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South West Mayo
DEVELOPMENT COMPANY LTD
Comhlacht Forbartha Iarthuaisceart Mhaigh Eo Teo

MAYO CLIMATE ACTION AWARENESS WORKSHOPS

LCDC

Rialtas na hÉireann
Government of Ireland

Tionscadal Éireann
Project Ireland
2040

MAYO.IE

CARO

Mayo Climate Action Workshops: 3b - Climate Change and Community Energy

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CLIMATE ACTION AWARENESS GROUP

- South West Mayo Development Company Ltd.
- CARO (Climate Action Regional Office)
- Mayo County Council
- Moy Valley Resources IRD
- Mayo North East Development Company Ltd.

Mayo Climate Action Workshops: 3b - Climate Change and Community Energy

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Mayo Climate Action Workshops: 3b - Climate Change and Community Energy

OVERVIEW

South West Mayo Development Company, as part of a Climate Action Awareness Group, are delivering a bespoke workshop programme 'Mayo Climate Action Awareness Workshops' in 5 Mayo Towns. These workshops will look at a number of topics related to climate change, the relative impacts and adaptation and mitigation actions that can be taken.

The format of these workshops will allow for educating and creating awareness of climate change issues and for interactive discussion around these issues and associated actions that can be taken individually or as a community. The training material will be a combination of both generic and specifically local information using local case studies directed at communities.

This programme will run over a period of 6 weeks, starting the 4th of February 2020 with 3 workshops running in 5 locations around the county. The first two workshops in each location will be common across all 5 locations, with the final workshop focusing on different themes in each location, but open to participants across the whole county.

Mayo Climate Action Workshops: 3b - Climate Change and Community Energy

FOCUSED WORKSHOPS

DATES AND LOCATIONS

WORKSHOP 3A: UNDERSTANDING CLIMATE CHANGE AND COASTAL IMPACTS

- Belmullet - Aras Inis Gluaire
- 27th February 2020
- 7pm - 10pm

WORKSHOP 3B: UNDERSTANDING CLIMATE CHANGE AND COMMUNITY ENERGY

- Ballina - Family Resource Centre
- **11 March 2020**
- **19:00-22:00**

WORKSHOP 3C: UNDERSTANDING CLIMATE CHANGE AND HOUSEHOLD ENERGY

- Castlebar - Leisure Complex Lough Lannagh
- 3rd March 2020
- 7pm - 10pm

WORKSHOP 3D: UNDERSTANDING HOW PERSONAL CONSUMPTION AFFECTS CLIMATE CHANGE

- Claremorris - Town Hall
- 5th March 2020
- 7pm - 10pm

WORKSHOP 3E: UNDERSTANDING HOW TRANSPORT AFFECTS CLIMATE CHANGE

- Westport - Leeson Enterprise Centre
- 7th March 2020
- 10am - 1pm

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Workshop: 3a

Climate Change and Community Energy

How your community can conserve energy and support renewable energy projects and infrastructure

Energy Efficiency – relating to building energy use

<u>2012 Energy Efficiency Directive (EED)</u>:

Reduce carbon emissions and decrease dependence on fossil fuels.

- 20% energy efficiency target by 2020
- Public sector improved energy efficiency 33% by 2020
- Public bodies obliged to procure products, services and buildings with high energy efficient performance.
- Mandatory energy audits and energy management obligations for the industrial sector.
- Energy savings of 31,925 GWh

Energy Efficiency – relating to building energy use

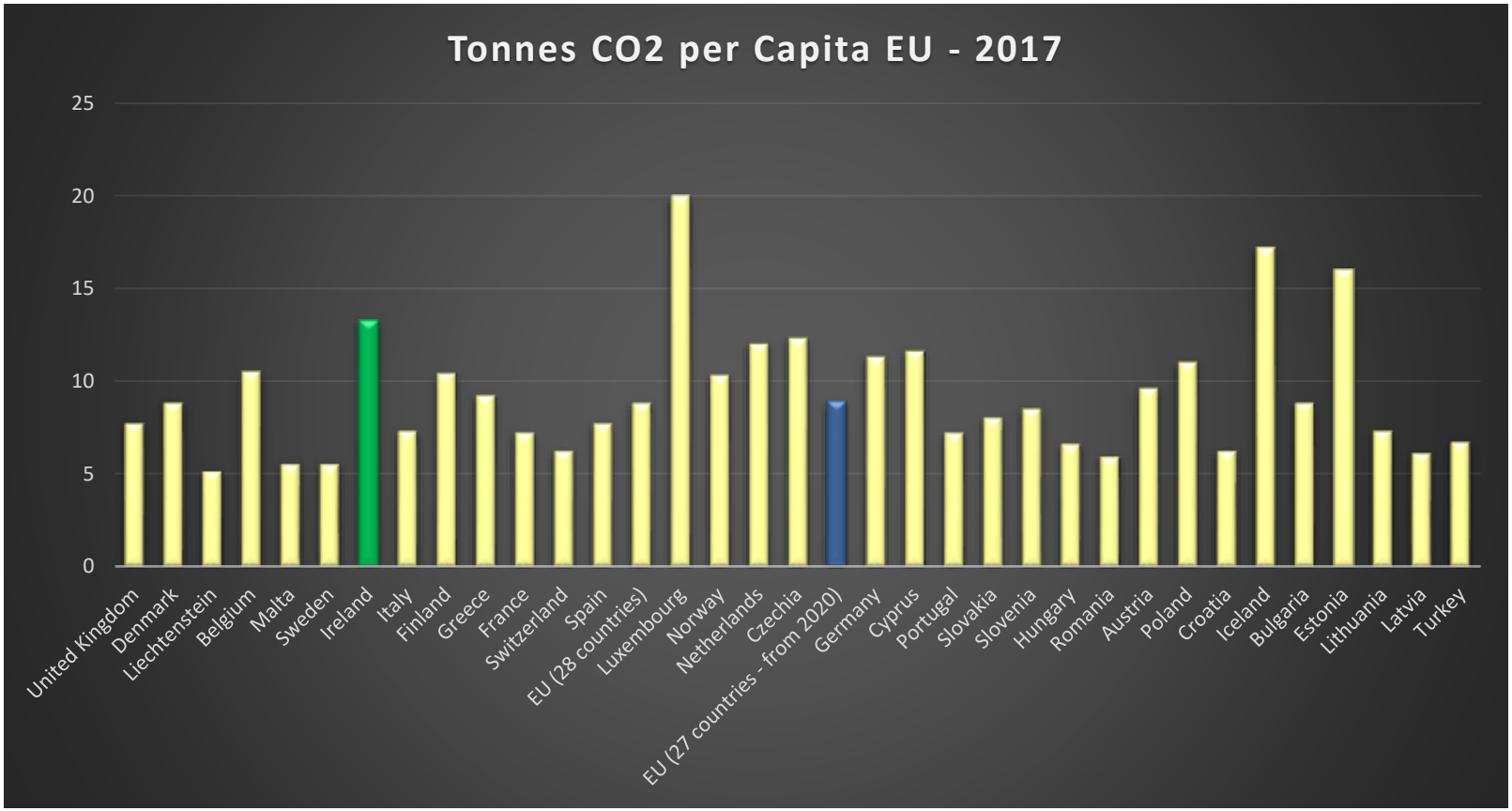
EE achieved in 2017 was a 12.9% reduction on 2005 levels

