

# Food waste in South Africa: Opportunities and challenges

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Competency Area: Solutions for a Green Economy

Operating Unit: Natural Resources and the Environment



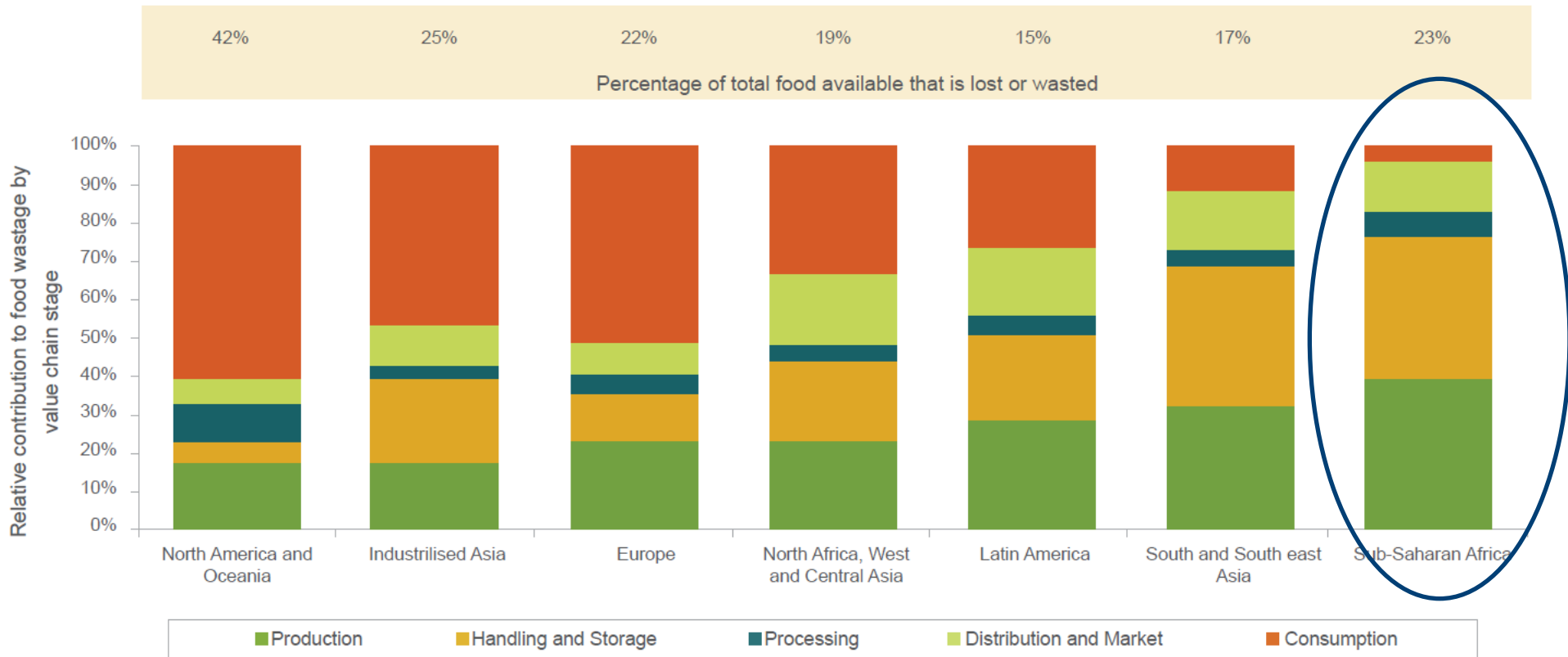
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# Motivation for the research

- Food is treated as a disposable commodity
- Food waste has a triple negative effect:
  - It impacts on food security
  - Resources used in food production and distribution are wasted
  - Environmental impacts throughout the supply chain
- Almost one in seven people globally are estimated to be undernourished

**It is estimated that globally between 30-50% of food produced is wasted before reaching consumers**

# Food loss by region and stage of the supply chain



Source: Lipinski et al. (2013). World Resources Institute (WRI) analysis based on data in Global Food Losses and Food Waste (FAO 2011).

