



**Renewable Energy
Research Development and Demonstration Programme**

**Revised Programme Strategy
May 2004**

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1. INTRODUCTION

The SEI Renewable Energy Research Development & Demonstration Programme (RE RD&D) Strategy was published in the summer of 2002, and was launched in response to Ireland's Green Paper on Sustainable Energy. The programme was originally allocated an indicative budget of €16.25m (NDP) and provided support for product R&D and technology demonstration. To April 2004, a total of €7.5m has been committed to projects in; biomass, ocean, wind, solar, geothermal and hydro energy. The Programme Strategy has now been reviewed and refined based on:

- Lessons learned and experience from activity to date
- Outputs from programme to date, and further work recommended
- Current RE policy issues (regulatory, fiscal)
- Emerging technology priorities for Ireland
- International developments
- Budgets

This RE RD&D programme refinement is aimed at more clearly focusing the programme over the next 18 months (at which point it will again be reviewed). This exercise included updating programme goals, identifying targeted funding opportunities and justifying public funding expenditure. The programme refinement will allow the RE RD&D Programme to be flexible, respond to high priority areas, and instigate significant growth in the sector. The priorities for funding in various technologies are outlined in Section 4¹.

The goal of the programme is to make a positive impact on the implementation of renewable energy in Ireland². The refined programme strategy will thus focus on areas that can have a significant impact in Ireland with utility-scale, grid connected RE featuring strongly. The programme will seek those applications that present excellent possibilities for replication and acceleration of the take up of appropriate RE.

This document outlines the context, principles, and priority funding areas for the refined RE RD&D Programme.

1.1 Irish Context for Renewable Energy

The Irish energy sector is in a dynamic period of change. It is important to place the RE RD&D within the wider energy sector and current regulatory, policy, and economic frameworks. The following list is indicative (rather than comprehensive) of relevant aspects of the energy sector to RE.

- Ireland is updating its regulatory and policy regime as it applies to the RE sector.
- There is likely to be a new fiscal support policy for RE put in place by the Government
- There is ongoing development of a new electricity market structure in Ireland at both the wholesale and retail levels.

¹ A comprehensive discussion of renewable energy is not included in this revision. SEI's Energy Policy Statistical Support Unit (EPSSU) is preparing a document on renewable energy statistics in Ireland (for release in Q3, 2004), and further information can be found through the services of SEI's Renewable Energy Information Office (REIO).

² The SEI RE RD&D programme is **not** a replacement for a national fiscal support mechanism for renewable energy. The Minister for DoCMNR is currently progressing a process on the formulation of a new fiscal support mechanism (post AER 6) in conjunction with wide industry consultation.

- There are numerous technical considerations (nearly) unique to Ireland's electrical system (little interconnection, import dependent, low capacity margins).
- There is growing interest in the use and production of biofuels in Ireland.
- Deployment of biomass based heat and power systems is minimal compared to elsewhere in Europe.
- Ocean energy is at an early stage of technical development, but the potential resource in Irish waters is significant.
- There are large obstacles to wind farm development (primarily integration into the electrical grid) despite the large resource and mature technology.
- There are challenging emissions (GHG and transboundary) targets (NECD, LCPD, RES-E, Kyoto, etc.).
- European Directives are becoming increasingly important in this area (eg RES-E, and Biofuels).

A well-focused RD&D programme is an essential component for addressing these challenges. Applicants for support under the programme are referred to the 'General Information and Conditions' guidance available on the web at www.sei.ie.

2. PRINCIPLES

The RE RD&D Programme aims to stimulate the deployment of RE by:

- Accelerating the development and deployment in the Irish marketplace of competitive renewable energy products, processes and systems.
- Providing support for solutions that enable technical and other barriers to market uptake and/or modal switching to be overcome.
- Establishing, where necessary, and strengthening, where possible, a national capacity to access, develop and apply international class RD&D in a way that can best meet specific Irish needs on a continuing basis.
- Facilitating and providing guidance to policy makers

These remain the core goals of the programme. In addition the programme will seek to:

- Target specific technologies
- Support only high quality, well founded projects
- Attain value for money in all project and commissioned work
- Encourage replication of demonstrations
- Undertake effective dissemination of information gained and lessons learned
- Measure and evaluate the success of funded projects
- Be flexible, within the priorities set out
- Have an impact on:
 - further grid integration of RE electricity
 - electricity market integration

