Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Stephen Kelly

Manufacturing NI

Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

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Invest Northern Ireland

Minister Caoimhe Archibald MLA

Department for the Economy

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Alan McKeown

Invest Northern Ireland

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ID-NI Initiative Update

Wednesday 19th February

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Eugene Heaney

Invest Northern Ireland

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Industrial Decarbonisation for Northern Ireland

- Why we did it?
- How we did it?
- What was said?
- What did we deliver?
- What could be achieved?

IDNI – Why we did it?

Department for the Economy
An Roinn Geilleagair

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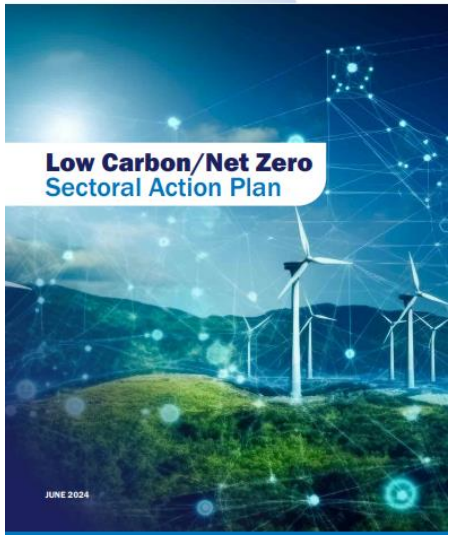
Northern Ireland Executive | Draft Green Growth Strategy for Northern Ireland



IDNI
Industrial Decarbonisation
Northern Ireland

How we did it?

Derry City & Strabane

Armagh, Banbridge and Craigavon

Mid Ulster

Belfast

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IDNI Industrial Decarbonisation Northern Ireland

How we did it?

Fermanagh & Omagh

Causeway Coast & Glens

Antrim & Newtownabbey

Ards & North Down

Mid & East Antrim

Lisburn & Castlereagh

Newry & Mourne

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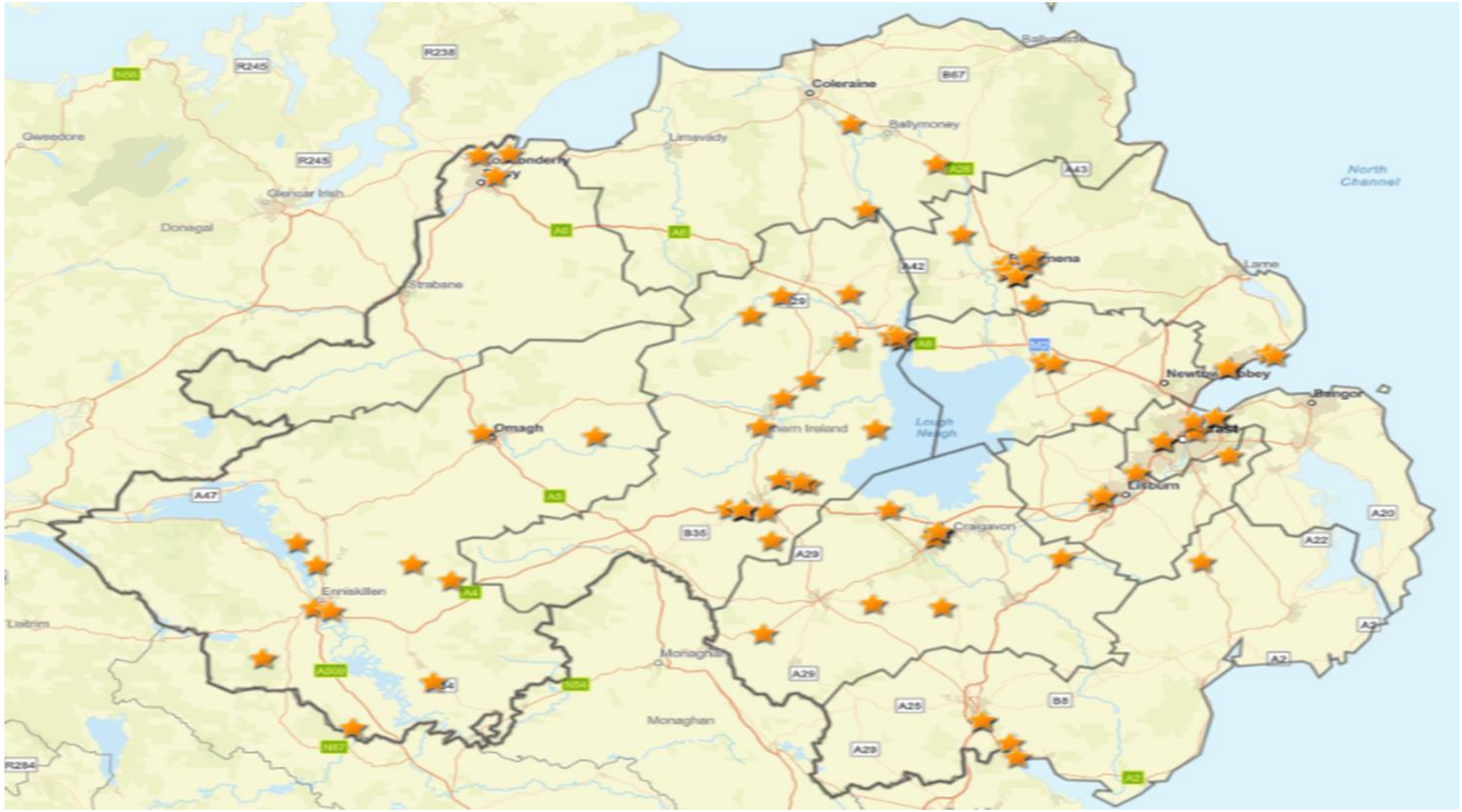
How we did it?



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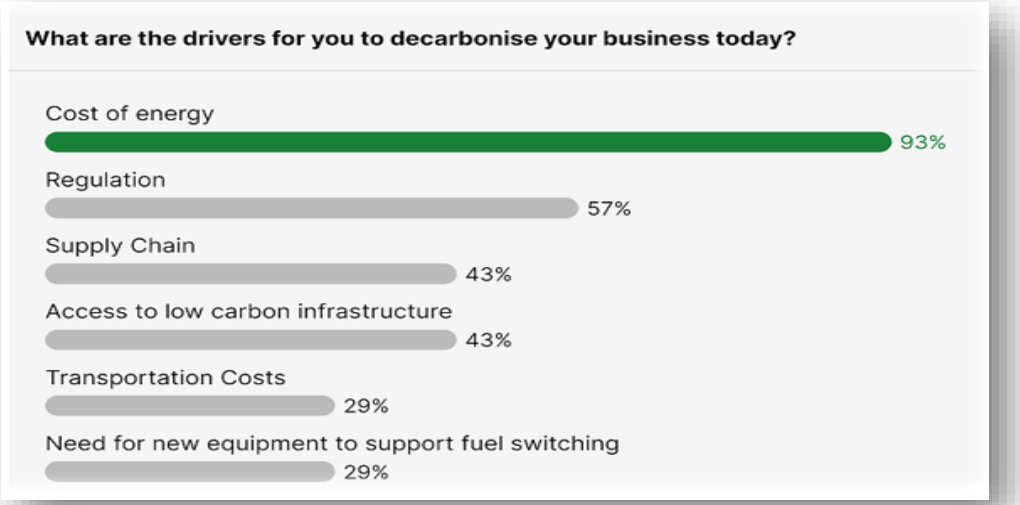
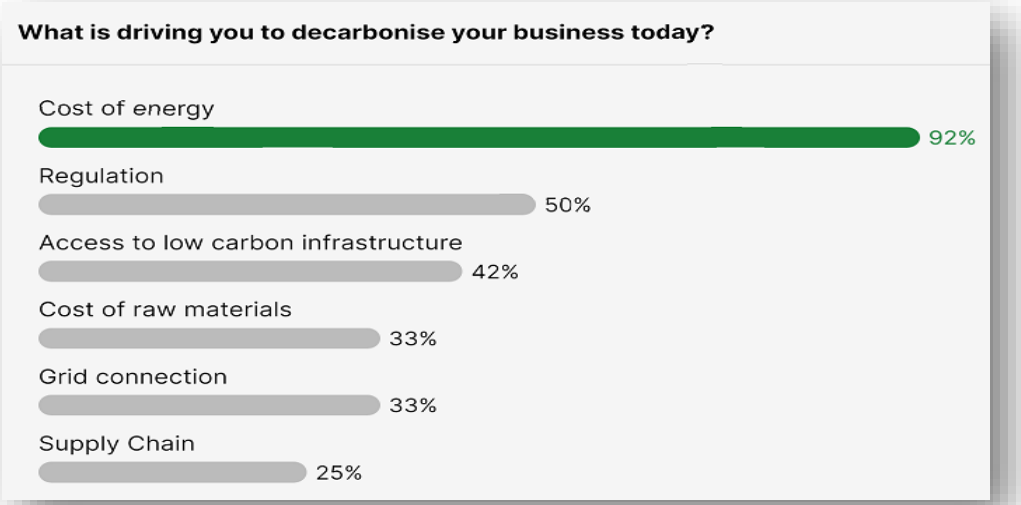
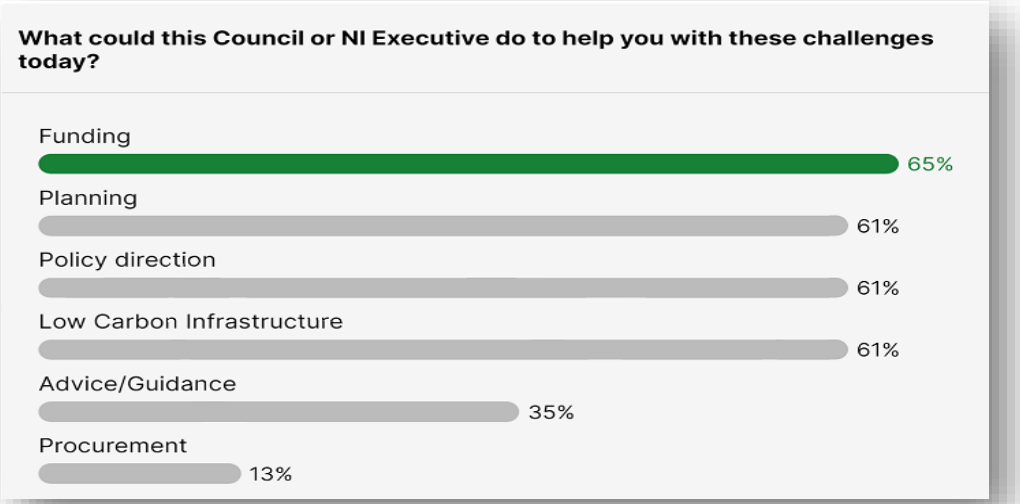
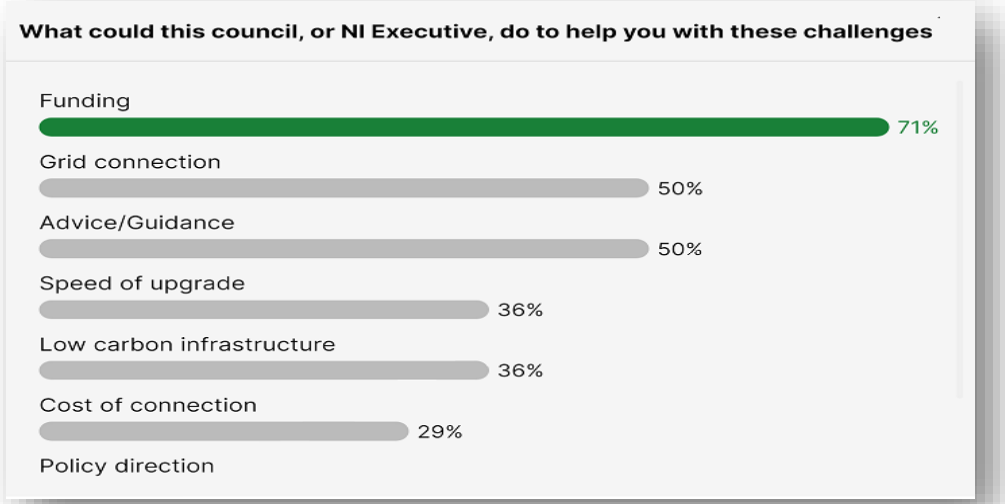
What was said?









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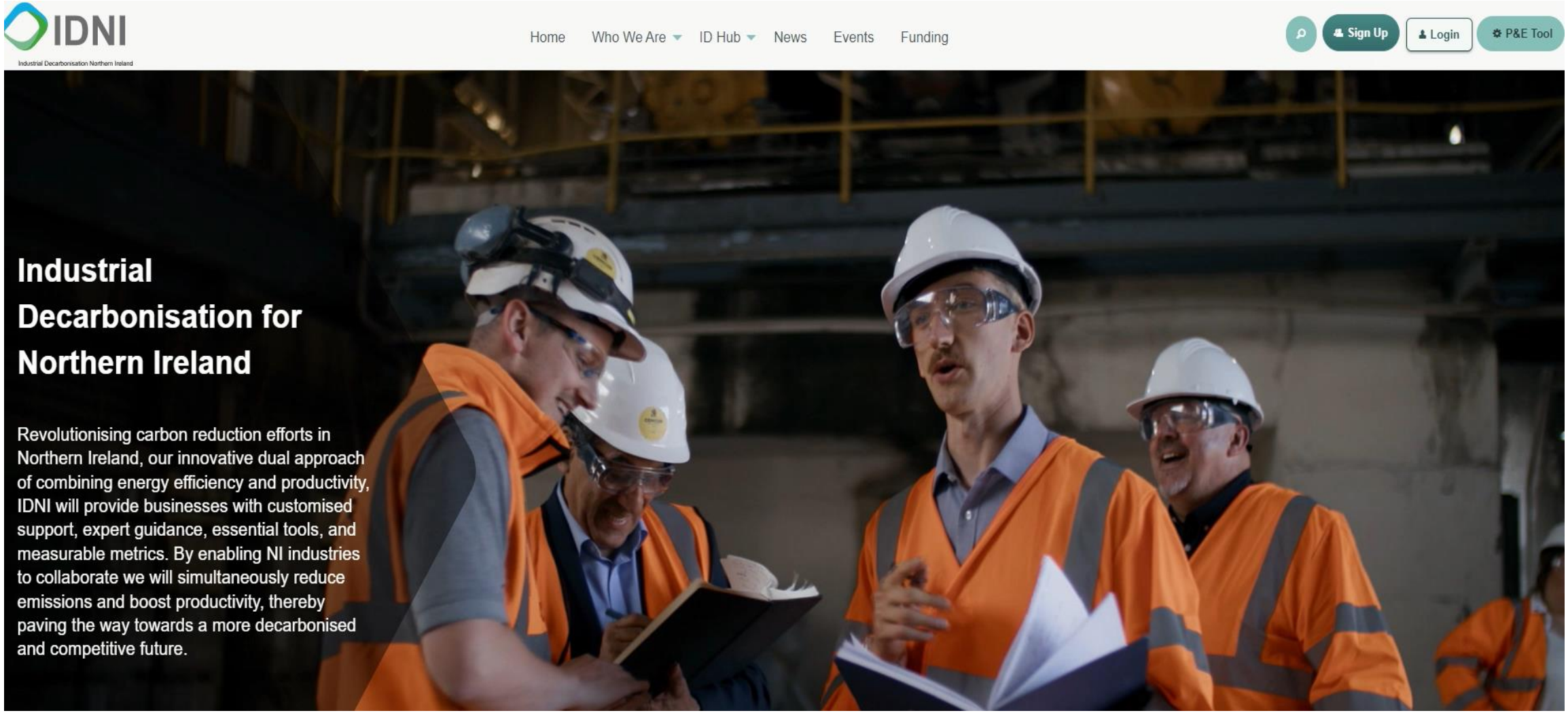
What did we deliver?

Knowledge Sharing Platform (KSP)



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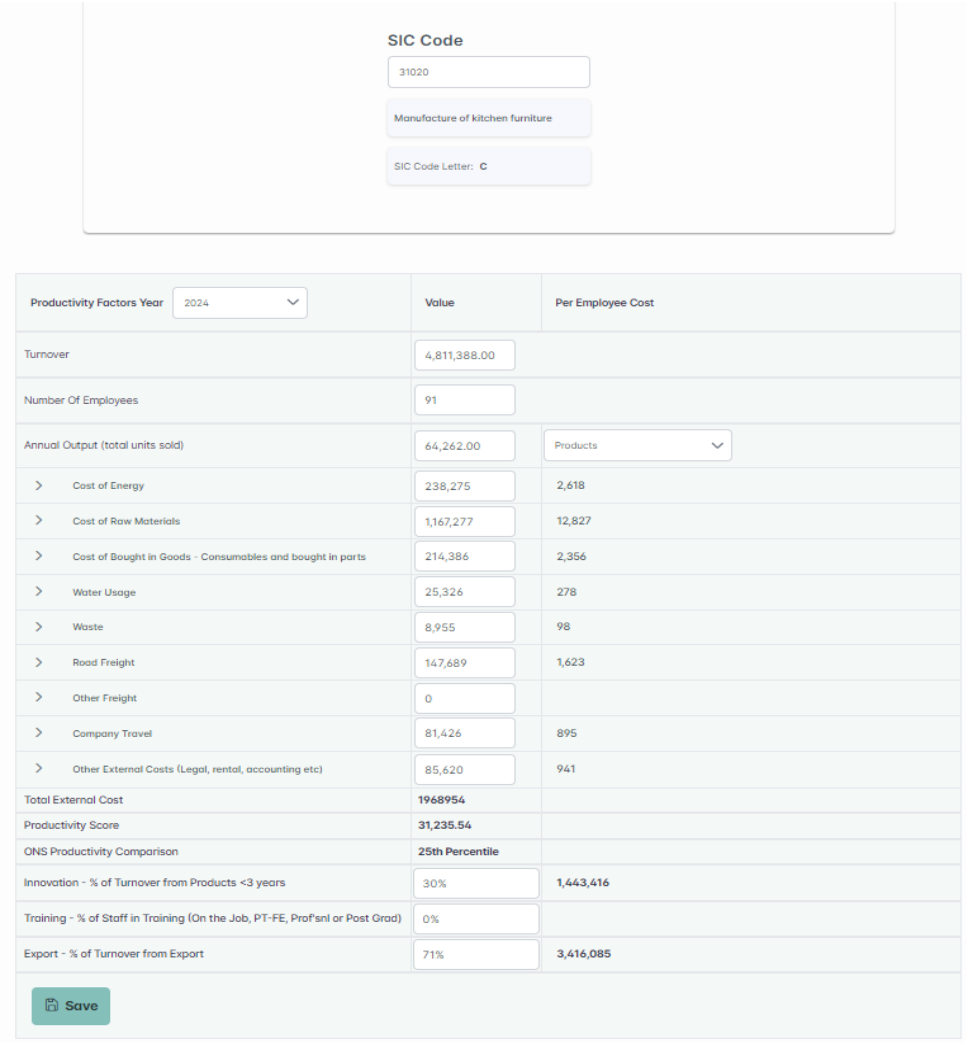
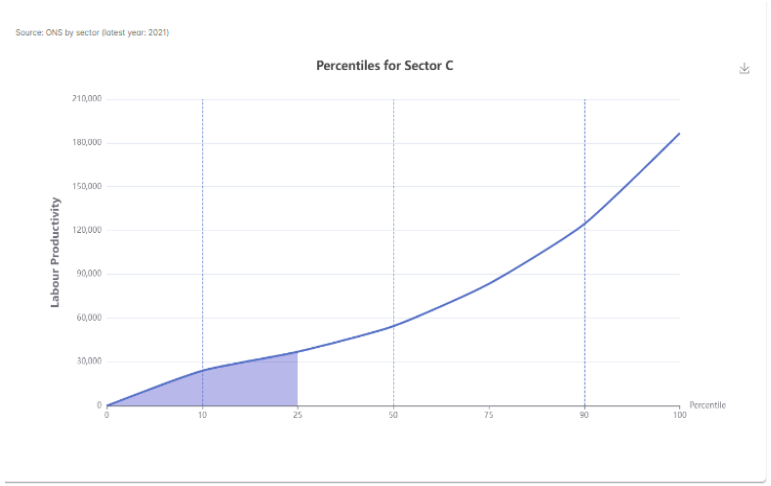
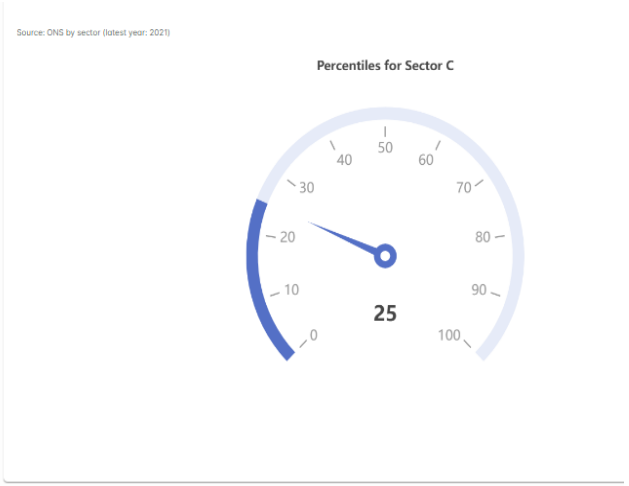
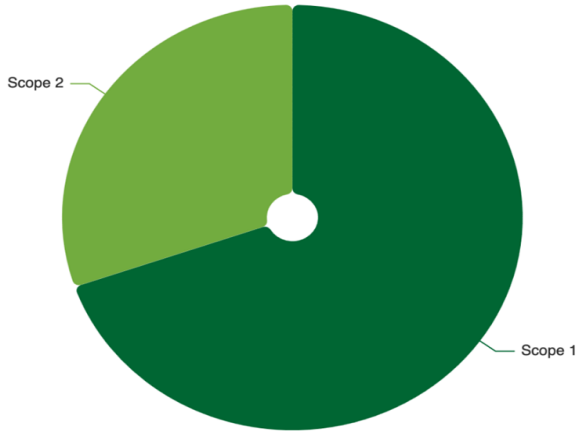
What did we deliver?

