

NATIONAL 10-YEAR WASTE RDI ROADMAP FOR SOUTH AFRICA

Unlocking the economic potential of the waste hierarchy through
Science, Technology and Innovation



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science
& technology

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CSIR
our future through science

Background

- 90% of the waste generated in SA is still disposed of to landfill (2011)



Background

- According to Packaging SA (2013), 49% of packaging still lost to landfill



Background

- In landfilling we are losing viable resources – e.g. polymer, paper, metal



Background

- In landfilling we are losing viable resources – e.g. organics



Background

- In landfilling we are losing viable resources – e.g. metals



Opportunities for RDI



- The (i) correct management of waste and the (ii) diversion of waste away from landfill creates **environmental**, **social** and **economic** opportunities for South Africa
- Opportunity to move resources into a **local** secondary resources **economy**
- In this lies significant **opportunity** and **need** for research, development and innovation (RDI) to –
 - **Inform policy** development and implementation
 - **Inform technology** uptake
 - Inform decision-making through **sound evidence**



The Economic Opportunities

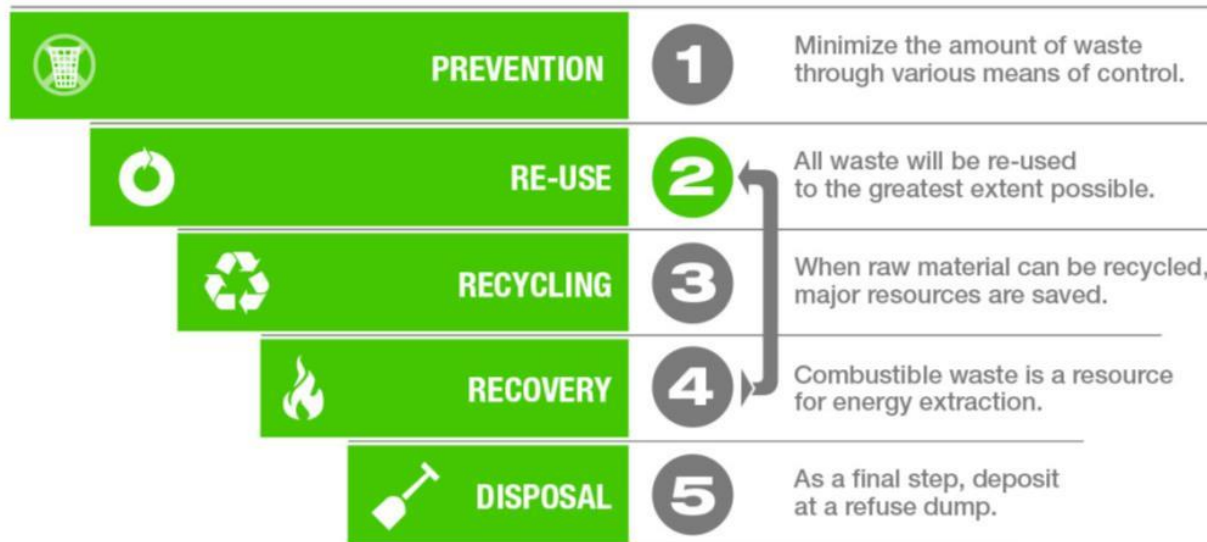
- Research by the DST showed that –
 - South Africa generated at least R25.2b worth of resources as waste (in 2012)
 - But R17.0b worth of resources were **lost to the economy** in 2012 through disposal as waste to landfill
 - This evidence provides an opportunity to inform the move up the waste hierarchy –
 - **Appropriate technology solutions** – material recovery (recycling) of plastic waste provides a ten-fold greater economic benefit to the country than energy recovery
 - **Policy responses** – How do we unlock economic opportunities, where the unit value (R/t) is greater than the cost of landfilling but recycling remains low



The Social Opportunities

- The waste sector provides opportunities to create –
 - **Large numbers** of **low-skill jobs** for the currently unemployed
 - **New economic activities** in the secondary resources economy (recycling / manufacturing) thereby creating new job opportunities

WASTE HIERARCHY



JOB OPPORTUNITIES

- Cleaner production, Industrial efficiency, Design for environment
- Dismantling, Refurbishment, Reuse
- Collection, Sorting, Reprocessing, Manufacturing
- Waste-to-energy processing
- Landfill operation



The Waste RDI Roadmap

- The National Waste RDI is therefore aimed at –
 - Supporting the waste sector in unlocking these opportunities through the **three pillars** of the Waste RDI Roadmap –



- Aligned with the mandate of the DST and national priorities

Focus of the Waste RDI Roadmap



- Providing support to –
 - All spheres of government, especially local government
 - The private sector (business and industry)
 - To realise the opportunities in the five priority waste streams
 - **Municipal waste**
 - **Organic waste**
 - **Plastic waste**
 - **Waste Tyres**
 - **Electronic waste (WEEE)**