# Estimated waste percentage for each commodity group in each step of the food supply chain for sub-Saharan Africa

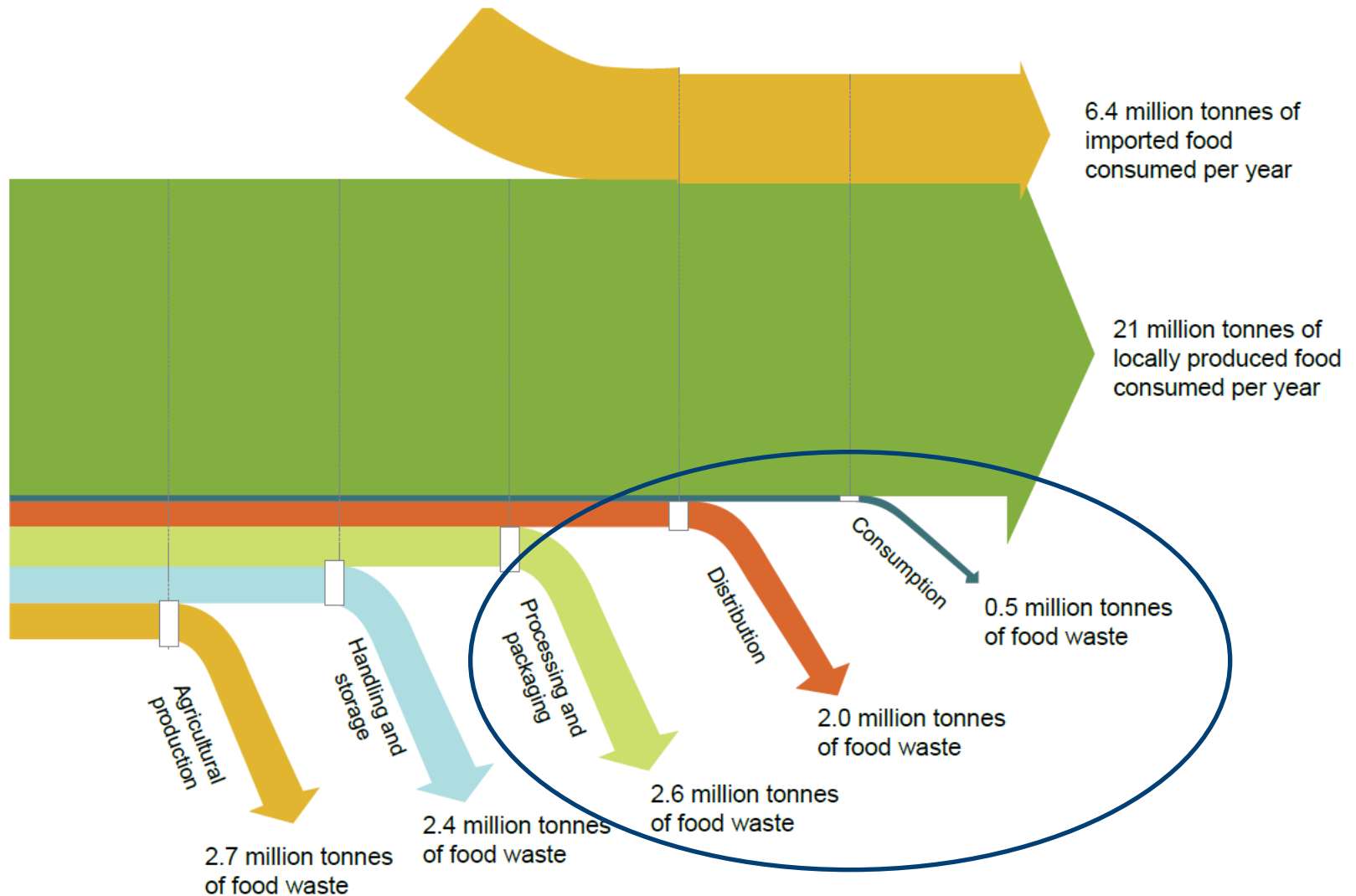
Commodity group	Agricultural production	Post harvest handling and storage	Processing and packaging	Distribution	Consumption
Cereals	6.0%	8.0%	3.5%	2.0%	1.0%
Roots and Tubers	14.0%	18.0%	15.0%	5.0%	2.0%
Oil seeds & Pulses	12.0%	8.0%	8.0%	2.0%	1.0%
Fruits and Vegetables	10.0%	9.0%	25.0%	17.0%	5.0%
Meat	15.0%	0.7%	5.0%	7.0%	2.0%
Fish and Seafood	5.7%	6.0%	9.0%	15.0%	2.0%
Milk	6.0%	11.0%	0.1%	10.0%	0.1%

