

SEAI National Energy Modelling Framework & Carbon Budgets



Emma Lynch – Energy Modelling Programme Manager, SEAI

18th October 2022

Overview

SEAI Energy Modelling Function



National Energy Modelling Framework



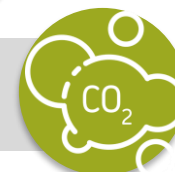
NEMF Applications



Innovation Cycle in NEMF Development



Maximizing Modelling Impact in Carbon Budgets Context



Recent Examples SEAI Analytics Enhancements



SEAI Energy Modelling Function

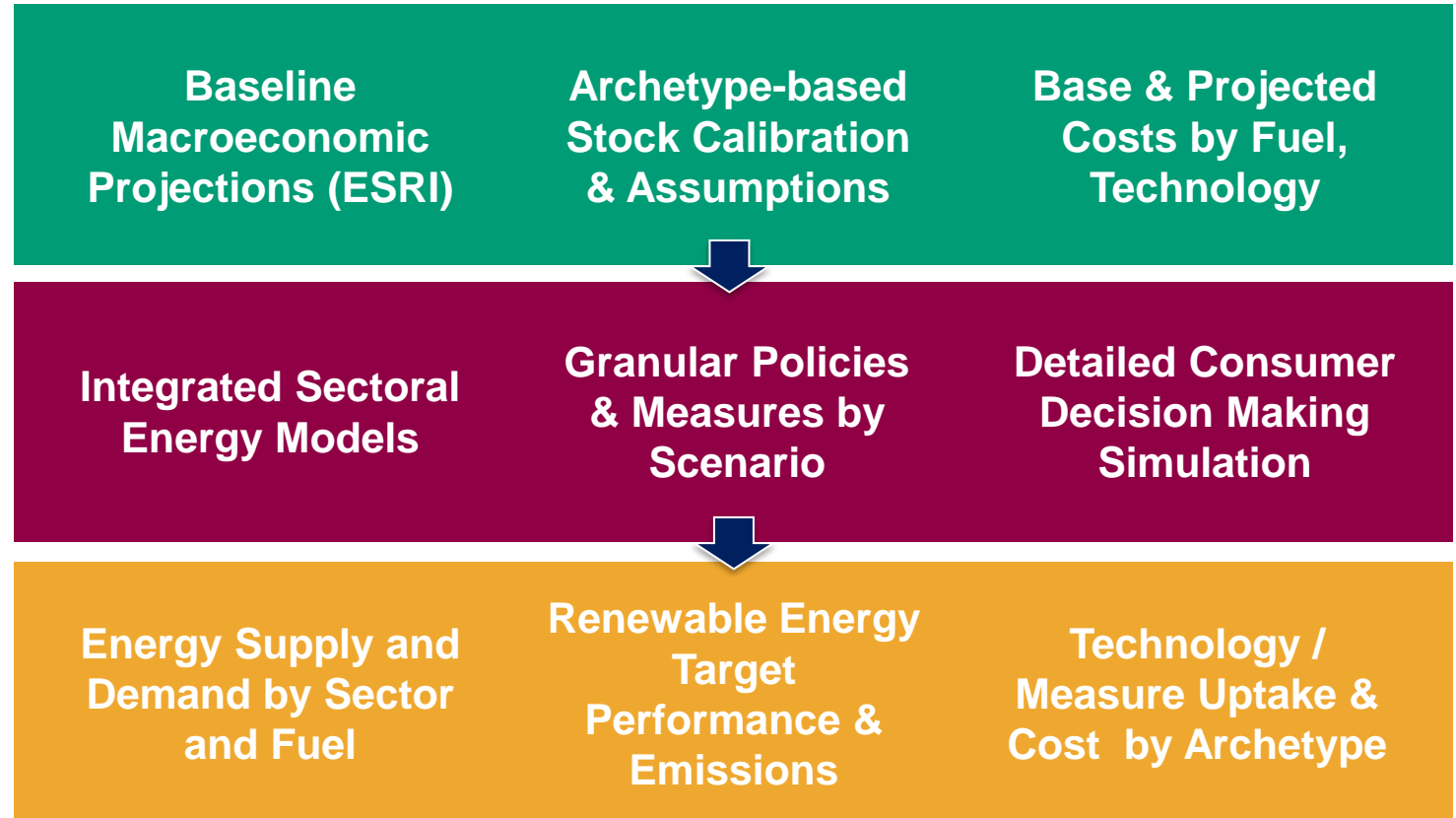
- SEAI functions established by the Sustainable Energy Act, 2002
 - share information and projections on energy production and use
 - assist State with coordinating sustainable energy activity
- SEAI Energy Modelling purpose
 - Simulate future energy supply and demand
 - Quantify effects of policy on trends
 - Identify gaps to targets and priority areas
 - Fulfil reporting requirements