Focus of the Waste RDI Roadmap

- In order to implement –
 1. More effective **decision-making**
 2. Faster insertion of **context-appropriate Technology**
 3. **Export** of Know-How and Technology
 4. Strengthened RDI **capability and capacity**
- And strengthen –
 - Waste RDI **collaboration** within and between the public and private sector

Focus of the Waste RDI Roadmap



Strategic Planning

Macro-Economics

Value Chain Strategy

Policy and Legislation

Governance

Build and strengthen the basis and application of strategic analysis and advice for the purposes of evidence-based decision-making to inform strategy formulation, planning and its execution and management



Modelling and Analytics

Systems Analysis and Modelling

Business Models

Socio-Economic and Environmental Modelling

Analytics

Impact Assessment

Develop and use methods, tools, techniques, platforms, systems and frameworks for the analysis, monitoring and evaluation of technical, economic, social and environmental opportunities and impacts associated with secondary resources



Technology Solutions

Process Performance Optimisation

Technology Development

Technology Evaluation and Demonstration

Technology Localisation

Design, development, evaluation, demonstration, localisation and deployment of technologies – both local and inbound – for customer-driven performance improvement



Waste Logistics Performance

Strategic Network Design

Planning and Management Systems

Operational Logistics Processes

Optimisation of strategic, tactical and operational decision-making in respect of logistics objectives, assets and resources



Waste and Environment

Aquatic

Land

Atmosphere

Climate Change

Strengthen the ability to identify, monitor, evaluate and report on environmental impacts of waste and its management, in order to inform better targeted and more effective responses



Waste and Society

Jobs and Labour

Business Practices

Behaviour

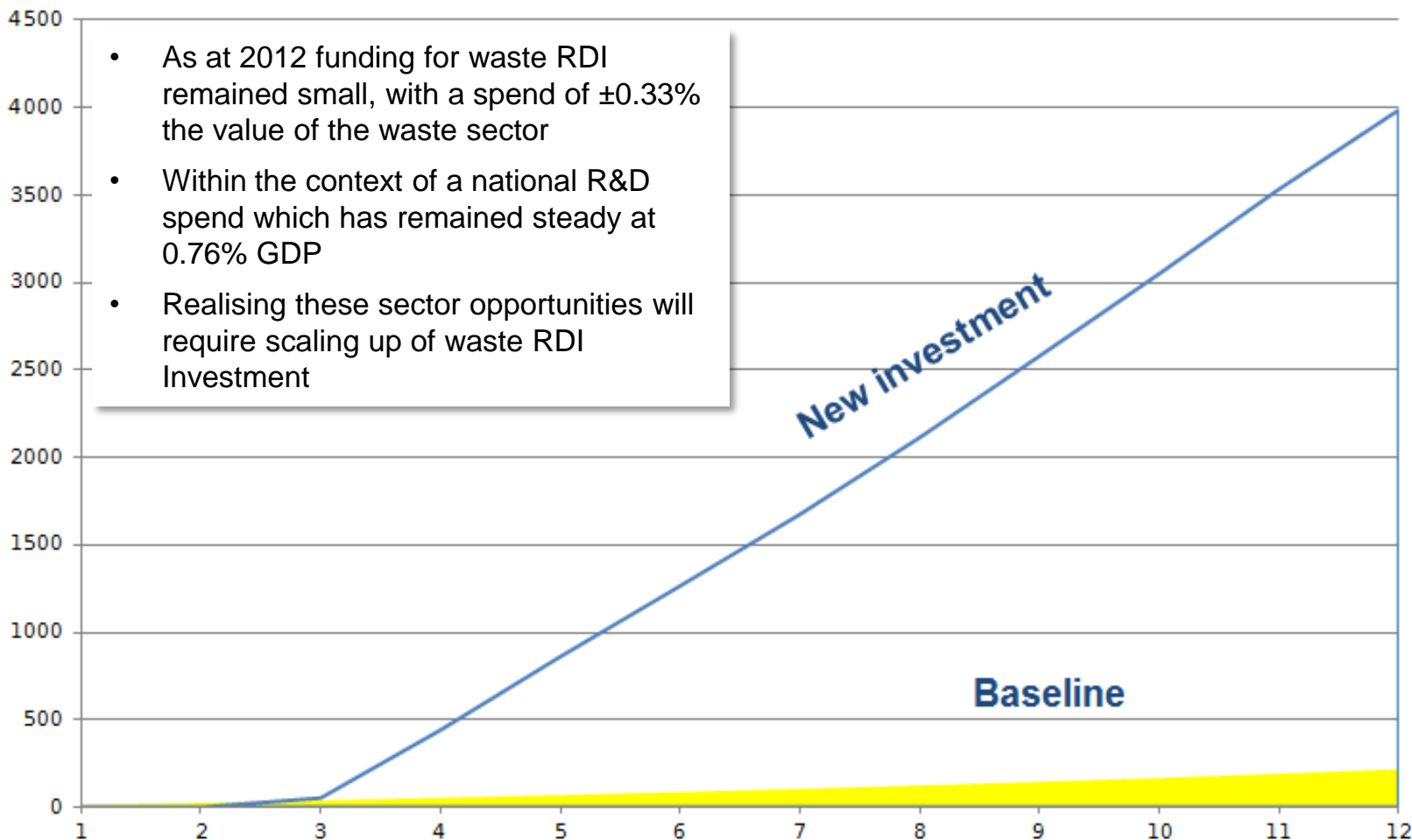
Awareness and Communication

Human Health

Deepen understanding of waste-related opportunities and threats, to increase the success of influencing perception and practice positively

