



Enterprise Heat Emissions Reductions to 2030
IBEC Irish Whiskey Association

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www.seai.ie

Agenda

- Climate and Energy Policy Status – where we stand
- SEAI Heat Study – what does the data tell us?
- Roadmap for Industrial Heat
- Example of Heat Electrification in Distillery

Climate and Energy Policy Status, SEAI Supports

Where we stand.....

Carbon Budgets	Relevant National Targets	Key Sectoral Policies
<p>2021-2025: 295 Mt CO₂ eq. an average of - 4.8% for the first budget period.</p> <p>2026-2030: 200 Mt CO₂ eq. an average of - 8.3% for the second budget period.</p> <p>2031-2035: 151 Mt CO₂ eq. an average of - 3.5% for the third provisional budget.</p>	<ul style="list-style-type: none"> • At least 37% in Enterprise (7.9 reduced to 5 MtCO₂) • 70-80% in Electricity (with Focus on CPPAs and LEUs (data)) • 50% reduction in commercial building emissions, with renewable heating deployed in 50,000 commercial buildings 	<p>Core Policy Measures</p> <ul style="list-style-type: none"> • Emission Trading Scheme (ETS) • Carbon Tax • Energy Efficiency Obligation Scheme • SEAI LIEN, EXEED and SSRH • IDA and EI Climate Action Supports • Building Regulations • Renewable Heat Obligation Scheme <p>Additional policy focus</p> <ul style="list-style-type: none"> • Transparent reporting of emissions • CPPA policies • SEAI, IDA and Enterprise Ireland collaboration • District Heating framework • Assess feasibility of renewable gas

Focus: Large Industry Support

- Large Industry Energy Network (200 businesses, 20% national energy footprint)
- Long history of impact and leadership (Agreements, I.S. 399 / ISO 50001, I.S. 393)

Engaging Business

- Membership typically engaged but ambitions keep changing and new members join
- More focus on climate creates new strategic focus on emissions reductions

Educating and Guiding Business

- Decarbonisation Partnerships
- Energy Management Systems (ISO 50001)
- Annual Reporting (Efficiency and Emissions)
- Special Working Groups
- Advice and Knowledge Sharing

Enabling Business

- Mandatory Audits
- Energy Efficiency Obligation Scheme
- Grants - EXEED, SSRH, Communities

SEAI Heat Study

SEAI National Heat Study Outputs



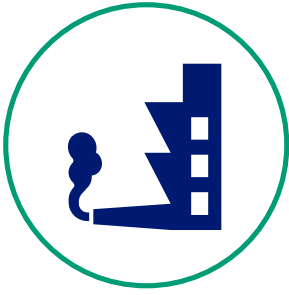
➤ Published 2021



➤ Published 2022

How to get to zero?

Baseline



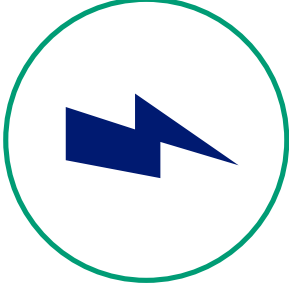
The baseline scenario, or **'business as usual' case**, shows the most likely development of energy demand, supply and transformation based on current knowledge, technological development and policy measures.

Decarbonised Gas



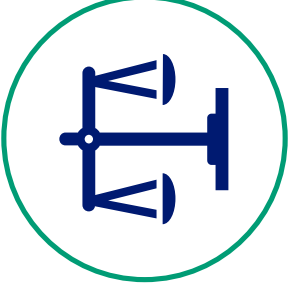
Policy supports **expansion of the gas grid**, implementation of **CCS/BECSS in power and industry**, the production of **green hydrogen**, and maximising **additional AD resources**. **District heating limit of 10%** of heating demand in buildings.

High Electrification



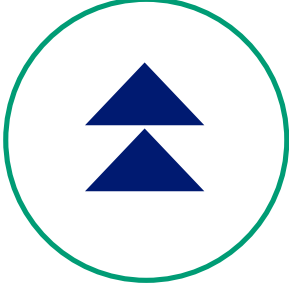
Policy supports the **uptake of heat pumps** alongside **uptake of energy efficiency, electricity network reinforcement**, and maximising **perennial energy crops**; the gas network extent reduced. **District heating limit of 30%** of heating demand in buildings.

Balanced



Diverse policy flexibly supports **electrification** alongside use of **green hydrogen and biomethane**, implementation of **CCS/BECSS in power and industry**, and a mix of additional AD resources and perennial energy crops. **District heating limit of 20%** of heating demand in buildings.

