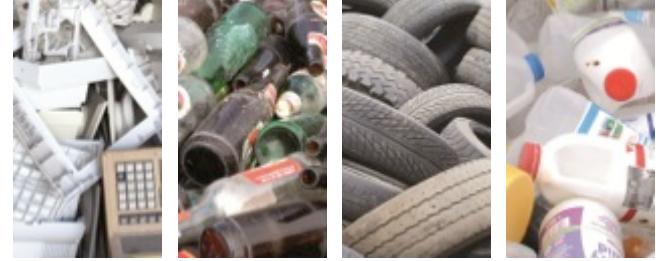




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Waste Minimisation in Cape Town

~ WasteEcoSmart Delegation ~

6 November 2015

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Head: Waste Minimisation
Solid Waste Management Department

Making progress possible. **Together.**

Presentation Structure

- Introduction to Cape Town
- Cape Town's waste composition
- CoCT's waste minimisation infrastructure
 - MRF's and Drop-off sites
 - Pyrolysis Plant
- Selected CoCT WM Programmes and Research
 - Think Twice, CoCT Waste Streams, Home Composting
- Waste Minimisation Statistics
- Waste Minimisation: Mechanisms, Barriers and Economic Considerations
- Partnerships
 - Recyclers database, Waste to Art, IWEX, WISP



Introduction to the City of Cape Town (CoCT)



Cape Town Metropole

- 2444 km²
- Population 3.918 million (Stats SA - 2014 midyear estimate)
- Over 830 000 formal households
- 152 000 informal households & backyarders
- Generates > 2.5 million tons per year of waste

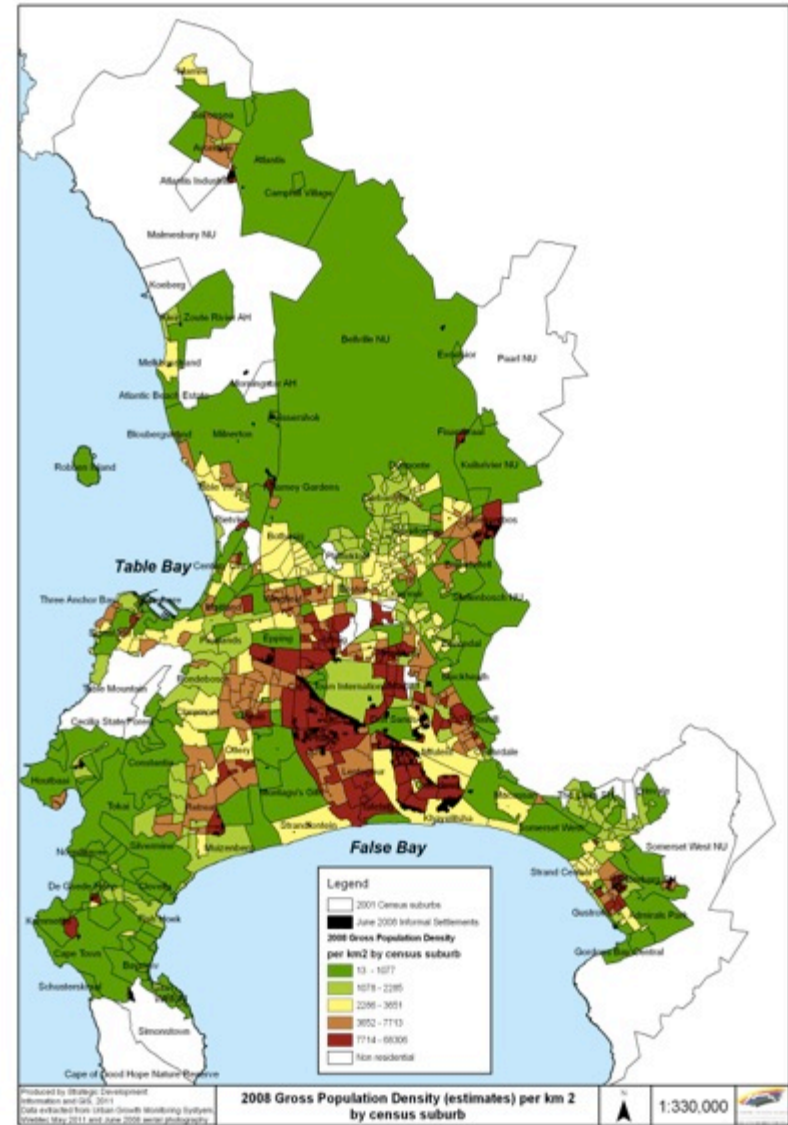
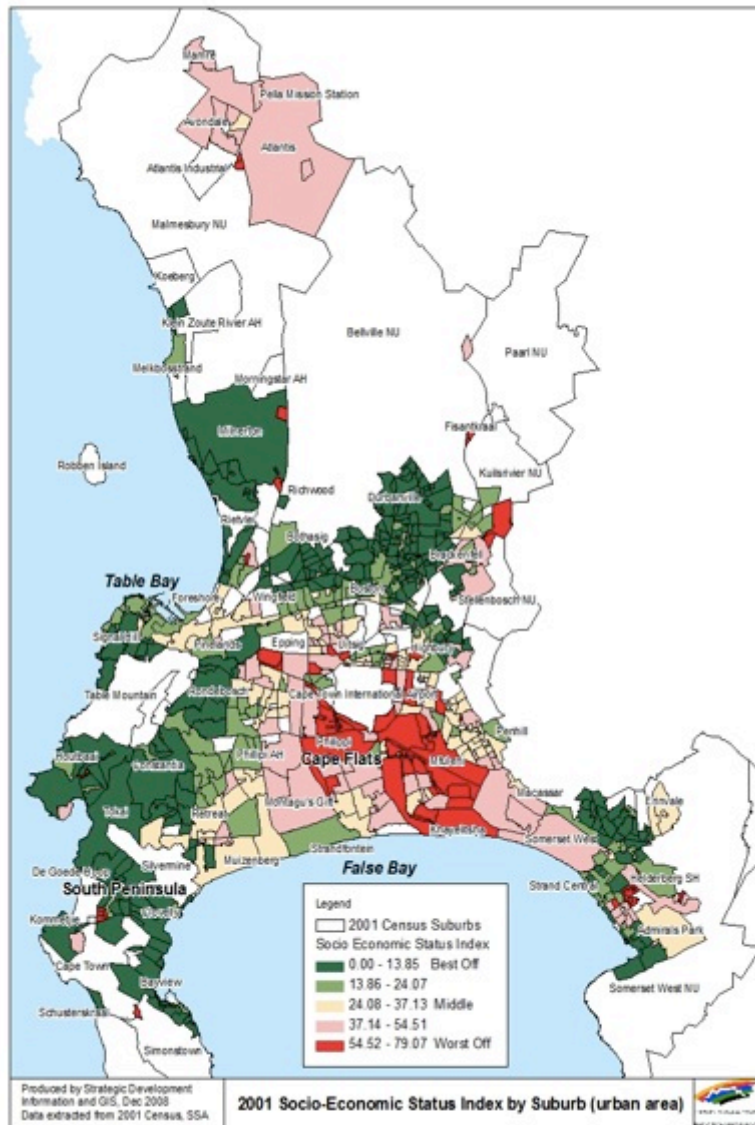
Municipality (CoCT) Legal Mandate

