GREBE

Generating Renewable Energy Business Enterprise

Northern Periphery and Arctic Programme 2014-2020

Advice Notes on Ground & Air Source Heat Pumps Technology

Economics for the NPA Region

www.grebeproject.eu

The GREBE Project

What is GREBE?

GREBE (Generating Renewable Energy Business Enterprise) is a €1.77m, 3-year (2015-2018) transnational project to support the renewable energy sector. It is co-funded by the EU's Northern Periphery & Arctic (NPA) Programme. It focuses on the challenges of peripheral and arctic regions as places for doing business, and helps develop renewable energy business opportunities in areas with extreme conditions.

The project partnership includes the eight partners from six countries, Western Development Commission (Ireland), Action Renewables (Northern Ireland), Fermanagh & Omagh District Council (Northern Ireland), Environmental Research Institute (Scotland), LUKE (Finland), Karelia University of Applied Sciences (Finland), Narvik Science Park (Norway) and Innovation Iceland (Iceland).

Why is GREBE happening?

Renewable Energy entrepreneurs working in the NPA area face challenges including a lack of critical mass, dispersed settlements, poor accessibility, vulnerability to climate change effects and limited networking opportunities.

GREBE will equip SMEs and start-ups with the skills and confidence to overcome these challenges and use place based natural assets for RE to best sustainable effect. The renewable energy sector contributes to sustainable regional and rural development and has potential for growth.

What does GREBE do?

GREBE supports renewable energy start-ups and SMEs:

- To grow their business, to provide local jobs, and meet energy demands of local communities.
- By supporting diversification of the technological capacity of SMEs and start-ups so that they can exploit the natural conditions of their locations.
- By providing RE tailored expert guidance and mentoring to give SMEs and start-ups the knowledge and expertise to grow and expand their businesses.
- By providing a platform for transnational sharing of knowledge to demonstrate the full potential of the RE sector by showcasing innovations on RE technology and strengthening accessibility to expertise and business support available locally and in other NPA regions.

- To connect with other renewable energy businesses to develop new opportunities locally, regionally and transnationally through the Virtual Energy Ideas Hub.
- By conducting research on the processes operating in the sector to improve understanding of the sector's needs and make the case for public policy to support the sector.

For more information, visit our website:
http://grebeproject.eu/

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https://greberenewableenergyblog.wordpress.com/

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https://www.facebook.com/GREBEProject/

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https://twitter.com/GREBE_NPA

The Advice Note aim to provide introductory material for entrepreneurs, startups and SME's, considering to enter into the renewable energy sphere and based in the NPA regions partners to GREBE. The scope of the Advice Note covers regional, trade and industry, renewable energy (RE), technology information from Ireland, Northern Ireland, Scotland, Iceland and Finland. Different partner regions have different level of deployment of the various RE technologies covered by the Advice Notes. Thus, the level of information will vary depending on the level of deployment for each technology. For example, GSHP and ASHP are not deployed on a large scale in Iceland; however, it is deployed to a certain extent in Scotland, Finland, Ireland and Northern Ireland.

The focus of the Advice notes is to provide regional partner information on some of the main economic characteristics, sited as imperative, when making an informed choice, regarding which RE technology may be the optimal choice for the business:

- Costs and economics associated with the relevant technology
- Support schemes available, relevant to the technology
- Government allowance/exemptions, relevant to the technology
- Funding available for capital costs of the relevant technology
- List of the relevant to the technology suppliers/developers, with focus on local/regional suppliers/developers and the products and services they offer.

The technologies that are covered in the Advice Note are the following:

- *Biomass CHP*
- *Wind*
- Solar PV
- *Small – scale Hydro (SHP)*
- *Anaerobic Digestions (AD)*
- *Geothermal*
- ***Ground source heat pump (GSHP)***
- ***Air source heat pump (ASHP)***
- *Energy storage*
  - *Electric (batteries)*
  - *Thermal (heat storage)*
  - *Chemical (hydrogen – fuel cell and electrolysis).*

The selection of the right RE technology will also be determined by the balance of energy demand of the business, the prospect to exploit local natural resources and the existing supply network. Assessing the energy mix assists in determining which RE technology is apt for your business. Those matters will be discussed in depth in the Renewable Energy Resource Assessment Toolkit.

