

A photograph of two hikers on a mountain peak. One hiker, wearing a blue jacket and a pink beanie, is reaching out to help another hiker, who is wearing a red jacket and a white beanie, up a rocky slope. The background shows a vast mountain range under a clear sky. A decorative graphic of white concentric lines is overlaid on the right side of the image.

Five Years of Achievement

Our journey over the past 5 years required a balanced approach towards meeting the policy goals of secure energy supplies, competitive energy services and environmental protection. It involved championing the importance of sustainability in meeting the needs of society, the economy and the environment.

Our focus continues to be on pursuing a more sustainable development path and energy future for Ireland.

Our challenge entails raising standards of performance and implementing better ways of promoting, planning and delivering sustainable energy within Ireland. This involves innovation in a long-term process of market transformation.

Our success is determined by how well we form partnerships with other organisations and stakeholders in the public and private sector to deliver on our remit.

the following

values

will always underpin our actions

- *Independence in the exercise of our powers and the discharge of our functions*
- *Excellence in all our work with a strong commitment to best practice*
- *A creative and open stance to the support of policy, market and technological innovations*
- *Openness to adaptation and flexibility in the incorporation of new practices into our programmes and structures in pursuit of our objectives*
- *Effectiveness, with a results orientation and a commitment to breaking new ground in policy, programmes and market interventions*
- *Influence through the provision of well-timed and informed advice*
- *SEI is people-centred and values all stakeholders accordingly*

sustainable energy

our foundations

Sustainable Energy Ireland (SEI) was established as a statutory agency and commenced operations on May 1st 2002. Its board is appointed by the Minister for Communications, Marine and Natural Resources. Under the Sustainable Energy Act 2002 SEI is mandated to promote and assist:

- environmentally and economically sustainable production, supply and use of energy
- energy efficiency and renewable sources of energy
- the reduction of greenhouse gas emissions and transboundary air pollutants associated with the production, supply and use of energy

- the minimising of the impact on the environment of the production, supply and use of energy
- research, development and demonstration of technologies

SEI also provides advice, information and guidance - to the Minister and such other Ministers or bodies as the Minister may direct, and to energy suppliers and users

ireland



context for the SEI strategy

The establishment of SEI built on the achievements of the Irish Energy Centre and was the culmination of a process formally begun with the publication of the Irish Government's Green Paper on Sustainable Energy in 1999. The foundations of SEI were strongly reaffirmed in SEI's Five Year Strategy 2002-2007. This enabled SEI to set out its response to the policy agenda and to action its mandate of promoting and assisting environmentally and economically sustainable production, supply and use of energy across all sectors of the Irish economy. This mandate is in support of Government policy to meet its commitments under the Kyoto Protocol and in line with EU policy.

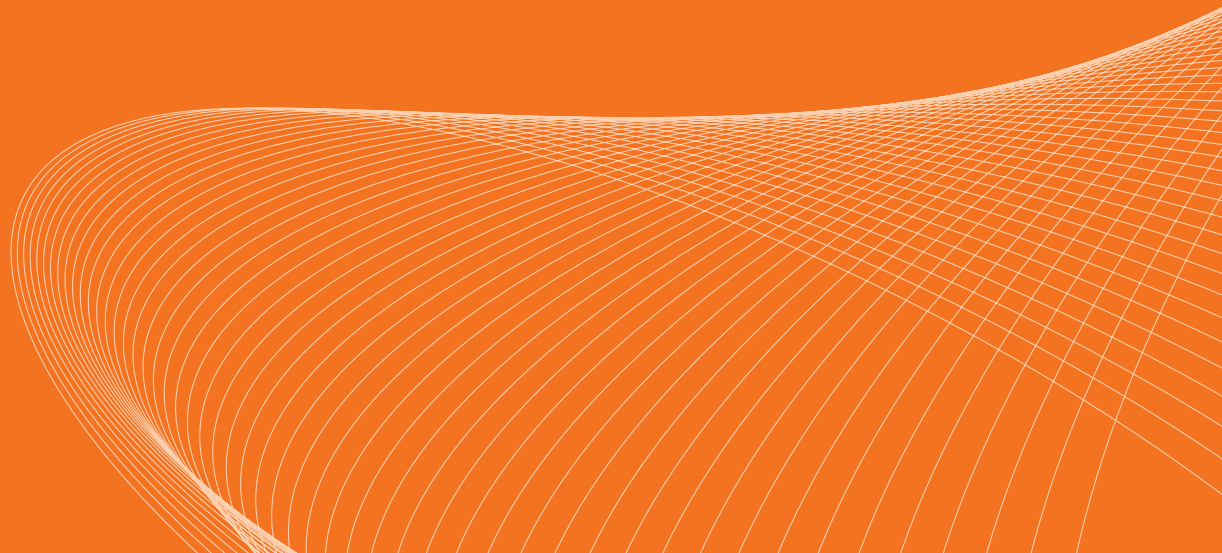
Climate change, rising fuel and electricity prices, and concerns about security of energy supply are all helping to focus attention on how best to address sustainable energy, in an innovative way. As Ireland's national energy agency we play a vital leadership role in promoting and in ensuring the timely implementation of energy efficiency and renewable energy. SEI advises Government, implements programmes, and engages with all sectors of the economy.