Rapid Progress



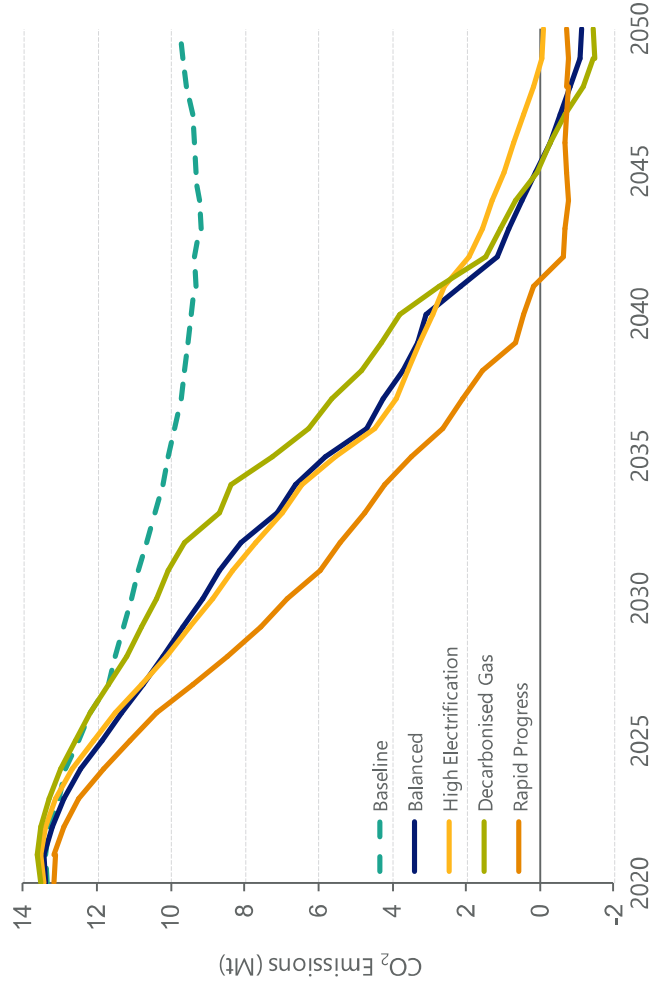
Immediate and diverse policy supports **electrification in the near-term** alongside the increased use of **biomethane** in the **gas grid**, implementation of **CCS/BECSS in power and industry**, and maximising AD resources. **District heating limit of 30%**.

Key Insights

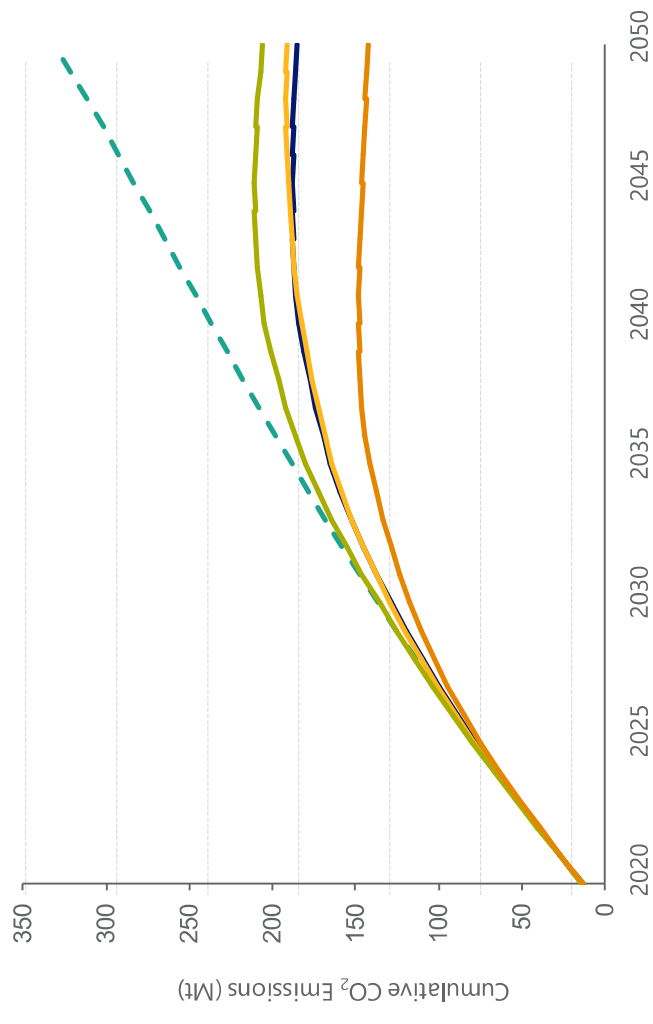
ACT NOW	DECIDE NOW	INVESTIGATE NOW
<ul style="list-style-type: none"> • District Heating Deployment • Rapid elimination of fossil fuels in buildings (heat pumps) • Accelerate competitive options in commercial and industrial sectors (heat pumps and biomass) • Implement sustainability governance for bioenergy • Policies for low carbon gasses • Renewable electricity deployment 	<ul style="list-style-type: none"> • Role for negative emissions technologies • Role for CCUS • Timetable for fossil fuel phase out by sector • Future role of national gas grid • Role of secondary heating 	<ul style="list-style-type: none"> • Economic impact of deep decarbonisation? • Energy security implications? • What's the business model for competitive low carbon industry? • How can green hydrogen be accelerated, and costs reduced?

