
Another Frontier: CO₂ Reduction via Sorting Leftover Mixed Waste

Reloop Unpacks

The Future of Managing Resources in a Competitive Europe
Residence Palace: Brussels

18th June 2025

Dr Dominic Hogg

Household waste



Leftover Mixed Waste (LMW)



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Sorting of Leftover Mixed Waste



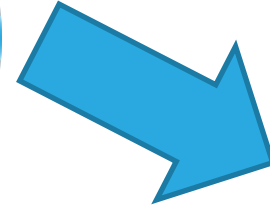
Residual Waste



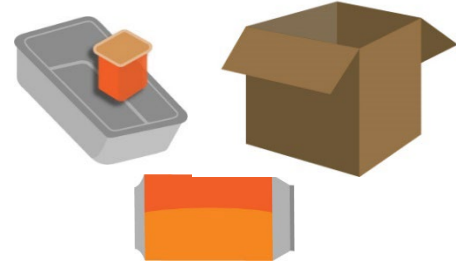
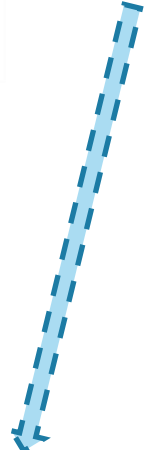
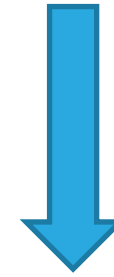
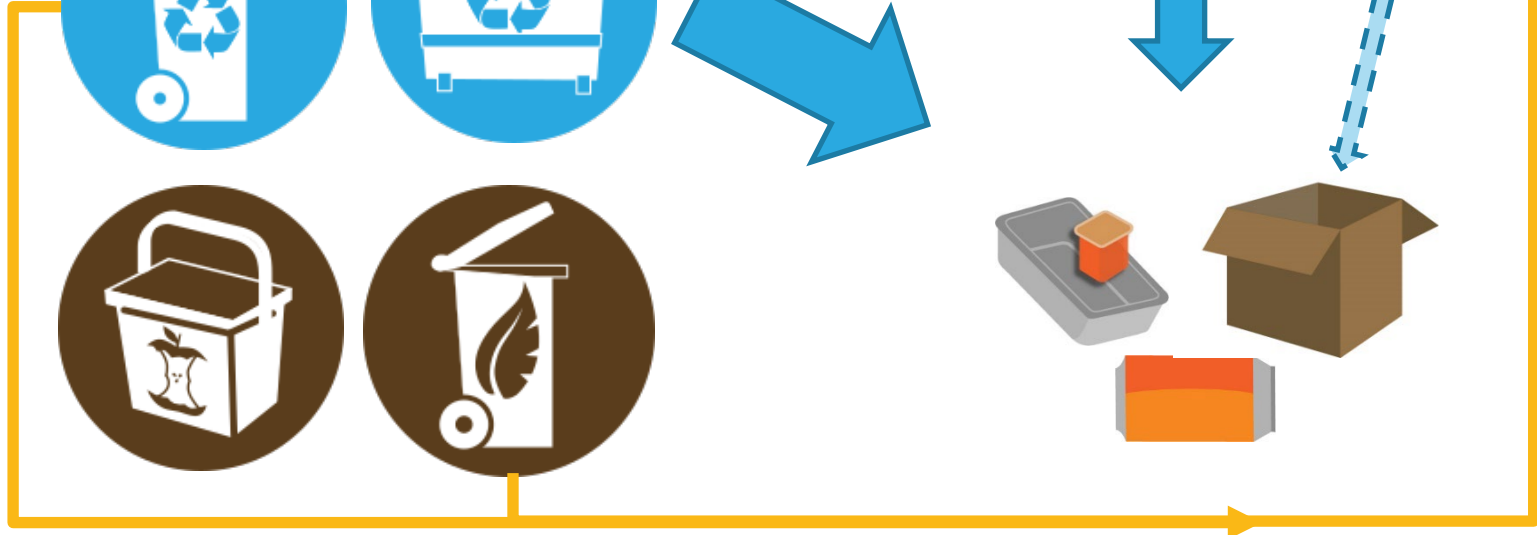
Non-household MSW