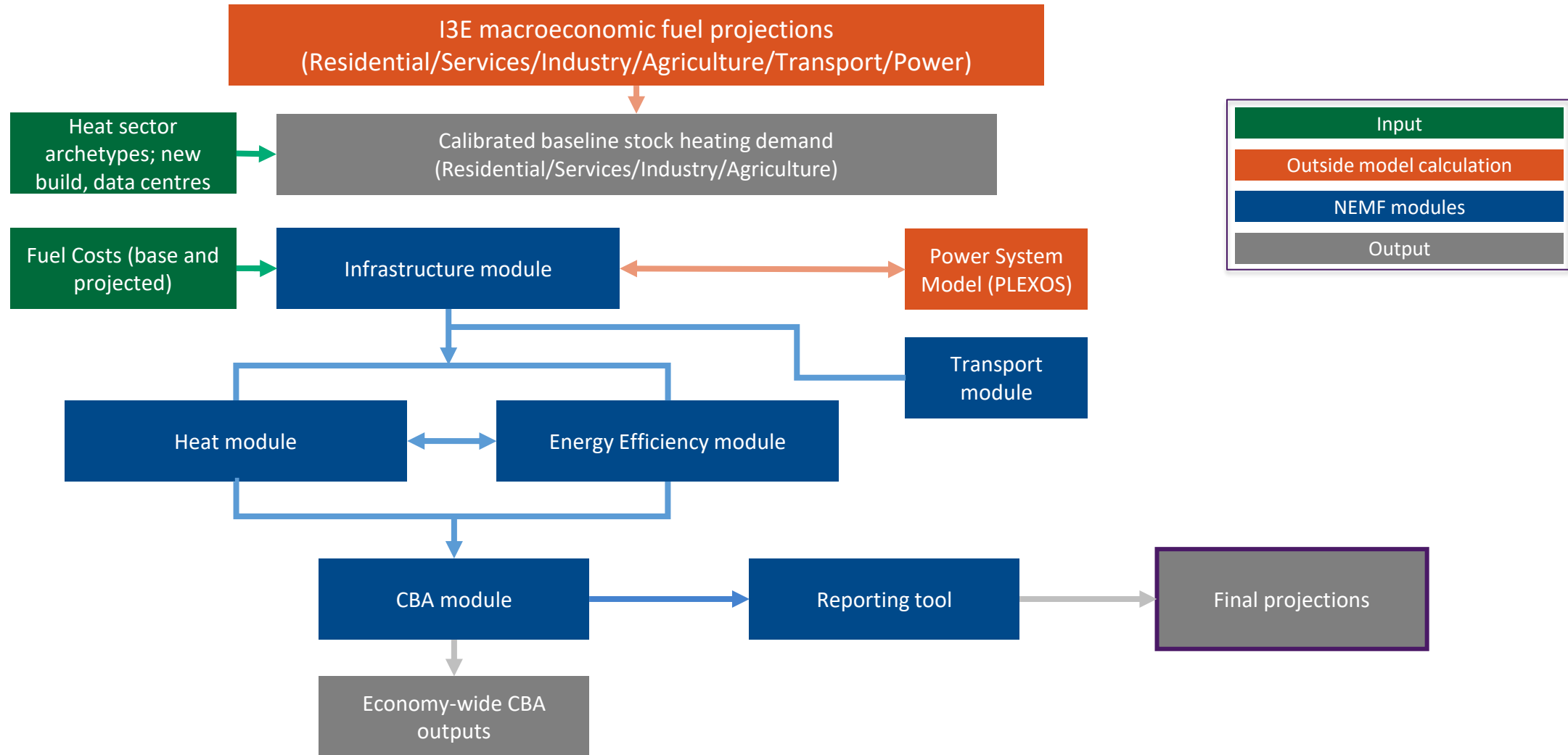
SEAI National Energy Modelling Framework

The National Energy Modelling Framework (NEMF):

