

Climate Action Economic Opportunities: Local Authorities Supporting Enterprise

Real World Example
of Business Realising the
Opportunities in Transition

12th October 2021

Dr Shirley Gallagher



IRISH
MANUFACTURING
RESEARCH

**TECHNOLOGY
CENTRE**
ENTERPRISE IRELAND
IDA IRELAND SUPPORTED

The Technology Centre logo features a stylized graphic of a wave or signal with multiple colored lines (green, blue, yellow, red) on the right side.

**Climate Action Economic
Opportunities: Local Authorities
Supporting Enterprise**

Agenda:

01

**IRISH
MANUFACTURING
RESEARCH**
7 minutes

02

**REAL
WORLD
EXAMPLE**
5 minutes

03

**INDUSTRY
5.0**
3 minutes

The background features a dark blue gradient with several glowing purple lines that form a grid-like pattern of intersecting curves. A large, dark blue, rounded rectangular shape is positioned in the center, partially overlapping the glowing lines. In the upper right corner, there is a dark blue, angular shape that also overlaps the glowing lines.

**IRISH
MANUFACTURING
RESEARCH**

Irish Manufacturing Research (IMR)



+ 5 years

2-5 years

1-3 years

**Blue Sky
Research
in Academia**

Partnership
with industry
WP owners

**Applied
Research
in Academia**

Partnership
with industry
WP owners

Platform for
HPSU

**IMR TRL
4-8**

Scoping
of Research.
ID RPOs, funding

**Industry
Solutions
HPSU**

Industrial
Challenges
identified

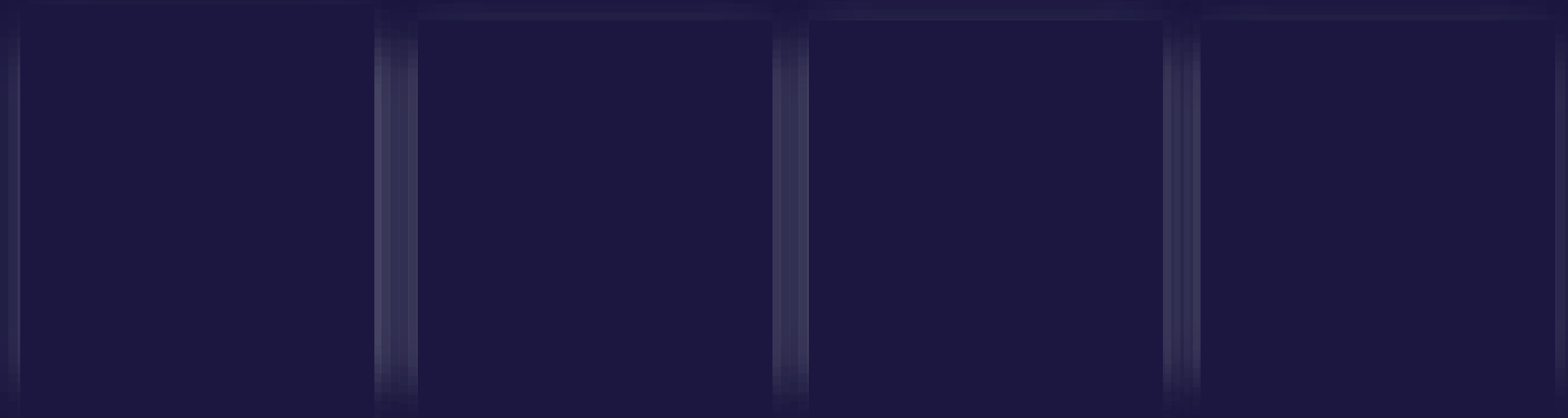
- Founded in 2014
- Demystify, De-risk and Deliver



DEMYSTIFY, DERISK, DELIVER

emerging technologies
for manufacturing

IMR 4 Thematic Pillars



Innovate with Factories



Manufacturing Professional
of the Future



Factory of the Future &
Future Technologies



Sustainable Manufacturing in
a Low Carbon Economy



The Future of
Manufacturing





Resources



70+ Researchers

500+ Years

43,500 sq. ft of R&D
Pilot Lines and
Development labs

State-of-the-Art
Equipment



Impact

40+ Active
Research
Partnerships

€8.5m in
R&D funding

€Million's saved
in productivity,
decarbonisation
and efficiency
improvements
for Industry



Connectivity

Irish leadership
on
12 major EU
decision
making bodies



Strategic
Partnerships
with 8 Irish
Academic
Institutes
200+ Industry
Network



Training and Dissemination

700+ attendees
at IMR courses and
dissemination
events



400+ students
involved in
STEAM programs

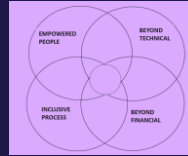
500+ Circular Economy
programme CIRCULÉIRE
dissemination events



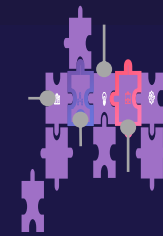
Tacit Knowledge Management



LifeCycle Analysis (LCA)



