

# Industrial Symbiosis

Improving productivity through efficient resource management

[investni.com/industrialsymbiosis](http://investni.com/industrialsymbiosis)



**International Synergies**  
NORTHERN IRELAND  
industrial ecology solutions

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Director

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# Sustainability Roundtable Discussion

*What is Sustainability?*

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# *What is Net / Positive / Carbon / Zero?*

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# *What is Circular Economy?*

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# *What is Industrial Symbiosis?*

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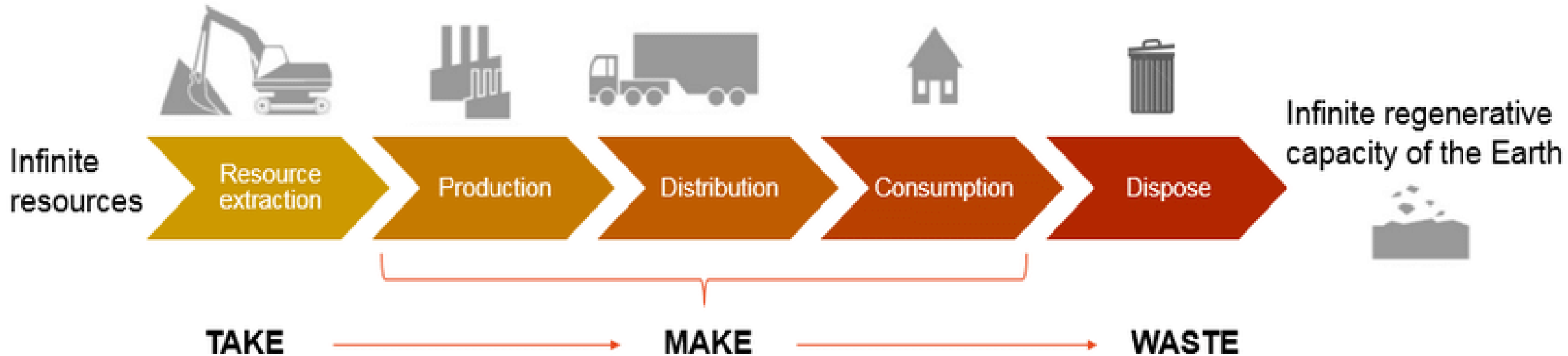
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# TRADITIONAL ECONOMIC MODEL

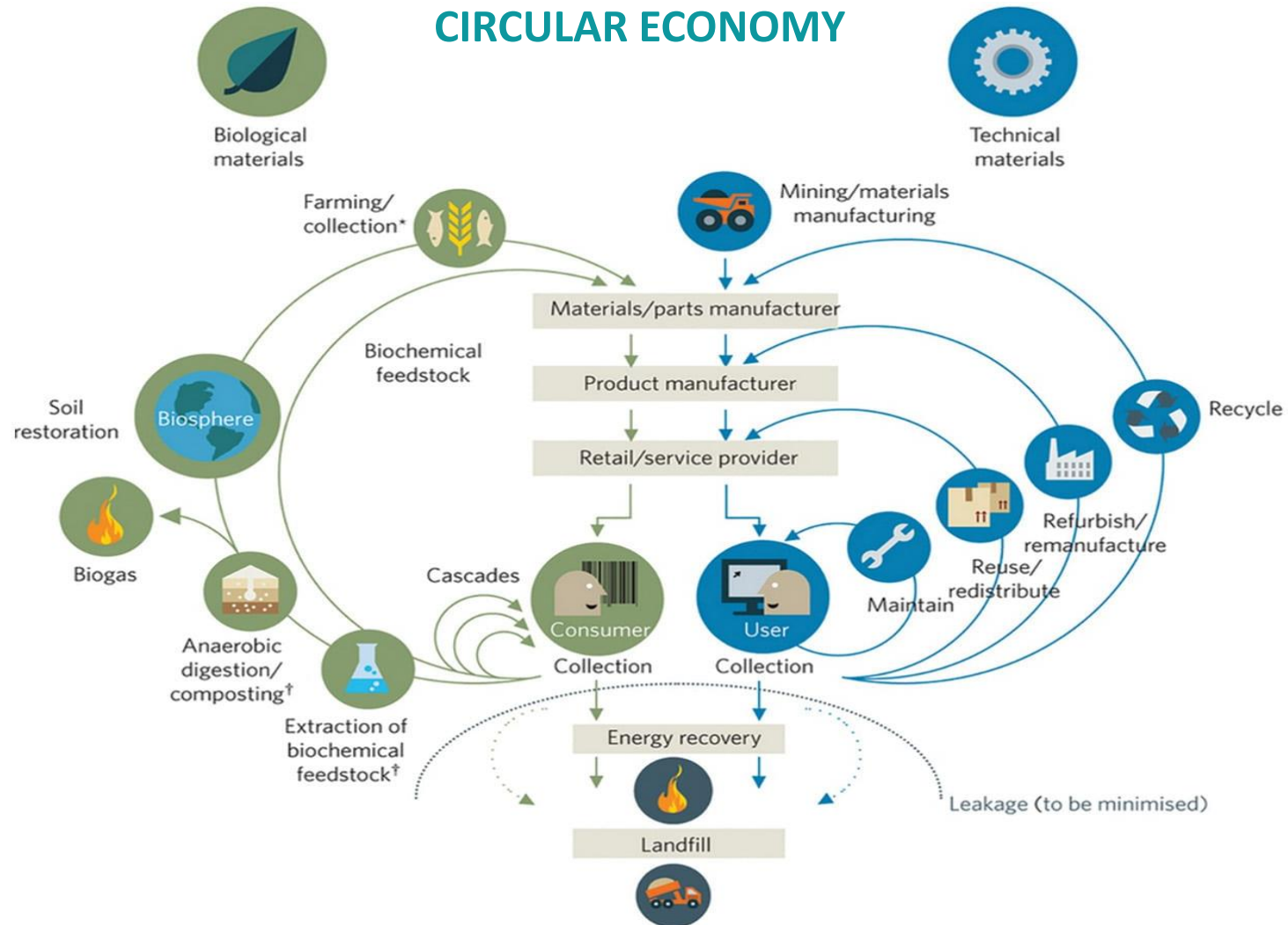


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# CIRCULAR ECONOMY



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# | Waste Directive amendments 2018

