

Wind Energy: The Export Opportunity

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Irish Wind Energy Association

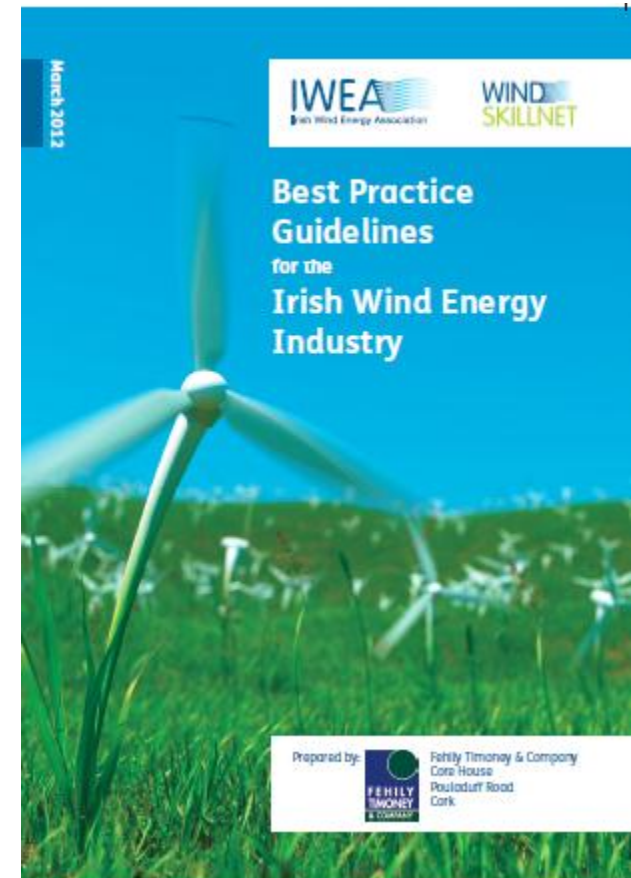
Agenda

- Background to IWEA
- Why Exporting
- The Opportunity
- Enablers



IWEA Aims

- IWEA believes that Ireland can be a world leader in renewable energy
 - Reduce CO2 emissions
 - Create investment and jobs
 - Increase energy security
 - Create a thriving export industry
- IWEA is committed to responsible and sensitive wind energy development.
- IWEA promotes the development of onshore and offshore wind
- IWEA supports the development of other renewables particularly marine energy



IWEA Members



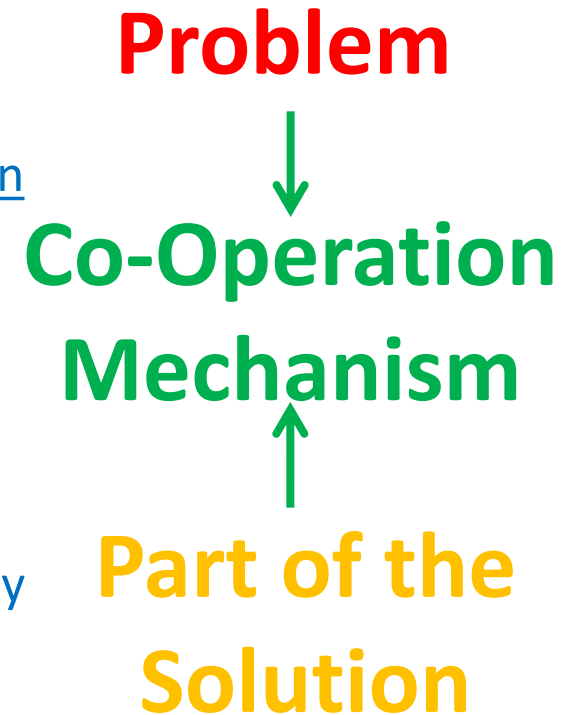
Why Exporting

UK Perspective

- Challenging onshore wind development scenario
- Large Combustion Plant Directive
 - Multiple thermal plants to close in 2015-2018
- Existing nuclear due to close 2023
- 10 New nuclear plants announced ???
- Substantial Commitment to Offshore Wind
 - 33GW in Round Three Crown Estates Auction
 - Strong Support System - ROCs

Irish Perspective

- More resource than required for domestic use
- Member of a large nearby open trading economy
- Need to create new export lead growth
- Expertise in technology and finance



Why Exporting?