- Combines **sectoral energy models** with baseline **macroeconomic inputs** from ESRI's I3E model
- Simulates **consumer decision-making** and measures uptake under **alternative scenarios**
- Assesses **combined impact of granular policies and measures** on energy supply, demand and energy-related CO₂ emissions



SEAI National Energy Modelling Framework



NEMF Applications

- National and International reporting and monitoring against targets
 - Annual National Energy Projections produced since 2006
 - collaboration with ESRI, EPA, DECC and others; contributes to EPA's GHG Emissions Projections
 - Analysis informs National Energy & Climate Plan
- Extensive focused scenario-based pathway evaluation for decarbonisation
 - National Heat Study and targeted reports on paths to net zero by 2050
- Focused scheme impact analysing savings within and across sectors
 - Retrofit Grants and Financing, SSRH, RESS, etc.



Cycle of Innovation in NEMF Development

- Leverage behavioural economics research to inform consumer choice modelling



- Assess economic impacts on energy market and actors in model



- Continuously upgrade tools and methodology for agility and robustness

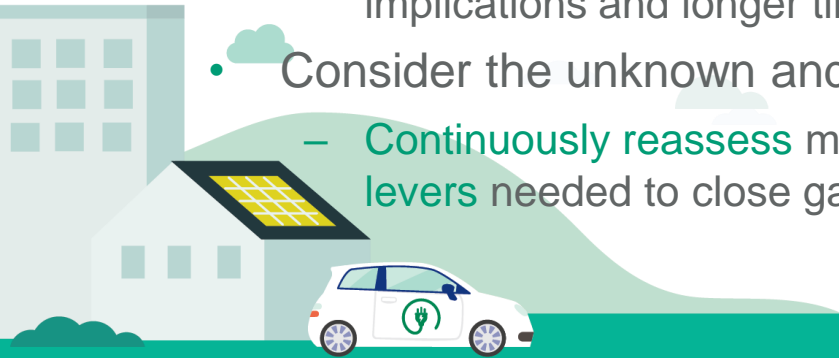


- Monitor on-the-ground performance of schemes to calibrate model and refine scenarios



Maximizing Modelling Impact in Carbon Budgets Context

- Continuously share key findings
 - Improving tools to **enrich datasets** and produce more **timely insights** relevant to budgets and sectoral ceilings
- Make it real
 - Data & Insights teams working with Research & Technology and Delivery capabilities to produce **granular analysis** as **foundation for policymaking** and **pilot projects**
- Start the complex conversations early
 - collaborative research to **understand trade-offs** for **large-scale projects** with cross-sectoral implications and longer time horizons
- Consider the unknown and stay agile
 - **Continuously reassess** mix of measures based on what's deliverable and highlight **additional levers** needed to close gaps



Latest Statistics & Key Insights

2021 Energy Balance
Summary of CO₂ emissions from energy in Ireland in 2021

Energy-related CO₂
Over half of Ireland's CO₂ emissions come from energy
58%

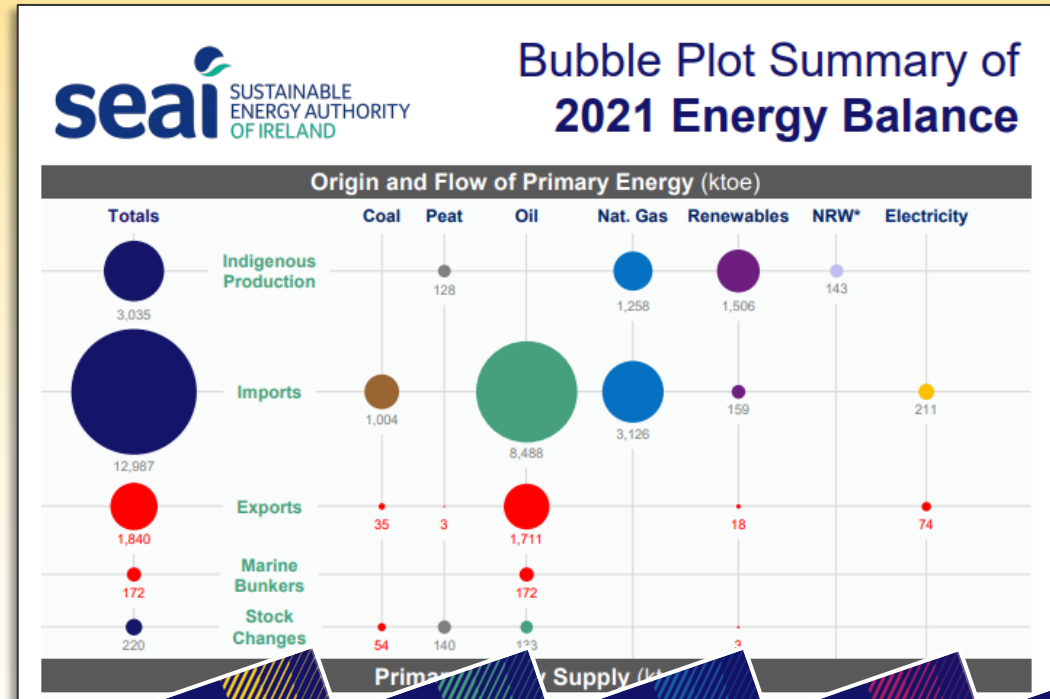
The vast majority of energy still comes from fossil fuels
87%

