SEAI &
Energy Opportunity

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Agenda and introduction

- Introduction to SEAI
- EU Policy and targets
- The Irish Context: Ireland’s policy targets and energy flows
- Ireland- Low carbon Opportunities
- SEAI Vision and Interventions
Introduction to SEAI
SEAI Remit

SEAI Act 2002
• Energy efficiency
• Renewable energy
• Combined heat & power
• Greenhouse gas reduction

Market development
Underpinning energy policy
Energy research coordination
Ireland a recognised global leader in sustainable energy, a society that is fully engaged in the sustainable energy agenda and an economy that is fully exploiting the global opportunities in clean, low-carbon solutions
SEAI’s key strategic objectives

- Energy efficiency first – implementing strong energy efficiency actions that radically reduce energy intensity and usage;
- Low carbon energy sources – accelerating the development and adoption of technologies to exploit renewable energy sources;
- Innovation and integration – supporting evidence-based responses that engage all actors, supporting innovation and enterprise for our low-carbon future.
SEAI Roles

- Supporting Government decision-making through advocacy, analysis and evidence
- Driving demand reduction and providing advice to all users of energy
- Driving the decarbonisation of energy supply
- Raising standards in sustainable energy products and services
- Building markets based on quality, confidence and proven performance
- Fostering innovation and entrepreneurship
- Improving the coherence of Irish energy research and development
EU Context

-20%  -20%  +20%

GREENHOUSE GAS LEVELS  ENERGY CONSUMPTION  RENEWABLES IN ENERGY MIX
Energy policy pillars

**Competitiveness**
- Internal Market
- Interconnections (Trans European networks)
- European electricity and gas network
- Research and innovation
  - Clean coal
  - Carbon sequestration
  - Alternative fuels
  - Energy efficiency
  - Nuclear

**Sustainable Development**
- Renewable energy
- Energy efficiency
- Nuclear
- Research and innovation
- Emission trading

**Security of Supply**
- International Dialogue
- European stock management (oil/gas)
- Refining capacity and energy storage
- Diversification
- Energy efficiency

Source: European Commission
The Commission proposes an objective of increasing the share of renewable energy to at least 27% of the EU's energy consumption by 2030.
EU efforts in Renewables

IRELAND

Countries:
- BE
- BG
- CZ
- DK
- DE
- EE
- EL
- ES
- FR
- IT
- CY
- LV
- LT
- LU
- HU
- MT
- NL
- AT
- PL
- PT
- RO
- SI
- SK
- FI
- SE
- UK

Percentage of renewable energy in electricity generation.
Energy efficiency

Source: National Energy Efficiency Action Plan
Energy Efficiency’s Role Renewable Development

- By maximising energy efficacy it minimises energy lost and provides renewables with larger share of production
- Electric vehicles
- Improved fuel economy
- VRT/Motor tax changes
- Modal shift

More efficient generation
- Public sector 9%
- Energy Supply 13%
- Mobility-Transport 16%
- Business 17%
- Buildings 45%

- Better Energy (Retrofit) Programme
- Building regulations
- Smart meters
- Lighting and boiler standards
- Electric vehicles
- Improved fuel economy
- VRT/Motor tax changes
- Modal shift
- Public sector 33% target
- National Retrofit (services)
- SEAI business programmes
- ACA
- Building regulations
- SEAI large industry programmes
The Irish context:
Ireland’s targets and energy flows
## Irish energy targets

### Renewable Energy

<table>
<thead>
<tr>
<th>Year</th>
<th>Electricity</th>
<th>Heat</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>15%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>2020</td>
<td>40% (Ocean 500MW)</td>
<td>12%</td>
<td>10% Biofuels, 10% Electric Vehicles</td>
</tr>
</tbody>
</table>

### Energy Efficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>All Economy</th>
<th>Public Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>20%</td>
<td>33%</td>
</tr>
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</table>

*As compared to average annual energy use between 2001 & 2005*
Security of Supply

Irish dependency on imports

Ireland spends about €6 billion per year on imports.