Net zero pathways with the lowest cumulative emissions use more electric heating technologies. Scenarios focused on a hydrogen gas grid have more cumulative emissions.

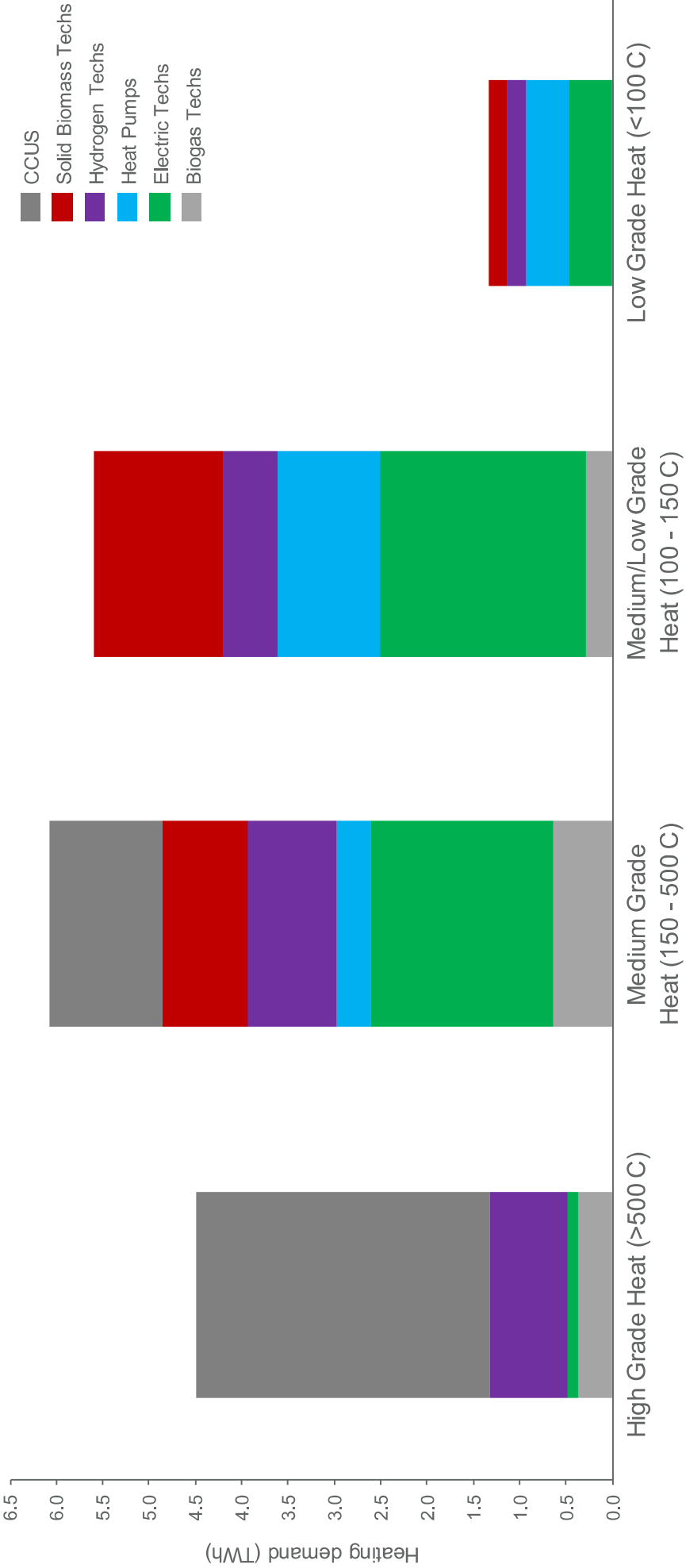
Annual CO₂ emissions (MtCO₂)



Cumulative CO₂ emissions (MtCO₂)



Industrial heating demand by tech group and heat grade – 2050 – Balanced



Roadmap for Industrial Heat

What's in the toolbox for 2030?