Energy-related CO₂
Ireland's energy related emissions increased in 2021
+5.4%

Reducing energy-related CO₂
Selected key measures to eliminate fossil fuels:

- Developing onshore and offshore wind and solar
- Developing energy storage
- Increasing the amount of journeys where we walk, cycle or take public transport
- Replacing petrol and diesel vehicles with electric vehicles
- Upgrading 850k homes to B2 ratings
- Using more heat-pumps and district heating

For a full list of actions, see the Government's Climate Action Plan at www.gov.ie



2021 Energy Balance
Summary of CO₂ emissions from energy in Ireland in 2021

Renewable Energy

Energy in Transport

Residential Energy

Energy in Business

Monitoring Scheme Performance

Statistics for National Home Retrofit Programmes



35,336
Applications Approved

16,033
Homes Completed

4,922
#B2s or Better

€ 86,925,932
Amount Funded



Year

2022

2022

Month

1

9

Scheme

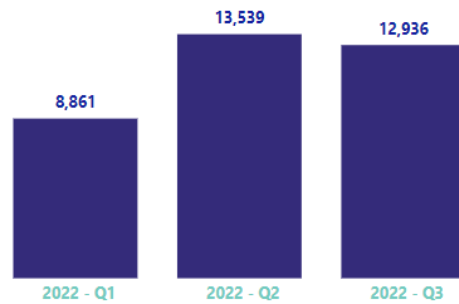
- Fully Funded Energy Upgrades
- Individual Energy Upgrade Grants
- National Home Energy Upgrade Scheme

Measures Installed

B2s & Heat Pumps

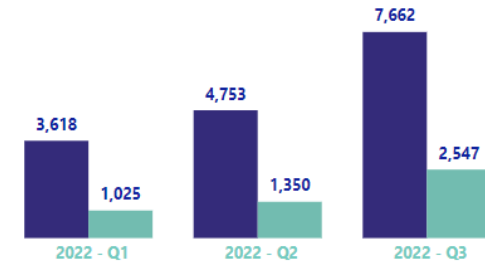
Homes Completed

Applications Approved by Quarter



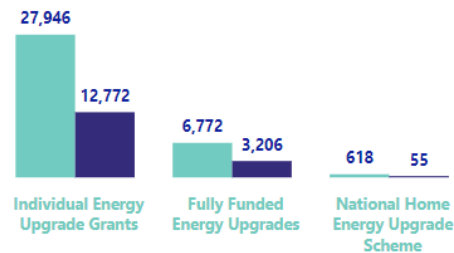
Homes Completed and #B2s or Better by Quarter

