Industrial Decarbonisation for Northern Ireland (IDNI) Initiative

Invest Northern Ireland has led on a first-of-its-kind decarbonisation project, for Northern Ireland. The Industrial Decarbonisation for Northern Ireland (IDNI) initiative sought to address three strategic priorities: reducing emissions, enhancing regional balance, and boosting productivity. Over 220 businesses have been actively engaged in the project, with workshops delivered across all council areas to ensure broad participation.

Funded by Innovate UK, key partners include Manufacturing NI, Mineral Products Association NI, AMIC/QUB, Ulster University/Smart Manufacturing Data Hub, and a GB consortium that successfully delivered the UKRI-funded RePowering the Black Country project. Invest NI has also secured support from all 11 councils, DfE, DAERA, DfI, SONI, NI Chambers and all major NI utility companies.

IDNI has developed a free to use, Productivity Emissions Tool (PET), which has been adopted by 103 NI high energy intensive businesses to date, helping them establish their Scope 1 & 2 emissions, plus benchmarking productivity against GB counterpart organisations, using ONS comparisons.

IDNI has identified nine industrial clusters of high-energy users, across 6 of the 11 council regions and a Mineral Products Sectoral grouping of more dispersed businesses, titled Community of Shared Interest (MPANI-COSI). Additionally, IDNI is advancing a mapping initiative to enhance visibility of NI's industrial sectors, linking these with infrastructure and renewable asset generation by integrating input from electricity and renewable datasets. Invest NI is also engaging gas and water utilities in this effort to enhance strategic planning, investment and policy for decarbonisation.

By taking a customer-first perspective, IDNI has identified three distinct levels at which industrial decarbonisation methodology needs to be pursued:

1. individual firm carbon reduction interventions
2. clustering of neighbouring companies to enhance shared energy infrastructure and waste streams
3. improved infrastructure planning, industry information sharing and development for the whole of Northern Ireland.

This summary document outlines IDNI's findings and emphasises the urgent need for a comprehensive and adaptable decarbonisation plan for the region that will reflect changes both globally and locally. Such a plan will guide future funding, infrastructure development, and demonstration projects, enabling manufacturers to enhance sustainability, boost productivity, and reduce carbon emissions.

The need for Industrial Decarbonisation in Northern Ireland

Northern Ireland faces pressing challenges in reducing greenhouse gas (GhG) emissions and improving productivity. Despite sourcing 45% of grid energy from renewables, emissions reductions stand at only 26.4% since 1990—less than half the UK average of 49.9%. Productivity is 13% below the UK average and 75% of the EU average. The Climate Change Act (NI) 2022 mandates a 48% reduction in net emissions by 2030, highlighting the urgency for immediate action.

A significant proportion of Northern Ireland's industrial base continues to rely on outdated energy systems, such as coal and LPG, due to the absence of alternatives. This reliance not only contributes to higher carbon emissions, increasing operational costs and reduced competitiveness but increases the opportunity for innovation within local businesses. For instance, companies without access to gas networks face logistical challenges and costlier energy sources, hindering their ability to adopt sustainable practices.

The IDNI project addresses the urgent need for industrial decarbonisation in Northern Ireland, where dispersed industrial operations and underdeveloped energy infrastructure pose significant challenges. A structured, government/stakeholder-backed approach is essential to position Northern Ireland as a global leader in sustainable industrial transformation but not at the expense of the wider economy. IDNI delivers a high-impact, scalable model for industrial decarbonisation and economic growth in Northern Ireland. By prioritising collaboration, innovation, and investment, the initiative enhances economic resilience, job creation, and environmental sustainability. The IDNI project has worked with nine pilot industrial clusters to develop and trial a new productivity and emissions tool, knowledge platform, mapping and specialist auditing services. Issues of legal and regulatory complexity, specialist capacity and trust then need to be addressed to make widespread local delivery of these projects as straightforward as possible.