- "Waste management in the [EU] should be improved and transformed into **sustainable material management ... promoting the principles of the circular economy** ... in a way that preserves resources and **closes loops**"
- "In order to promote sustainable use of resources and **industrial symbiosis**, Member States should take appropriate measures to facilitate the recognition as a by-product of a substance or an object resulting from a production process the primary aim of which is not the production of that substance ... the Commission should be empowered to adopt implementing acts in order to establish detailed criteria ... **prioritising replicable practices of industrial symbiosis.**"

*Official Journal of the EU L150 Vol 61, 14 June 2018*

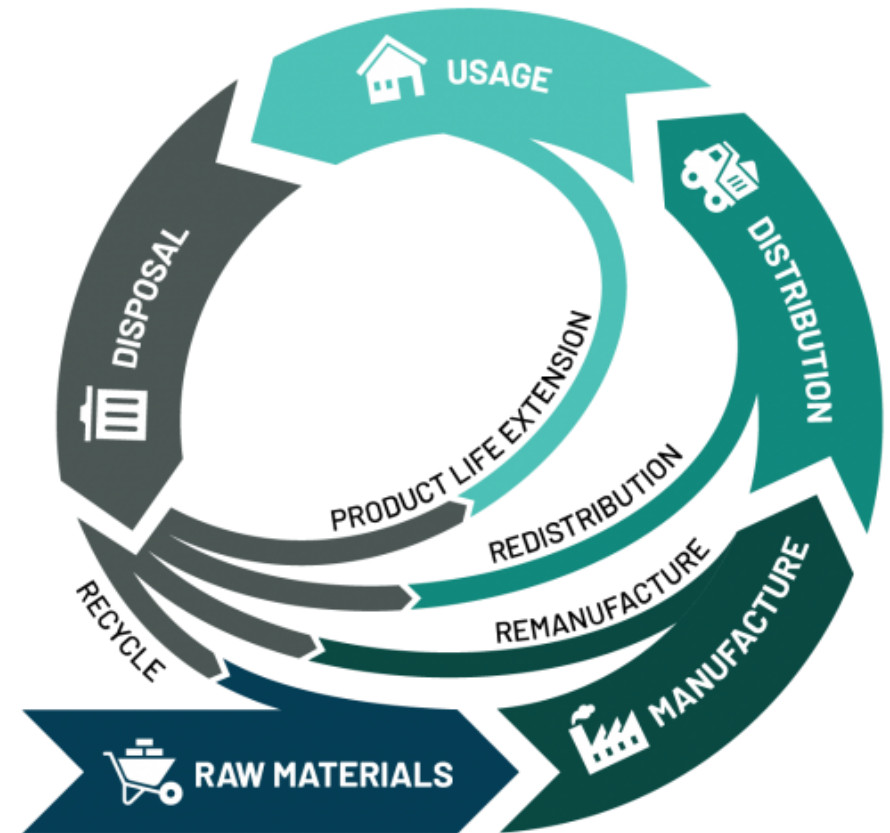


# WHAT IS INDUSTRIAL SYMBIOSIS?

An industrial ecosystem where unused or residual resources from one company are used by another, *keeping resources in productive use for longer.*

## Resulting in:

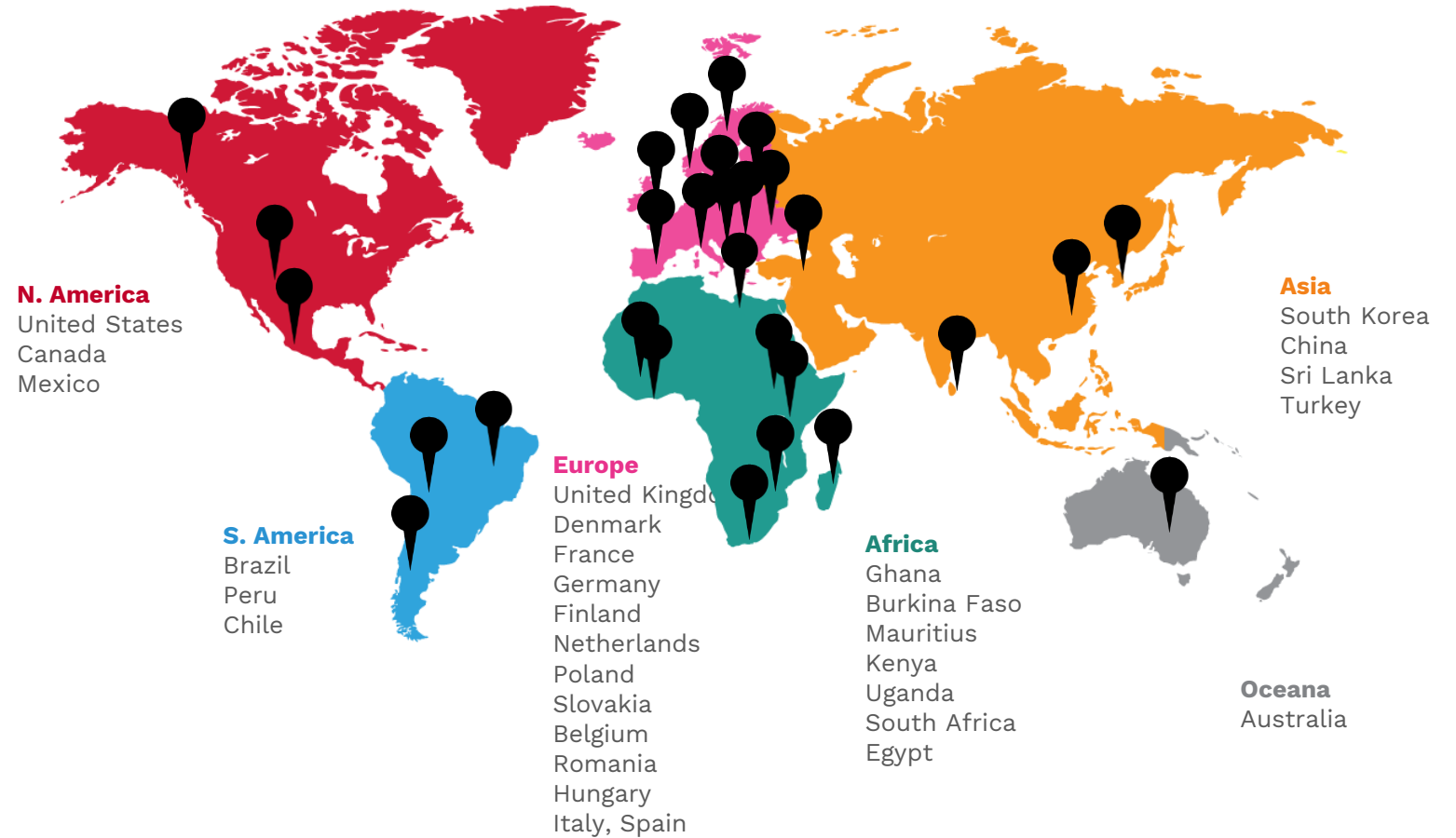
-  - operating costs
-  + business opportunities
-  + business collaborations
-  - environmental impact