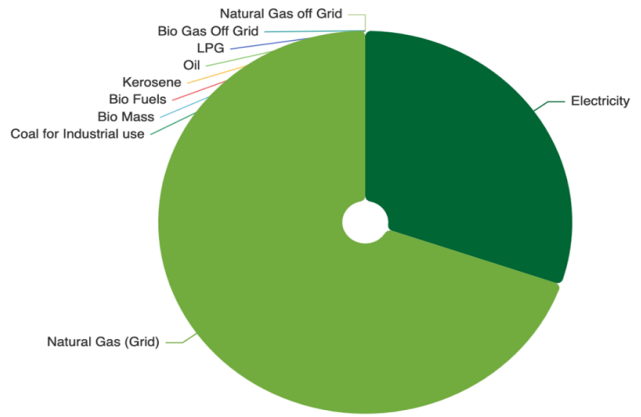
Productivity Emissions Tool (PET)











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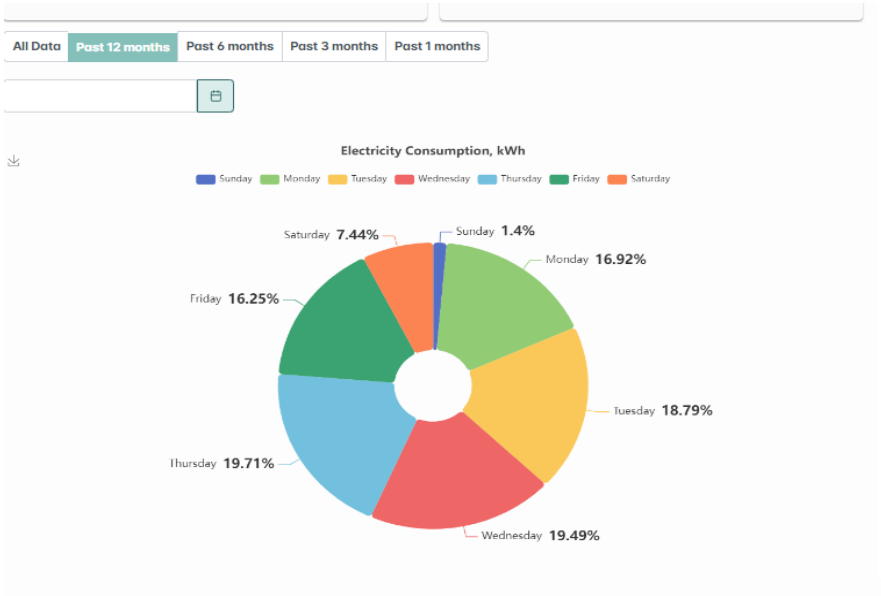
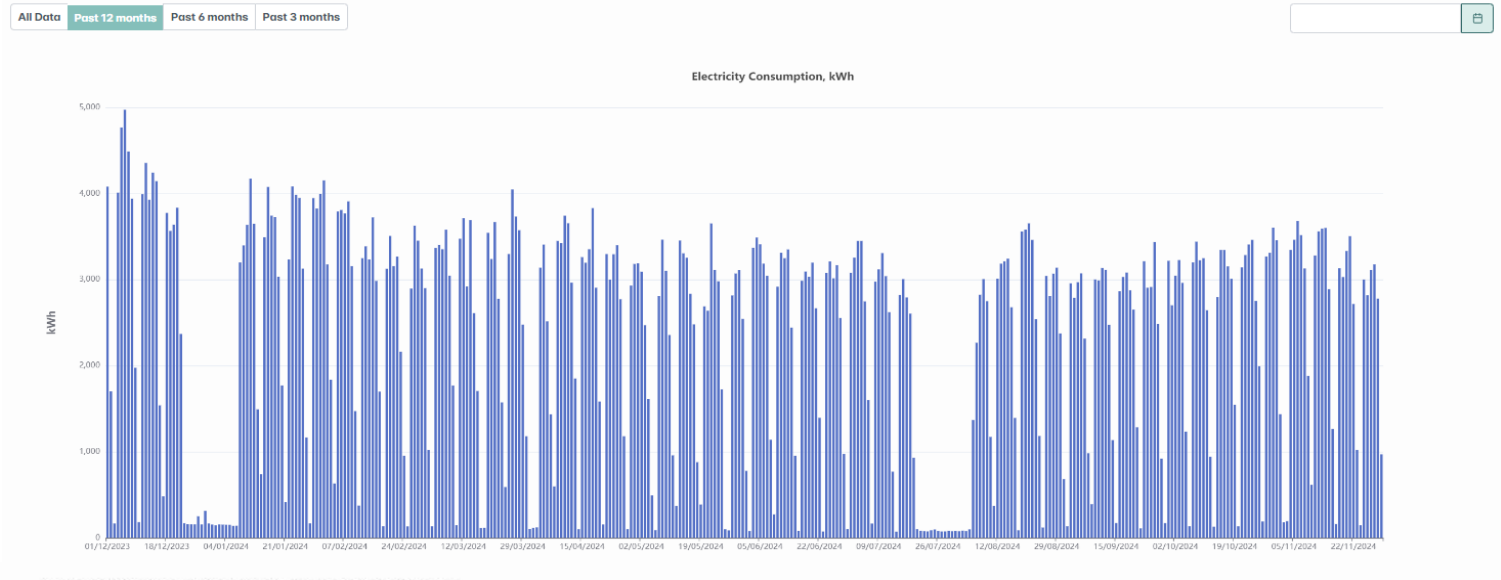
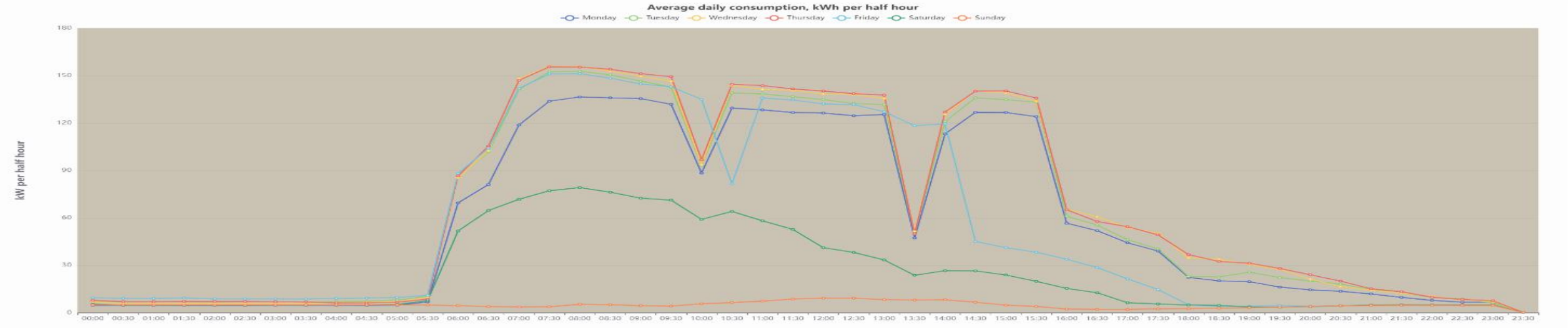
What did we deliver?

Productivity Emissions Tool (PET)







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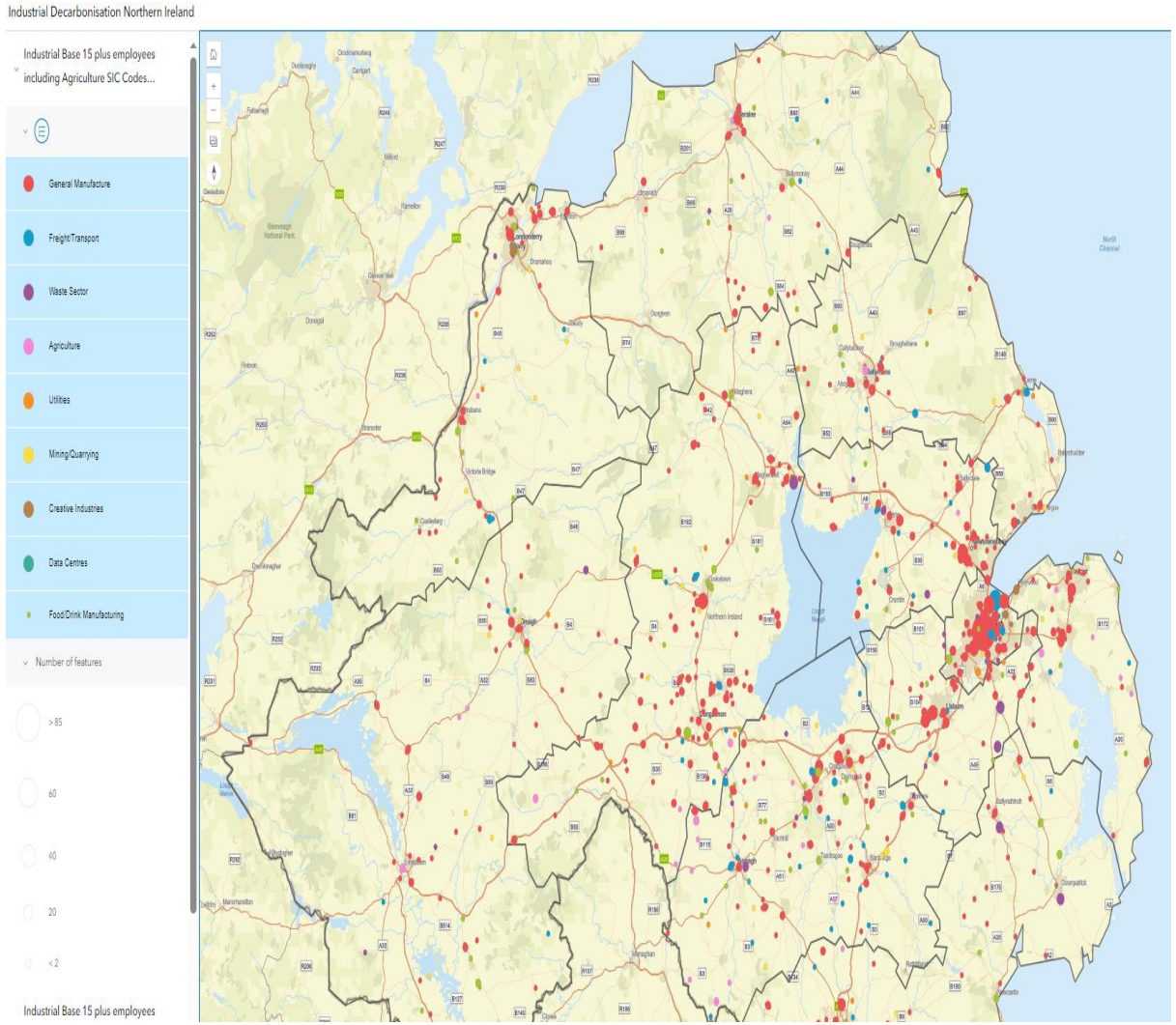
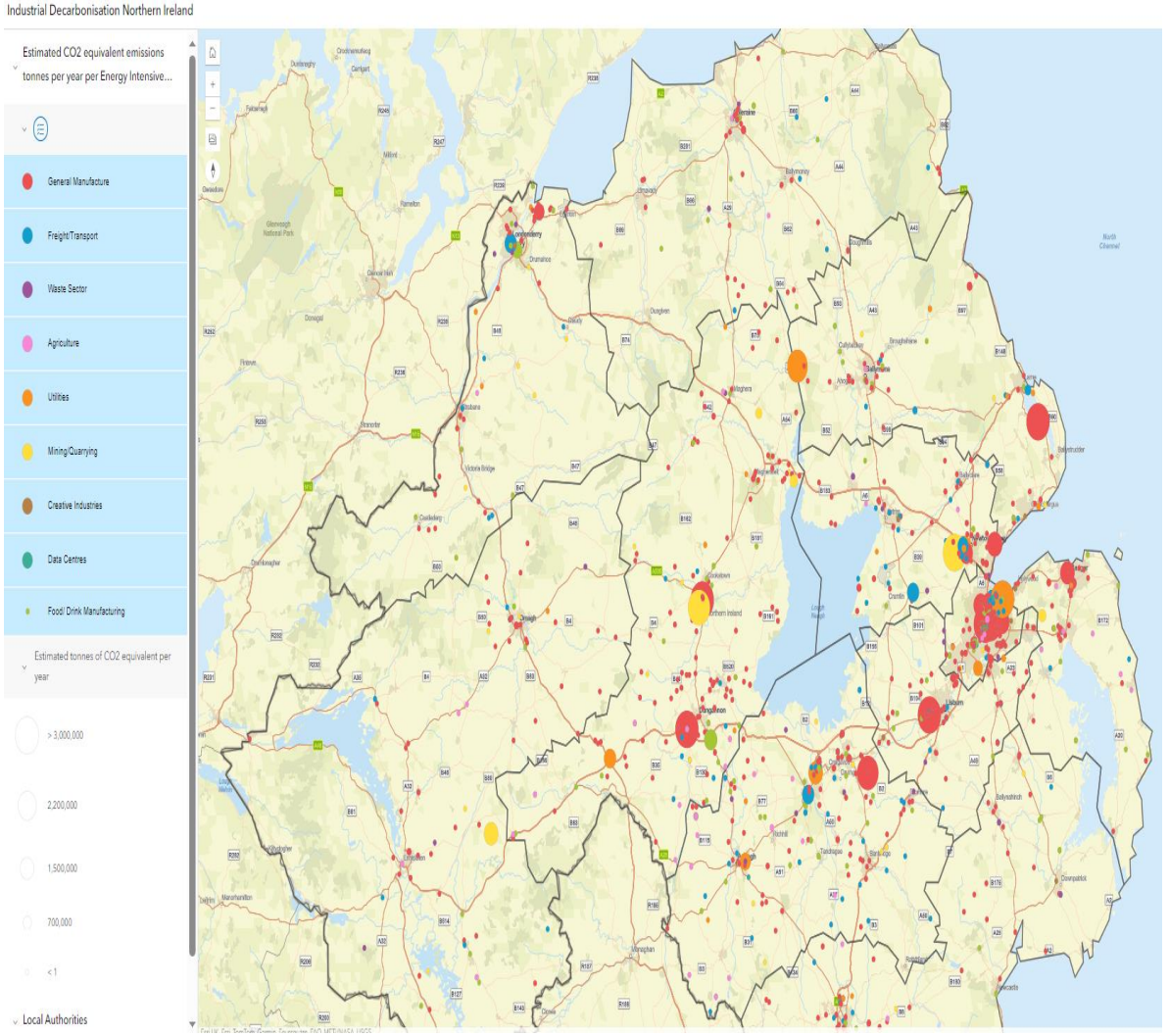
What did we deliver?

IDNI Mapping Resource





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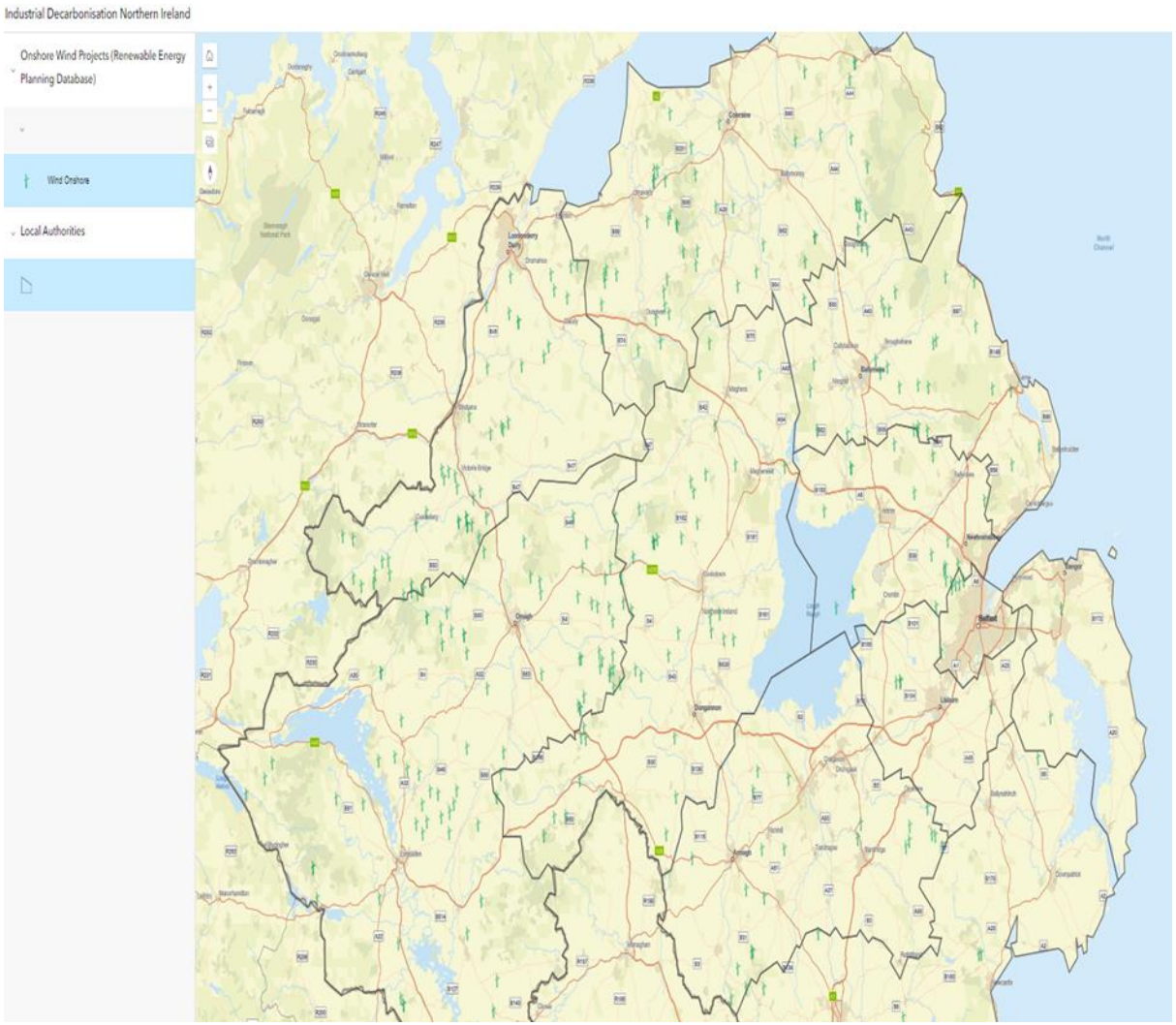
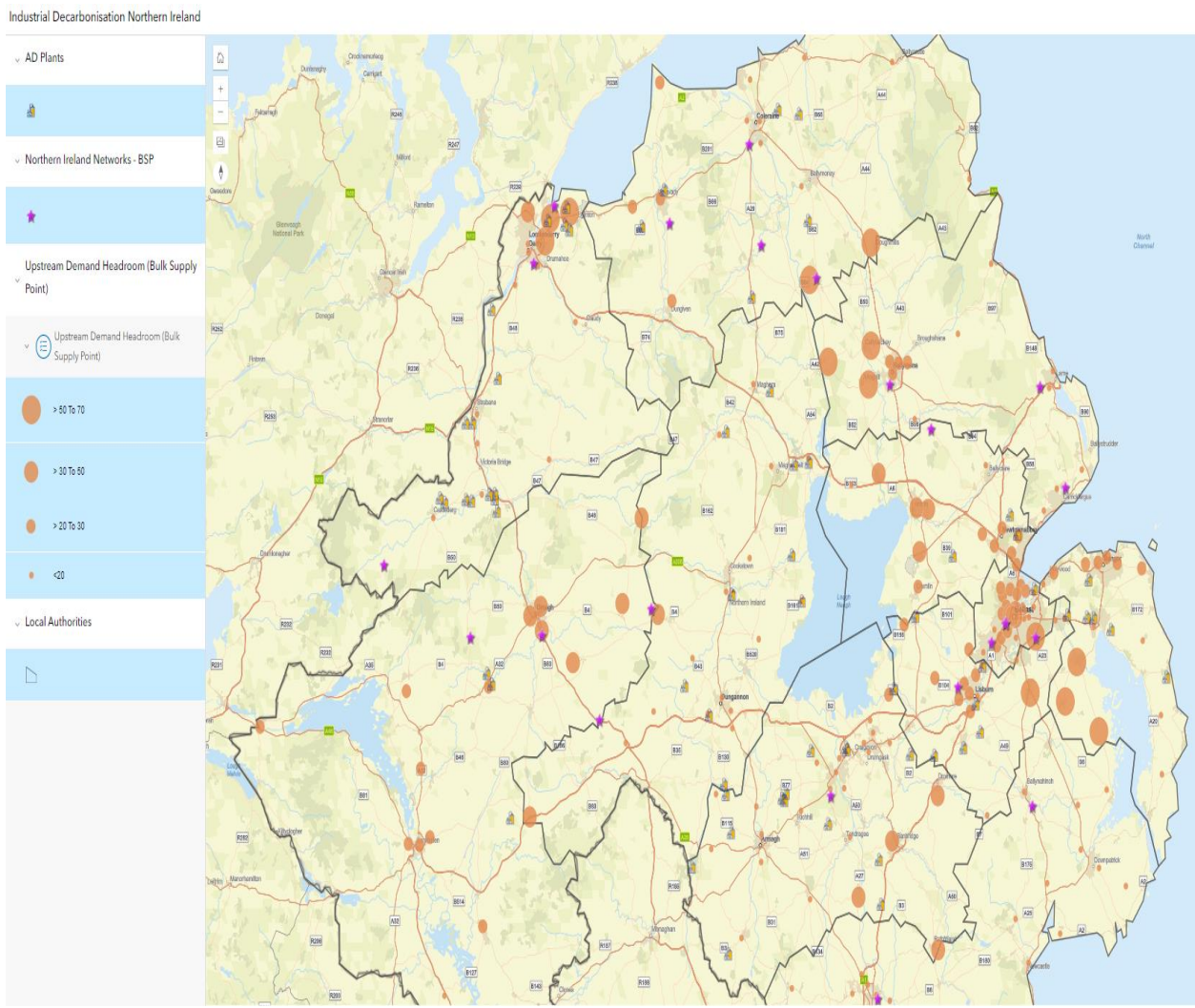
What did we deliver?

IDNI Mapping Resource





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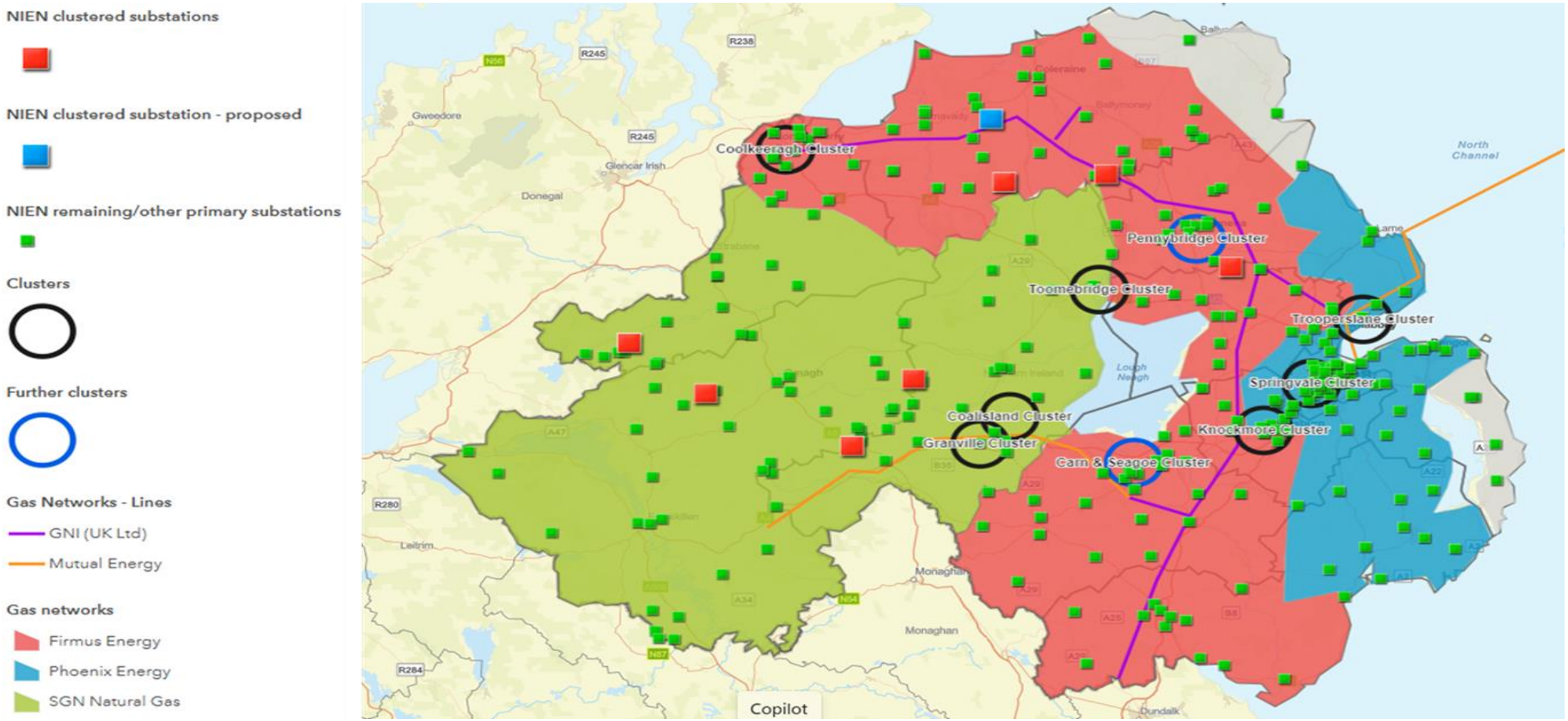
What did we deliver?

IDNI Mapping Resource



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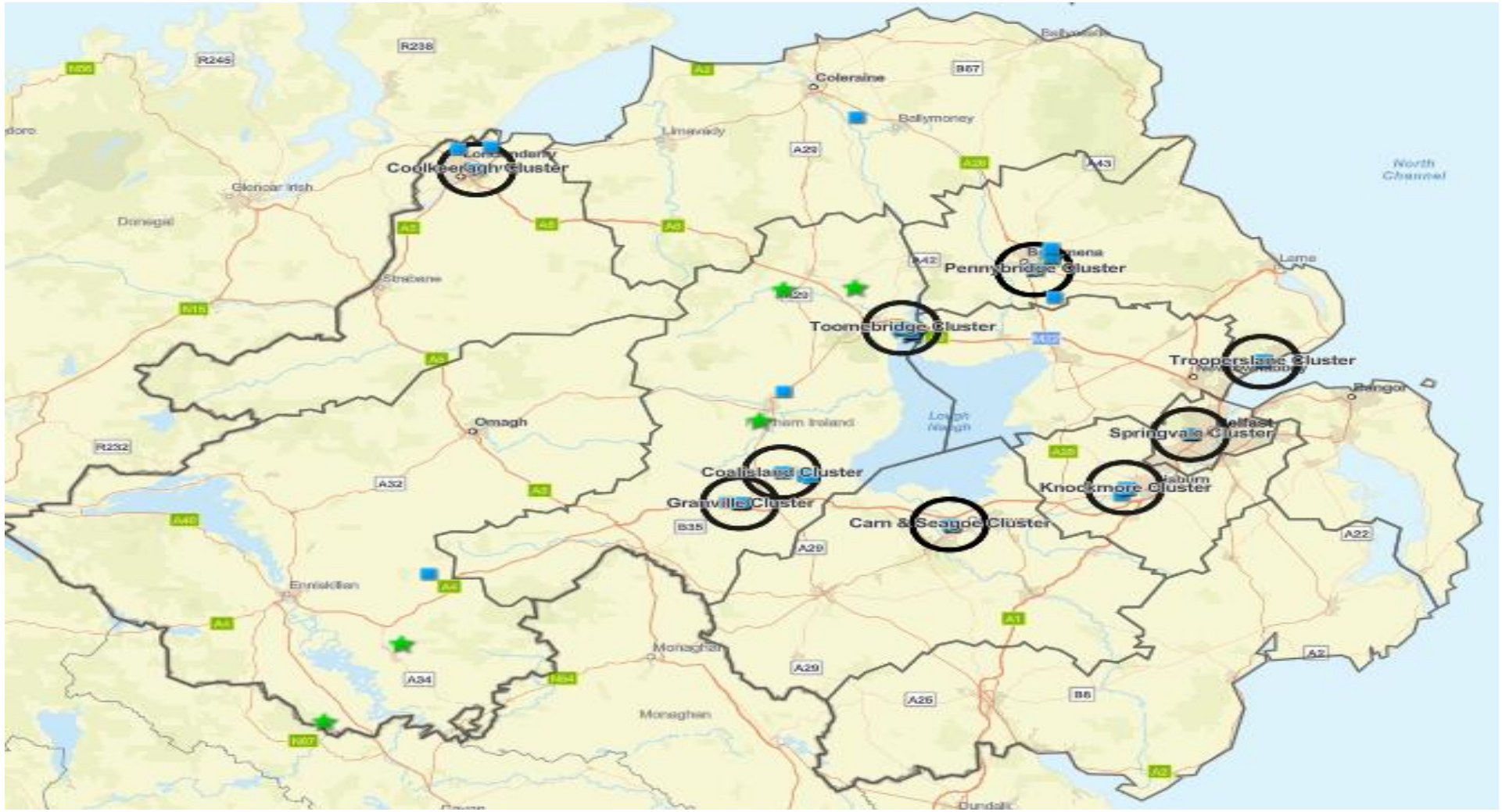
What did we deliver?

