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## Connective Cities Workshop on Integrated Waste Management

Musa Jack/Ika Magasa – Pikitup, City of Johannesburg:

Paradigm shift towards Waste Minimisation



# Context

- Joburg population – 4.7m ; about 1m households
- PIU manages about 1.4m tones per annum
- Disposing about 90% of waste to landfills
- Target: 20% diversion by 2016, 93% by 2040
- 42 drop off centres (garden sites), 4 landfills, 11 depots
- Two models are applied i.e
  - Community based approach (Jozi@Work)
  - Partnering with private sector for technological solutions towards diversion



## Typical Landfill Airspace

Landfill	Geographical area	Years left
Marie Louise	West	6
Ennerdale	South	13
Robinson deep	Central	7
Goudkoppies	South	15
Average		9

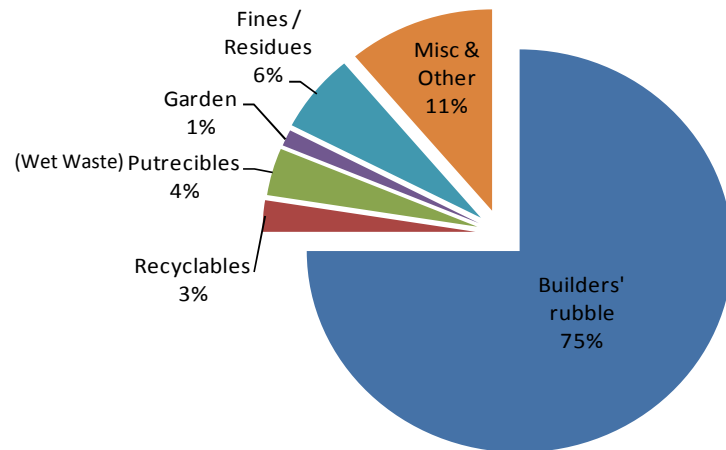
Note: - No City managed landfills in the North of the City



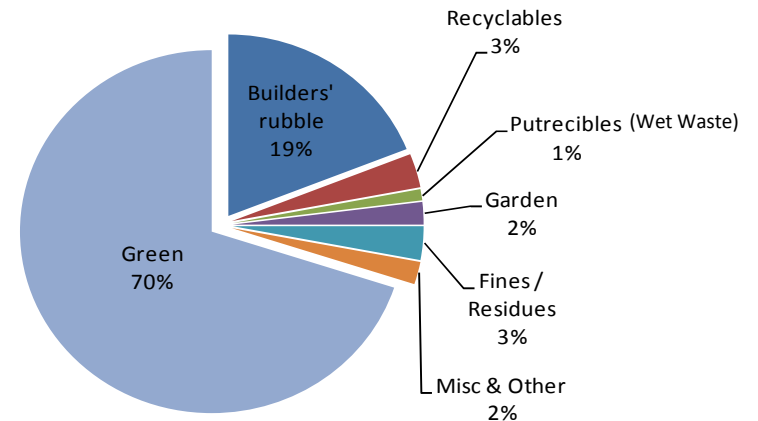
# Waste character

Management of different waste streams and effecting changes at the operational level

