

Circular Economy MSW Recycling Targets

➔ A Big Challenge for Ireland

Conor Walsh

(Technical Director)

28th November 2019

global **environmental** and **advisory** solutions



CONTENTS

1. Introduction to SLR

2. Waste Management in Ireland

3. Ireland's Current Performance

4. Future Targets

5. Deposit and Refund Systems

6. IWMA Recommendations on Recycling

7. Commercial Waste Recycling

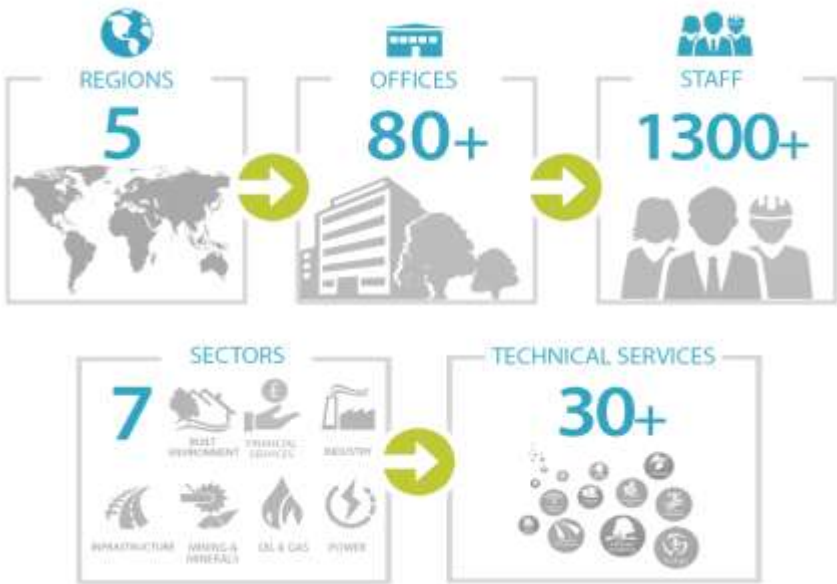
8. International Best Practice

SLR TODAY



SLR delivers global **environmental** and **advisory** solutions

We provide advice and services to clients in the oil and gas, mining and minerals, infrastructure, built environment, industry, financial and power sectors.



