestic waste, to landfill by 2022”*** through investment in science and technology and the establishment of a national waste innovation programme.
- * Where a ‘reduction’ is seen as being in addition to waste (or urban) mining; industrial waste includes mining waste; and a ‘landfill’ includes mine dumps and residue stockpiles.

Waste RDI Roadmap

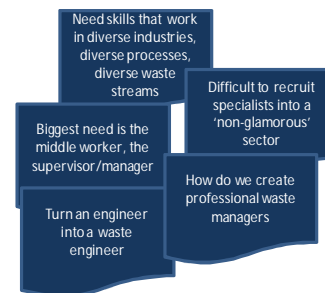


Human Capital Development

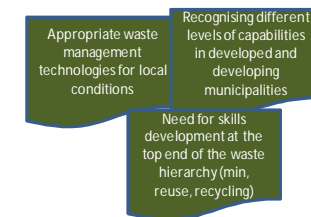
- Major themes

- Waste management professionals
 - Workplace ready graduates
 - Workplace up-skilling
- SA appropriate innovation and skills
- Network / community of practice
- Bridging research disciplines
- Need for waste data
- Who to be capacitated

Creating 'waste workplace-ready' graduates



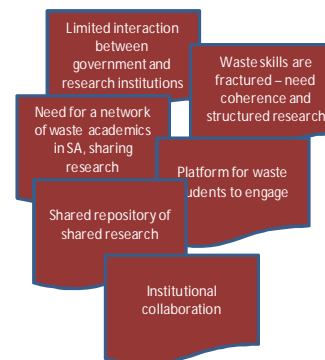
SA appropriate innovation & skills



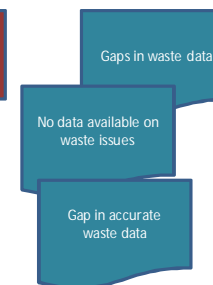
Who should be capacitated?



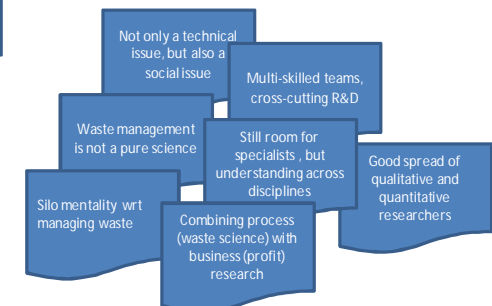
Network / Community of Practice



Need for waste data



Bridging Research Disciplines





HCD - Strategic Objectives

- Create workplace-ready graduates (postgraduate specialisation)
- Up-skill existing waste management practitioners
- Develop waste educators at all levels so as to increase supervisory capacity



HCD – Summarised findings

- Currently no waste management diploma or degree offered at tertiary level in SA (unlike internationally)
- Modules imbedded in engineering, environmental sciences
- Current research programs driven largely by personal research interests, no national research agenda
- Most waste R&D is self-funded



HCD – Summarised findings

- Modalities
 - Develop a waste management professional skills development programme (at university level)
 - Postgraduate degree/diploma in waste management
 - Honours option (research-focused pathway, with workplace learning)
 - Post-graduate diploma (workplace-focused pathway)
 - Multi-disciplinary



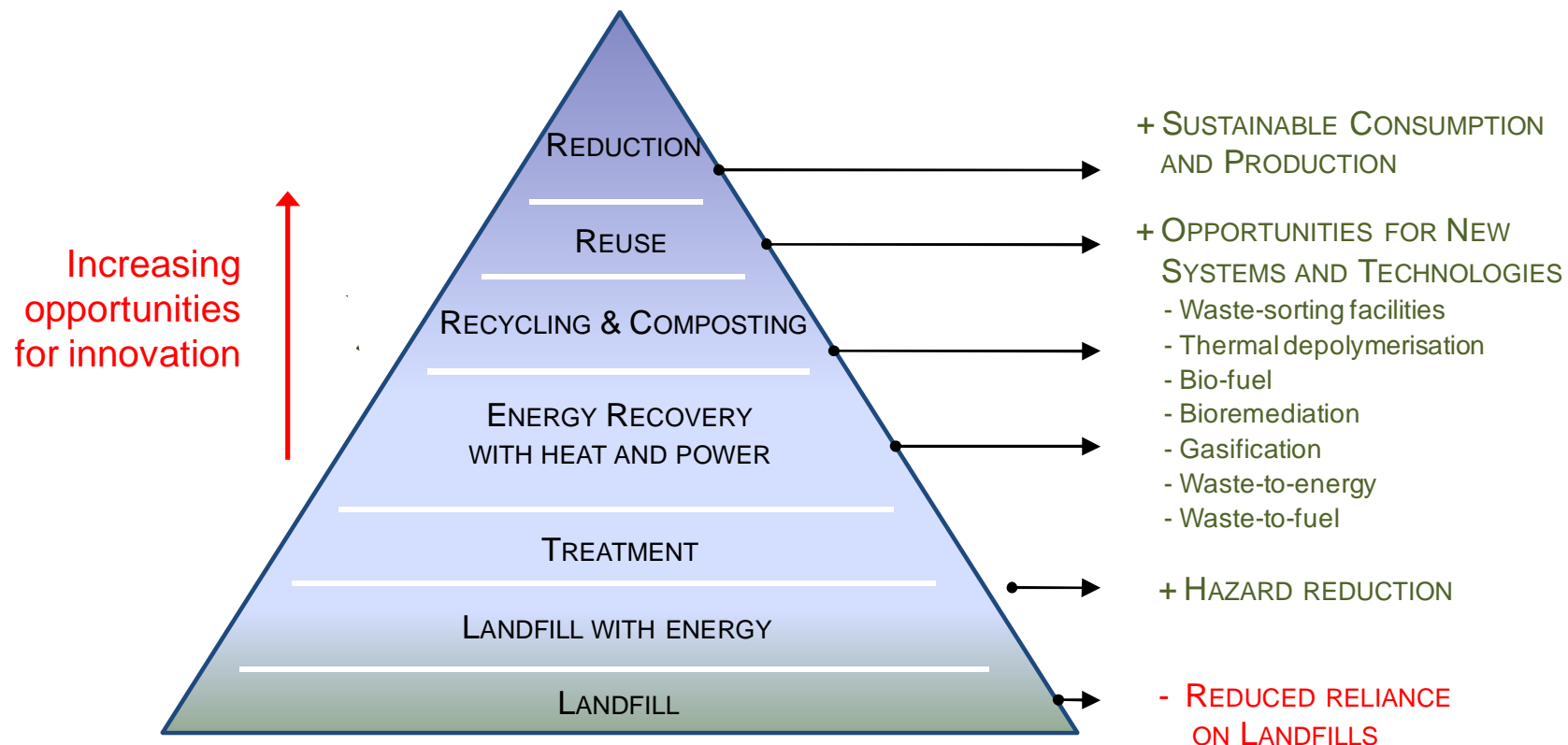
Opportunities & Constraints – Summarised findings



