

Opportunities For Ireland In A Low Carbon Economy - Our 2050 – Impacts and Outcomes

Brian Ó Gallachóir

Presentation to Our 2050 Final Project Event
Dec 10th, 2018.

MaREI in numbers



370

Journal Papers

€5m Industry Funding

8 Academic Partners



36

Collaborating Countries

€13m
EU
Funding

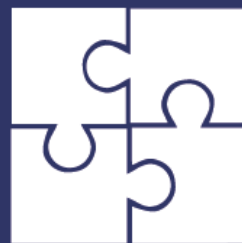
200

Researchers



48

Industrial Partners



90

Academic Collaborations



OUR 2050 – AMBITION



- Exploration of **low-carbon energy futures** for Ireland, and the **associated technology opportunities** arising from the various modelled scenarios over the next 35 years
- It assesses the **value chain** for these technology opportunities, and **development of an innovation system** to enable delivery of these opportunities
- Project's impact is through **informing policy makers** by enlarging the evidence base to show how the wider energy community can engage with the associated opportunities
- Contributing to **broader societal objectives**, “can also help to create economic opportunities and to provide long-term societal and environmental benefits”





1. Shifting policy

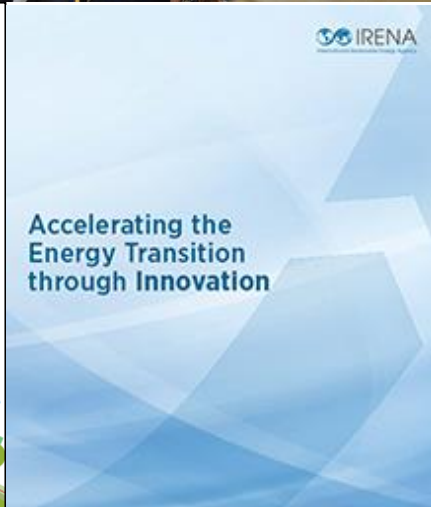
- a) DEBI-MaREI dual-appointment
- b) DFA-MaREI systems innovation network
- c) National Bioeconomy Statement

2. Empowering business

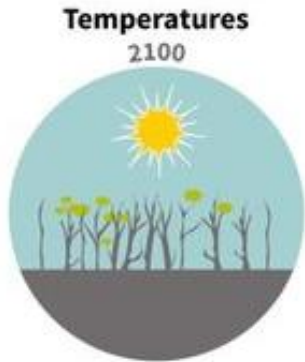
- a) Industry strategic plans
- b) Local enterprise initiatives
- c) IBEC Low Carbon Roadmap

3. Broadening capacity

- a) Advanced energy future modelling
- b) Identifying economic opportunities
- c) Quantifying innovation needs



Informing Delivery of Paris Agreement



• Keep warming “well below 2 degrees Celsius”. Continue all efforts to limit the rise in temperatures to 1.5 degrees Celsius”

CLIMATE POLICY
2019, VOL. 19, NO. 1, 30–42
<https://doi.org/10.1080/14693062.2018.1464893>