Circular Procurement



Site Assessments



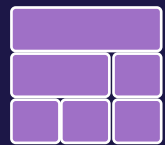
Design



Strategy



Data Analytics



Business Model



Schedule Optimisation



Modelling and Simulation



Data Visualisation



Energy Efficiency



Closed Loop Systems



IIoT



Virtual Reality



Augmented Reality



3D Printing



Robotics

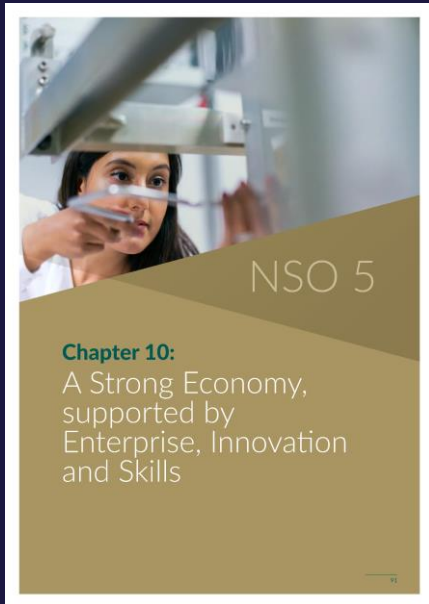


Digitisation



Innovation Management

IMR - Here to help



Chapter 10:
A Strong Economy,
supported by
Enterprise, Innovation
and Skills

Project Ireland 2040 | National Development Plan 2021-2030

Strategic Investment Priorities – Enterprise, Trade and Employment

Green Transition Fund - driving decarbonisation and enterprise resilience in the transition to a low carbon economy	Investing in Regional Growth and Resilience A comprehensive and integrated programme of measures will be initiated to strengthen growth and employment potential with a particular focus on balanced regional development and smart specialisation by building competitive and innovative enterprises through the following initiatives: The Regional Enterprise Development Fund (REDF) is aimed at accelerating economic recovery in all regions of the country by delivering on the potential of local and regional enterprise strengths. To date, through an allocation of €300 million over three competitive calls, the Fund has co-financed significant collaborative and innovative local and regional initiatives to build on specific industry sectoral strengths, improve enterprise capability, and drive job creation. The REDF is an important enabler of the Department of Enterprise, Trade and Employment's (DETE)'s Regional Enterprise Plans being updated in 2023. The goal of achieving a one-third increase in levels of entrepreneurship and survival of start-ups that are trading in all regions will be pursued through the Local Enterprise Office (LEO) and LEI. Through new initiatives, mentoring and collaborative initiatives at sector level and through the REDF. The work of the LEOs has been critical to regional and national SME resilience throughout the COVID-19 pandemic. The LEOs grant programme has further played an integral role in the ambitions of regional initiatives such as the Action Plan for Rural Development and the Regional Enterprise Plans in 2020. Regional Enterprise Plans represent a collaborative approach within each region, bringing together the business community and institutes of technology (IoTs), the business community and institutes of technology (IoTs), the business community and institutes of technology (IoTs) to work together to recruit, train and support a resilient and prosperous future for each region. The Regional Technology Cluster Fund (RTCF) is focused on enhancing the capacity of the institutes of technology (IoTs). Technological institutes (TIs) are drivers of regional enterprise academic collaboration and clusters. The RTCF comprises a number of regionally focused initiatives linking SMEs and IOTs/ TIs to build regional sectoral clusters to scale and internationalise enterprise in all regions. DETE is developing a National Clustering Policy in 2023 which will set out Ireland's approach to promoting the emergence and further growth of large scale, self-sustaining, business led clusters, where
Digital Transition Fund - building a future-focused SME base	
Establishing the network of European Digital Transition Hubs	
Future Manufacturing Hubs - developing Ireland's capabilities in advanced manufacturing and industry 4.0	
Advanced Manufacturing Measures - linking capacity and capacity across all regions	
Small Business Transformation through firm level assistance - including delivery of the Agri Food Transformation Fund	
Expanding Enterprise Ireland's budget for research and development	
Supporting IDA Ireland Regional Enterprise Programme - attract investment to regional locations	
A National Design Centre - assisting market led innovation to link-based enterprises to grow international sales	
Seed and Venture Capital Funding - assisting regional start-ups and growth	
Delivery of the Enterprise Technology Transition Fund to support innovation and investment in cutting edge technologies and future-focused solutions	
Space Technology Programme - benefiting firms in the regions	
Expansion of the National Institute for Bioprocessing Research and Training - scaling up capacity for a focus on personalised medicine	
New Regional Enterprise Development Funding	

Project Ireland 2040 | National Development Plan 2021-2030

Box 10.2: Enterprise Green Transition Fund

Addressing climate change will be the defining global business challenge of the near decade. The Enterprise Green Transition Fund is targeted at both large-scale enterprise companies with the aim of supporting them in achieving carbon abatement and meeting broader environmental, compliance and environmental sustainability requirements.

For the competition to occur to build resilience to the transition to a low carbon economy, businesses will need to develop management expertise and skills to assess the likely impacts to their cost base, regulatory environment, market demands and customer preferences.

This Fund will build on the training and implementation of the Climate Resilience Action Fund launched by it in April 2021. It will also further support to live with the implications of the forthcoming Climate Action Plan 2021, and carbon abatement opportunities in the manufacturing and construction sectors through systems transformation, specific manufacturing interventions.

The Fund will offer industrial sectors to play their part in the national decarbonisation trajectory while building resilience in businesses that are particularly exposed to climate transition in carbon pricing or further regulation.

The Fund will be designed to facilitate early adoption of technologies to reduce the CO2 footprint in the manufacturing construction sector - including energy and housing technologies using fossil fuels that could impact new technologies that will be significant contributors to CO2 and funding which will reduce the carbon period by accelerating the installation of these technologies.

Part funded under the National Recovery & Resilience Plan.

Table 10.1: Investment in regional innovation - IDA and IDA Technology Centres

Investment in Regional Innovation - IDA and IDA Technology Centres

Funded by the DETE, Trade and Employment, the Technology Centres programme in June 2013 and IDA Ireland initiative that assists industry-led technology development agencies, with a focus on close to market activities. Examples from the existing portfolio of 6 centres include those listed below.

- Meta Technology Ireland (MTI)** focusing on applied areas such as genomic predictions, meat safety, meat characterisation and health, involving University College Cork (UCC), Dublin City University (DCU), TU Dublin and Teagasc.
- IRIS Manufacturing Research Manufacturing 4.0** centres, for example, collaborative robotics, Augmented Reality/Virtual Reality, Informatics, Cyber security in Dublin and Westmeath. Research Partners include DCU, Trinity College Dublin (TCD), Science Institute of Technology (SIT), National University of Ireland, Galway (NUI), Mater Hospital Technological University (MTU), University College Cork, University of Limerick (UL), University of Ulster and Maynooth University (MIU).
- Microelectronics Circuits Centre Ireland (MCCI)** with focus on analog, digital, memory and mixed signal circuit research, funded by Teagasc National Institute with MTU and NUI.
- Learnmore** focusing on training technologies including corporate, school, higher education and non-formal learning, funded by TCD with a regional spread of industry and academic partners.
- Pharmaceutical Manufacturing Technology Centre (PMTCC)** research across the pharmaceutical manufacturing chain, continuous and powder processing, advanced rapid prototyping and analytical technologies, involving UCC, UL, IT Sligo, MTU, Waterford IT and TU Dublin.
- Construction Technology Centre** currently under development. This centre will facilitate and encourage collaboration between construction companies and the research community and help increase the level of R&D investment, innovation and productivity across the construction sector.