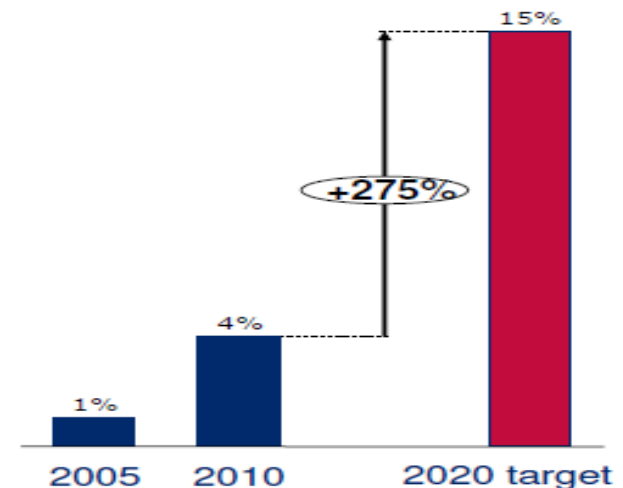
Keeping the Lights on.... and Green Energy

UK Security of Supply?

- UK now a net energy importer
- UK gas production has been declining by 6 per cent a year since 2000.
- In 2011, for the first time since 1967, the UK imported more natural gas than it exported.



