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IDEAS THAT WORK
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Finding value in waste:

Identifying opportunities for growth in a secondary resources economy

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Outline of presentation

- Defining the South African Waste Sector through R&D –
  - The South African Waste Sector
  - Opportunities in waste
    - The economic value in waste
    - The social value in waste
  - Unlocking the opportunities through
    - Enterprise development
    - Alternative policy responses

The South African waste sector

- The South African waste sector –
  - Is valued at R15.3 billion or 0.51% of the country's GDP (2012)
  - It employs approximately 30 000 people, 67% of whom work in the public sector (local government)
  - An estimated 2-3 times this number (60 000 – 90 000 people) earn a livelihood through the informal waste sector
  - We generate an estimated 108 million tonnes of general and hazardous waste a year, of which 90% is disposed to landfill (2011)
  - Every year at least R17.0b worth of valuable secondary resources are lost to the SA economy as waste, disposed of to landfill
  - While our recycling industry is growing, we are increasingly losing valuable resources to overseas markets

The South African waste sector

- The South African waste sector provides an opportunity to –
  - Recover valuable materials to return back into a local manufacturing economy (strengthening the local economy)
  - Create new jobs in an emerging secondary resources economy
  - Create job opportunities for low skilled, unemployed citizens
  - Through low barriers to entry, establish new enterprises, including co-operatives and SMMEs
  - Stimulate a local Green Economy


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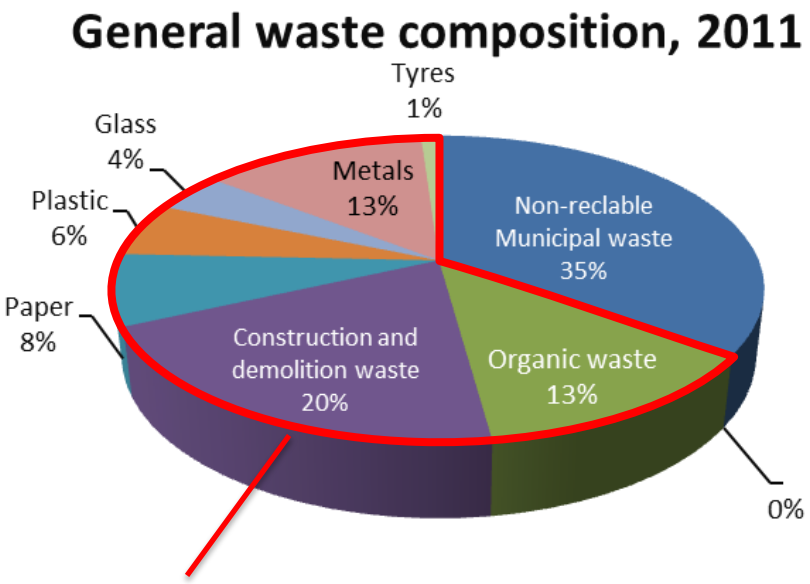
The South African waste sector

- South Africa generated ± 108 mT of waste in 2011, of which 59 mT was general waste, 48 mT was unclassified waste and the remaining 1 mT hazardous waste
- 98 mT (90%) was disposed of at landfill
- An estimated 60-70% of our general waste can be diverted into materials recovery (recycling) and the residual 30-40% into energy recovery
- Moving waste up the hierarchy creates social, economic and environmental opportunities for South Africa