The IDNI project methodology

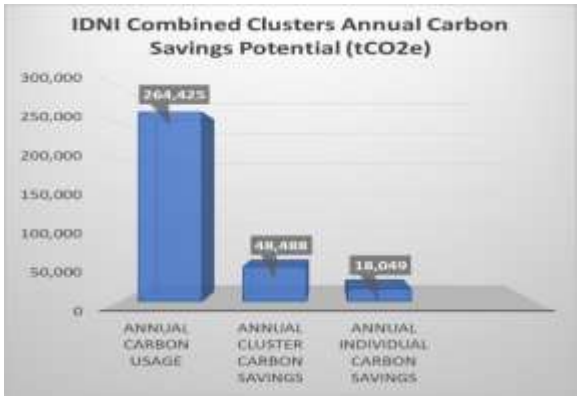
- **Stakeholder Engagement**: Workshops were held across all 11 Northern Ireland councils to gather industrial customer perspectives and identify interested 'industrial pilot clusters'.
- **Pilot Clusters**: Nine industrial clusters were identified, by aligning the workshop activity to the IDNI Mapping resource, leading to the development of carbon and energy-saving opportunities, as outlined below.
- **Tools and Frameworks**: Development of tools such as the PET, Industrial Mapping Resource and Digital Twins to accelerate assess real energy use and emissions.
- **Case Studies**: Analysis of local and international best practices, including an Austrian Energy Model for industrial energy facilitation.
- **Collaborative Platforms**: Engagement with councils, trade associations, and energy providers to streamline communication and knowledge sharing.

Northern Ireland has a significant opportunity to leverage the energy transition for economic benefit. Control over energy policy, favourable geography for renewable energy, access to markets in the Republic of Ireland, the UK, and the EU, and a distinctive regulatory framework, position the region uniquely for industrial decarbonisation. To effectively decarbonise industry, Northern Ireland needs clear policy and regulatory guidance, market integration of green energy, cross-border cooperation, utilisation of funding mechanisms, and alignment on decarbonisation goals.
IDNI emphasises the connection between emissions and productivity, aiming to improve industrial competitiveness with an innovative, world-leading approach. Success will depend on strong collaboration among government, industry, and the energy sector.

IDNI results

IDNI results demonstrated significant energy and emissions savings potential, for example:

- **£28.7 million in annual energy savings (a 32% reduction in current collective energy spend across these 54 organisations).** The NI Business Energy Purchases Provisional Estimates 2016 – 2018 report, currently, the most up to date statistics, estimated NI business total energy spend to be £1.4 billion1, but even using this low outdated estimate, by replicating IDNI initiatives across NI business, could potentially save over £448 million per annum.



- **66,537 tCO2e in emission reductions, which is a 25% reduction in the total industrial emissions across the cluster businesses.** By comparison the Northern Ireland Greenhouse Gas Emissions 2022 report only recorded a reduction of 0.1% across the total industry sector. Given Industry represents 15% of all emissions, a replication of IDNI initiatives could reduce NI's total emissions by an additional 4%.

- **A clustered approach to decarbonisation interventions had over a three-fold increase in impact on both energy savings and carbon reductions versus companies acting individually.** Although the average IDNI cluster assessment showed roughly a three-fold increases in benefit, a project in Mid Ulster had upwards in a nine-fold increase in benefits, improving return on investment.

- **A Knowledge Sharing Platform** https://idni.eco/ bringing together councils, industrial stakeholders, funding and sustainability portals, and *including*
- **An industrial mapping initiative** to identify clustering opportunities and improve infrastructure decision making and investment

1 ABI Business Energy Purchases Final (economy-ni.gov.uk)

- **Indicative capital investment for Feasibility, Pre-FEED and FEED studies** (which is envisaged to be a mixture of private/public funding).

    - Year One £3 – 5 million IDNI decarbonisation deployment initiatives
    - Year Two £8 – 10 million IDNI decarbonisation deployment initiatives
    - Year Three £25 – 30 million IDNI decarbonisation deployment initiatives
    - Year Four plus £30 – 40million IDNI decarbonisation deployment initiatives

- **The need to establish a Northern Ireland Industrial Energy Facilitation Agency (NIIEA).** NIIEA would be a facilitator, not a market participant: it would support intermediaries, energy service companies and aggregators, by establishing market standards, building confidence and trust and helping manufacturing and industrial companies deliver initiatives identified. Also, it would future proof industrial decarbonisation by aligning to changing markets contexts and needs.