% of UK energy from renewables, 2005-2020



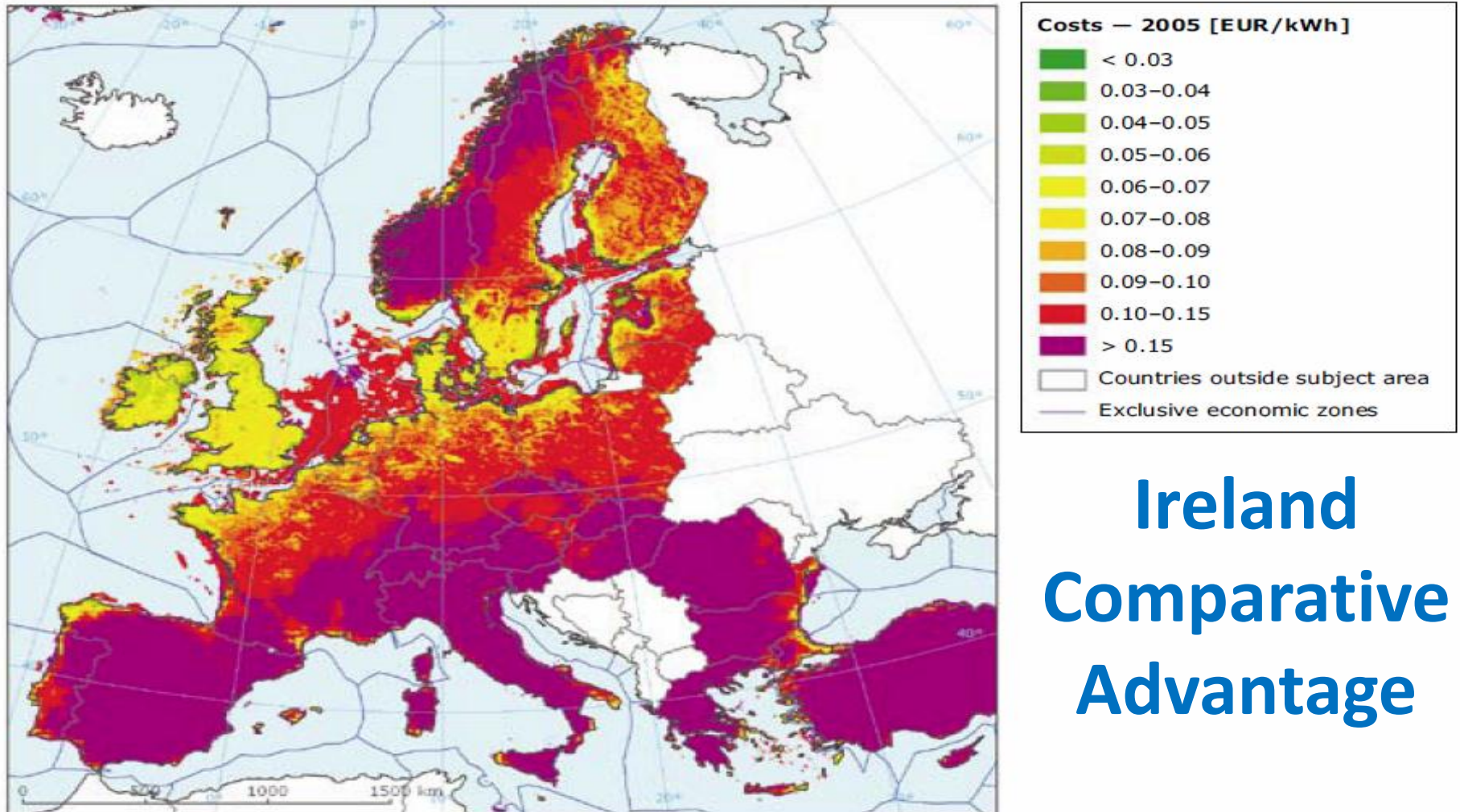
Energy Need

- Combustion Directive
- UK Challenging RE Energy Targets