Opportunities & Constraints – Summarised findings

Role for the DST

- With new waste legislation and regulations as a driver -



Waste Sector Audit – Summarised findings

- South African waste sector survey (2012)
 - Understand the organizational and innovation situation within the formal waste sector
 - To inform the development of the Waste RDI Roadmap





Waste Sector Audit – Summarised findings

- Minimum number of people employed in the formal waste sector (public and private) (for 2012) was **29,833**
 - Majority of these employees are situated within large enterprises (77.5% of private waste sector employees) and
 - Metropolitan municipalities (64.9% of public sector employees).
- Minimum financial value is **R15.3 billion**, or 0.51% of GDP
- Spend on waste R&D was **R50.2m**, 0.33% of the value of the total sector.
- Spend on waste HCD was **R429m**, 2.8% of the value of the sector



Waste Sector Audit – Summarised findings

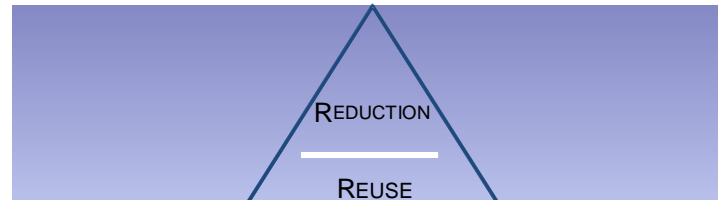
- The waste sector has shown positive transformation over the past two decades (since 1994) with
 - **77.2%** of private sector respondents indicating they are BBBEE certified,
 - with an average **BBEEE level 4**
 - With respect to race, **83.8%** of private sector employees and **98.3%** of municipal employees are people of colour
 - For gender, **37.8%** of private sector employees and **32.1%** of municipal employees are female



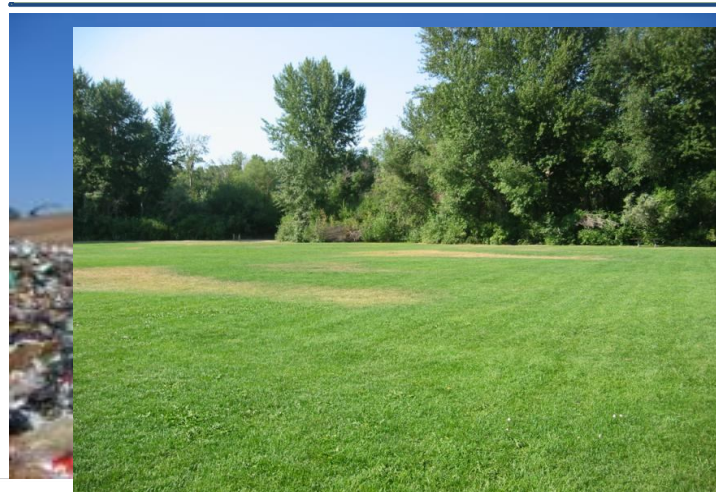
Waste Sector Audit – Summarised findings

- A strong complimentary role between the private and public sectors is evident from the results -
 - The positive response by the private waste sector to introduce new technological and non-technological innovations to the South African waste market, suggests that they have an important role to play in transferring these innovations into the public sector.
- The private waste sector is a potential partner to support the transfer of technological innovations from supplier (local and abroad) into municipalities.
- Mechanisms to support partnerships between the public and private sectors must be explored.
- Government must identify means of encouraging and supporting the introduction of technological innovation across the waste sector, so as to encourage a shift away from landfilling towards alternative waste management options.

Conclusion



Acknowledging the goals of the NWMS, the DST believes that “***the South African waste sector can achieve a 20% reduction (by weight) in industrial waste and a 60% reduction (by weight) in domestic waste, to landfill by 2022”*** ***through investment in science and technology*** and the establishment of a national waste innovation programme.



Courtesy of Linda Godfrey
Activerain.com accessed on the 17 October 2012



Dankie

Enkosi

Ha khensa

Re a leboga

Ro livhuwa

Siyabonga

Siyathokoza

Thank you



CONTACTS

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R&D and Innovation Roadmap contact –

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