- Basic refuse collection for all
- Safe Waste Disposal
 - CoCT landfills - 1.6 m tons/year
 - (Pvt landfills - 0.6 m tons/year)
- Wall to wall cleaning of ALL public areas
- Ensure & enable waste minimisation & recycling (approx. 675 000 tons per year)



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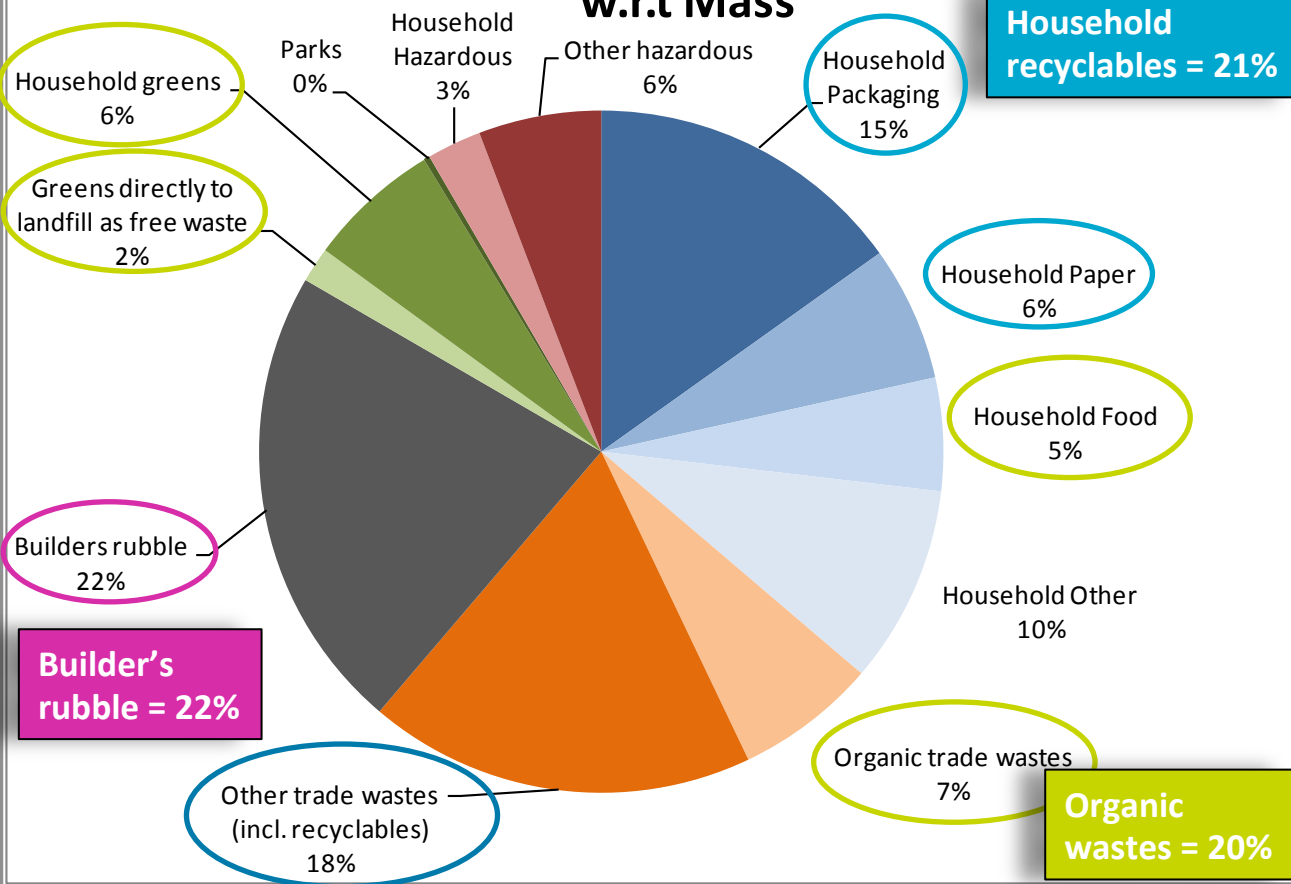
CoCT – Socio-economic status and population density



