10-YEAR WASTE RDI ROADMAP FOR SOUTH AFRICA (2015-2025)

Opportunities for biomass- and organic- waste valorisation







65% of municipal organic waste and nearly 100% of industrial biomass (agricultural & food processing) in SA still disposed to land (DEA, 2011)



On average, 57% of MSW generated in Africa is organic waste, the bulk of which is currently dumped, but which could provide significant socio-economic opportunities for countries (UNEP 2018)





10-Year Waste RDI Roadmap

- In 2012 the DST embarked on a process to develop a strategic approach to research, development and innovation (RDI) in the South African waste sector
- That would support
 - South Africa's move away from landfilling towards alternative options that provide value-adding opportunities
 - More effective decision-making, faster insertion of context-appropriate technology, export of know-how and technology, and strengthen RDI capability and capacity





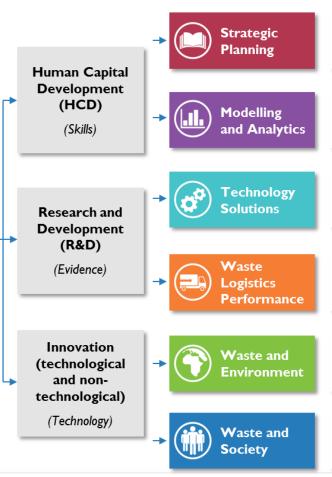


10-Year Waste RDI Roadmap

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



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





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Grant funded research projects



Beneficiation of **forestry biomass** waste streams [Prof B Sithole, CSIR NRE, Durban]



Valorisation of waste chicken feathers [Prof B Sithole, CSIR NRE, Durban]



Sustainable utilization and conversion of post-harvest agricultural waste residues into value added materials [Dr M John, CSIR MSM, Port Elizabeth]



Value recovery from solid confectionary waste [Prof S Harrison, UCT, Cape Town]







Grant funded research projects



Reactor design for industrial furfural production from sugar cane agricultural residues [Prof J Görgens, SUN, Stellenbosch]



Biogas and volatile fatty acids biorefinery by co-digestion of fruit juice wastes with lignocellulosic biomass [Prof J Görgens, SUN, Stellenbosch]



Production of novel cellulose nanocomposites from organic waste

[Dr A Chimphango, SUN, Stellenbosch]







Implementation instruments



an initiative of Plastics|SA in partnership with the DST and CSIR-hosted Waste RDI Roadmap Implementation Unit



South African Biorefinery
Research Platform an initiative of
the DST in support of the Waste
RDI Roadmap and Bio-Economy
Strategy

www.wasteroadmap.co.za/biorefinery







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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