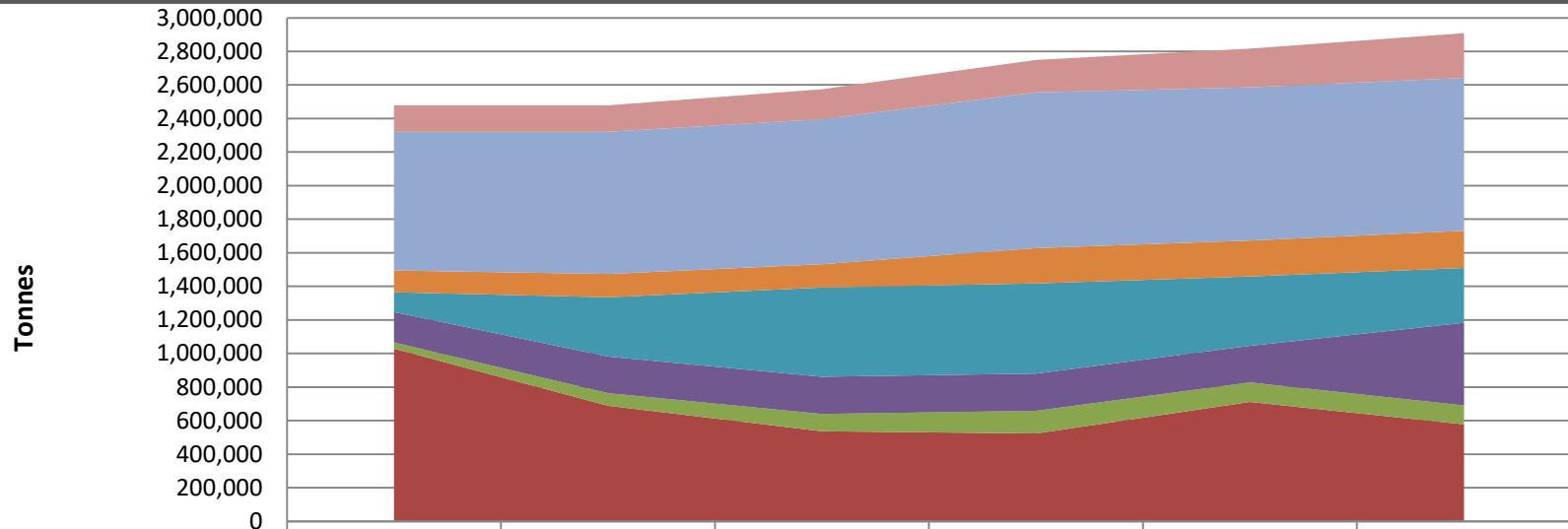
SLR GEOGRAPHY

We deliver global environmental and advisory solutions from a network of offices in five regions covering Europe, the US, Canada, Asia-Pacific and Africa.



	AFRICA	4 offices
	ASIA PACIFIC	14 offices
	CANADA	18 offices
	EUROPE	21 offices
	USA	23 offices

Current Waste Management in Ireland



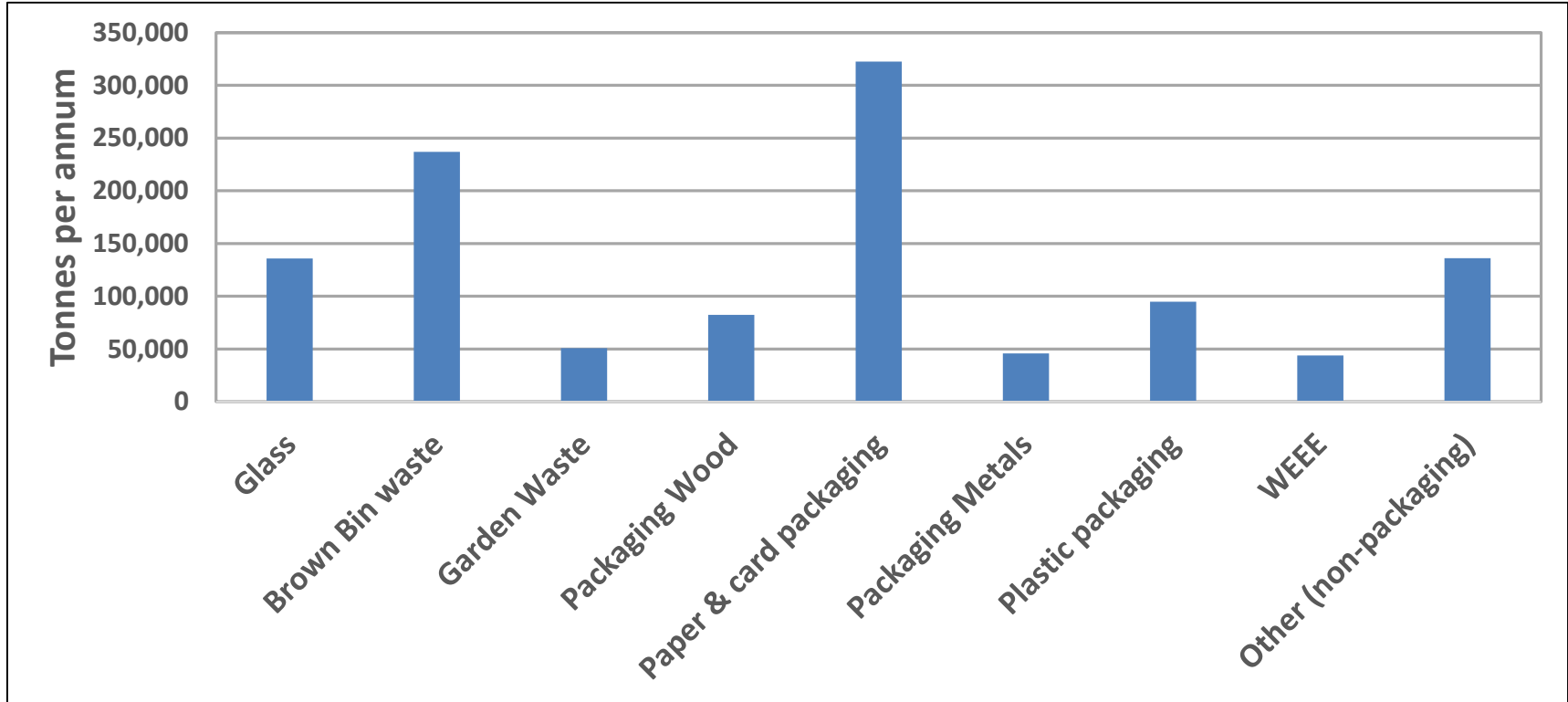
	2012	2013	2014	2015	2016	2017
Composting/AD (t)	156,000	158,000	180,017	194,054	230,616	267,827
Material Recycling (t)	828,000	845,884	863,172	927,626	913,480	910,000
SRF Ireland (t)	130,000	139,772	140,000	209,438	215,000	222,000
WtE Export (t)	117,000	354,000	531,064	537,000	413,000	327,000
WtE Ireland (t)	180,000	216,610	222,000	222,664	218,158	491,853
Fines & IBA Recovery (t)	38,914	75,000	102,376	135,645	116,513	113,217
Landfill (t)	1,028,000	689,071	536,621	522,693	710,333	577,932