Cape Town's waste composition

Characterisation of Waste Landfilled

w.r.t Mass



❑ CT's total waste:
> 2.5 M tons/year

Approximately **27%** of **TOTAL waste stream** (by mass) diverted from landfill
(MSA S78 Report, 2011)

❑ **18.2 % = Pvt. Sector**
❑ **8.8 % = CoCT**

Landfilled waste ≈
45% = residential
55% = commercial & industrial

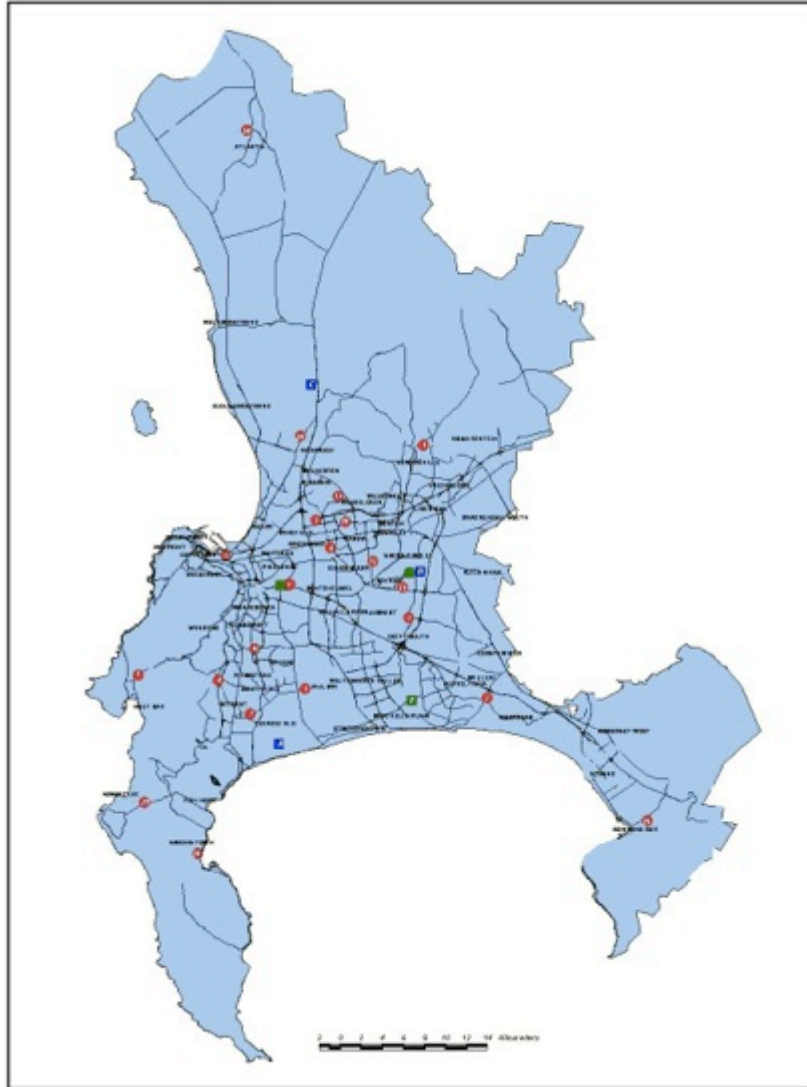


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CT's Waste Minimisation Infrastructure

