

A 10-year Waste RDI Roadmap for South Africa

Executive Summary

The Waste Research Development and Innovation (RDI) Roadmap presents a structured national approach to waste RDI over the next 10 years, as a means of supporting the implementation of national policy, strategy and planning on waste and secondary resources management in South Africa.

The vision of the Roadmap is that the development and deployment of performance improvements in waste management has delivered a significant contribution to the strengthening of a sustainable, regional secondary resources economy in South Africa. This has been achieved by means of a National Waste RDI Programme that supports maximisation of diversion of waste from landfill towards value-adding opportunities, including prevention of waste and the optimised extraction of value from reuse, recycling and recovery, in order to create significant social, economic, and environmental benefit.

Driven by the potential to create local and regional benefit, the Roadmap presents a sound case for increased public and private investment in Waste RDI.

Developed through a structured process which included extensive participation and valuable input from key stakeholders in industry, government and organisations within the National System of Innovation, the Roadmap provides strategic direction, a set of action-plans and an implementation framework to guide, plan, coordinate and manage South Africa's portfolio investment for the next 10 years in six identified clusters of research, development and innovation activity.

Developing, strengthening and embedding South Africa's waste RDI capability and capacity within and between research institutions, academic institutions, industry and government, will enable the sector to make more effective decisions, insert context-appropriate technologies and create opportunities for the export of know-how and technology into the African continent and beyond.

The strategic clusters which frame the Waste RDI Roadmap (2015-2025), and which will guide RDI and investment, are –

► **Strategic Planning**

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**

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**

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

► **Waste Logistics Performance**

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

► **Waste and Environment**

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**

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

Strategically directing waste RDI in support of impact

Problem

Means

How

Opportunities

Problem Statement:

- 90% of South Africa's waste goes to landfill
- Resulting in **loss of resources** to the economy
- Resulting in social (human health) and environmental **impacts**
- Municipalities face **challenges** in delivering services and diverting waste from landfill
- Alternative waste treatment typically more **expensive** than landfilling

Human Capital Development (HCD)
(Skills)

Research and Development (R&D)
(Evidence)

Innovation (technological and non-technological)
(Technology)

 **Strategic Planning**

 **Modelling and Analytics**

 **Technology Solutions**

 **Waste Logistics Performance**

 **Waste and Environment**

 **Waste and Society**

Strengthen **skills** and generate **evidence** to **inform** decision-making, planning and policy development by government and industry

Strengthen **skills** in methods, tools, models and techniques and apply these to generate **evidence** to **inform** the management of waste

Develop, evaluate, demonstrate, localise and deploy **technologies** to **support** municipalities and industry in diverting waste away from landfill towards value-add

Strengthen **skills** and generate **evidence** to optimise decision-making around the movement of waste across the country (logistics, assets, resources)

Strengthen **skills**, generate **evidence**, **deploy technologies** to reduce the impacts of waste on receiving environments

Deepen understanding of the socio-economic opportunities provided by waste, but also the threats that waste poses to human health

Opportunities:

- Preventing waste creates opportunities for industry to increase **value-addition and competitiveness**
- Diverting waste from landfill creates opportunities for new direct and indirect **jobs** and **enterprises**
- Improved management of waste **reduces risks** to human health and environment

Realising Waste Stream Opportunities via 6 RDI Clusters

RDI Clusters defined



Strategic Planning	Modelling and Analytics	Technology Solutions	Waste Logistics Performance	Waste and Environment	Waste and Society
Macro-Economics	Systems Analysis and Modelling	Process Performance Optimisation	Strategic Network Design	Aquatic	Jobs and Labour
Value Chain Strategy	Business Models	Technology Development	Planning and Management Systems	Land	Business Practices
Policy and Legislation	Socio-Economic and Environmental Modelling	Technology Evaluation and Demonstration	Operational Logistics Processes	Atmosphere	Behaviour
Governance	Analytics	Technology Localisation		Climate Change	Awareness and Communication
	Impact Assessment				Human Health

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

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

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

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

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

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