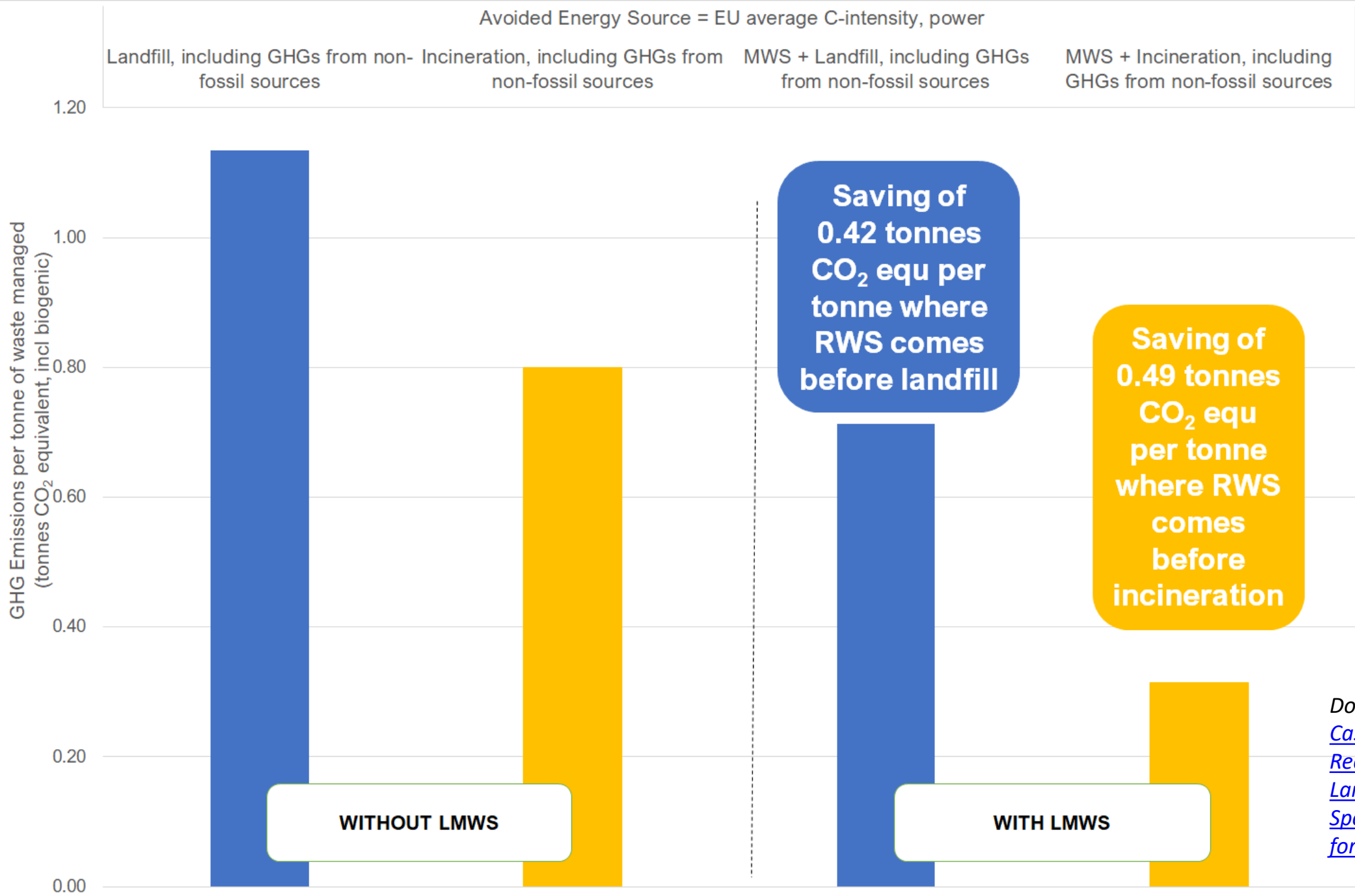


Separate Collection



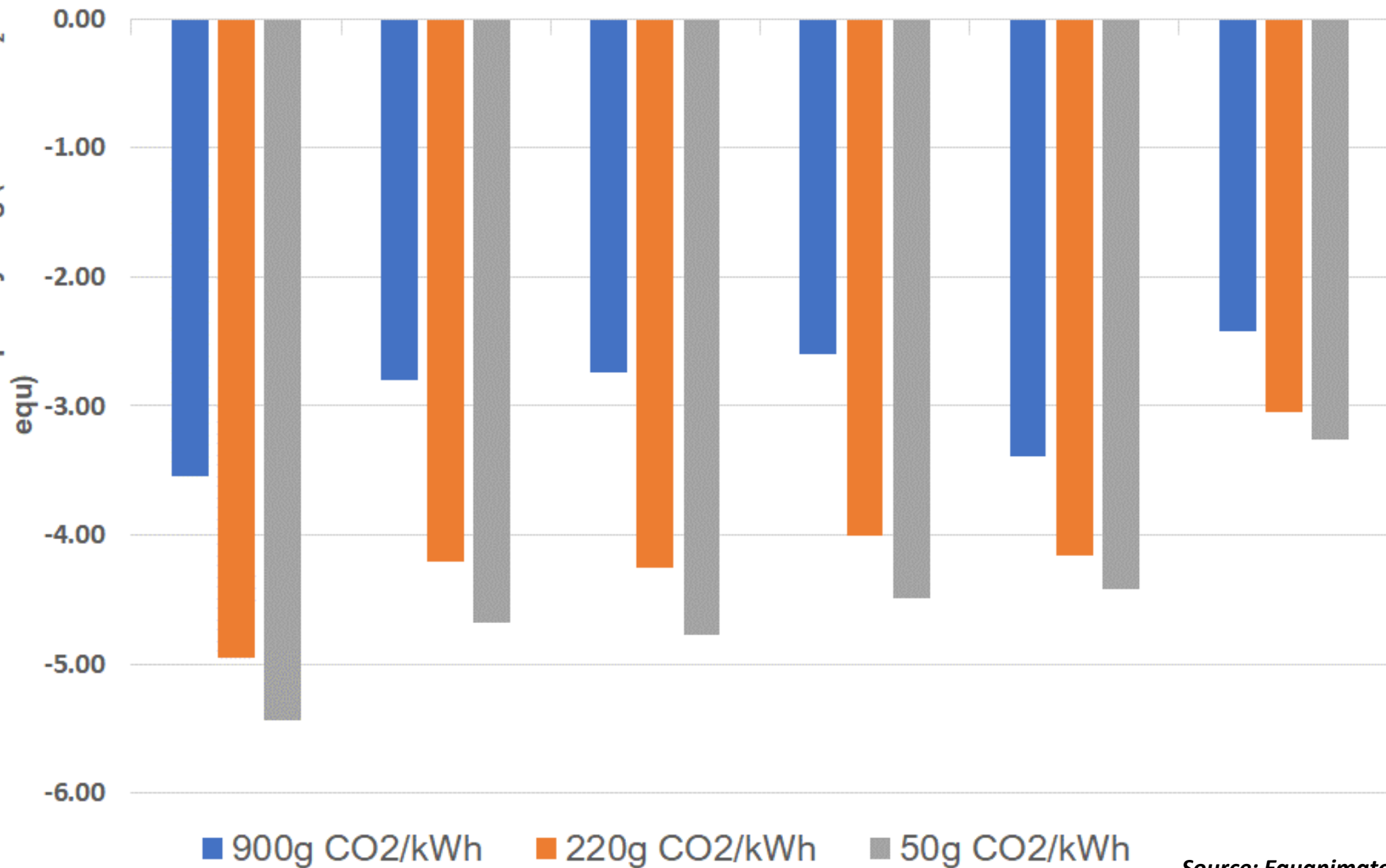
Rejects





Dominic Hogg (2022) [The Case for Sorting Recyclables Prior to Landfill and Incineration, Special Report prepared for Reloop, June 2022.](#)

Emissions Avoided When 1 tonne of Polymer is Switched from Incineration to Closed Loop Recycling (tonnes CO₂ equ)



Source: Equanimator

Landfill and Incineration