3. WORK PROGRAMME

3.1 Action Lines

The main focus of the RE RD&D programme is on stimulating the deployment of renewable energies. As such, the following types of RD&D activities will be given priority:

- Demonstration of technology innovation: aimed at higher risk, major projects that represent significant technical advances and/or cost reductions and have good replication potential;
- Innovative market demonstrations, where proven technology is used to demonstrate non-technical innovation (e.g. contractual arrangements, financing) for applications with high replication potential;
- Independent monitoring of projects/technologies;
- R&D aimed at the integration of renewable energy into the electricity market and the national electricity grid (and network)
- R&D into overcoming the barriers to development and deployment of large scale RE projects;
- Data monitoring, forecasting, communications and control of large RE systems
- Specific applied research projects in renewable energy fields by research centres, third-level institutions and centres of excellence with a high level of expertise in the relevant area;

3.2 Funding Mechanisms

The programme is open to a wide range of research, development and demonstration projects under the support mechanism categories proposed in the Green Paper. This categorisation, and the level of support in each case, is related to the character of benefits and risks involved.

- 1. Shared cost Demonstration:** Projects demonstrating particular Renewable Energy technologies or applications which, although at or near commercial viability and having potential for replication, currently face market barriers due to lack of expertise, knowledge or market confidence. The objective here is to gain information which will be made available to potential replicators to encourage action without further financial support under the programme. To facilitate this, independent monitoring at the programmes cost may be required.
- 2. Shared cost R&D:** Research and development into innovative technologies, systems or marketing approaches which support the commercial exploitation of Renewable Energies, including applied research and development, technology transfer and adaptation and market research/feasibility studies.
- 3. Commissioned public good activities:** activities directed at increasing the value and impact of the programme results, which will ultimately be used to inform policy (commissioned by separate Invitations for Tender only – not open to *ad hoc* proposals).

All funding is subject to European Community limits on levels of State Aid. Funding support is expected to be available at up to the following percentages of eligible project costs:

- | | |
|-------------------------------------|--|
| 1. Shared cost Demonstration | up to 25% (in some cases up to 10%) |
| 2. Shared cost R&D | up to 45% |
| 3. Public good R&D | up to 100% |

Funding will be dispensed in the form of grant support.

4. RD&D PRIORITIES

This section briefly summarises the support given up to April 2004 and sets out priorities for new project funding until further notice. SEI reserves the right to support projects outside this scope in exceptional circumstances. In all cases potential applicants are strongly encouraged to discuss potential projects with SEI before submitting applications.

Projects should show clear replication potential as well as detailed information dissemination plans that will facilitate the principal programme goals. Applications should be clear, concise, well researched, and present rigorous preparation with detailed explicit outcomes and deliverables.

The main priorities are for projects in the categories of: Biomass, Wind, Ocean, and technologies and systems that facilitate the integration of these technologies into the electricity market and grid³.

Other categories listed are hydro, geothermal, solar and ground source heat pumps.

³ SEI will continue to commission public good research studies in priority areas, these topics do not form part of this document in the interests of brevity and clarity.

4.1 Biomass

Biomass refers to vegetation, organic residues and photosynthetic organisms. These are non-fossil, renewable resources from which energy can be produced. Energy from biomass can produce electricity and/or heat and liquid or gaseous biofuels for transport can also be derived from biomass sources.

In contrast with some other RE sources, energy from biomass offers the advantage of producing reliable scheduled power output from stored biomass.

Along with national commitments to the Kyoto Protocol, a range of EU directives provide stimulus to the market for biomass energy in Ireland:

- Directive 2001/77/EC: Promotion of Electricity Produced for Renewable Energy Sources in the internal electricity market, states a 13.2% target for electricity produced from renewables sources by 2010 for Ireland.
- Directive 2003/30/EC Promotion of the use of Biofuels for Transport states a target of 2% of transport fuel should come from biofuels by 2005 and 5.75% by 2010
- Directive 1999/31/EC on the Landfill of Waste states level of biodegradable waste going to landfill sites by 2015 should not exceed 35% of 1995 amount. Vegetable oil and other liquid will be excluded from landfill sites.
- Animal By-Products Directive states that recovered vegetable oil can no longer be used as animal feed by 1st Nov 2004.