GSHP & ASHP Economics Across the NPA

It is understood that the ultimate source of geothermal energy is radioactive decay occurring deep within the earth. In most regions, this heat reaches the surface in a very diffuse state. Nevertheless, due to a range of geological processes, some areas, including substantial portions of the NPA region, are underlain by comparatively shallow geothermal resources. The map (Figure 1.) below of global geothermal use shows that geothermal energy is exploited across the whole NPA region, mainly through direct use, with the help of ground source heat pumps (GSHP).

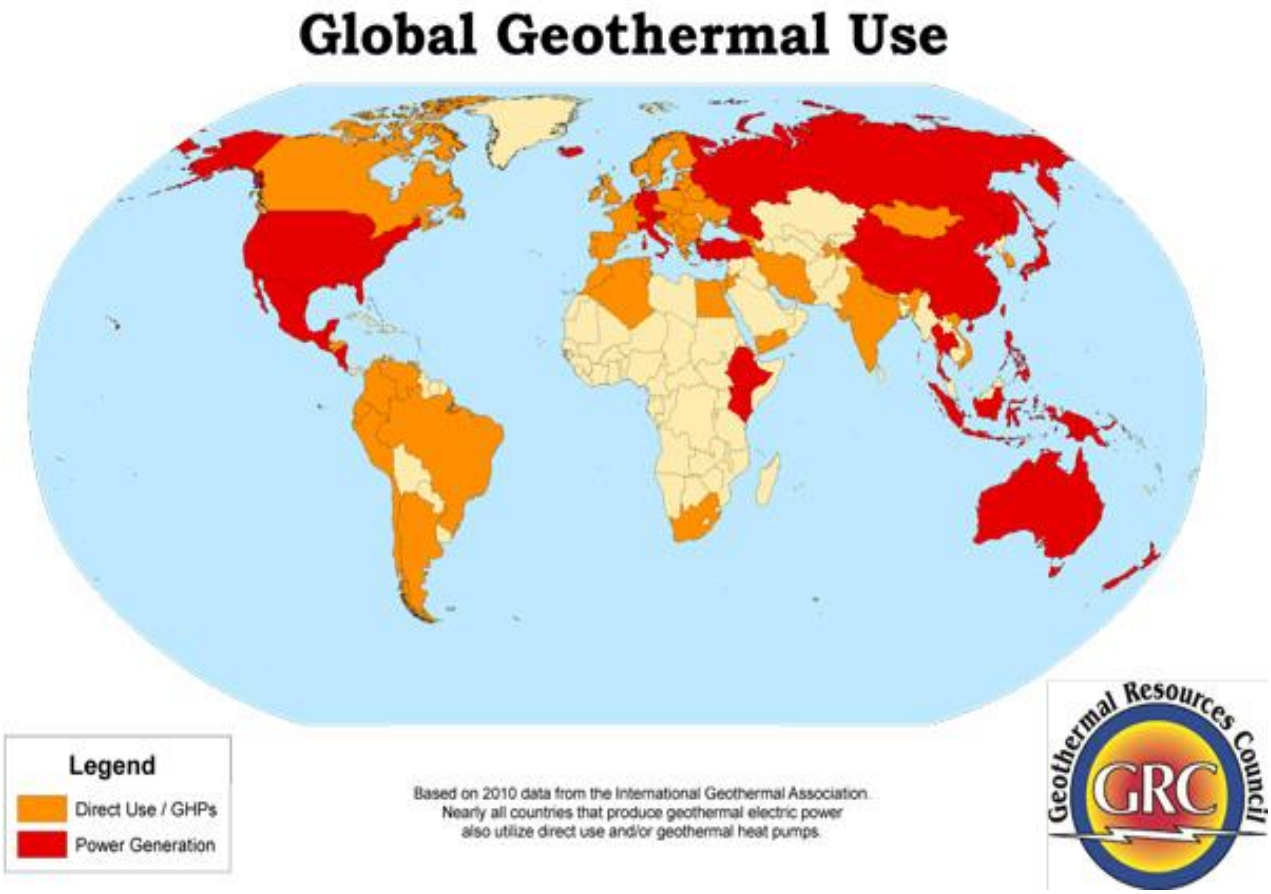

Figure 1. Global Geothermal Use Map.[1]