Why Exporting?

We can do it cheaper

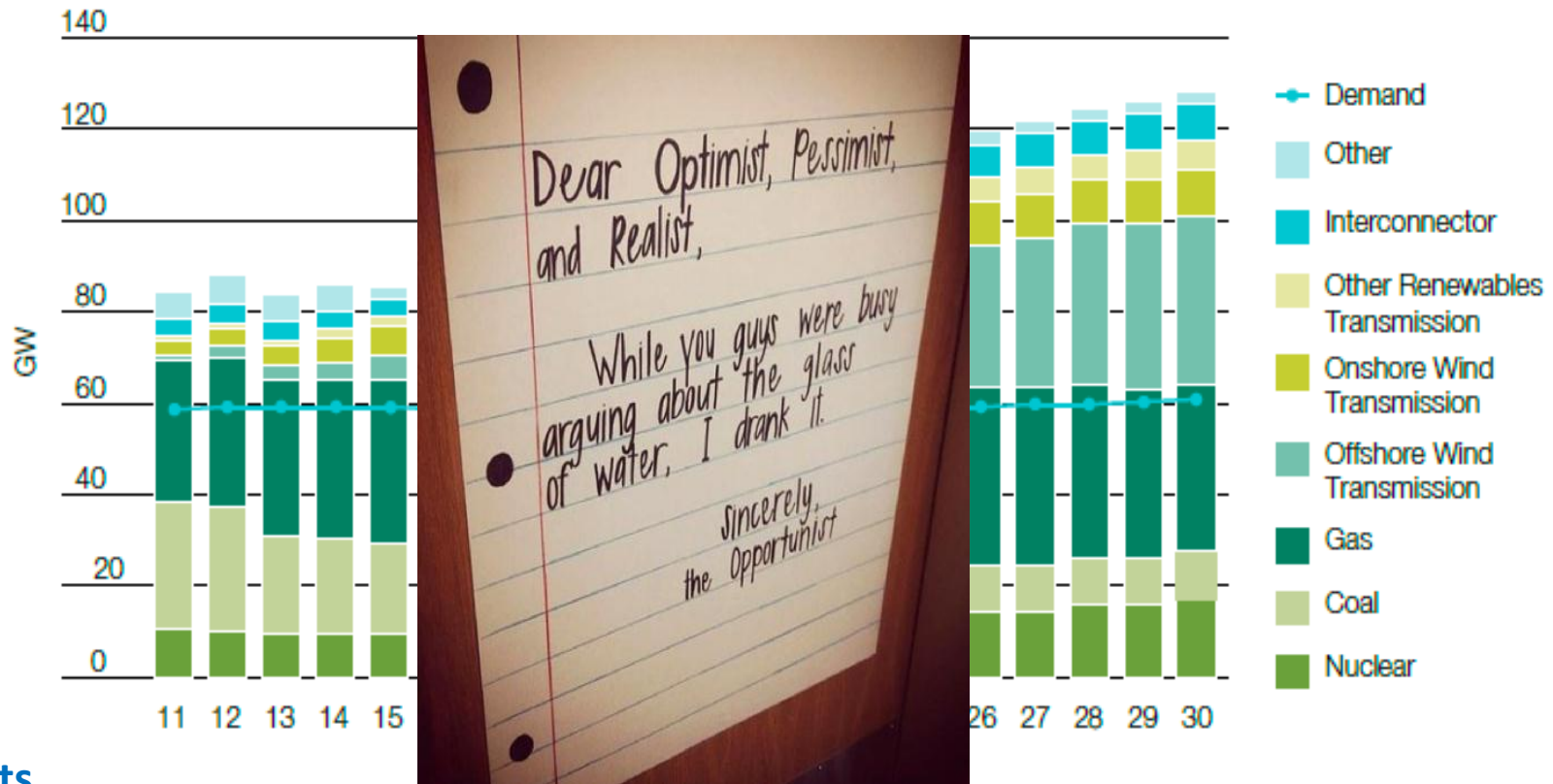
Map 6.2 Generation costs for wind energy in Europe, 2005