Projected EE in 2020 will be 14-16% reduction <4-6% less than envisaged

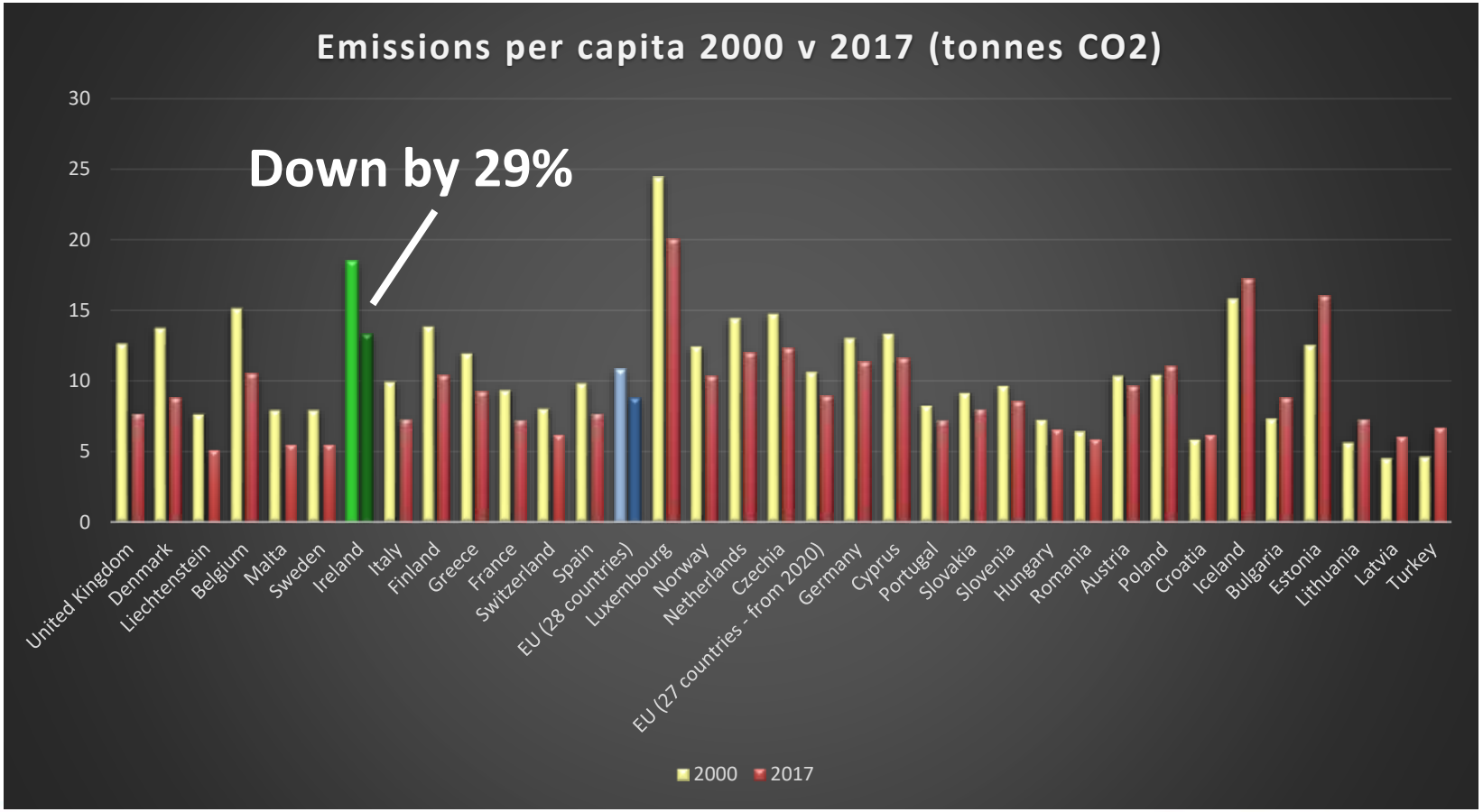
Will achieve 22,300-25,500 GWh reduction

6,400 GWh less than target

CO2 Reduction Progress

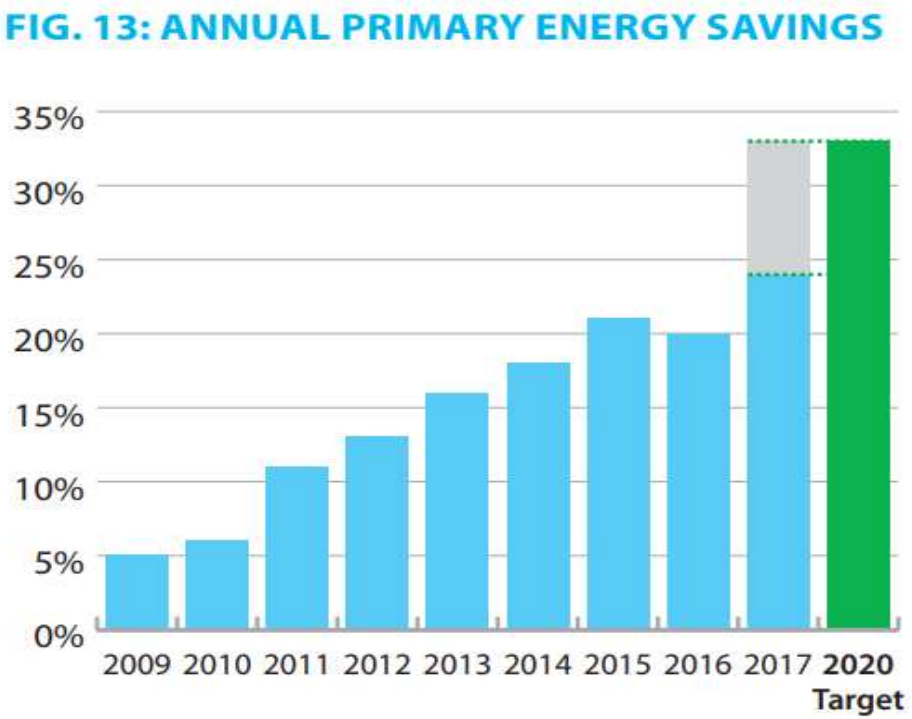


CO2 Reduction Progress



Energy Efficiency – relating to building energy use

Progress in **Public Bodies** is overall quite good

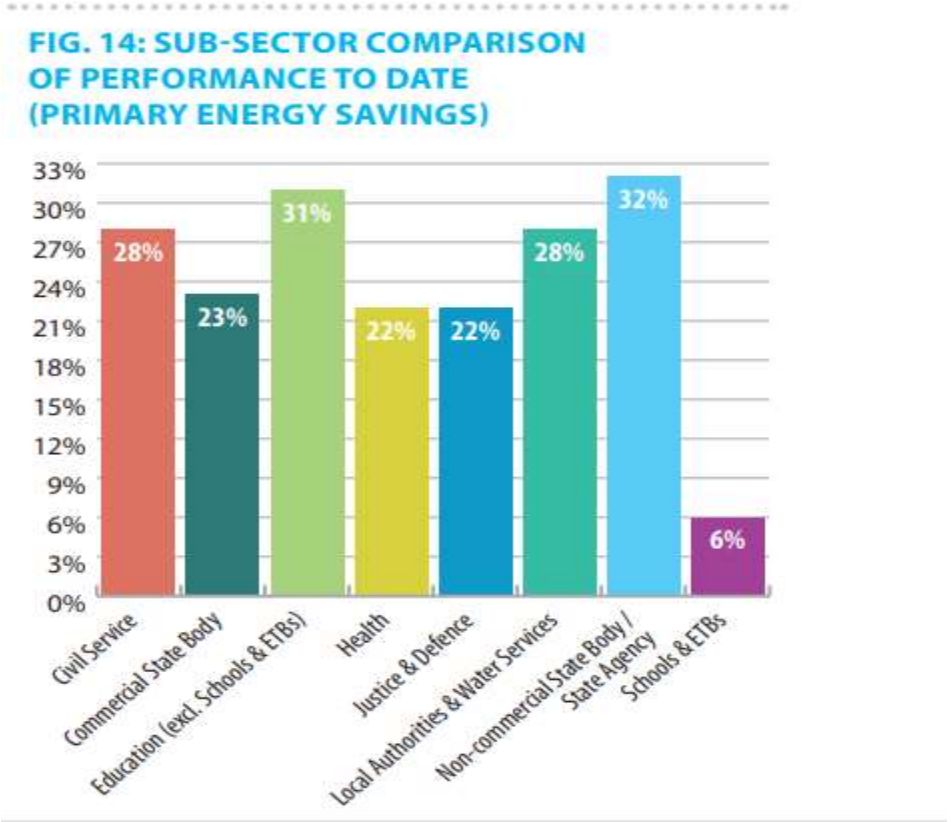


https://www.seai.ie/publications/Public-Sector-Annual-Report-2018.pdf

Energy Efficiency – relating to building energy use

Schools lag behind

Why do you think?



https://www.seai.ie/publications/Public-Sector-Annual-Report-2018.pdf

Energy Efficiency – building energy use

Energy Efficiency Policy 2030

- Reduce CO2 eq. emissions from the sector by 40–45%
- Sharply reduce fossil fuel use, given the current heavy reliance on gas, oil, coal and peat in the sector
- 500,000 building retrofits to achieve a B2 BER /cost optimal equivalent or carbon equivalent

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

Energy Efficiency – building energy use

Energy Efficiency Policy 2030

- 600,000 heat pumps (400,000 in existing buildings)
- Increase the number of Sustainable Energy Communities to 1,500
- Support Scheme for Renewable Heat (SSRH), biomass and anaerobic digestion heating systems
- 2 municipal scale district heat schemes: 50,000 homes

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

Energy Efficiency – building energy use

Energy Efficiency Policy 2030 - **HOW?**

Aggregate up into large area-based packages where economies can be achieved

A combination of

LA & Social Housing home ('core project')

+ Energy Poor (receiving Fuel Allowance)

+ Privately owned homes

= Critical Mass

COMMUNITY RETROFIT APPLICATIONS

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

Energy Efficiency – relating to building energy use

Energy Efficiency Policy 2030 - **HOW?**

- Promote the widespread adoption of heat pumps or other renewable heating options
- **Collaborative** approaches across Government, Local Authorities, Enterprise, Finance and Communities