Heat pumps offer a means to access and utilize the thermal energy that is contained naturally in air, water or the ground. Heat pumps extract low-grade energy from the surrounding environment (air, water, and ground) and transform it into usable energy at a higher temperature suitable for space and water heating.

Any kind of heat pump will need to be powered by electricity. Thus, the coefficient of performance (COP), which is the amount of electricity input, is a very important factor when considering GSHP or ASHP. For example if takes 1 unit of electricity input to produce 4 units of heat output, the CoP will be 4. One of the crucial factors for the CoP is the temperature required by the heating system as CoP is higher when the required temperature is lower (35- 45°C).

[1] https://geothermal.org/what.html

Therefore, heat pumps are appropriate for buildings that have these lower temperature heating systems. As these can be costly to retrofit, new buildings which are already fitted with low temperature heating are apt for heat pump technology. For a GSHP or ASHP system a minimum of CoP 3 is needed in order to be a viable option offering savings both in costs and C02 emissions.

The Advice Notes will cover Ground Source Heat Pump (**GSHP**) and Air Source Heat Pump (**ASHP**).

GSHP systems make use of the temperature difference between above-ground (air) temperatures and below-ground temperatures for heating or cooling.GSHPs take low-level heat from solar energy stored in the earth and convert it to high-grade heat by using an electrically driven or gas-powered heat pump containing a heat exchanger. A fluid, mixture of water and antifreeze, is circulated in a closed loop system, which picks up heat from the ground and then passes through the heat exchanger in the heat pump, which extracts the heat from the fluid. Heat pumps deliver heat most efficiently at about 30°C which is usually used to deliver space heating to buildings. GSHPs cover a wide range of capacities, from a few kW to hundreds of kW.

There two different types of ground pipe systems:

- Horizontal ground loops – uses coil pipe system, buried at depth from 1.5 to 2 m depth in order to avoid frosting. Horizontal ground loops require a large space of open area. The key advantage of horizontal ground loops over borehole systems is the cheaper overall installation cost and once fitted the ground can be reverted to its normal use.
- Vertical ground loops – pipe are installed by drilling a bore hole between 15 and 150 meters deep, depending on size and ground conditions. Specific site condition should be taken into account for the design of the pipe system to ensure pipes would not freeze. Unless data is obtainable from geological survey in the nearby area, a test hole and/or a geologist survey is suggested before commencing a project. Bore holes are expensive and are typically considered when there is not enough space available for horizontal loops or the soil is unsuitable. The viability of the system is greatly reliant on the geological conditions at the site. The installation of GSHPs requires a large amount of civil engineering works and installation is best suited to new build properties due to the amount of groundwork required.

The main parameters governing GSHP economics include[2]:

- Capital costs (CAPEX) the investment costs of a GSHP project can be separated into two main categories. The specific breakdown of field and plant investment costs is strictly dependent on site- specific conditions and the type of application, particularly with direct use of heat.
    - Field costs, including surface exploration, drilling, field development and reservoir management:
        - GHP System Sizing - Correct sizing is attained by establishing the peak heating load of the structure since as the load increases, so does GSHP system sizing and therefore the cost.
        - Site Geology & Conditions - One of the most restraining factors in determining GSHP system cost is site geology and conditions. A key objective is to attain maximum performance at minimal cost and impact to site. Different kinds of loops come at different cost.
    - Plant costs, including machinery, equipment, design, engineering and civil works.
- Operational cost (OPEX) - Electric Power Requirements - The GSHP compressor is a small motor demand increases with increase in GSHP size.
- Delivery System Preferences - Geothermal heating is inherently a low-temperature technology and heat delivery systems must conform to GSHP temperatures in order to be economically viable.
- GSHP lifetime - GSHP manufacturers' project a lifespan of 25 to 30 years if the GSHP system is properly designed, installed and maintained. Indoor components last approximately 25 years. Ground loops last 50-100 years**.** Life cycle varies for secondary components, such as circulating pumps, blowers and some electrical parts.