Overview of CoCT's waste minimisation infrastructure



- 19 stand-alone drop off sites – recycling &/or garden waste chipping contracted out
- 5 Drop Off sites attached to Landfills/ Transfer Stations – chipping of garden waste
- 1 dirty Material Recovery Facility (ARTS) – Recycling contracted out
- 1 clean Materials Recovery Facility (KIWMF) – Recycling contracted out
- Bellville Compost Plant – In-house composting
- Pilot Pyrolysis Plant – Kraaifontein
- Construction Waste Crushing contracted out at various Landfill Sites from time to time



CoCT integrated refuse transfer stations ~ with materials recovery facilities (MRF's) ~

Athlone Refuse Transfer Station (ARTS) and dirty MRF*



Kraaifontein Integrated WM Facility (KIWMF), incl. CLEAN MRF*



CoCT drop-off sites

~ garden waste and builder's rubble ~

- Residents drop off **clean builder's rubble** free of charge at drop-off sites
- This is transferred to landfill, where crushing contracts are in place from time to time

- Residents drop off **garden waste**, which is chipped onsite and transported to composting industry
- **Over 10 000T/Month garden waste is diverted from landfill**



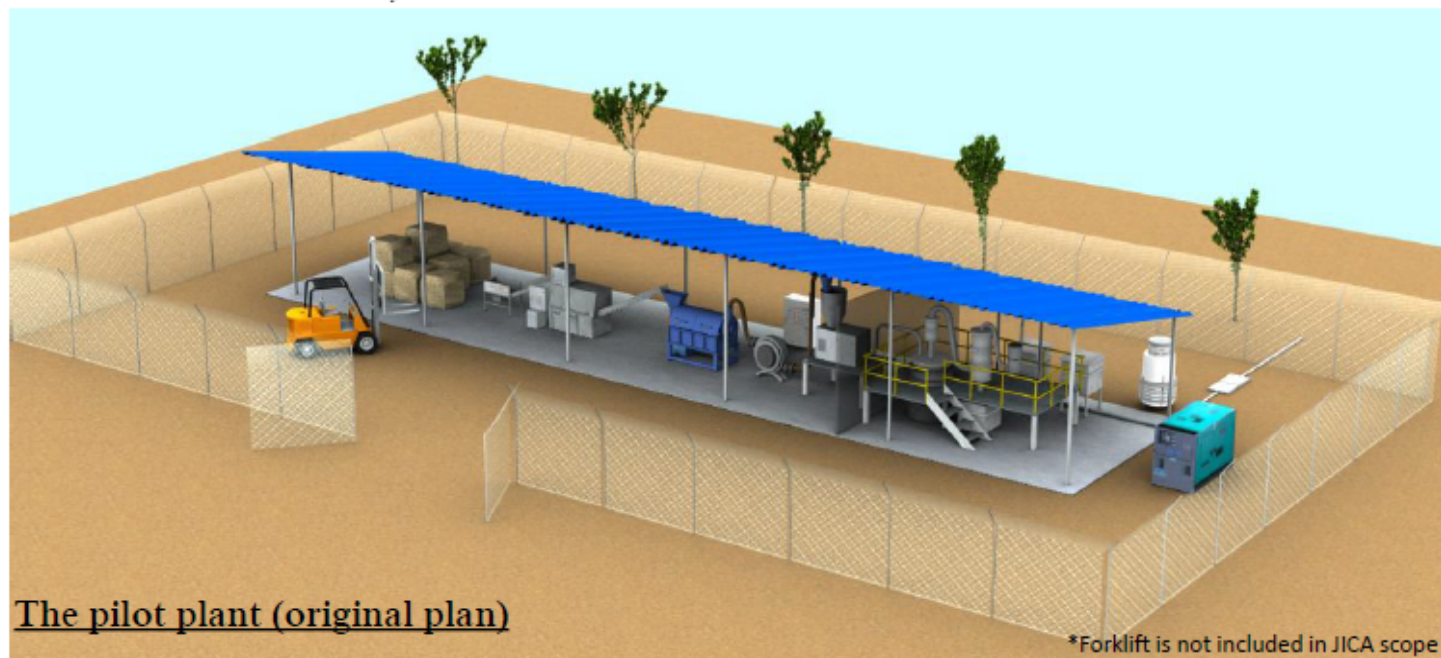
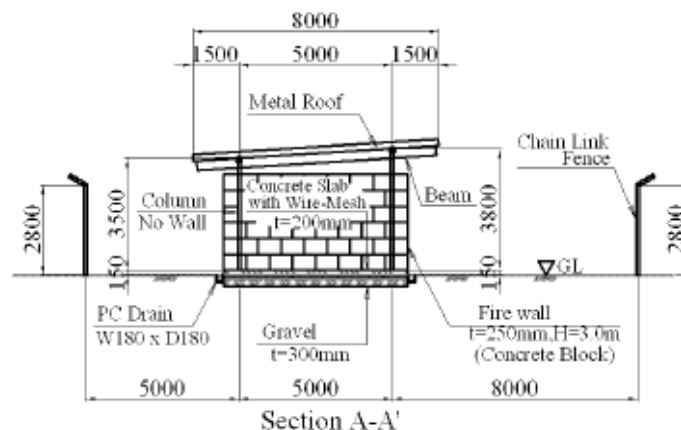
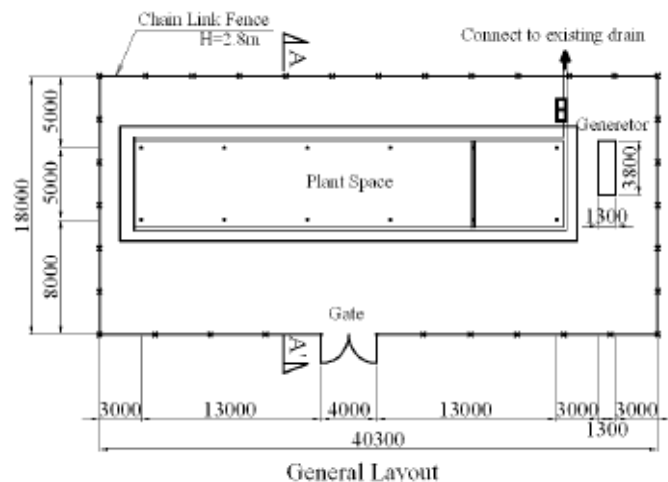
CoCT stand-alone drop-off sites ~ recycling and wood recovery ~

