

Introduction to Wind Energy

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Irish Wind Energy Association

Overview

- Background to IWEA
- Picture in 2020
 - Can it be done?
 - How do we do it?
 - What are the benefits?
- Conclusion

IWEA Aims

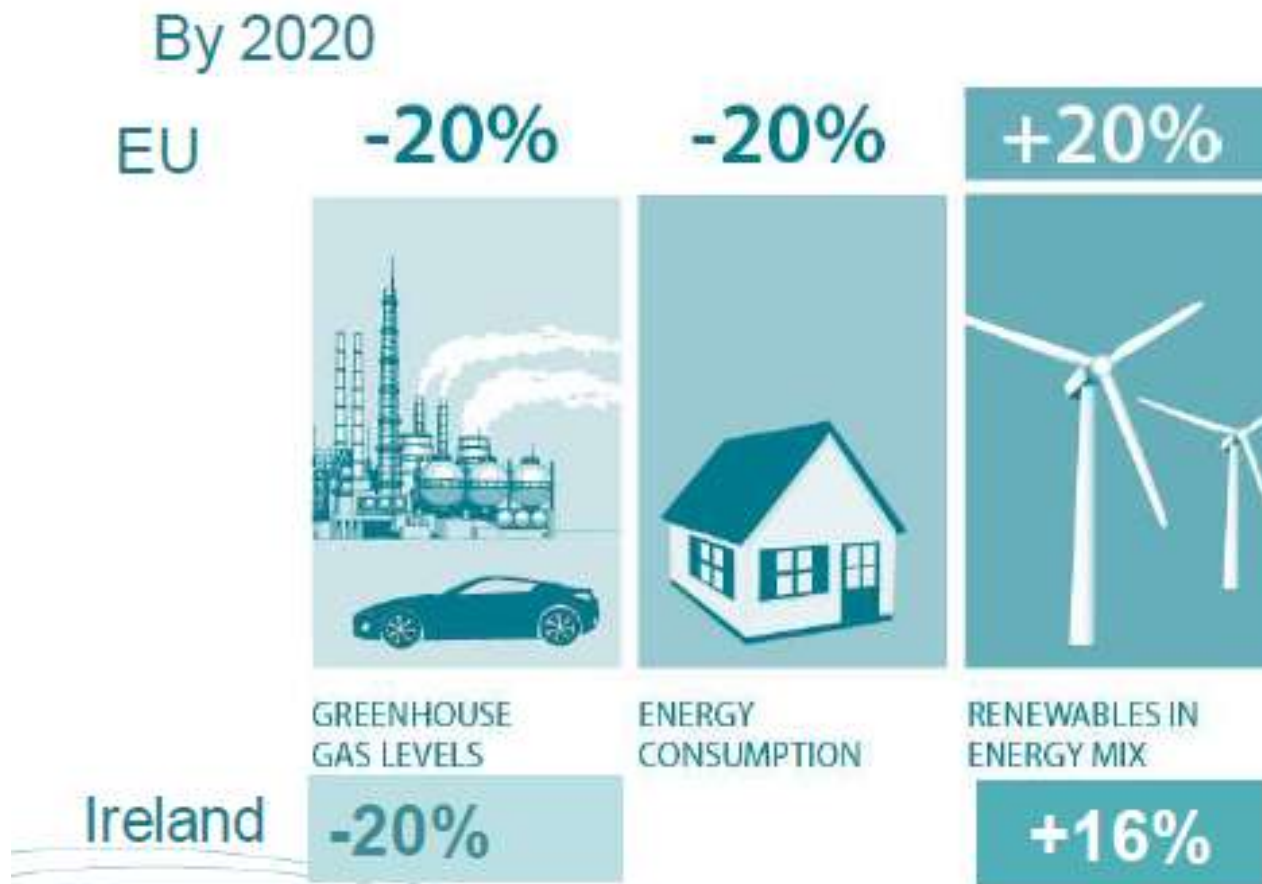
- IWEA believes that Ireland can be a world leader in renewable energy
 - Reduce CO2 emissions
 - Create investment and jobs
 - Increase energy security
 - Create a thriving export industry
- IWEA is committed to responsible and sensitive wind energy development
- IWEA promotes the development of onshore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

IWEA Members

- Largest national network with members from various sectors
 - Wind farm developers
 - Turbine manufacturers
 - Construction companies
 - Supply companies
 - Accountants
 - Insurance
 - Consultancy
 - Legal firms
 - Banks
 - Small local businesses