In response to the above influences, the biomass technology categories supported by the RE RDD programme are as follows:

- Biomass CHP
- Biomass Heating
- Biogas Anaerobic Digestion
- Liquid Biofuels

4.1.1 Biomass CHP

Installed Capacity (MW)	0
Final Energy Consumption (TJ)	0
RE RDD budget committed to date to this category	€ 1,180,000
% RE RDD Programme budget committed to this category to date	16%

Projects Supported Up To April 2004

- SWS Group Ltd - Technical and Economic Evaluation of the Feasibility of developing a small scale wood residue Combined Heat and Power (CHP) plant with integrated wood pelleting technology in an Irish Sawmill facility
- Glanbia Plc - The study investigates opportunities for reducing energy / operational costs for the milk suppliers and customers serviced by Glanbia Plc.
- Iveragh Co-Op – Feasibility of a Optimised Biomass CHP Plant & Wood Pelleting Plant
- Glanbia Plc - Feasibility of a Wood Fueled Boiler/CHP & Wind Energy
- Balcas Kildare Ltd - Feasibility of the Manufacturing of wood pellets with biomass CHP
- SWS Group & Irish Softwoods Ltd - Construction and Operation of a small-scale wood fired biomass CHP plant at Grainger Sawmills Ltd. The aim of this project is to build a 1.8 MW_e wood fired biomass CHP plant in Grainger Sawmill, Co. Cork.
- Centenary Co-Op - Wood Biomass Substitution for Oil, CHP and Wood Pellet Production.
- Participation in IEA Bioenergy Implementing Agreement

Commissioned Work:

- Electrowatt Ekono: “Biomass Co-firing”

Priorities for further projects

The current focus of the programme is to demonstrate medium scale biomass CHP for applications > 10MW_e. The priorities are therefore as follows:

Design Study Priorities

- Up to 45% support for 1 biomass CHP feasibility study where electrical power is greater than 10MW_e.

Demonstration Priorities

- Up to 10% support of eligible costs for 1 biomass CHP plant where electrical power produced is greater than 10MW_e.

4.1.2 Biomass Heat

2002 Final Energy Consumption	6,365 TJ Heat
RE RDD funds committed to date to this category	€ 240,000
% RE RDD Programme funds committed to this category to date	3%

Heating from wood pellets and wood chips is an increasingly popular form of renewable energy heating successfully used across Europe. Pellet and chip production and boiler technologies are considered to be at mature states and well understood.

These technologies could prove to be commercially viable heating options for Ireland. In order to stimulate the use of wood residues for heating purposes, the RE RDD programme will provide support to projects that promote both the supply of wood pellets and chips and the demand for wood pellets and chips.

Projects Supported Up To April 2004

- Clearpower Ltd - Feasibility study into installing a renewable wood pellet fuelled system to heat the renovated workhouse and adjacent local authority buildings.
- Clearpower Ltd - Fermoy wood pellet manufacturing plant feasibility study
- Tipperary Creamery Co-Op - Feasibility Study into the establishment of a wood pellet plant in the Tipperary Region.
- Coillte - A large scale commercial installation of a wood pellet / wood chip fuelled boiler in Ireland.

Commissioned Work:

- MC O’Sullivan: “An Assessment of the RE Resource Potential of Dry Agricultural Residues in Ireland”

Priorities for further projects:

SEI intend to stimulate the creation of a detailed biomass heating programme. Further details will be made available in Q4 of 2004. The new programme to be detailed will outline fiscal support for wood heating utilising pellets or wood chips across various sectors. It is likely that industrial use will be prioritised. Relevant parties are invited to register their interest with SEI.

An example of the requirements for support will be as follows:

- Evidence of long term supply of the required quantity of biomass fuel
- Fuel quality test procedures
- Thermal load profile for site
- Capital cost
- Cost benefit analysis for biomass boiler compared with oil and gas
- Evidence of suitably qualified personnel and suppliers
- Ash disposal route
- Maintenance schedule

Although the primary focus of this section of the programme is on the use of wood pellets and chips for heating, other sources of dry biomass heating include straw and poultry litter. Support for these technologies will also be considered and the same criteria as above will apply.

Design Study Priorities

- Up to 45% support for 1 feasibility study for the production of wood pellets.

Demonstration Priorities

- Up to 25% support of eligible costs for 1 wood pellet production plant where production is greater than 20,000 tonnes of wood pellets per annum.

