

# Current and New Approaches to Recycling Depots

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# Introduction

- Overview
- Canada examples
- European examples
- Key learnings and best practices
- Key recycling depot opportunities
- Technology example- Modulo Béton

# Recycling Depots

## Definition

- A facility that accepts recyclable materials and garbage delivered by residents and/or businesses to a standalone facility or a facility co-located in conjunction with other waste management infrastructure- e.g. landfill, transfer stations



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# Recycling Depots

- Rural areas- main infrastructure for all waste management
- Urban areas- overflow and infrastructure for recyclables not collected curbside.
- Can accept a wide range of recyclables including:
  - Printed paper and packaging- PPP
  - Organics
  - Municipal Hazardous and Special Waste- MHSW
  - Waste Electronics and Electrical Equipment- WEEE
  - Construction and demolition wastes- C&D
  - Textiles
  - Other
- Typically also accept garbage.



# Untapped Potential

- Canadians produce about 30 million tonnes/year of waste
- Only a small proportion of recyclables currently captured at recycling depots
- In some countries as much as 30% of residential waste is received at recycling depots
- Recycling depots represent a low cost option for diverting wastes
- Really operating a specialized transfer station

# Unorganized Potential

- Key Recycling Depot Challenges:
  - Poorly designed
  - Traffic flow issues
  - Limited recycling opportunities
  - Sometimes messy and unappealing
  - Health and safety issues
    - Failure to separate generator traffic from waste removal vehicles
    - Inadequate protection around bins



# Value Proposition

- Eliminate/avoid curbside collection costs (\$100-\$200/tonne)
- Opportunity to capture a wide array of wastes that would ordinarily be landfilled
- Re-use opportunities
- How do we create a pleasant and safe environment that will attract residents and businesses to divert more wastes?
- How do we make it part of a day out rather than a single stop trip?



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# Canadian Examples



# Ontario

## Recycling Depots

- Recycling depots usually accept more than one material
- PPP- 150 recycling depots
- Organics- 75 recycling depots
- WEEE- 120 recycling depots
- MHSW- 100+ recycling depots

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# Ontario

## Annual Tonnage

Waste Stream	Tonnes
Printed Paper and Packaging	42,000
Organics	126,000
WEEE	8,000
MHSW	18,000
Other (e.g. Textile, C&D)	112,000
Total	306,000
Kg Per Capita	24

# Saskatchewan

## Recycling Depots

- Recycling depots usually accept more than one material
- Beverage Containers- 70 recycling depots
- Printed Paper and Packaging- 53 recycling depot programs (of 67 programs)
- Organics- 15 recycling depots (best guess)
- WEEE- 75 recycling/retail depots
- MHSW- 75 recycling depots (paint)

# Saskatchewan

## Annual Tonnage

Waste Stream	Tonnes
Printed Paper and Packaging	20,500
Beverage Containers	19,000
Organics	20,000
WEEE	3,000
MHSW	400
Total	62,900
Kg Per Capita	57

# Saskatchewan

## 2012 Saskatchewan Datacall Analysis Report

- For Printed Paper and Packaging:
  - 53 depot programs
  - 44 kg/capita/year
  - \$363/tonne cost
- Lowest annual median net costs but also relatively low recovery for recycling depots
- While cost efficient on a per tonne basis recycling depots are not effective in recovering significant volumes of material.
- The vast majority of depot programs are small municipalities; however, Regina and Saskatoon were also depot-based programs (now curbside).
- Lots of potential...



The logo for 2cg, featuring the letters '2cg' in a large, dark blue, sans-serif font.

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# European Examples

# France

## Stats

- About **12** million tonnes/year- **185**kg/capita
- Approximately **4,600** sites
- Average of **2,600** tonnes/year/site
- On average 1 per 14,000 residents
- **63%** efficiency rating