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

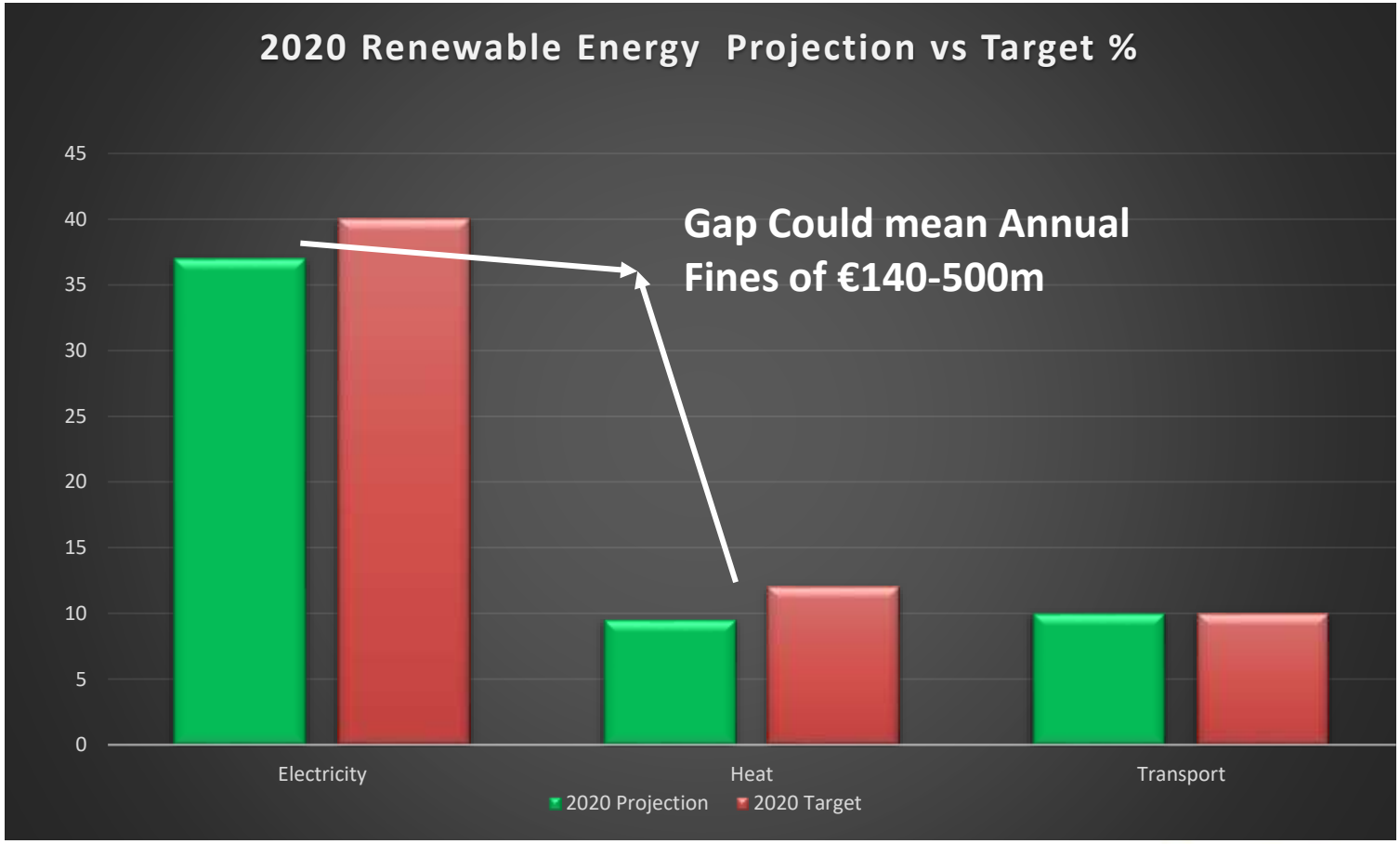
Renewable Energy Policy

EU targets for renewable energy 2020

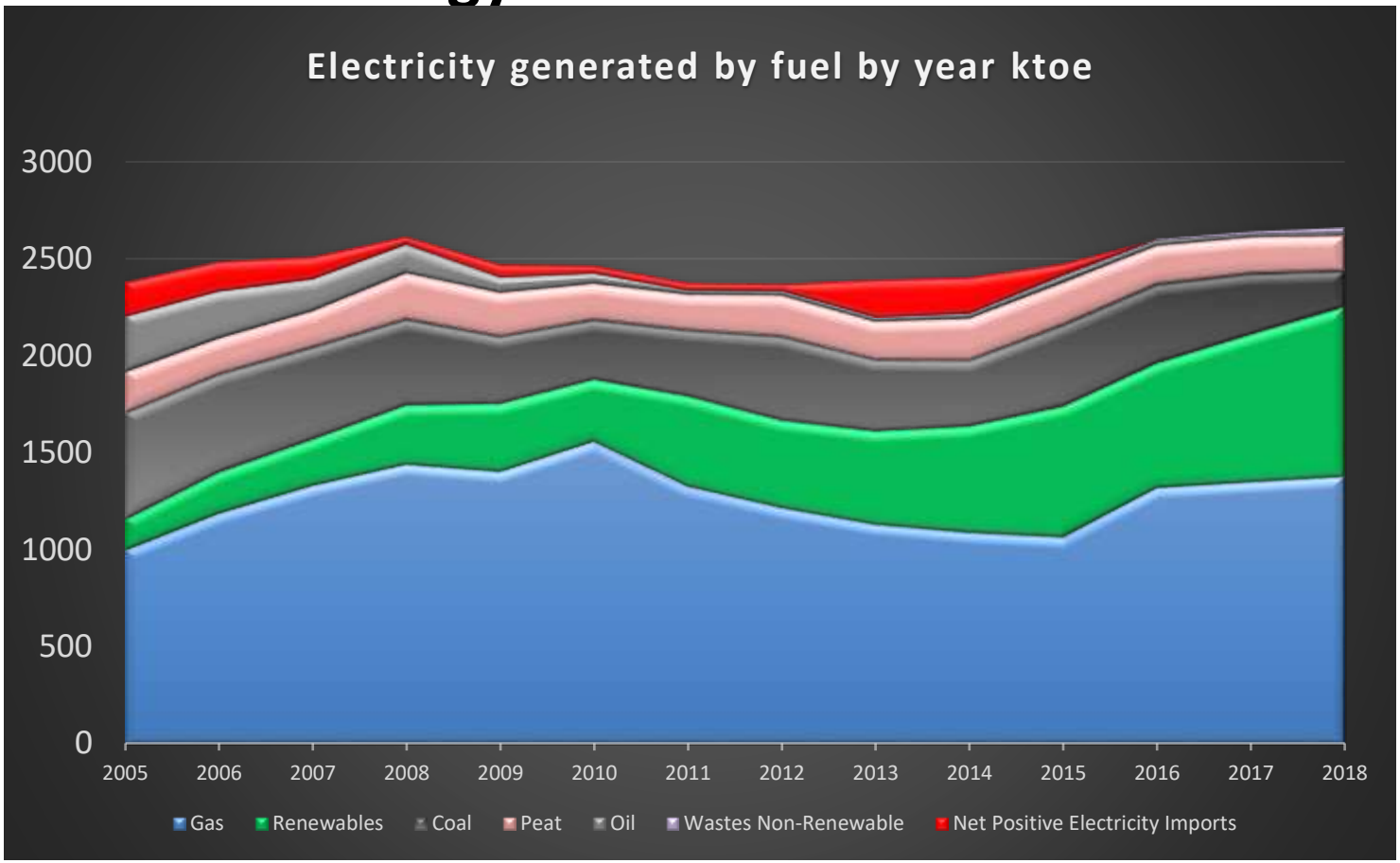
- 16% of final energy use (all sectors) must be sources from renewables
- 10% renewable energy use in the transport sector
- national sub-targets:
- Heat (12%)
- Electricity (40%)