4.1.3 Anaerobic Digestion (AD)⁴

2002 Installed Capacity power from Biogas (MW)	15 MW electricity
2002 Gross Electricity Generation from Biogas	291.6 TJ Electricity
2002 Final Energy Consumption from Biogas	180TJ Heat
RE RDD funds committed to date to this category	€ 1,540,000
% RE RDD Programme funds committed to this category to date	21%

Anaerobic Digestion can provide a technical solution to the national requirements to produce energy from renewable sources and reduce the amount of organic waste delivered to landfill sites. The aim of the RE RDD programme is to support the successful demonstration of this technology applied to a range of feedstocks and project scales in Ireland.

Projects Supported Up To April 2004

- Freshford Plc - Feasibility study to build a Greenhouse Digester incorporating tropical gardens, water hyacinths and a swimming pool complex in Freshford.

Commissioned Work

None to Date

Priorities for further projects:

Design Study Priorities

- Up to 45% support for 1 feasibility study.

Demonstration Priorities

- Up to 10% support of eligible costs for 1 AD plant where electrical production < 2MWe.

⁴ Landfill Gas is considered to be a mature technology and is supported under the AER process. There is considerable operational and technological experience in this area in Ireland. Thus, in this programme revision there are no specifically stated priorities.

4.1.4 Liquid Biofuels

Final Energy Consumption May 2003-May 2004	567000 MJ
RE RDD funds committed to date to this category	€ 320,000
% RE RDD Programme funds committed to this category to date	4%

The EU Directive on Biofuels states that member nations should aim to produce 2% of all transport fuels from biofuels or other renewable fuels by 2005. This figure should then be increased to 5.75% by 2010 (These are both reference figures).

Based on the spirit of the Directive and the ban on the use of recovered vegetable oil in animal feed and limited disposal methods, there is increasing opportunity in Ireland to produce liquid biofuels for sale into the Irish market.

The aim of the RE RDD programme in this area will be to demonstrate the viability of the market for indigenously produced liquid biofuel products in Ireland. Key to the commercial success of biofuel production is the rate at which excise duty is charged on biofuel products. In the recent Finance Act, provision has been made to grant excise relief to Pilot Demonstration plants. Decisions on excise duty remission will be made by the Department of Finance (DoF) in consultation with the Department of Communication Marine and Natural Resources (DoCMNR) (likely to be finalised in Q3 2004).

A capital support programme by SEI is currently being designed. It will be utilised to support and work in coordination with the efforts of the DoF. The details of the programme should be released in Q3 of 2004. Interested applicants are invited to register with SEI.

The most readily available feedstocks in Ireland are considered to be:

- Recovered Vegetable Oil (RVO) – waste cooking oils
- Tallow - product of rendering process
- Vegetable Oil – produced by pressing e.g. oil seed rape
- Sugar beet or wheat

Projects Supported Up To April 2004

- Biogreen Fuels Ltd - Vegetable oil production, extraction and use in modified vehicle engines in Co. Wexford

Commissioned Work

- Clearpower Ltd.: "A Resource Study on Recovered Vegetable Oil and Animal Fats"
- Ecofys: Study on Biofuels
- Teagasc: Rape Seed Oil Standards

Priorities for further projects:

Design Study Priorities

- Up to 45% funding is currently available for 1-2 feasibility studies

Likely Demonstration Priorities

The following projects are likely to form the basis for the SEI capital support programme. They remain indicative until a final detailed programme is announced.

- Up to 10% support will be provided for Vegetable Oil Presses where $500 \text{ kLitres} \leq \text{production} \leq 3,000 \text{ kLitres}$. Support will be provided for up to a 1-2 plants or up to a total production of 6 Mlitres
- Up to 10% support will be provided for 1 Biodiesel Plant where $15 \text{ Mlitres} \leq \text{biodiesel production} \leq 25 \text{ Mlitres}$
- Up to 10% support will be provided for 1 Bioethanol Plant where $15 \text{ Mlitres} \leq \text{bioethanol production} \leq 25 \text{ Mlitres}$

4.2 Wind (and RE Electricity)

2004 Installed Capacity	226 MW (as of May 2004)
2002 Gross Energy Generation	1396.8 TJ Electricity (2004 estimated energy generation = 1,781 TJ Electricity)
RE RDD funds committed to date to this category	€ 3,000,000
% RE RDD Programme funds committed to this category to date	40%

Increasing the penetration of renewable energy will require electricity system reinforcement and novel approaches to system design, operation, protection and commercial arrangements. Rigorous analysis will be required to investigate and inform the integration of intermittent RE systems within the wider generating plant portfolio and the electricity market.