MSW Recycling Rate in Ireland (SLR Estimates)

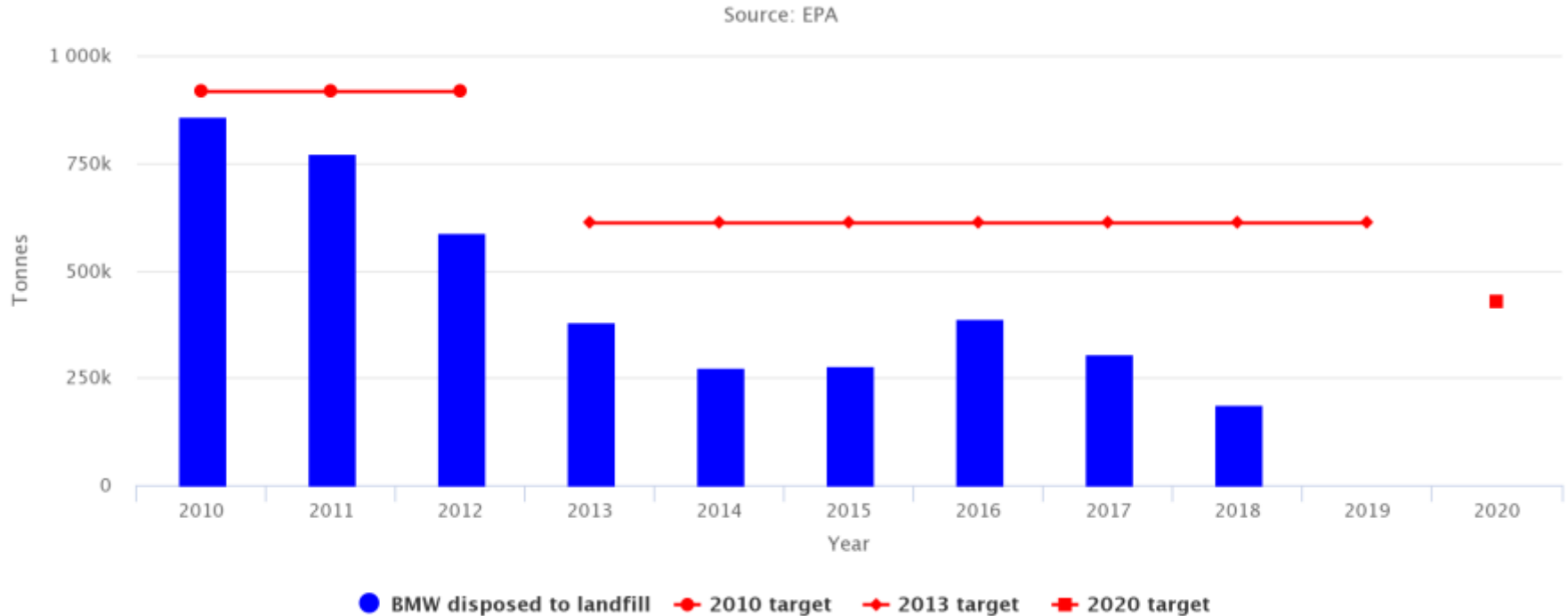
- 2012 = 39.7%
- 2013 = 40.5%
- 2014 = 40.5%
- 2015 = 40.8%
- 2016 = 40.6%
- 2017 = 40.8%
- 2018 = 41.8%