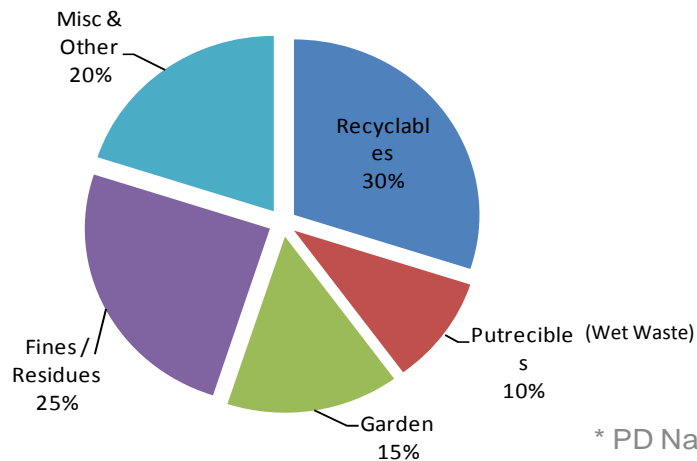
**Illegal Dumping**



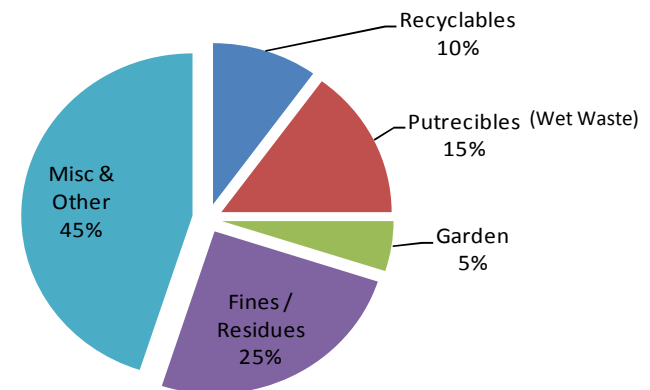
**Garden Sites**



**RCR**



**Informal settlements**



\* PD Naidoo (2007)