Onshore Wind Energy

In Ireland wind energy is developing rapidly, with about 201 MW installed capacity as of May (plus an additional 25 MW offshore)2004, and a stated government objective of an additional 500 MW of electricity from RE sources by 2005, most of which is likely to be from onshore wind. Onshore wind energy technology is well developed, although there is still scope for further technical development and cost-reduction, particularly in rotor technology, variable speed generators and drives, and controls. Key issues for onshore wind are more likely to be creating the correct conditions (electrical network, and fiscal) for the integration and further deployment of wind energy.

Offshore Wind Energy

Offshore wind energy technology is less well developed than the onshore equivalent. There is currently only one offshore wind farm (25 MW Airtricity/GE). Ireland may be well suited to the development of offshore wind energy because of a favourable wind resource available in relatively shallow waters and in the vicinity of both load centres and the transmission network.

Projects Supported Up To April 2004

- Qinetiq: "Investigating the Effects of Wind Turbines on MSSR Radar Tracking in Ireland"
- Riso Laboratories: "Offshore Wind and Industry Development"
- Aertech - Evaluation of wind turbine foundation behaviour.
- Institute for Numerical Computation & Analysis/Airtricity Ltd - The influence of mounting booms and towers on wind speed measured by anemometers
- Veelite Lighting Ltd - Feasibility study on small Vertical Axis Wind Turbine.
- CENER - Definition of a Monitoring Programme for Irish Wind Farms.
- ERC, University College Dublin - The development of benchmarked dynamic wind-turbine and wind-farm models suitable for use within the power system community of the Republic of Ireland.
- Dundalk Institute of Technology - Development of a 1.2 kW Domestic Wind Turbine

- Gaoth Tec Teo - To develop new thermoplastic composite wind turbine blades and revolutionary manufacturing methods for the European wind industry based on the expert application of superior, cost effective materials and methods.
- Participation in IEA R&D Wind Implementing Agreement

Commissioned Work

- ILEX: "Impacts of Reserve on Increased Wind Penetration"
- Brattle Group: "Renewable Energy in the New Electricity Market"
- PB Power: "Costs and benefits of Distributed Generation"

Priorities for further projects:

Design Study and Demonstration Priorities

Onshore: Some specific priorities for onshore wind energy funding would be:

- Demonstration Projects of innovative wind energy applications (including autoproduction)
- Data monitoring of energy production
- SCADA systems for wind farms
- System modelling
- Integration of large scale wind farm energy penetration into electricity grids
- Wind Energy Forecasting

Offshore: Some specific priorities for offshore wind energy funding would be

- O&M of wind turbines and farms,
- Integration of offshore wind energy into Ireland's electrical infrastructure and
- Data monitoring.

4.3 Ocean Energy

Installed Capacity	0
Gross Energy Generation	0
RE RDD funds committed to date to this category	€ 350,000
% RE RDD Programme funds committed to this category to date	5%

Ocean Energy includes wave and tidal energy, whereby the energy in the waves or tides is converted to electricity or some other form of energy. The most advanced wave energy devices are currently those designed to be mounted on, or near to, the shoreline. However offshore devices in waters of depths greater than 40m may offer greater opportunities in the future as they can avail of the greater wave energy regime in the deeper waters. Tidal stream devices offer the potential to harness the energy contained in daily fluctuating currents.

Most wave and tidal technology is still at the development stage, and is not yet ready for commercial deployment in Ireland. The most important objective now for these devices is to demonstrate their performance at full scale in order to build confidence in their operation under real sea conditions.

Applicants must demonstrate a strong technical background and be able to describe satisfactorily the theoretical performance of a proposed device. The theoretical model must be used to present evidence for the performance and cost of the proposed device. It is recommended that all interested applicants familiarise themselves with and apply the International Energy Agency - Ocean Energy System document on the "Development of Recommended Practices for Testing and Evaluating Ocean Energy Systems".