"Our mission is to promote and assist the development of sustainable energy".

"Our vision is that Ireland becomes a leader in embracing sustainable energy".

Following this vision over the past five years has meant promoting energy sustainability within public policy, business behaviour and private action.

**the building
blocks for
sustainable
energy**



Our key objective, since establishment, has been to mitigate, and where possible prevent, environmental and security of supply risks to energy supply and use in Ireland.

The past five years has witnessed a significant rate of energy service demand growth and associated environmental impact, and deteriorating competitiveness of supply. Our focus over the last five years has been on:



➤ Improving energy efficiency

➤ Advancing the development and competitive deployment of renewable energy sources of energy and combined heat and power

➤ Reducing the environmental impact of energy production and use, particularly in respect of greenhouse gas emissions

In providing the building blocks for sustainable energy SEI identified three key policy objectives going forward:

➤ Energy efficiency first

➤ Renewable energy deployment

➤ Integration and innovation

five years of achievement

SEI is committed to measuring and reviewing the impact of its activities. Over the past five years SEI programmes and projects have benefited consumers, communities, industries and Government bodies while reducing Ireland's CO₂ emissions, as well as our reliance on imported fossil fuel. Many of these programmes are highlighted over the coming pages and bear witness to the major strides that SEI, and Ireland as a whole, have taken towards a sustainable energy future.

energy efficiency first



- **12,000 Low-income houses** have been upgraded with energy-efficient features. These will contribute to reduced energy consumption and help provide affordable warmth while increasing comfort in each home.

- Funding support of over **€33 million** has been approved for 5,300 homes to be built to high environmental standards under the House of Tomorrow programme.

- **Over 150 Design Studies** and 'Model Solution' Demonstration projects have been approved. These are significantly improving the energy performance of public-sector buildings.

- €5 million in **Energy Savings** has already been achieved annually through Public Sector Approved Projects.

- 0.57 Mt CO₂ estimated cumulative savings have been achieved through **SEI's Industry Programmes** - this is equivalent to the CO₂ emissions of 57,000 homes.



renewable energy



➤ €27.3 million in total funding and investment has been committed to renewable energy research, development and demonstration projects. These are designed to **reduce our reliance on imported fuels**.

➤ SEI's Renewable Energy RD&D programme supported Ireland's first biomass Combined Heat and Power plant at Grainger's Sawmills in Co. Cork as well as supporting **13 District Heating and CHP** feasibility studies.

➤ **780MW** of Grid-connected wind energy is supporting the Irish economy. This is enough electrical energy to power over 340,000 homes annually.

➤ 48 capital support projects and 12 feasibility studies were supported under the Renewable Heat Deployment Programme. This will result in an approximate annual reduction of over 12,000 tonnes of CO₂, the equivalent of **eliminating 4,000 tonnes of oil per annum**.

integration & innovation

- **The Dundalk Sustainable Energy Zone (SEZ)** will guide an integrated approach to the delivery of energy services and will influence improvements in sustainable energy within the wider community and the region, leading to the development of a national model centred on Dundalk and its hinterland.



- **www.combatclimatechange.ie** encourages homeowners, families and schoolchildren to take action against man-made climate change and global warming.

- Over **1,500 education workshops** for primary and secondary schools involving 45,000 students have been provided by SEI since 2002.

- SEI's Energy Policy and Statistical Support Unit was formed to develop **comprehensive national statistics** on production and use. Its reports are highly valued by Ireland's energy policy makers and market players alike. The analysis and outputs inform many energy actions in Ireland today. EPSSU has produced 18 significant sectoral energy analysis reports since 2002.

energy efficiency first

Our goal is to improve energy efficiency in industry and commercial sector, public buildings and the residential sector. This is being achieved by reducing energy waste and managing energy more efficiently while still contributing to economic growth.