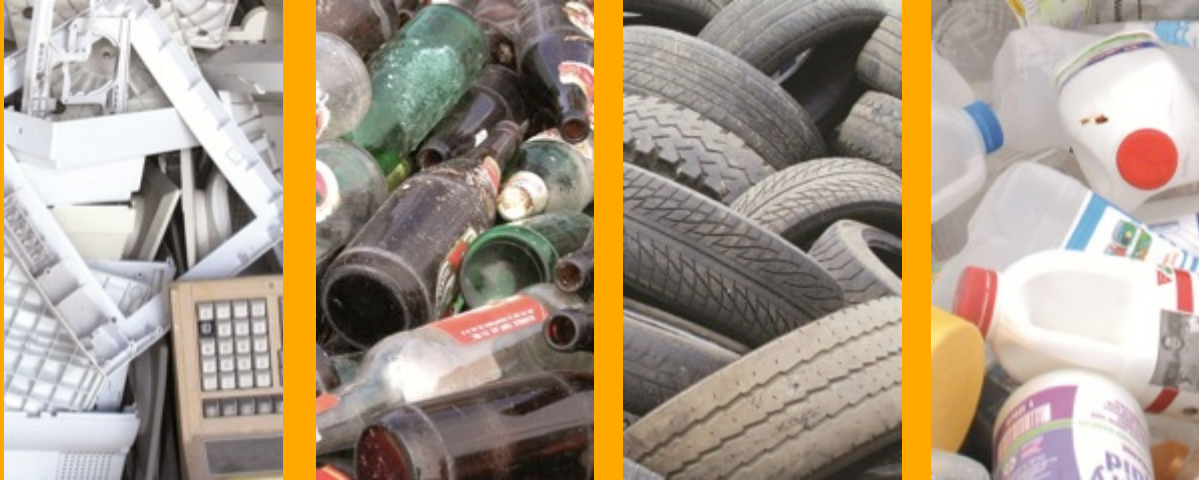
- **Entrepreneurs** contracted per drop-off site to recover all waste types which can be re-used or recycled
- **Empowerment to 10** mostly SMME entrepreneurs
- **Over 500 T/Month** currently recovered at drop-off sites*



- **Residents** drop off wood offcuts, planks and pallets at the drop-off sites
- Pilot project planned to **understand the composition** and **investigate alternative uses** for these products

CoCT (South Africa) – JICA (Japan) pilot pyrolysis plant ~ plastics to oil ~ **Launched 4 Nov 2015**





Selected CoCT Waste Min Programmes & Research

Recycling of City of Cape Town's waste streams

- **CT Civic Centre** - one of over 250 City Admin buildings involved in **paper recycling programme**
- Approximately **140 tons** recycled per year
- **Awareness programmes** for staff on minimising paper/cardboard

Internal CoCT waste streams are recycled, such as paper, cardboard, used oil & scrap metal



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CoCT home composting research and rollout



Research Phase (2012-2014)