# Magnitude of food waste in SA

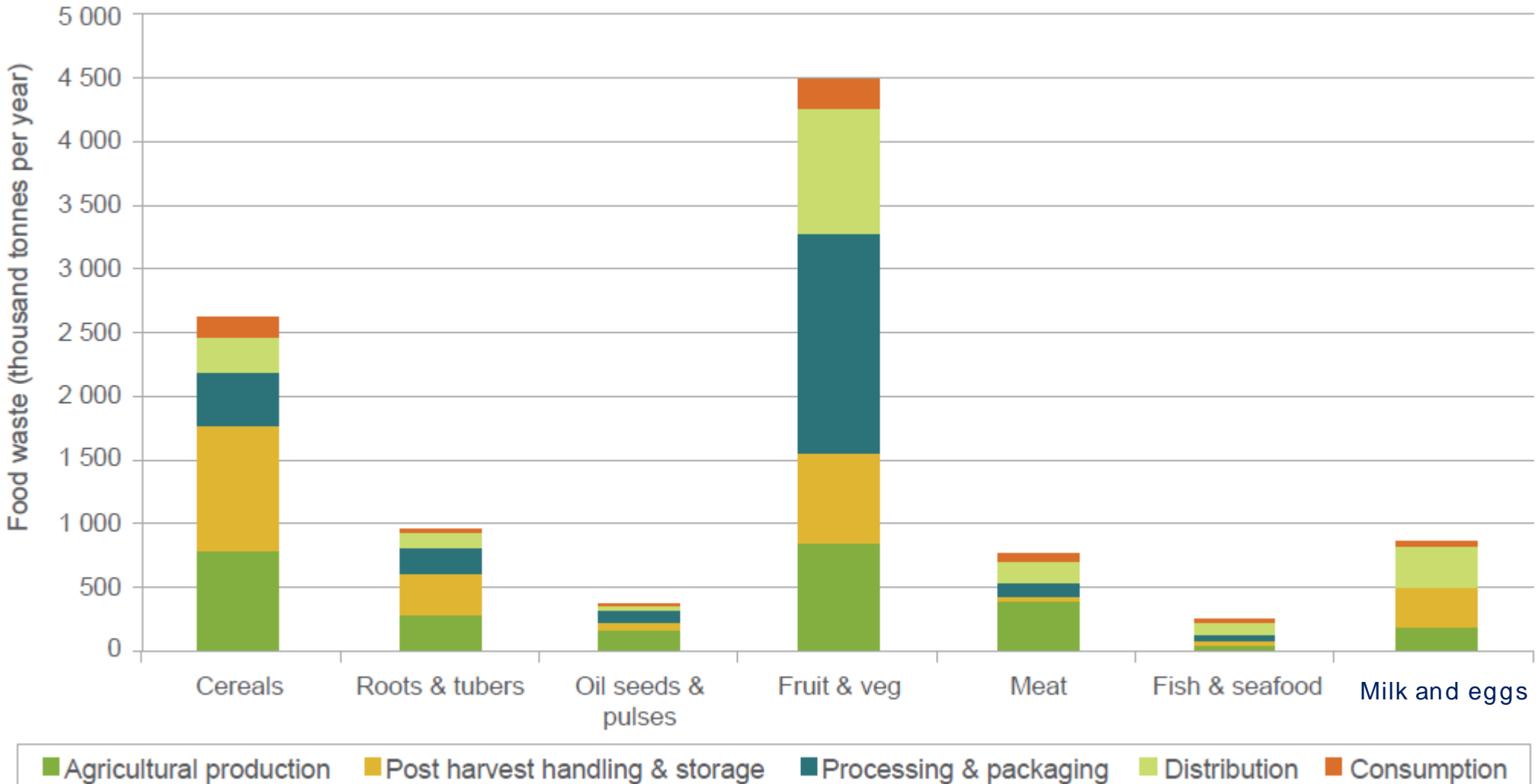
Food waste from local production only  
= 9.04 million tonnes per annum  
= 31.4% of average annual production