House of Tomorrow Programme

Launched in September 2001, this programme improves the quality of energy performance in Irish homes.

Today, a House of Tomorrow development exists in every county of Ireland, covering **5,300 homes in 124 developments with funding support of over €33 million**. The House of Tomorrow is now a sought after mark of distinction, and legislation proposed in the 2007 White Paper has embraced these



standards for all new homes in Ireland. Such proposals demonstrate the importance and success of this programme.

Case Study – Elm Park, Dublin

The House of Tomorrow Programme supported the construction of **336 residential units** in a prestigious development at Elm Park, Dublin 4. The key energy features include design for natural ventilation, low fabric u-values, LED lighting, the installation of two 500kW wood chip/pellet boilers and the deployment of a district heating network for space heating and domestic hot water supply. **Projected energy savings will exceed 40%.**

Public Sector Model Solutions Programme

This SEI programme promotes energy-efficient design, technologies and services to improve the energy performance of public-sector buildings. **151 projects** have been funded across almost every county in Ireland, in sports centres, local authority offices, public buildings and education establishments. Such projects **inspire and inform** building owners and operators to make more intelligent energy-investment and management decisions.



Naas County Council

The 12,500m² Naas County Council Offices are designed to minimise energy consumption. The energy efficiency improvement is estimated to be 70% better than good practice.

The “e3 Energy Management Bureau” for third level colleges enabled DIT, TCD, DCU and UCD to reduce energy consumption by 10% in 30 buildings, resulting in €428,231 in energy savings, or 1,700 tonnes of CO₂ emissions.

Low-Income Housing Programme



Over 12,000 Irish homes improved.

Many low-income householders are unable to afford the measures needed to improve the energy performance of their homes. SEI's programme is making a big difference by implementing a national plan of action that will reduce losses and improve comfort conditions in affected homes. Fourteen community based organisations are funded by SEI to provide this service around Ireland.

Dundalk Energy Efficiency Pilot

This private-sector delivered pilot project is providing a full complement of **insulation measures to over 170 homes.**

The houses will receive both attic and cavity wall insulation and will reduce energy loss by between 20 and 40%, depending on the measures applied.

Industry and Business Programmes

SEI has been working with the largest industrial energy users for more than ten years through the Large Industry Energy Network. The relationships built up in this programme are now growing stronger with many firms moving up to highest-level energy management via IS393, the new Irish Energy Management Standard.

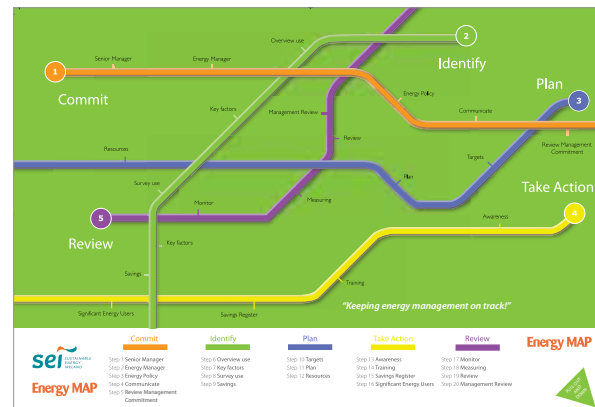
These firms are pioneering a new, **deeply strategic approach to energy management**, which is already proving itself and showing dividends.

The growing interest extends beyond Ireland, with many other states looking at such approaches and an EU energy management standard under development, influenced by the Irish standard.

In 2005 alone, Large Industry Energy Network participants undertook energy efficiency projects that resulted in avoided energy costs of €27 Million.



*The annual **Sustainable Energy Awards** recognise and reward excellence in energy management by groups and individuals.*



The Energy MAP

Energy MAP (Energy Management Action Plan) provides businesses with advice on structured energy management and the latest efficient technologies. Associated training and advice delivers tailored supports to all types of business.

All SEI's programmes for business emphasise a whole-company response, placing emphasis on the involvement of all staff. The **Power of One** campaign message, that all energy users can make a difference, will support this response.

renewable energy

Investment in renewable energy is vitally important to securing Ireland's future energy supplies. Over the last five years, SEI has supported research and investment, helping to establish the conditions for large-scale use of wind, and the development of ocean and bio energy technologies.

These initiatives have an immediate impact through reduced CO₂ emissions, and reduced reliance on imported fossil fuels.

Renewable Energy Research, Development and Demonstration programme (RERD&D)

Through the Renewable Energy Research, Development and Demonstration programme (RERD&D) SEI stimulates the development of renewable energy technologies in Ireland. This is a dynamic and expanding area of the energy market, and **107 national and international projects** have been funded to date.