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

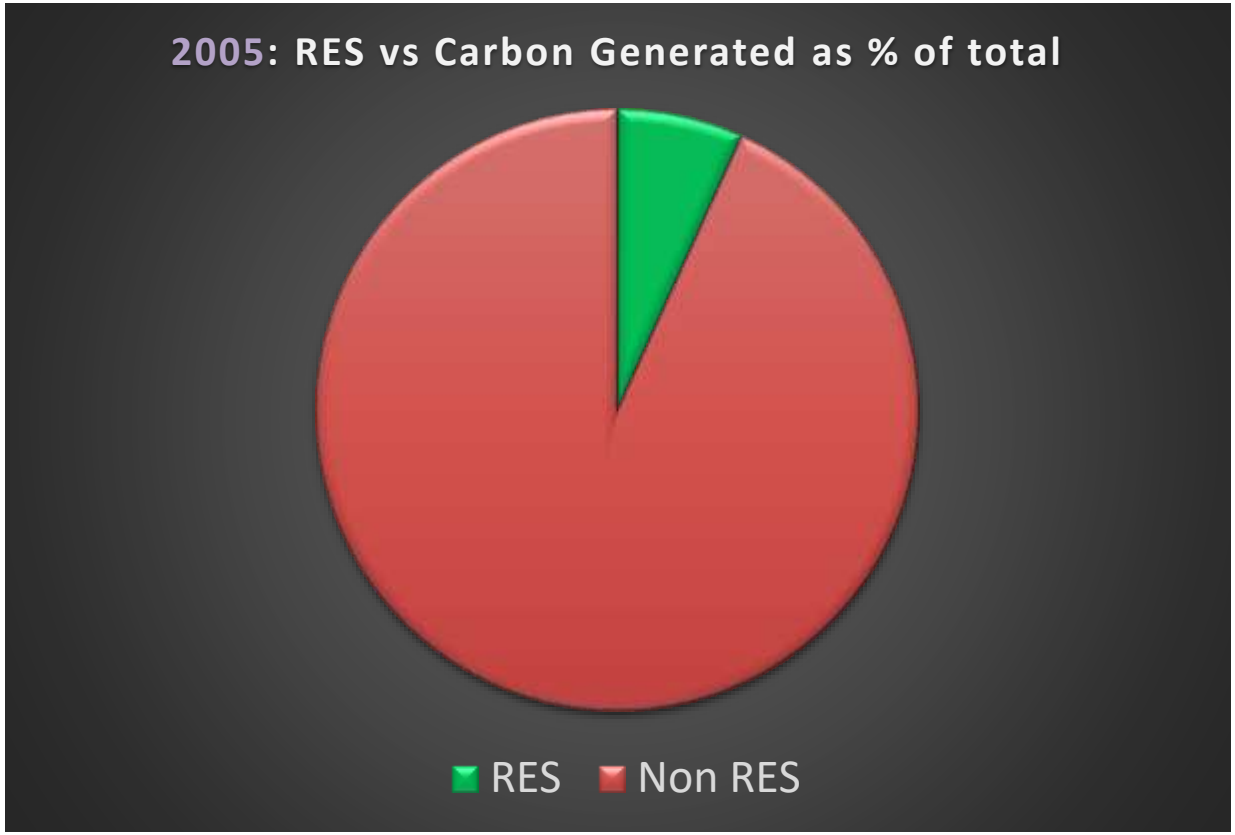
Renewable Energy Policy



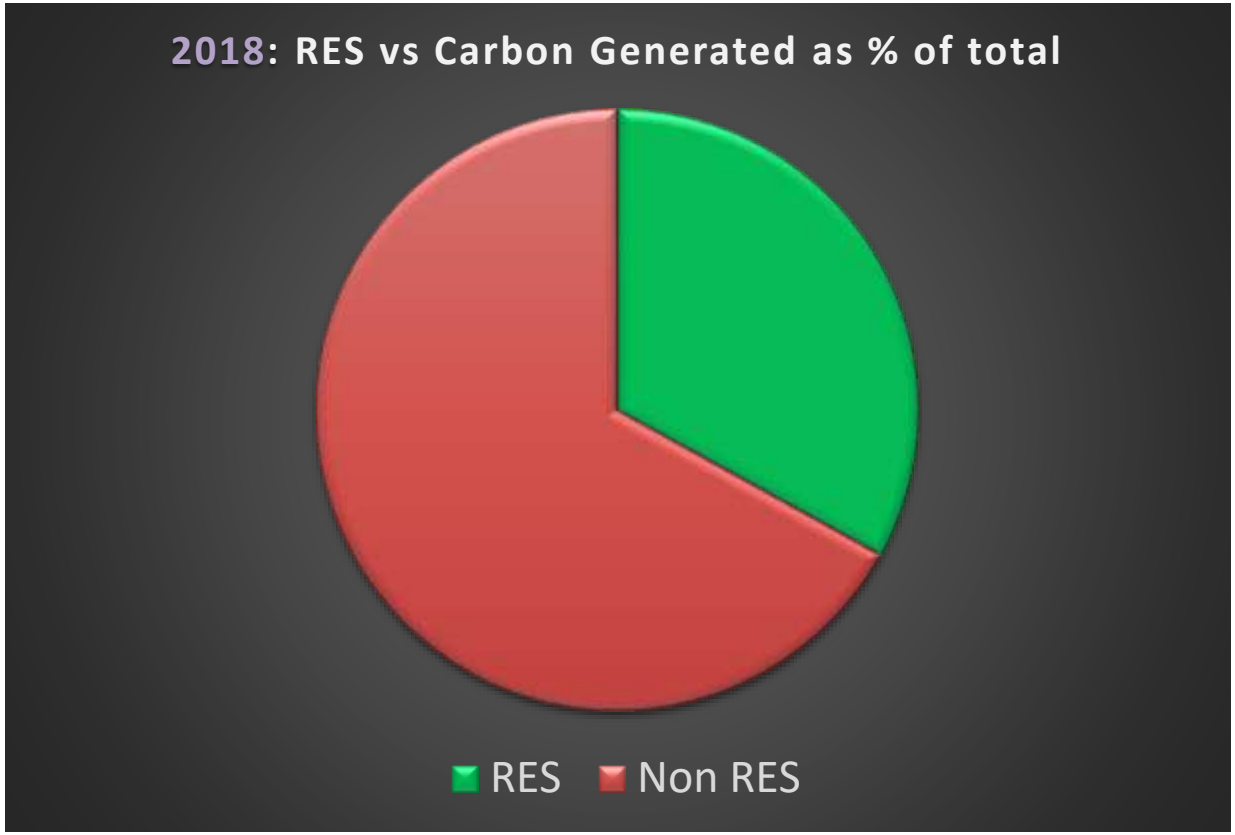
Renewable Energy



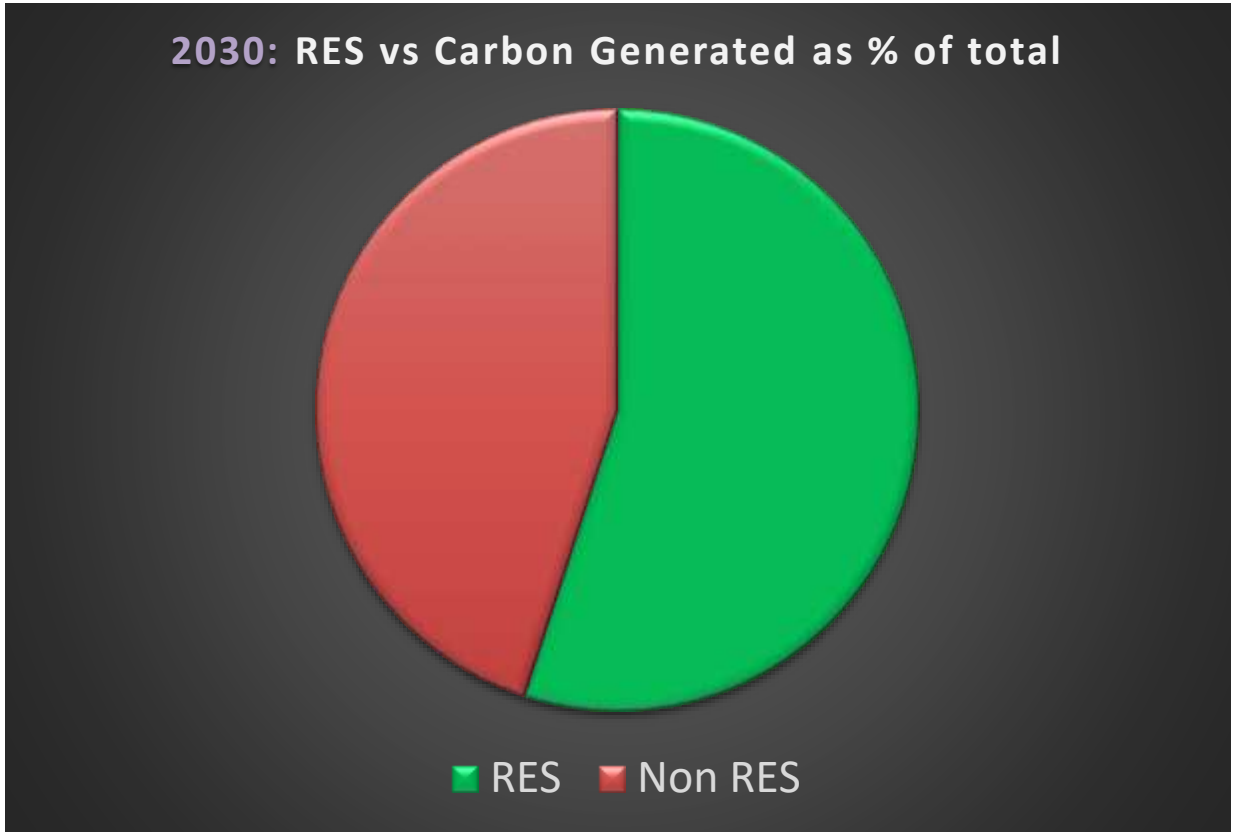
Renewable Energy



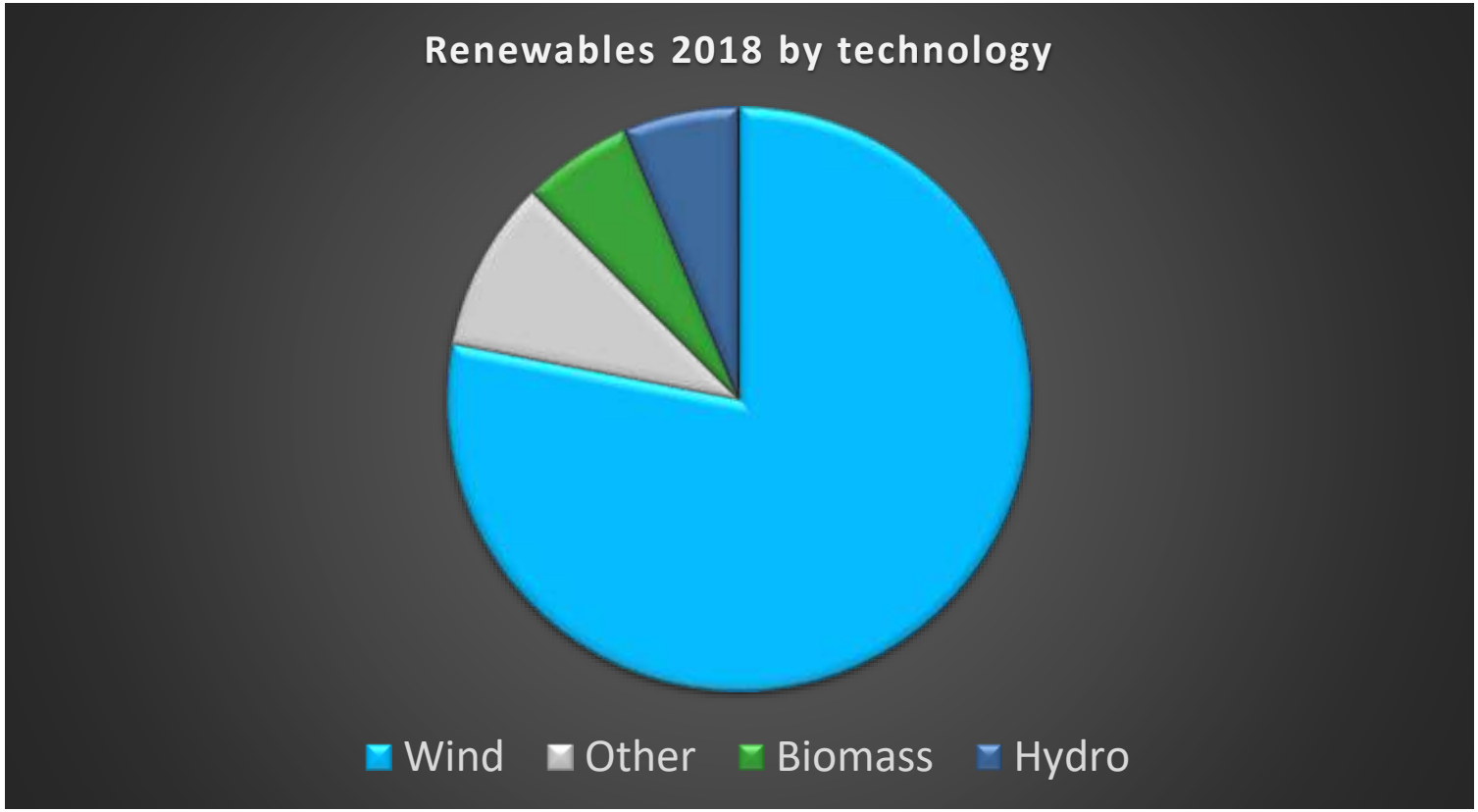
Renewable Energy



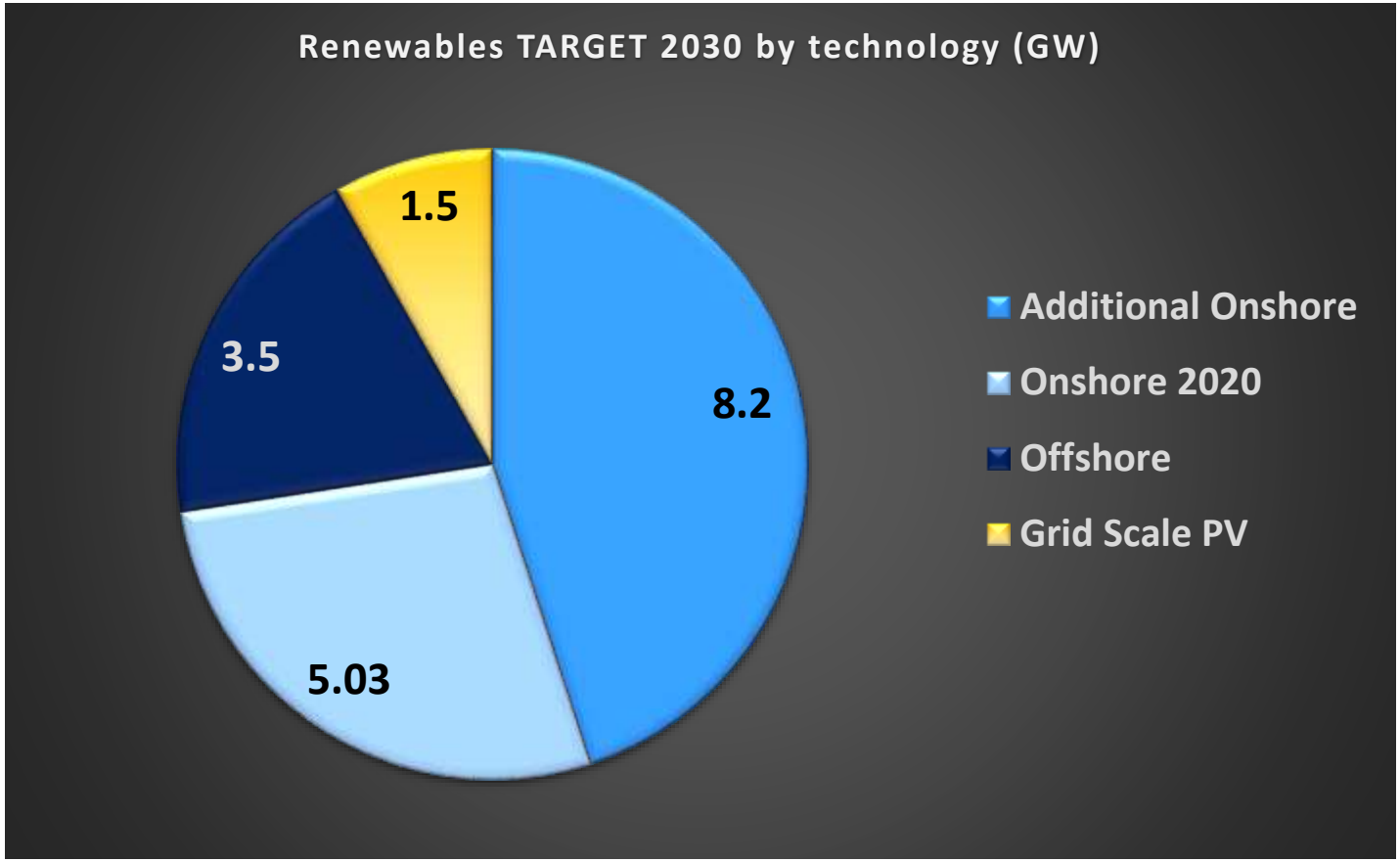
Renewable Energy



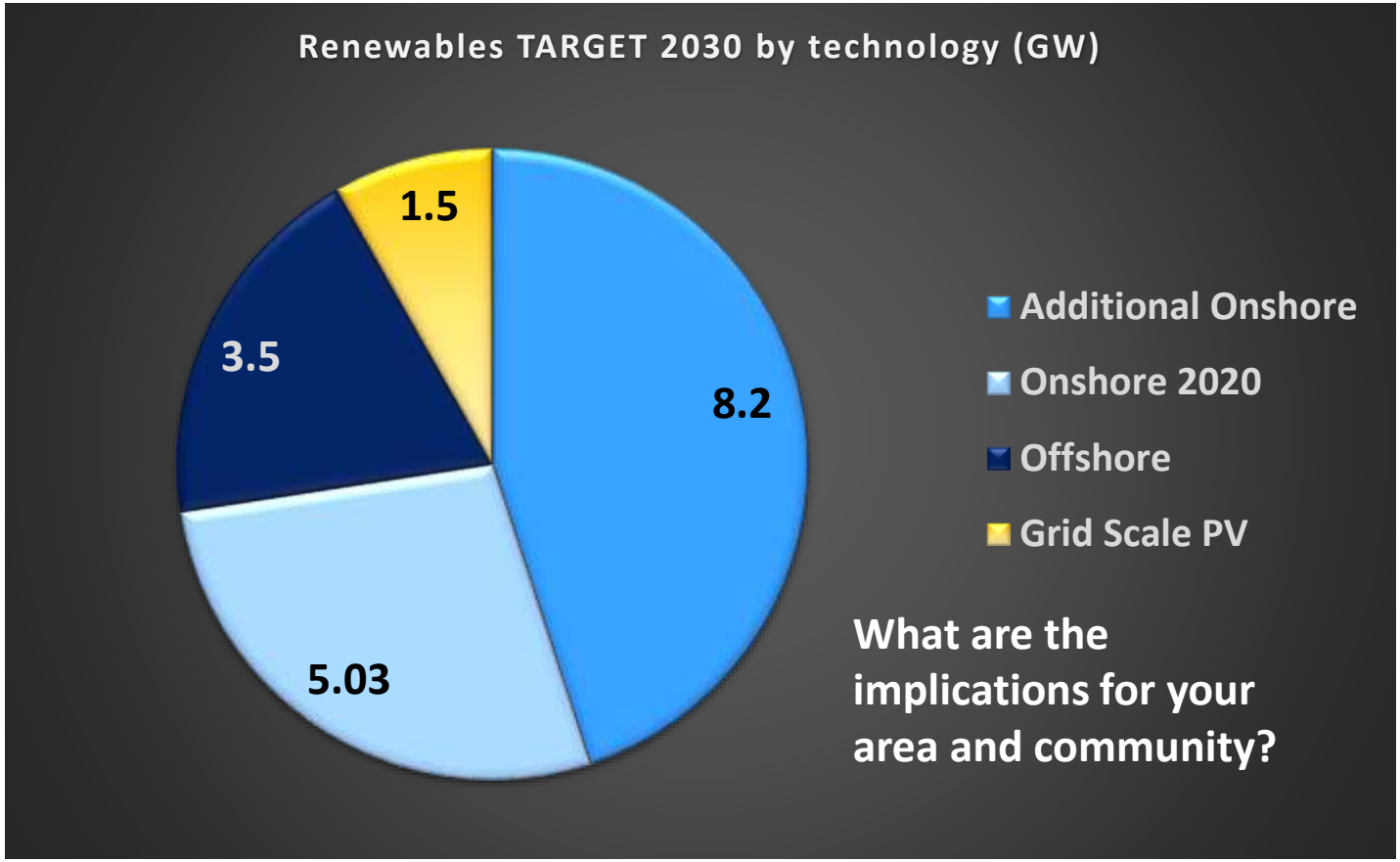
Renewable Energy



Renewable Energy



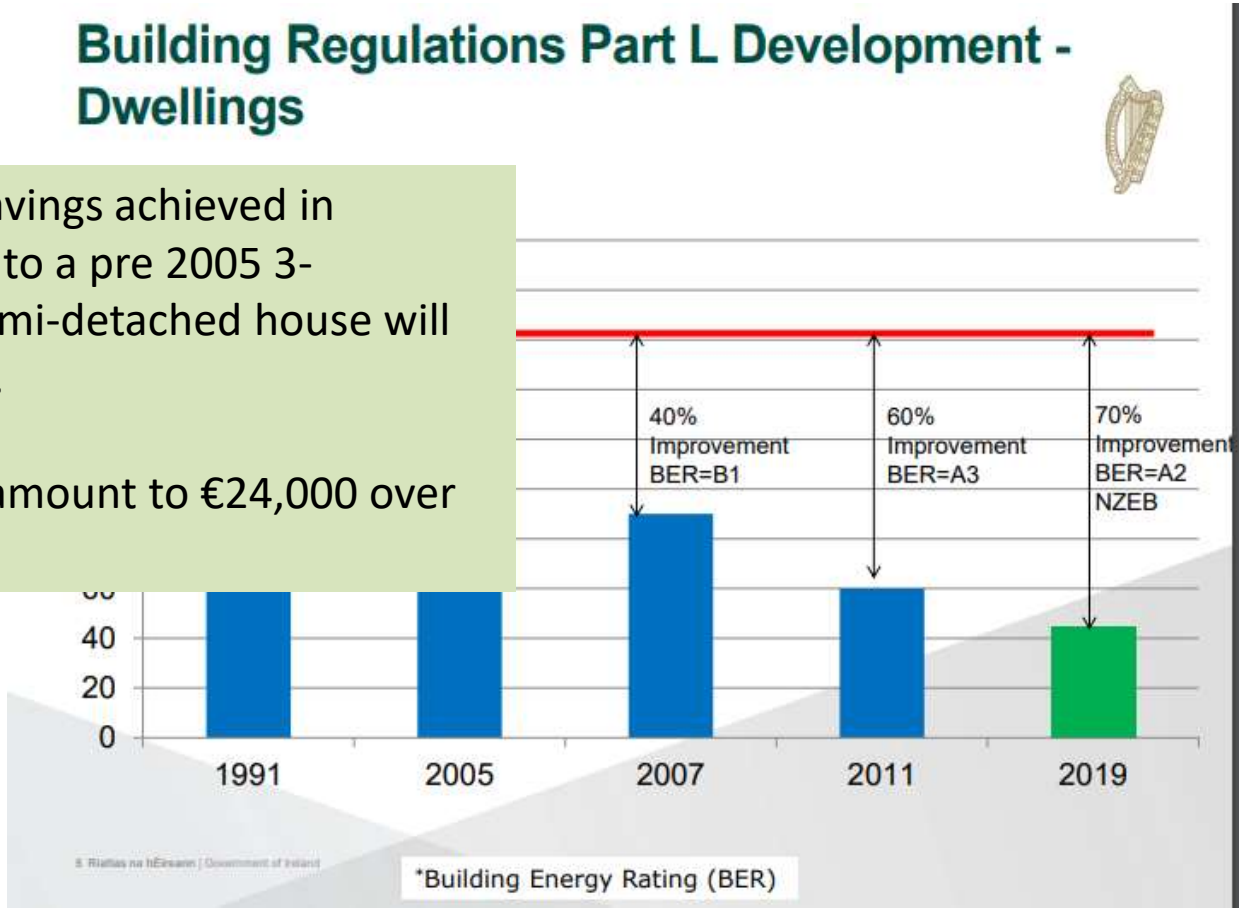
Renewable Energy



Energy Efficiency –Domestic New Build

Projected savings achieved in comparison to a pre 2005 3-bedroom semi-detached house will be €800 p.a.

This would amount to €24,000 over 30 years.



Energy Efficiency – Domestic Renovation

Major Refurbishment to >25% of building envelope

- ‘Cost Optimal Level’
- An energy performance of 125 kWh/m2 /yr
- B2 BER

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

Energy Efficiency – Domestic Renovation

Major Refurbishment to >25% of building envelope

- Windows Renovation Only
- Roof Renovation Only
- Floor Renovation
- Roof and windows renovation
- Windows and floor renovation
- Roof and floor renovation