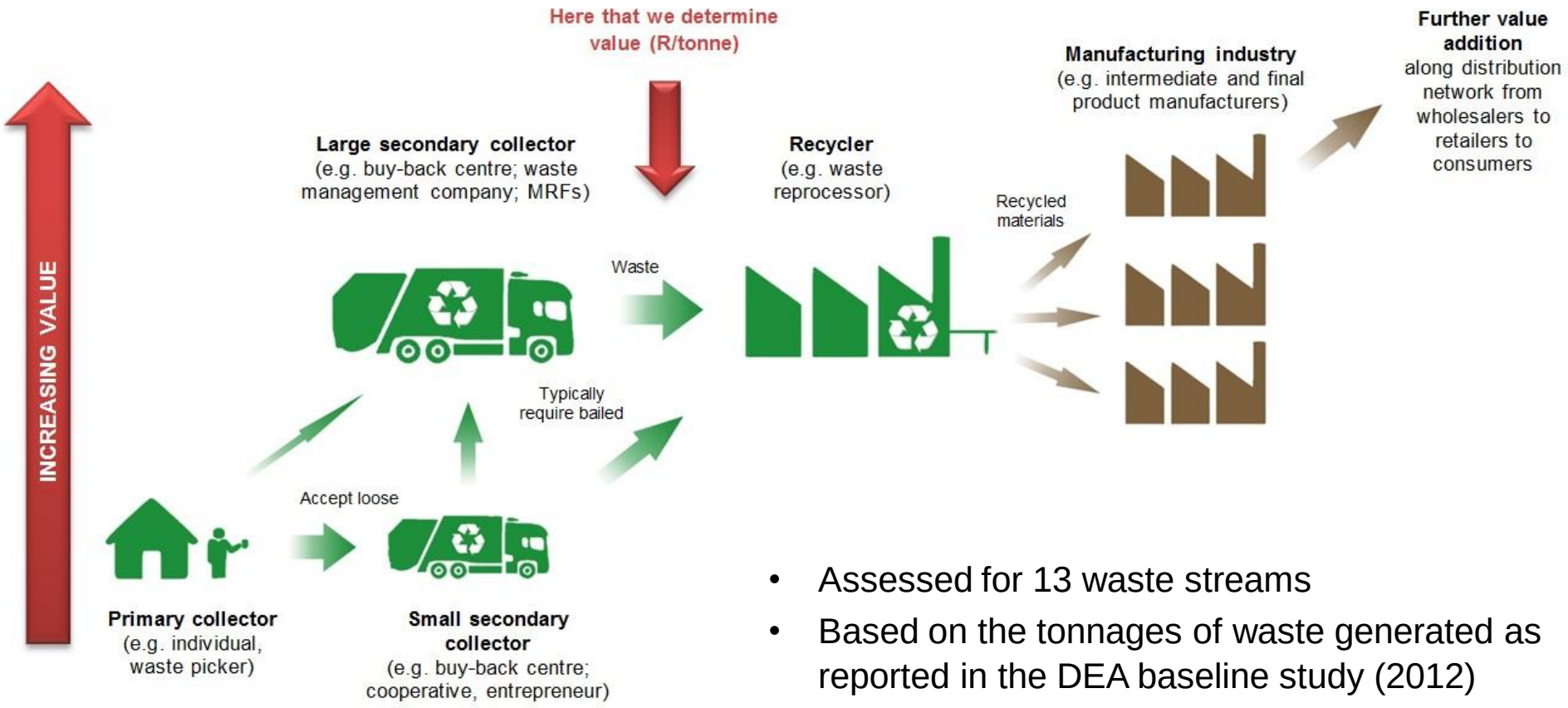
Potential for diversion to materials recovery

National Waste Information Baseline Report (2012). Completed by the CSIR for the Department of Environmental Affairs

Opportunities in waste

- But why should South Africa move waste up the hierarchy away from landfill?
  - We still have land available for disposal
  - Our landfilling is cheap (relative to alternative waste treatment)
- What are the social, environmental and economic impacts of continuing to send waste to landfill in South Africa?

The economic value in waste



- Assessed for 13 waste streams
- Based on the tonnages of waste generated as reported in the DEA baseline study (2012)
- Based on the average Unit Value per waste stream (price paid by the recycler for the waste)

The value of resources lost through landfilling (2014). Completed by the CSIR for the Department of Science and Technology

The economic value in waste

	Value (Rand/year)			
Stream	Scenario 1 (Baseline)	Scenario 2	Scenario 3 (DST Goal)	Scenario 4 (100%)
Metals	5 668 103 740	6 022 360 735	6 376 617 729	7 085 130 810
Industrial biomass	0	2 046 933 732	4 093 867 465	6 823 112 441
Plastic	734 824 361	1 677 846 536	2 449 411 002	4 082 351 670
Non-recyclable MSW	0	740 547 527	1 481 095 054	2 962 190 108
Paper	735 995 662	809 595 449	1 032 976 649	1 291 220 811
Slag	469 959 700	587 449 625	704 939 550	939 919 400
Organic fraction MSW	199 624 053	299 436 079	399 248 106	570 354 437
Glass	150 499 090	204 584 780	282 185 904	470 309 840
C&D waste	66 157 613	136 450 038	206 742 463	413 484 925
Waste oils	146 666 667	193 333 333	240 000 000	333 333 333
Ash	6 867 312	14 299 656	21 732 000	108 660 000
Tyres	3 620 455	38 015 658	72 410 862	90 513 577
WEEE	6 884 000	19 453 250	32 022 500	64 045 000
Total	**8 189 202 652**	**12 790 306 399**	**17 393 249 283**	**25 234 626 353**