MSW Materials Recycled in Ireland in 2017



Diversion of Biodegradable Municipal Waste from Landfill (EPA)



Highcharts.com

Meeting Current Targets (MSW & Packaging)

EU Directive	Target Date	Target Specifics	Reference Year	Rate	Indicator	
Waste Framework Directive (2008/98/EC)	12/12/2020	Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (calculation method 1)	2017	50%	On track Due December 2020	
Packaging Directive (94/62/EC as amended)	31/12/2011	60% as a minimum by weight of packaging waste will be recovered or incinerated at waste incineration plants with energy recovery.	2017	87%	Achieved	
		55% as a minimum by weight of packaging waste will be recycled .	2017	66%	Achieved	
		No later than 31 st December 2011 the following minimum recycling targets for materials contained in packaging waste will be attained:				
		(i) 60% by weight for glass ;	2017	84%	Achieved	
		(ii) 60% by weight for paper and board ;	2017	79%	Achieved	
		(iii) 50% by weight for metals ;	2017	72%	Achieved	
		(iv) 22.5% by weight for plastics , counting exclusively material that is recycled back into plastics;	2017	34%	Achieved	
(v) 15% by weight for wood .	2017	74%	Achieved			

Meeting Future Targets (MSW & Packaging)

EU Directive	By 2025	By 2030	By 2035	Target Specifics	Reference Year	Rate	SLR Comment
Waste Framework Directive (2018/851)	55%	60%	65%	Preparing for re-use and the recycling of municipal waste	2016	41%	Not on Track
Packaging Directive (2018/852)	65%	70%	-	Percentage of all packaging waste to be recycled.	2017	66%	On Track
	50%	55%	-	Percentage of Plastic packaging waste to be recycled.	2017	34%	Not on Track
	25%	30%	-	Percentage of Wood packaging waste to be recycled.	2017	74%	Achieved
	70%	80%	-	Percentage of Ferrous Metal packaging waste to be recycled.	2017	72% ¹	On Track
	50%	60%	-	Percentage of Aluminium packaging waste to be recycled.	2017	73% ²	On Track
	70%	75%	-	Percentage of Glass packaging waste to be recycled.	2017	84%	Achieved
	75%	85%	-	Percentage of Paper & Cardboard packaging waste to be recycled.	2017	79%	On Track

¹ The reported figure for 2017 is for 'metal packaging'. The EPA and REPAK data do not currently differentiate between ferrous and aluminium packaging.

² Figure provided by REPAK in 2019. We understand that this estimate includes the capture of aluminium can from residual waste and from incinerator bottom ash.

Meeting Future Targets (Single Use Plastics)

EU Directive	By 2025	By 2029	Target Specifics	Reference Year	Rate	SLR Comment
Single Use Plastics Directive (2019/904)	77%	90%	<p>Separate collection for recycling of single use plastic beverage bottles with a capacity of up to 3 litres, including their caps and lids, but excluding:</p> <ul style="list-style-type: none"> Glass or metal beverage bottles that have caps and lids made of plastic. Beverage bottles intended and used for food for special medical purposes that is in liquid form. 	2018	Estimated 57% to 60% ³	Not on Track

^[3] REPAK has stated recently that the members of REPAK placed 25,492 t/a PET bottles on the market in Ireland in 2018, but the total quantity of PET Bottles on the market was estimated to be in the region of 30,000 t/a. We understand from various REPAK sources that roughly 17Kt to 18Kt of PET bottles are recycled each year, which is between 57% and 60% of the estimated total.

Deposit & Refund System – Would it Help?



Some Good Examples
in Australia

Deposit & Refund Systems – Likely Annual Cost for Ireland

Item	Description	Estimated Cost per annum (millions)
1	Installation of RVMs & Storage Room (spread over 10 years)	€ 25.0
2	Development of 3 Regional Depots (spread over 10 years)	€ 3.8
3	Set-Up costs (spread over 10 years)	€ 2.1
4	Ongoing labour and space costs at stores	€ 6.3
5	Logistics Costs	€ 22.4
6	Counting Centre Costs	€ 3.2
7	Central Administration Costs	€ 2.7
8	Labelling & Security Markings	€ 7.7
	Total Estimated Annual Costs (Gross)	€ 73.2
	Added Value of Additional Beverage Containers Captured	€2.9
	Total Estimated Annual Costs (Net)	€ 70.3