● # Homes Completed ● #B2s or Better*

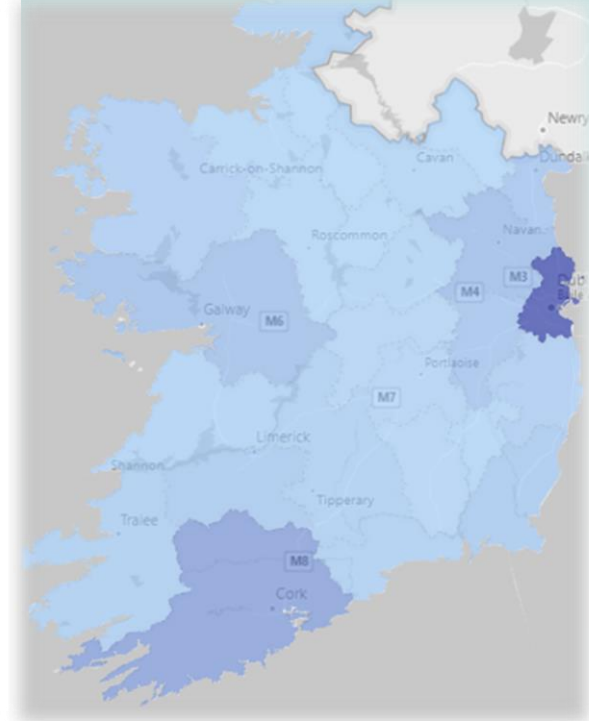
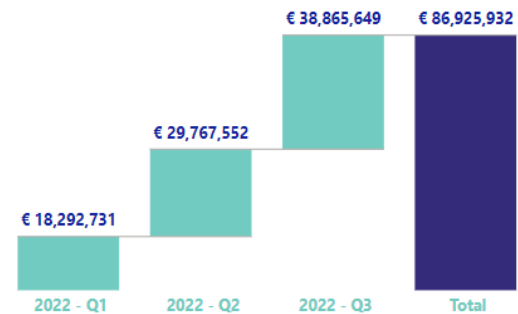


Applications Approved and # Homes Completed by Scheme

● # Applications Approved ● # Homes Completed



Amount Funded by Quarter



*Please note that achieving B2 or better is not a key priority for Free Energy Upgrades as they are often upgrading the worst performing homes.

Data as of: 30/09/2021



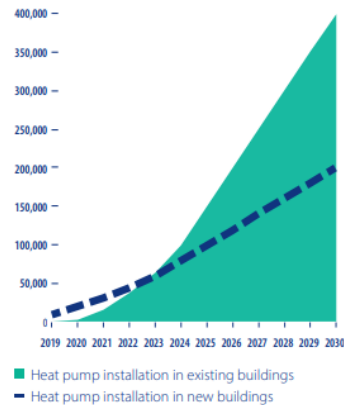
Consumer Incentives & Insights



Encouraging heat pump installations in Ireland

A Behavioural Economics Perspective

A step change in heat pump adoption in existing buildings is required to meet the Climate Action Plan target



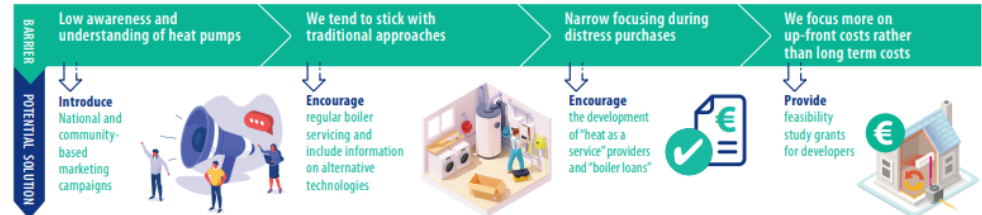
t +353 1 808 2100 e info@seai.ie
www.seai.ie

Sustainable Energy Authority of Ireland (2020). Encouraging heat pump installations in Ireland. A Behavioural Economics Perspective. Sustainable Energy Authority of Ireland.