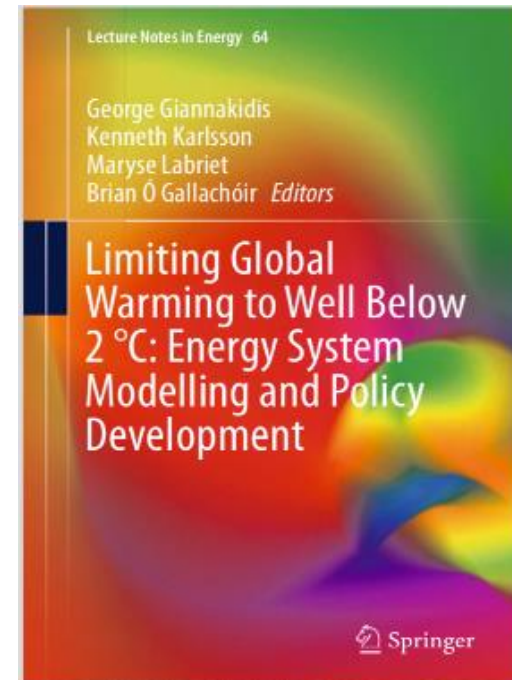
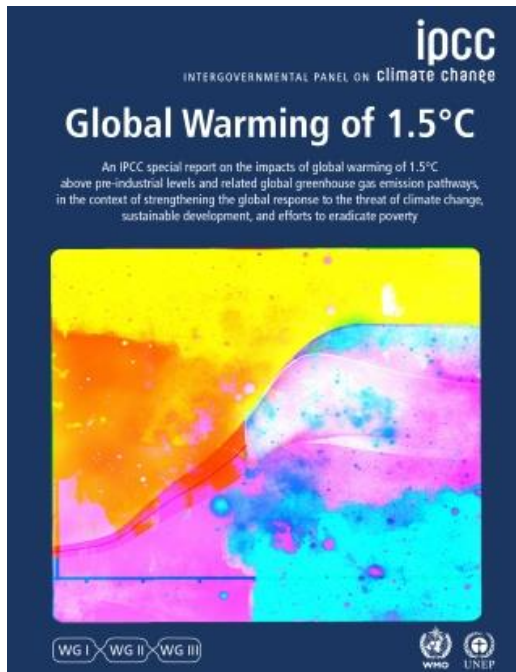
RESEARCH ARTICLE

OPEN ACCESS Check for updates

Zero carbon energy system pathways for Ireland consistent with the Paris Agreement

James Glynn ^{a,b}, Maurizio Gargiulo ^{a,b,c}, Alessandro Chiodi ^{a,b,c}, Paul Deane ^{a,b}, Fionn Rogan ^{a,b} and Brian Ó Gallachóir ^{a,b}

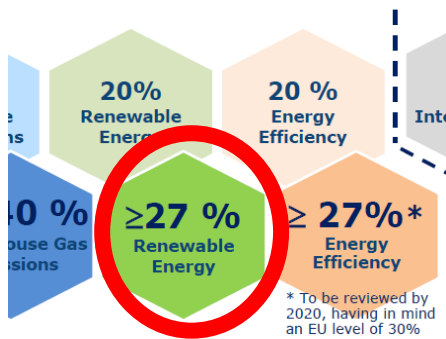
^aMaREI Centre, Environmental Research Institute, University College Cork, Cork, Ireland; ^bSchool of Engineering, University College Cork, Cork, Ireland; ^cE4SMA S.r.l., Turin, Italy



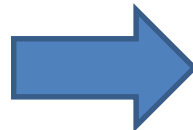
Increasing EU 2030 Renewable Energy Ambition



Agreed headline targets 2030 Framework for Climate and Energy



New governance system + indicative



Energy Strategy Reviews 22 (2018) 147–165

Contents lists available at ScienceDirect

ELSEVIER

Energy Strategy Reviews

journal homepage: www.elsevier.com/locate/esr

ENERGY STRATEGY REVIEWS

Check for updates

Planning the European power sector transformation: The REmap modelling framework and its insights

Seán Collins^{a,b,*}, Deger Saygin^{c,1}, J.P. Deane^{a,b}, Asami Miketa^c, Laura Gutierrez^c, Brian Ó Gallachóir^{a,b}, Dolf Gielen^c

^a Energy Policy and Modelling Group, MaREI Centre, Environmental Research Institute, University College Cork, Ireland
^b School of Engineering, University College Cork, Ireland
^c International Renewable Energy Agency, IITC, Bonn, Germany

News
European Parliament

Headlines Press room Agenda FAQ

Press room / Energy: new target of 32% from renewables by 2030 agreed by MEPs a...