Wind Atlas for Ireland

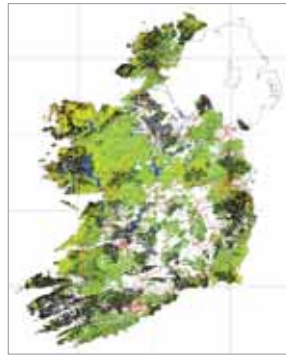
Until 2003, no resource existed for anyone who needed information on the optimum location for a wind farm in Ireland. SEI's Wind Atlas, launched in 2003 is now **the cornerstone of all wind farm design and development in Ireland**

Ocean Energy

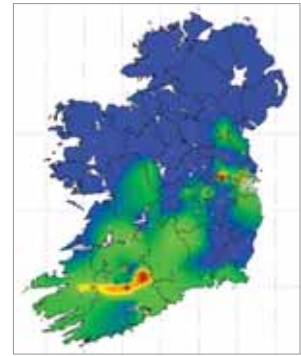
SEI co-developed an Ocean Energy Strategy with the Marine Institute in April 2006 and co-funded the establishment of an open sea test site in Galway Bay to facilitate large-scale trials of wave-energy technologies.

SEI has funded five ocean-energy developers, three of which have reached large-scale deployment. SEI funded three other wave-energy companies to perform modelling work at the Hydraulics & Maritime Research Centre in University College Cork.

Atlases for Ireland's renewable energy resources:



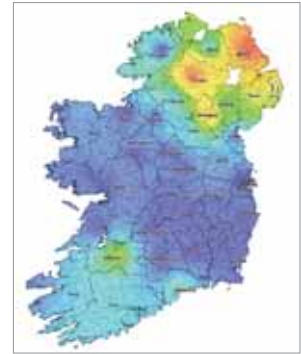
Wind



Geothermal



Tidal/Marine



Biomass



Open Hydro Turbine

SEI's Renewable Energy R,D&D programme supports the testing of three large scale ocean energy prototypes, one of which is the Open Hydro Tidal Turbine.

Alternative Heat

Greener Homes Scheme

Over 14,000 approved applications

Launched in 2006, this popular Government scheme has attracted over 14,000 applications. It supports homeowners who wish to install renewable energy heating technologies (wood pellet/chip stoves and boilers, solar panels and geothermal heat pumps) in their homes.

The Greener Homes grant support, Irish home owners to install renewable energy technology, substantially reducing emissions of CO₂ and cutting our dependence on fossil fuels



ReHeat

Launched in early 2007, **SEI's Renewable Heat Deployment Programme**, built upon the early successes of the Bioheat Programme. It aims to increase the use of solar, bioenergy and heat pump based heating systems in the commercial, industrial and public-services sectors by offering grant support of 30% of eligible costs. In 2006, **21 capital support projects** were approved resulting in a **reduction of 3,000 tonnes of CO₂ annually**.

integration & innovation

The third of SEI's key policy objectives integrates energy efficiency and renewable energy measures with projects that are aimed at inspiring sustainable energy communities and consumers.

This will help to stimulate Irelands transition to a sustainable energy future by introducing, in a holistic way sustainable energy technologies, promoting best practice and supported by the evidence of experience, comprehensive national statistics.

Dundalk 2020 programme

The Dundalk 2020 programme, initiated in 2006, encourages a community to aspire to high levels of energy efficiency and to **generate 20% of its heat and energy** from renewable sources. This community of consumers, businesses and public bodies - known as the **Dundalk Sustainable Energy Zone (SEZ)** - will demonstrate how an ideal community can better generate and use energy. Ultimately, the goal is to create a number of such zones nationally. This is just one of nine EU wide projects selected in the 2006 call.



Energy Policy Statistical Support Unit (EPSSU)

EPSSU was established to develop comprehensive national statistics on how we produce and use energy. Such information, never produced before, is crucial to informing the Government's policies and measures towards more sustainable energy. EPSSU's reports are instrumental in informing the development of Government policy, including the recent Green and White papers on energy. To date, **18 significant sectoral energy analysis reports** have been produced, including Energy in Ireland 1990-2004 and Security of Supply.

The reports serve to ground, inform and orchestrate the energy debate in Ireland and inform the business community in its energy investment decisions.