Air-source heat pumps (ASHPs) work on the same principle as GSHP, by taking low-grade thermal energy from the air (using an air-source collector outside of the building) and converting it to useful heat by means of the vapour compression cycle. ASHPs are in common use in commercial-scale heating, ventilation and AC systems as they can meet both heating and cooling demand. Installation of an ASHP includes fixing an external unit and drilling holes through the building wall with and an extra pipework may be required. The main steps for deciding if an ASHP is an apt choice are the same as those for a GSHP system, without the need for a ground survey.

[2] Renewable Energy: Technology, and Environment Economics, 2007.

There are two main types of air source heat pump systems:

- Air to water heat pump - allocates heat via a wet central heating system and can both heat the space while providing hot water.
- Air to air heat pump - produces heat by using fans to circulate outside air into the building and it provides only space heating.

ASHPs are a substitute to GSHPs where lack of space is an issue. In comparison with GSHP, ASHPs has the benefit of being cheaper to install, but the drawback that in cold weather (very common problem in the NPA area), the pump thus has to work harder to supply the heat required, and the efficiency of the system drops ostentatiously. The performance of an ASHP varies with the external air temperature and this should be taken into account when considering the use of such a system. ASHPs normally require some form of back-up boiler heating system. With an average CoP of 3.2, air source heat pumps perform well without wasting energy. Correct sizing of the heat pump and its radiator or underfloor system is crucial to the effective and efficient operation and will depend on the building's heat requirements. It is important to add good insulation and draught-proofing to the building to reach the highest level of efficiency for the ASHP.

The main parameters governing ASHP economics include[3]:

- Capital costs (CAPEX) – the CAPEX for ASHP is half the CAPEX required for GSHP as the field costs are very low compared with GHSP and the plant costs are cut in half.
- Operational cost (OPEX) - running costs of an installed system will also vary conditional to how much heat it needs to deliver, the type of distribution system and the CoP of the system. Maintenance costs for air source heat pumps are low. They are reliable, work automatically and have a long life.
- Delivery System Preferences - Geothermal heating is inherently a low-temperature technology and heat delivery systems must conform to GSHP temperatures in order to be economically viable
- ASHP Lifetime - The fan motor or compressor may need replacing after 10 years, while the other parts of the system have a sensible life prospect. The actual lifetime will depend on the quality of the unit and its installation.

[3] Renewable Energy: Technology, and Environment Economics, 2007.

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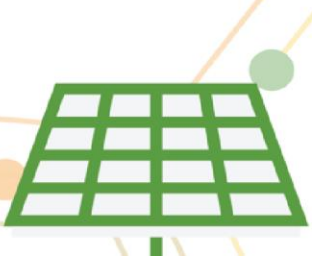
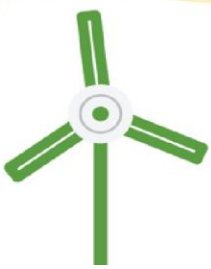
Scotland





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Costs and Economics

Costs and Economics GSHP

Costs and economics – The expected life of a GSHP is 15 to 20 years, but ground loops can last over 50 years. GSHPs can be expensive to install and generally have high capital investment costs compared to other renewables technologies; with significant costs for the equipment and any necessary ground works. The introduction of the RHI has resulted in the typical payback period for a GHSP dropping from in excess of 15 years to between 5-8 years. The Energy Saving Trust (EST) estimates it can cost between £13,000 and £20,000 to install.