National Development Plan 2021-2030

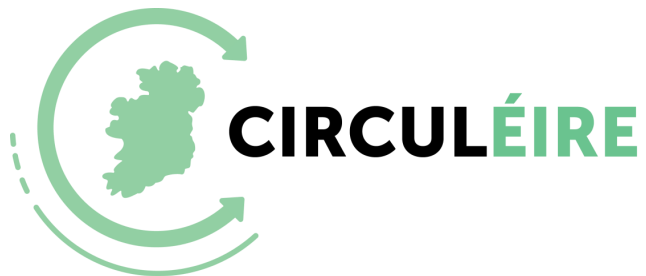


Prepared by the Department of Public Expenditure and Reform
gov.ie/2040

National Development Plan (NDP) 2021-2030 incorporates an investment package of €165 billion. Irish Manufacturing Research directly supports priority solutions to strengthen climate ambitions, jobs in regions, and economic renewal for the decade ahead.
Page 93-96

The background features a dark blue to black gradient. Overlaid on this are several glowing purple lines that form a grid-like pattern of intersecting curves. There are also large, dark, rounded shapes that appear to be cutouts or shadows of the letters 'O' and 'R' from the text 'OR'.

**REAL
WORLD
EXAMPLE**



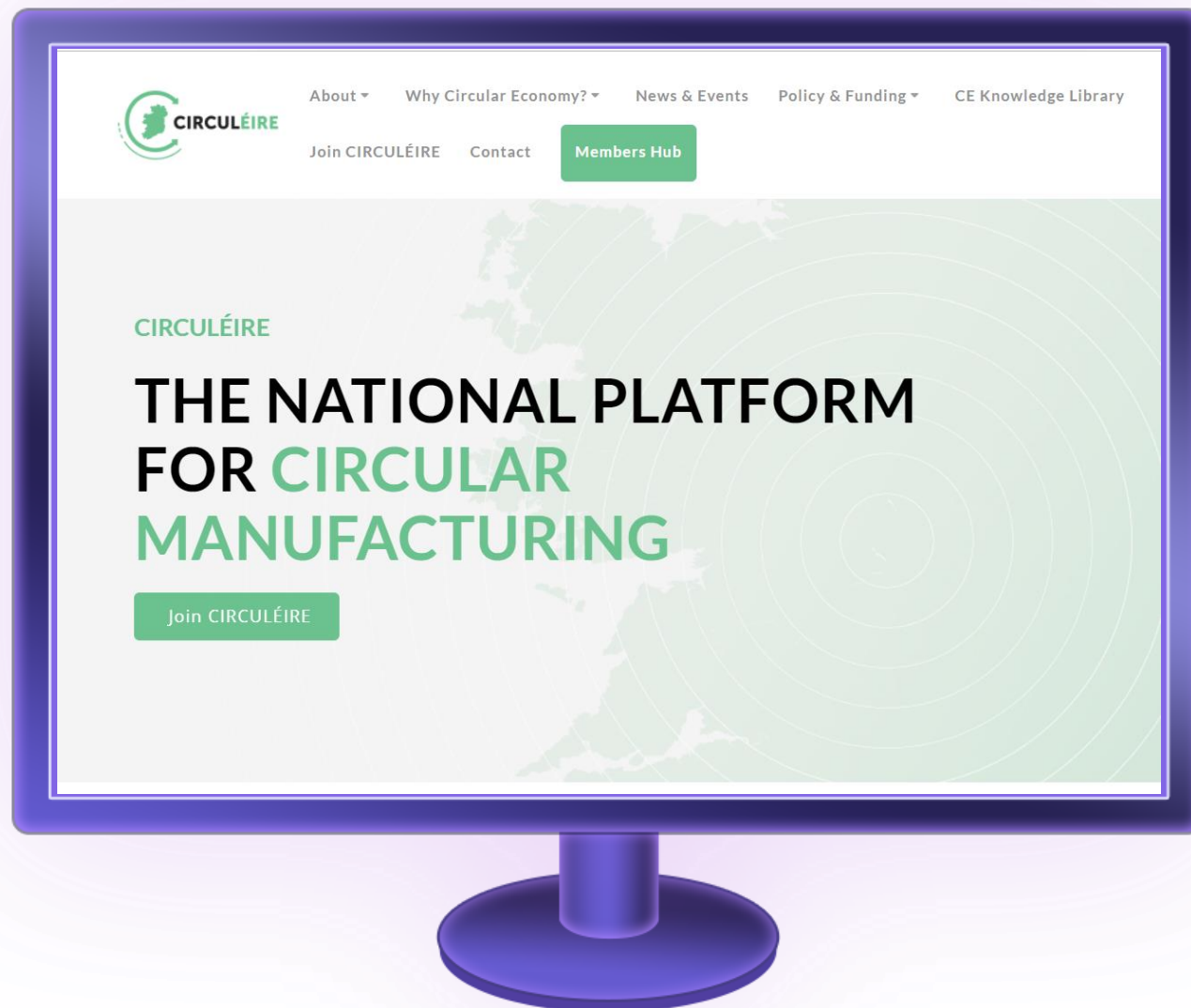
CIRCULÉIRE is the first cross-sectoral industry-led innovation network dedicated to accelerating the net-zero carbon circular economy in Ireland using systems innovation to embed circularity in Irish industry.

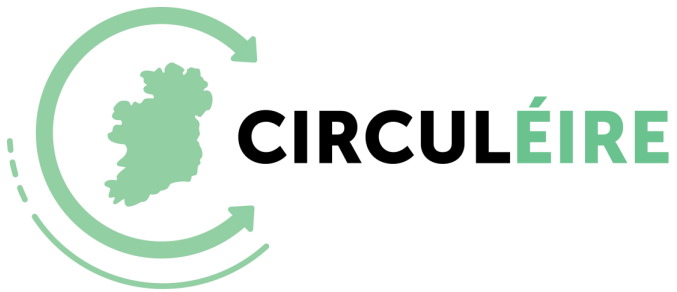
Join the conversation!
[@circuleire](#) #CircularEconomy
[linkedin.com/circuléire](https://www.linkedin.com/company/circuleire)

Strategic partners:



An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications





Ireland's National Platform for Circular Manufacturing

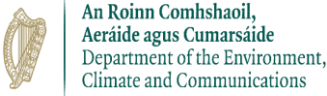
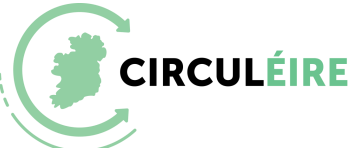
- Industry-led €4.5 million public- private partnership to accelerate the transition towards a net zero-carbon circular economy (2020-2022)
- De-mystify, de-risk and deliver circular economy (CE) concepts through innovation demo pilots
- Ireland's 1st circular economy innovation network co-creating solutions with 37 members...