Doctoral Fellowship Programme

With funding from the EU, and in partnership with IRCSET, SEI continues to support doctoral and post-doctoral research programmes. In 2006, SEI helped to fund **seven new doctoral fellows**, working in such areas as grid integration of wind, and applied chemistry of biofuels. Such research paves the way for new technologies that could significantly influence Ireland's energy usage, enhance the overall capacity of Ireland and contribute to the knowledge economy. IRCSET is funded by the State under the National Development Plan.

Energy Show

Recognised as Ireland's major **national showcase for manufacturers and suppliers of sustainable energy technologies**, the SEI-organised Energy Show has been held since 1996. The show provides an excellent forum for suppliers and customers of sustainable energy technologies to meet, share views and transact business.



Integrating Wind into the Electricity Market



Currently, Grid-connected wind farms around Ireland deliver **780MW** of energy: enough energy to power over **340,000 homes**. Since wind energy was first developed in this country, we have been on a steep learning curve. SEI has initiated and funded landmark studies and programmes to help Ireland gain the maximum benefit from this **powerful renewable energy**.

Education programme for primary and secondary schools

The SEI education programme aims to bring the topic of energy **into the classroom** in a vibrant and interactive way. If children are educated at an early age about the benefits of energy efficiency, it will become a habit for life and inform their attitudes and values. Furthermore, these children will also act as influencers on their parents' habits.

Over 1500 education workshops involving approximately 45,000 students for primary and secondary schools have been provided by SEI since 2002.

Case Study: Guzzler's Primary Schools Website

The Guzzler character has proven hugely popular with primary students and features heavily in a number of SEI's education resources for primary schools. Teachers and students can now log on to learn more about sustainable energy, through the new-look Guzzler website which includes tips on energy efficiency; online activities; and information on SEI's nationwide interactive workshops.



In 2005, SEI developed www.combatclimatechange.ie to introduce visitors to the science behind climate change, to offer tips and advice, and to provide a variety of school resources.

what the future holds

*Statement from
David Taylor, CEO, SEI*



As energy demand continues to grow worldwide, there is mounting concern about oil and gas reserve depletion and the prospect of continued price volatility. Ireland relies heavily on imported fossil fuels to meet its transport, heat and electricity requirements, and this dependence is expected to remain high for the foreseeable future.

Growing energy demand, diminishing resources and environmental impacts characterise the energy landscape and the challenges to be addressed.

Fossil fuels that remain relatively abundant, principally coal, involve a high carbon content and hence the environmental cost of utilising such energy resources may be much higher than envisaged.

However, the prospects of exploiting our renewable energy resources are growing brighter. Decreasing costs, improved technologies, new and more consumer-friendly applications are making the renewables market increasingly attractive to consumers and industry alike.

Of course exploiting the full value of our renewable energy resources can only happen if we first reduce our energy demand and use energy more intelligently. This requires both technical development and behavioural change. Innovation in how we use and manage our energy is part and parcel of creating a new energy system that is clean, intelligent and cost-effective.

The recently published White Paper, *Delivering a Sustainable Energy Future for Ireland*, sets out the following goals for 2020:

- energy efficiency is improved by at least 20%
- renewable energy accounts for 33% of Ireland's gross electricity consumption
- biofuels account for 10% of road transport fuels

In order to meet these goals it is anticipated that renewable energy technologies such as wind, bioenergy, solar and ocean will grow significantly (12.5% per annum) from 2005-2020, providing much more sustainable electricity, heat and transport energy.

At SEI, we see a future Ireland where Government, business, families and individuals work together to make sustainable energy a key part of our everyday lives; where it is clear to all that sustainable energy solutions improve our lives, our environment and our economy. Over the next 10 to 15 years we expect to see:

- the use of fuel-efficient vehicles and public transport the norm rather than the exception
- homes and workplaces that have significantly higher energy performance as standard, using a variety of technologies from improved insulation to solar power
- significantly higher energy efficiency in business, industry and the public sector
- Irish entrepreneurs and universities generating new low-carbon technologies and solutions, as well as the individuals to apply them
- farmers growing crops that can help meet our energy needs
- businesses exploring the full potential of wind, wave, solar and biomass energy

These are ambitious goals, but there is tremendous potential for us to be more energy efficient, as well as more energy self-sufficient. Everyone has a part to play, and it is SEI's role to ensure that we understand and exploit all opportunities available to us to meet these important goals. If we all work together then Ireland has the potential to be a model on which other countries base their sustainable energy policies.

Those of us at SEI are working hard to make a difference. Over the last five years we have achieved a lot and this brochure highlights some of that success. But this is only part of a long-term strategy. We will continue to work hard in the years ahead as Ireland embraces the benefits of sustainable energy, both for our lives and for the environment.



Acknowledgements

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