NOT CONSIDERED TO BE FEASIBLE TO BRING TO 'COST OPTIMAL LEVEL'

https://assets.gov.ie/10206/d042e174c1654c6ca14f39242fb07d22.pdf p79

Energy Efficiency – Domestic Renovation

Major Refurbishment to >25% of building envelope

- External walls renovation
- External walls and windows renovation
- External walls and roof renovation
- External walls and floor renovation
- New Extension affecting more than 25 % of the surface

Upgrade insulation at ceiling level (roof)
Boiler replacement and controls upgrade where efficiency < 86 % to 91%
and/or Replacement of electric storage heating systems where more than 15 years old.

https://www.housing.gov.ie/sites/default/files/publications/files/tgd_l_dwellings_2019.pdf

Energy Efficiency – Domestic Renovation

Major Refurbishment to >25% of building envelope

Upgrade insulation at ceiling level (roof)
Boiler replacement and controls upgrade where efficiency < 86 % to 91%
and/or Replacement of electric storage heating systems where more than 15 years old.
Upgrade insulation at wall level

- External walls and floor renovation
- New Extension affecting more than 25 % of the surface area of the existing dwelling's envelope

https://www.housing.gov.ie/sites/default/files/publications/files/tgd_l_dwellings_2019.pdf

Energy Efficiency – Domestic Renovation

In this order focus on:

1. high thermal and air tightness performance first
2. select appropriate ‘green’ materials (timber, organic based insulation)
3. biomass boilers or heat pumps
4. PV and Solar Thermal

Moran, Goggins, and Hajdukiewicz, 2017
https://aran.library.nuigalway.ie/bitstream/handle/10379/15116/Moran_Energy%26Buildings2017_LCA_Superinsulate_or_Renewable.pdf

Renewable Energy Domestic Level

Solar PV Household Scale

Average House will support 2kW PV
Using on average 80% of electricity generated
With Storage this could be up to 100%

Moran, Goggins, and Hajdukiewicz, 2017
https://aran.library.nuigalway.ie/bitstream/handle/10379/15116/Moran_Energy%26Buildings2017_LCA_Superinsulate_or_Renewable.pdf

Renewable Energy Domestic Level

Solar PV Household Scale

2kW System		
Cost	€3,400	€5,000
SEAI Grant	€1,800	€1,800
Net Cost	€1,600	€3,200
kWh/a delivered	1900	1900
Cost Electricity	€0.16	€0.16
Household Use	1425	1425
Net Savings/a	€243.20	€243.20
Payback yrs	6.5	13
Lifetime Savings	**€2,360.00**	**€1,160.00**