IDNI Clusters and Communities of Shared Interest (COSI) Identified



MPANI COSI

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What did we deliver?

IDNI Clusters and COSI Members

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What did we deliver?

IDNI Clusters and COSI Members

AXON
westland give it your best
McCloskey INTERNATIONAL
UnitedFeeds
dunbia
Linergy
Ulster Farm BY-PRODUCTS
Energy Through Innovation
bmi
Linden FOODS
Granville

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What did we deliver?

IDNI Clusters and COSI Members

Granville Site Recommendations						
Company ID	Rec. Title	kWh/yr	£/yr	tCO2e/yr	Cost	Payback
1006	Biogas	-	£ -	2192.5	-	0.0
1011	HVO	-	£ -	1190	-	0.0
1005	Repair Air Leaks	41,300	£ 15,100.00	6.5	£ 2,000.00	0.1
1007	aM&T System	160,000	£ 32,000.00	36	£ 40,000.00	1.3
1005	LED Lighting	780	£ 280.00	0.2	£ 400.00	1.4
1008	Shut-off Valves	31,200	£ 6,200.00	7	£ 10,000.00	1.6
1005	VSD Compressor	81,300	£ 36,900.00	22.7	£ 60,000.00	1.6
1006	aM&T System	112,000	£ 17,900.00	28	£ 40,000.00	2.2
1010	PIR Sensors	2,300	£ 600.00	0.5	£ 1,500.00	2.5
1008	Sub-surface Aeration	346,000	£ 69,000.00	78	£ 230,000.00	3.3
1005	aM&T System	17,900	£ 3,600.00	4	£ 15,000.00	4.2
1007	Inverter Drives	23,500	£ 4,700.00	5.3	£ 20,000.00	4.3
1007	Solar PV	370,100	£ 74,000.00	83.3	£ 473,000.00	6.4
1011	Battery	151,000	£ 30,000.00	34	£ 200,000.00	6.7
1009	Solar PV	53,900	£ 11,100.00	12	£ 83,000.00	7.5
1008	Solar PV [332.5kW]	170,000	£ 34,000.00	38	£ 266,000.00	7.8
1006	Solar PV	550,000	£ 88,000.00	125	£ 690,000.00	7.8
1008	Solar PV [100kW]	49,900	£ 10,000.00	11.2	£ 80,000.00	8.0
1010	Solar PV	26,577	£ 6,800.00	6	£ 55,000.00	8.1
1012	Solar PV Array	350,000	£ 72,600.00	78.7	£ 607,000.00	8.4
		2,537,757	**£ 512,780.00**	**£ 3,958.90**	**£ 2,872,900.00**	-

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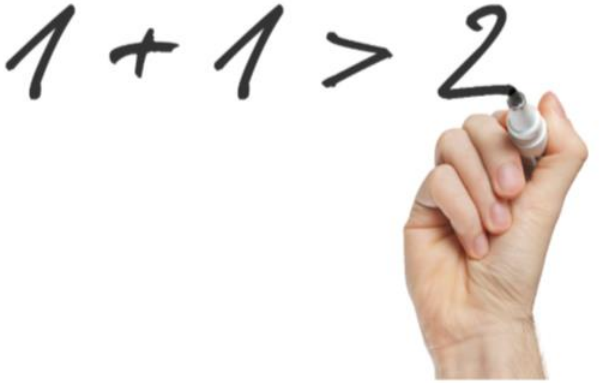
Cluster Opportunities – General Principles

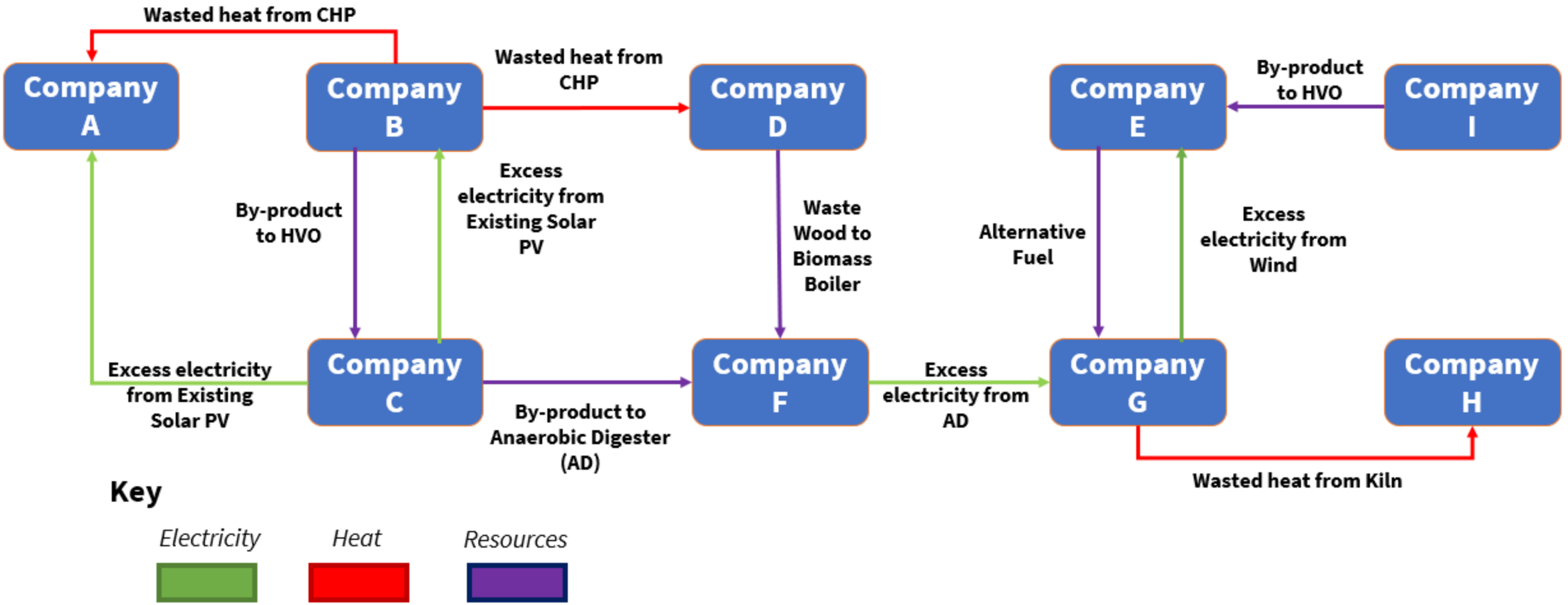
- Excess electricity production
- Waste heat
- Recover energy from waste products



- Economies of scale
- Leverage capability
- Load management
- Grid constraints

What did we deliver?

IDNI Clusters and COSI Members



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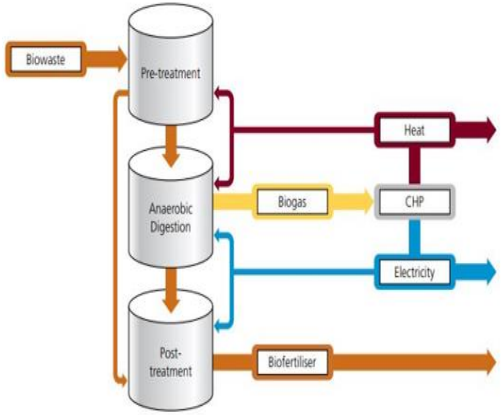
What did we deliver?

IDNI Clusters and COSI Members

Collective Solar PV Array:

- Saving 5,781,000 kWh Per Yr
- 1,300 tCO2e,
- 8.4year pay-back period



Collective 2.7 MWp AD Plant W/ChP (Animal Waste):

- Saving 4,500,000 kWh Per Yr – Electricity
- Saving 5,700,000 Kwh Per Yr - Heat
- 2,055 Combined tCO2e,
- 6.5 year pay-back period

Collective HVO Purchasing:

- Savings of approx. £160,000 on standard HVO price by pooling purchasing power
- 1192 tCO2e,

Collective Wind Farm:

- Saving 10,640,000 kWh Per Yr,
- 2,394 tCO2e,
- 4.3year pay-back period

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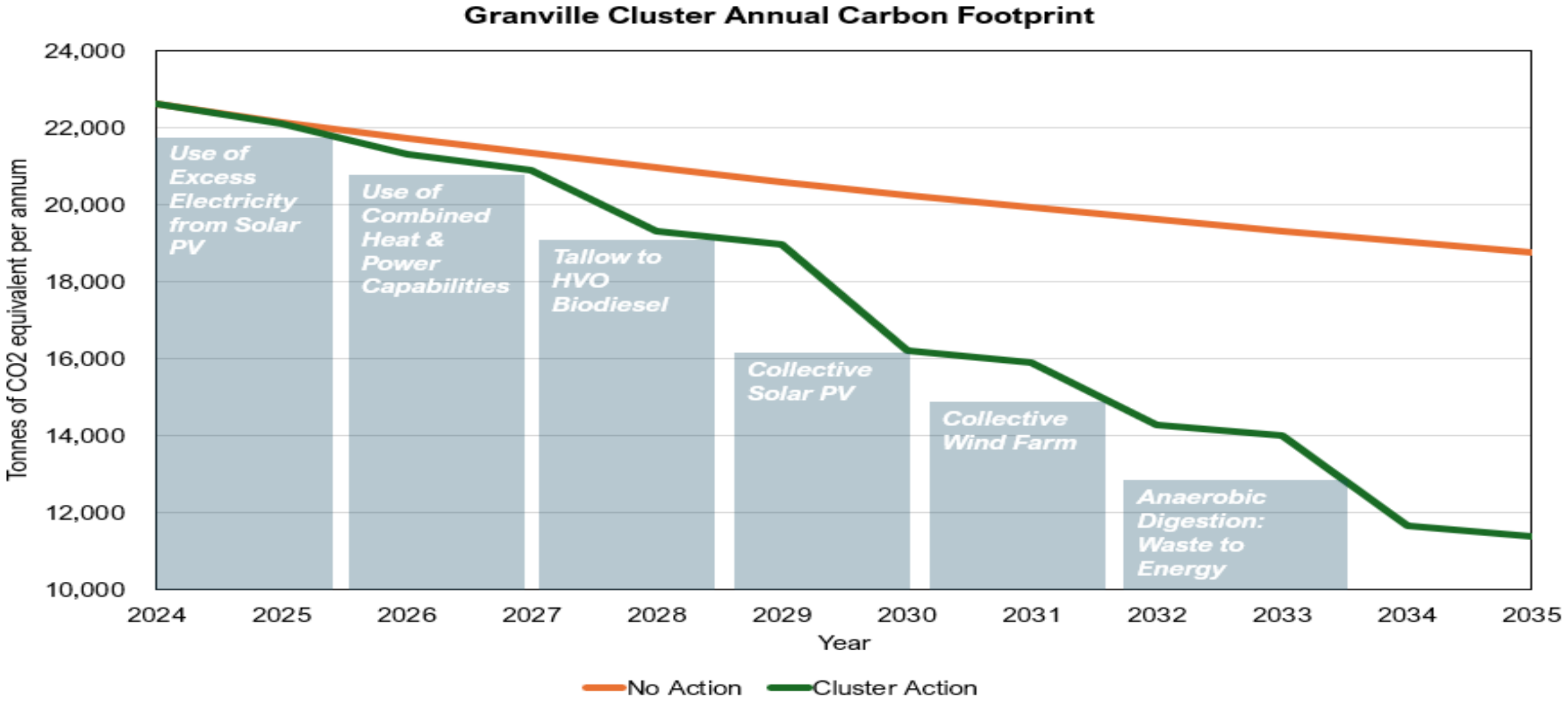
What did we deliver?



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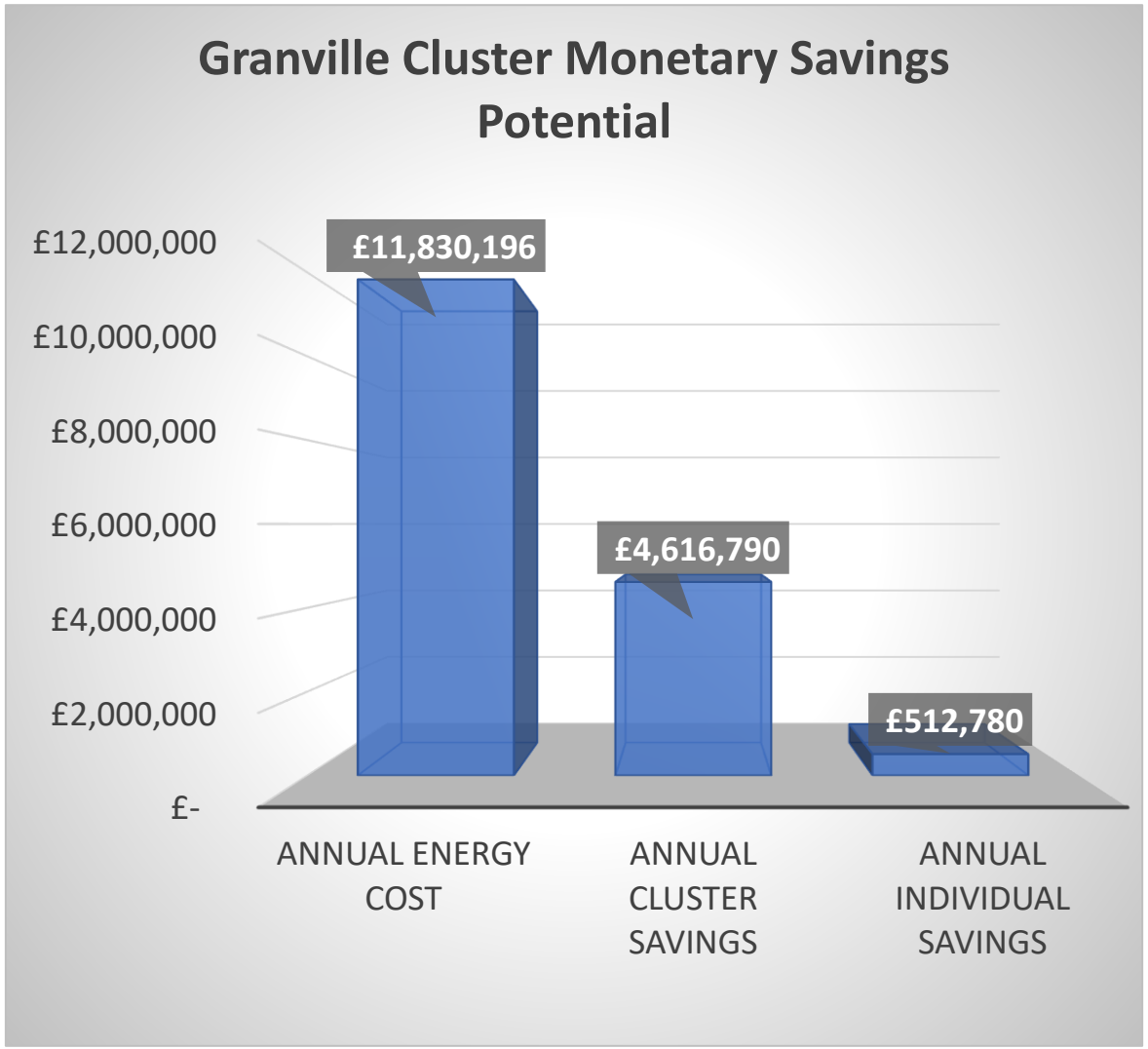
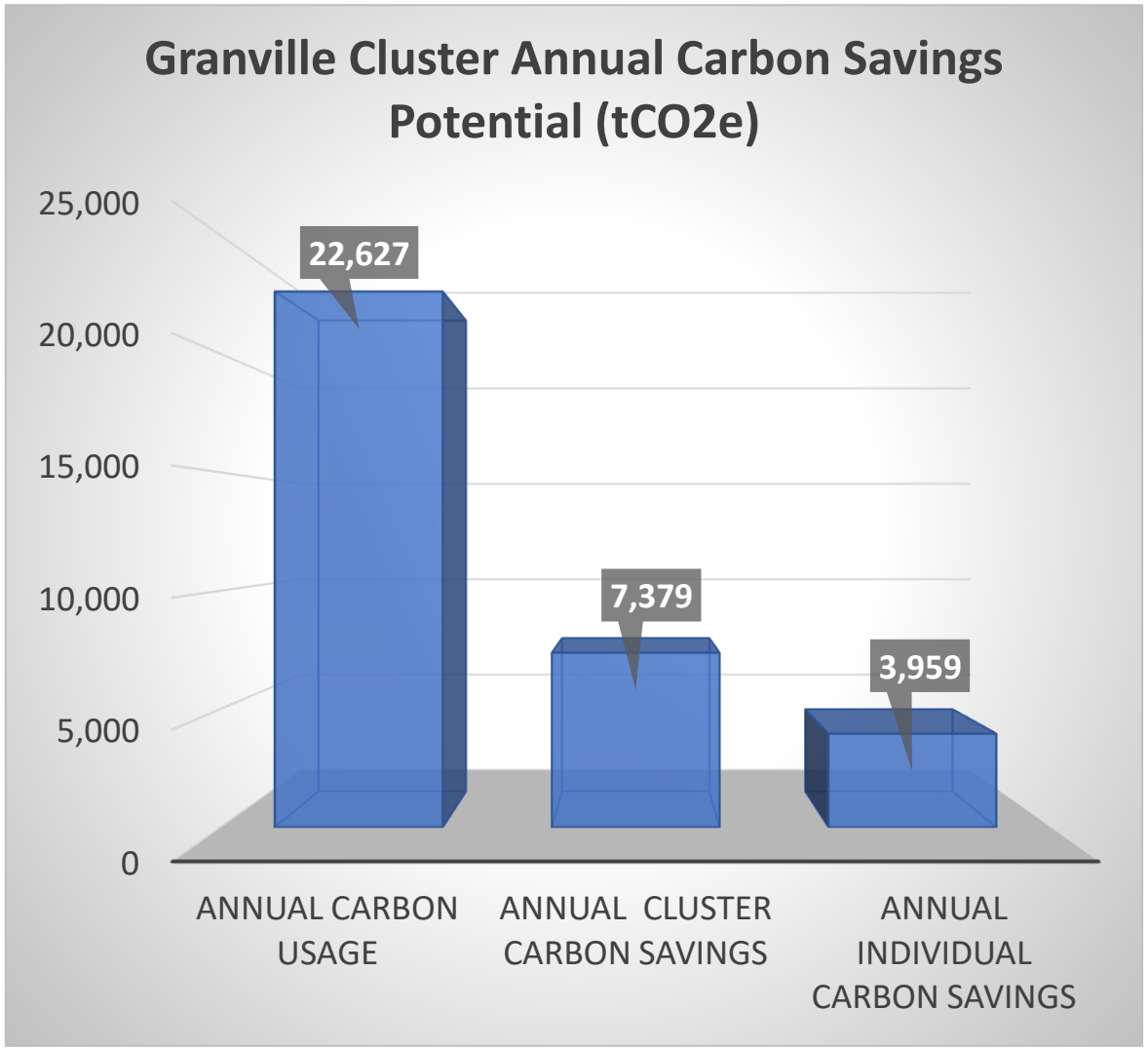
What could be achieved?





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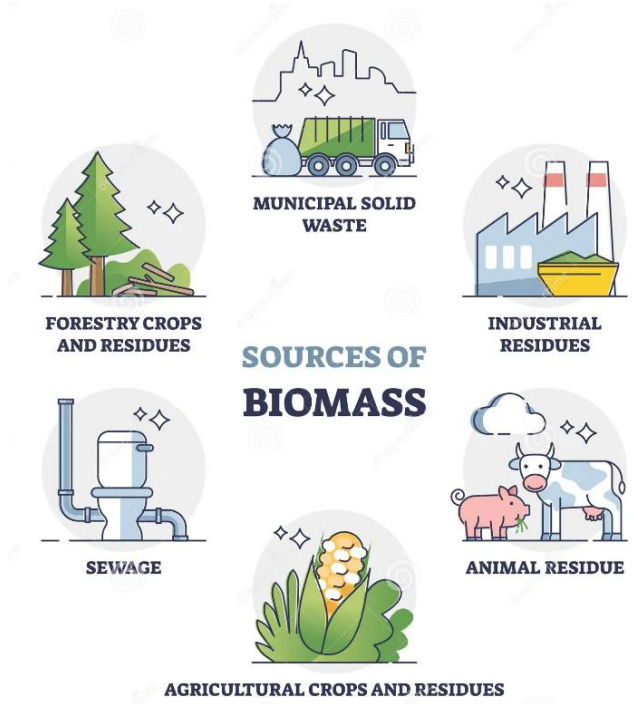
Additional Cluster Opportunities

Knockmore Cluster

Coolkeeragh Cluster



Carn & Seagoe

Toomebridge Cluster

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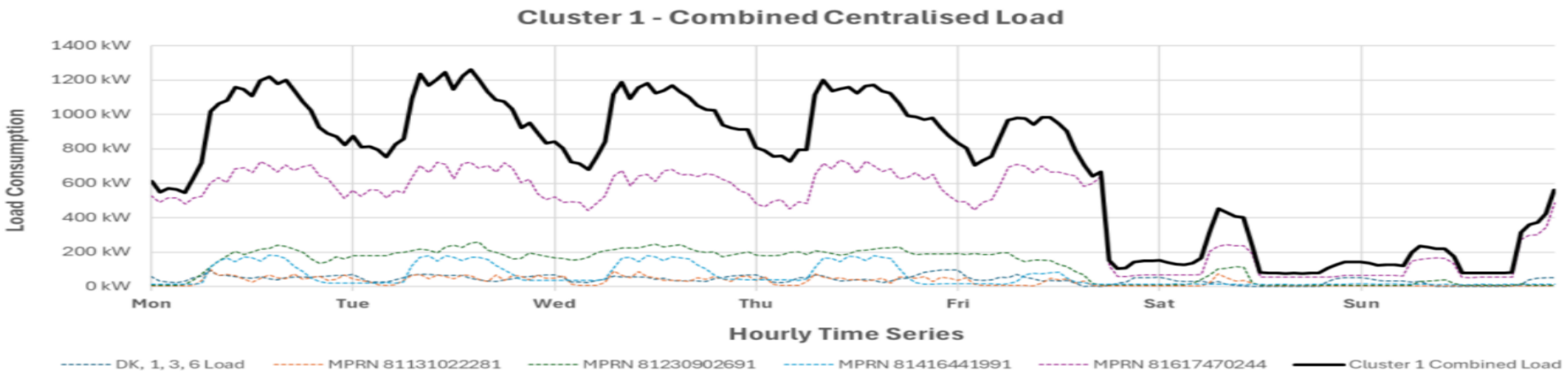
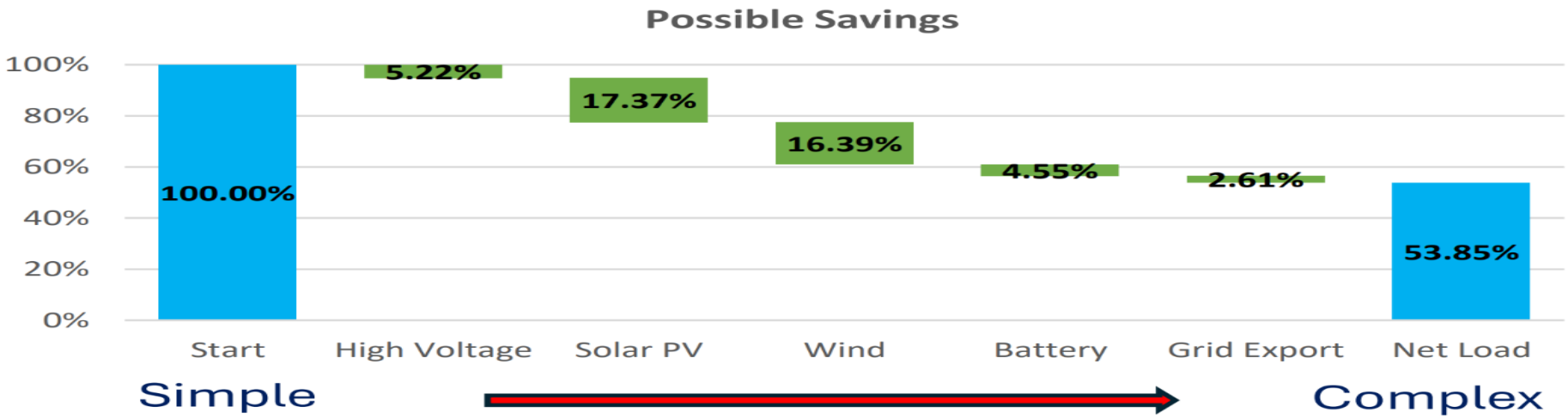
What could be achieved?