# France



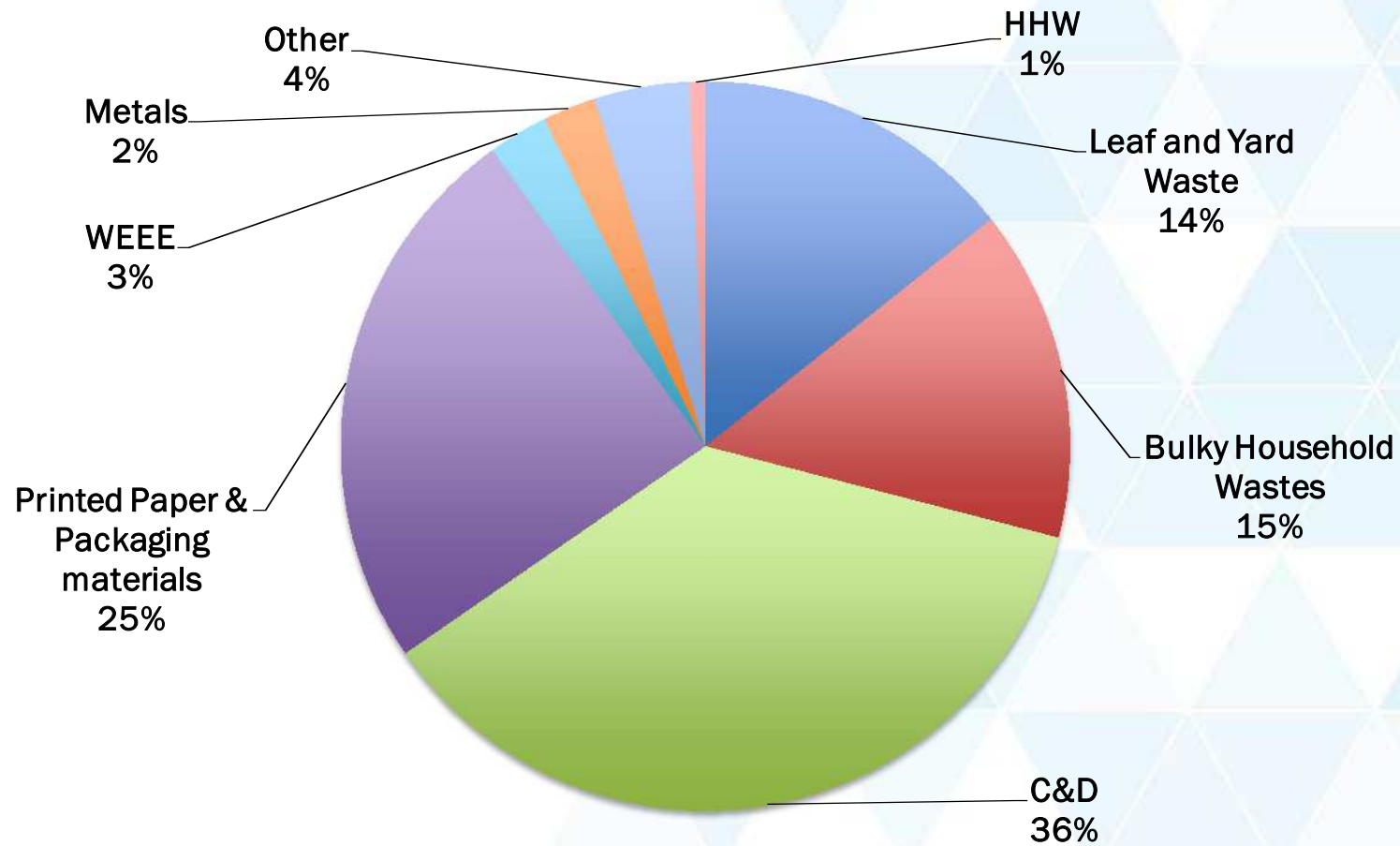
# Netherlands

## Statistics

- About 2.8 million tonnes/year- 165kg/capita
- Approximately 400 sites
- Average of 7,000 tonnes/year/site
- 1 site per 40,000
- 84% efficiency rating
- In Netherlands 30% of residential waste is dropped off at recycling depots.
- Waste generation must be decoupled from economic growth
- Only waste that cannot be re-used, recycled or converted into energy can be landfilled
- Country wide waste plan helping to drive diversion at recycling depots

# Netherlands

## Composition



# Netherlands



# Best Practices

- SGS Lakefield-Evaluation of Best Practices of Rural Depot Recycling Programs, 2006 (Ontario)
- WRAP- Household Waste Recycling Centre (HWRC) Guide, October 2012 (UK)
  - Detailed best practice guide for developing recycling depots

# Evaluation of Best Practices of Rural Depot Recycling Programs

- User accessibility
- Well trained and diligent attendant
- Depot capacity
- Depot proximity to MRFs and other recyclers



# Household Waste Recycling Guide

## Key Layout and Design Considerations

- Review/Improve **Traffic Flow**
- **Split Level** Architecture (> 10,000 tonnes/year)
- **One way** system for public traffic
- Construct feeder road to reduce congestion
- Keep **public and service traffic separate**
- Clear road, parking spot and traffic markings
- Bin order (**make it easier to recycle**)