- CAPEX - The capital cost of a small commercial scale installation (~55kW), will, on average, be in the region of £900-£1,050/kW. Total installed costs would therefore be between £50,000 and £58,000. Assuming a 35% load factor, a system of this size could produce over 168,000kWh of heat output per year. For smaller domestic scale systems, in the region of 6 to 11kW, the capital cost would be around £940-£1,830/kW, with typical total installation costs between £9,000 and £18,000.
- OPEX - GSHP running costs are dependent on the cost of electricity used to power the heat pump. No maintenance is required for the ground pipes, and the heat pump requires only standard mechanical equipment maintenance.

The table below shows an average of the CAPEX depending on choice of groundwork.

Number of Rooms	Heat Pump and Installation Cost	Horizontal Groundwork Cost	Vertical Groundwork Cost
2	£16,000	£3,000	£6,000
4	£21,000	£5,000	£13,000
6	£32,000	£8,000	£20,000
7+	£42,000	£12,000	£30,000

Costs and Economics ASHP

ASHPs tend to be cheaper and easier to install than GSHPs. The cost of a professional ASHP installation is reliant on the property and location and ranges from about £800 to £1,200 per kW of peak heat output, excluding the cost of the heat distribution system the price per kW gets lower as systems get larger.

- CAPEX - between £5,000 and £11,000. The costs depend on many factors, including size of the building, how well insulated is, pump size and brand, as well, as performance/efficiency of the pump
- OPEX - Approximate running costs for a year are between £1135 - £1493

Support Schemes GSHP & ASHP

Renewable Heat Incentive[4] - Tariffs can be found below for installations

Description	Total Installed Capacity (kW)	Eligible Tariff (pence per kWh)
GSHP	All capacities	9.02
ASHP	All capacities	2.61

In order to be eligible for the ASHP RHI, the air source heat pump has to be an air-to-water heat pump.

Government Allowances and/or Exemptions GSHP & ASHP

Earnings from the Feed-in Tariff and energy savings are tax free and index linked.

[4] https://www.gov.uk/domestic-renewable-heat-incentive

Funding available for Capital Costs GSHP & ASHP

Green Investment Bank (GIB) - The Green Investment Bank was set up by the UK Government as a public company in October 2012. The Bank has £3 billion to invest in sustainable projects, where public capital is used to support private investment. Energy from Waste, which includes anaerobic digestion, is a specific priority area for the bank.

Technology suppliers, products and services they offer

Supplier	Product	Services	Contact Information
GreyStone Energy	NIBE™ F1345 – commercial heat pump. Outputs from 24-540KW in cascade configuration	Full installation for the project from start through to completion, deal with one contractor, look after ground work and drilling also. Greystone Energy's in house installer, design and service team have exceptional experience and training in heat pumps – Being NIBE VIP Installers they offer extended warranty on their installations and can monitor and adjust the settings on the heat pump from anywhere in the world via NIBE Uplink.	Phone: 01241 856798 Mobile: 07944 388 565 07597 163 443 Email: enquiries@greystone-energy.co.uk
Glendevon Energy	NIBE Air source heat pumps - NIBE F2300 14 and 20 kW with a two-stage ventilator for higher economy, for large properties and commercial use. OCHSNER utilises the heat source air with heat pumps in split construction – Horizontal Split Evaporator Technology. With split appliances of the GMLW Series from 5 to 65 kW, the air heat exchanger is mounted horizontally, these being decisive for efficiency and operational safety.	NIBE VIP Installer Company provides to customers an Extended parts and labour warranty for 7 years on all Air Source NIBE heat pump. We work with underfloor heating suppliers, ground works and borehole contractors, and/or customer's own contractors/ work force to ensure a smooth installation process and the highest functioning system.	

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Ireland

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GSHP & ASHP

Economics

Ireland

Costs and economics GSHP

Cost and economics - The initial capital costs of installing a geothermal heat pump system is usually higher than other conventional central heating systems. A large proportion of the outlay will be for the purchase and installation of the ground collector. The system is among the most energy efficient and cost effective heating and cooling systems available.

Typically, 3-4 units of heat are generated for every unit of electricity used by the heat pump to deliver it, and the payback is typically about 8-10 years. The life expectancy of the system is around 20 years. Once installed a heat pump requires very little maintenance and anyone installing a heat pump should speak with their installer regarding a maintenance agreement. Heat pumps operate optimally when a system design approach is taken. It is important that the heat collector and heat distribution systems are correctly sized/installed.