1. At GWP100=34 for methane, landfill of untreated waste is worse than incineration

(a) Effective radiative forcing
1750 to 2019

(b) Change in global surface temperature
1750 to 2019

Emitted Components

CO₂

CH₄

N₂O

CFC + HCFC + HFC

NO_x

NMVOC + CO

SO₂

Organic carbon

Black carbon

Ammonia

Climate effect through:

Carbon dioxide (CO₂)

N₂O

CFC + HCFC

HFC

Methane (CH₄)

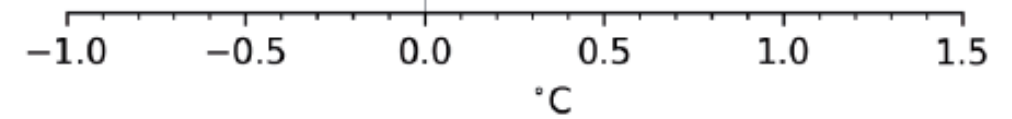
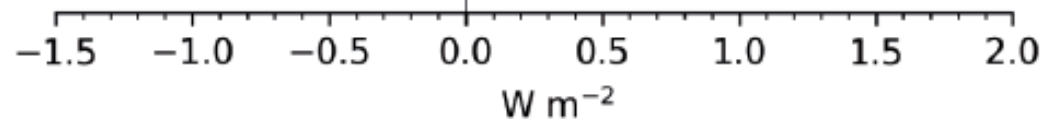
Ozone (O₃)