The economic value in waste

- Research shows –
  - That South Africa generated at least R25.2b worth of resources as waste (in 2012)
  - As viable polymer, fibre, metal, glass, organics
  - R17.0b worth of resources were lost to the economy in 2012 through disposal as waste to landfill
  - Material recovery (recycling) of plastic waste provides a ten-fold greater economic benefit to the country than energy recovery
  - The unit value (R/t) for most streams is greater than the cost of landfilling (R100-R150/T)
  - Why are we only recycling ~10% of all waste generated?

Valuable, finite resources are being lost to the SA economy

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- (Fortunately) material is “recovered” by pickers at kerbside and landfill and returned to the economy
- It is estimated that 70-90% of the recyclable post-consumer packaging is sourced by the informal sector

The social value in waste

- Waste provides not only economic but also social opportunities
- The 2015 Q1 unemployment rate for South Africa was 26.4% (12 year high) (StatsSA, 2015)
- With an expanded unemployment rate (1) of 36.1%
- ~60% of the unemployed have less than a high school (Grade 12) qualification (StatsSA, 2012)
- South Africa sits with high numbers of uneducated, unskilled, unemployed citizens

(1) Includes those people who are not seeking work but are available to work

The social value in waste

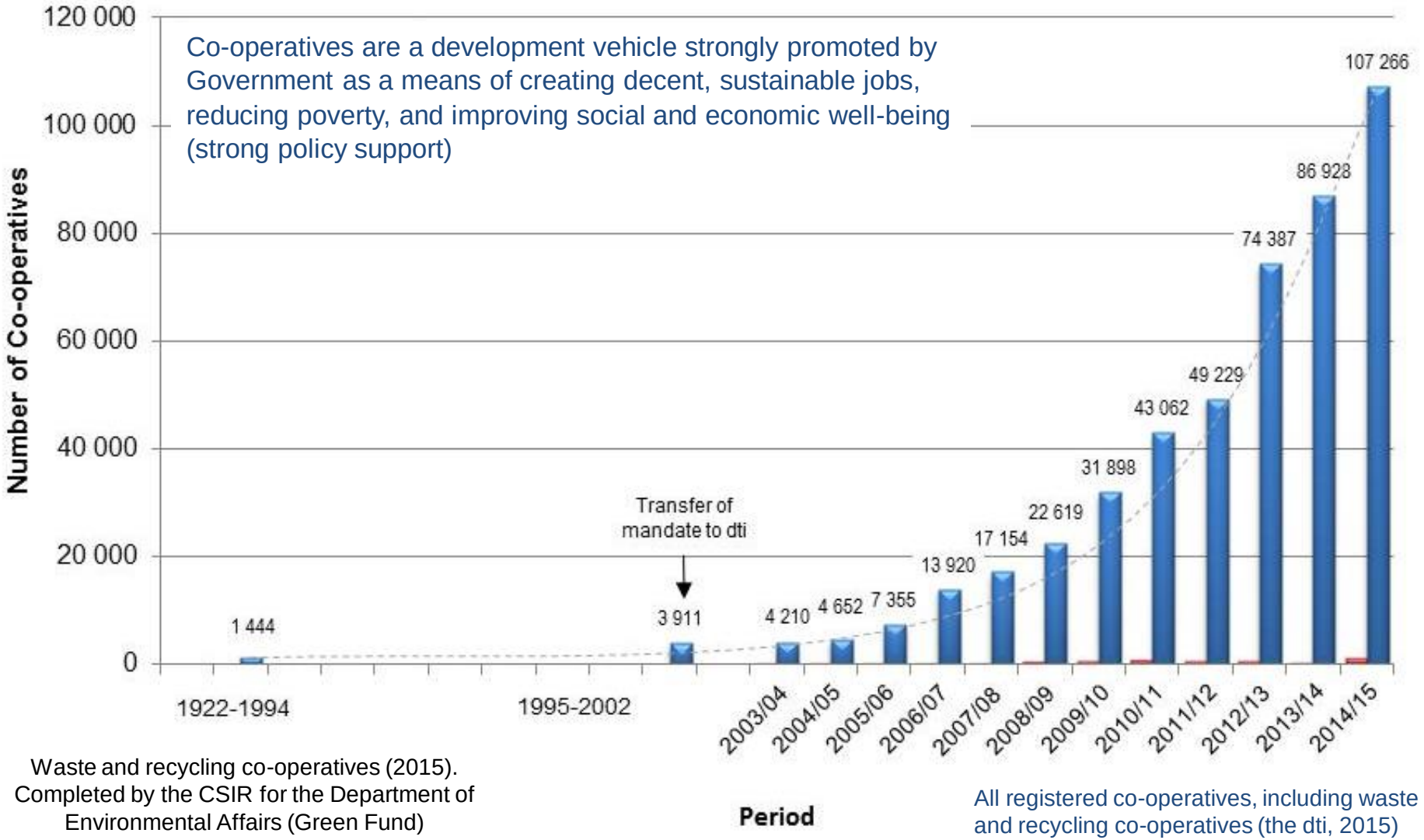
- South Africa's employment challenge is two-fold –
  - Create large numbers of **low-skill jobs** for the currently unemployed
  - Grow economy to **create new job** opportunities
    - New economic sectors, e.g. secondary resources economy (recycling / manufacturing)
    - Upskill and new skills
  - The waste sector provides an opportunity to do both