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Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications



HOW: Supporting Industry to Capture Circular Advantage



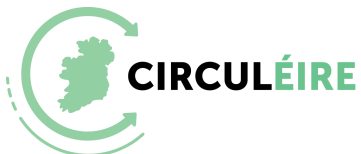
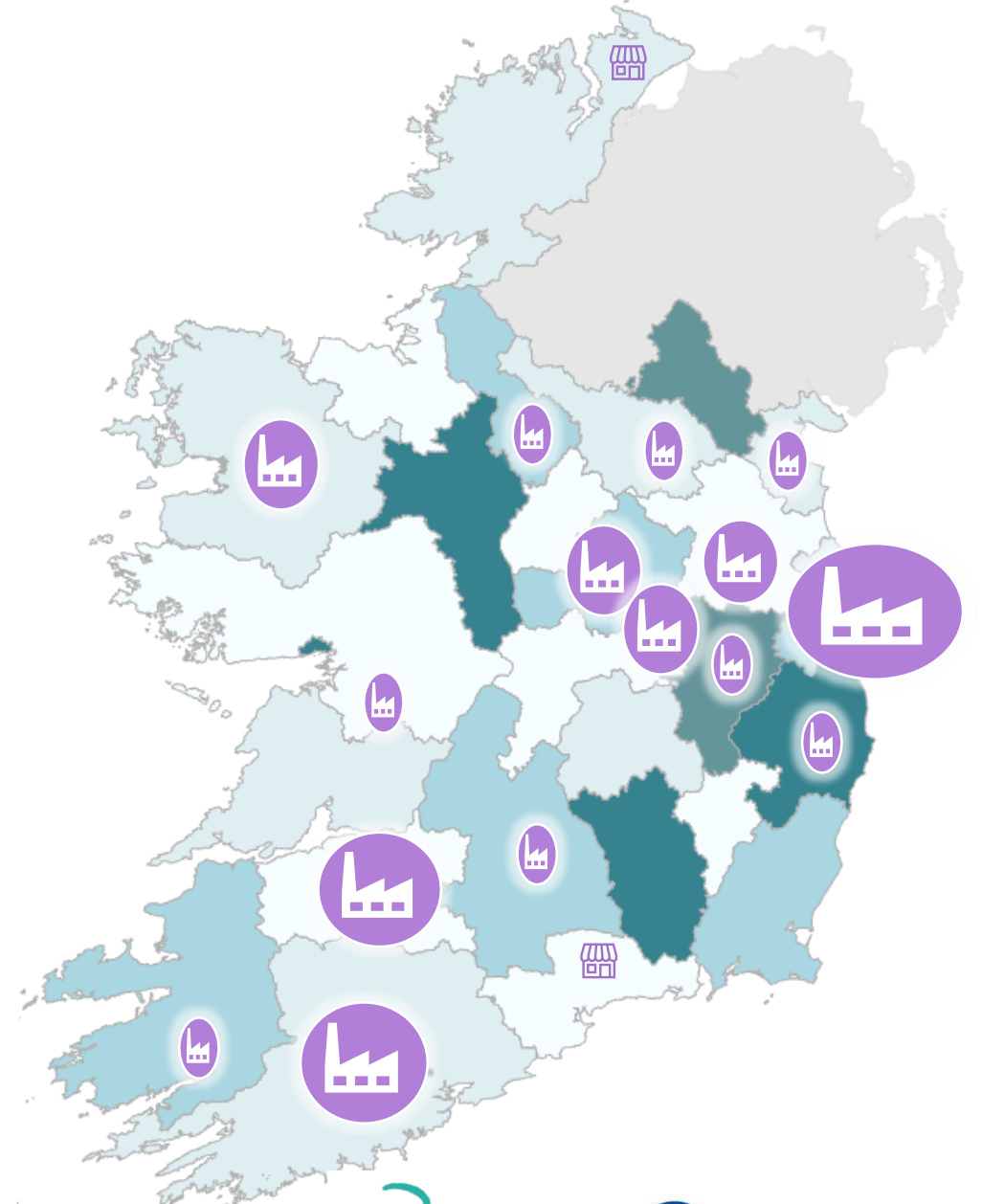


CIRCULÉIRE

- 27 Manufacturing Sites
- 5 Start Ups (5 pending)
- 8 Support Industries
- 21 Local Authority Jurisdictions



Location of CirculEire Members



An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications





**Next Meeting
Thursday 21st
October 7pm**

Email

shirley.gallagher@imr.ie

THE IRISH TIMES

Tue, Oct 12, 2021

NEWS

SPORT

BUSINESS

OPINION

LIFE & STYLE

CULTURE

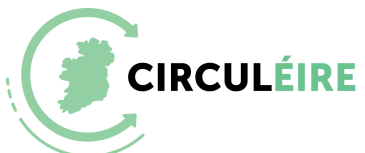
[Companies](#) > [Energy & Resources](#) | [Financial Services](#) | [Agribusiness & Food](#) | [Health &](#)

Nphet-like group needed to steer Ireland through energy crisis, says entrepreneur

Expert team needed to respond to threat of power outages in winter – Eddie O'Connor