(approx. 700 participants)

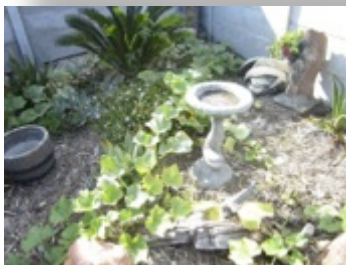
- Low and middle income areas & 2 schools
- Participants received composter, data recording booklet & instructions

Results:

- From reported data – over 38 Tons organic waste landfill diversion
- Average 16.9 kg organic waste/hh/month

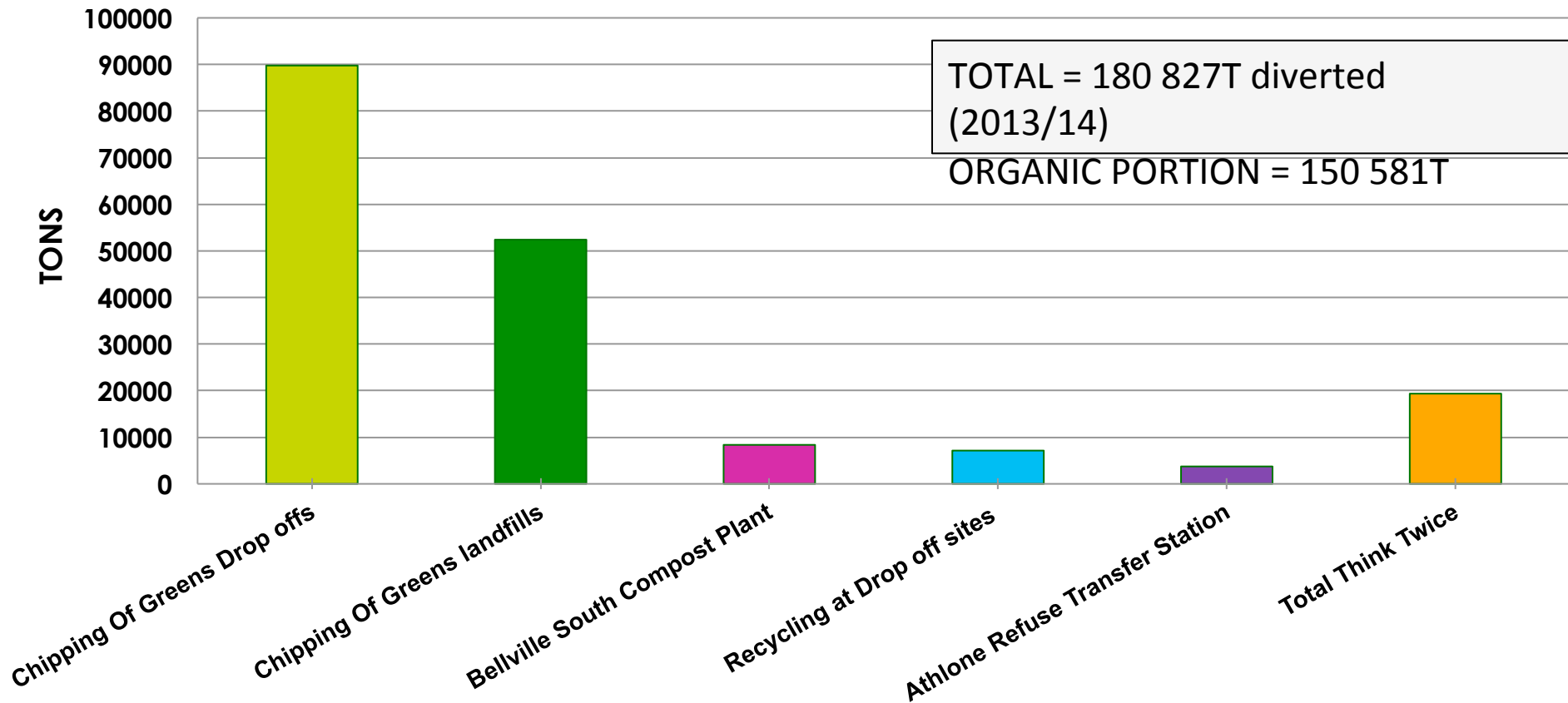
Extension Phase & Willingness to Pay Survey

- **SWM Dept Plans:** Test 5000 composters in 2016
- **Market Research:** 2015 – Over 8000 residents surveyed:
 - Would you participate in Home Composting (& Think Twice Recycling)?
 - What would you pay for the Composter?