CAPEX - The capital cost of a small scale installation (8 to 12kW),

- Open Loop €12,500 to €14,500
- Closed Loop (vertical) €18,950 to €21,950
- Closed Loop (horizontal) €10,650 to €14,650

OPEX - GSHP running costs are dependent on the cost of electricity used to power the heat pump. No maintenance is required for the ground pipes, and the heat pump requires only standard mechanical equipment maintenance. Annual maintenance costs of €250 per year for 8 to 12KW installation.

Costs and economics ASHP

Costs and economics - A heat pump that is retrofitted into an existing house or building can save large amounts of money over many years. It is not uncommon for the payback time to be as little as four or five years, that is dependent on the cost of the fuel you are currently using.

The annual running cost plus the cost of financing the work usually come to less than the annual purchase cost of oil or LPG gas, so the benefits are immediately felt.

- Opex: Average cost for businesses: €11/Day for 1000Ltrs of water, 50 weeks of the year works out at: €3850/yr.
- CAPEX: Cost of the Orca Coolwex 300lt heating cylinder: €2500 + vat, Average installation cost: €500

Support Schemes

None in place

Government Allowances and/or Exemptions

ACCELERATED CAPITAL ALLOWANCE SCHEME (ACA)

The ACA is not a grant, but rather a tax incentive for companies paying corporation tax and aims to encourage investment in energy efficient equipment.

The ACA offers an attractive incentive whereby it allows companies to write off 100% of the purchase value of qualifying energy efficient equipment against their profit in the year of purchase. Eligible equipment can be chosen from the Triple E register (See solar databases – Triple E) and includes solar heating and electricity technologies.

Support is available for communities under the SEAI Better Energy Communities Scheme.
http://www.seai.ie/Grants/Better_Energy_Communities/

Support is available for householders under the SEAI Better Energy Homes Scheme.
http://www.seai.ie/Grants/Better_energy_homes/

Funding available for Capital Costs

N/A

Technology suppliers, products and services they offer

Supplier	Product	Services	Contact Information
Heat Pumps Ireland	Danfoss domestic ground source heat pump range	Heat Pumps Ireland is one of Ireland's largest suppliers of heat pump systems to the residential and commercial markets. We offer the broadest range of geothermal and air to water heat pump systems to the construction industry and the renewable energy installer sector.	Coes Road, Dundalk, Co. Louth info@heatpumpsireland.com

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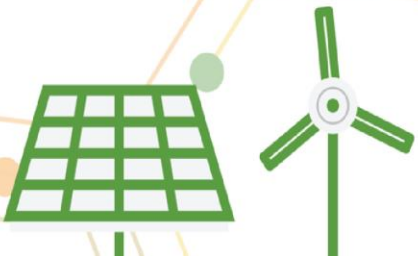
Finland



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Costs and economics GSHP

Average costs of ground source heat pumps (GSHP) for households:

Capacity	Technology, without installing (VAT 24 %)
6 kW	5500 – 6200 €
8 kW	5700 – 6500 €
10 kW	7000 – 8000 €
12 kW (larger estates)	7500 – 8500 €

Installing costs approximately 2500 – 350 € (basic installing). Deep well drilling costs 28-32 €/m (average drilling about 100-200 meters). For a 150-20 m2 house, total system capital expenditure (CAPEX) is about 15 000 - 20 000 €'s. The costs of horizontal systems are lower compared to the drilled systems.

OPEX - GSHP running costs depend on the cost of electricity and the system efficiency. The electricity consumption compared to produce energy varies approximately from 1:3 to 1:4. With electricity price of 11.5 c/kWh, this would mean about €600 per annum for a household consuming 20 000 kWh energy annually.

LCOE costs of a household-scale GSHP system (17 50 € investment for 20 years, and tax deduction of installation) is about 6.6 c/kWh. In larger 300 kW system (20 years investment period, 0% support), LCOE is about 5.2 c/kWh.