© Mon, Oct 11, 2021, 01:00 | Updated: Mon, Oct 11, 2021, 06:37

Kevin O'Sullivan Environment & Science Editor



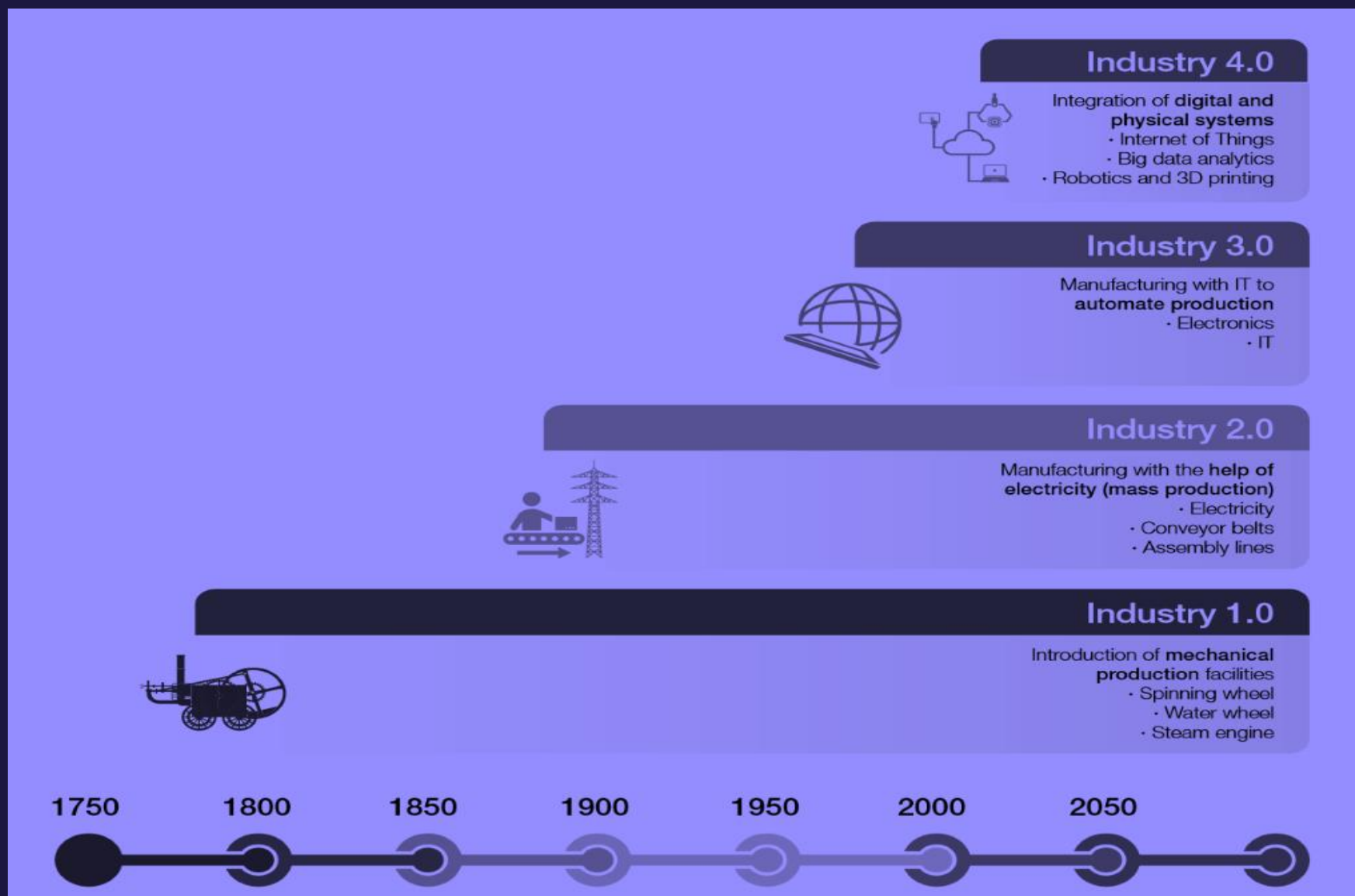
An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications



The background features large, semi-transparent letters 'I' and '5' in a dark blue color. Overlaid on these letters are several glowing purple lines that form a grid-like pattern of intersecting curves, creating a futuristic, digital aesthetic.

INDUSTRY 5.0

Industrial Revolution- Technology Journey





Industry 5.0 ...



Industry 5.0 policy attempts to capture the value of new technologies, providing prosperity beyond jobs and growth, while respecting planetary boundaries, and placing the wellbeing of the industry worker at the centre of the production process.



Why Industry 5.0?



Industry 5.0 is a **SOLUTION PROVIDER** for people and for our planet

IMR INDUSTRY 5.0 REAL WORLD EXAMPLES

- [BEinCPPS @BEinCPPS](#)
- [MACHINING4.0 @Machining4_eu](#)
- [DIGITbrain @digitbrain_EU](#) [DIH² @L4MS_EU](#)
- [ACROBA @AcrobaProject](#)
- [ADMA TranS4MErs @ADMAeurope](#)
- [iBECOME @iBECOME_EU](#)
- [ECOFACT @Ecofact_Project](#)
- [Industry 4.E @Industry4E](#)
- [Connected Factories 2 @C_Factories](#)
- [MIDIH@MIDIH_EU](#)
- [CIRCULÉIRE: @circuleire](#)

Thank you
Go Raibh Maith Agaibh
Please Get in Contact



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01

IRISH
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02

REAL
WORLD
EXAMPLE
CIRCULEIRE

03

INDUSTRY 5.0



**IRISH
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RESEARCH**

Sustainability Case Studies

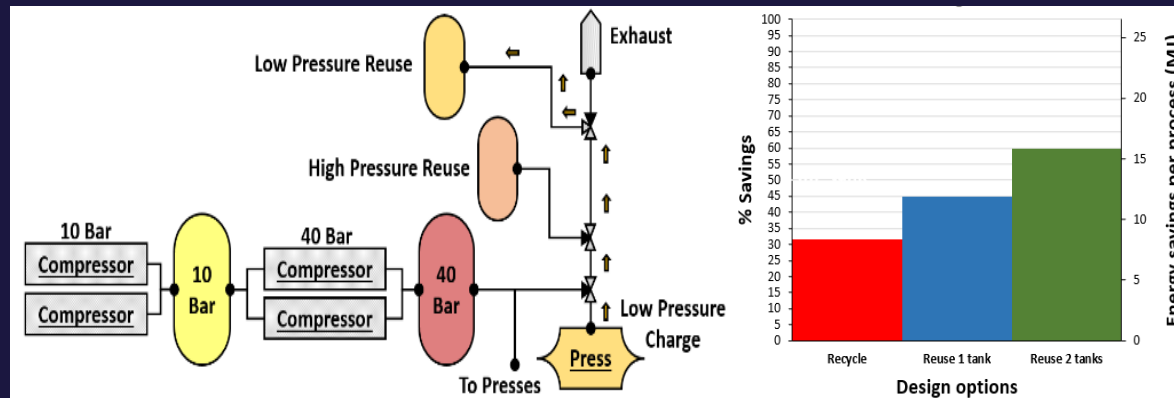
Compressed Air Recovery

Problem/opportunity hypothesis?