Food waste from local production + imports – exports  
= 10.2 million tonnes per annum

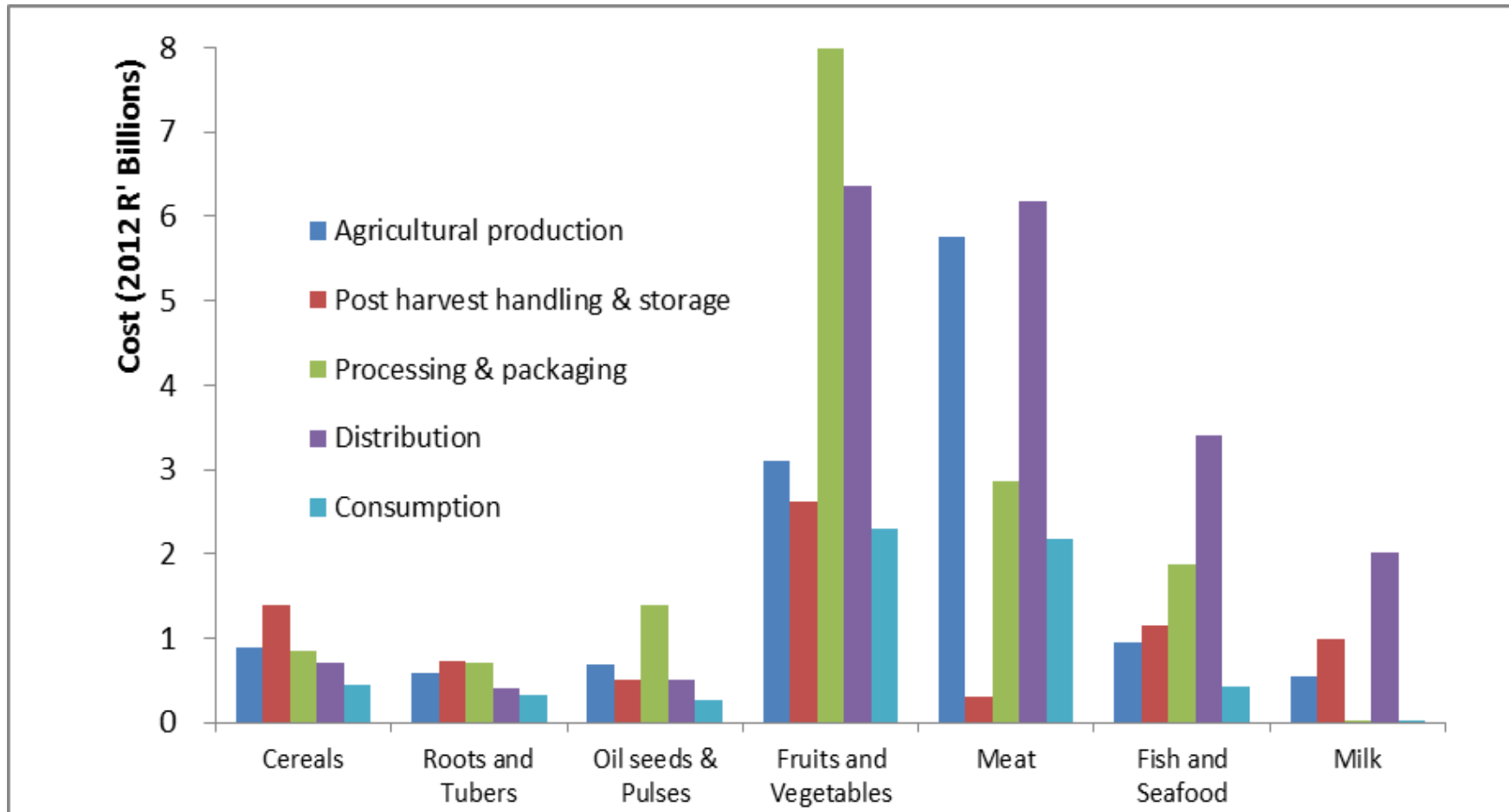
# Estimated food waste throughout the supply chain in SA