# A GLOBAL BUSINESS

We work with

- businesses
- governments
- regional development agencies



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# OUR COMPANY



DELIVER – CONSULT – ENABLE  
Powered by SYNERGie®

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NORTHERN IRELAND  
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[info@international-synergiesni.com](mailto:info@international-synergiesni.com)

# OUR LOCAL TEAM



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- £45m economic benefit
- 600 innovative solutions
- >120 jobs created

- Zero Waste Goals
- >420,000 tonnes diverted from landfill
- >400k tonnes CO2 emissions reduced



- 500+ businesses collaborated on 600 synergies
  - 3000+ member organisations
  - Portfolio in every LA

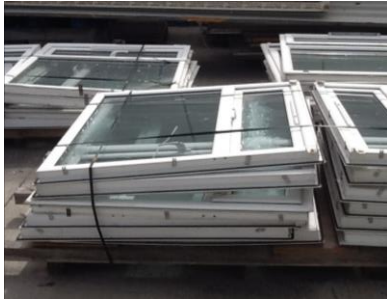
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# INI FUNDED ADVISORY VISITS



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# RECORD BRAKING RESULTS JUNE 2022



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# ONE MONTH SUCCESS – JUNE 2023 (17 COMPANIES)

Cost savings £214,326

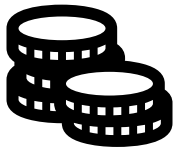
Landfill Diversion 7 Tonnes

Tonnes CO2e 59 Tonnes

Virgin Materials saved 7 Tonnes



**1 COMPANY  
HAD £37,687  
ACTUAL  
COST  
SAVINGS**



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# RESOURCE MATCHING WORKSHOP



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# INDUSTRIAL SYMBIOSIS DELIVERS INNOVATION



“Innovation occurs at the intersection of expertise, diversity and opportunity driven by making novel connections”

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# FEBRUARY WORKSHOP 2023

Cost savings  
identified

£11,800,000



Potential landfill  
diversion

74,000  
tonnes



Potential synergies  
identified

81 matches



Participating  
companies

27



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OVERVIEW

The Invest NI Resource Matching service is the **longest running facilitated Industrial Symbiosis programme in the world**. It has been delivered by International Synergies NI Ltd since inception in 2007 and to date our team have worked **with over 3000 NI companies** to achieve significant impact.

IMPACT

Cost Savings



£30.7m

Additional Sales



£17.6m

Private Investment



£2.1m

Jobs



130

Virgin Material Savings



308 KT

Waste diverted from landfill



404 KT

CO2 Savings



436 KT



**WEDNESDAY 30 AUGUST 2023**

- Participating companies – 41
- Potential Synergies Identified - 150
- Potential landfill diversion – kt78,101
- Cost Savings Identified **-£12,460,160**



# CONNECTING INDUSTRY



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# JUMP THE HEDGES



- Redundant PVC truck tarpaulins reclaimed for manufacture of designer yoga bags
- Material provided texture, colour range and durability
- Met with company's sustainability ethos
- CO2 reduction 12t



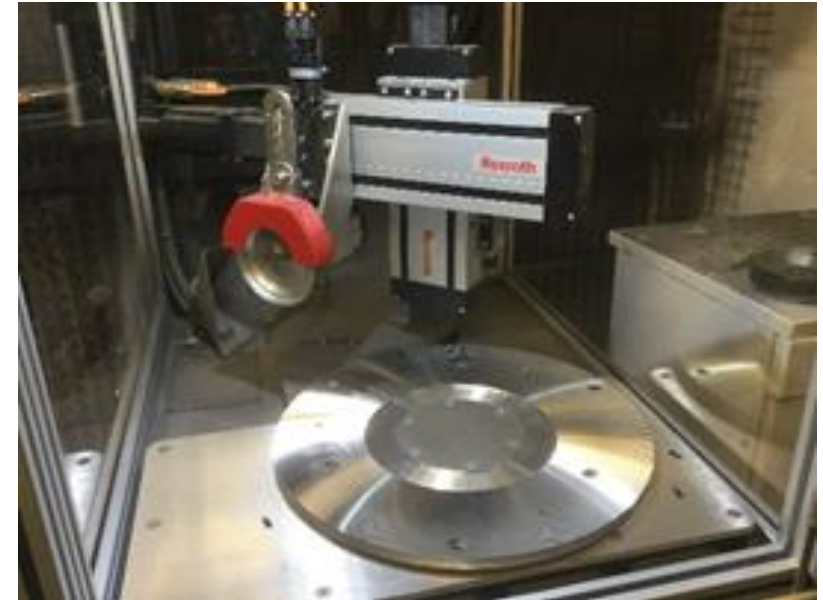
# CAMDEN GROUP

- Upgrade of facilities to take post consumer window frames containing both plastic and metals
- Significant cost savings and additional sales for all companies involved
- Reduced environmental impact – up to 80% recycled content
- Currently processing over 150t per week
- Material diverted from landfill