# Paradigm shift

Today

Proposed Strategy

0%

7%

0%

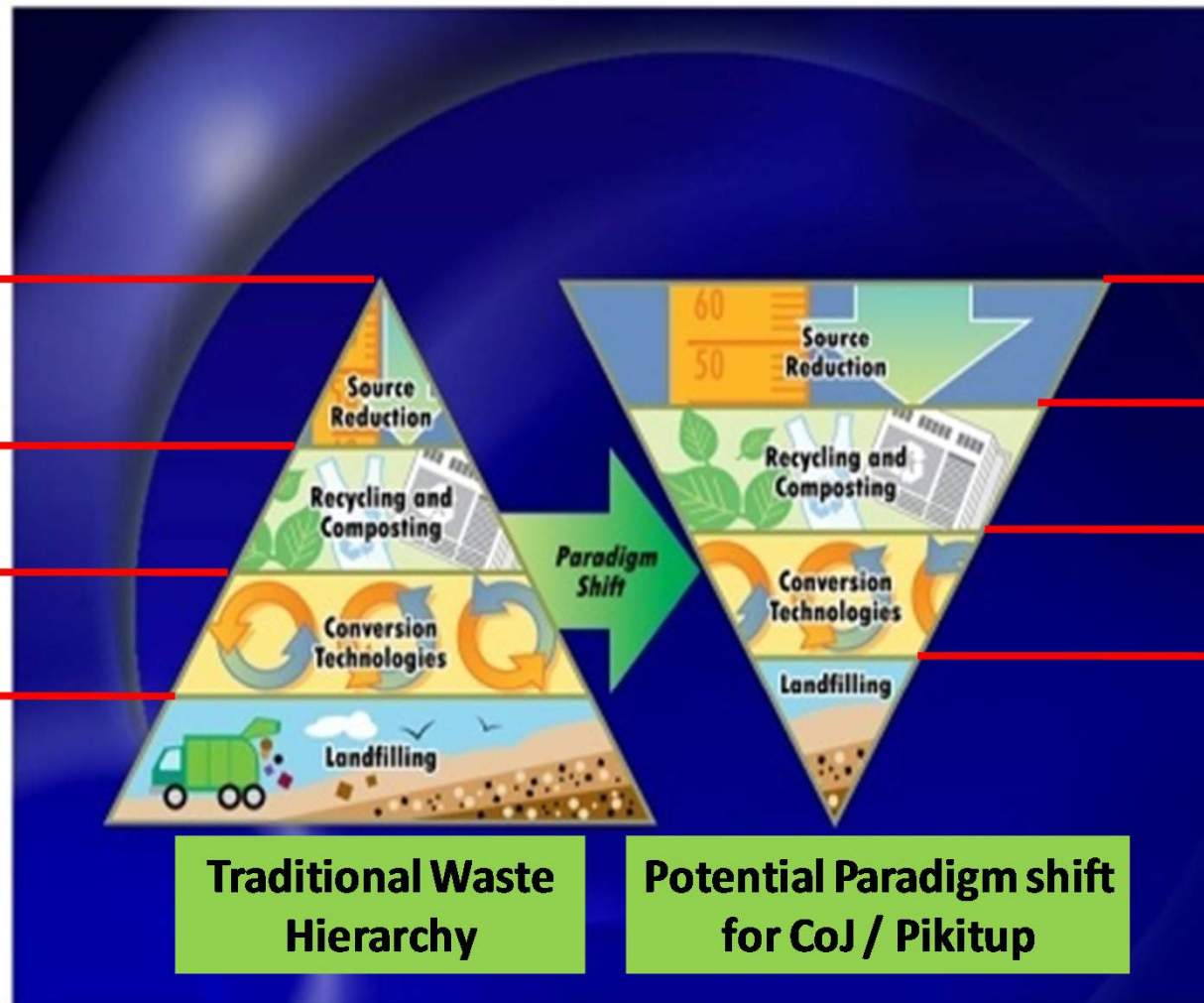
93%

20%

33%

40%

7%





## Projected diversion targets

Programme	Indicator	Targets			
		2014/15 baselines	2015/16	2016/17	2017/18
Waste diversion from landfills	Tons of green waste per annum	27000t	60 000t	120 000t	170 000t
	Tons of builders rubble per annum	7000t	50 000t	100 000t	150 000t
	Tons of dry recyclables per annum (S@S)	18000t	60 000t	80 000t	100 000t
	Tons of food waste per annum	0t	10 000t	15 000t	20 000t
	TOTAL		180 000t	315 000t	440 000t



# Waste Minimisation Plan

Pikitup commissioned the development of the WMP as a direct response to the need to invert the waste triangle such that only 7% of waste is diverted to landfills by 2040 as outlined in the City's (GDS).

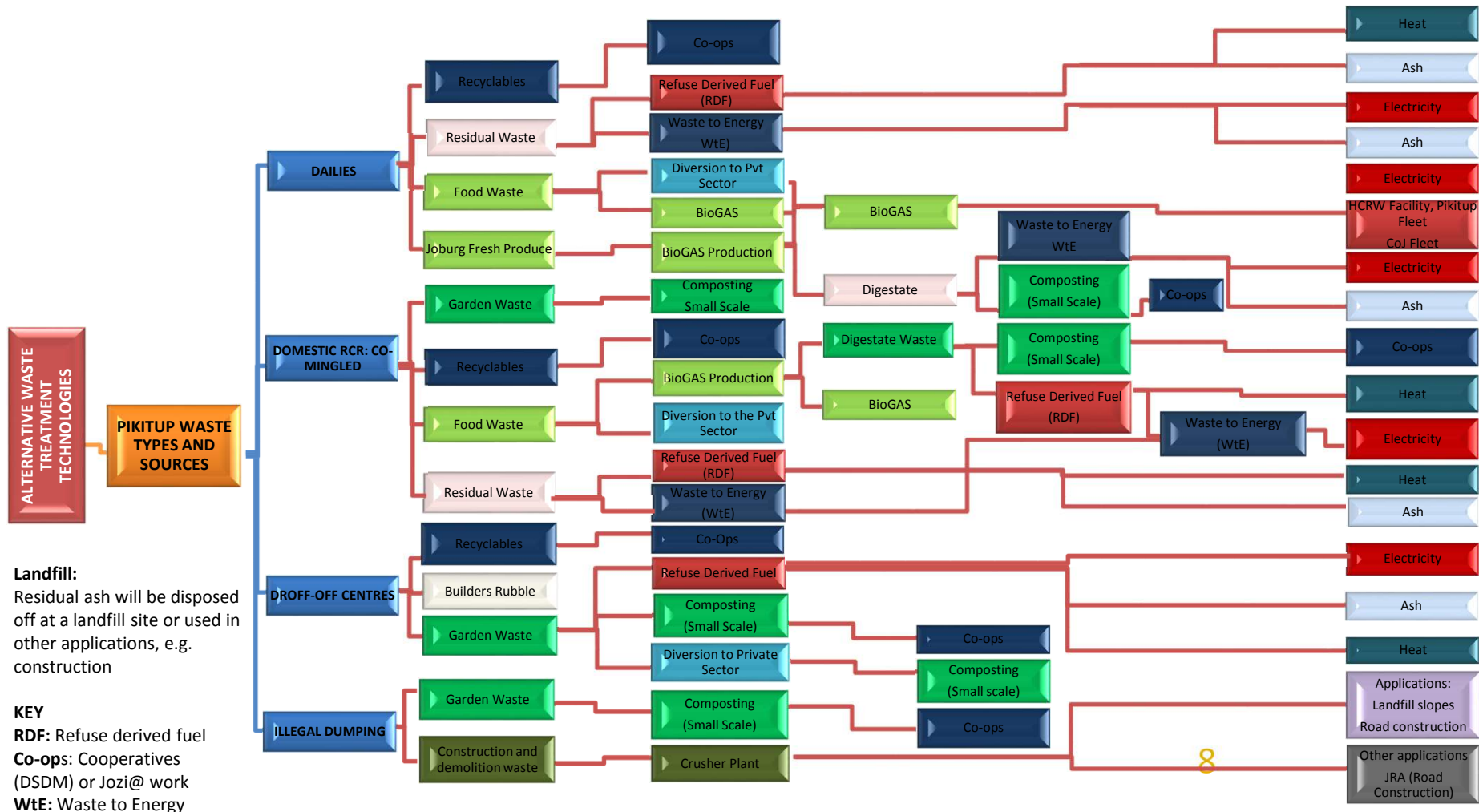
The plan:

- tackles all 4 pillars of triangle inversion (as illustrated in previous slide) i.e waste avoidance, recycling and composting, waste treatment technology solutions and landfilling.
- proposes interventions to manage all waste streams i. e recyclables, green, food, builders' rubble, tyres and e-waste.
- proposes interventions over immediate, short, medium and long term – until 2040





# WMP initiatives







## Recycling – Dry waste

- Commenced in 2009 as a pilot
- Mainstreamed as part of operations since 2013
- Rolled out in +/- 469 000 households (8 depots)
- Development service delivery model – coops
- 24 coops, over 500 jobs
- 27% participation rate
- Education and Awareness initiatives need attention
- 13 591t during 13/14 FY,
  - does not include diversion by private sector and reclaimers and “trolley pushers”
- Infrastructure development: BBC, Upgrading of garden sites/drop off centres and landfills, mobile facilities, static facilities, recommissioned MRF
- 2016 target – roll out citywide: community and pvt sector collaboration



# Mobile recycling facility





# Recycling bins







# Sorting Facilities





## Garden waste

- Approved Green Waste Strategy – incorporated into WMP
- PIU manages about 170 000t
- Diverted 17 487t in 2013/14, 27 000t in 14/15
- Procured 4 chippers
- Model: collaboration with private sector: composting, pelletisation



# Chippers





## Food waste

- 27 000t (JFPM and commercial customers)
- Excludes households/ other commercial/ institutions
- Feasibility study during 2014/15 for bio gas production
- Targetting Robinson Deep landfill site for Bio Digester
  - Propelling of facilities and fleet





## Builders Rubble

- 6 mobile crusher plants have been purchased
- Design for the Crusher Facility in Linbro Park (closed landfill site) will be conducted during 2014/15
- Will utilise crushed material as landfill cover and will recycle where possible
- Look into opportunities of partnering with community enterprises



# Builders rubble crusher plant





## Residual waste

- Process underway to establish 1<sup>st</sup> WtE plant
- PPP process
- Transactional Advisor appointment
- Waste Characterisation has underway
- 1<sup>st</sup> of 6 envisaged plants



# Tyres and health care waste

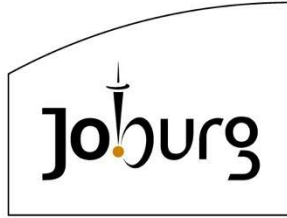
- Tyres – dispose through Redisa
- Medical waste:
  - Recommisioning of Robinson Deep Facility
  - Feasibility Study and EIA underway



## Integrated Waste Management Facilities

- Address challenge of depleting airspace
- Without being perceived to be adopting conventional approaches
  - Therefore IWMF
- Integrated facility to incorporate disposal, composting, recycling, AD, drop off centre, transfer station
- Opportunities for a Regional Facility





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**THANK YOU!**