Deposit & Refund Systems – Impact on MSW Recycling Rates

PET Bottles:

- Total on the market = c.30,000 t/a.
- Uplift from 57% to 90% = 33% = 10,000 t/a extra recycled.
- 10,000 t/a out of a total MSW generation of 2.8 million t/a = **0.36%**

Aluminium Cans:

- Total on the market = c.11,456 t/a.
- Uplift from 73% to 90% = 17% = 1,948 t/a extra recycled.
- 1,948 t/a out of a total MSW generation of 2.8 million t/a = **0.07%**

Total Uplift in MSW Recycling rate = **0.43%**

Total Uplift in Packaging Waste Recycling = **1%**

Total Uplift in Plastic Packaging Waste Recycling = **3.4%**



DRS in Ireland – Putting Costs in Perspective

- €70.3 million / 11,948 tonnes = **€5,884** per tonne for **DRS**
- We estimate **€497** per tonne for **kerbside MDR** recycling
- We estimate **€240** per tonne for **Civic Amenity Site** recycling

Breakdown Costs of Average Household Kerbside Service by Fraction

Fraction	Estimated Cost per House (ex. VAT) in euro
Residual Waste Cost	130.37
MDR Cost	66.98
Food Waste Cost	40.27
Total Cost	237.61



Deposit & Refund Systems – Impact on Kerbside Recycling

Expected Revenue Losses at MRFs if DRS Materials Removed

Material	Volume Handled (t/a)	Average Value of Material including REPAK subsidy (€)	Loss of Revenue per Annum (€)
Aluminium Cans	4,444	915	€ 4,066,260
PET Bottles	11,227	247	€ 2,773,069
Estimated Cost due to Loss of Beverage Containers			€ 6,839,329
HDPE Bottles	7,283	415	€ 3,022,445
Estimated Cost due to Loss of Beverage Containers and HDPE Bottles			€ 9,861,774

Material	Revenue Loss (€)	Household MDR Handled in 2016 (t/a)	Household MDR Handled after DRS materials removed (t/a)	Loss of Revenue per Unit / Potential Gate Fee increase (€)
Loss of Beverage Containers	€ 6,839,329	253,328	237,657	€ 28.78
Loss of Beverage Containers and HDPE Bottles	€ 9,861,774	253,328	230,374	€ 42.81

Deposit & Refund Systems – Potential Impact on Kerbside Recycling

MRF Gate Fees:

- MRF Gate fees are currently in €60 to €75 per tonne range in Ireland.
- MRF Gate Fees are likely to increase to €89 to €104 per tonne range if all beverage containers are removed.
- This could be as high as €102 to €117 per tonne if HDPE containers are also removed.
- Current issue with the recycled paper market could drive those gate fees even higher.
- REPAK subsidies could also be reduced as producers finance DRS instead of Kerbside Recycling.
- As MRF gate fees become as high as residual waste gate fees, the financial incentive to recycle is lost, so we must rely too heavily on enforcement. Fear of Rogue Operators.

Deposit & Refund Systems – Protection of Kerbside Recycling

In order to protect Kerbside Recycling against the potential impact of a DRS, we recommend that MRF Operators should be allowed reclaim deposits for materials they process, as is the case in New South Wales in Australia.

Material	Approved Factor (eligible count per kg)	Assumed count per tonne	Assumed CDS income per tonne
Aluminium	59.17	59,170	\$5,917
PET segregated	18.96	18,960	\$1,896
HDPE segregated	0.69	690	\$69



Improving Recycling Performance in Ireland – IWMA Recommendations

- Kerbside Recycling **Encouragement** and **Incentivisation** (described by Brian Lyons)
- **Camera Detection System** (Panda Initiative)
- Increase **Public Awareness** – Higher spend by Government
- Enforcement of **Incentivised Charging**
- Promote **Home Composting** in Rural Areas
- Better Focus on **Apartment** Waste Management
- Better Focus on **Commercial** Waste Management
- Deposit and Refund Schemes at **Major Events**
- Better **Public Space** Recycling



Commercial Waste Recycling in Ireland – IWMA Recommendations

- Introduce mandatory charging **per kilo** for all commercial wastes
- Introduce mandatory **incentivised charging**
- Introduce a **ban** on placing food waste, garden waste and recyclable wastes in residual waste bins at commercial premises.
- Consider the introduction of **mandatory material separation** for different types of commercial premises.
- Commence and properly fund a strong **awareness campaign**
- Encourage and fund **enforcement** of these obligations.
- Consider the introduction of a **Recycling Performance Rating Scheme** for businesses, perhaps along the lines of Building Energy Rating (BER) scheme.