Costs and economics ASHP

Average CAPEX of air source, heat pumps installed for households (80-20 m2) is approximately 1700-3000 € (VAT 24 %).

Average costs of air to water heat pumps for households:

Capacity	Technology without installation (VAT 24 %)
7 kW	5000 – 6000 €
9 kW	5500 – 6500 €
14 kW	8000 – 8500 €
20 kW (larger estates)	9000 – 10000 €

Installation costs of air to water heat pumps begin from €2000, so the CAPEX is about €7000 - €12000.

ASHP has limited operational costs, so they are not estimated here. LCOE of an ASHP is estimated to be about 6-6.5. c/KWh (for a heat pump of €3000 investment cost and operational costs, 15yr calculated life-time, annual average saving 3000kWh/a).

Support Schemes GSHP & ASHP

Energy support for GSHP is 15% for conventional technologies (TEM, Ministry of the Employment and the Economy via TEKES Finnish Funding Agency for Innovation) in energy renovations. New technologies may receive support between 20-40%.

Heat pump technology investments can receive 15 % investment support (in energy renovations) and energy efficiency projects (including waste and by-product energies) up to 20-25% (if there is e.g. ESCo service included). (TEM, Ministry of the Employment and the Economy via TEKES Finnish Funding Agency for Innovation).

ARA provides investment supports for RE in private houses and housing associations, approximately 10-15%, depending on the financing.

Government Allowances and/or Exemptions GSHP & ASHP

Energy support for GSHP: 15 % (TEM, Ministry of the Employment and the Economy via TEKES Finnish Funding Agency for Innovation), support is not available if the end-user converts from the district heating to the own system.

The household can receive tax deduction for the installation work.

The Housing Finance and Development Centre of Finland (ARA) is a governmental agency of the Republic of Finland operating under the supervision of the Ministry of the Environment. ARA provides investment supports for RE in private houses and housing associations, approximately 10-15%, depending on the financing.

Funding available for Capital Costs GSHP & ASHP

Energy efficiency projects of industry and municipalities can utilise the ESCo financing models and partnerships. The information of these is provided by the Motiva Ltd. (www.motiva.fi/en). There are several ESCo service providing companies, such as Caverion Ltd, operating also in North Karelia.

Technology suppliers, products and services they offer

Company	Services	Contact Information
Itä-Suomen ilmalämpö, Kitee	Ground source heat pumps, air source heat pumps, air to water heat pumps (Fujitsu, Nibe, Mitsubishi)	http://www.ita-suomenilmalampo.fi/
Lämpöykkönen, Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps, exhaust air heat pumps	https://lampoykkonen.fi
Ecotec, Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps, exhaust air heat pumps	http://www.ecotec.fi/
Lämpökarelia, Kitee and Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps	http://www.lampokarelia.fi/
Putkiykkönen, Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps	http://www.putkiykkonen.fi/
Jh-lämpö, Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps	http://www.jh-lampo.fi/
LVI-Myller Oy, Joensuu	Ground source heat pumps, air source heat pumps, air to water heat pumps, exhaust air heat pumps	https://www.lvi-myller.fi/
Gebwell Oy, Joensuu	Ground source heat pumps. Reference site Green park: (10 x 200 m deep wells) 3 x ground source pumps (35 kW/unit) operates together with the district heating covering 10 % of the heat demand.	http://www.gebwell.fi/
K-rauta, Prisma, Hankkija	Air source heat pumps, air to water heat pumps	https://www.k-rauta.fi - https://www.prisma.fi/fi/ - https://www.hankkija.fi/
Avot sähkö, Joensuu	Air source heat pumps	http://avotsahko.fi/
Joensuun Kylmäkone	Ground source heat pumps, air source heat pumps, air to water heat pumps	http://joensuunkylmakone.fi/

Joen Sähköpojat, Joensuu	Air source heat pumps	http://www.joensahkopojat.fi/
LVI Dimeks, Joensuu	Air source heat pumps	http://www.dimeks.fi/
Ylä-Karjalan sähkö	Air source heat pumps	http://www.ylakarjalansahko.fi/
LVI-Bioneerit, Kitee and Tohmajärvi	Ground source heat pumps, air source heat pumps, air to water heat pumps	http://www.lvi-bioneerit.fi/