**Ireland
Comparative
Advantage**

How Exporting?

Statistical Transfer V's Physical Transfer

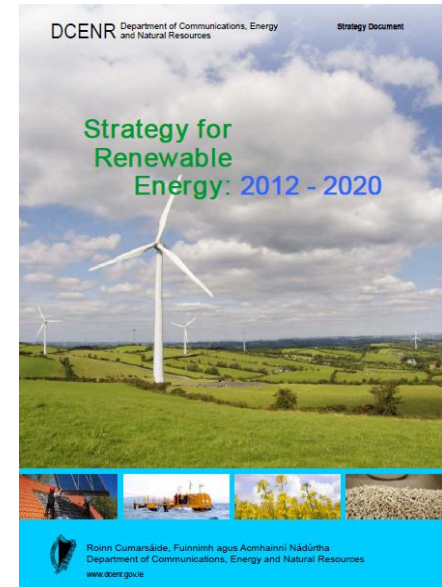
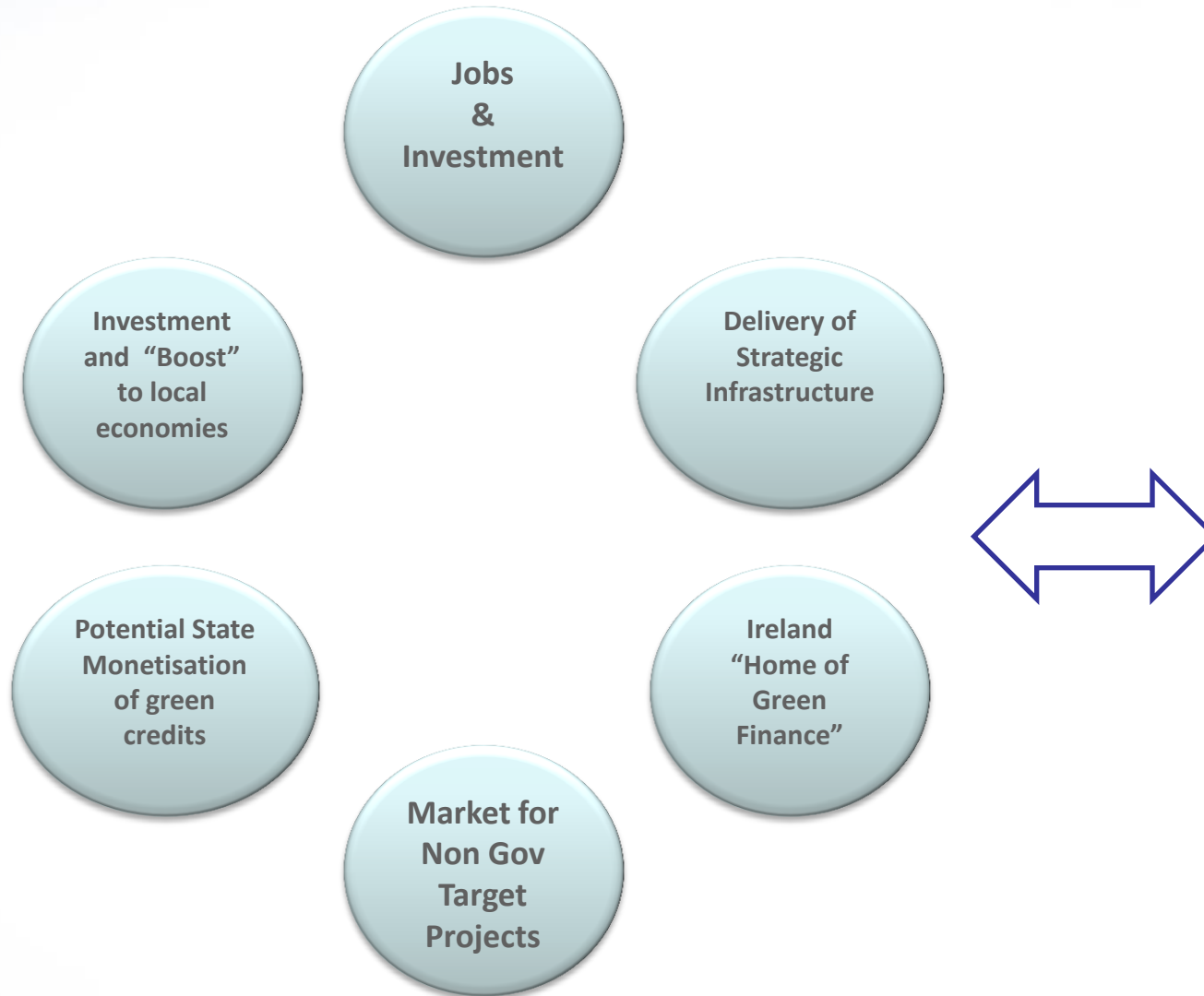


Facts

1. Over a fifth of the UK's generating capacity coming off stream before 2020.
2. By the end of the decade, the UK Government is calling for 18,000 megawatts of installed offshore wind capacity

The Export Opportunity

“Without cost to the Irish Consumer and to the benefit of the economy”



The Export Opportunity

“Jobs and Investment” Ireland

Europe



Avg investment offshore
€3M per MW Offshore.
€3M per MW Onshore.

2GW Onshore (2020) **€4Billion**
Potential Additional?
3GW Onshore = 3GW Offshore
= **€19Billion**

EWEA target **40GW** of offshore wind energy to be installed by 2020.

Investments in offshore wind farms in Europe alone are projected at **€209** billion from 2010-20

UK = **18GW** Need. UK will target projects remote to UK mainland

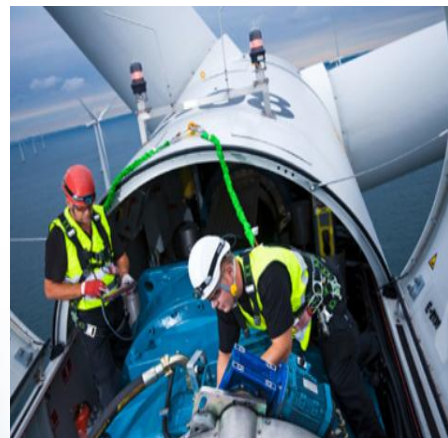


SEAI: Wind Road Map

Onshore and offshore wind could create 20,000 direct installation and O&M jobs by 2040.

Irish wind industry peak annual investment of between €6 billion and €12 billion by 2040.