Knockmore Cluster energy modelling?



Knockmore cluster – 53.85% Nett Load or **46.15% reduction** in Energy use if acting as a cluster



Knockmore cluster – 76.5% Nett Load or **23.5% reduction** in Energy use if acting individually

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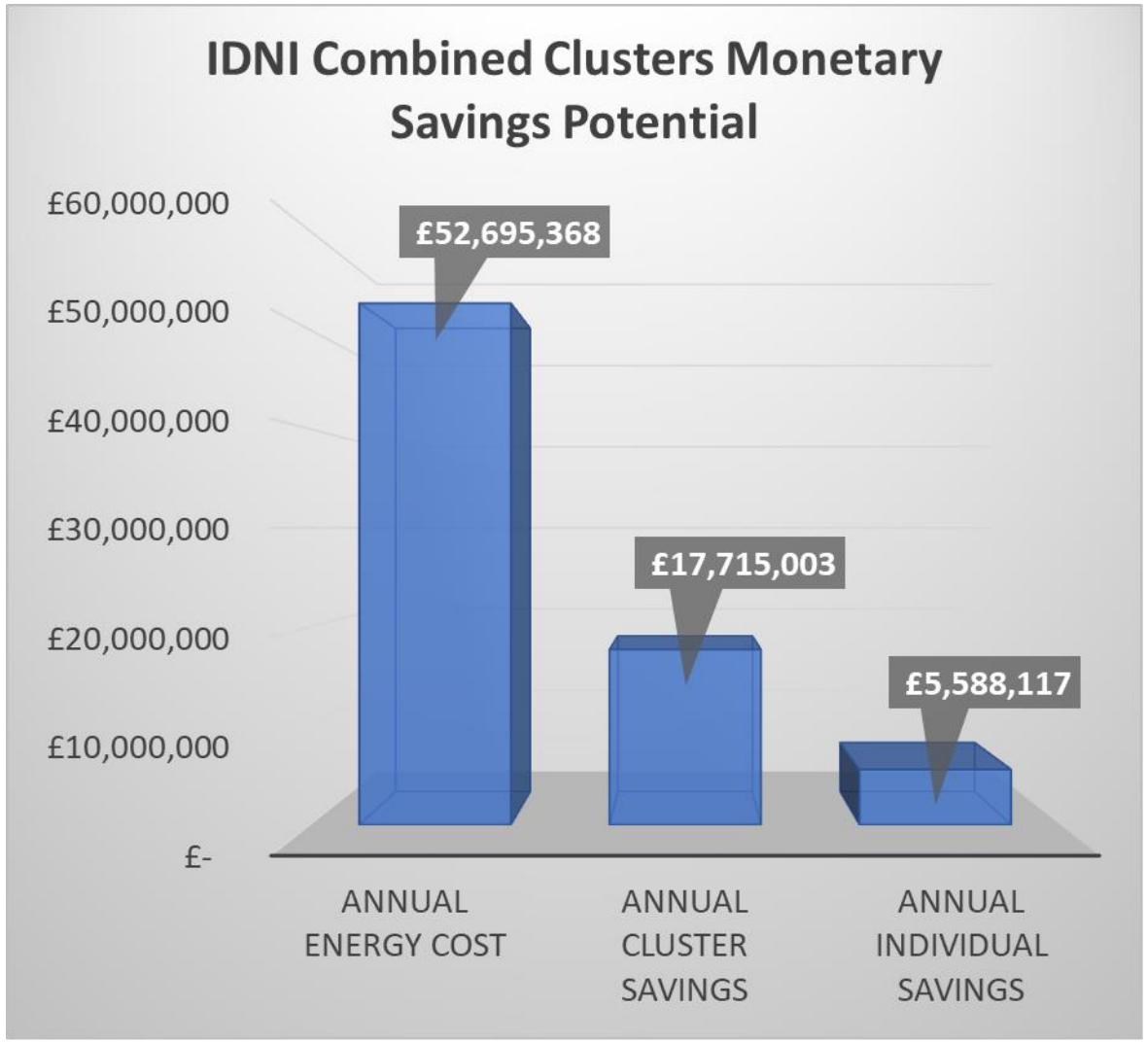
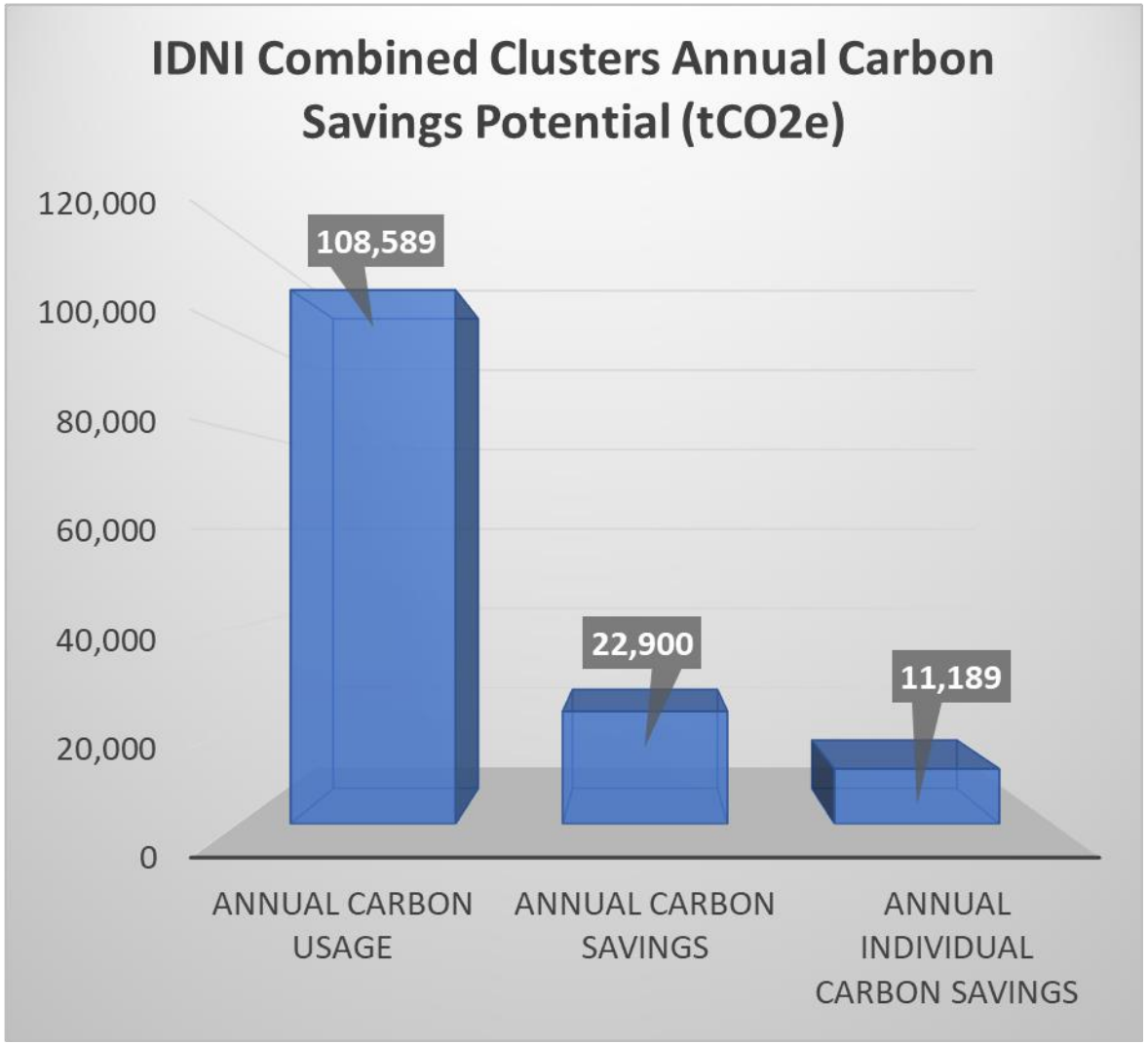
What could be achieved?





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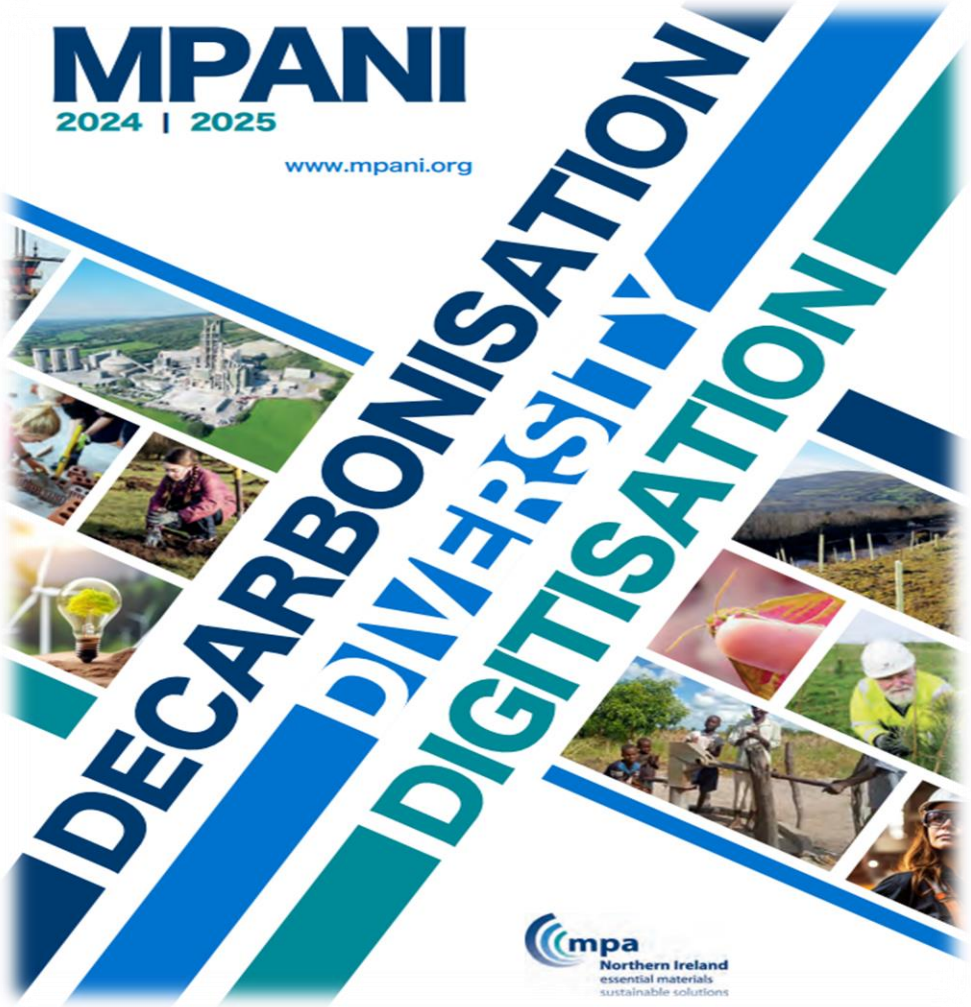
What did we deliver?

IDNI COSI Members

MPANI COSI



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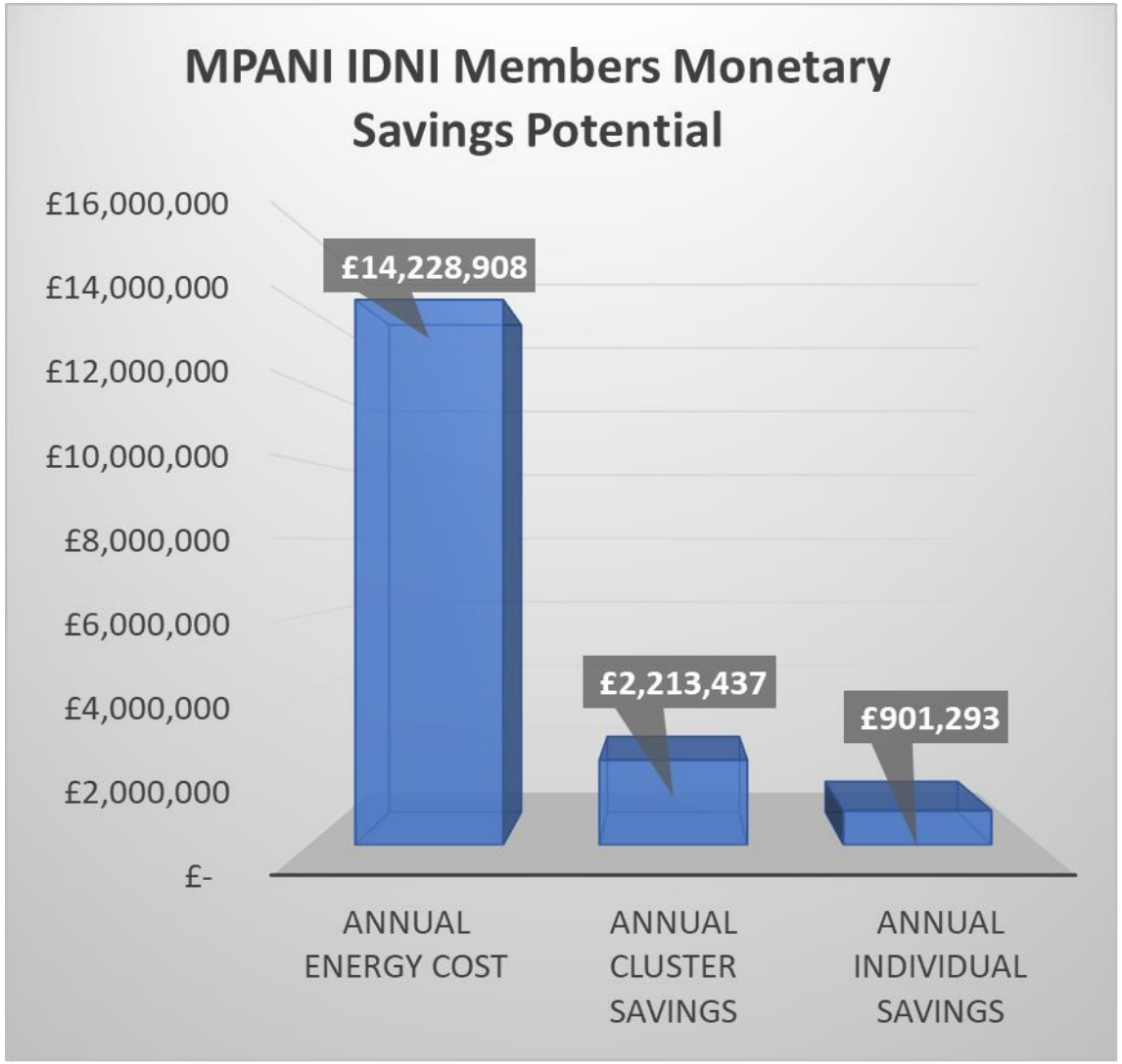
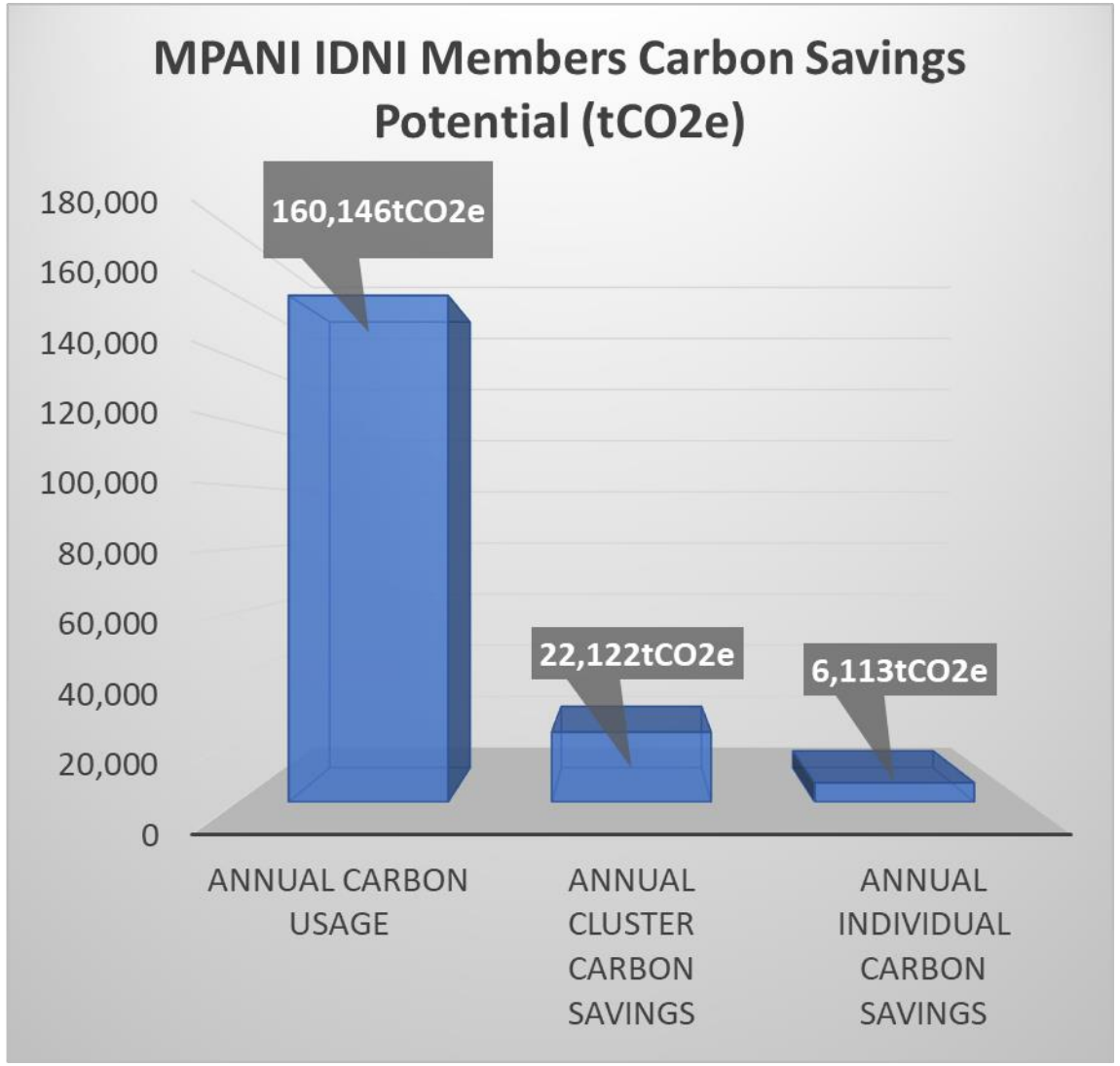
Northern Ireland

What could be achieved?

IDNI COSI Members





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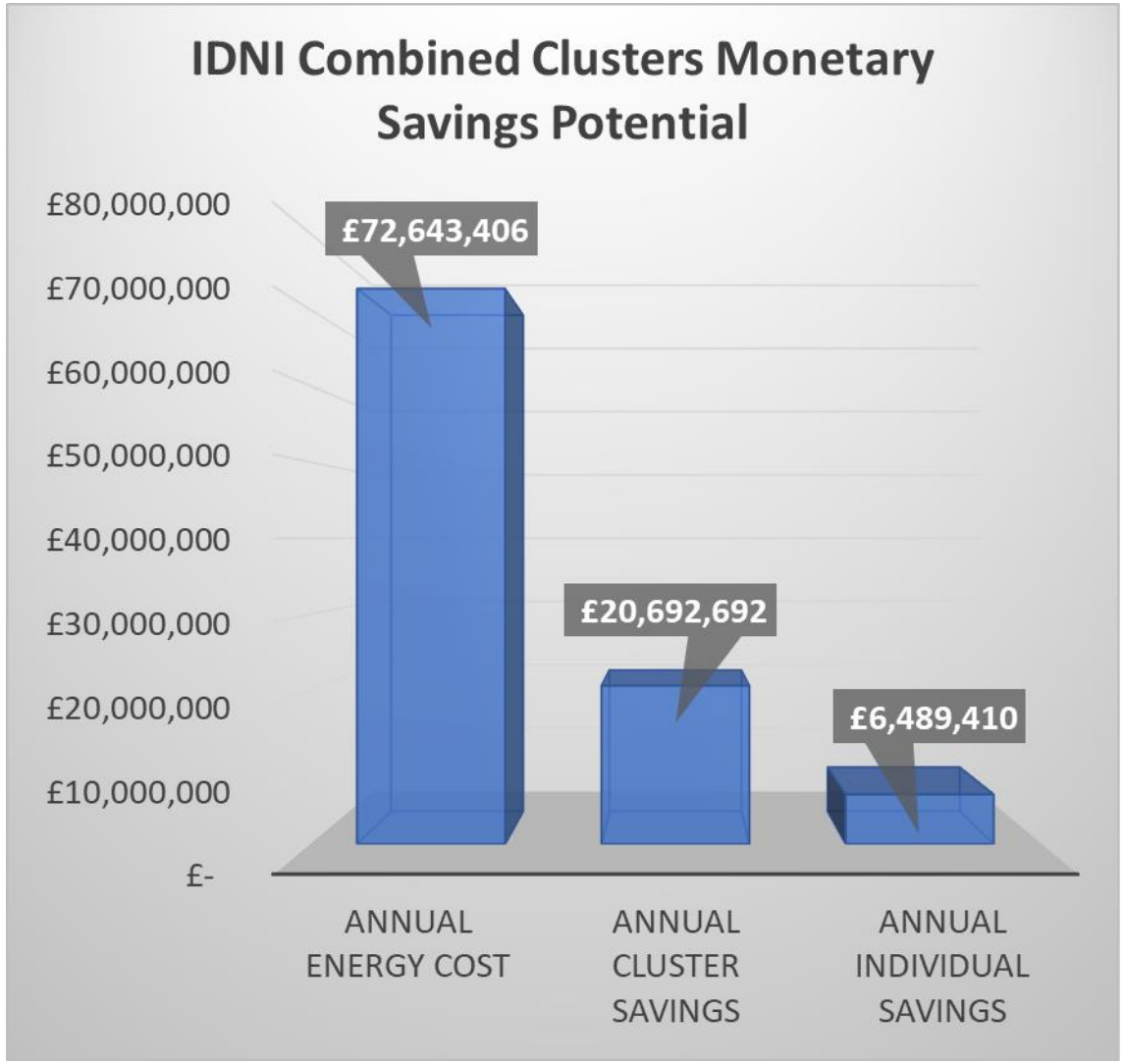
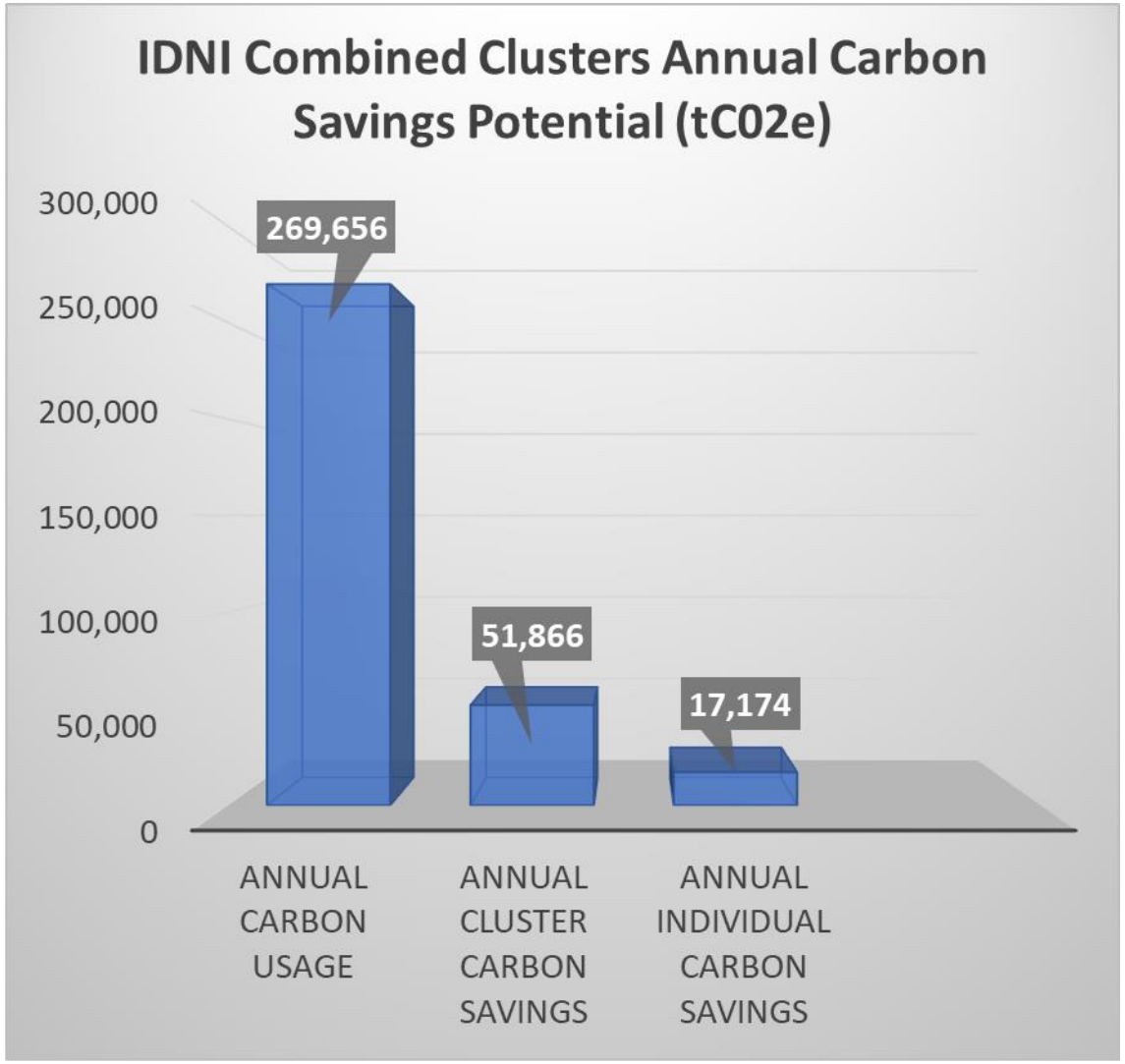
IDNI Industrial Decarbonisation Northern Ireland

What could be achieved?