Picture at 2020

20-20-20 EU Policy



National Policy Target

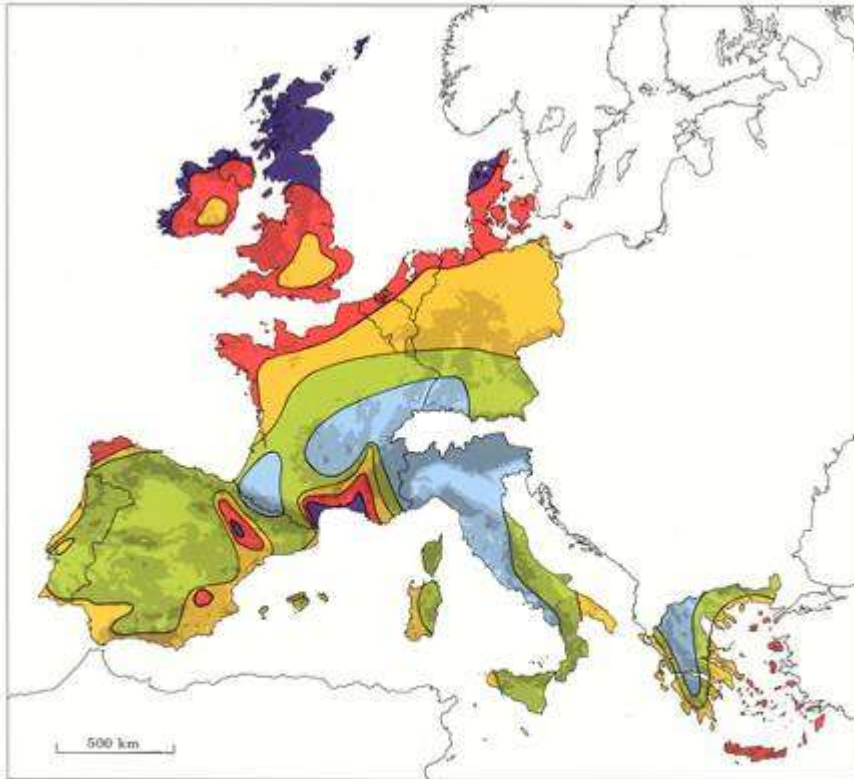


By 2020

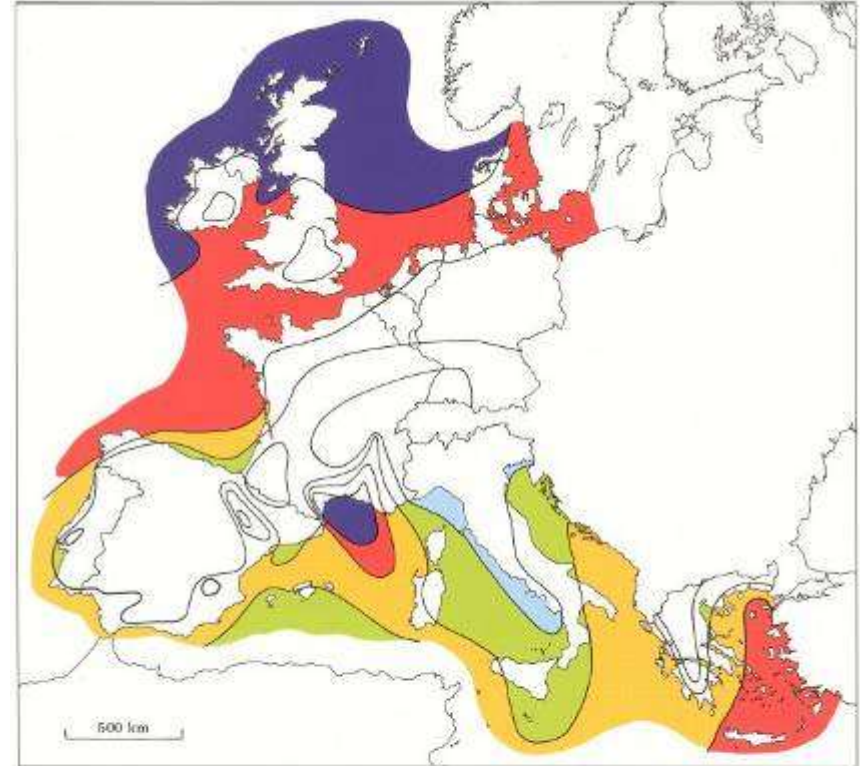
By 2010

Can this be done?