# BLADE SHARPENING MACHINE MO TEAM

- High transport costs and machine downtime involved in sharpening of pulverising blades to keep them in optimum condition
- Machine designed and built by Mo Team in Crumlin
- Significantly reduced operating costs for users and improved quality of materials being recycled
- Other companies in the recycling field are looking at having equipment manufactured locally that will reduce costs in consumables by carrying out the processes in-house



# SURVITEC GROUP



4 tonnes of unwanted material repurposed into sports bags  
Cost savings of £1,273 + Additional sales of £7000

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>100 000  
Resources

34 000  
Registered sites

30 countries  
6 continents

15+ yrs  
experience

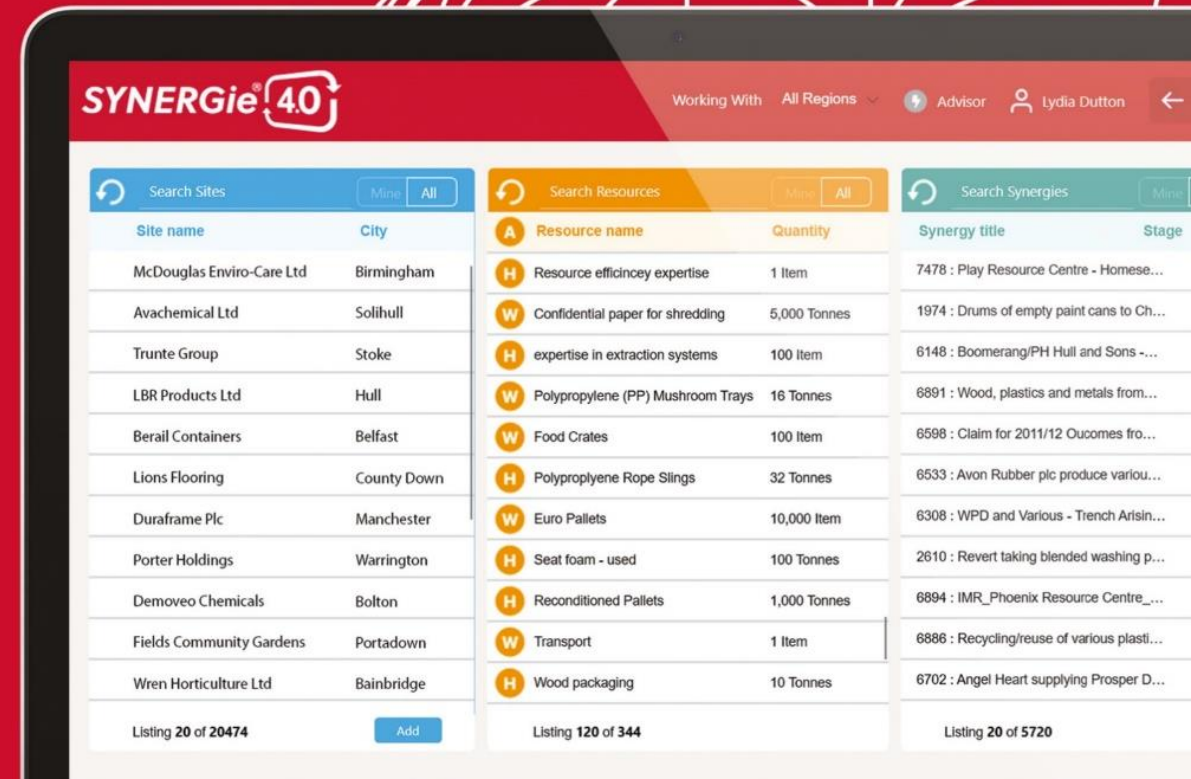
7 languages

# SYNERGie® 4.0

The Resource  
Matching App  
*powering the  
circular economy*



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# WE USE OUR AWARD WINNING SOFTWARE PLATFORM TO FIND RESOURCE MATCHES



AI learning from users  
and best practice



Advisor alerts and  
notifications



Internal and supply chain  
KPI reporting



Synergy  
matching



Management system for  
industrial symbiosis



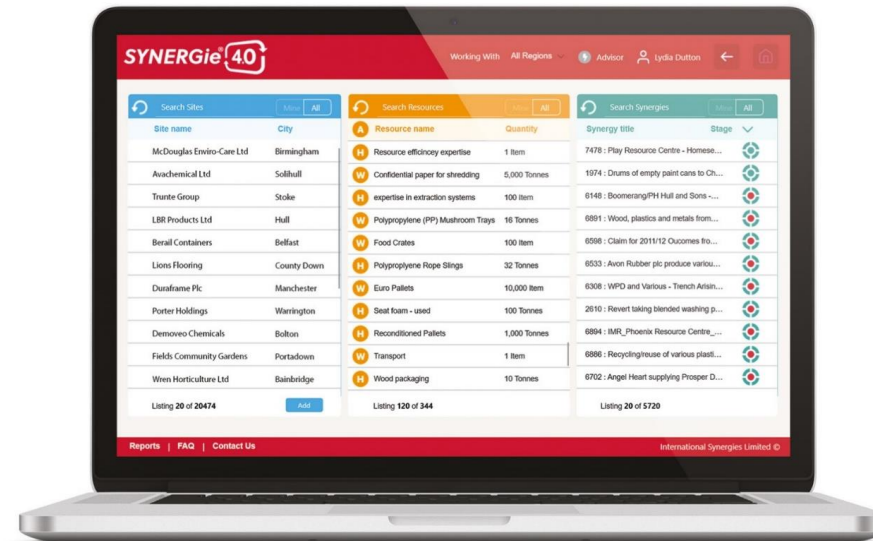
Global configuration  
capabilities



Integrated mapping  
of resources



Secure multi-device  
web based system



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# GLOBAL DATABASE– SYNERGie® 4.0