IDNI Clusters and COSI Members





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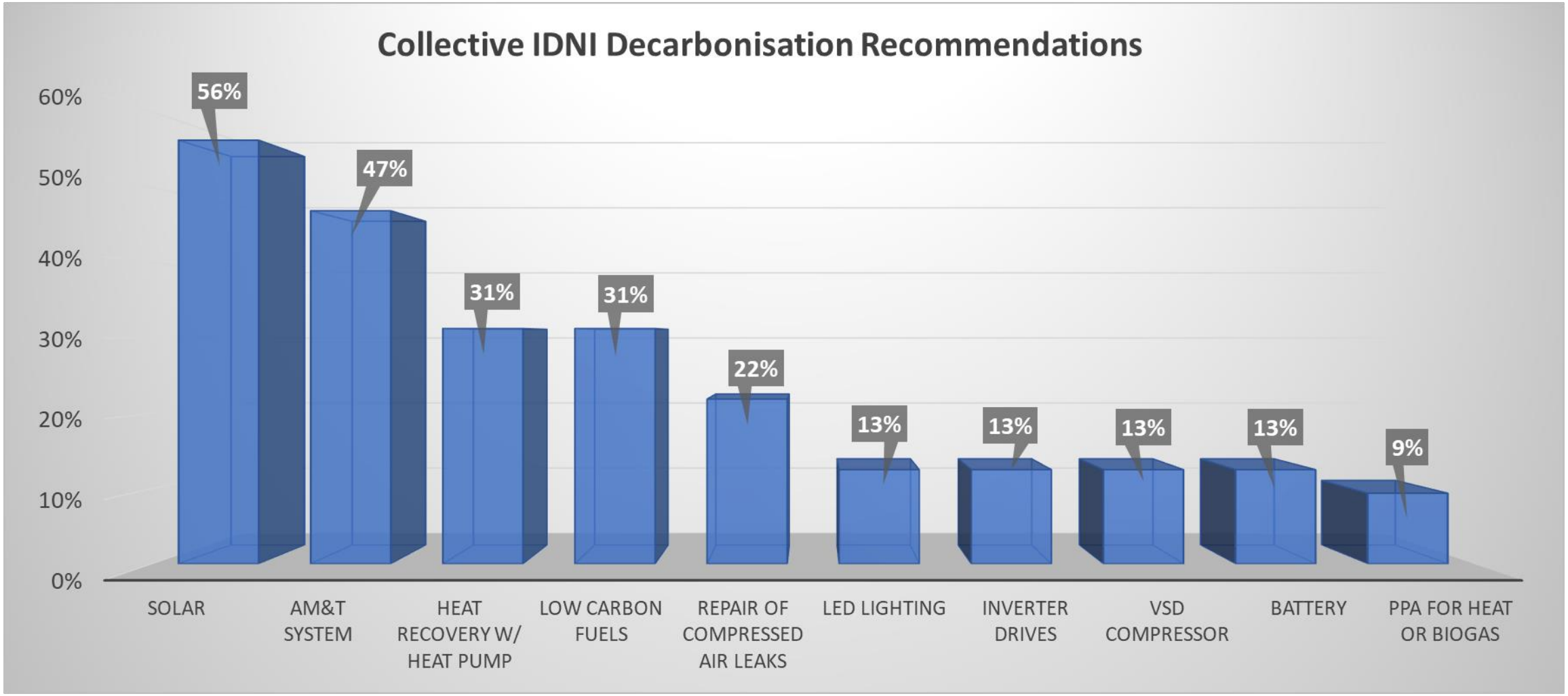
IDNI Industrial Decarbonisation Northern Ireland

What could be achieved?

IDNI Clusters and COSI Members



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Key Take Aways?

Carbon Savings 69,040 tCO2e

Monetary Savings £27,182,102

26.4% GhG reductions since 1990 – 48% 2030 Target

A 25.6% reduction in GhG

3 C's Clustering, Collaboration and Community is the key

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Matthew Rhodes

Camirus

Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

IDNI: How and why to stay involved

Insights Event

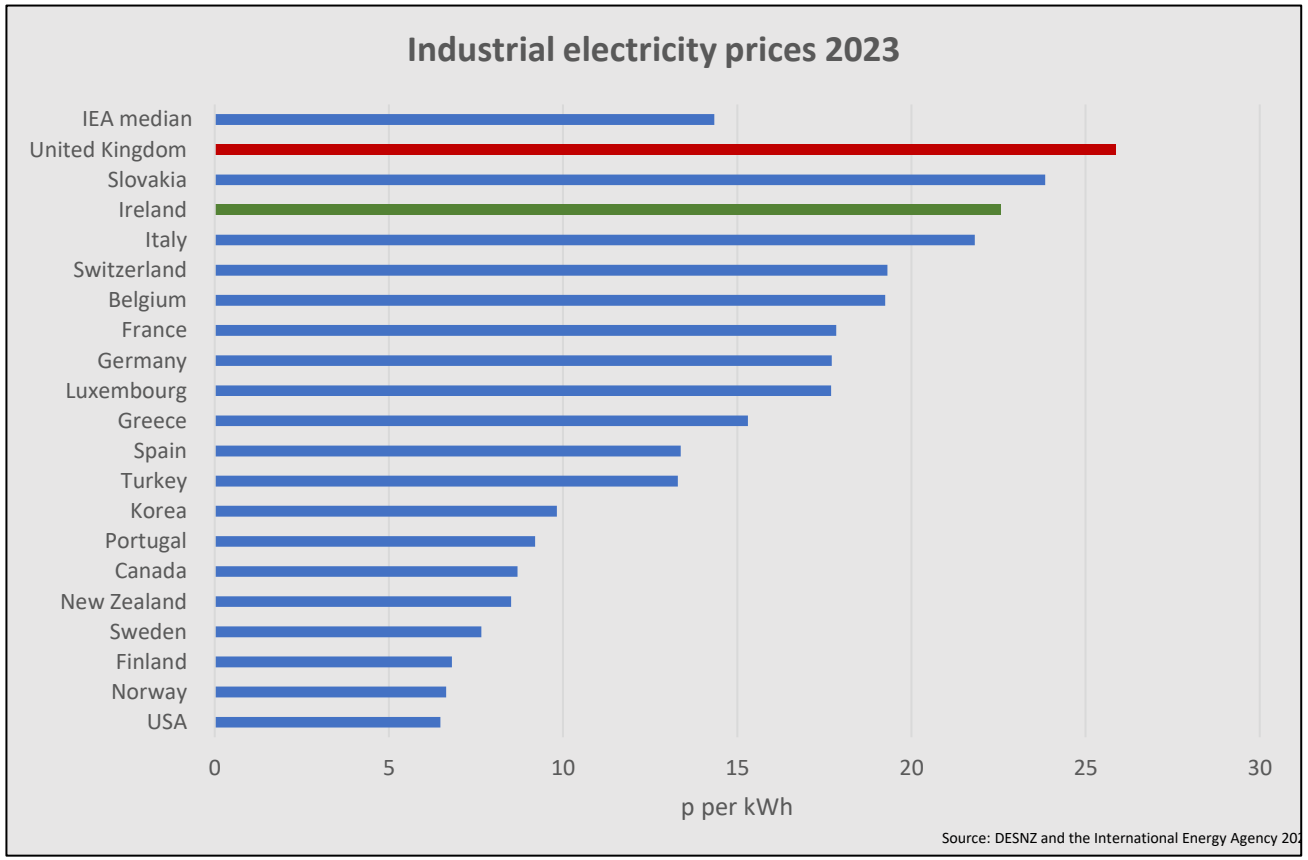
February 2025

The challenge is maintaining competitiveness in a changing world

- NI electricity costs are already holding back industry competitiveness*
- NIEN will invest ~£2bn+ of billpayer's money in network enhancement**

- **This investment needs to be targeted and efficient**

- How to do this?



* Energy is 2-10% of a typical manufacturing business' total costs. This means any company locating in the US immediately makes 1.5-7.5% more profit compared to locating in NI.

** These are the costs of increased electricity network capacity; hydrogen or carbon capture assets, even ***before costs of companies investing in new equipment to cope with new fuels.***

Northern Ireland has the opportunity to learn from successful global experiences

- **Devolved powers over energy and transport**
- **Cooperative industrial culture and family firms**
- **Global digital hub**
- **Relatively good renewable resources (biomethane, wind, Irish Sea)**
- **Integrity of institutions (energy, political, economic bodies all have the same boundaries)**

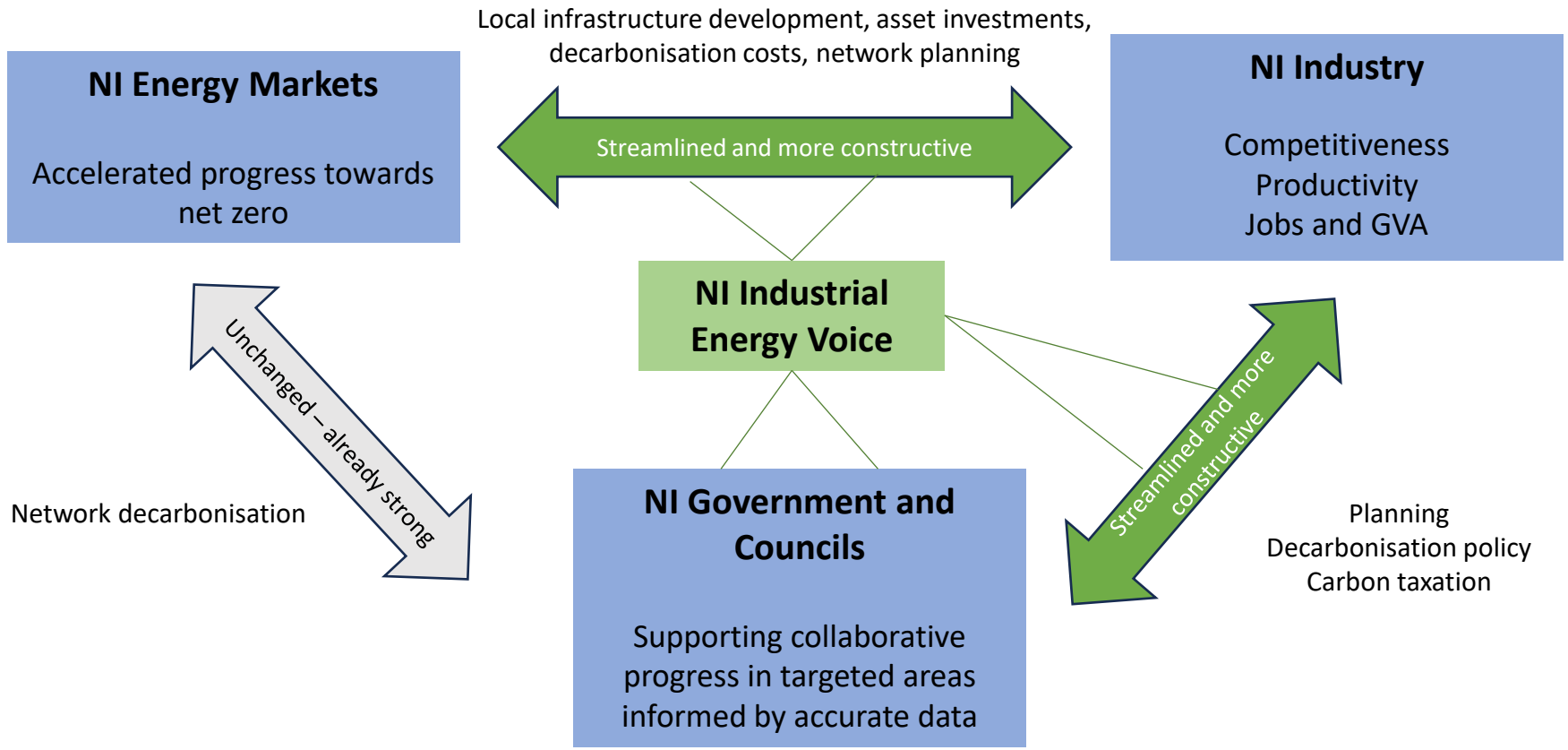
- Austrian energy communities model
- Geographical clustering and sharing of expertise between trade associations and industry groups (e.g., Basque cluster)
- An industrial voice to balance the energy (investor) megaphone and networks super-tanker
  - Infrastructure
  - Regulation
  - Carbon taxation (accounting)
  - Funding – subsidy and business models

Not topics most NI companies are eager or set up to engage in

Good projects will hit unnecessary barriers and delays without help

- Planning delays
- No capacity or specialist resources to develop projects
  - Companies don't know energy market or technologies; energy people don't know industrial sectors
  - Fuel switching or operational changes have biggest carbon and cost benefit but greatest business risk
- Perceived (or actual) innovation risk
- Unfamiliar and complex business models and intermediaries. Lack of trust.
- Complex energy regulations and market structures; who to deal with
- No whole economy, whole cluster and whole energy system view

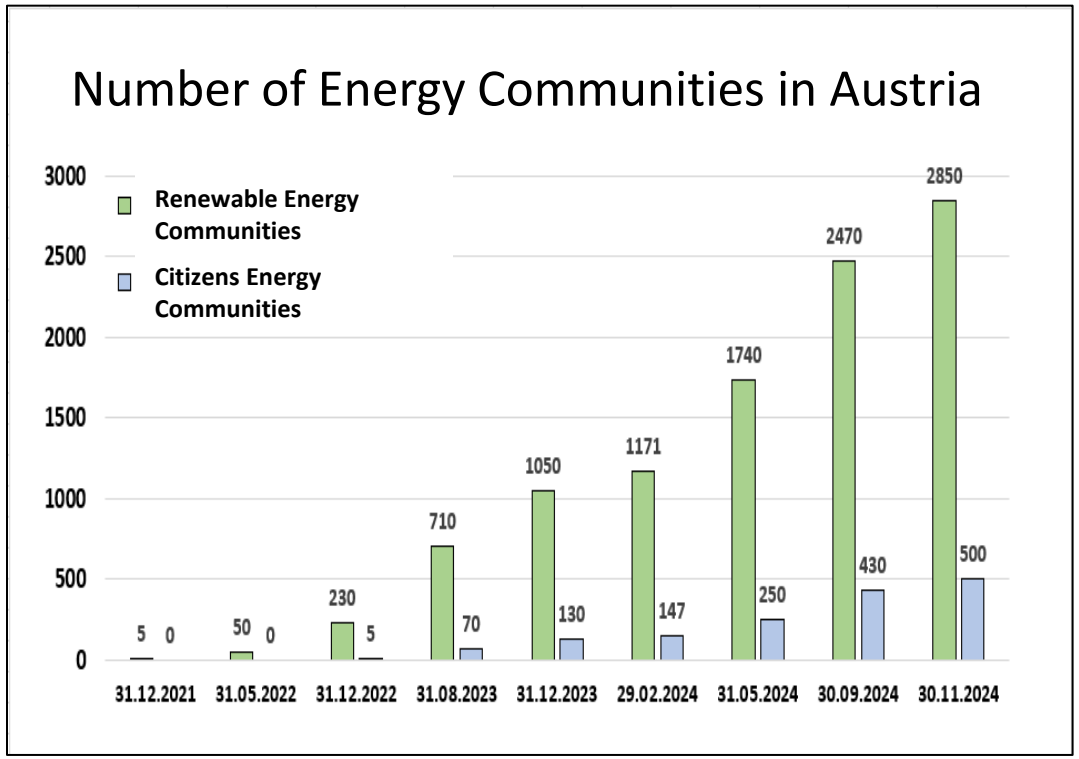
A coherent industry voice is critical – but often lacking



IDNI has created the foundations and mechanisms to help create this voice

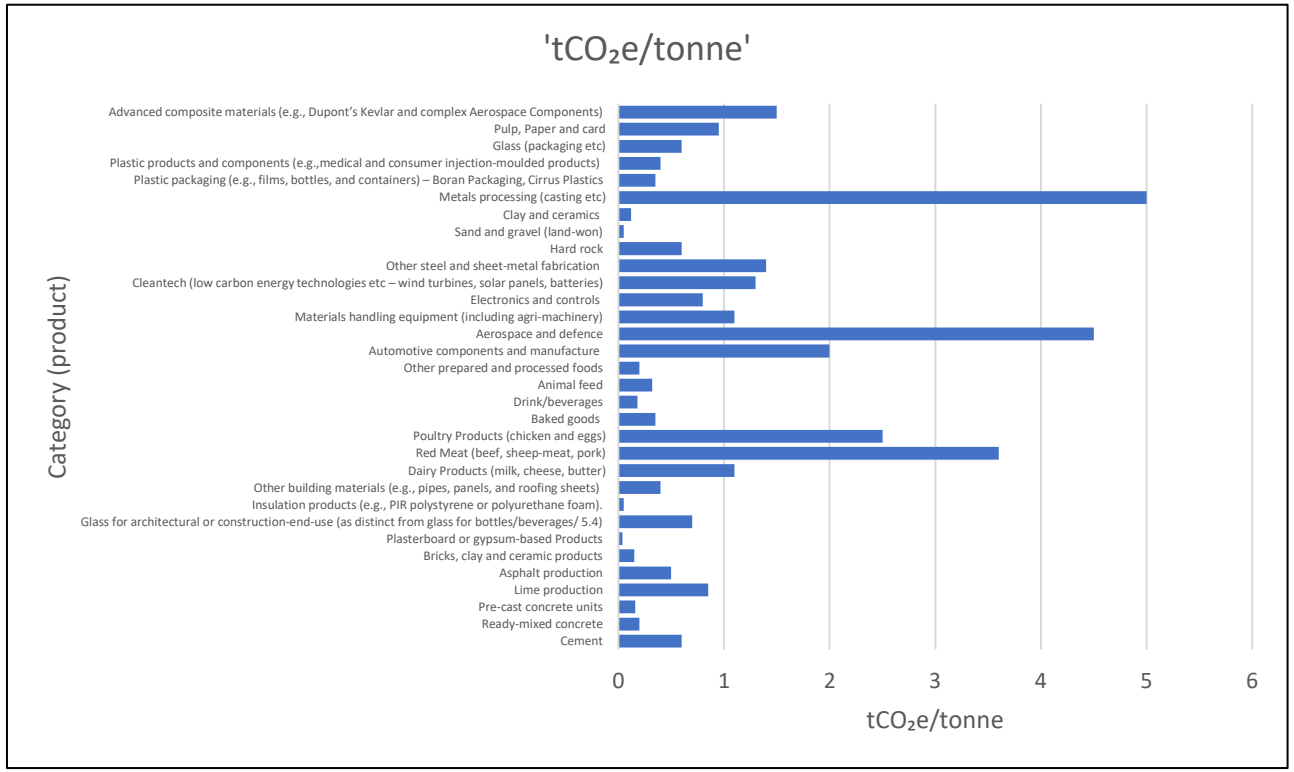
- Communities of shared interest (COSIs)
  - Geographical clusters
  - Whole NI Sectors
- Web tools via Knowledge-sharing platform (KSP
  - Energy and carbon planning
  - Productivity and Emissions Tool (PET)
- Advisory Board
  - Bringing networks and industry together in constructive dialogue
  - Possible first step towards industrial energy agency

We have also looked globally



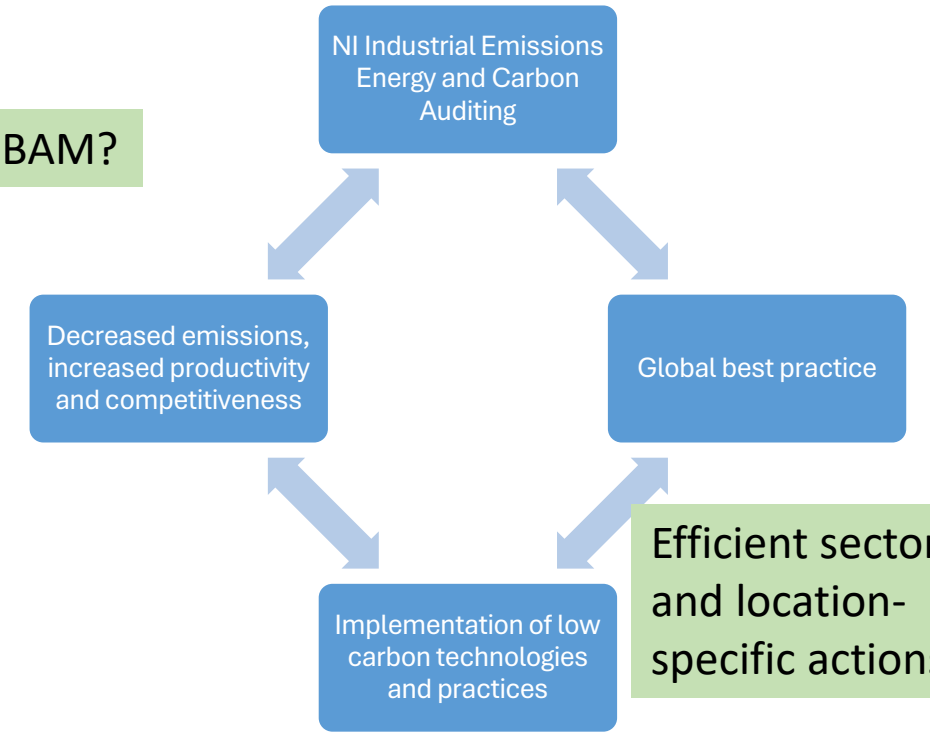
- The Austrians have encouraged investment in local renewables by allowing companies to sell power to their neighbours with lower network costs and system levies
- This reflects physical and commercial realities
- It doesn't have a noticeable impact on non-participating consumer bills

Sector-specific evidence is powerful for policy and should be useful to companies too



Global tariffs and carbon accounting?

CBAM?