Resources & Capabilities



Wind resources ¹ at 50 metres above ground level for five different topographic conditions									
Sheltered terrain ²		Open plain ³		At a sea coast ⁴		Open sea ⁵		Hills and ridges ⁶	
$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}
> 6.0	> 250	> 7.5	> 500	> 8.5	> 700	> 9.0	> 800	> 11.5	> 1800
5.0-6.0	150-250	6.5-7.5	300-500	7.0-8.5	400-700	8.0-9.0	600-800	10.0-11.5	1200-1800
4.5-5.0	100-150	5.5-6.5	200-300	6.0-7.0	250-400	7.0-8.0	400-600	8.5-10.0	700-1200
3.5-4.5	50-100	4.5-5.5	100-200	5.0-6.0	150-250	5.5-7.0	200-400	7.0- 8.5	400- 700
< 3.5	< 50	< 4.5	< 100	< 5.0	< 150	< 5.5	< 200	< 7.0	< 400



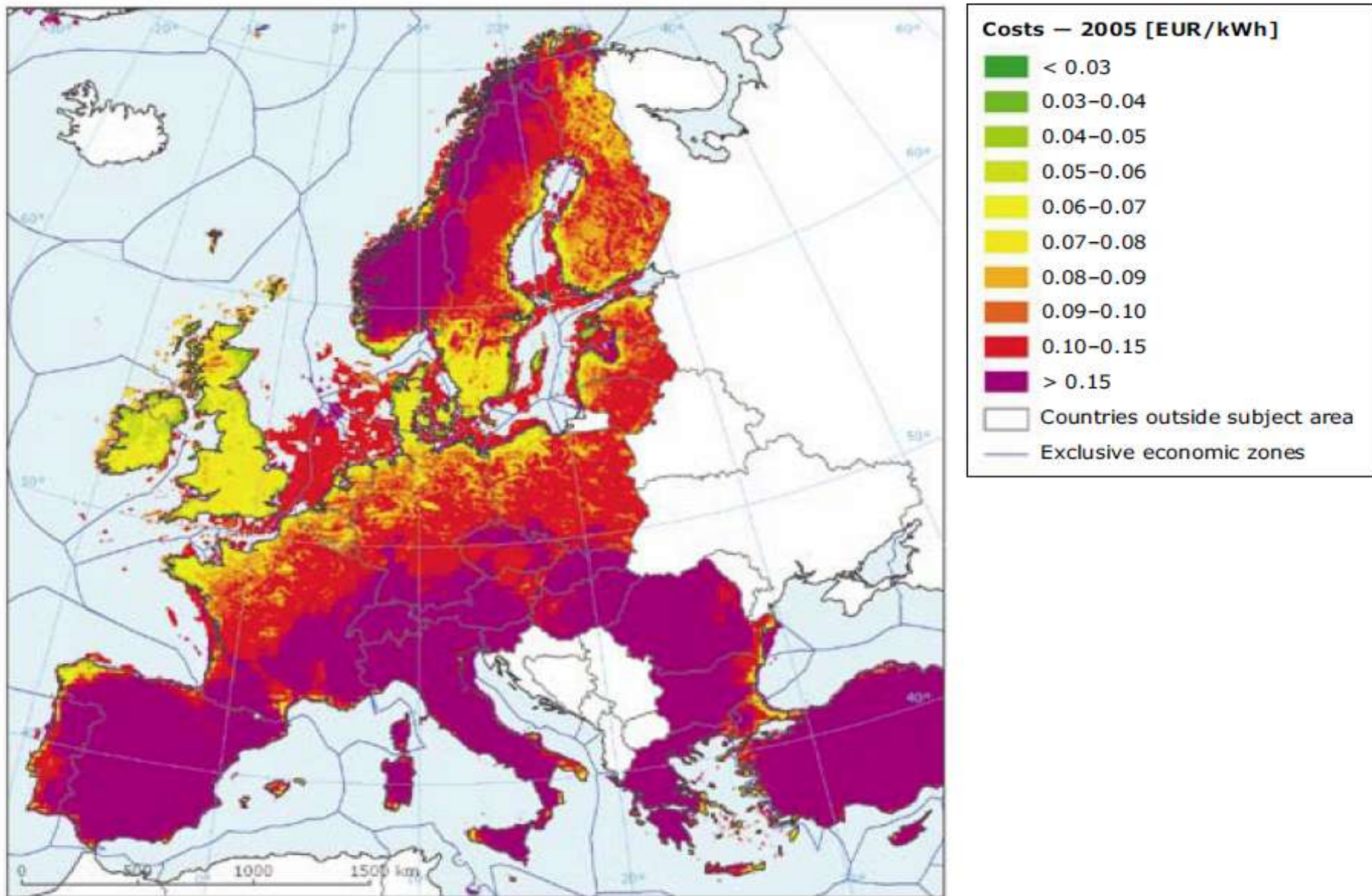
Wind resources over open sea (more than 10 km offshore) for five standard heights									
10 m		25 m		50 m		100 m		200 m	
$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}	$m s^{-1}$	Wm^{-2}
> 8.0	> 600	> 8.5	> 700	> 9.0	> 800	> 10.0	> 1100	> 11.0	> 1500
7.0-8.0	350-600	7.5-8.5	450-700	8.0-9.0	600-900	8.5-10.0	850-1100	9.5-11.0	900-1500
6.0-7.0	250-300	6.5-7.5	300-450	7.0-8.0	400-600	7.5- 8.5	450- 650	8.0- 9.5	600- 900
4.5-6.0	100-250	5.0-6.5	150-300	5.5-7.0	200-400	6.0- 7.5	250- 450	6.5- 8.0	300- 600
< 4.5	< 100	< 5.0	< 150	< 5.5	< 200	< 6.0	< 250	< 6.5	< 300