Wind has a cumulative Investment potential of **€100 - €200 billion** in 2050

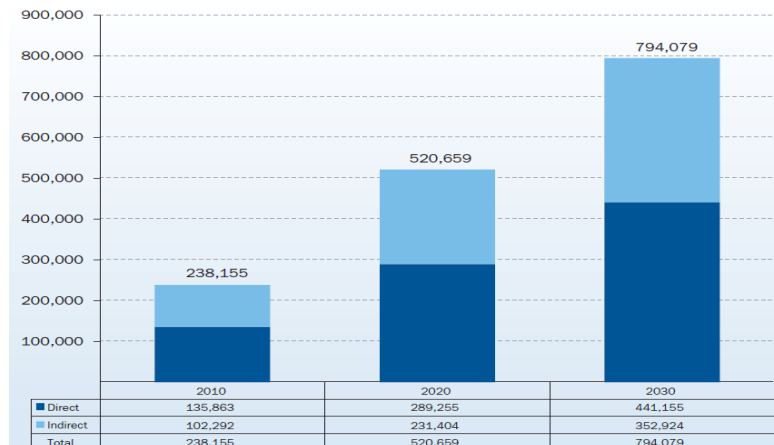


Projected Jobs:

IWEA Deloitte Study **10,700**
Jobs 2020 targets

Avg 2000 Job per GW
= **24,000 Jobs**

Heavy Industry Manufacturing?



The Export Opportunity

“Investment and boost to local economies”

Jobs
&
Investment

Investment
and “Boost”
to local
economies

Delivery
of
Strategic
Infrastructure

Potential State
Monetisation
of green
credits

Ireland
“Home of
Green
Finance”

Market for
Non Gov
Target
Projects

The Local Economy

Rates:

Ex: 30% of County council rates in Donegal come from existing wind farm development

Improved infrastructure – roads

The Landowner:

Sustainable income/diversification for landowners

Compatible with agriculture.

Community Benefit Funds

For communities hosting projects

Employment:

Opportunity for employment - in design, construction, O&M

The Export Opportunity

"Investment and boost to local economies"



2001/2



2012

The Export Opportunity

"Delivery of Strategy Infrastructure"
"State Monetisation of Green credits"

Jobs
&
Investment

Investment
and "Boost"
to local
economies

Delivery of
Strategic
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Potential State
Monetisation
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Ireland
"Home of
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Finance"

Market for
Non Gov
Target
Projects

Potential Benefits to Ireland Inc:

The value of Green Credit

1. The renewable value can be separated from the physical flow. = monetisation of renewable value

Why = Ireland can meet its EU targets from onshore wind. (also Gov. Decision)

Benefit of additional Infrastructure

1. Reduction in wholesale cost of electricity
2. Increased security of supply
3. Certain approach could allow access to EU funding.

Mitigation of need for planned infrastructure?? (Ireland and UK)

The Export Opportunity

"Market for Non Government target Projects"

Jobs
&
Investment

Investment
and "Boost"
to local
economies

Delivery of
Strategic
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Potential State
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Ireland
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Market for
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New Market Opportunities:

Gate 3 3900MW:

Revised EirGrid Demand Figures
need up to 4000MW.