# Estimated food wastage in SA by commodity group



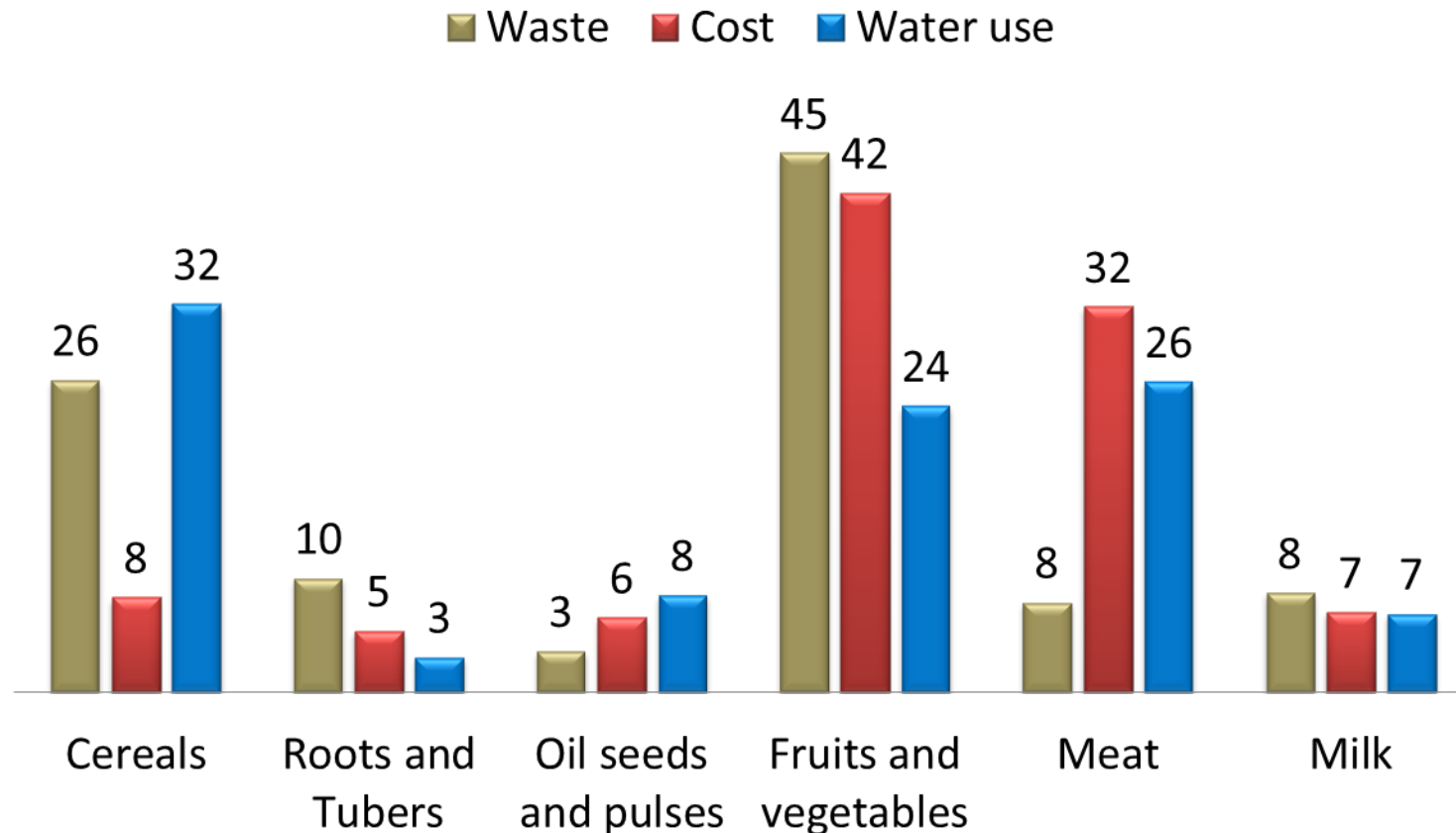
# Cost of food waste in each stage of the value chain for each commodity in SA