Ireland’s high reliance on imports leaves the country more exposed to changes in fuel prices.
Energy Flow in 2012

Wind 345 ktoe
Hydro 69 ktoe
Biomass, Other Renewables & Wastes 468 ktoe
Electricity Imports (net) 36 ktoe
Briquetting 14 ktoe
Natural Gas own use /loss 61 ktoe
Oil Refining 104 ktoe
Electricity Transformation & Transmission Losses 2,514 ktoe

Oil 6,005 ktoe
Natural Gas 4,023 ktoe
Coal 1,482 ktoe
Peat 802 ktoe

Total Primary Energy Requirement 13,229 ktoe
Total Final Consumption 10,761 ktoe

Transport 4,195 ktoe
Residential 2,715 ktoe
Industry 2,252 ktoe
Agriculture & Fisheries 273 ktoe
Services 1,326 ktoe

Note: Some statistical differences exist between inputs and outputs
Total primary energy requirement
National EE Action plan - contribution by sector

- Business and Public sectors: 8,340 GWh
- Residential sector: 10,355 GWh
- Transport sector: 4,670 GWh
- Energy Supply Sector: 365 GWh
Ireland: Low carbon Opportunities
Significant contributions from

- renewable energy,
- energy efficiency and consulting,
- waste management, recovery and recycling and
- wastewater treatment
- The global market for environmental goods and services is expected to grow to $700 billion by 2010 and $800 billion in 2015.
Where are the opportunities?
Abatement Cost Curve

Abatement cost
€ per tCO₂e

Width - extent of abatement tonnes

Height - cost of abatement €/tonne

Abatement potential
Mt CO₂e per year

SEAI
SUSTAINABLE ENERGY AUTHORITY
OF IRELAND
2030 Abatement Cost Curve

40% of opportunities save more than they cost
New technologies will be essential
BUILDINGS SECTOR

2030 Cost Curve Oil at $60/bbl

Abatement cost
€ per tCO₂e

LIGHTING - switch incandescents to LEDs, commercial

NEW BUILD efficiency package, residential

Retrofit BUILDING ENVELOPE, residential - advanced

NEW BUILD efficiency package, commercial

Retrofit BUILDING ENVELOPE, commercial

Retrofit BUILDING ENVELOPE, commercial basic

LIGHTING retrofit controls, commercial

LIGHTING new build controls, commercial

Abatement potential
Mt CO₂e per year
Oil at $120/bbl

Abatement cost
€ per tCO₂e

Abatement potential
Mt CO₂e per year

- 2nd generation biofuels
- Plug-in hybrids
- Onshore Wind
- Wave
- Battery EVs
- Tidal
SEAI Vision and Interventions:
Actions to Meet Targets
Key areas for Ireland

Delivering now: retrofit
Delivering soon: ICT
Key for the long-term: new energy resources

Renewable electricity exploitation
this vision focuses on

• A growing suite of new energy positive buildings complemented by strong energy retrofitting of all existing buildings.

• Government grants are driving strong activity
  – 200,000 homes upgraded to date
  – Total efficiency spend in Ireland (public and private) was €250 million in 2011
  – This is currently supporting almost 6,000 jobs
  – Quality and confidence are key
Building a future on new technologies

- Wind, on- and off-shore
- Biomass
- Electric vehicles
- Ocean and tidal energy
- Smart grids
- New building designs and technologies
New Resources
Ireland’s wind opportunity

Annual Electricity Demand vs. Wind Generation

- Total Wind Installed (GWh/yr)
- Peak Electricity Demand (GWh/yr)
the vision focuses on

- Electricity supplied by renewable energy sources, delivered via a smart, active grid. Renewable sources of heating for all sectors of society.