All-Island Grid Study

Results of the “***ALL-ISLAND GRID STUDY***”, published on 10th January 2008 show that:

- Renewable penetration levels of up to 42% demand are technically feasible
- Principal form of renewable generation will be wind





Source: EEA, 2008.

Wind Generation in Ireland

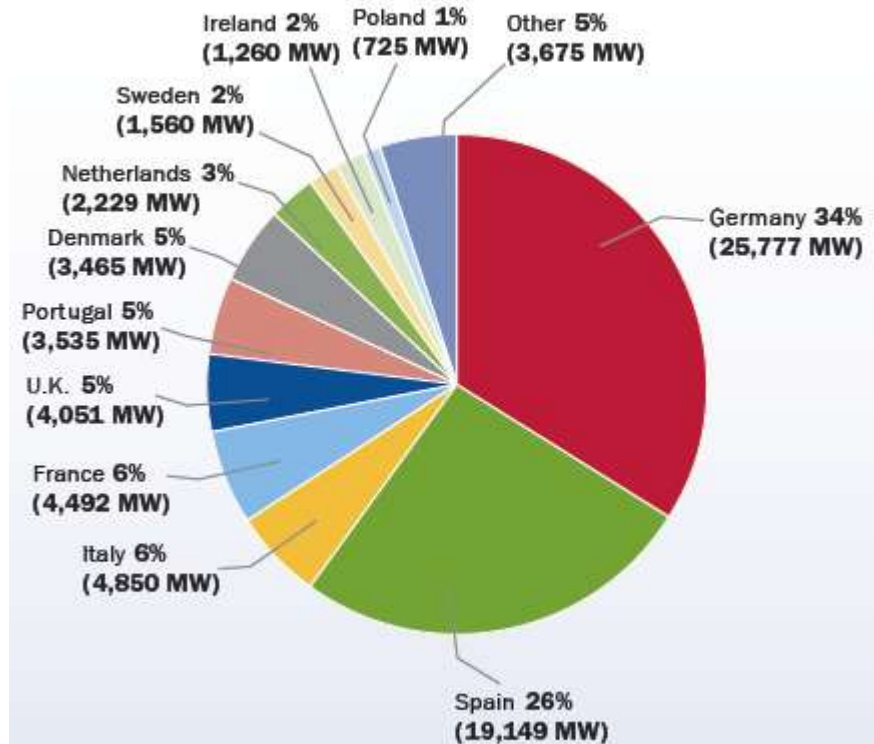
- Installed 1379MW
- Gate 2 1300MW
- Gate 3 3900MW
- Other Applications >11000MW