The social value in waste

- Immediate opportunities in the waste sector include –
  - **Open-spaces cleaning** (e.g. clearing of illegal dumping sites, street cleaning and sweeping, litter picking)
  - Waste **collection**
  - **Sorting** of recyclables
  - These are labour intensive activities that require low skills
  - With low barriers to entry
- Co-operatives and SMEs provide a vehicle to drive this

Unlocking the opportunities through enterprise development

Co-operatives are a development vehicle strongly promoted by Government as a means of creating decent, sustainable jobs, reducing poverty, and improving social and economic well-being (strong policy support)



Waste and recycling co-operatives (2015). Completed by the CSIR for the Department of Environmental Affairs (Green Fund)

All registered co-operatives, including waste and recycling co-operatives (the dti, 2015)

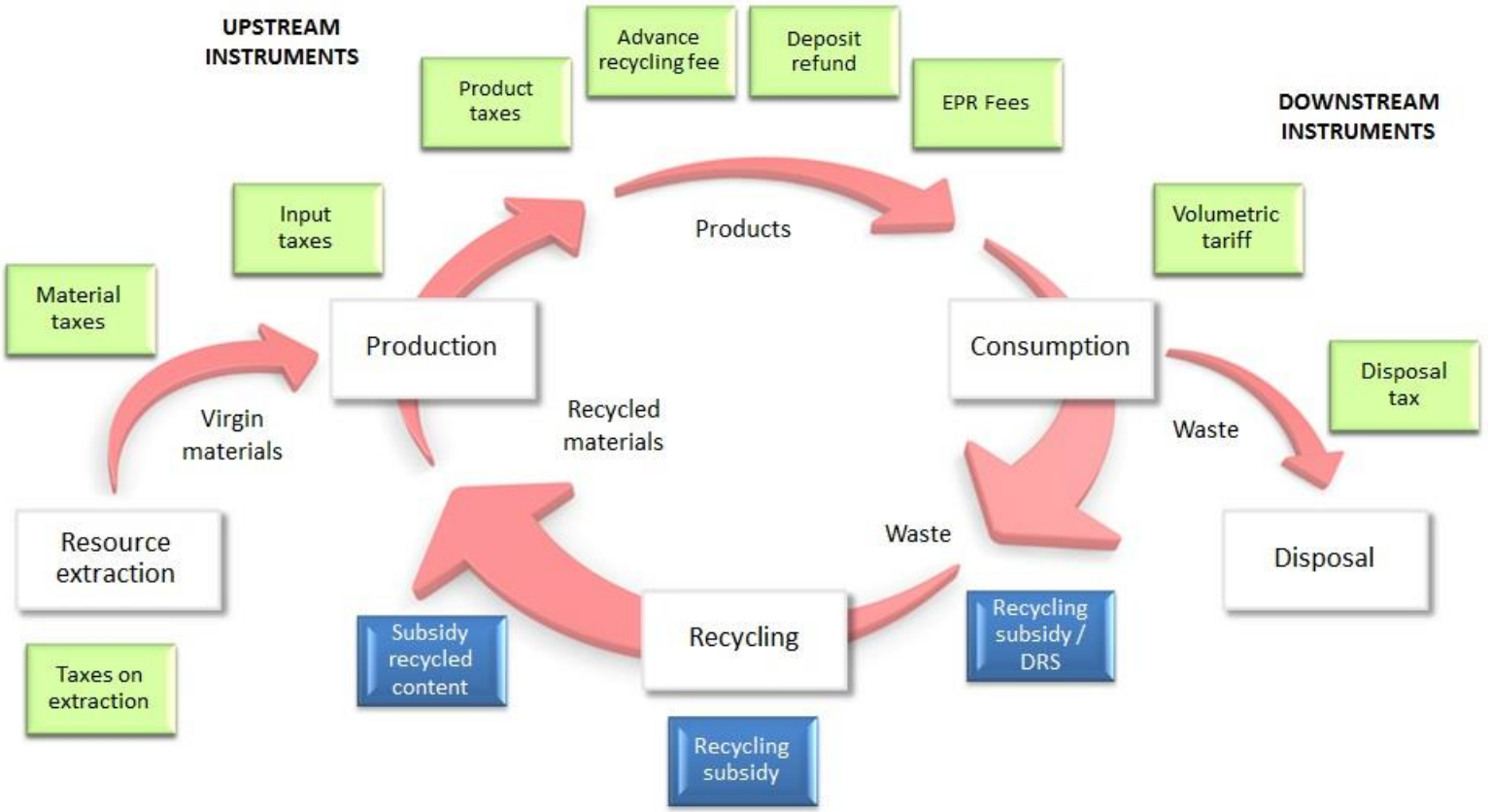
Unlocking the opportunities through enterprise development

- Waste and recycling co-operatives (as do SMEs) –
  - Have the potential to create significant 'income opportunities' in the waste sector
  - Are a developmental vehicle with strong government and policy support
- But, the results show that –
  - Co-operatives face numerous challenges (currently 92% fail)
  - Have not been integrated into municipal solid waste management systems (operate largely on the periphery)
  - Creating sustainable waste and recycling co-operatives requires "long-term" support (incubation) by external stakeholders (public and private) due to the low skill level of members

Unlocking the opportunities through policy responses

- If –
  - There is economic value in our waste
  - Reuse, recycling and recovery provides opportunities for job creation and enterprise development