Ian Humphreys



## Advanced Resource Search

UK Northern Ireland Any City

Category Site Classification From Workshop

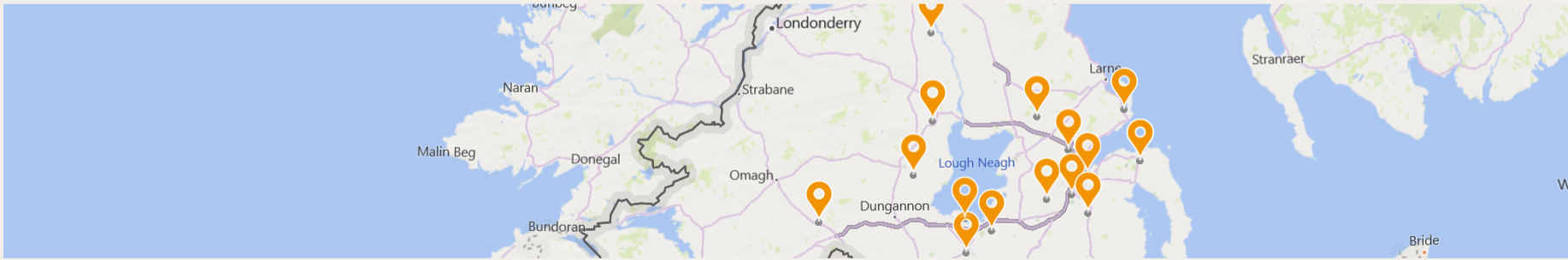
Category Site Classification Any Workshop

Distance Latitude Longitude

0 0 0

[Search](#) [Export](#) Search returned 3,161 results

[List View](#) [View on Map](#) Showing 1 to 20 of 3161



[Reports](#) | [FAQ](#) | [Contact Us](#)

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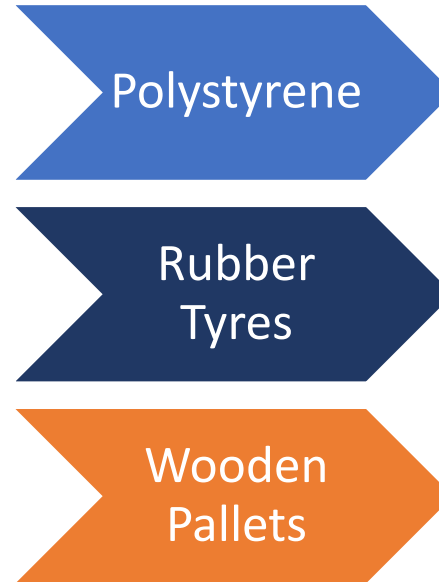
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# RESOURCES “Live” SYNERGIES



Opportunities exported out of NI!

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# Scaling Circular Innovation in NI & ROI a strategic, long-term approach

# The Strategic Overview

There is independent agreement by both the Irish (ROI) government and the Northern Irish (NI) government that the respective economies must transition to net-zero by 2050. This has been legislated for in the *Climate Action and Low Carbon Development (Amendment) Act 2021* and in Northern Ireland's *Climate Change Act (Northern Ireland) 2022*.



# The Strategic Overview ROI

Department	Policies, Strategies, Legislation
	Climate Action and Low Carbon Development (Amendment) Act 2021 Circular Economy and Miscellaneous Provisions Act 2022
Department of Rural & Community Development	Whole of Government Circular Economy Strategy 2022-2023
Department of Enterprise, Trade and Employment	National Smart Specialisation Strategy for Innovation 2022-2027 Trade and Investment Strategy 2022-2026
Department of the Environment, Climate and Communications	Climate Action Plan Community Climate Action Programme Waste Action Plan for a Circular Economy 2020-2025
Environmental Protection Agency	The Circular Economy Programme 2021-2027



# The Strategic Overview NI

Department	Policies, Strategies, Legislation
	Climate Change Act (Northern Ireland) 2022
Department for Economy	Draft Circular Economy Strategy The Circularity Gap Report Northern Ireland 10X Economy The Path to Net Zero energy: NI Energy Strategy Skills for a 10x economy – Skills Strategy for Northern Ireland
Department of Agriculture Environment and Rural Affairs	Draft Green Growth Strategy Innovation Strategy 2020-2025 Circular Economy Package Policy Statement July 2020 The new 'Waste Management Strategy' (under development) Draft Environment Strategy
Department for Infrastructure	Procurement Enhancement Programme – Procurement Strategy



# The Strategic Overview

Both governments also identify the CE as key to achieving this target however each jurisdiction has different legislative, strategic and policy documents relating to how to deliver.



# The Strategic Overview

## Key points of difference NI/ROI

- In the last 3 years ROI has stepped up it's commitment to CE and is now more advanced from a policy/legislation/action plan/budgetary point of view than NI
- NI has been working with a better approach to waste for much longer. E.g. incentivised waste separation but lags behind on progressing from draft strategy to action plans with a budget



# The Strategic Overview NI



The delivery of the **Circular Economy Strategy** is key to enabling the strategic vision for a **10X Economy** with **Green Growth** at its heart in NI by 2030



# The Strategic Overview – Draft NI CE Strategy

1. The delivery of a circular economy strategy in NI will be a key enabler of the 10 X Economy Strategy and the Draft Green Growth Strategy with innovation, efficiency, net-zero and growth opportunity for NI businesses.
2. The Circular Economy represents an incredible way to de-risk your business supply chain (We are over 90% reliant on virgin materials in NI and by 2050 these will all be used up at current levels of consumption)
3. We need to cut our material footprint in half by 2050 if we are to achieve our goals for Net Zero
4. The key industries are: the bioeconomy, advanced manufacturing, construction, tourism and, hospitality
5. Industrial symbiosis represents a fast and practical way for business to engage in the circular economy today with huge upsides in cost savings, job creation, innovation and improved environmental impact.



# Key strategic barriers that ISNIL can help address

1. Lack of data collection & measurement (material flows)
2. Lack of CE awareness & CE business opportunities
3. Inadequate CE R&D to solve linear problems
4. Inadequate networks for CE collaboration
5. Lack of knowledge & skills for cross sector circularity
6. Waste regulations & classifications impede material circularity and valorisation



# Key strategic challenges to CE

The **Circular Economy** strategy has a significant target to **reduce the material footprint** of NI from 16.6 tonnes pp to **8 tonnes pp**.