Efficient sector- and location-specific actions

Immediate next steps

- Form your own cluster or COSI
- Register on Knowledge Platform; look at tools; have an audit to populate them
- Get involved via clusters bid(s)
- See demo on Camirus/Pro Enviro stand

ID- NI Initiative Update

Q&A

Eugene Heaney

Invest NI

Matthew Rhodes

Camirus

Invest Northern Ireland

Northern Ireland Industry IDNI Experience

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Northern Ireland Industry IDNI Experience

Panel Session

Roisin McCabe

Specdrum

Hannah Miskimmon

Northstone

John Kennedy

Creagh Concrete

Invest Northern Ireland

Global Best Practices in Industrial Decarbonisation

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Eugene Heaney

Invest Northern Ireland

Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Catherine McHale

ESB

Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Energy for generations

Invested in Net Zero

Renewables

Zero Carbon Dispatchable Power Generation

Hydrogen

Sub Sea Storage

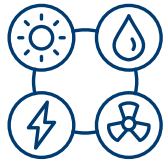
Delivering Hydrogen & Storage

ESB is now an established leader of Hydrogen in Ireland, influential in policy and delivering credible projects

- Policy influence
- Kestrel storage
- Lighthouse Project
- Proof of Concepts

Initial investment in the UK will provide momentum for our Hydrogen ambitions

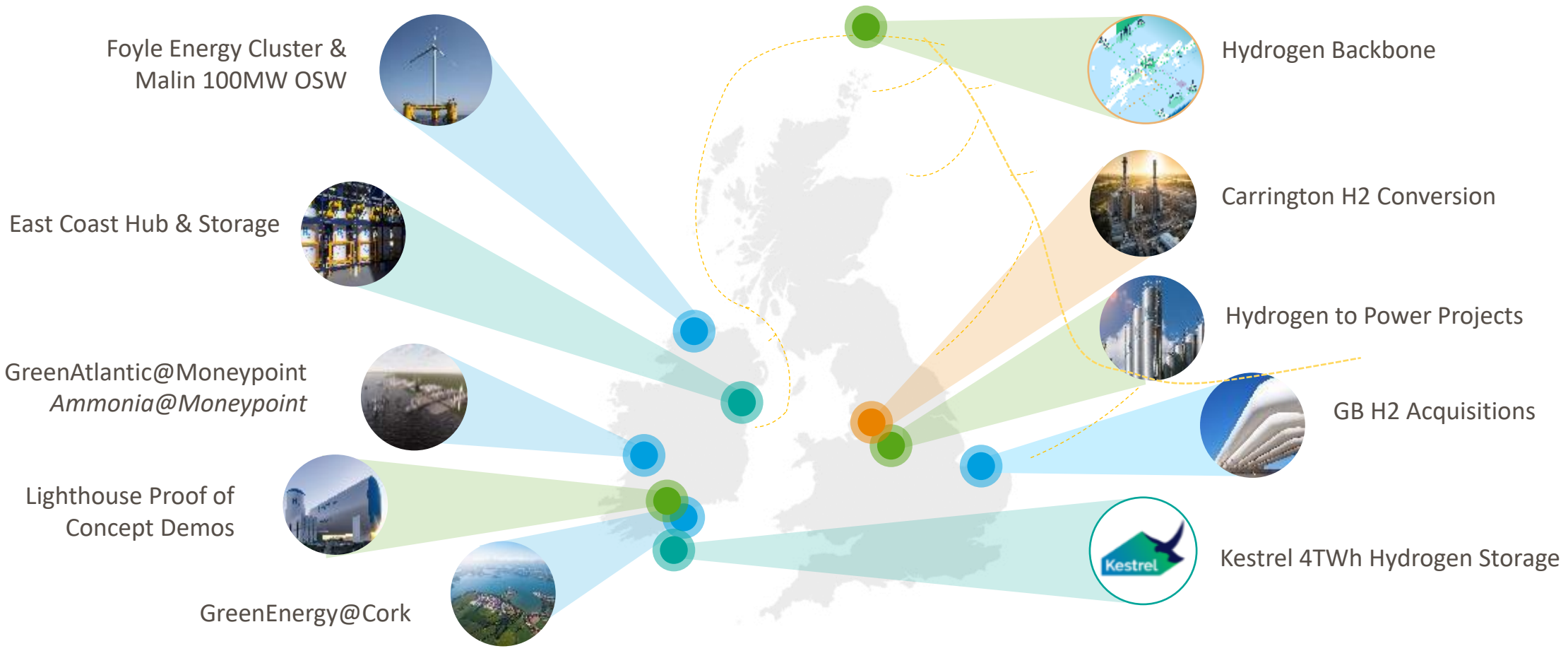
- Acquisitions
- Carrington Conversion
- Hydrogen Backbone
- Hydrogen to Power



Delivering Energy Hubs enables OSW, Hydrogen Storage and Zero Carbon Dispatchable Generation

- GreenAtlantic@Monyepoint
- GreenEnergy@Cork
- HyNet (Carrington)
- Foyle Hub
- Dublin Hub

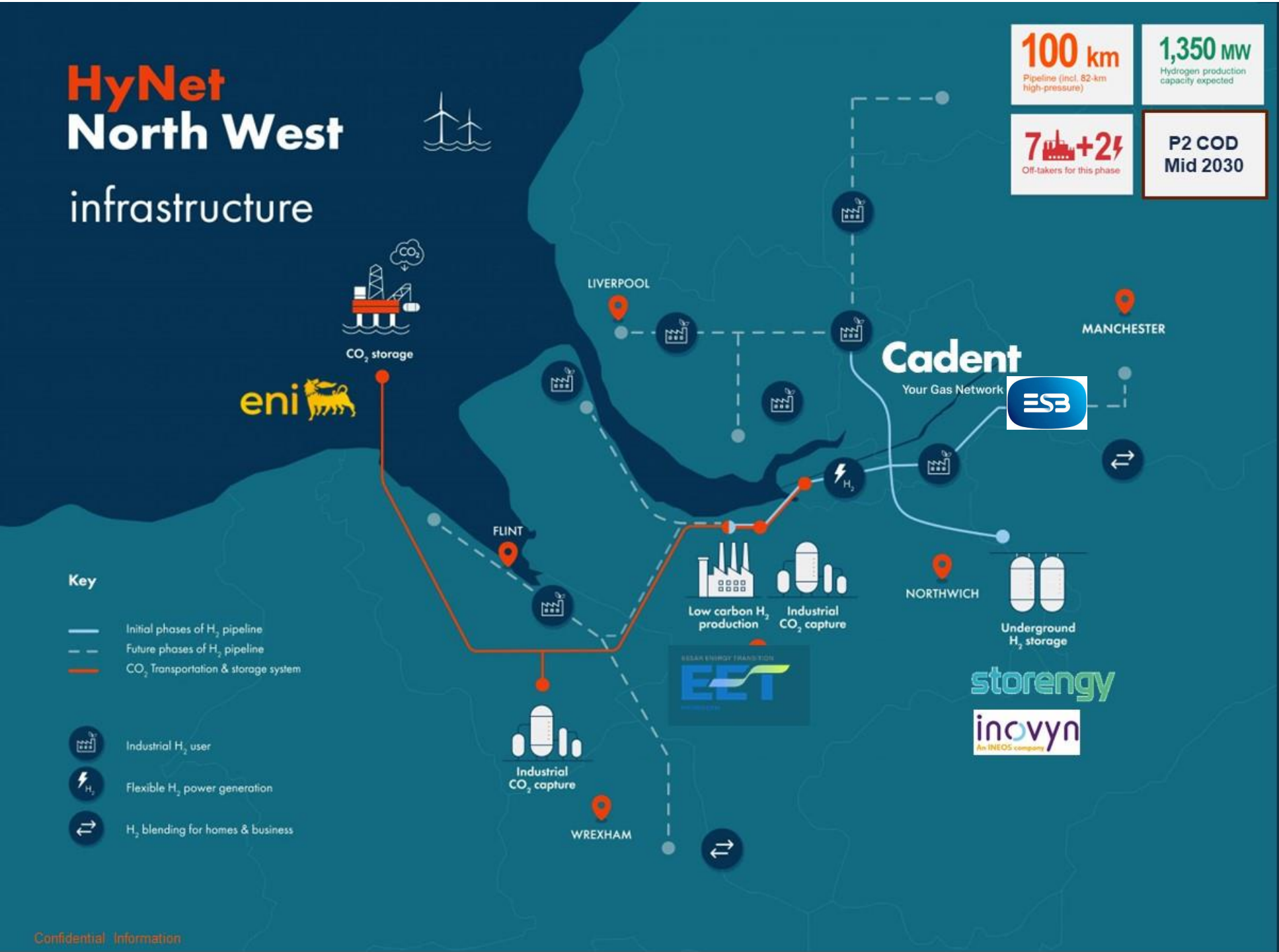
Delivering Net-Zero – Hydrogen, Ammonia and Long Term Storage



HyNet North West

Delivering on Clean Power 2030 and Enabling re-industrialisation

hynet.co.uk



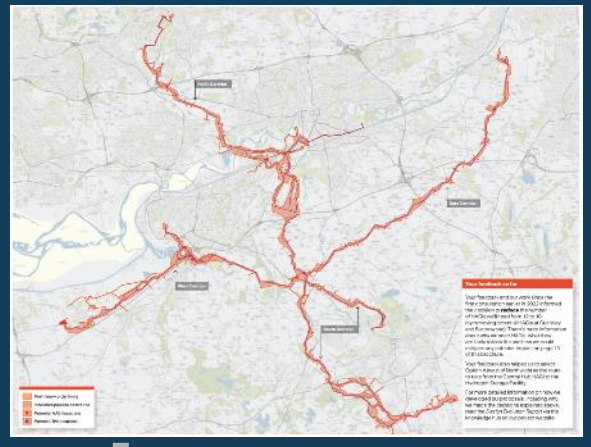
HyNet Infrastructure

- → CO_2 transport and storage facilities
- → Facilities to capture CO_2 emissions
- → Low-carbon hydrogen production
- → A hydrogen pipeline network and salt caverns in which hydrogen can be stored ready for use

Demand-led decarbonisation CCS and H_2 offtake

Unlocking new low-carbon growth opportunities for the automotive, chemical, shipping, glass, food, material, building material and energy sectors, including:

HyNet: A Full Chain Hydrogen Ecosystem



H_2 Production

- EET Hydrogen delivering CCUS enabled H_2. First 350MW Track 1 Anchor project, 1GW T1X, FEED completed
- Grenian & other electrolytic H2 projects across region

H_2 Network

- 100km+ of dedicated hydrogen pipeline
- Designed to distribute over 30TWh of hydrogen
- Finalising FEED & Consent underway

H_2 Storage

- Capable of storing 1300GWh of energy
- Most advanced H_2 store in the UK: Finalised FEED and consent

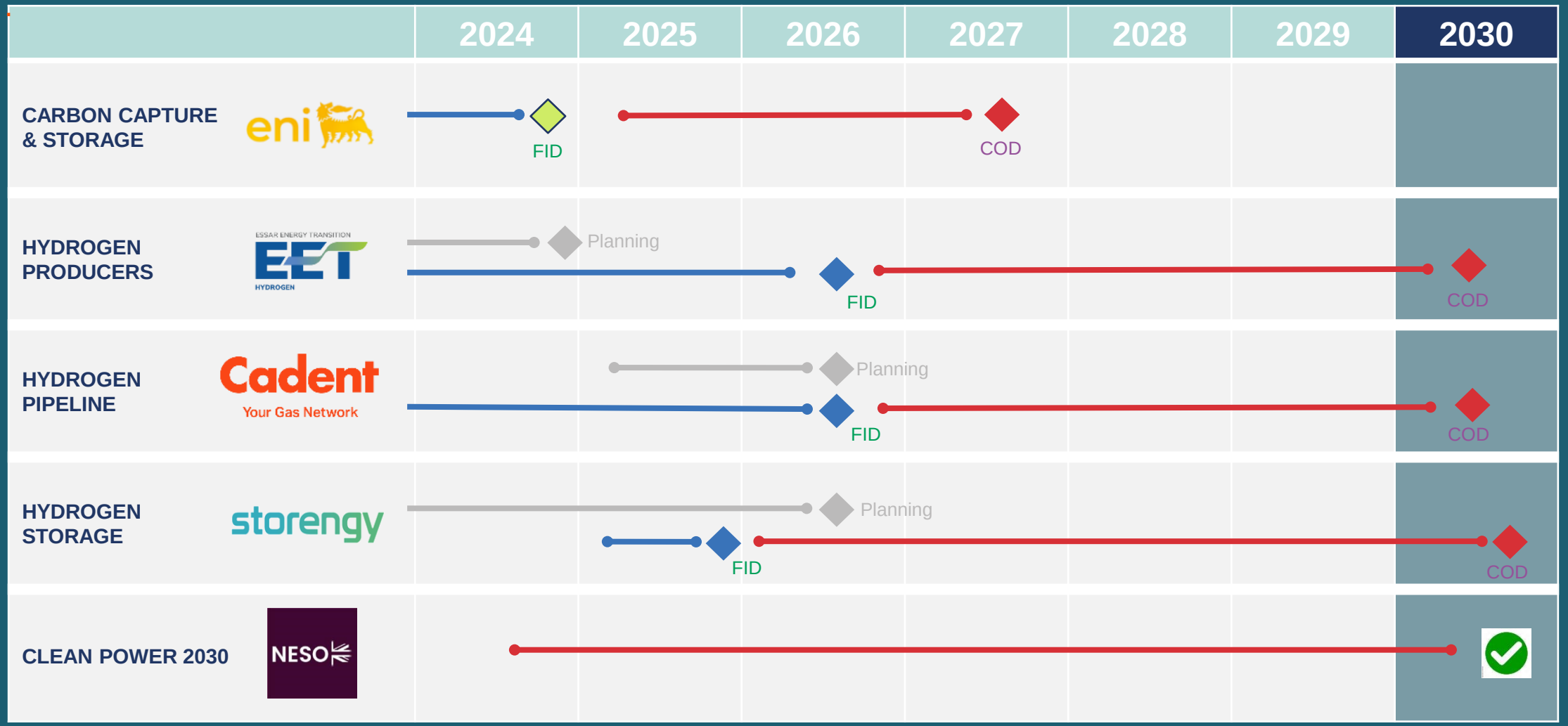
H_2 Offtakers

- Over 30 industrial and dispatchable power off-takers
- World leading demonstrations of fuel switching (Glass, FMCG, Aluminium recycling,& others)

CO_2 Storage CO_2 Pipelines CO_2 Capture CO_2 solution

HyNet North West

The consortium has an aligned objective to commence commercial operations by 2030, aligned with Clean Power ambition



UK Government CCS Announcement

4th October 2024

Nearly £22bn pledged for carbon capture projects

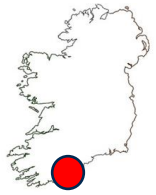
DARREN STAPLES/PA

The prime minister made the announcement on a visit to to the North West with Rachel Reeves and Ed Miliband

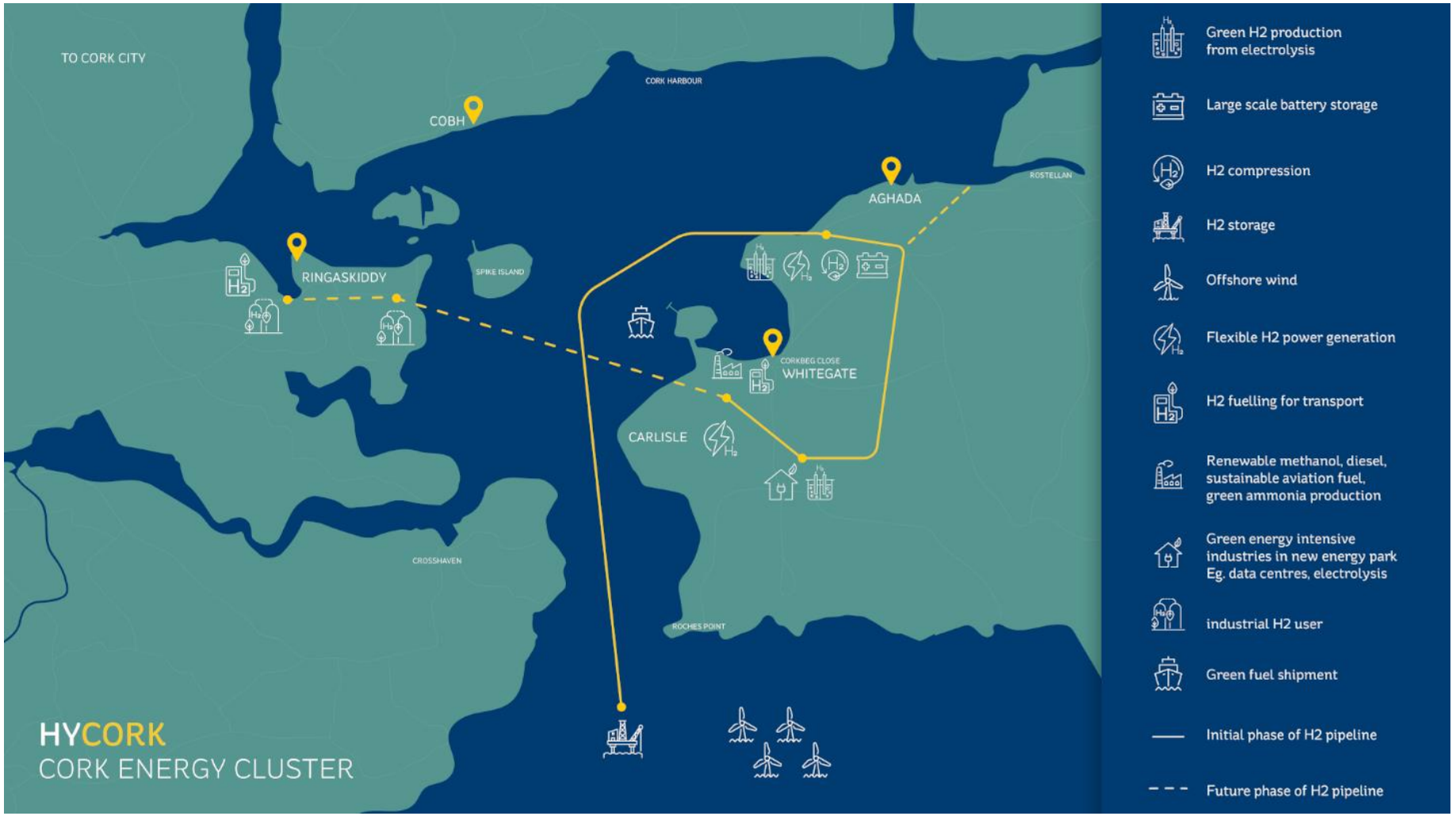
HyNet North West

Energy for generations

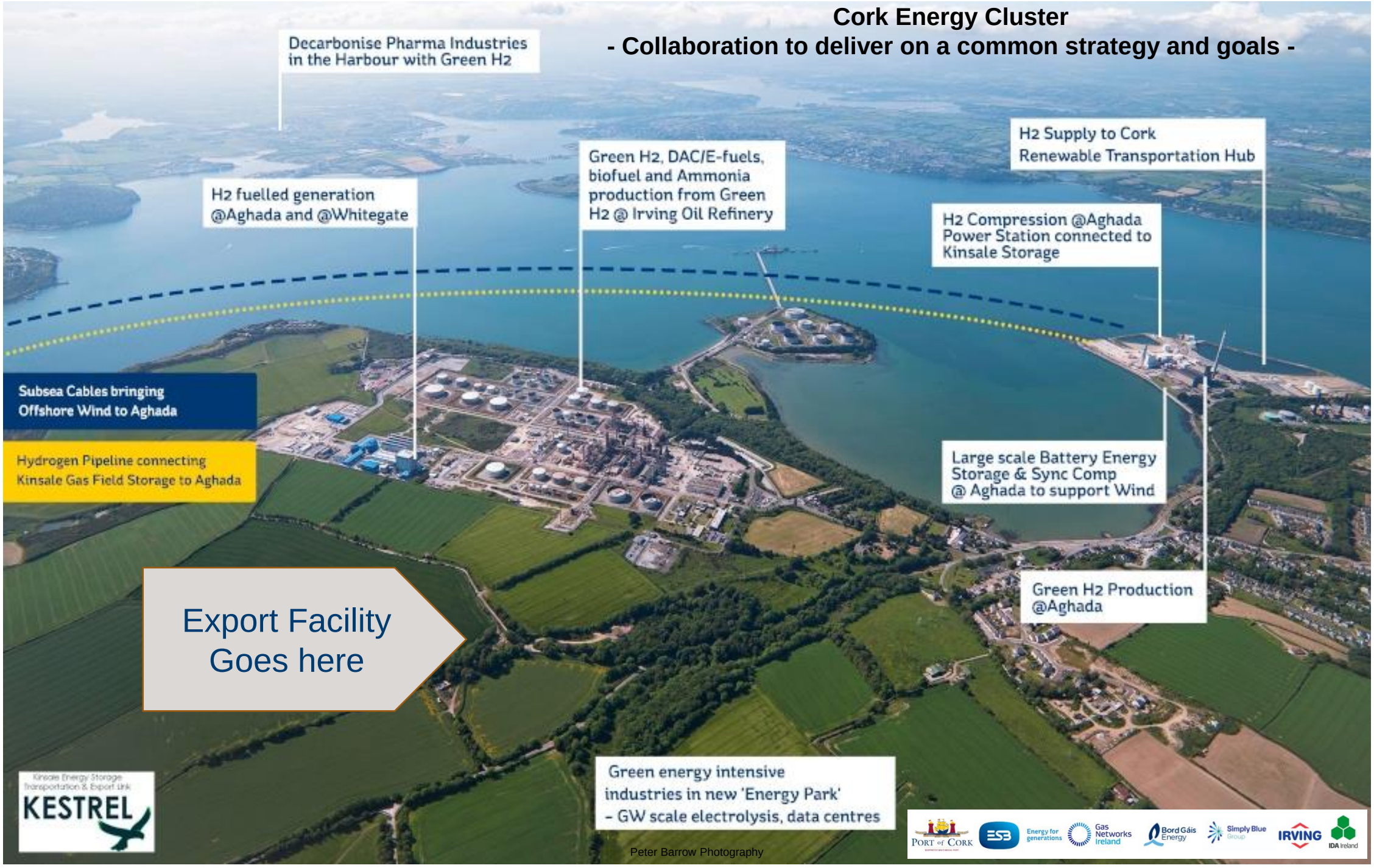
HYDROGEN CLUSTERS KEY TO NET ZERO BY 2040



(South) Cork Cluster



Cork Energy Cluster
- Collaboration to deliver on a common strategy and goals -



Thank You

Energy for generations

Ainara Raton

SPRI

Industrial Decarbonisation for Northern Ireland (ID-NI) Insight Event

Wednesday 19th February

Glenavon Hotel, Cookstown

Invest Northern Ireland

Net-Zero Basque Industrial Super Cluster

SPRI

February 2024

GRUPO spri TALDEA

EUSKO JAURLARITZA
GOBIERNO VASCO

INDUSTRIA, TRANTSIZIO ENERGETIKO ETA JASANGARRITASUN SAILA

DEPARTAMENTO DE INDUSTRIA, TRANSICIÓN ENERGÉTICA Y SOSTENIBILIDAD

The **Net-Zero Basque Industrial SuperCluster** aims to accelerate the path to net zero emissions in the Basque Country, fostering energy supply decarbonization and energy efficiency in the industrial sectors while creating market opportunities based on the scale-up of the new technologies and innovative services.

Basque Industry
5,7 Mtn CO2e
(34% of Basque emissions)

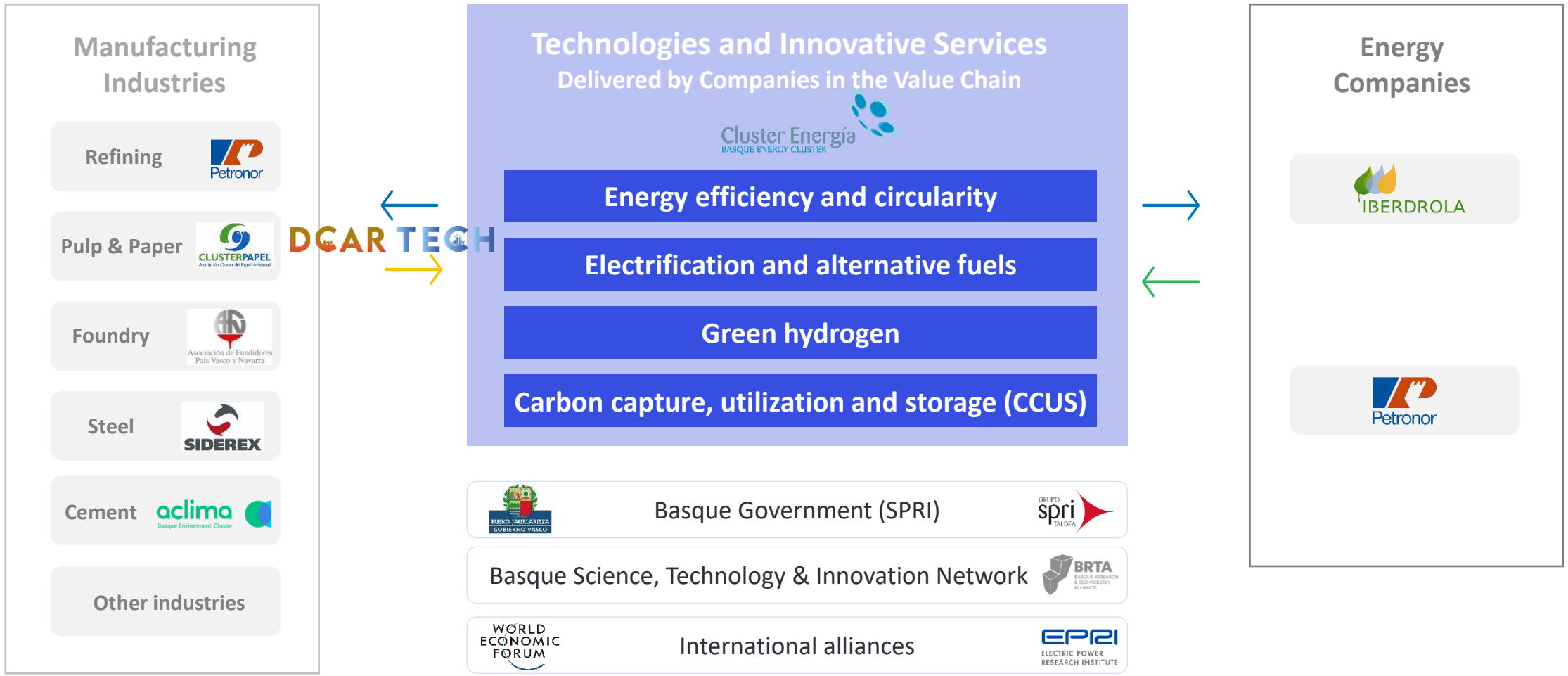
→ **5 industries** →

67%
of industrial GHG emissions

- **Collaboration and commitment** between the **government and the key energy companies** operating in the region.
- Search for **common objectives** to enable the **development of zero balance technologies.**

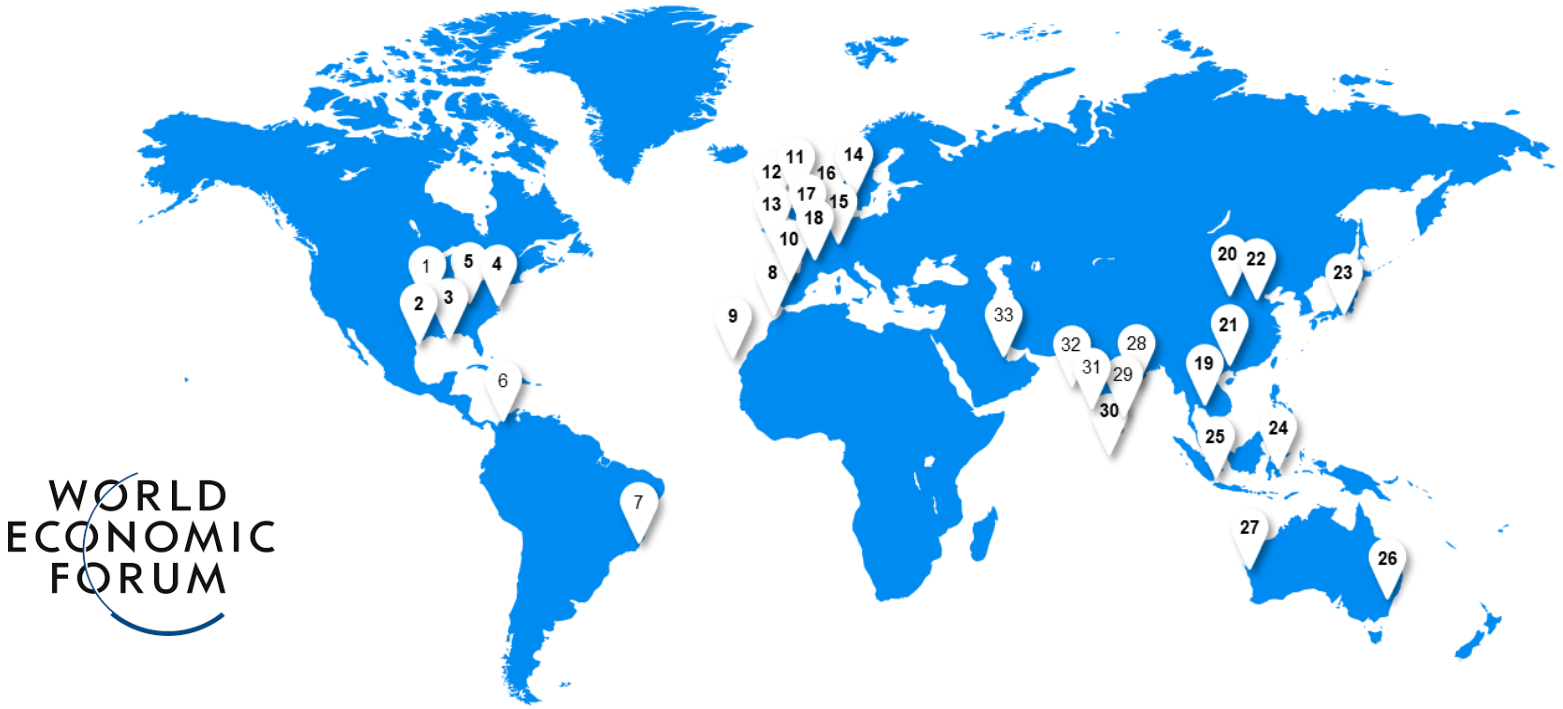
- **Super Cluster** because **it integrates the industrial associations** already operating in the Basque Country.
- With an **initial focus** on those industries with higher emissions (**pulp & paper, cement, refining, steel and foundry**), but **intention of progressively expanding to the rest of the industries.**

The SuperCluster aims at developing a robust, innovative industrial ecosystem where **technology innovations serve as key driver** of the energy transition and decarbonization.