Heat pump customer journey

STAGE 1: CONSIDERING

Not actively researching, but forming opinions of, heating technologies



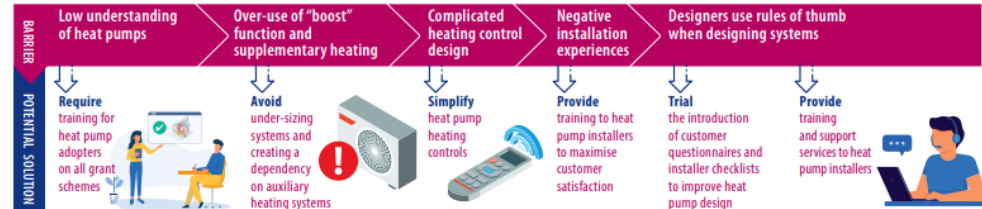
STAGE 2: ORGANISING

Coordinating and organising the installation of a heat pump



STAGE 3: DESIGNING, INSTALLING & OPERATING

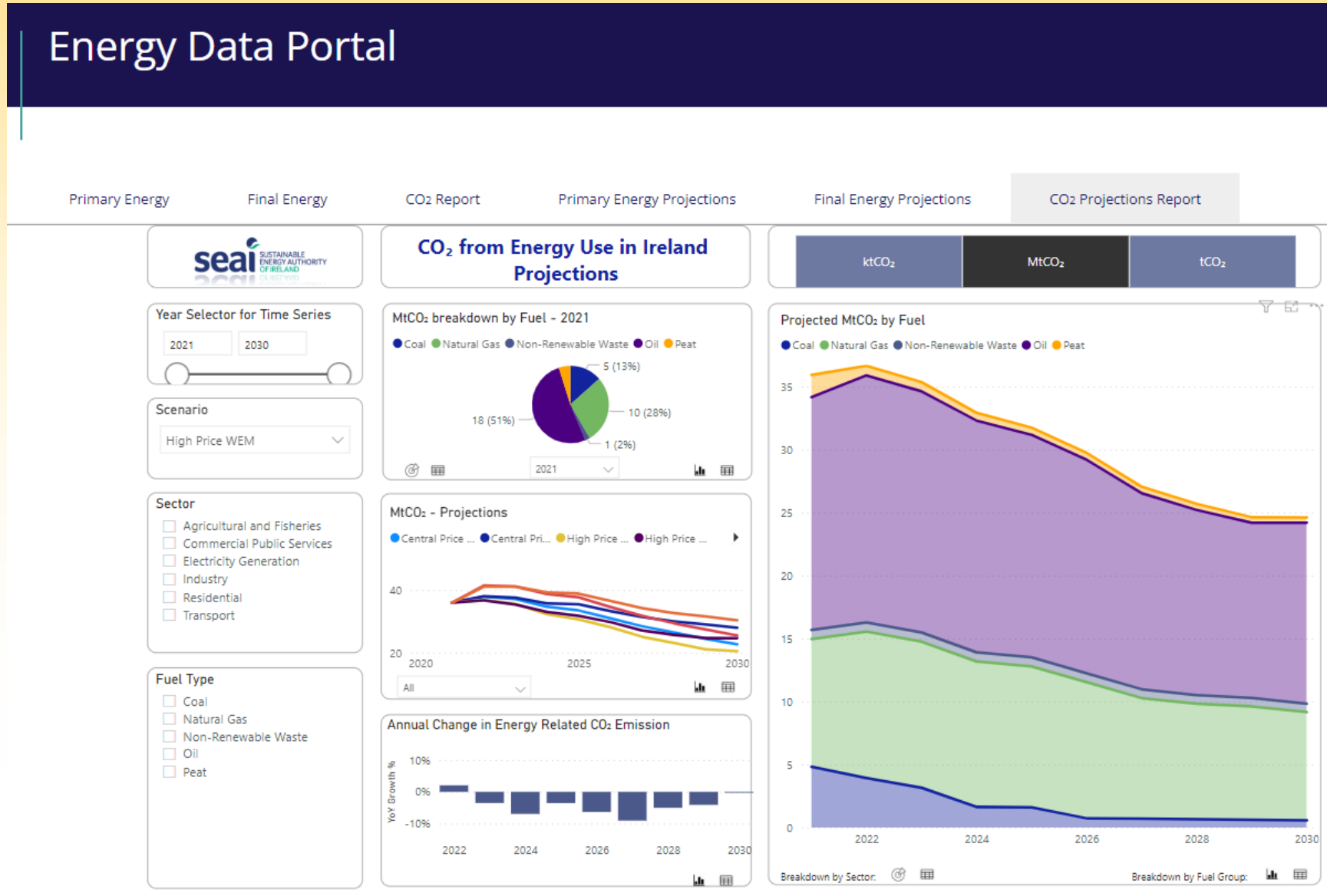
Making design decisions, facilitating installation & operating



Please note: The potential solutions identified here will require further consideration prior to implementation. The barriers, solutions, and customer journey shown here have been simplified for presentation purposes. Please see the full report for more detail.

Improving Accessibility of Projections

Energy Data Portal



- Data online for Previous National Energy Projections
 - WEM / WAM, price sensitivities
 - Primary and final energy, energy-related CO₂ emissions by sector and fuel
- New NEP cycle underway
 - Future iterations to include carbon budget context and sectoral ceilings alignment
 - Accompanying sector-focused reporting on findings

Thank you!

Further questions or want to collaborate?:
Emma.Lynch@seai.ie