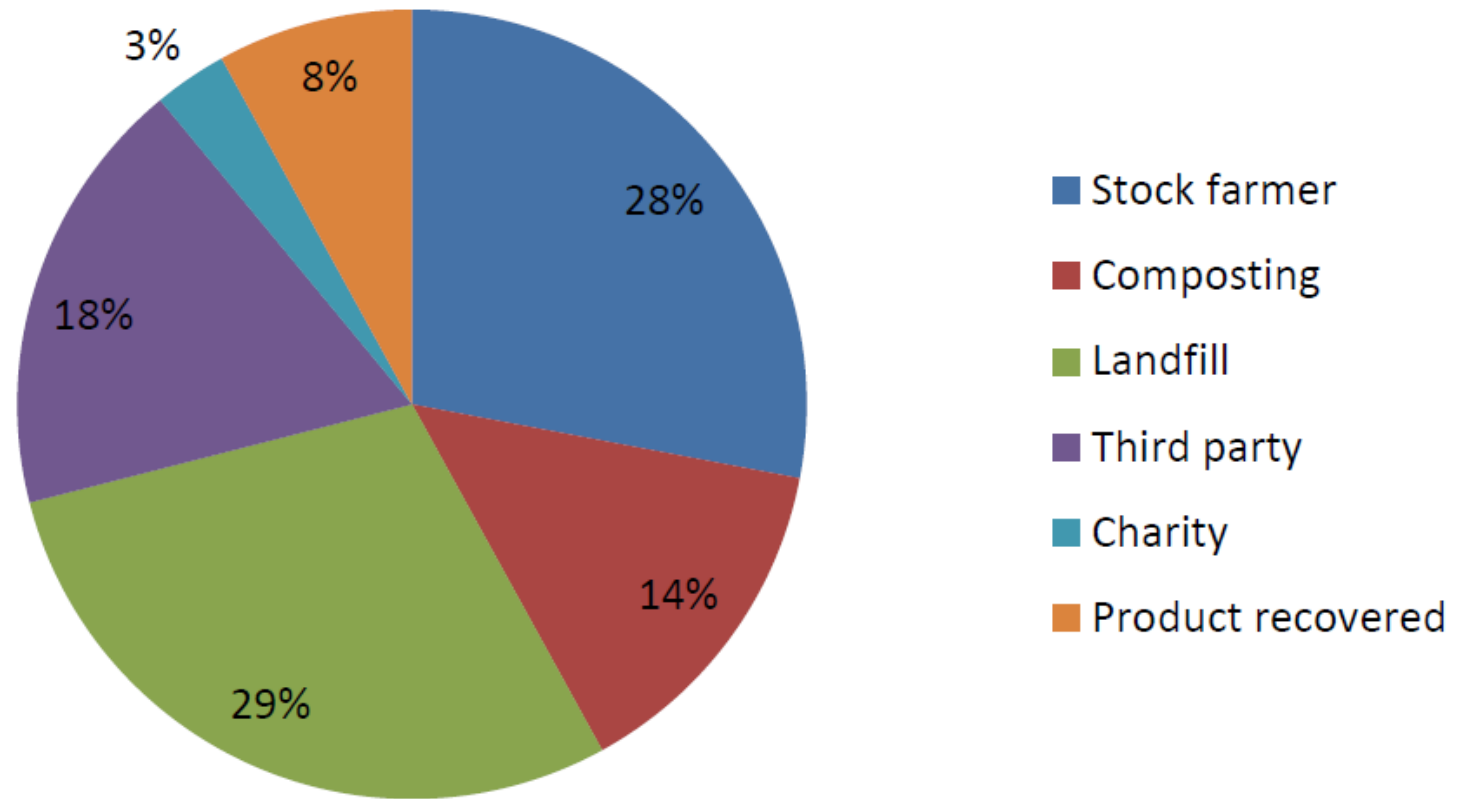


# Percentage contribution per commodity group in South Africa

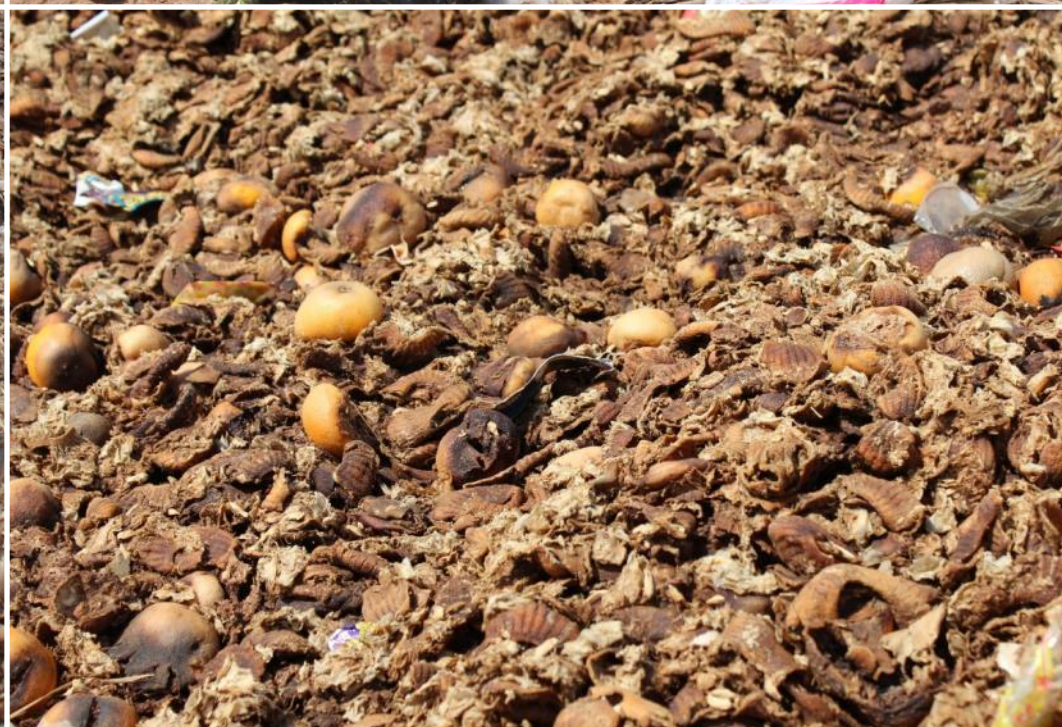
## Relative contribution per commodity type



# Current waste management practices in the supply chain of Woolworths



Source: Hayes, 2011



# Percentage by weight of food waste in SA households

City	Source	Waste category	Low income (%)	Middle income (%)	High income (%)
Cape Town	Department of Environmental Affairs and Tourism (1999)	Kitchen waste	8.16	8.97	4.76