H₂O (strat)

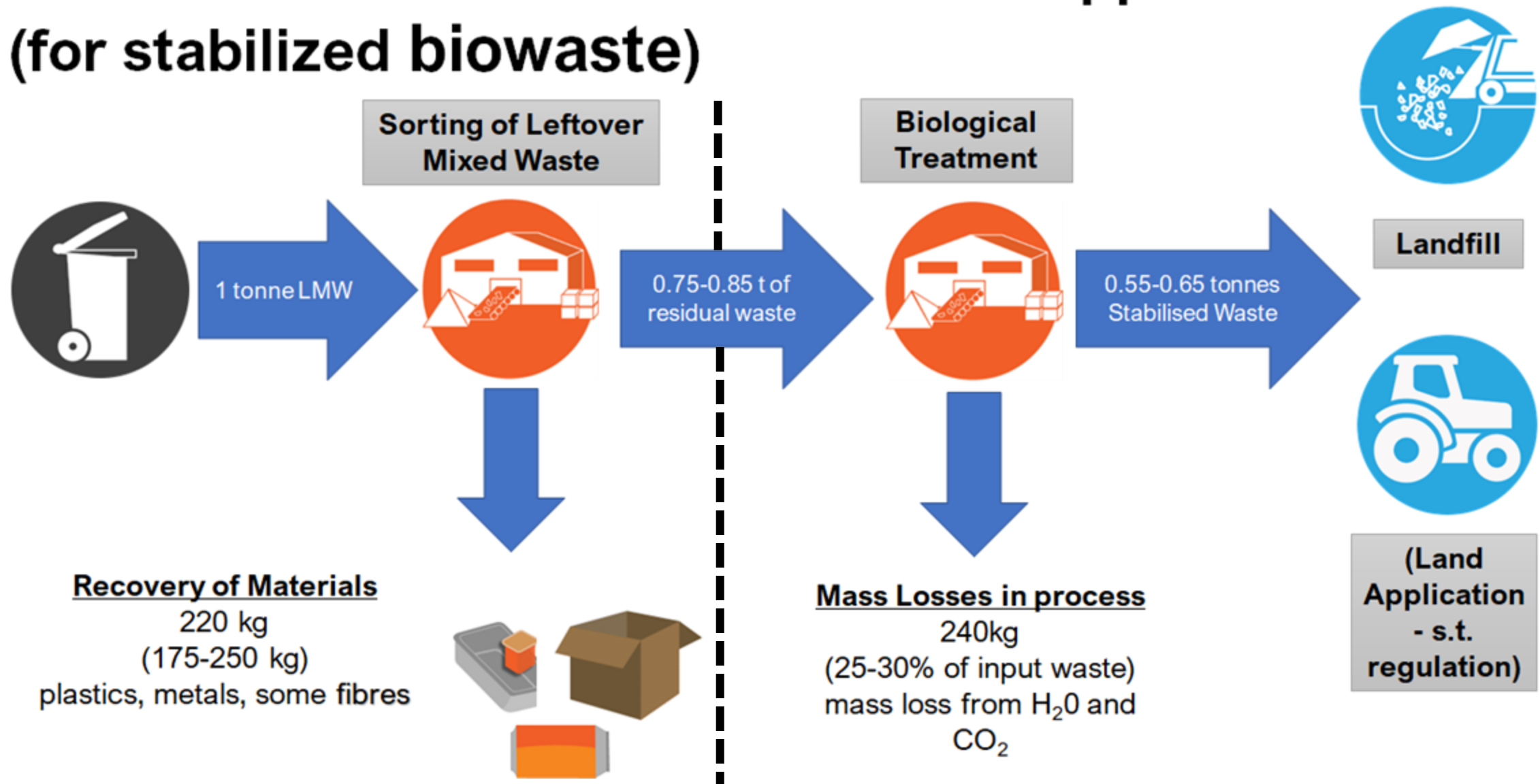
Aerosol-radiation

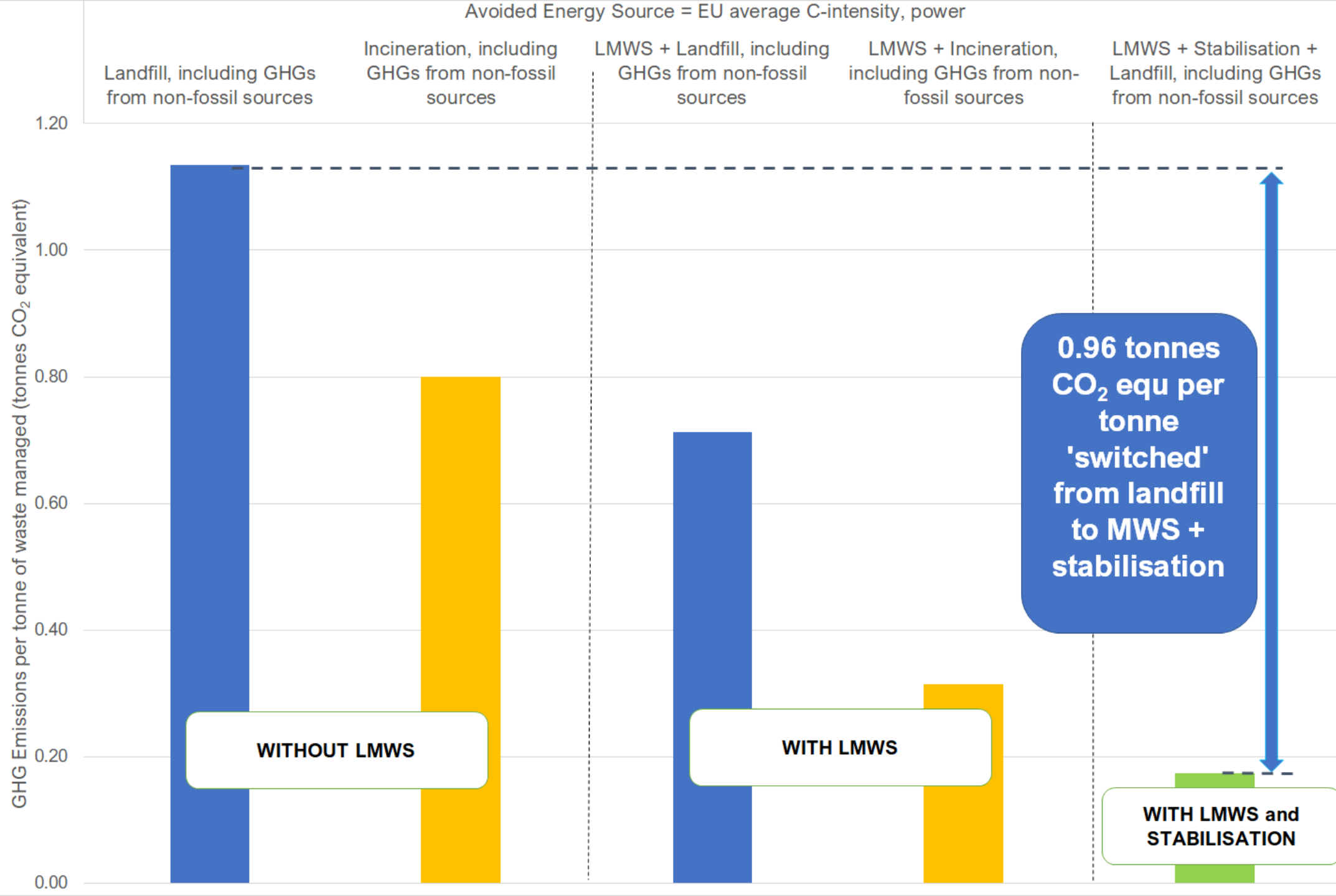
Aerosol-cloud

Sum



MRBT = LMWS + BT + Landfill / Land Application (for stabilized biowaste)





Dominic Hogg (2022)
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Summary

- 1. The argument for using LMWS is becoming ever more compelling**
 - **GHG / energy savings associated with materials capture**
 - **GHG emissions avoided from incineration / landfill**
 - **Avoided costs of landfilling / incineration**
- 2. Can EU policy help?**
 - **Incineration in EU-ETS – but contractual rigidities will remain**
 - **Landfill BREF – in progress – give substance to ECJ rulings**
 - **PPWR – how else to implement Art.48(1)?**
 - **Article 27 WFD**

Thank you

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*Born at 0.2 degrees C
above early C19th levels*

*.... > 80% of global
temp increase has
happened in my
lifetime*