NI is **90%+ dependent on virgin materials** and identifies **12 key barriers**:

1. Lack of data collection & measurement (material flows)
2. New products are associated with wealth
3. Perception of growth is linked to building new
4. Lack of CE awareness & CE business opportunities
5. Inadequate CE R&D to solve linear problems
6. Public procurement supports linear models
7. Lack of Gov leadership, vision & funding
8. Lack of incentives to support regenerative materials
9. Disconnect between consumption and environmental impact
10. Inadequate networks for CE collaboration
11. Lack of knowledge & skills for cross sector circularity
12. Waste regulations & classifications impede material circularity and valorisation



# Operational Challenges

Businesses are becoming more aware of the principles of the CE, but don't know how to advance with specific opportunities or don't yet have the systems in place to make it business as usual.

Based on our experience of working on CE on the island of Ireland some common barriers include:

- to move “waste” resources for reuse across the border between companies, compliance requires completing the TransFrontier Shipment of waste (TFS) document and paying a fee. The additional requirements (reporting, time and fee) can be a barrier to all-island business uptake of CE because in most cases it is faster and cheaper to keep material within a single jurisdiction.
- In NI, regulations dictating waste/end of waste/ waste carriers license can mean that the business cannot legally transfer its unwanted resources to another company within a reasonable time frame or without incurring additional costs, such as the use of a registered waste contractor to take and process the waste before it can be delivered to the company that wants it.



# The Strategic Overview - Opportunities

In ISL' experience, the economic opportunities to adopt CE approaches are to be found in:

- savings costs
- opportunities for additional sales
- safeguarding and creating new jobs
- product innovation
- progress on net zero goals
- reducing ESG risk - making the company more attractive to investors

**It is estimated that more than 13,000 jobs could be created by 2030, if Northern Ireland moved to a circular economy**



What is your biggest barrier to engaging in the circular economy?

# Three asks!

1. One sustainable act this weekend?
2. Inter Trade Ireland Questionnaire?
3. Sustainability Assessment?



## All Island Digi Manufacturing Cluster – Join for FREE today

Digi Manufacturing 2.0 is a cross-border collaboration project between IDEAM Cluster and Manufacturing NI. Funded through the InterTradeIreland Synergy Programme which aims to scale cross-border collaboration between SMEs to foster strategic value chains and unlock Green Innovations of Manufacturing SMEs.

*Click on the QR codes below*

### Sustainability Assessments

**FREE Sustainability Assessments**



Book your slot now with Ben Craig,  
Commercial Director at International  
Synergies  
(1-1.5hr via zoom)

### B2B partnering workshop online 20th Sept 11am-1pm

**Complete online form by 6th Sept**



Benefits of completing the form include;

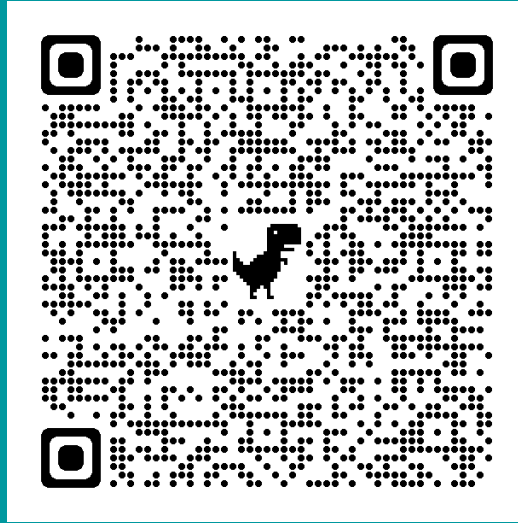
- ✓ FREE entry into an online B2B catalogue of companies interested in cross border collaborations
- ✓ Meet companies interested in partnerships in the areas of;
  - Sustainability
  - Energy monitoring
  - Digitalisation
  - Artificial intelligence
  - Robotics
  - Data analytics
- ✓ Apply for £1,000 project initiation voucher for 1-1 support
- ✓ Linkages to the Manufacturing NI and The IDEAM cluster business community & other clusters across the Island of Ireland

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# Let's accelerate the Circular Economy



Book a free visit

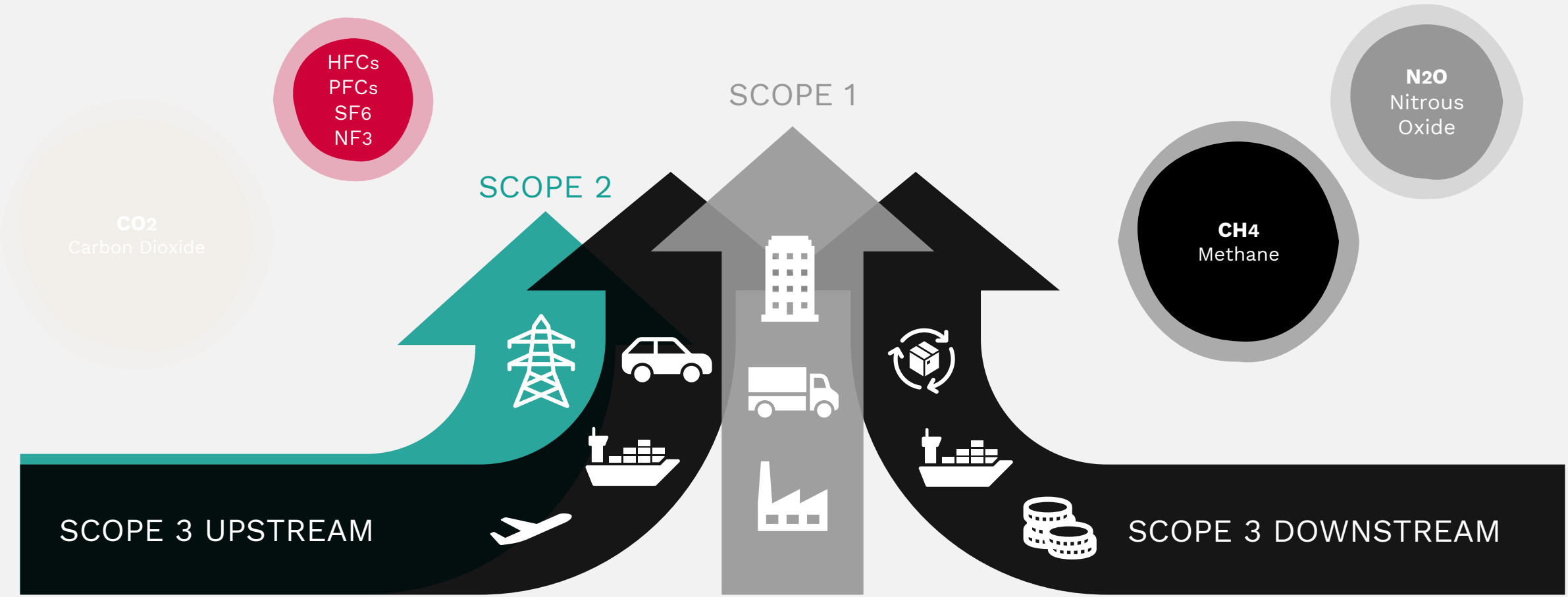
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# GOVERNANCE & REGULATION