- What policy instruments can be implemented to help drive this move up the waste hierarchy away from landfilling?
  - Need to understand the appropriateness and integration of alternative policy instruments into the South African policy landscape
  - With a focus on economic instruments (e.g. incentives and disincentives) and Extended Producer Responsibility (EPR)

Unlocking the opportunities through policy responses



National pricing strategy for waste management (2014)
Completed by the CSIR for the Department of Environmental Affairs

Unlocking the opportunities through policy responses

- Alternative policy instruments provide an opportunity to
  - Shift the responsibility (financial or operational) for the treatment or disposal of selected products (e.g. packaging, WEEE, tyres) at end-of-life away from government to the producer
  - Relieves municipalities of some of the financial burden of waste management
- Provides financial incentives to –
  - Producers to incorporate environmental considerations in the design of their products (design for the environment)
  - Subsidise alternative waste treatment in South Africa against a backdrop of cheap landfilling

Conclusions

- The research conducted by the CSIR, and the quantitative and qualitative data sets collected across various projects –
  - Has come together to tell the story of a waste sector that provides considerable social, environmental and economic opportunity for South Africa
  - Through numerous first-of-a-kind studies (e.g. types and quantities of waste, the organisational make-up of the sector, appropriate policy responses for SA)
- Committed to driving research, development and innovation in partnership with government and business in support of maximum value recovery from waste as outlined in the National Waste RDI Roadmap

Thank you

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