Energy: new target of 32% from renewables by 2030 agreed by MEPs and ministers

Press Releases ENVI ITRE 14-06-2018 - 13:38

European Commission | IRENA
International Renewable Energy Agency

Renewable Energy Prospects
for the European Union





Ireland's low carbon future

— Dimensions of a solution



EMPOWERING BUSINESS

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Carbon storage plan for vacated Kinsale gas

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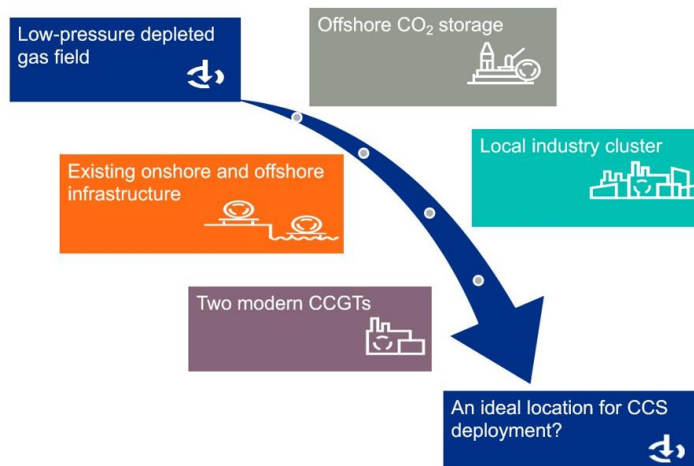
Thursday, April 19, 2018 - 06:30 AM



The Kinsale gas fields off the Cork coast could be used by the State to capture and store carbon waste once they are decommissioned from use in the next decade.

Cork shows potential to be an ideal location for CCS

ervia

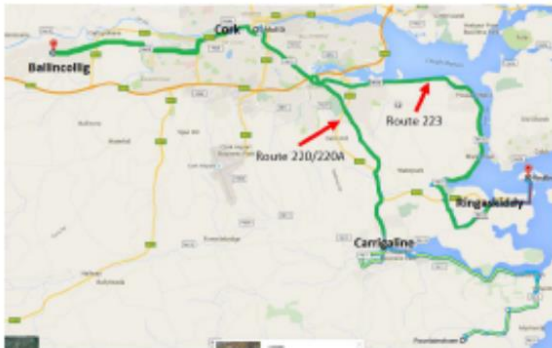


'Green' buses to be tested on routes in Dublin and Cork from next month

Vehicles will use variety of technologies designed to reduce carbon emissions

Ireland's Greenest Bus Corridor

Low Carbon Public Transport in Cork



Low Carbon Roadmap Workshops



INDUSTRY PARTNER TESTIMONIALS



“MaREI has proven to be an **invaluable research partner** for the Wave Energy Conversion Corporation of America (WECCA) in relation to the development of system controls”



“Our collaborative research activities within MaREI have provided us with **access to world-class research capacity and testing infrastructure** that have enabled us to expand our knowledge”



“Collaborative research activities carried out between Gas Networks Ireland (GNI) and MaREI have assisted us in developing **renewable gas business cases** and in **renewable gas advocacy**”



“MaREI’s work has been a **key input into our strategy development**. Based on our experience, we believe the team have made a **valuable contribution to national debate and policy development** founded on rigorous research”



“We believe that the **investment in this collaboration** will inform and facilitate our national **transition to a sustainable low-carbon economy**, while simultaneously addressing other fundamental challenges such as **fuel poverty**, energy security and economic competitiveness”





1. Research

- Advanced energy future modelling
- Identifying economic opportunities
- Quantifying innovation needs

2. Communications

- Meetings, Conferences, Workshops
- Policy Briefs, Blogs, Books, Articles
- Visualisation Platform

3. Impact

- National Mitigation Plan
- IPCC Special Report on 1.5°
- IRENA Energy Innovation
- Industry energy efficiency savings



Policy Brief

Creating evidence base for the energy transition

Our 2050

This is one of a series of policy briefs to summarize ongoing findings related to the research project, 'Our 2050 – Opportunities for Ireland in a Low Carbon Economy', which is on the economic and societal opportunities arising from the transition to a low carbon economy and the policies needed to achieve this transition.