Johannesburg	Jarrold Ball and Associates (2001)	Putrescibles	19.42	10.63	7.31
Rustenburg	Silbernagl (2001)	Putrescibles	26.67	13.33	16.67
<b>Average</b>			<b>18.08</b>	<b>10.98</b>	<b>9.58</b>

Source: Nahman et al., 2012

# Average quantities of household food waste generated in SA

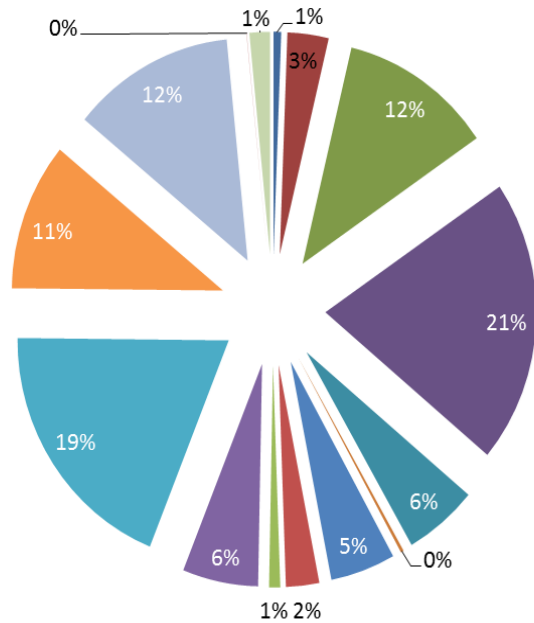
<b>Income level</b>	<b>Domestic waste (tonnes / annum)</b>	<b>Food waste (%)</b>	<b>Food waste (tonnes / annum)</b>
Low	5 600 116	18.08	1 012 688
Middle	2 929 639	10.98	321 577
High	1 093 352	9.58	104 713
<b>Total</b>	<b>9 623 106</b>		<b>1 438 977</b>