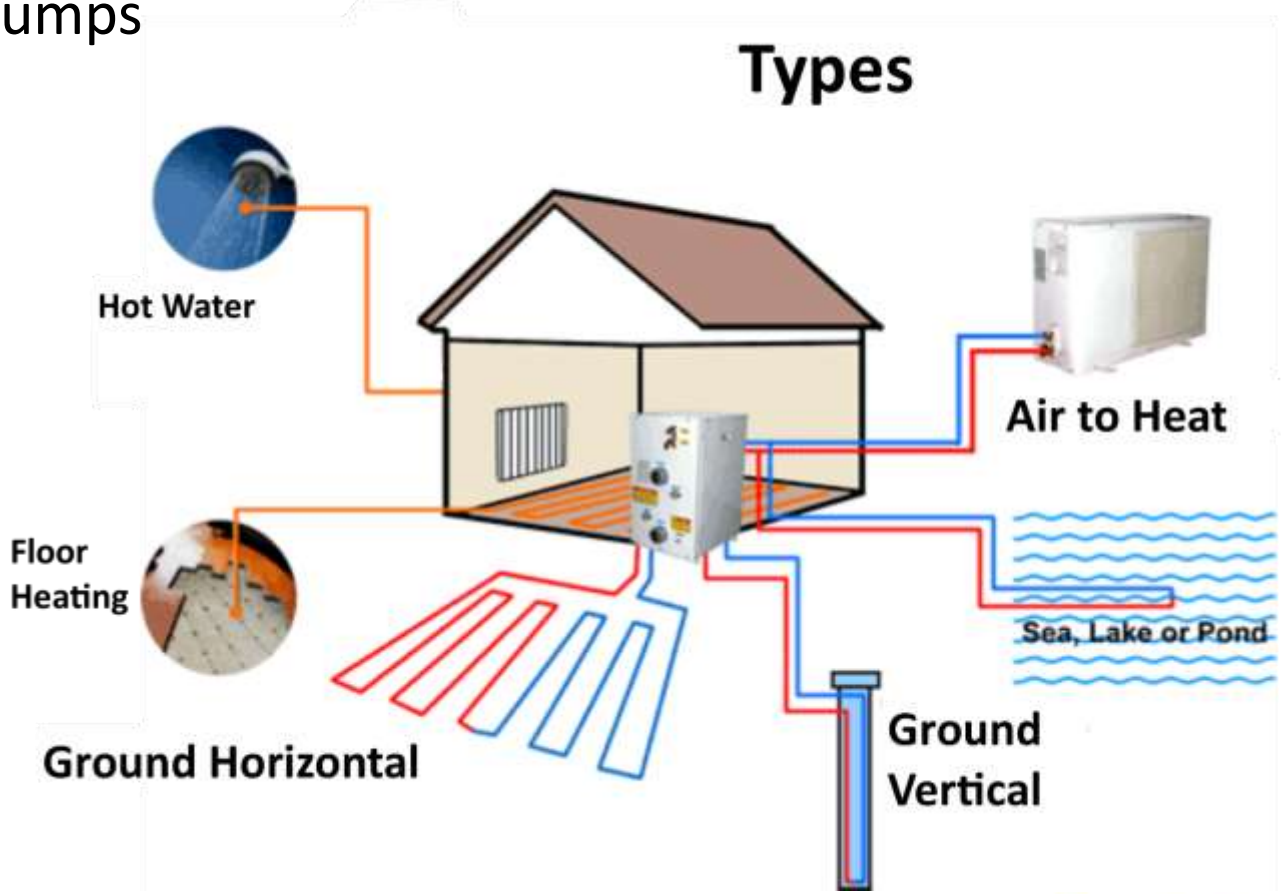
Renewable Energy Domestic Level

Using the electricity you generate

Diverter will push excess energy to HW ‘immersion’
Battery: adds €4k+ to system costs
Heat Pump: could reduce electricity costs by 50%
EV: Car may be offsite during the day

Renewable Energy Domestic Level

Heat Pumps



Renewable Energy Domest

Co-installed with PV will reduce this electricity cost even further

Heat Pumps

Energy Required to heat typical 3 bedroom detached house				
	kWh/a	cost/kWh	cost/a	
Oil	13,000	€0.09		€1,116.70
Gas	13,000	€0.07		€956.80
Wood Pellets	13,000	€0.06		€835.90
Heat Pump	4,333	€0.16		€693.33
Heat Pump NR	4,300	€0.11		€473.00

Renewable Energy Domestic Level

Heat Pumps

When heat pumps are renewable – home PV, green tariff, more RES in the future

Caveat Emptor: not all heat pumps are created equal

Geothermal – space restrictions, shallow or deep?

Air Source – environmental considerations

Exhaust Air Source Heat Pump – new builds

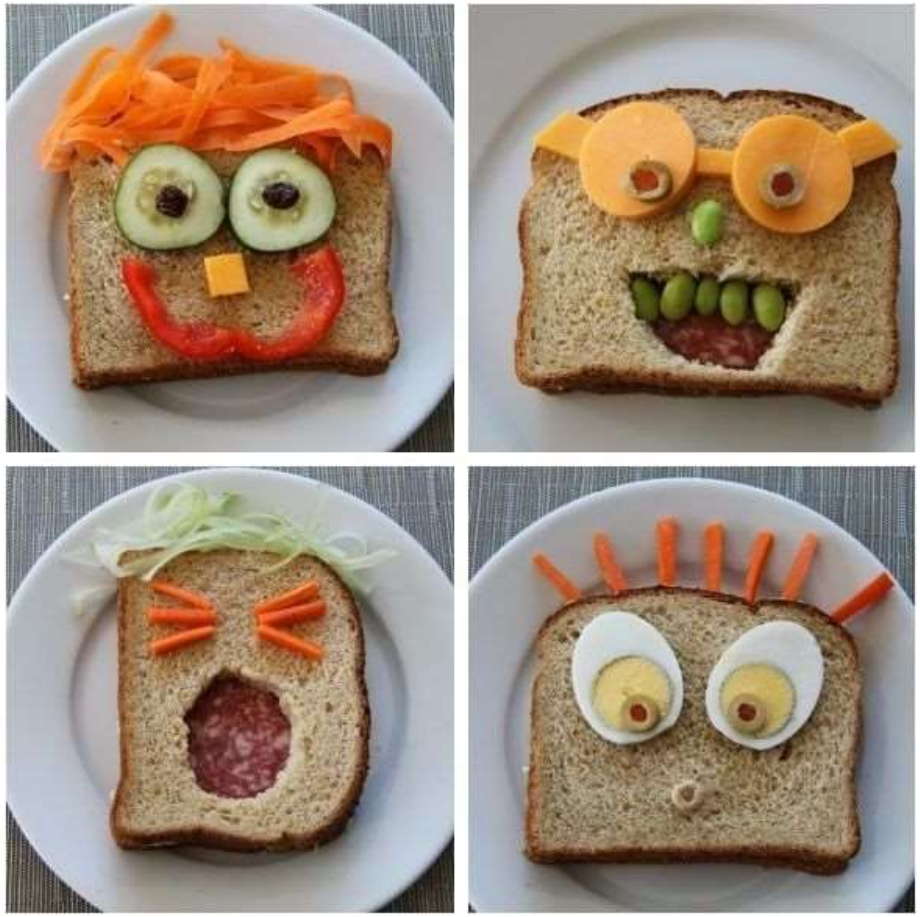
Discussions

12 minutes Small Groups

Technology solutions that generate/conserve energy.
What suits/doesn't suit your area?

Feed back to the group: 8 minutes

Mayo Climate Action Workshops: 3b - Climate Change and Community Energy



Energy Conservation Community Level

Case Study 1: School

St John's National School Ballybrack, County Dublin

Energy Conservation Community Level

Case Study 1: School

St John's National School Ballybrack, County Dublin

Energy retrofit 2017

Heating upgrades to the boiler, radiators, heating controls, installation of energy efficient lighting.

Annual energy demand reduction by 25-30%,

Saving 42,000 kWh each year.

Est Value = €4,200 per year

Energy Conservation Community Level Erris Report by Western Development Commission

https://localenergycommunities.net/wp-content/uploads/2019/05/IRELAND-CASE-STUDY-1.pdf

Energy Conservation Community Level Erris

Local Authority – Mayo County Council drew down the grant on behalf of the community.

Community grant fund from Corrib Gas community gain fund (40%)

Energy Conservation Community Level Erris

2014	Projects completed
14 Community Groups Total Cost: €340,163 50% SEAI BEC 40% Community Gain Fund 10% Community Groups 194,143 kWh electricity saved Annually Value of €29,000/a	2 electric vans for local "Meals on Wheels" 2 x 7kW Photovoltaic arrays 10 buildings insulated 9 buildings heating system upgrades 7 buildings LED lighting 28 Quantum storage Heaters

Energy Conservation Community Level Erris

2015	Projects completed
10 Community Groups Total Cost: €385,729 50% SEAI BEC 40% Community Gain Fund 10% Community Groups 323,624 kWh electricity saved Annually Value of €48,543	Western Care (Adults with Intellectual Disabilities) 3 buildings upgraded Irish Wheelchair Association 11kW Photovoltaic array 6 National Schools retrofitted Micro grid incorporating: • 11 kW Photovoltaic, • 6 kW battery, • 3 x Glen Dimplex storage heaters

Energy Conservation Community Level Erris

2016	Projects completed
2016 50 home owners in energy poor homes €402,777 80% SEAI BEC 20% Home Owners 373,470kWh thermal saved annually Value of €18,673 an average of €380 per house	Doors and windows replaced LED lighting replacements Attic, cavity, internal and external insulation New heating systems Solar hot water systems

Better Energy Communities

Community – Business – Citizens

Joint Application for retrofit grants

Sustainable Energy Communities

Charter

Competencies

Energy Master Plan

SEC Grant

Claremorris Energy Co-op
Tuar Mhic Eadaigh
Shrule Community
Sustainable Headford
Bellclare - Planet 21 Renewables
GMIT Mayo Campus
Westport
Mulranny Green Plan Group
Achill Community Futures
Cliara Development Company DAC
Burrishoole Community Partnership
Rundale Ox-Moy Group
Louisburgh Community Futures Group
Erris SEC
Friends of Mayo Dark Skies
Killawalla Community Council
Down Syndrome Ireland West