Need an additional 2000MW

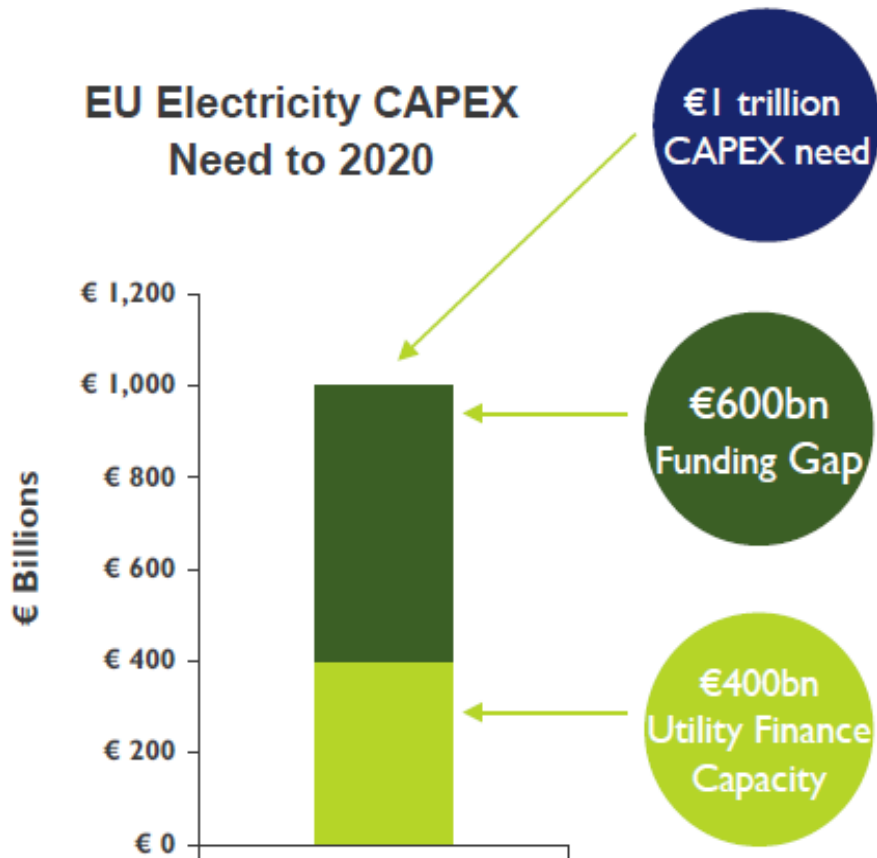
A portion of gate 3 projects not
required to meet 2020 targets

2030 Targets??

Export Gate?

The Export Opportunity

"Ireland – Home of Green Finance"



Source: Rothschild, KPMG, CitiGroup, Goldman Sachs, HgCapital Research

Green Finance = Irish Green IFSC Opportunity

€1 Trillion

The investment required to 2020 in European power infrastructure due to ageing power generation capacity, nuclear moratoria, energy security concerns and renewable energy and climate change targets

€400 Bn

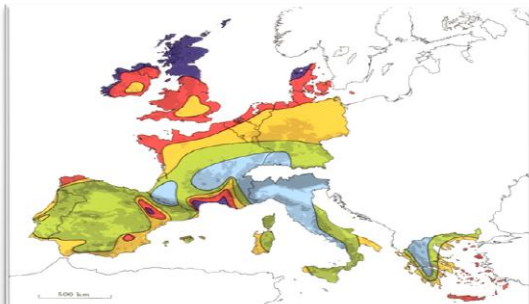
The estimated finance capacity of the EU electric utilities to 2020. Those utilities and Governments have been the traditional sources for that investment

€600 Bn

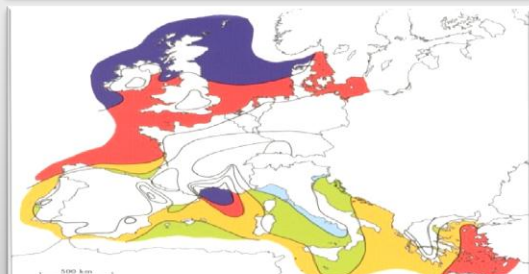
The finance gap, to which more and more those utilities and Governments are seeking to fill from private institutional investors – pension funds, insurance companies, sovereign wealth funds and family offices

"2 out of 3" to "3 out of 3"