- This will be achieved through the intelligent deployment of resources and technologies underpinned by the best physical, regulatory and market infrastructure.
Wind: Debunking myths

- Wind is environmentally clean and underpins a move towards a low carbon economy: bringing economic, environmental and social benefits.
- The displacement of fossil fuels by RE saved €280m in fossil fuel imports with more than half of this saving made by wind.
- Wind is no more expensive than gas powered electricity: the growing wind component of the Irish electricity mix has served to reduce the wholesale price of electricity. Only a quarter of the PSO levy goes to wind and that a curtailment factor has to be built into gas powered plant too.
- In the past five years renewable energy has saved over €1 billion in fossil fuel imports; has reduced CO₂ emissions by 12 million tonnes and has not added to consumers’ bills.
- Ireland is highly dependent on imported fossil fuels, spending €6.5 billion per year on such imports.
Software and Hardware
this vision focuses on

• Innovative and intelligent technologies and behaviours driving high levels of energy efficiency in all end users

• This will be achieved through a suite of efficiency supports and innovations, working with enterprise to deliver low energy solutions.
SEAI & Local Authorities
Local Authority influences on energy sustainability

SEAI Public Sector Programmes

- National Spatial Strategy
- Energy Efficiency Action Plan
- SEAI Sustainable Energy Communities Programme

Local energy demand

- County Development Plans
- Local Renewable Energy Strategies

Own use of energy

- National climate end renewables targets
- National planning guidelines

Renewable Energy Supply

- Grid 25
- Local Planning Requirements

Regional Planning Strategies
## Wind and planning

<table>
<thead>
<tr>
<th>County</th>
<th>Applications</th>
<th>Granted</th>
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<tbody>
<tr>
<td>Meath</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>Roscommon</td>
<td>18</td>
<td>88%</td>
</tr>
<tr>
<td>Cavan</td>
<td>25</td>
<td>83%</td>
</tr>
<tr>
<td>Kerry</td>
<td>116</td>
<td>81%</td>
</tr>
<tr>
<td>Leitrim</td>
<td>24</td>
<td>76%</td>
</tr>
<tr>
<td>Sligo</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>Limerick</td>
<td>76</td>
<td>69%</td>
</tr>
<tr>
<td>Cork</td>
<td>145</td>
<td>65%</td>
</tr>
<tr>
<td>Donegal</td>
<td>171</td>
<td>63%</td>
</tr>
<tr>
<td>Wexford</td>
<td>44</td>
<td>53%</td>
</tr>
<tr>
<td>Galway</td>
<td>45</td>
<td>47%</td>
</tr>
<tr>
<td>Clare</td>
<td>41</td>
<td>44%</td>
</tr>
<tr>
<td>Kilkenny</td>
<td>22</td>
<td>44%</td>
</tr>
<tr>
<td>Mayo</td>
<td>66</td>
<td>35%</td>
</tr>
</tbody>
</table>
Local authority renewable energy strategies

• County development plans that consider energy planning:
  – Align plans with national targets
  – Facilitate consistent approach to renewables
  – Align with regional development plans
  – Ensure all available resources are considered
  – Provide appropriate signals to renewables developers
  – Facilitate planning and development of infrastructure
LARES
High Level Objectives

• Align County Development Plans with National Targets
• Facilitate Consistent Approach to RE by Local Authorities
• Ensure Alignment with Regional Development Plans
• Ensure All Available Resources are Considered
• Provide Appropriate Signals to RE Project Developers
• Facilitate Planning and Development of Electricity Infrastructure for Renewable Energy Projects
Social acceptance

• An important factor in the future expansion of wind and other renewables
• Good planning is essential: capturing our opportunities should reasonably reflect the interests of local communities.
• We need a careful and considered approach which is transparent and that involves meaningful consultation and local benefits.
• Wind developers must recognise the importance of ensuring people benefit directly from developments in their areas.
• A suite of principles and protocols for promoting community acceptance:
  – Spatial planning
  – Distributional justice: perceptions of shared gains
  – Procedural justice: decision making transparency and fair processes
Responding to change

- The right governance environment
- Debating the trade offs
- Predicting the future
- Innovation vs regulation
- Adaptability vs consistency
- What will it take to deliver the goals?
Conclusion
Conclusion: An opportunity for Ireland

• The sustainable energy agenda is more central to society than ever before: Growing our RE is also vital for our national competitiveness, giving us greater control over our energy prices.
• There is greater complexity
• The analysis reminds us that the challenges are also opportunities – for enterprise, export and employment.
• There is a range of goals, some aligned some not and there is an appetite for innovation
• Investment looks for certainty and transparency
• Should be strategic and coherent as much as possible
• We have a core imperative to reduce the negative impacts of energy use through greater efficiency and greater use of renewable sources.