Projects Supported Up To April 2004

- Ocean Energy - To provide the definitive engineering specification to allow the construction and deployment of a 1MW wave energy pilot plant off the Irish west coast
- WaveBob – Scale modelling and wave tank testing programme
- ESBI - Inshore Atlantic Wave Regime: Co. Clare
- Participation in IEA Ocean Energy Implementing Agreement

Commissioned Work

- Kirk McClure Morton: "Tidal and Marine Current Energy Resources in Ireland"
- Peter Bacon & Associates with ESBI "Economic Benefits from development of Ocean Energy" in conjunction with Marine Institute

Priorities for further projects

Design Study Priorities

- Up to 45% support is available to examine technical feasibility studies for 1-2 wave or tidal energy devices.

R&D Priorities

- Up to 45% support is available for 1-2 applicants wishing to demonstrate prototype wave or tidal energy devices.

4.4 Enabling Technologies and Systems

Installed Capacity	292 MW
2002 Gross Energy Generation	1267 TJ Electricity
RE RDD funds committed to date to this category	€ 50,000
% RE RDD Programme funds committed to this category to date	1%

Ireland is in a unique position in Europe in regards to its electricity system. It has ready access to large amounts of intermittent wind and wave energy, however, the realities of a synchronous island grid with minimum interconnection, currently low conventional plant availability, forecasted low capacity margins, and a rapid growth of wind energy penetration create a number of complex issues for system operation.

In this situation, rapidly increasing wind energy penetration levels presents a challenge and an opportunity, which will require particular attention to both system design and operation. In addition, the use of energy storage systems or controllable DSM in Ireland could allow the increased penetration of intermittent electrical energy sources such as wind and wave energy. This may increase the nation's ability to access and exploit its renewable energy potential.

Projects Supported Up To April 2004

Commissioned Work

- UCC: "Study Of Electricity Storage Technologies And Their Potential To Address Wind Energy Intermittency In Ireland"

Priorities for further projects

Design Study Priorities

- Up to 45% support is available to examine specific technical feasibility studies for energy storage technology options. Successful applicants here must demonstrate significant technical ability in the area of energy storage. It is intended to support up to 2 projects in this category.

Demonstration Priorities

- Up to 10% support is available for 1 applicant wishing to demonstrate a prototype energy storage technologies in conjunction with intermittent renewable energy sources such as wind or wave energy. Technical options here could include Hydrogen or compressed air storage for example.
- Up to 10% support is available for 1 applicant wishing to demonstrate a prototype demand side management system that will allow aggregation and control of loads in real time in conjunction with intermittent renewable energy sources such as wind or wave energy. The project will require a consortium of stakeholders.

4.5 Hydro

Installed Capacity	530 MW
2002 Gross Energy Generation	4450 TJ Electricity
RE RDD funds committed to date to this category	€ 405,000
% RE RDD Programme funds committed to this category to date	5%

The Hydro section of the programme has been well subscribed to with three demonstration projects supported to date. The use of hydro power for autoproduction has not been adequately demonstrated however. Therefore, support remains available for a suitable project in this category.

Projects Supported Up To April 2004

- Tarmonbarry Hydroelectric Ltd - An Environmentally Friendly Low Head Small Hydro Implementation Solution
- Dr Martin J Leahy - Case Study of a modern small hydro generating station
- Water Power Services - Annagh Lodge Hydroelectric

Commissioned Work

(None to date)

Priorities for further projects

Demonstration Priorities

- Up to 10% support is available for 1 demonstration of industrial-scale autoproduction hydro power. This example must illustrate the cost benefit of using autoproduction.

4.6 Geothermal

2002 Gross Energy Generation	10 TJ Heat
RE RDD funds committed to date (€) to this category	€ 170,000
% RE RDD Programme funds committed to this category to date	2%

The use of geothermal energy from the earth’s core, is not widely used within the EU. Recent projects in Germany and Switzerland have attempted to pump cold water down into warm rock below then return the warm water to the surface for heating purposes.

A study to investigate the potential of geothermal energy in Ireland has been supported by the programme.

Projects Supported Up To April 2004

- CSA - Geothermal Energy Exploitation in Ireland – Review, Strategy Framework and Demonstration Project

Commissioned Work

(None to date)

Priorities for further projects

Design Study Priorities

- Up to 45% support is available to perform 1 technical feasibility study to investigate the technical and economic potential of using geothermal heating systems in Ireland.