Key Tools Available

Tool	Energy Efficiency	Electrification (Heat Pumps)	Electrification (Direct)	Biomass
Maturity/ Availability/ Impact	<ul style="list-style-type: none"> • Very mature • Widely available tools • Huge opportunity for “radical” efficiency 	<ul style="list-style-type: none"> • Mature/available up to 100°C now (200°C by 2030?) • High impact, with emissions saving growing with scale 	<ul style="list-style-type: none"> • Electrode boilers available in medium scale • Good experience in Ireland 	<ul style="list-style-type: none"> • Mature and available • Good experience in Ireland
Key Constraints and Enablers	<ul style="list-style-type: none"> • Organisational focus • Maturity of manufacturing plants 	<ul style="list-style-type: none"> • Limited operational experience • Infrastructure costs and price structure • CPPAs and onsite generation can accelerate reduction 	<ul style="list-style-type: none"> • Limited operational experience • Flexible demand market, unlocking lower emissions • Infrastructure costs and price structure • CPPAs and onsite generation can accelerate reduction 	<ul style="list-style-type: none"> • Sustainable and secure fuel supply • Space and maintenance

TIER 1: MATURE, AVAILABLE, IMPACTFUL

Key Tools Available

Tool	Biomethane (Offgrid)	Biomethane (Injection)	Hydrogen
Maturity / Availability / Impact	<ul style="list-style-type: none"> • Mature technology, SSRH support • Suitable for offgrid, high temp applications 	<ul style="list-style-type: none"> • Mature technology, no incentive • Available in large scale 	<ul style="list-style-type: none"> • Mature and unclear economics • Major focus at European level • Abundent resources
Key Constraints and Enablers	<ul style="list-style-type: none"> • Low volume available • Sustainable fuel supply • Onsite or offsite production? 	<ul style="list-style-type: none"> • Low volume available by 2030 (5-10%) • Sustainable fuel supply • Impacts on agriculture • Network cost penalty • Self generation may come from circularity initiatives 	<ul style="list-style-type: none"> • Volume available by 2030 (<1%) • Transmission constraints • Economics of production • NOx emissions

TIER 2: MATURER, IMPACTFUL, LIMITED AVAILABILITY

Other Solutions?

Tool	Combined Heat and Power (CHP)	Batteries / Thermal Energy Storage	Carbon Storage
Maturity / Availability / Impact <ul style="list-style-type: none"> Extremely Mature and economically attractive Emissions impact will be negative after 2025 	<ul style="list-style-type: none"> Mature technology Doesn't reduce emissions, can displace generation 	<ul style="list-style-type: none"> More mature technology Small number of test plants Not available until 2035 or later BECCS will be important negative emissions option 	<ul style="list-style-type: none"> Volume available by 2030 (<1%) Economics of production (needs to be more than electricity) NOx emissions
Key Constraints and Enablers <ul style="list-style-type: none"> Highly variable supply chain May have some medium term value in the electricity system in terms of firm capacity 	<ul style="list-style-type: none"> Relatively limited operational experience Flexible demand market, unlocking lower emissions 	<ul style="list-style-type: none"> Relatively limited operational experience Flexible demand market, unlocking lower emissions 	<ul style="list-style-type: none"> Volume available by 2030 (<1%) Economics of production (needs to be more than electricity) NOx emissions

TIER 3: NEGATIVE IMPACT, NICHÉ, AND POST 2030

What's in the toolbox for 2030?



Energy Efficiency **Electrification** **Renewable Elec** **Biomass**

Biogas **H₂** **Hydrogen**

Other Options

Deploy Rapidly to 2030 **Develop Rapidly for post 2030**

Grid CPPA Onsite

UNIVERSITY OF MILWAUKEE

Example of Heat Electrification in Distillery

Distillery in Ireland (coming soon!)

Application	Distillery
Country	Ireland
Year of Installation	2022
Heat Capacity	470 kW
Supply Temperature	115°C
Source Temperature	60°C
Efficiency (COP)	--
Energy Savings	--
Financial Savings	--
Payback	--