High pressure compressed air system exhaust considerable volumes of high value air to atmosphere that can be captured and reused.

Research Question

Can pressurised air capture technology used in limited high volume applications be redesigned and evaluated for an existing SME system?



Why is it important?

- Reduce power consumption of low and high pressure compressed air line.
- Reduce the design capacity allowing more flexibility for expansion or decommissioning of compressors.

Cleanroom Optimisation

Problem/opportunity hypothesis?

Classification 6-8 cleanrooms are using 40-60% more energy than required. In addition manual environmental monitoring practices lead to unnecessary product quarantine and scrap.

Research Question

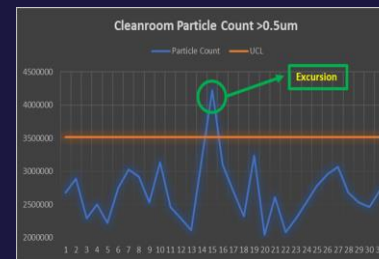
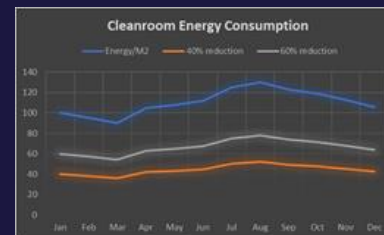
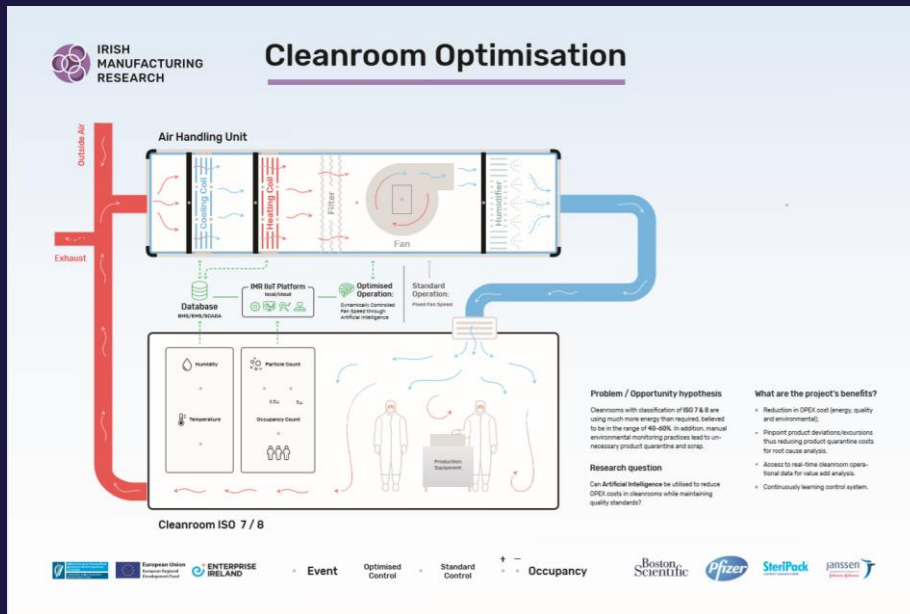
Can Artificial Intelligence be used to reduce energy while maintaining quality standards?

Why is it important?

- Reduce/Eliminate the cost of manual testing
- Reduce the number of cleanroom recertification
- Minimise/Eliminate quarantine/scrap product due to cleanroom excursions
- Minimise the energy consumption while operating cleanroom within spec

Project Outputs (IP)

- Energy Efficiency Cleanroom Design Guide
- Cleanroom Dynamic ACR ML control Algorithm



Chilled Water System Optimisation

Problem/opportunity hypothesis?

Chilled Water Systems typically account for 20% of the energy consumption in a manufacturing facility. Current strategies are not set up for energy efficiency

Research Question

Can existing data sets from multiple system on site be utilised to optimise CHW system performance without a large capital outlay

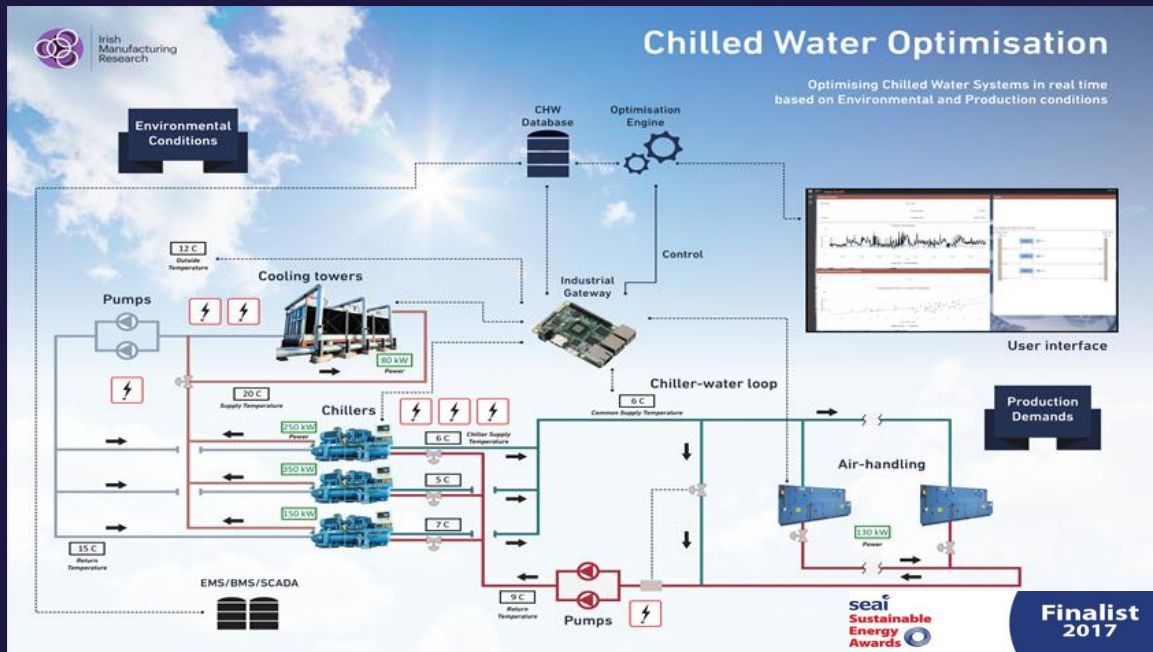


Why is it important?