- Complex and wide ranging
- Environment Management Systems
- Responsible Business = Beyond Compliance



# CLASSIFYING BUSINESS EMISSIONS



# EMISSIONS SOURCES: SCOPE 3

## SCOPE 3 UPSTREAM

Purchased goods and services



Capital goods



Fuel and energy-related activities



Upstream transportation and distribution



Waste generated in operations



Business travel



Employee commuting



Upstream leased assets



## SCOPE 3 DOWNSTREAM



Downstream transportation and distribution



Processing of sold products



Use of sold products



End-of-life treatment of sold products



Downstream leased assets

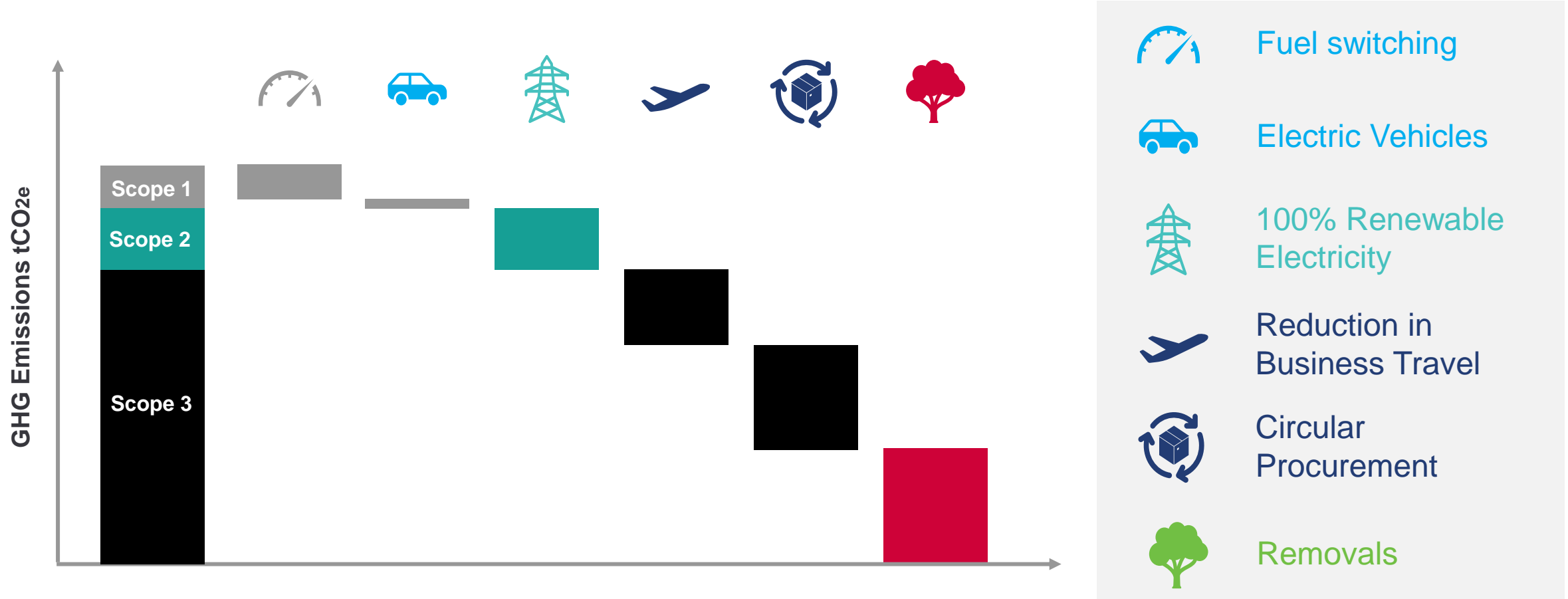


Franchises



Investments

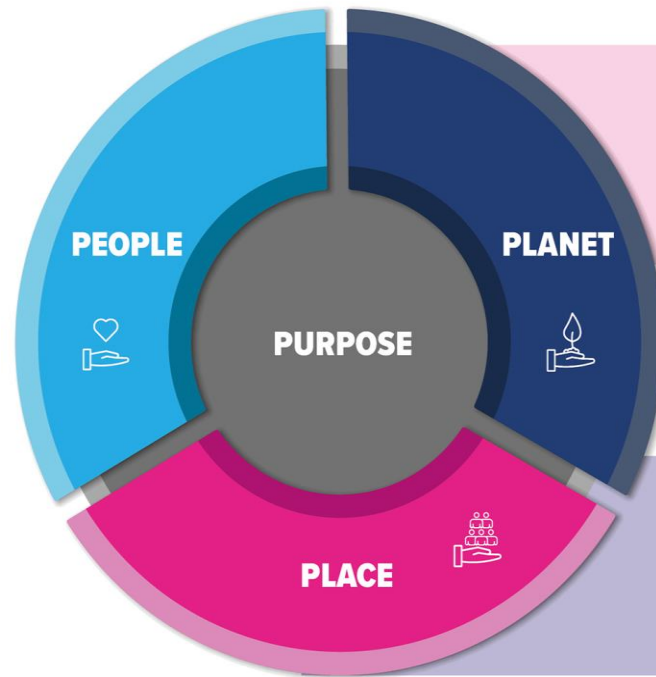
# WHAT DOES MITIGATION LOOK LIKE FOR A BUSINESS?