Waste diverted from landfill ~ 2013-14 (City programmes)

Waste Diversion - July 2013 to June 2014





Waste Minimisation: Mechanisms, Barriers and Economic Considerations

Organic waste



CT – Mechanisms

(6.5%)*

- ***Home and worm composting**



- **On-site processing - e.g. composting/ AD (commercial)**



- ***Dropping off green waste @ drop-offs**

- **Separate municipal collections**
 - garden waste
 - kitchen waste

Barriers

- Public acceptability (gross factor)
- Perceived effort (hard work)
- Lack of incentives
- Cost

- Capital cost/payback
- Lack of perceived benefits
- Lack of technology knowledge
- Scarcity of service providers

- Convenience (distance)

- No of drop-offs
- Transport/ Effort



- Double municipal cost (vehicles, drivers, fuel) – who pays?

Paper & packaging waste



CT – Mechanisms

(1.5%)*

- * Think Twice separation at source (\$@S) programme



- Participation rates 13% - 60%: (n=8)

- * Dropping off recyclables at City drop-off sites



- Commercial:
 - Onsite sorting, separation & recycling

Barriers

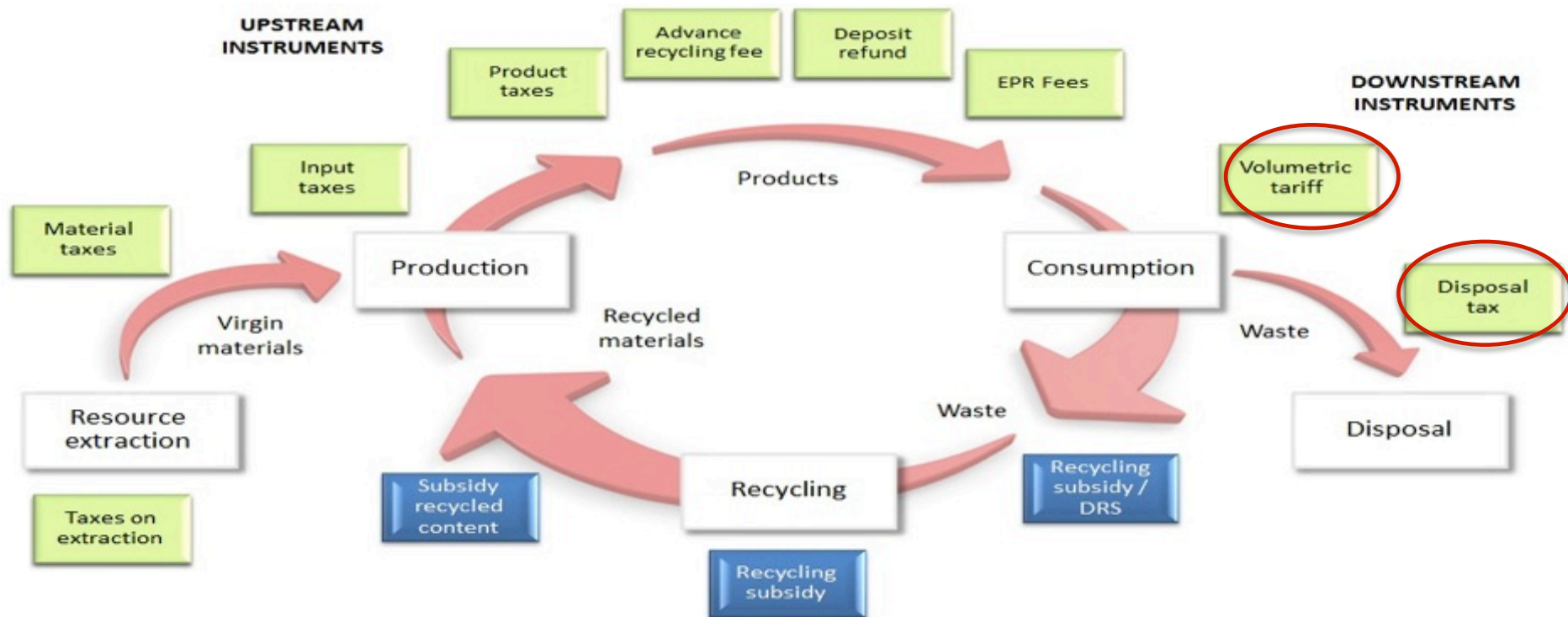
- Values & beliefs don't prioritise recycling (why should I?)
- Lack of incentives
- Cost (rollout barrier)
- Convenience (distance)
- Long process: open new drop-offs
- No of drop-offs
- Transport/ Effort (some = perceived)
- Corporate recycling culture
- Reliability of service providers
- Cost effectiveness (market fluctuations)

Recycling: Waste = Resource ~ Complex value chain



Draft Waste Pricing Strategy – NB: Research municipal impact

Legislative framework – Waste Pricing Strategy (Draft for comment Jan 2015)



- ❖ **Volumetric Tariffs:** - charge variable rates, based on quantity of waste collected (i.e. **volumetric tariffs** or “pay-as-you-throw”). Quantities assessed by weight or no of containers or bags
- ❖ **Disposal Taxes:** - a tax on landfilling (over-and-above landfill tipping fees) – would be payable by landfill operator/owner to SARS