Source: Nahman et al., 2012

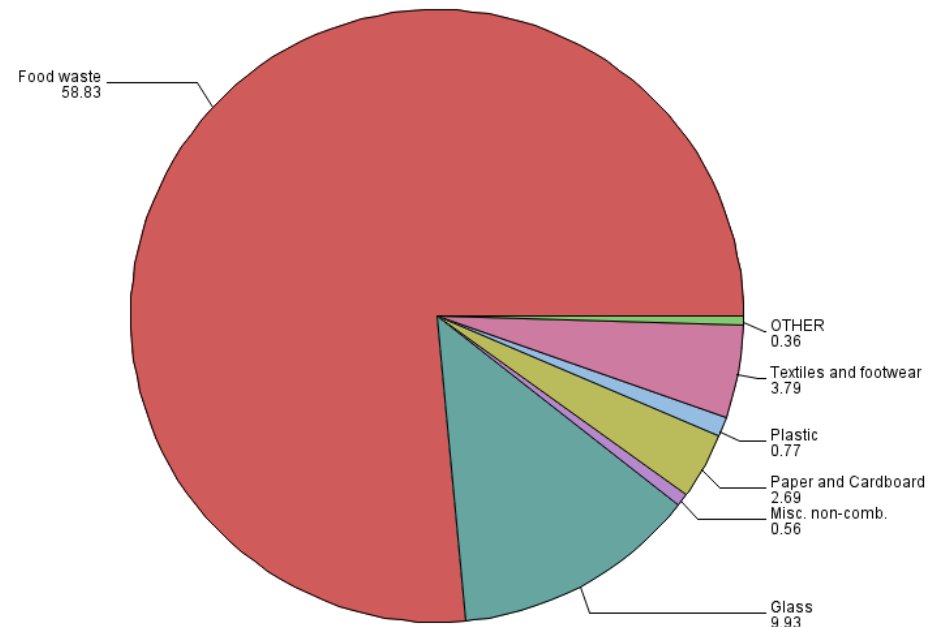
# Municipal waste composition – preliminary results

**Total RCR waste**

- E- WASTE
- Garden waste
- Healthcare waste
- Miscellaneous non-combustible
- Textiles and footwear
- Fines (<10mm) Not specified
- Glass
- Metal: ferrous and non-ferrous
- Paper and Cardboard
- Tyres
- Food waste
- Hazardous wastes
- Miscellaneous combustible
- Plastic
- Wood waste



**Waste categories for streep sweepings**



# Responding to the problem

- When considering cost, interventions should focus on:
  1. Processing and packaging of fruit and vegetables
  2. Distribution of fruit and vegetables
  3. Production and distribution of meat
- When considering water, interventions should focus on:
  1. Cereals;
  2. Meat;
  3. Fruits and vegetables
- Alternative waste treatment technologies must be considered:
  - Energy production
  - Composting
  - Source of valuable functional compounds such as antioxidants

# Opportunities

- Waste legislation require reporting of waste quantities into the South African Waste Information System
- The National Waste Management Strategy set targets for diversion of organic waste from landfill
- Large gaps in information and knowledge to be filled
- Potential for collaborative research
- High potential for student involvement on projects
- Potential for multidisciplinary approach to research



# Challenges

- Funding for on-going research
- Lack of accurate data on food wastage at all stages of the value chain
- Lack of information on the contribution of the informal sector
- Robust quantification methods needs to be developed and standardised
- Published research are mostly high level global estimates based on assumptions which needs to be verified

# Conclusions

- Estimates of food waste in South Africa is based on assumptions and calculations
- Pre-consumer food waste should be a bigger concern than post-consumer in SA
- Only the formal sector is accounted for while a large informal sector is active in SA from production through processing to retail
- Flaws in assumptions needs to be corrected through primary data collection in SA

# Thank You

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