- Reduce CHW System energy consumption
- Prolong Plant life
- Maximise return on investment of existing plant
- Minimise the energy consumption while operating maintaining production requirements

Project Outputs (IP)

- Chilled Water System Simulation Tool
- Chilled Water System optimisation control



Production System EXEED Program



Problem/opportunity hypothesis?

Production system typically account for >50% of the energy consumption in a Manufacturing Facility .

Research Question

Can GreenMode methods be utilised to assist the implementation of the EXEED on production systems



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Project Partners



Why is it important?

- Methodology designed for energy reduction on production systems
- A structured approach to analysing utility consumption & identifying opportunities
- Full site view of energy consumption, applicable to all utility categories
- Focuses on investigating how a site utility category translates down onto a factory floor
- Energy optimisation and reduction improvements that have been risk assessed against specific factory KPIs

Project Outputs (IP)

- *GreenMode Methods*

The True Cost of the Water

Problem/opportunity hypothesis?

Energy and Water are linked resources and the interrelationship is often referred to as the energy water nexus. Whilst the statement “saving water saves energy” can be easily understood, the true cost of the water resource cannot be easily calculated.

Research Question

Can Industrial Internet of Things (IIoT) solutions be utilised to map the true cost of water in a manufacturing facility and identify opportunities for optimisation and reuse



Project Partners

Wyeth[®] | Nutrition



Why is it important?

- Develop an understanding of water flow on site
- Reduce water consumption on site
- Reduce energy consumption on site
- Reduce treatment costs on site

Project Outputs

- *TCW Software auditing tool*

PROducing a composite from plastic BOTtles – PROBOT



Problem/opportunity hypothesis?

Plastic packaging waste is a huge problem around the world. Despite efforts in some European countries such as plastic bottle deposit schemes or having to pay for plastic bags in the supermarket, the average EU citizen creates 31kg of plastic waste per year with Ireland producing nearly double per person

Research Question

Can State of the Art technology be utilised to recycled PET plastics into a self reinforced polymer that can be used in the automotive industry

Project Partners



Why is it important?

- Plastic waste reduction
- Creation of new Business models
- Improving the market for recycled plastic

Project Outputs

- rPET recycling process (ICOMP)

SymbioBeer

Problem/opportunity hypothesis?

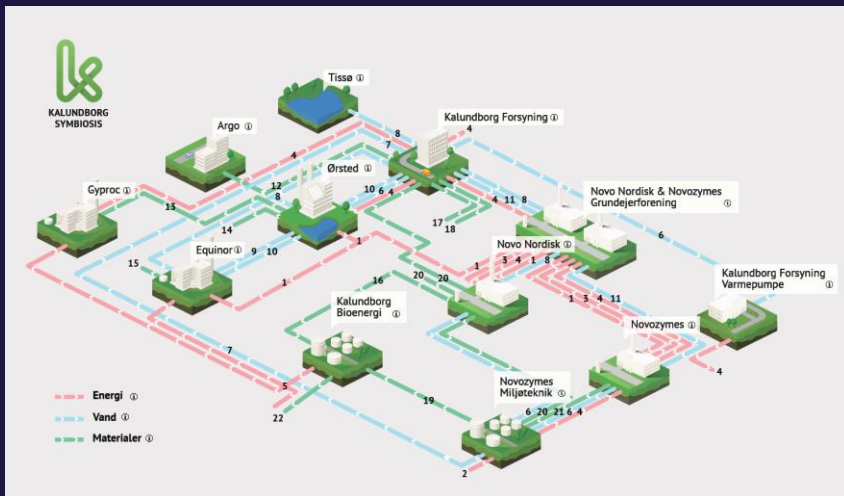
Industrial Symbiosis – whereby the waste from one industrial process is utilised as an input for another industrial process - can deliver environmental and economic benefits.

Transforming waste into a secondary raw materials is often cheaper than virgin raw materials and increases supply-chain resilience.

Research Questions

Can waste bread from a bakery be utilised as a malted grain substitute to produce a novel beer by a brewery?

What are the barriers and enablers to widespread adoption of this industrial synergy in Ireland within the bread and brewing sectors?



Source: <http://www.symbiosis.dk/en/>



Project Partners



Why is it important?

- Increased revenue potential and creation of new revenue streams through new product development and product diversification
- Reduced environmental impact of waste through transformation of waste into a resource
- Reduced GHG emissions associated with transportation and raw material extraction
- Reduced cost of raw materials
- Increased resilience in supply-chain due to local source of raw materials

Project Outputs (IP)

- *Craft Beer made from waste Bread*

iBECOME-intelligent Building Energy Assets Control for Comfort, Energy and Flexibility Optimisation



Problem/opportunity hypothesis?

The market for deep renovation of buildings needs to be transformed in terms of technologies, processes and business models. The multiple benefits of improved energy efficiency are well known, but more action is needed for Europe to achieve the higher rates of renovation that would reduce energy use and decarbonize the building stock in order to meet long-term climate and energy targets.

Research Question

Can the concept of a Building digital twin be utilised to simulate potential energy savings based on actual building performance as well as optimise the building's energy performance