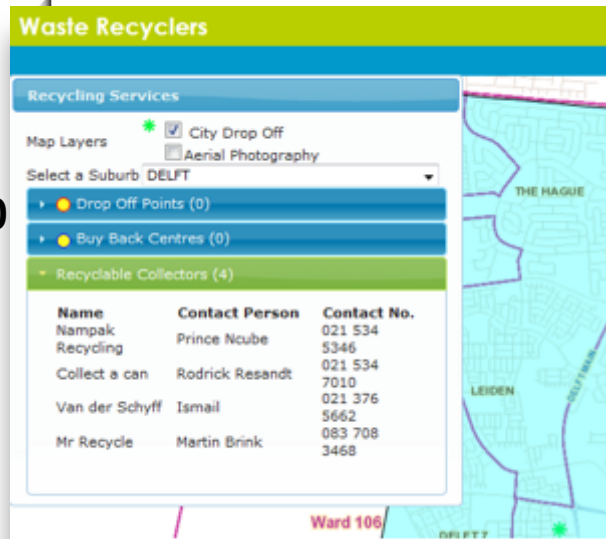


Partnerships

Recyclers database and assistance

- **Recyclers Database:**
- CoCT administers database of > 110 recycling businesses in CT
- **Being converted into Recycling Interface:**

- Log into City's Internet
- Search for Pvt. Drop-offs & Recyclers in your suburb + details



- **Recycling Entrepreneurs:**
- CoCT partners with recycling industry associations to offer recycling entrepreneurs
- **Business skills and training courses**
- **Relevant advice**
- **Networking**



“Waste to Art” entrepreneur assistance/markets



- CoCT has network of **“Waste artists/crafters”**
- Hold “Waste to Art market for public each December to assist these ± 40 entrepreneurs and raise public awareness to minimise waste



Integrated Waste Exchange **IWEX**

Free, online system to encourage schools/communities/businesses to exchange waste.

Benefits:

- **save costs, reduce waste & be green**

Recently upgraded:

- **Revise branding**
- **Increase user-friendliness of IWEX**
- **Add new features (such as photo upload ability)**
- **Bring IWEX in line with new legislation**
- **Increase accuracy of reporting**



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Get your BUSINESS CONNECTED

IWEX INTEGRATED WASTE EXCHANGE
Save costs. Reduce waste. Be green.

**ATTENTION, CAPE TOWN-BASED BUSINESSES
AND ALL POTENTIAL USERS OF WASTE MATERIAL**

WHAT IS IWEX?

- A FREE online waste exchange platform hosted by the City of Cape Town.
- Connects your business's unwanted by-products or waste with another business's needs.
- Join the IWEX business community and discover waste exchange opportunities.

WHO CAN USE IWEX?

Commerce and industry, businesses, non-governmental organisations (NGOs), community organisations, institutions, schools and individuals. Cape Town-based businesses and NGOs are invited to post waste items on the site which can be traded with any potential user of waste material worldwide.

IWEX OPPORTUNITIES AND BENEFITS

- Unlocks a market for your unwanted materials
- Cuts waste costs and improves your business's sustainability
- Improves your business's environmental and social responsibility image
- Conserves energy, resources and landfill space

IWEX is firmly rooted in the saying: "One person's garbage is another person's gold"

GET CONNECTED – GET **IWEX**
www.capetown.gov.za/iwex



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Making progress possible. **Together.**

Western Cape Industrial Symbiosis Programme



Funded by: **Delivered through:**



**Connecting Industry,
Creating Opportunity**

Collaborators:

International Synergies
industrial ecology solutions



- ▶ **WISP = Facilitated Industrial Symbiosis programme connecting businesses through cost effective waste exchange “synergies”, using unused resources (materials, energy, water, assets, logistics, expertise) from other WISP network members.**
- ▶ **Based on the National Industrial Symbiosis Programme (NISP) in UK**
- ▶ **Over 1000 T diverted since May 2013**
- ▶ **Over R4 Million revenue generated for participating businesses**



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Thank You

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Making progress possible. Together.

Websites for further information



Packaging Waste

www.pacsa.co.za



www.prasa.co.za



www.theglassrecyclingcompany.co.za



www.collectacan.co.za



www.plasticsinfo.co.za
www.petco.co.za
www.polystyrenepackaging.co.za
www.polyco.co.za
www.plasticsinfo.co.za/sapro.asp
www.plasticsinfo.co.za/sava.asp



Used Motor Oil

www.rosefoundation.org.za



Electronic Waste

www.ewasa.org
www.ewastealliance.co.za



Tyres



www.redisa.org.za
www.rubbersa.com



Other



www.capetown.gov.za/solidwaste
www.capetown.gov.za/iwex



www.iwmsa.co.za
www.recycling.co.za



www.ccdi.org.za