IDNI Key Findings

Challenges:

- **Dispersed Industrial Base:** Northern Ireland's SMEs face higher costs and barriers to adopting low-carbon technologies.
- **Infrastructure Deficits:** Grid constraints and limited gas network expansion hinder renewable energy integration and decarbonisation efforts.
- **Regulatory Complexity:** Opaque energy market regulations impede industrial participation in energy planning.

Opportunities:

- **Renewable Energy Potential**: Northern Ireland's renewable resources, particularly wind energy, are among the highest globally.
- **Cultural and Digital Strengths:** Family-owned/SME business base, with advanced digital expertise provide a foundation for cooperative and innovative energy solutions.
- **Devolved Policy Leverage:** Unique policy autonomy enables bespoke decarbonisation strategies.

IDNI Strategic Actions & Recommendations

To address Northern Ireland's urgent decarbonisation and productivity challenges, the **Industrial Decarbonisation for Northern Ireland (IDNI)** initiative outlines critical actions and corresponding asks to achieve impactful, scalable results. These are designed to support industry, councils, energy stakeholders, and government in delivering both environmental and economic benefits.

Expand Energy Assessments & Efficiency Tools

- Fund and deploy specialist industrial energy assessments, including clustered assessments across NI businesses.
- Leverage/Adopt PET for Scope 1, 2, and 3 emissions analysis to guide policy and investment.
- Facilitate adoption/implementation/funding of energy efficiency projects and clustered solutions.

Accelerate Cluster Development

- Formalise cluster qualification and sustain momentum in nine pilot clusters and MPANI-COSI.
- Provide targeted support to ensure project execution and maximize impact.
- Nine pilot clusters have been identified and supported through the IDNI project. These clusters need ongoing facilitation to maintain momentum. Additional clusters may also develop, and this should be encouraged.
- Consider bids for support into the Invest NI Cluster Acceleration programme with a view to funding ongoing cluster facilitation support for the pilot Eastern and Western Clusters created through the project.

Improve Knowledge Sharing & Infrastructure Mapping

- Expand the IDNI Knowledge Sharing Platform to enhance collaboration.
- Develop, improve and broaden industrial demand maps for informed infrastructure investment, to include additional utilities information and accurate industrial identification.
- Align renewable generation/curtailment information with industrial demand and Invest NI regional property strategy

Enable Policy & Regulatory Support

- Align funding programs to support industrial clusters and energy audits, as per IDNI's three-stage methodology.
- Advocate for streamlined planning regulations to fast-track decarbonisation projects.

Establish an Industrial Energy Facilitation Agency (NIIEA)

- Proposed feasibility study into the establishment of a Northern Ireland Industrial Energy Facilitation Agency (NIIEA) based on a model pioneered with EU support in Austria.
- This NIIEA would be industry-led and tasked with facilitating and accelerating industrial decarbonisation initiatives, through contractual preparation and pilot cluster projects.
- Facilitate regulatory processes and secure large-scale funding.
- Provide ongoing advisory and policy support for industrial decarbonisation.
- Liaise with legal experts to develop standardised templates and legal contracts to facilitate, empower and accelerate decarbonisation initiatives across the region.

Next steps

The immediate first steps to implement the findings of the project are:

1. Confirm an ongoing process for funding and delivering company-level energy assessments
2. Establish facilitation support for the initial nine pilot clusters
3. Secure funding for development and delivery of pilot cluster projects, by consolidating projects and ensuring a more commercially attractive investor proposition.
4. Agree and establish ongoing maintenance and ownership of KSP and support tools
5. Support energy sector decarbonization efforts by establishing a NI version of an industrial energy agency (modelled on the Austrian model)
6. Develop industrial demand mapping resource to improve the efficiency of infrastructure planning, investment and policy delivery
7. Set up simple management structure (Advisory Board) to co-ordinate and secure funds for 1-6 above, while keeping additional key stakeholders, such as councils onboard.

Roles and responsibilities

- **Government & Dept for the Economy (DfE):**
  - Potentially co-fund NIIEA development and integrate cluster-based decarbonisation into policy.
  - Adjust policy frameworks to enable and reward cluster-based solutions and decarbonisation initiatives, to complement existing individual interventions offered by Invest NI, such as Energy Resource Efficiency Support.