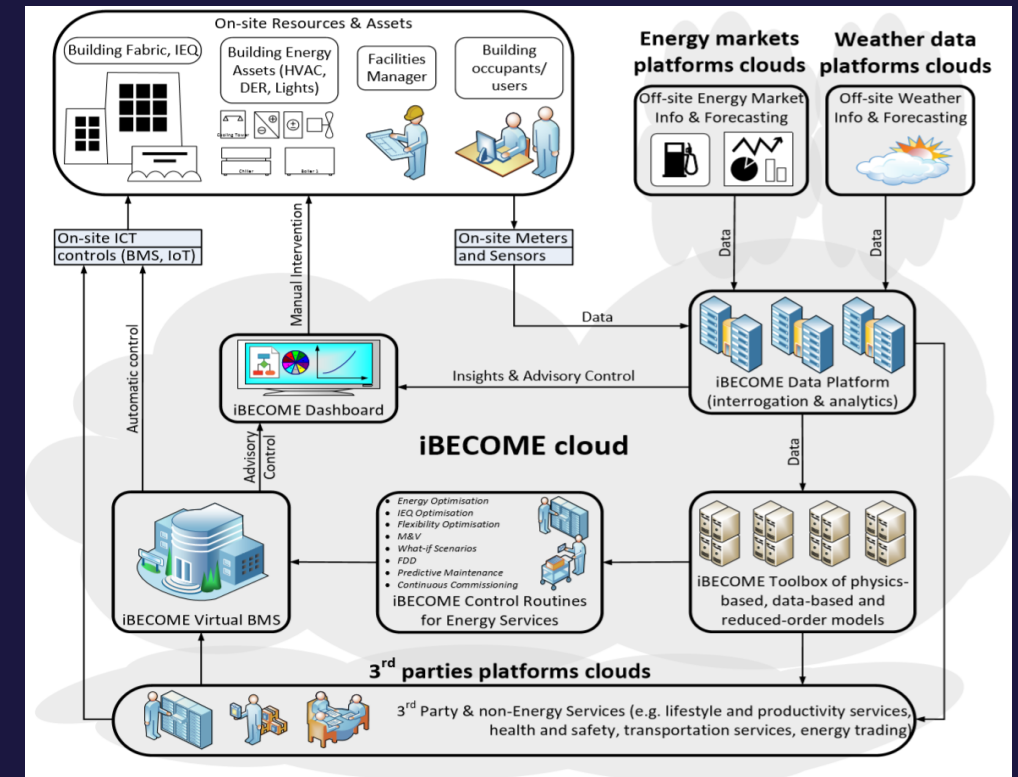
Why is it important?

- Trigger Investments in sustainable energy technologies
- High energy performance in the renovated buildings;
- Measurable cost reduction compared with a typical renovation;
- Reduction of time needed on site for renovation works by 20%
- Demonstration of the effectiveness and replicability of the proposed solutions to lead to an increased rate of renovation

Project Partners



8 X EU Partners



ECOFACT

Problem/opportunity hypothesis?

Improving industrial energy efficiency requires the integration of energy data, such as historical data, real-time data and real-time predicted energy cost, into the production management systems. Manufacturing systems are complex because many parameters, related to environment, components, usage of materials, machines, cells, lines and supply chains, collectively influence the energy performance of production processes

Research Question

Different technologies of energy-efficient manufacturing have already been studied in the past. However, the challenge is now to combine all these technologies in a holistic, intelligent and interoperable approach to ensure *a comprehensive implementation, providing significant energy savings.*

Why is it important?

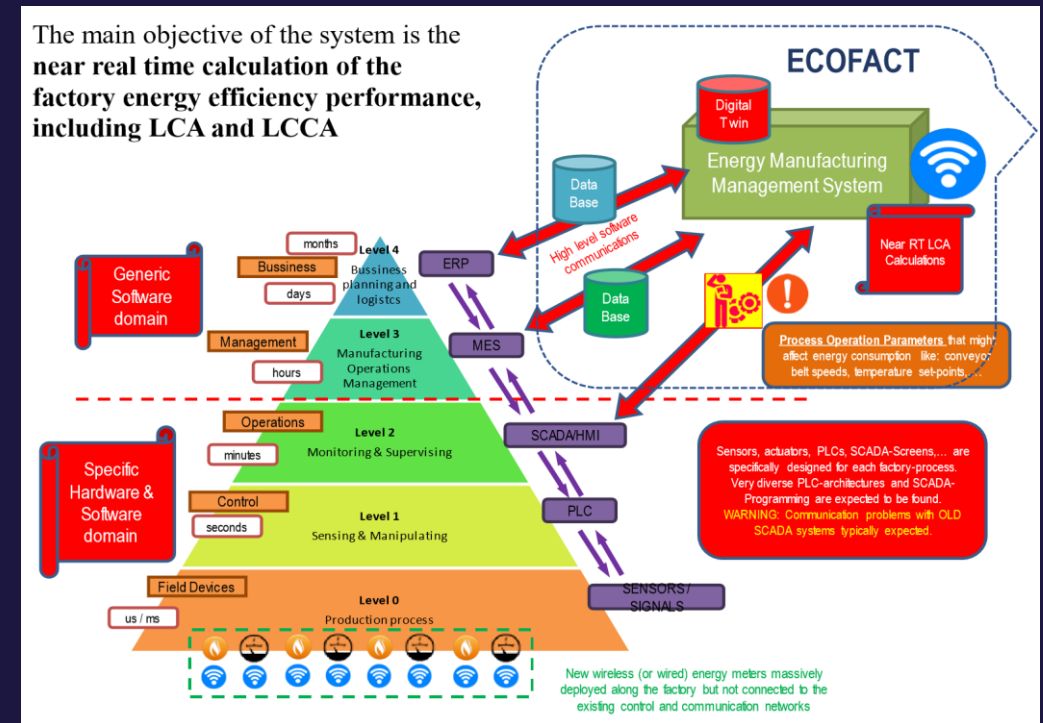
- Resource and energy efficient manufacturing process at factory level
- Holistic approach for the manufacturing value chain
- Eco-efficient product/production design (labelling)
- European Standardization of interoperable energy management systems and MES



Project Partners



18 X EU Partners



Where can Irish Industry get support?



**IRISH
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Competitive Funding for Manufacturing Industry

- **Success:** Take a sneak peek behind the scenes at IMR, and let us share our funding success with YOUR company;
- **Options:** Get links to YOUR company's funding options NOW and those not to be missed in the coming months; &
- **Support:** If YOUR company needs more help, IMR offer a range of funding support personalised for our members.

Freemium services for IMR Community Members

- **1-to-1 Funding Clinic** taking you through the exact grant options available for your company (1hr online);
- **1-page Funding Intelligence Report** containing a summary of the information and links related to your project pipeline; &
- **Exclusive access to 1 Industry Funding Workshop & 2 EU/National consortia*** coordinated by IMR.

Premium Service for IMR Tiered Members

- **Funding Roadmap Design Service:** Funding targets for YOUR project pipeline calendar & resource planning;
- **1-to-1 Funding Advisory Service:** Personalised funding support, grant management, administrative resources: &
- **Strategic Funding Partnerships:** Introduction, brokerage and facilitation for your funding needs.

Get in touch to find out more about National and European funding opportunities for IMR members



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