Renewable Energy Support Scheme (RESS)

- Understand communities can't compete in auction with professionals
- Made case for community "pot"
- Supports to deliver community projects

Renewable Energy Support Scheme (RESS)

- Maximum project size is 5MW;
- Open access;
- Participation based on local domicile first then nationwide;
- ‘Co-op principles’
- Consortium/Entity must include a Sustainable Energy Community within it;
- Other entities also allowed within consortium such as SMEs or Local Auth’s
- Primary purpose of 51% of project is community benefit

Renewable Energy Support Scheme (RESS)

- Trusted intermediaries - mentors
- Trusted advisors – specialist expertise
- Financial supports - feasibility grants and development soft loans
- Information warehouse

Successful Community Projects

Champion
Network
Focus
Mentorship
Realism
Structure

Unsuccessful Community Projects

Too many chiefs (or none)
One person bands - isolated
Vague
Too slow to access expertise
Over ambitious

Steps

Form Community Committee
Delegate: admin, technical - horses for courses
Start on SEC journey or identify an SEC to partner with
List the skills and connections the group already has
What are you missing
Build a network and make allies: within community
Get advice from a similar community that is further along the way
Mentorship
Structure – decide what suits you best

Renewable Energy Community Level

Templederry

Renewable Energy Community Level

Templederry

- Began development plan 1999 – advice from Prof Tom Collins and Seamus Hoyne of Tipp Energy Agency
- Est Templederry Wind Farm Ltd – **<u>30 Shareholders €1,000 each (note this number)</u>**
- Planning Application Success in 2003

Renewable Energy Community Level

Templederry contd.

- Grid access delays – planning lapsed
- 2nd Planning App 2007 - Bord Pleaneál appeal
- Financing: Rabobank + Enercon and BES investors
- Build 2011, commissioned 2012
- 2 turbines, total nominal power: 4,600 kW
- Cost €6.2m
- Estimated Payback 5-6 years

Renewable Energy Community Level

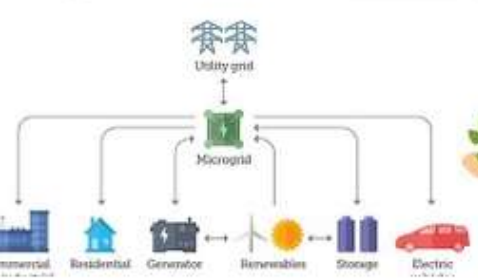
Claremorris and Western District Energy Co-op

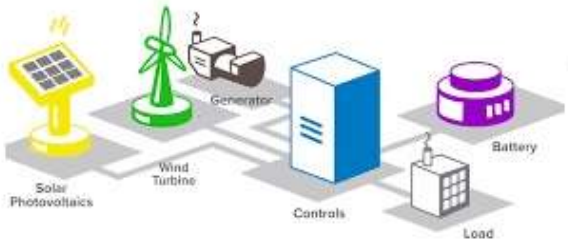
Renewable Energy Community Level

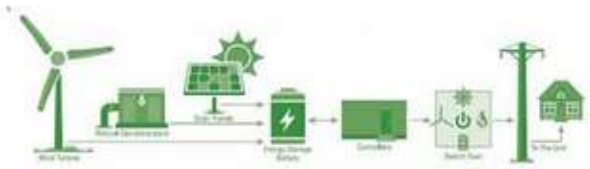
Claremorris and Western District Energy Co-op

Established 2015
50 members
SEAI SEC scheme 2017-2020
Planning Permission for community owned 5 MW Solar PV
Will be in first auction for RESS in 2020

Galway Energy Co Op – Established November 2018







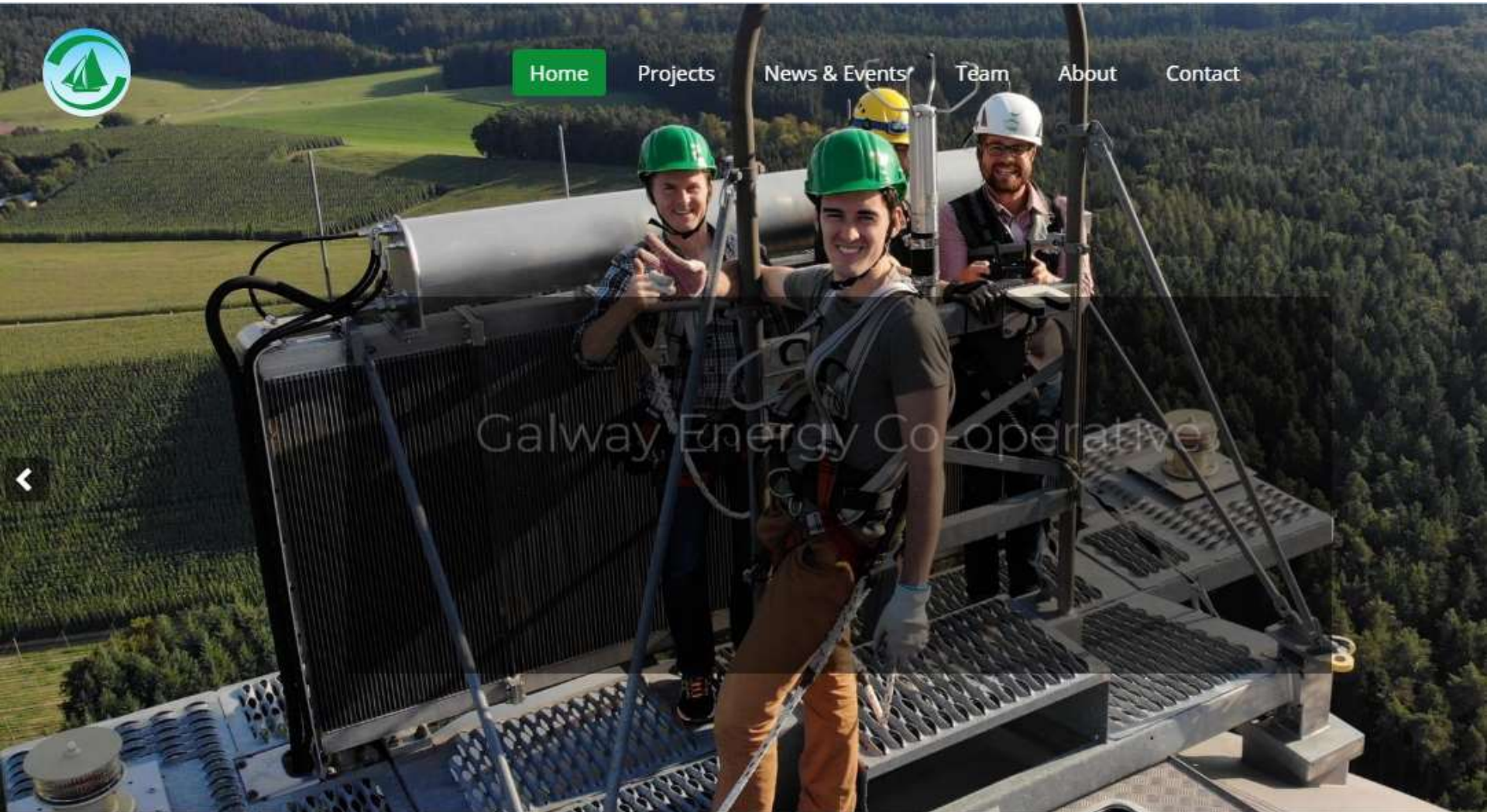
Galway Energy Co Op – before we formed

Galway Energy Co Op – Aims

- Develop renewable energy to support climate change mitigation
- Democratise energy production
- Develop local employment opportunities
- Engage the knowledge, energy and expertise of the local community.

Galway Energy Co Op – Public Events Westside and Ballybane

Galway Energy Co Op – Twinned with Pfaffenhofen Bavaria



Galway Energy Co Op – Projects

- Community Energy Consultancy / Payback Analysis
- SEC: Improving Your Home Energy Efficiency, public events in Westside and Ballybane
- Stage 2 application for EU Interreg project (Energy Storage)
- EU twinning with Pfaffenhofen

Galway Energy Co Op – Projects

- HyBioSol: SFI “Zero Emission” challenge (NUIG)
- Galway Hydro Conference NUIG
- Establishing Hydrogen Working Group for West Coast
- RESS Community partners in Solar and Wind Power

Discussion Renewable Energy Community Level

What Generation projects are possible in you area?

What other stakeholders are there?

20 minutes

Renewable Energy Community Level

Start your journey:

Renewable Energy Community Level

Start your journey:

Form or ally with an existing SEC

seai.ie/community-energy/sustainable-energy-communities

Charter: aims and core group (10+ people to start with)

Audit your skills and contacts

Stakeholder map tool: energyco-op.ie/resources/

Build your network

Set about formalising your structure

Access expertise

- Peer to peer
- Professional

Mayo Climate Action Workshops: 3b - Climate Change and Community Energy

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Rethink

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Email: vincent.carragher@tcd.ie