# Key Recycling Depot Opportunities

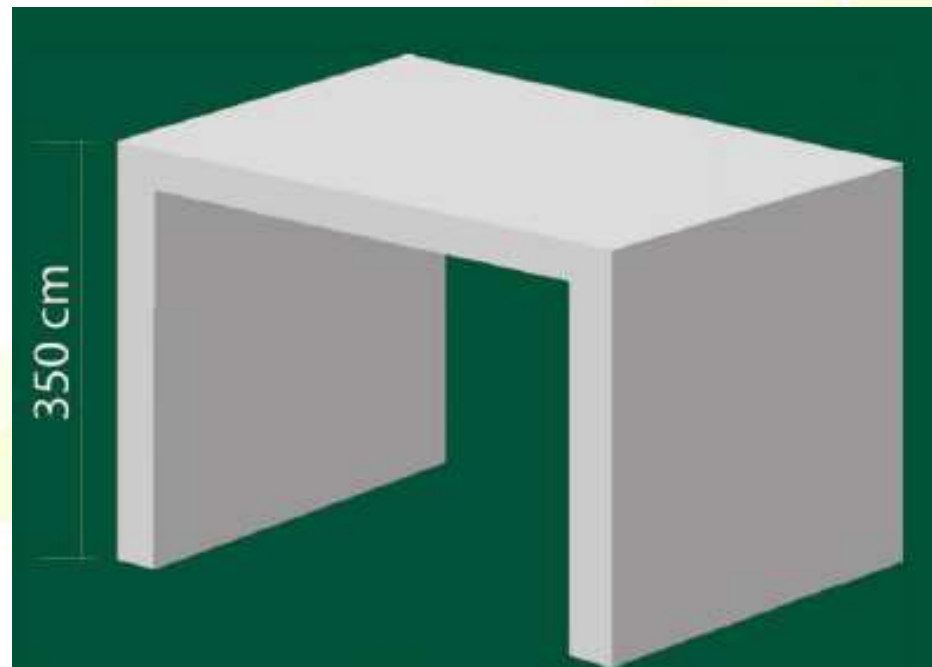
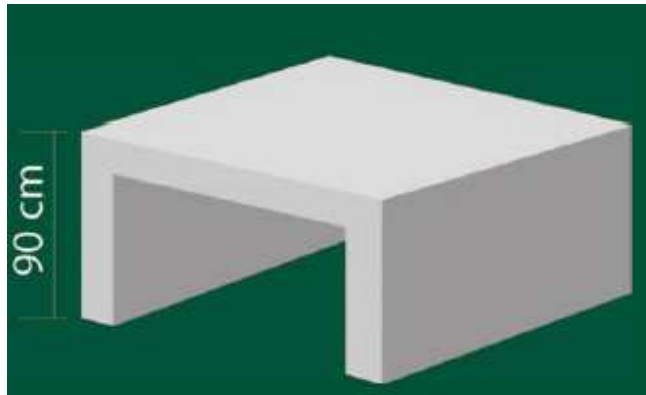
- Good base of recycling depots in Canada
- Relatively low capture rates
- Recycling depots full potential not being met due to design and operational issues
- Can capture a greater share of waste at recycling depots by:
  - Build on existing network of recycling depots
  - Set up so residents can combine with other activities
    - Optimize traffic management
    - Convenient hours
    - Clean and appealing
    - Broadest array of re-use and recycling opportunities.