- **Invest NI, Innovate UK & DESNZ:**
  - Expand Invest NI funding to support IDNI's methodology and pilot cluster projects.
  - Adopt PET for data capture across Invest NI's suite of intervention to broaden information gathering and develop a coherent, timely and standardised dataset for decision-making.
  - Support the development and deployment of pilot cluster projects through sustainable technology support and potential Invest NI cluster accelerator support.
  - Extend capital grant programs for smaller industrial firms not eligible for large-scale funding, such as Energy Efficiency Capital Grants, in line with IDNI methodology.
  - Provide Feasibility, Pre-FEED and FEED support as detailed in Appendix 1
  - Explore Invest NI owned industrial property as first of a kind demonstrator sites for clustered decarbonisation projects, such as Granville and Knockmore.
  - Review cluster solutions to inform Invest NI Regional Property Strategy.
  - Align Innovate UK Action Plan for NI with IDNI recommendations

- **Energy Sector & Utility Regulator:**
  - Review regulation/barriers to enable local energy trading and shared resources, including PPA's and VPPA's.
  - Engage with NIIEA to deliver regulatory/contractual solutions to deliver initiatives highlighted
  - Contribute funding, or resources, toward the NIIEA to help streamline/accelerate industrial collaboration.
  - Increase transparency and responsiveness in infrastructure planning for identified clusters, as exemplar pilot decarbonisation projects

- **Energy Sector & Utility Regulator:**
  - Promote additional industry engagement, registration, and data upload on the PET to improve planning/policy/investment modelling.
  - Encourage decarbonisation/productivity best practice sharing with IDNI KSP team to develop case studies, thereby informing industry of solutions
  - Support future cluster funding applications/calls with funders, such as DESNZ, Innovate UK, UK/NI Government
- **Local Councils:**
  - Streamline planning processes and facilitate IDNI industrial cluster formation, as exemplar pilot decarbonisation projects.

- **All-Island Collaboration:**
  - Engage the Irish Government and SEM Committee to optimise incentives for industrial clusters.

This summary provides an overview of the IDNI project's objectives, findings, and next steps. Northern Ireland has a key opportunity to use industrial decarbonisation to achieve several policy goals, such as improving regional balance and boosting productivity.

To deliver these potential benefits, IDNI has validated the pressing and urgent need for a balanced and constructive relationship between industrial consumers, the energy sector, local councils, and critical parts of government and regulation, particularly the planning system.

- **Industrial customers** are willing to embark on productivity and decarbonisation journeys, but direction, guidance and project funding is lacking, coupled with an ever-complicated energy market, especially when considering 'clustered' solutions, which provide a much greater return on investment but have a greater degree of risk and coordination need for individual companies.

- **Energy Sector stakeholders** are seeking a lower cost transition (expansion) of networks, with lower prices to consumers. IDNI can provide better visibility of demand investments, which lead to a more accurate picture of available flexibility and demand response opportunities, lowering network operational costs. Short- medium term local 'cluster' solutions could increase grid headroom and reduce urgency of very large network improvements and mitigate constraints

- **Local Councils** keen to support economic growth in their regions by improving business competitiveness and expansion plans through a more streamlined efficient industrial interaction

- **Government** by facilitating a collaborative approach to decarbonisation, could assist in delivering lower energy costs for all, resulting in a more competitive NI that's an attractive location for inward investment, with improving economic growth and a healthier, happier society.

- **Planning,** which has been highlighted throughout the 11 council workshops as a barrier to decarbonisation. Better coordination and understanding of the challenges of stakeholders will help mitigate some of these issues.

A regionally focused decarbonisation strategy could spread the economic benefits of low-carbon technologies and sustainable industries throughout Northern Ireland. With 65% of Invest NI's investments planned for areas outside of Belfast, coupled with a new regional property plan, this approach could also help stimulate local economies, create quality jobs, and support new industries in underdeveloped regions like the North-West. Northern Ireland's strong renewable energy resources, especially wind, offer a solid foundation for growth in sectors such as advanced manufacturing, low-carbon technologies, and renewable energy infrastructure. These industries promise high-value job creation and the potential to strengthen regional supply chains, benefiting SMEs across the economy.