International Best Practice - Germany

Claimed 67% MSW Recycling but now revised to 52% or less. Main Issues are:

- A large proportion of source separated **plastics** delivered to sorting plants and counted as recycled, end up being sent to WtE rather than recycled - only 20% to 50% is actually recycled. (4.8 to 7.6% MSW recycling lost)
- There is weight loss in **MBT plants**, mainly due to bio-drying. This is currently counted as recycled waste, but under EU rules going forward it will be recovery, not recycling. (4.5% MSW recycling lost)
- **Bulky waste** delivered to sorting plants is counted as recycled, but only 20% to 50% is actually recycled. (1.4 to 2.2% MSW recycling lost)
- Recycling of **commercial waste** sent to sorting plants also appears to be vastly over-estimated. (2.1 to 2.3% MSW recycling lost)
- **Road sweepings** will not count for recycling. (1.4% MSW recycling lost)

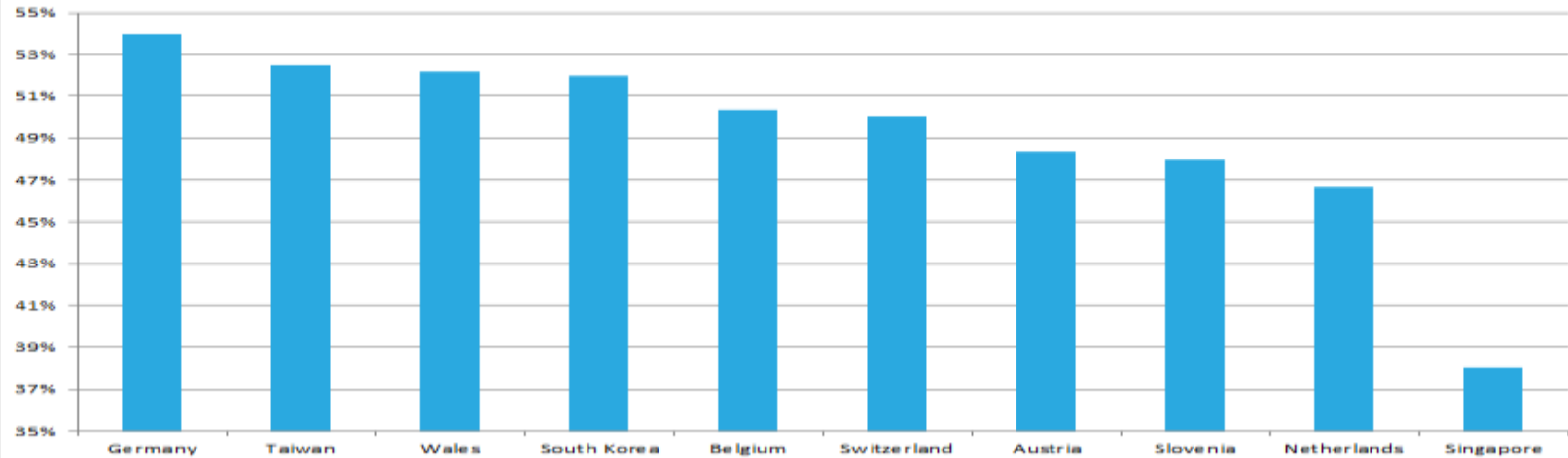
International Best Practice - Wales

Claimed 62.7% MSW Recycling but is only 51.1% using EU rules. Main Issues are:

Material	Quantity Reduction (t)	Impact on Wales Recycling Rate	Comments
Rubble & Soil Recycled	104,942	-6.8%	From CA sites
IBA Recycled	60,300	-3.9%	allow 10% for metal recycling
Residues from Co-Mingled Recyclables	38,328	-1.9%	Conservatively assume 15% over-estimate
Total Reduction in Recycling Rate		12.6%	