4.7 Solar & Ground Source Heat Pump

2001 Gross Energy Generation (solar thermal only)	7 TJ Heat
RE RDD funds committed to date (€) to this category	€ 245,000
% RE RDD Programme funds committed to this category to date	3%

These technologies are well understood with several demonstrations currently supported around the country. The SEI Public Sector Programme has to date supported 12 GSHP projects totalling 730 kW, and 11 solar thermal projects totalling 270 kW. Support through the RE RD&D Programme will be limited to those demonstrations that demonstrate a level of technical or market innovation, and are not similar to those projects already supported.

This programme is not open to passive solar applications.

Applicants interested in pursuing R&D or Demonstration projects in this field are also referred to the House of Tomorrow programme which is operated within the Built Environment department of SEI.

Projects Supported Up To April 2004

- Systemlink Ltd. - GroundLink (ground source heat pump with improved COP)
- Dunstar - DACH Certification of heat pump line
- Shamrock Solar Energies Ltd - Multiple Renewable Energy Heatpump System
- Danish Energy Authority - CTO for active solar thermal energy in Ireland – Phase One: Action Plan and Strategy
- Youngfield Workshops Ltd - Research, Development & Demonstration of Microprocessor-Controlled Sunspaces with Air-Circulation, Passive Ventilation, Shading and Insulation Systems as a Device for Energy Efficient Heating of Buildings
- Arsenal Research (Austria): "Campaign for Take Off for renewable heat pumps in Ireland"

Commissioned Work

(None to date)

Priorities for further projects

Demonstration Priorities

a) Active Solar Thermal Systems:

Funding will be made available for **1 large-scale solar thermal demonstration** project.

Applications are only eligible in the following sectors, with a strong preference for an application in commercial facilities:

- Hospitality Sector: hotel, youth hostel, camp site, etc. Indicative size: 50-100 m²
- Shopping Centre: Indicative size: 50- 100 m²
- Private Sector Sports Complex. Indicative size: 100-200 m²
- Health Care Sector: clinic, nursing home, spa, etc. Indicative size: 40-80 m²
- Agricultural & Industrial Heat: creamery, fishery, low-temperature process heat, warehouse heating. Indicative size: 100-200 m²

Preference will be given to a solar thermal system installed in conjunction with another green heating system (wood boiler, heat pump, etc.).

b) Ground/water/air Source Heat Pump Systems:

Funding will be made available for **1 large-scale heat pump demonstration** project.

Applications are only eligible from within the following sectors, with a strong preference for an application in commercial facilities:

- Private office building with heating and cooling needs. Indicative size: 200 kW +
- Hospitality Sector: hotel with heating and cooling need. Indicative size: 200- 500 kW
- Shopping Centre for heating and cooling. Indicative size: 200- 500 kW
- Private Sector Sports Complex. Indicative size: 100-300 kW
- Agricultural and industrial heat: fishery, creamery, low-temperature process heat. Indicative size: 100 – 500 kW or more

c) Solar Photovoltaic System:

Funding will be made available for **1 medium-scale solar PV system**, grid connected, with a power capacity of > 10kW.

This system should be on a highly visible building, in an urban environment.

5. PROGRAMME MANAGEMENT

5.1 Submitting a Proposal

Prospective applicants are strongly advised to discuss their idea with SEI staff before formal submission. This will save wasted effort on proposals that will not meet the criteria for support and enable staff to give guidance on how best to present a proposal to meet SEI's needs. It should be noted that staff can only give guidance, full evaluation is necessary before support can be given.

Costs incurred by applicants, before formal approval of support from SEI has been granted, will not be eligible for support. Applicants should allow approximately 3 months from receipt of application to delivery of contract before commencing the proposed project. All project start/finish dates, milestones and deliverables included in the proposal should allow for this response time in the planning process.

5.2 Proposal Evaluation

The programme is organised and managed by SEI. Advice on the programme strategy and support of individual proposals is also taken from the Energy Investment Advisory Committee. Where necessary and appropriate, proposals may be submitted in confidence to external independent experts for evaluation.

The detailed procedures for inviting, evaluating and approving proposals, and for contract management, are designed to ensure that the process is transparent, and that outcomes are based on independent and impartial advice in relation to compliance with the terms of the notification or call for proposals and value for money. The complete Sustainable Energy Ireland evaluation manual is available from SEI and can be downloaded from the SEI website at www.sei.ie.