Wind Energy in Ireland Today and IWEA projections for 2020

	2020
Installed capacity	11,000 MW *

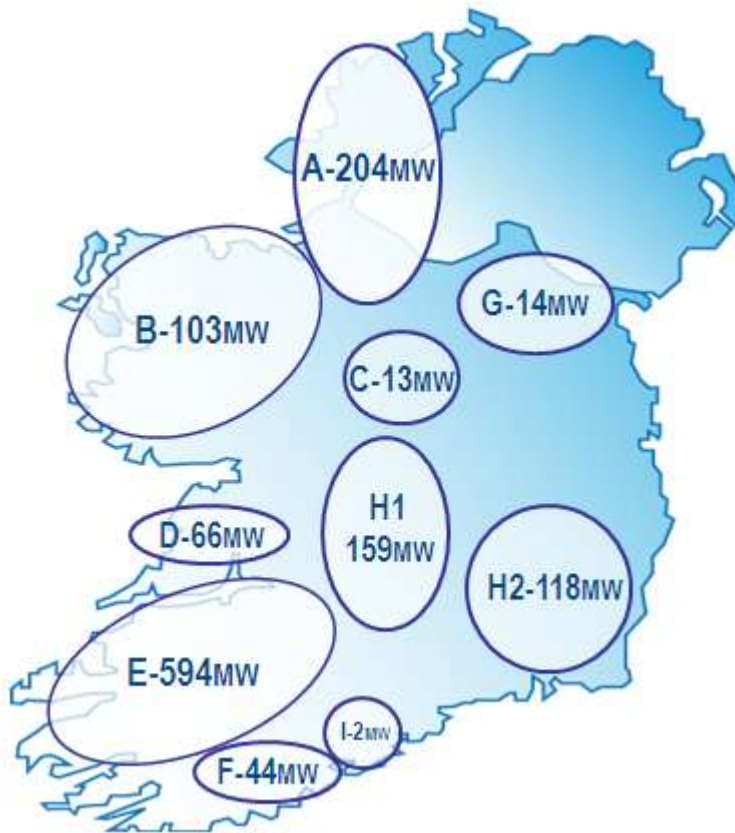
EU MEMBER STATE MARKET SHARES FOR TOTAL INSTALLED CAPACITY (2009). TOTAL 74,767 MW FIGURE 3.4



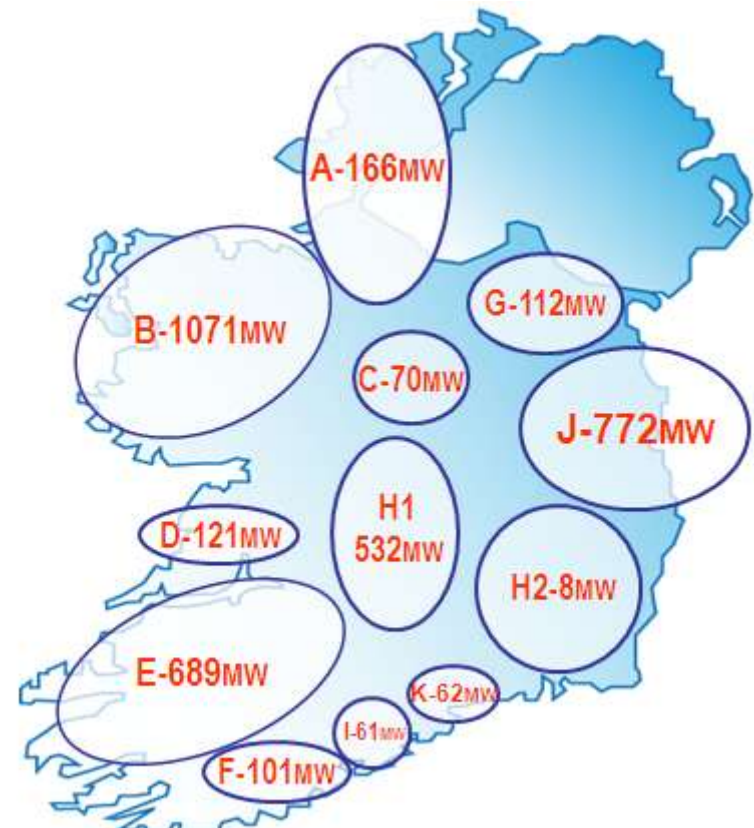
*5,000 MW for export to UK/Europe

Wind Generation in Ireland

Gate 2



Gate 3



How do we do it?