International Best Practice – Eunomia Analysis

Top 10 MSW Recyclers - Adjusted Recycling Rate



Country	Eurostat 2017 MSW Recycling Rate	Adjusted Rate Based on New Calculation Methods according to Eunomia
Germany	67.6%	54%
Belgium	53.7%	50%
Switzerland	52.5%	50%
Austria	57.7%	48%
Slovenia	57.8%	48%
Netherlands	54.2%	47%

International Best Practice – Lessons for Ireland

Main Differences between Ireland, Germany and Wales

Recycled Biodegradable Garden and Park Wastes

Ireland **1.8%** of MSW

Germany **10.9%** of MSW

Wales **10.4%** of MSW

Household Waste Generation per Capita:

Ireland **316kg**

Germany **452kg**

Wales **419kg**

EU Average **419kg**



Should Ireland recycle more Biodegradable Garden and Park Wastes?

Disadvantages:

- More waste generated or managed?? – although still well below EU average
- Additional Cost of collection – would need to be financed – In Germany it is funded by the Climate Action Funding Programme

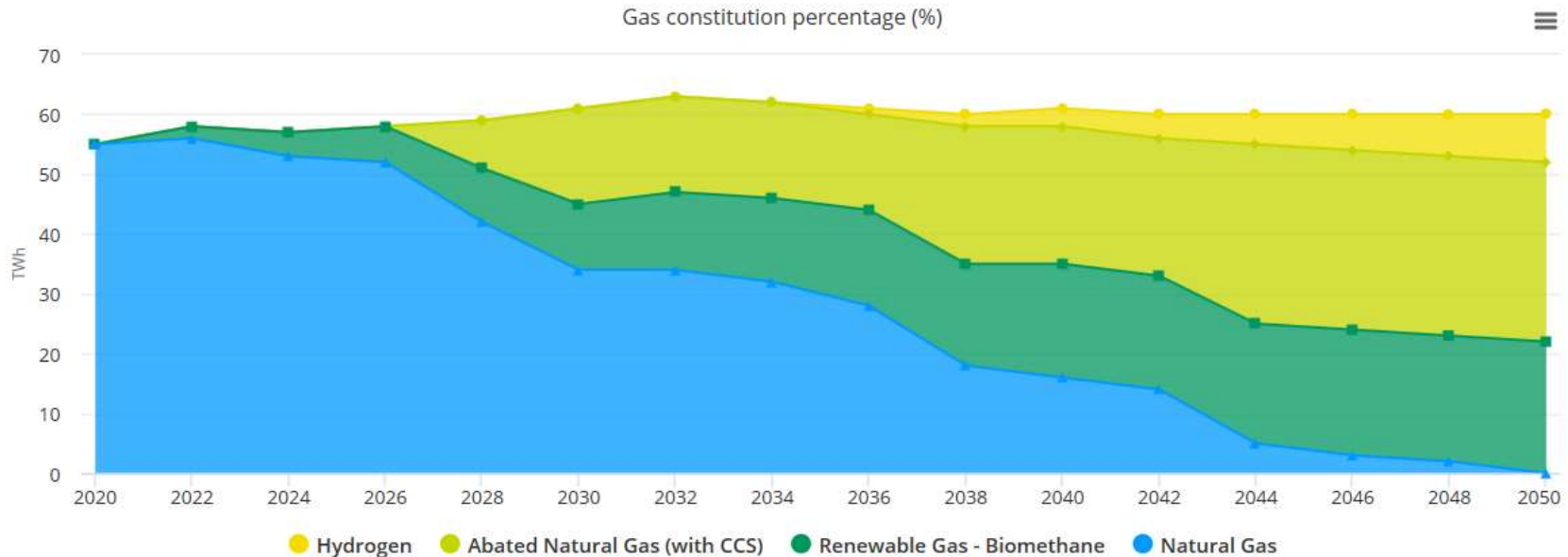
Advantages:

- Could increase MSW recycling rate to 50% or more
- Could provide feedstock for biogas production – better than growing energy crops
- Local authorities manage large areas of parks and sportsgrounds – good availability of grass as an energy crop
- Gas Networks Ireland has major plans to feed biomethane into the national gas grid – Feedstock needed

Decarbonising the National Gas Grid

From Gas Networks Ireland Website

Our vision for a net zero carbon gas network by 2050



CONTACT



Conor Walsh
Technical Director – SLR Consulting

t +353 (0)1 2964667
e cwalsh@slrconsulting.com
w www.slrconsulting.com