Proposals are evaluated to determine:

- Administrative compliance with programme requirements.
- Technical compliance with programme category requirements.
- Relevance to the programme objectives /market potential:
- Ability to facilitate and accelerate the development and deployment in the Irish marketplace of competitive renewable energy products, processes and systems;
- Ability to enable technical and other barriers to market uptake to be overcome;
- Contribution to the development of an indigenous RE industry

Project management capability is assessed on the basis of:

- Methodology of approach
- Strength and balance of the team
- Efficient use of resources

Provision for follow-up of the RD&D project and its results to increase market penetration is also a key consideration.

Given that the general aims of the programme are to increase the deployment of RE in Ireland, applications for funding should include details of plans to publish reports, independent monitoring for demonstrations, follow up seminars, opportunities for replication or for follow-on projects etc.

5.3 Contracting

If support is awarded, a contract will be offered from SEI to the lead proposer. In addition to detailing financial and progress milestones and deliverables required, it will also include details of

any involvement of SEI staff required during the course of the project. There may also be requirements with regard to provision of data and participation in marketing and promotional activities.

The rate of contract commitments to be entered into will be consistent with the funding profiles to which SEI is subject under the National Development Plan. Phasing of supports paid to projects is related to the achievement of project milestones and meeting the requirements for deliverables. In particular, payment is conditional on receipt of satisfactory progress reports and on co-operation with monitoring and dissemination of results.

When claiming grant award, applicants will only be paid on proof of incurred costs. Therefore, applicants must ensure that they have adequate backup of costs and payments at all times. Milestone deliverables must be accompanied by statements, which provide evidence of incurred costs. Following satisfactory review of deliverables plus costs, SEI will then make the necessary grant payment.

SEI monitors projects that are awarded funding to ensure that they are implemented efficiently and correctly to help achieve successful results.

The maximum capital grant support for projects is €500,000, however in exceptional cases this support may be as high as €1,000,000.

No further commitments will be made to capital projects in receipt of AER contracts until the position with state aid is clarified.

5.4 Project Implementation

SEI will be involved in the implementation of the project as set out in the contract. Project management remains the responsibility of the lead contractor but SEI have a duty to ensure that the objectives of the programme are met.

Projects funded by two (or more) official R&D support agencies

- Proposal applications by Irish entities relating to RE RD&D which have succeeded in attracting funding from other official national agencies or appropriate EU programmes (international collaboration) will be considered for supplementary funding, aimed at enhancing the benefits of the project in relation to Irish sustainable energy needs. Participation in other relevant international research networks, such as those operated under the aegis of the EU or the International Energy Agency (IEA), may also be supported.
- In order to qualify as eligible for funding by SEI these proposals are required to comply with the EU Competition Directorate limits on levels of State Aid and operate in accordance with the rules governing the operation of individual schemes.
- In addition these projects are required to demonstrate how the contribution of the other funding agency/ agencies offers a significant benefit, such as: achieving a useful output that would not otherwise be possible; project cost economies; or other value for money benefit.

Eligibility for Funding

- Opportunities to participate are available to public, private and international entities resident in Ireland (including Irish subsidiaries of overseas companies) and carrying out projects in Ireland. In some circumstances, the programme may support Irish entities on work undertaken overseas, where this is necessary for the completion of the work. In exceptional cases, funding of work overseas may be supported where there is a demonstrable contribution to resolving specific Irish issues.
- Applications will be accepted from individual organisations, or from organisations acting in collaboration with other organisations or with third level colleges/research institutes, either on

a contractual basis or within consortia or joint ventures. Collaborative development programmes between manufacturers or service companies and research institutions or other centres of learning are actively encouraged.

- Legal entities that are not registered in Ireland are welcome to participate in projects supported by the programme, but we would not normally expect the programme to contribute to their costs, except in special circumstances.
- All funding will be subject to EU Competition Directorate limits on levels of State Aid.
- The Programme is not intended to support universities or other third-level institutions in undertaking fundamental research. Third-level institutions wishing to undertake fundamental research should contact the relevant body for such funding (such as the Irish Research Council for Engineering Science & Technology or the Programme for Research in Third Level Institutions, administered by the Higher Education Authority (HEA)). (SEI also funds a doctoral and post-doctoral research programme in coordination with IRCSET.)