# Modulo-Béton Recycling Depots

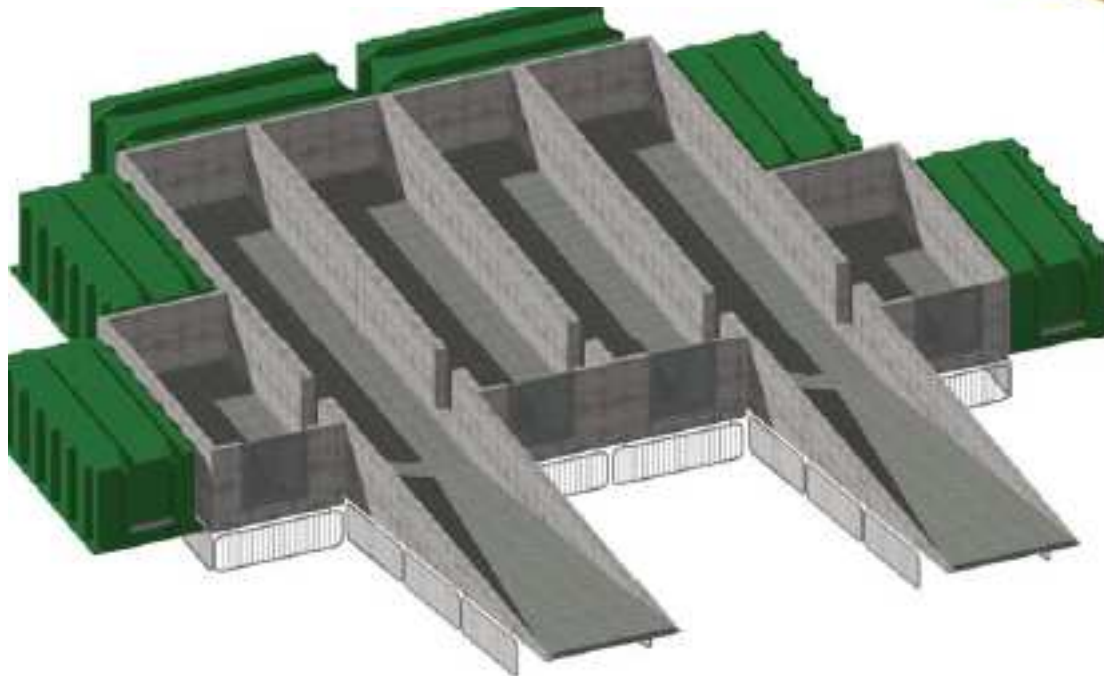
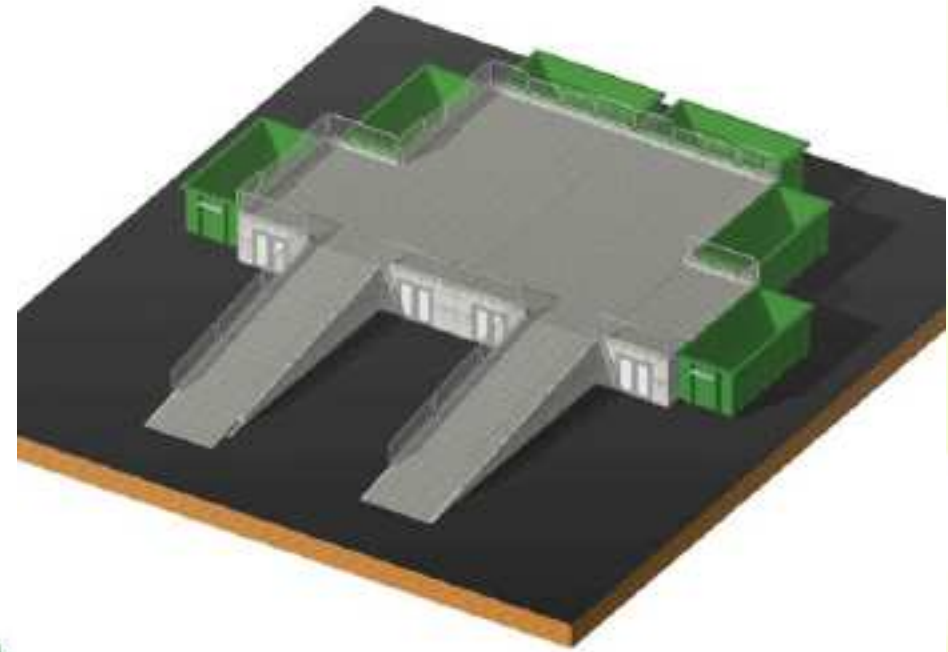
## Design

- Was asked by conference organizers to include an overview of Modulo-Béton technology:
- Key design features:
  - Creation of an above grade concrete platform with inbound and out bound vehicle ramps
  - System uses pre-cast concrete building blocks
  - Provides usable space below the platform
  - Modular
  - Mobile
  - Customizable

# Flexible Width and Height



# Flexible Design



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# Modulo-Béton Recycling Depots

## Construction

- Key construction features:
  - Modest site preparation
  - Pre-cast blocks and other materials delivered to site
  - Assembly in 3-10 days
  - Modular- can add to as required
  - Mobile- can be disassembled and moved as required

# France

## Installation



# France

## Installation





# St Remy, Quebec

Installation (clockwise)



# St Remy, Quebec

## Installation



# Modulo-Béton Recycling Depots

## Operation

- Key operational features:
  - Separates generator traffic (inbound/outbound ramps)
  - Separates generator and waste removal traffic
  - Separates generator from bins through fencing or walls while providing efficient access to bins
  - Essentially provides a building that can be used for various functions:
    - Storage
    - MHSW
    - WEEE
    - Re-use centre
- See 2013 Article at <http://2cg.ca/pdf/files/swr%20feb-mar%202013%20p%2023-24.pdf>

# Netherlands

## Operation



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