Policy Brief

Risks and returns of opportunities in the energy transition

Our 2050

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Policy Brief

Job opportunities of Ireland's electricity interconnectors

Our 2050

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Policy Brief

Opportunities for natural gas vehicle in road freight

Our 2050

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Policy Brief

Capturing the Energy Efficiency Opportunity

Our 2050

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Policy Brief

Wave energy innovation needs

Our 2050

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ACADEMIC | ENGINEERS IRELAND

Harnessing the opportunities from the low-carbon transition

Tomorrow's energy engineers must take a multi-disciplinary perspective to the low-carbon energy transition, embracing economic, social, business and innovation challenges to develop holistic solutions, writes Dr Fionn Rogan



Low-carbon energy futures

The global energy landscape is changing fast. Recent breakthroughs in technology innovation, price reductions in renewable energy and the signing of the Paris Agreement have led to increased progress in the worldwide transition to a low-carbon energy system – in 2016, energy generated from renewables alone grew by 14%.

The change in focus from the Kyoto Protocol emphasis on burden sharing to the Paris Agreement focus on opportunities has unlocked considerable momentum. But this momentum is not shared equally across all sectors and all countries.

In Ireland in October, the Citizens' Assembly was asked, 'How the State can make Ireland a leader in tackling Climate Change?' This ambitious framing contrasts with much evidence that makes Ireland as an underperformer in climate action and energy policy.

What are the opportunities for Ireland associated with the low-carbon energy transition? A research team at University College Cork's (UCC) MAREI centre is exploring this question in the NTK Foundation-funded Our 2050 project.

MAREI is Ireland's research and innovation centre on marine and renewable energy, supported by the Science Foundation Ireland. It has seven research areas, including marine renewable energy technologies, bioenergy, energy policy and modelling, and energy management.

Part of the fresh approach of MAREI is taking a multi-disciplinary perspective to the low-carbon energy transition, bringing together engineering,

RTÉ

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Whatever happened to the street lighting man?

Updated / Monday, 28 May 2018 16:22



"What are the jobs today that might change in a low carbon energy transition?"

By Fionn Rogan
Environmental Research Institute

More from UCC
University of Cork, Ireland

Opinion: as the disappearance of the lamplighters from our cities showed, energy transitions have a huge bearing on how we earn a living

- Introduction
- 1. Scenarios
- 2. Energy
- 3. Economics
- 4. CO2 Emissions
- 5. Energy Security
- 6. Technology
- 7. Opportunities
- 8. Summary

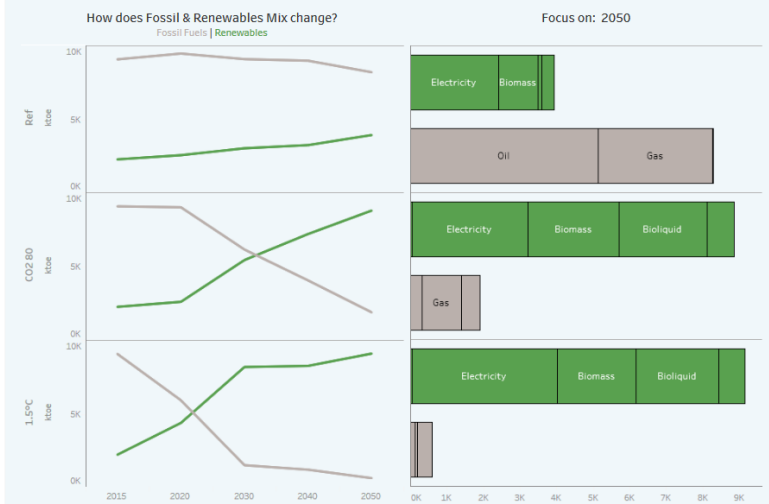
What mix of low carbon energies are needed? | What's the impact of the Paris Agreement?

Fossil fuels need to phase out as soon as and as fast as possible

The Paris Agreement impacts the timing of when the transition away from fossil fuels needs to start: as the 1.5°C scenario below shows, the switchover from fossil fuels to renewables needs to start as soon as possible. Select a Year for Comparison to see how the reduction in fossil fuels and growth in renewable energy is different in the three scenarios.

Select a Year for Comparison

2050



“Unlocking the potential of our marine and renewable energy resources through the power of research and innovation”



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