With the creation of the **Net-Zero Basque Industrial SuperCluster**, the strategy for the decarbonisation of industrial activity in the Basque Country joins the **World Economic Forum project Transitioning Industrial Clusters** towards Net-Zero.

33 Industrial Clusters from 16 Countries



832 Mt CO_2
Abated emissions represented

4.3 million
Direct/indirect job represented

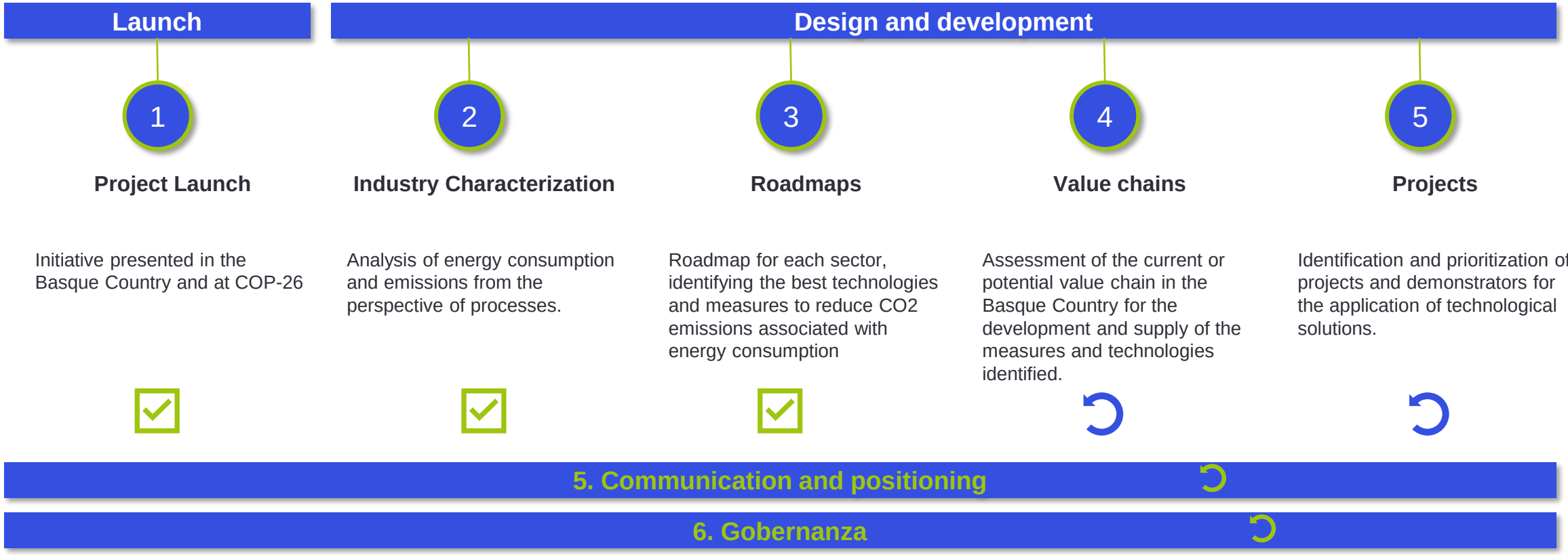
$492 billion
GDP contribution represented

* Impact key performance indicators represent CO2 e emissions, jobs and GDP/economic data reported by a limited number of signatory clusters.

1 Greater St. Louis and Illinois Regional Clean H2 Hub
2 H2Houston Hub
3 Louisiana Future Energy Cluster
4 National Capital Hydrogen Center
5 Ohio Clean Hydrogen Hub Alliance
6 Cartagena Industrial Cluster
7 Port of Açu Low Carbon Hub
8 Andalusian Green Hydrogen Valley
9 Canary Islands Industrial Cluster
10 Net-Zero Basque Industrial Super Cluster
11 HyNet North West
12 Solent Cluster
13 Zero Carbon Humber
14 Tranzero Initiative
15 Brightlands Circular Space
16 Port of Rotterdam
17 Port of Antwerp-Bruges
18 DKarbonation
19 Saraburi Sandbox
20 Ordos-Envision Net Zero Industrial Park
21 Sanjiang New Area Industrial Park
22 Tianjin Economic-Technological Development Area
23 Kawasaki Carbon Neutral Industrial Complex
24 Jababeka Net-Zero Industrial Cluster
25 Indo-Pacific Net-zero Battery-Materials Consortium
26 Hunter Region
27 Western Trade Coast (Kwinana Industries Council)
28 Gopalpur Industrial Park
29 Kakinada Cluster
30 Kerala Green Hydrogen Valley
31 Mumbai Green Hydrogen Cluster
32 Mundra Cluster
33 Jubail Industrial City

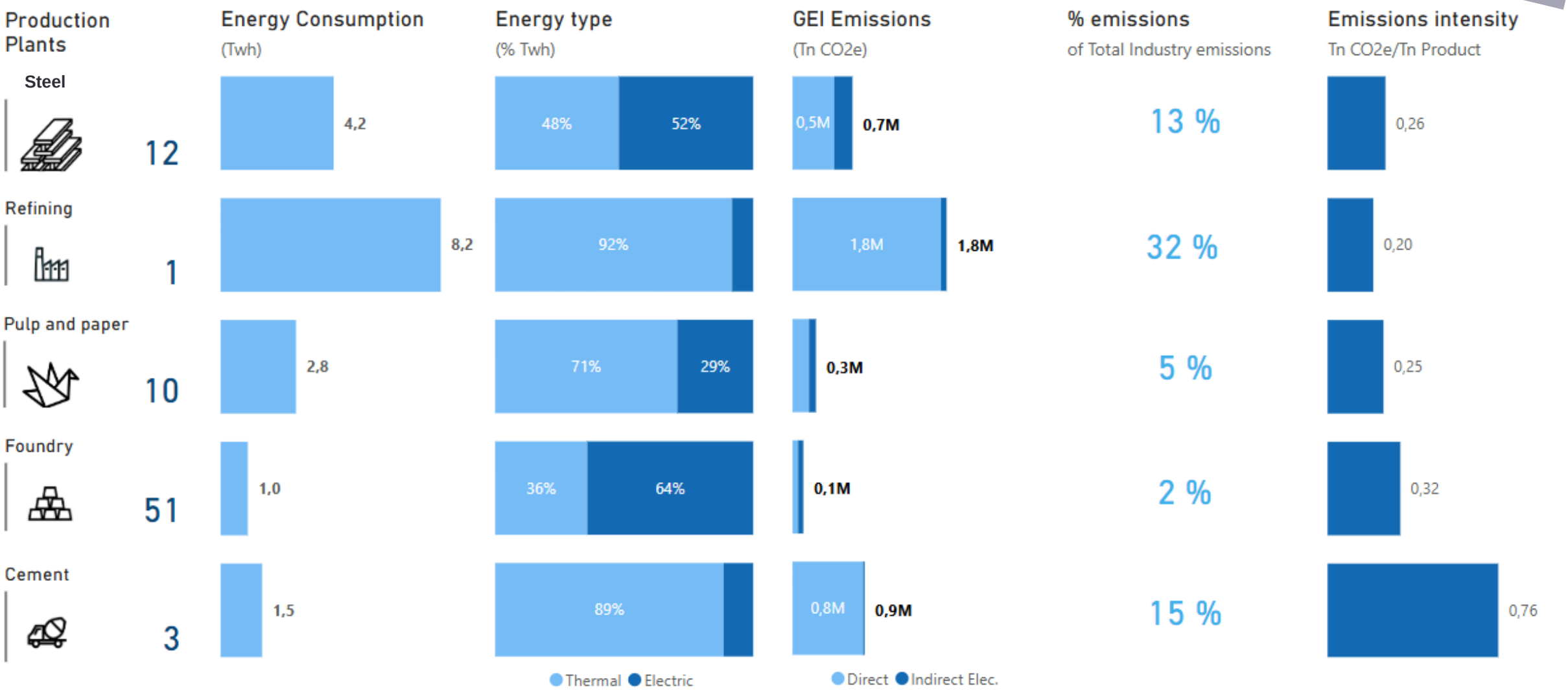
Transitioning Industrial Clusters towards Net Zero - World Economic Forum (weforum.org)

Since its **presentation at COP26**, the Super Cluster's activity has been developed in four technical phases and two continuous lines of work that allow its deployment at local and international level.



The characterization is focused on energy consumption and processes with higher emissions of 5 industrial sectors

2023 data



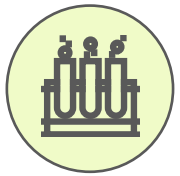
A **decarbonization roadmap** was prepared for each industry. The measures identified were classified according to their level of technological maturity and the WEF classification.

Technological measures

Measures in **need of** technological development	Low level of maturity that will require developments in the coming years. Identifying **Technology Challenges** with SPRI Support
Commercially available measures	Based on technologies with a high level of **technological maturity**, already available in the industry
Non-technological measures	Based on different management, regulation, and procurement solutions that have a direct or indirect impact

Strategic Lines

Energy efficiency and circularity



Green hydrogen

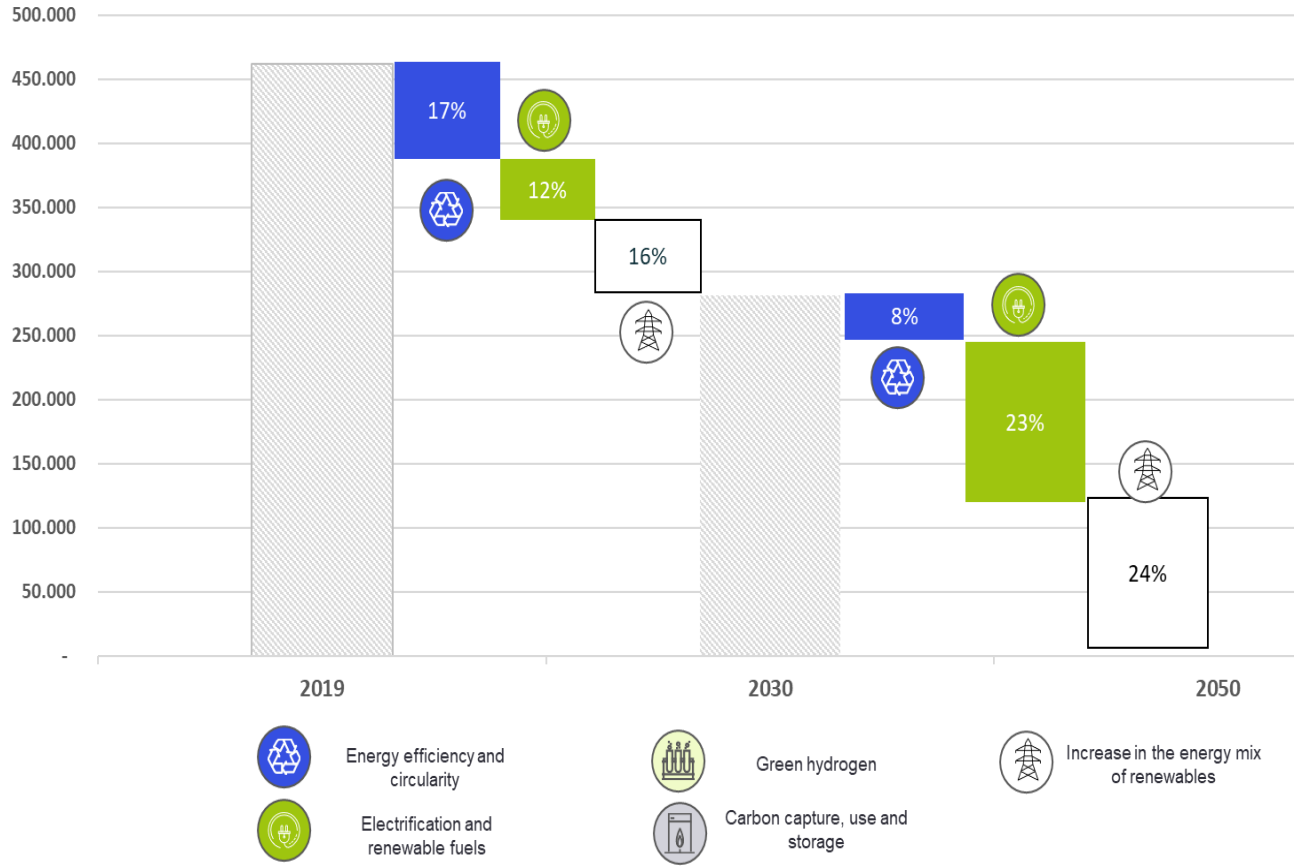
Electrification and renewable fuels

Carbon capture, use and storage

List of technological measures in need of technological development and commercially available and cumulative contribution of each of the decarbonization axes.

Energy efficiency and circularity
1. Smooth pulping process.
2. Deep eutectic solvent.
3. Innovative mechanical drying systems.
4. Use of pulping enzymes.
5. Cellulose micro-nanofibers.
6. Use of non-wood fibers.
7. Digitalization and AI for process control.
8. Use of conical refining techniques.
9. Increased use of recycled pulp.
10. Process heat recovery.

Electrification and alternative fuels
11. Electrification of the process by means of heat pumps.
12. Drying by electrical forces.
13. Gasification of waste and sludge from the water treatment plant.
14. Pyrolysis of by-products.
15. On-site renewable electricity generation.



Measures in need of technological development

List of technological measures in need of technological development and commercially available and cumulative contribution of each of the decarbonization axes.

Energy efficiency and circularity

1. Digitalization and AI for process control.
2. Ordinary Portland cement from new non-carbonated limestone fuels.
3. Use of oxycombustion.
4. Optimization of fuel properties.
5. Alternative additions and their activation.

Electrification and alternative fuels

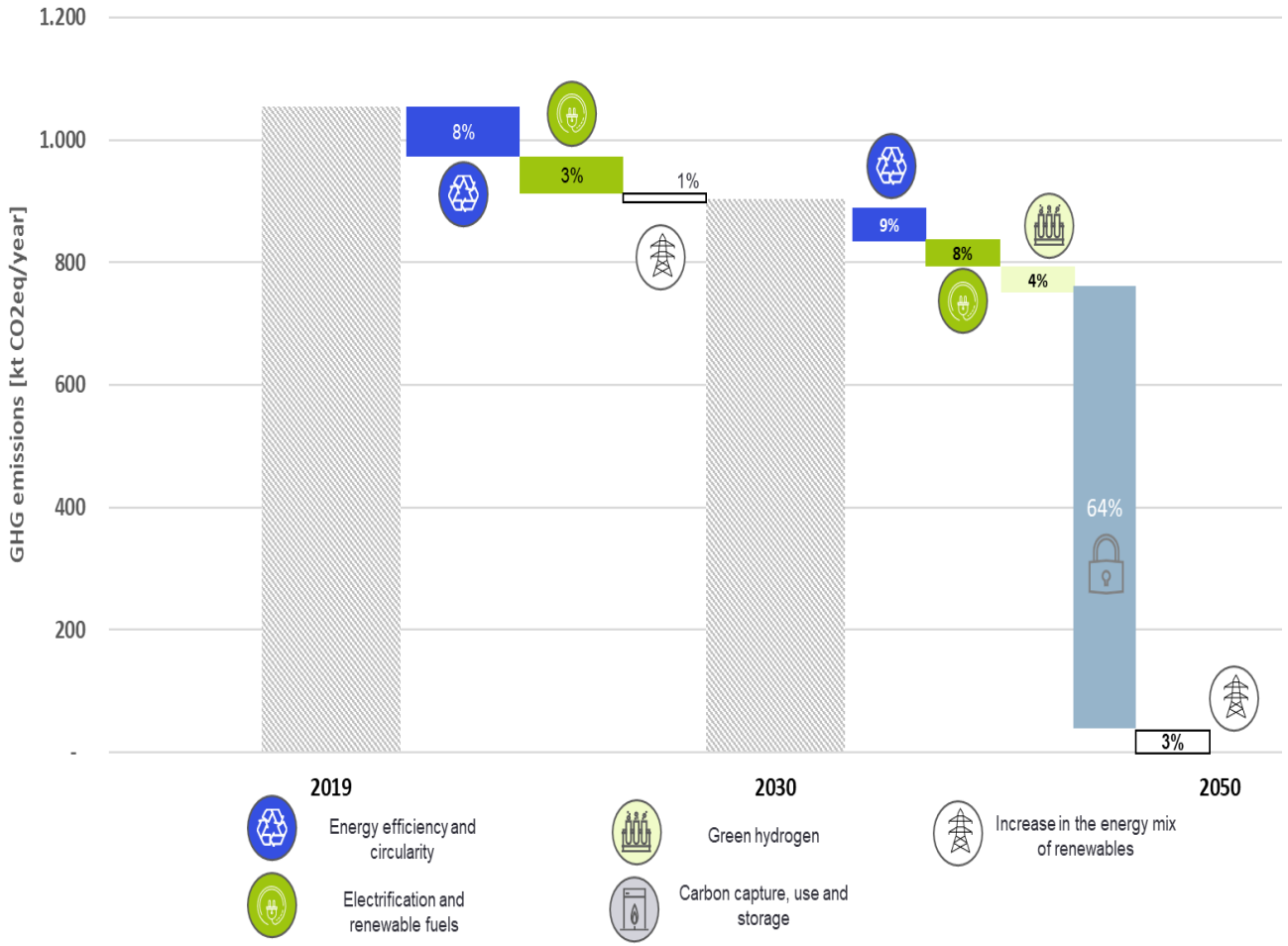
6. Electrolyzer for the decarbonization of calcium carbonate before clinker production in the furnace.
7. Electrification of the clinkerization process by means of electrical forces and microwave heating.
8. Co-processing of refuse-derived fuel (RDF).

Green hydrogen

9. Partial use of hydrogen as hydrogen in the furnace

Carbon capture, use and storage

10. Process Carbon Capture
11. Indirect heating (separate stream furnace) with capture



Measures in need of technological development

List of technological measures in need of technological development and commercially available and cumulative contribution of each of the decarbonization axes.

Energy efficiency and circularity

- ◯ 1. Generation of advanced biofuels from waste.
- ◯ 2. Digitalization and AI for process control.
- 3. Exhaust gas heat recovery or process waste heat.
- 4. Energy recovery in pressure jumps.
- 5.Combined AC/DC fields to desalinate crude oil.
- 6. Generation of biogas from urban waste (substitution of cogeneration gas).

Electrification and alternative fuels

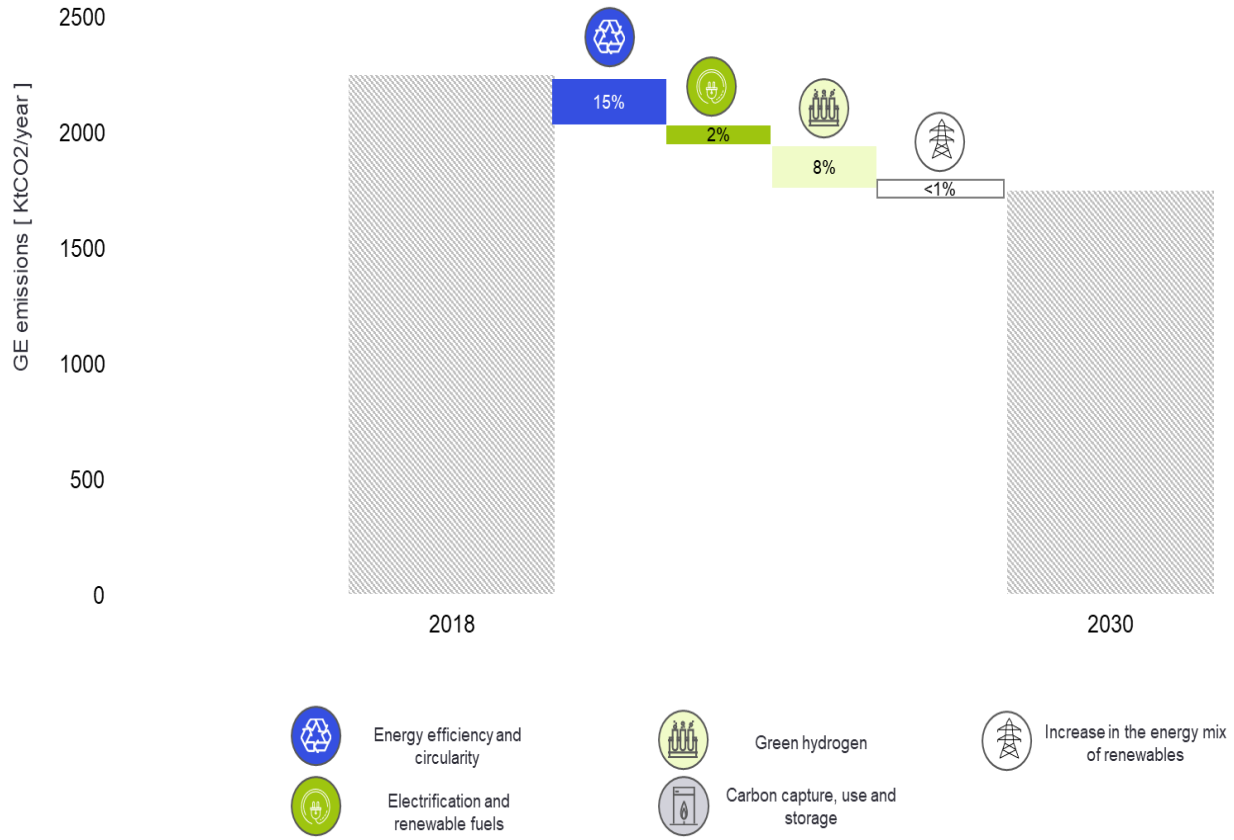
- 7. Electrification of heat through heat pumps and absorption machines.
- ◯ 8. Generation of synthetic fuels from green hydrogen and CO2
- ◯ 9.Second and third generation ethanol production

Green hydrogen

- ◯ 10. H2 production plant by electrolysis.
- ◯ 11. Production of H2 and alternative fuels from biomass gasification.

Carbon capture, use and storage

- ◯ 12. Process Carbon Capture



◯ *Measures in need of technological development*

List of technological measures in need of technological development and commercially available and cumulative contribution of each of the decarbonization axes.