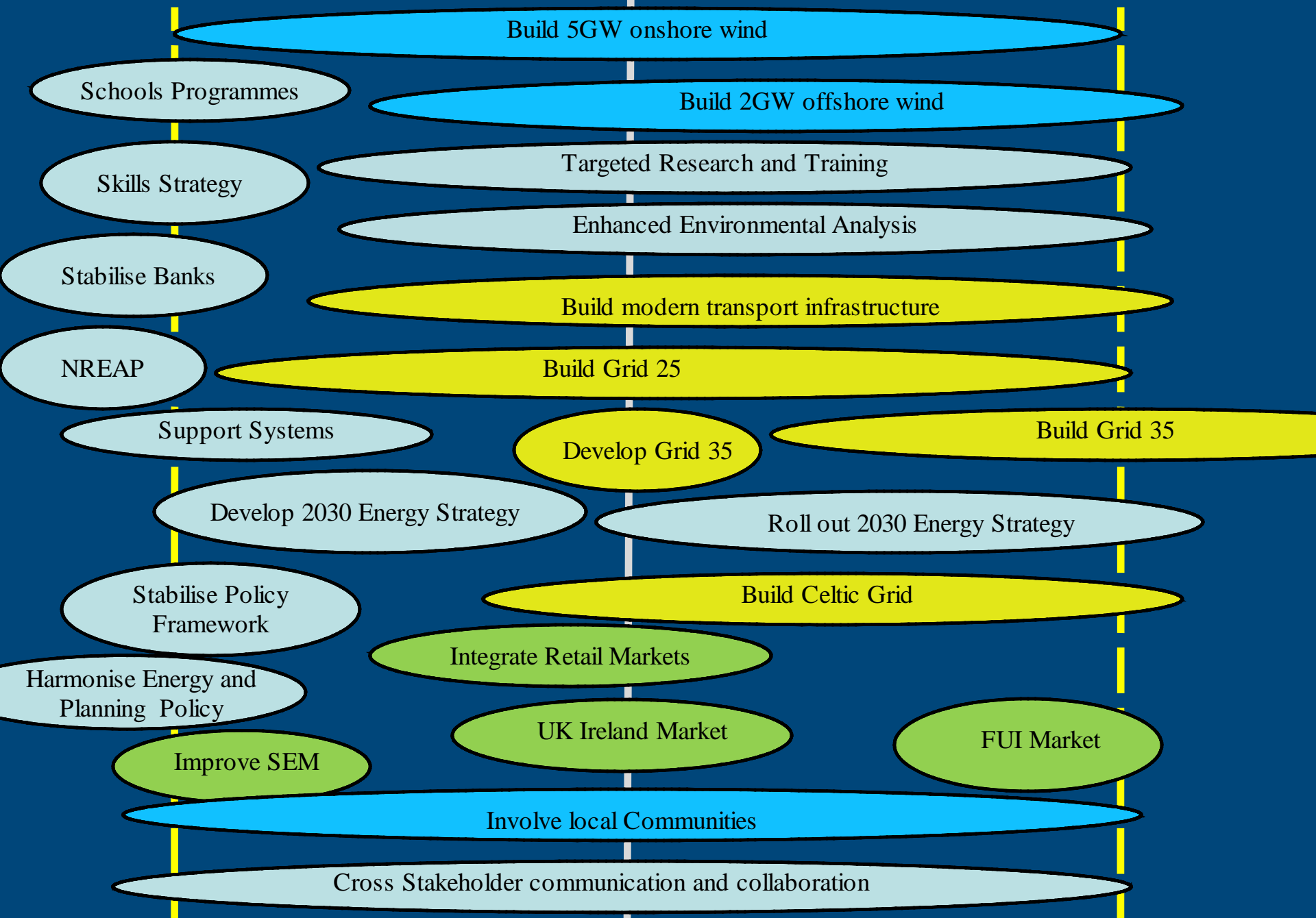
Action Areas

- Infrastructure Development
- Stabilise Policy Framework
- Harmonise Planning and Energy Policy
- Involve Communities

2009

2015

2020



What are the benefits?

Deloitte.

IWEA
Irish Wind Energy Association

Jobs and Investment in Irish Wind Energy
Powering Ireland's Economy



10 760 new jobs in Ireland

Many unexplored opportunities exist, these will contribute positively to green economy and jobs

Vital that industry stakeholders and state bodies work together

Necessary to increase investment in training

Unless the current institutional barriers to steady growth of wind energy are removed many of these jobs will be lost

Opportunities for Industry

- Adapt fleet – generation, vehicles, buildings etc.
- Deliver required infrastructure
- Develop new services, systems and markets

Huge Supply Chain

- Construction
- Logistics
- Consultancy
- Finance and Legal
- Smart Grid and Demand Side Control

Conclusions

- Excellent resources and skills in Ireland
- Strong strategic policy framework
- More ambition to develop indigenous industry
- Focus on implementation essential

We must rethink our energy future

Renewable

Competitive

Clean



Offering energy independence

Thank you

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