1. Resources:



| Wind resources* at 50 metres above ground level for five different topographic conditions | | | | | | | | | |
|---|-----------|-------------|-----------|----------------|-----------|-----------|-----------|-------------------|-------------|
| Hilly/terrain* | | Open plain* | | All sea coast* | | Open sea* | | Hills and ridges* | |
| Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 |
| < 4.0 | < 3.0 | < 7.5 | < 5.0 | < 8.5 | < 7.0 | < 9.0 | < 8.0 | < 11.5 | < 10.0 |
| 5.0-6.0 | 1.50-2.50 | 6.5-7.5 | 3.00-3.50 | 6.0-6.5 | 4.00-7.00 | 6.0-6.0 | 4.00-6.00 | 10.0-11.5 | 1.200-1.800 |
| 4.5-5.0 | 1.00-1.50 | 5.5-6.5 | 2.00-3.00 | 6.0-7.0 | 2.50-4.00 | 6.0-7.0 | 4.00-6.00 | 8.5-10.0 | 700-1.200 |
| 3.5-4.5 | 50-100 | 4.5-5.5 | 1.00-2.00 | 5.0-6.0 | 1.50-2.50 | 5.5-7.0 | 2.00-4.00 | 7.0-8.5 | 400-700 |
| < 3.5 | < 50 | < 4.5 | < 1.00 | < 5.0 | < 1.50 | < 5.5 | < 2.00 | < 7.0 | < 400 |



| Wind resources over open sea (more than 10 km offshore) for five standard heights | | | | | | | | | |
|---|-----------|---------|-----------|---------|-----------|----------|-----------|----------|-----------|
| 10 m | | 50 m | | 100 m | | 150 m | | 200 m | |
| Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 | Wm 1 | Wm 2 |
| < 4.0 | < 3.0 | < 6.5 | < 5.0 | < 7.5 | < 6.0 | < 8.5 | < 7.0 | < 10.0 | < 8.0 |
| 7.0-9.0 | 3.50-4.00 | 7.5-9.5 | 4.50-5.00 | 8.0-9.0 | 5.00-6.00 | 8.5-10.0 | 6.00-7.00 | 9.5-11.0 | 6.00-7.00 |
| 6.0-7.0 | 2.00-3.00 | 6.5-7.5 | 3.00-4.00 | 7.0-8.0 | 4.00-5.00 | 7.5-8.5 | 4.50-5.50 | 8.5-9.5 | 5.00-6.00 |
| 4.5-6.0 | 1.00-2.00 | 5.0-6.5 | 1.50-3.00 | 5.0-7.0 | 2.00-4.00 | 6.0-7.5 | 3.00-4.50 | 6.0-8.0 | 3.00-4.00 |
| < 4.5 | < 1.00 | < 5.0 | < 1.00 | < 5.5 | < 2.00 | < 6.0 | < 2.50 | < 6.5 | < 2.00 |

3. Plan:



2. Talent:

Every Vision Needs a Solid Base

1

Trading

Agreement should provide a mechanism for generators in Ireland to participate in the UK's support system.

2

Market

Reflecting the need to meet binding 2020 RES-E targets onshore wind should not be compromised in pursuit of any option that could materially affect the ability to meet domestic targets.

3

Integration
& Regulation

Government/ Industry Implementation Group to be setup bringing in the necessary private and public stakeholders and agencies, private capital, determine the goals and then lead the implementation. (Gate 3)

4

Interconnection
& Market

Seek EU funding in the EU 2014 – 2020 'Connecting Europe' financial programme for advancing further interconnection as part of the move to integrate Ireland more robustly to the EU energy market.



Every Vision Needs a Solid Base

5

Enterprize

Establishment of Renewable energy divisions in the IDA and Enterprize Ireland to promote Ireland as the renewable energy hub of Europe
Jobs + Investment

6

Enterprize

Ireland export potential and the existing proven track record in the provision of fund services Ireland should create a centre of excellence for Green Finance in the area of project financing and also the reestablishment of green funds

7

R&D

Specific programme developed - floating turbine technology via demonstration facilities. Marine Refit support advanced for demonstration / pre-commercial projects of less than 10MW.



The Export Opportunity

From small seeds, big new ideas grow.



Opportunities for Ireland

- 11.5GW installed by 2020.
- Over €19bn in new investments
- Significant new Industry with potential for 28000 jobs
- World leading innovation and development centre
 - Technology
 - Integration
 - Finance and Services
 - Community
- Leading player in gigantic global industry

Time to be Ambitious