Energy efficiency and circularity

1. Generation of advanced biofuels from waste.
2. Digitalization and AI for process control.
3. Exhaust gas heat recovery or process waste heat.
4. Energy recovery in pressure jumps.
5. Combined AC/DC fields to desalinate crude oil.
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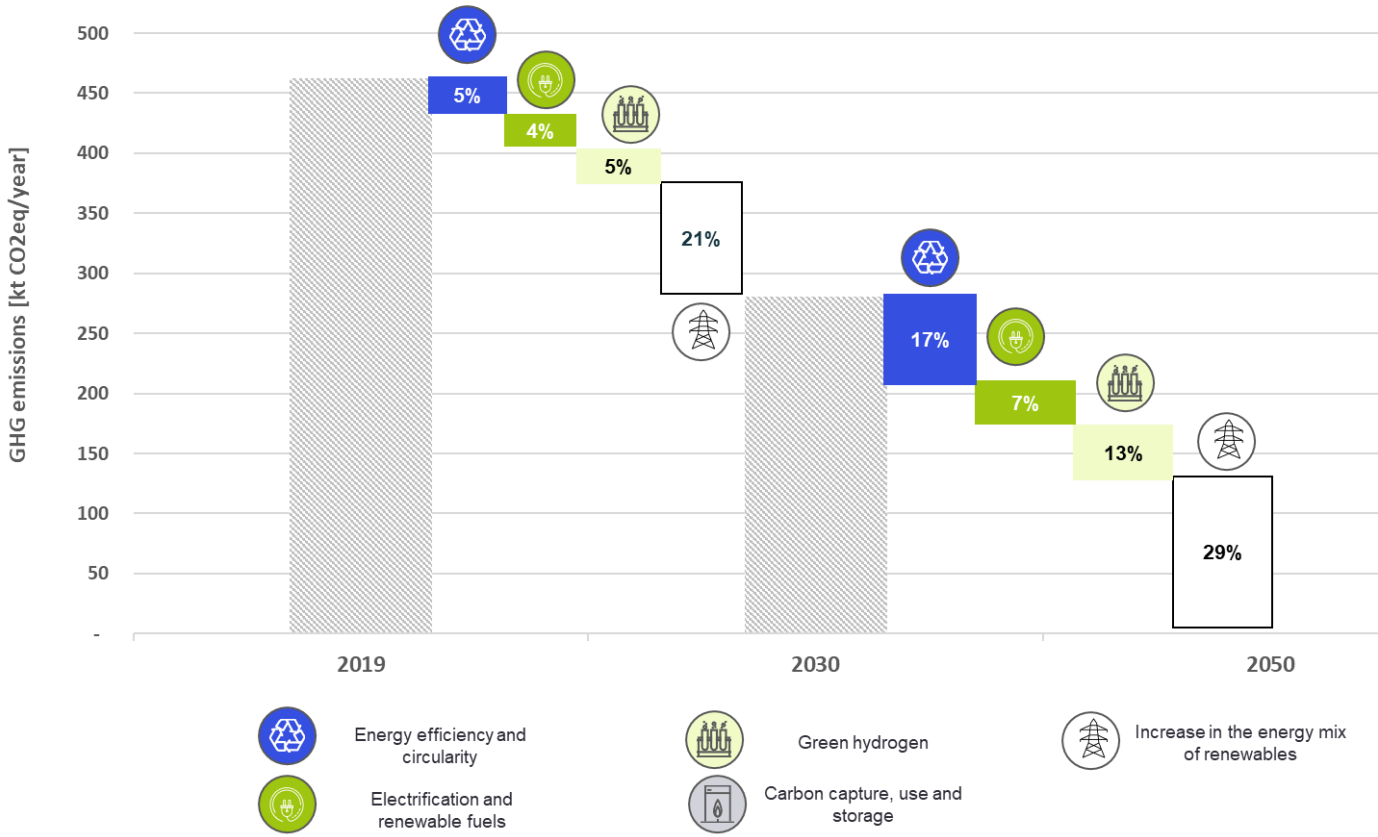
Electrification and alternative fuels

7. Electrification of heat through heat pumps and absorption machines.
8. Generation of synthetic fuels from green hydrogen and CO2
9. Second and third generation ethanol production

Green hydrogen

10. Green hydrogen consumption



Measures in need of technological development

List of technological measures in need of technological development and commercially available and cumulative contribution of each of the decarbonization axes.

Energy efficiency and circularity

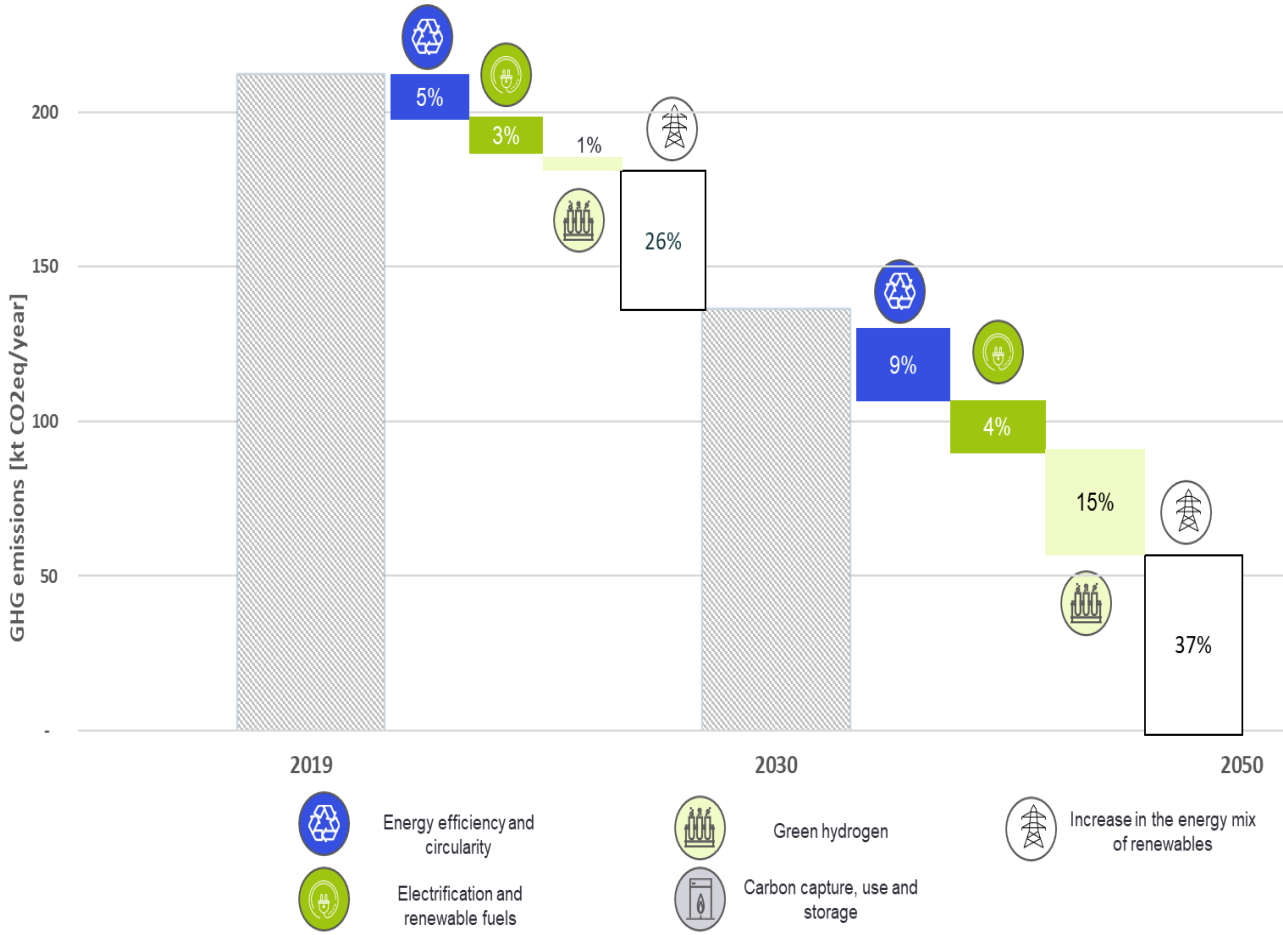
1. Digitalization and AI for process control
2. Heat recovery from exhaust gases and other waste heat.
3. Oxycombustion.
4. Combustion optimization through gas control and flame visualization.
5. Digitalisation for better sorting and greater use of recycled raw materials
6. Recovery of metals in the production process
7. High efficiency burner.
8. Additive manufacturing.

Electrification and alternative fuels

9. Inductive furnaces.
10. Use of biogas.
11. On-site renewable power generation
12. Use of microwave technologies

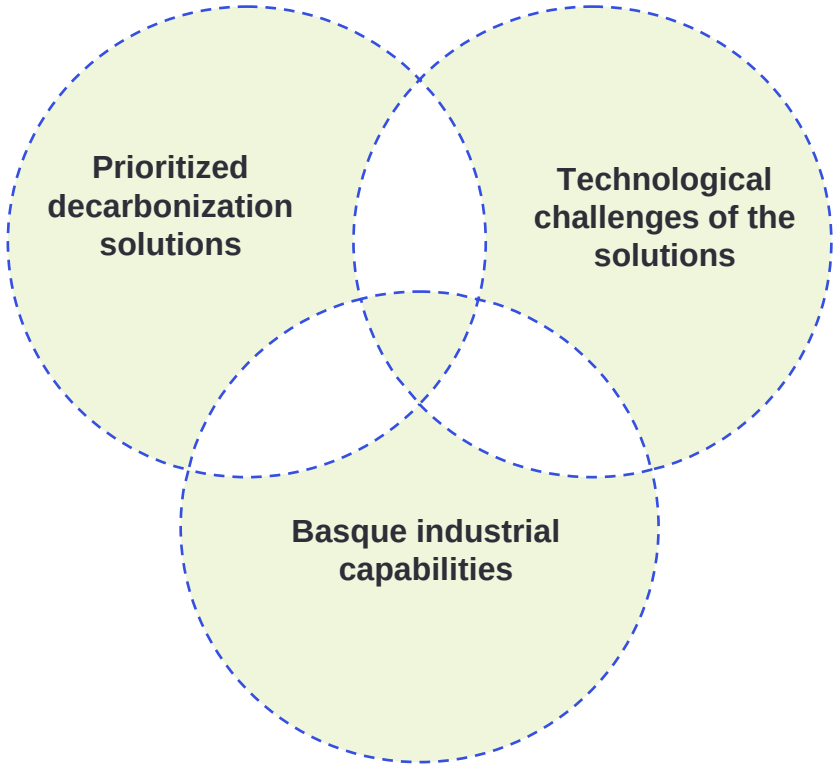
Green hydrogen

13. Green hydrogen consumption



Measures in need of technological development

In PHASE 3, the **value chains** of the solutions prioritised in the previous phase were characterised, by identifying Basque companies with capabilities on those areas.



Strategic line	Value chains
Energy efficiency and circularity	► Energy efficiency
Electrification and renewable fuels	► Heat pumps
Green hydrogen	► Green hydrogen ► Oxicombustion

Value Chain: **Heat Pump**

END USER

AHLSTROM MUNKSJÖ · cemosa CELULOSAS MOLDEADAS, S.A. · COMINTER · LUCART SHARING THE FUTURE · Aralar · PAPELERA DEL ORIA · Grupo iberpapel PAPELERA GUIPUZCOANA DE ZICUÑAGA, S.A.U. · Papresa we are paper · Smurfit Kappa · ZUBIALDE

MANUFACTURERS

AIRLAN · Saunier Duval · DOMUSA TEKNIK · Sedical Técnica para el ahorro de energía

ENGINEERING AND INTEGRATION

TAMOIN · Sedical Técnica para el ahorro de energía · 25 años frigolan · apina Cooling Future® · GIROA VEOLIA · sener · IBERDROLA

REFRIGERANTS

NIPPON GASES · Air Liquide · CARBUROS METALICOS Grupo Air Products · Petronor

HEAT EXCHANGERS

ARAUT · lointek · Kelvion · TORRAVAL cooling · MECET S.r.l. · Sedical Técnica para el ahorro de energía · indelcasa ingeniería del calor

COMPRESSORS

ABC COMPRESSORS · Danfoss · BETICO COMPRESSORS · PUSKA AIRE COMPRIMIDO

GEOTHERMAL ENERGY

telur · EKOGAR · Geinor Ingeniería Servicios Energéticos · ekidom · ingeka Ingeniería Geotérmica

CONTROL

msi grupo · Genelek · miesa · OPTIMITIVE EFFICIENCY THINKING · RPM SOLUTION · xabet

RVCTI

CIC energiGUNE MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE · ikerlan MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE · tecnalia MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE · Tekniker MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE · Universidad del País Vasco Euskal Herriko Unibertsitatea · vicomtech MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

Value Chain: **Energy Efficiency**

AUDITS, MONITORING AND ENERGY MANAGEMENT

ENERGY AUDITS

CEIBER energy · EDE INGENIEROS · ase grupo oee · ARISE ENERGY · gese Servicios Energéticos · santillán · eldu · stratenergy velatia · tecuni

MEASUREMENT AND VERIFICATION OF CONSUMPTION

ARISE ENERGY · EDE INGENIEROS · DOMINION · globalfactor · CARLO GAVAZZI · Ondoan · ase grupo oee · santillán · eldu

ENERGY MANAGEMENT

ase grupo oee · gese Servicios Energéticos · eldu · ARISE ENERGY · CEIBER energy · Conecta energía

ENERGY SERVICE COMPANIES

stratenergy velatia · GIROA VEOLIA · elecnor · ENGIE · eldu · edp · enermetrik solutions

ENERGY EFFICIENCY MEASURES

HEAT RECOVERY

ENGINEERING

IDOM · TAMOIN · sener · sarralle · ELA 21 Ingeniería de Soluciones · ORLOGA INGENIERÍA · BOSLAN INGENIERÍA Y CONSULTORÍA · KREAN

EXCHANGE EQUIPMENT

ARA · ORLOGA INGENIERÍA · lointek · TORRAVAL cooling · MECET · Sedical · Kelvion

DIGITALIZATION

OPTIMITIVE EFFICIENCY THINKING · BIGDA Solutions · Ibermática EMBRACING THE FUTURE · BELLMER SINCE 1842 · barbara · Valmet · IMMERSIA SEE BEYOND · VOITH · imatek ADVANCED TECHNOLOGIES · AFRY · KAYTEK smart digital business · alhona smart industry · ariSens by INGEMET · versia · D&A Innovative Systems · LKS Next · xabet · PcVue Solutions · MSI grupo

AUXILIARY FACILITIES

COMPRESSED AIR

EDE INGENIEROS · coprein · santillán · ABC COMPRESSORS · BETICO COMPRESSORS

HOT WATER/STEAM

Tecman · Ondoan · GIROA VEOLIA · santillán · ZAGAR

SELF-CONSUMPTION INSTALLATIONS

PHOTOVOLTAIC SOLAR

Edinor · Bikote Solar Proyectos fotovoltaicos · Ekisolar · krea ENERGÍAS RENOVABLES · bet energía y sistemas · artico INGURUMENA · BERLIN PI · DOMINION · R2M SOLUTION

GEOTHERMAL ENERGY

telur · ekidom · EKOGAR · Geinor Ingeniería Servicios Energéticos · ingeka Ingeniería Geotérmica

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Value Chain: **Oxy- Combustion**

END USER

Petronor
ArcelorMittal
sidenor
CELSA GROUP
NERVACERO
TUBACEX GROUP
ACEROS INOXIDABLES OLARRA
cementos LEMONA A CRH COMPANY
TUBOS REUNIDOS GROUP TUBOS · PRODUCTOS
Cementos Rezola HEIDELBERGCEMENT Group
Asociación de Fundidores País Vasco y Navarra

OVENS

ghi SMART FURNACES
insertec Furnaces & Refractories
sarralle A Universe of Engineering
INDUCTOTHERM GROUP IBERIA ONDARLAN
ARROLA
fives Industry can do it

OXYGEN

Air Liquide
NIPPON GASES
CARBUROS METALICOS Grupo Air Products
360gases

BURNERS

sarralle A Universe of Engineering
E&M COMBUSTIÓN
fives Industry can do it
DEGUISA
TEKENER QUEMADORES
Sedical Técnica para el ahorro de energía

REFRACTORY

Calcinor QUÍMICA NATURAL
DEGUISA
insertec Furnaces & Refractories
Kelsen
KROSAKI AMR REFRACTARIOS, S.A.
DOMINION

RVCTI

AZTERLAN MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
ceit MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
ikerlan MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
tecnalia MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE
Universidad del País Vasco Euskal Herriko Unibertsitatea

Value Chain: **Green Hydrogen**

R+D ORGANIZATIONS

Tekniker · tecnalia · cidetec · CIC energiGUNE · Universidad del País Vasco / Euskal Herriko Unibertsitatea · ikerlan · ceit · CTA · Mondragon Unibertsitatea · Goi Eskola Politeknikoa · Tknika

SUPPORT NETWORK

GRUPO spri · ENERGIAREN EUSKAL ERAKUNDEA / ENTE VASCO DE LA ENERGÍA · Cluster Energía BASQUE ENERGY CLUSTER

The initiative is complemented by the implementation of several mechanisms to foster industrial decarbonization.

BASQUE COUNTRY	Support by GRANTS	Support by TAX DEDUCTION
 Support for **R&D&I**	▪ Programa Elkartek (I+D RVCTI) – SPRI ▪ Programa Hazitek (I+D empresarial) - SPRI ▪ Fast Track Innobideak 2024 - Ayudas SPRI ▪ Horizon Europe – European Commission	Technical Qualification Reports for Tax Effects for R&D and Innovation projects with technological advancement
 Support for **INVESTMENT**	▪ Industrial decarbonization - SPRI ▪ Energy efficiency for Industry - EVE. ▪ Strategic Projects for Economic Recovery and Transformation (PERTE) - MINTUR	Basque List of Clean Technologies tax deduction of 30% of the equipment investment cost

SUPPORT FOR R&D. More than 50 R+D projects were launched in 2021-2024 by Basque agents and companies in the field of industrial decarbonisation, mobilising a total investment of 280 million euros.

	Energy efficiency and circularity	Electrification and renewable fuels	Green hydrogen	Carbon capture, use and storage	
Pulp and paper	2	1			3
Refining	1			3	4
Cement					-
Siderurgy	5		5		10
Foundry	4				4
Multisector	6	2	23	2	33
	18 projects 95 M€	3 projects 23 M€	28 projects 128 M€	5 projects 32 M€	

SUPPORT FOR INVESTMENT. R&D programs

INDUSTRIAL DECARBONIZATION PROGRAM

Budget: 20 M€ ; Proposed projects: 68; Proposed budget: 99,2 M€

Awarded grant: 17,62M€ ; Awarded projects: 58; Eligible budget: 87,15M€

SUPPORT FOR THE IMPROVEMENT OF PRODUCTION FACILITIES THAT CAUSE A REDUCTION IN GREENHOUSE GAS EMISSIONS IN THE BASQUE INDUSTRY

Energy efficiency

~84% of projects **~90% of awarded grant**

New machinery (30)
Solar panels (12)
Components

Installations
Heat exchangers
Raw material

Electrification

~16% of projects **~10% de la awarded grant**

Solar panels
Aerothermal
Heat pumps

Industries

Forging
Stamping
Steelmaking
Foundry
Aluminum
Chemicals
Glass
Paper
Food&Beverages
...

Since its launch at COP26, Net-Zero Basque Industrial SuperCluster has boosted its international positioning by participating in several forums.

WORLD ECONOMIC FORUM

EPRI
ELECTRIC POWER RESEARCH INSTITUTE

Alianza Q-Cero

All4ZERO

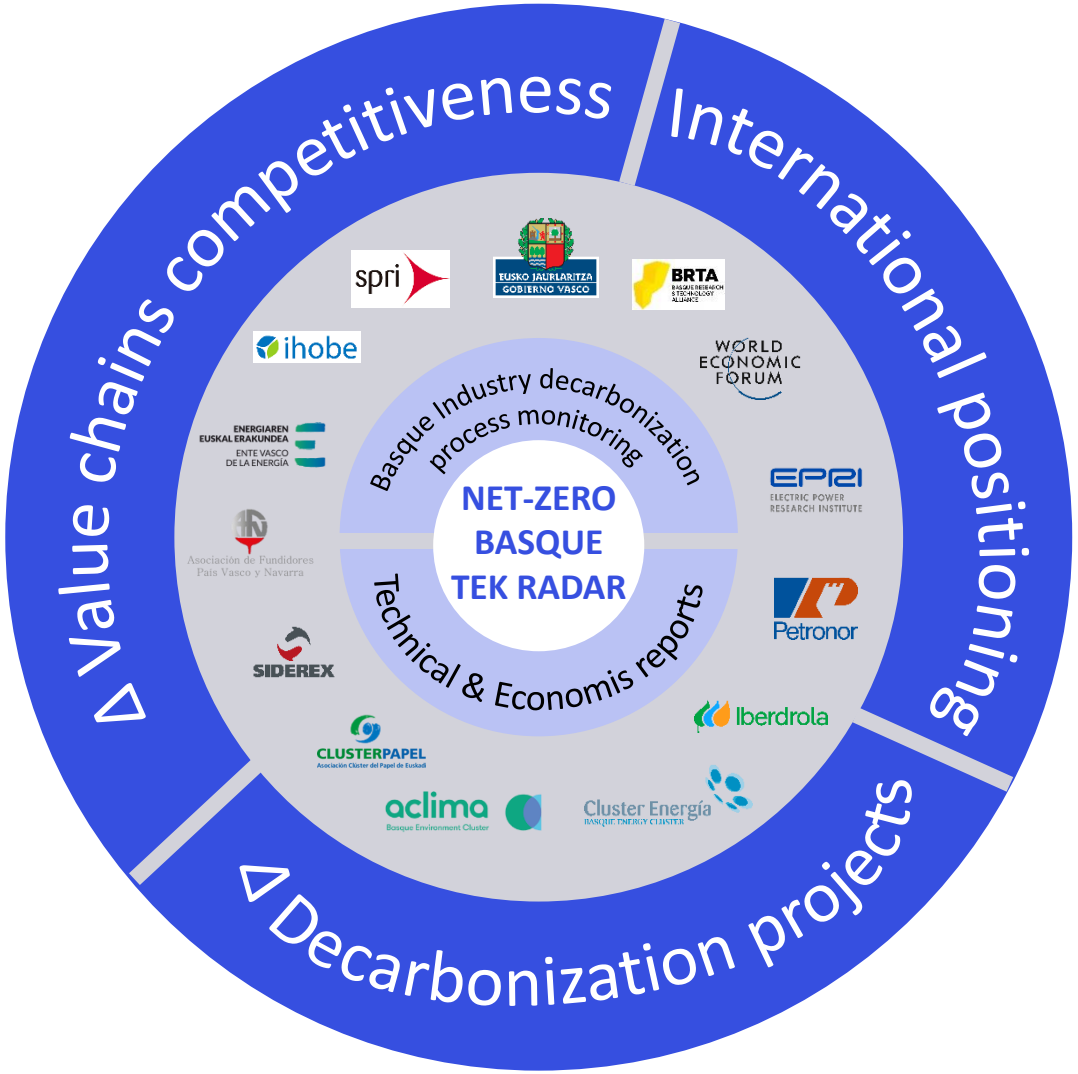
Organized by the industrial clusters in collaboration with SPRI, the Industrial Decarbonization Forum has been established as a meeting place between the supply and demand of energy efficiency and decarbonization solutions to boost opportunities for collaboration in this area.

~140 participants

~90 stakeholders

Next steps - Net Zero Basque Tek Radar

Tool to promote, coordinate, follow, measure and disseminate the deployment of the industrial decarbonization strategy in Euskadi



To continue strengthening the national and international positioning of the NZBISC

Digital platform to disseminate information and serve as a co-working network to promote collaborative actions within the initiative.

- Oxicombustion
- Heat pumps
- Electrification of heat treatments
- Emerging electrification technologies with high emissions reduction potential
- Portable electrolyzers

- R+D projects underway and completed
- Technologies developed
- Investments by companies
- Evolution of energy consumption indicators
- Evolucion of associated CO2 emissions
- Impacts on economic activity and employment, etc.

aclima Basque Environment Cluster
CLUSTERPAPEL Asociación Clúster del Papel de Euskadi
SIDEREX
Asociación de Fundidores País Vasco y Navarra

Decarbonization projects

Iberdrola
Petronor

Competitive value chains

Cluster Energía BASQUE ENERGY CLUSTER

Thank you!

Ainara Raton

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GRUPO spri TALDEA

EUSKO JAURLARITZA
GOBIERNO VASCO
INDUSTRIA, TRANTSIZIO ENERGETIKO ETA JASANGARRITASUN SAILA
DEPARTAMENTO DE INDUSTRIA, TRANSICIÓN ENERGÉTICA Y SOSTENIBILIDAD

Global Best Practices in Industrial Decarbonisation

Q&A

Catherine McHale

ESB

Ainara Raton

SPRI

Invest Northern Ireland

Next Steps for Industrial Decarbonisation

Panel Session

Gordon Best
MPA NI

Eugene Heaney
Invest NI

Matthew Rhodes
Camirus

Catherine McHale
ESB

Invest Northern Ireland