Ramping up RDI investment

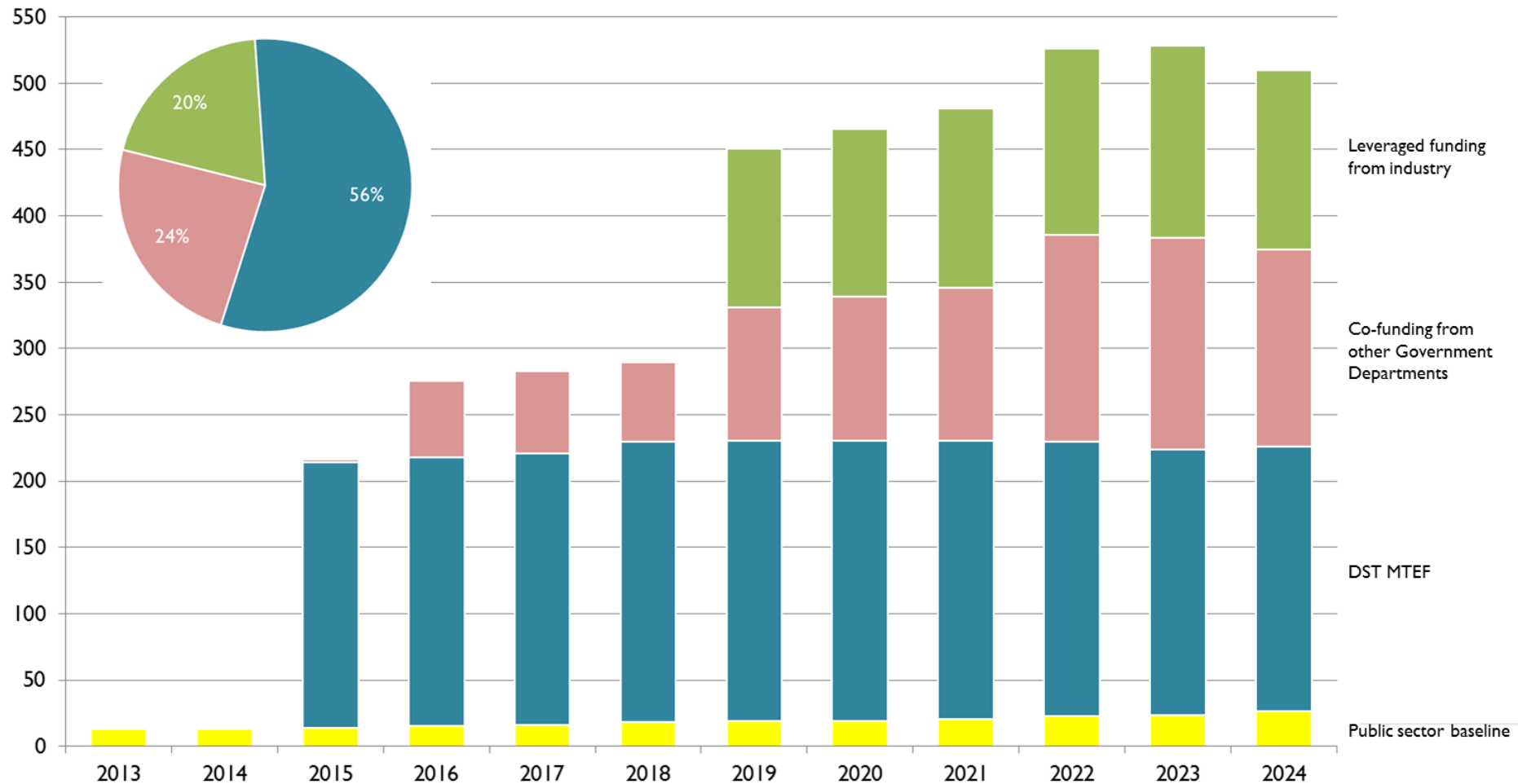
10-Year Investment – Cumulative, in ZARm





The importance of partnerships

Annual RDI Investment, by Funding Source, in ZARm



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Waste RDI Roadmap

Outlines the proposed interventions, progression paths and the related instruments, and the required RDI investment over time



Trends

Describes the local and global trends in waste management and approach adopted in arriving at the priority waste streams for the Roadmap



Capabilities

Maps the nature, availability and maturity of waste RDI capability and capacity in South Africa



Opportunities

Provides an overview of the Market Opportunities we see, how attractive they are and what is required to realise them