# YOUR RESPONSIBLE BUSINESS STRATEGY

Business in the Community is the network for responsible business. A registered charity and membership organisation, we exist to support and challenge business to be a force for good in society.

## WHAT MAKES A RESPONSIBLE BUSINESS?



## HOW CAN BUSINESS IN THE COMMUNITY HELP YOU?

**Objective 1**  
**ENGAGING BUSINESS TO COLLABORATE IN TACKLING SOME OF THE BIGGEST ISSUES FACING SOCIETY**



SOCIAL INCLUSION AND PROSPERITY



CLIMATE CHANGE AND CARBON FOOTPRINT



EMPLOYEE WELLBEING & INCLUSION

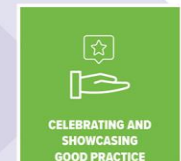
**Objective 2**  
**DEVELOPING AND GROWING THE MOVEMENT FOR RESPONSIBLE BUSINESS IN NORTHERN IRELAND**



NETWORKING AND SHARING



BENCHMARKING AND REPORTING

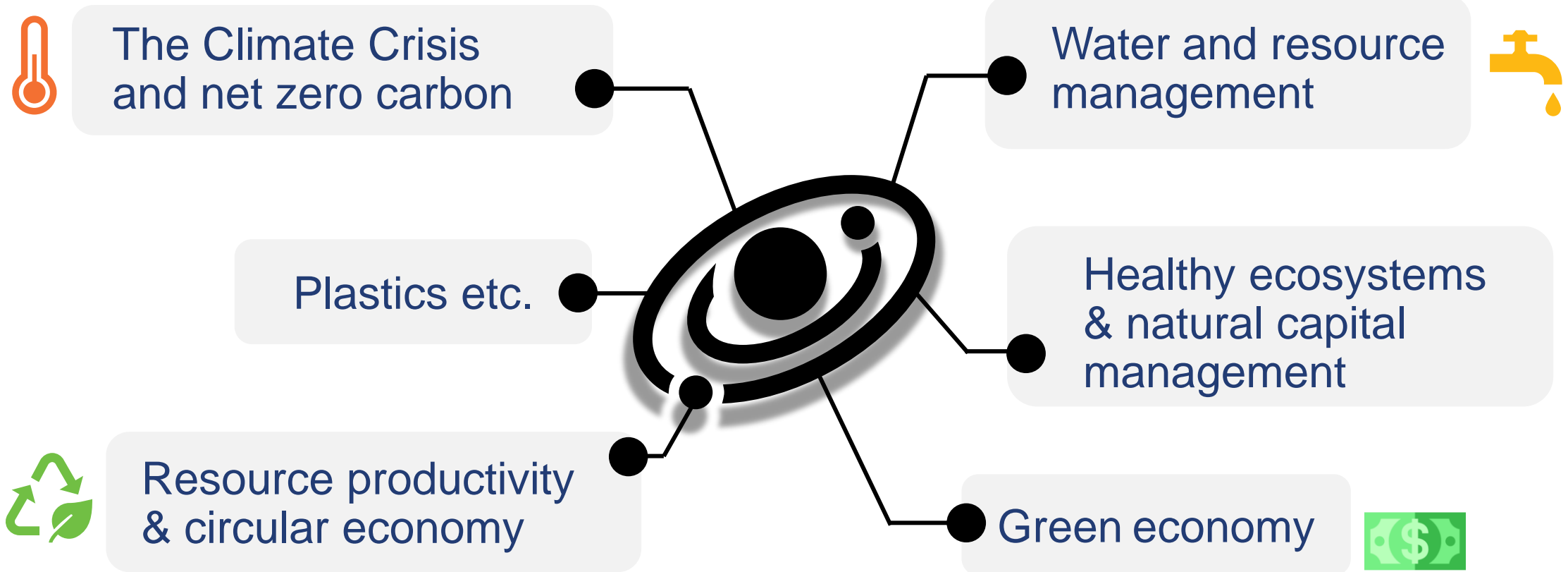


CELEBRATING AND SHOWCASING GOOD PRACTICE

# YOUR RESPONSIBLE BUSINESS STRATEGY



# THE ENVIRONMENT UNIVERSE FOR BUSINESS



# CREDIBLE STRATEGY VS GREENWASHING

## Credible

## Weak

### Boundary

- Includes Scope 1, 2 and material Scope 3

- Includes Scope 1, 2

### Reductions

- As close as possible to 100% of Scope 1, 2
- At least two thirds or top 3 of Scope 3
- Ambitious, time-bound, science based

- Limited to Scope 1, 2, low hanging fruit
- Include Scope 3 but not all material emissions
- Delayed action, not aligned with 1.5 degrees

### Removals

- Used for residual emissions after reductions have been accounted for
- Additional, permanent, no leakage
- Robust quantification and assurance

- Based on emissions avoidance rather than sequestration
- Would have happened anyway
- Not permanent
- Leakage may occur

# ASSESS YOUR BUSINESS CONTEXT

## PRIORITY ISSUES



# KEY IMPACTS



# MAPPING YOUR IMPACT

IMPACT	ACTIVITY	FREQUENCY OF IMPACT	INFLUENCE OF ORGANISATION ON IMPACT	POTENTIAL SEVERITY OF IMPACT	LEGISLATION RELATED TO IMPACT	REPUTATION RISK	OVERALL SIGNIFICANCE VALUE	SIGNIFICANCE
Energy Use	Electricity	5	5	5	5	5	25	Highly Significant
Resource use	IT purchasing	2	5	4	4	2	17	Significant
Waste	IT recycling	1	5	4	4	4	16	Highly Significant
Resource use	Paper use	3	3	2	4	1	13	Probably Significant