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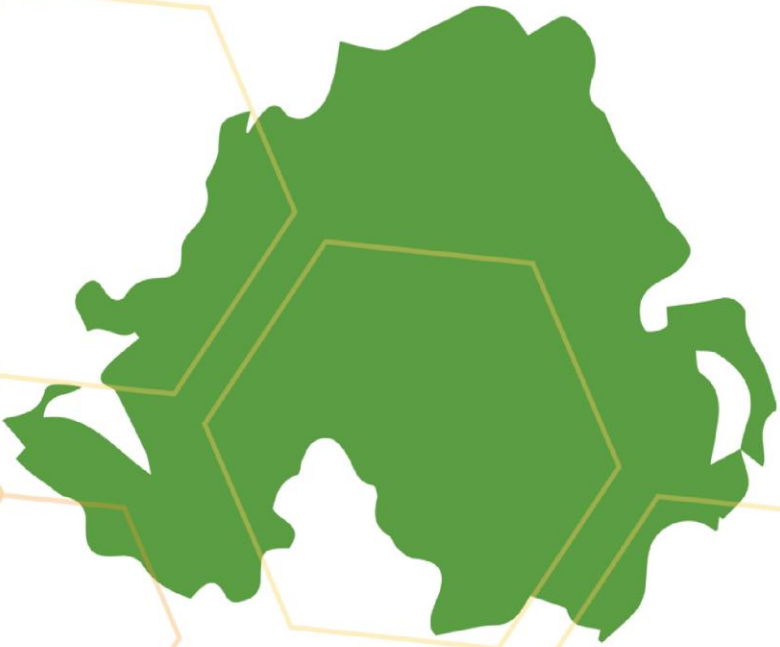
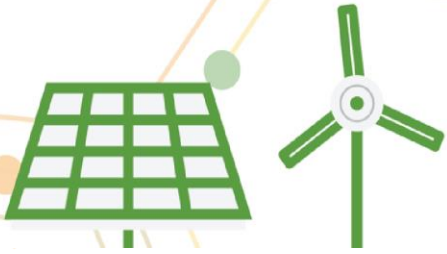
Northern Ireland





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Costs and economics GHSP

Costs and economics – The expected life of a GSHP is 15 to 20 years, but ground loops can last over 50 years. GSHPs can be expensive to install and generally have high capital investment costs compared to other renewables technologies; with significant costs for the equipment and any necessary ground works. Running costs will depend on a number of factors including the size of your home and how well insulated it is. The introduction of the RHI has resulted in the typical payback period for a GHSP dropping from in excess of 15 years to between 5-8 years (RHI no longer available in NI). The Energy Saving Trust (EST) estimates it can cost between £13,000 and £20,000 to install.

- LCOE
    - CAPEX - The capital cost of a small commercial scale installation (~55kW), will, on average, be in the region of £900-£1,050/kW. Total installed costs would therefore be between £50,000 and £58,000. Assuming a 35% load factor, a system of this size could produce over 168,000kWh of heat output per year.
    - OPEX - GSHP running costs are dependent on the cost of electricity used to power the heat pump. No maintenance is required for the ground pipes, and the heat pump requires only standard mechanical equipment maintenance.

Ground Source Ground Source Heat Pumps are more expensive to install than Air Source Heat Pumps, but are more efficient and have a lifespan of 20-25 years. They are also eligible for a larger Renewable Heat Premium Payment (RHPP) grant. The RHI grant for both ground source and water source heat pumps is £3500. (RHI no longer available in NI)

There is also the security of knowledge that the majority of your heating and cooling energy comes out of your ground, is under your control and will not increase in price.

Costs and Economics ASHP

The estimated cost to install an air source heat pump can be between - £6,500 and £10,000. Running costs will vary depending on the size of your home, how well insulated it is and how you use your energy. However across Northern Ireland the air source is less effective than the ground source heat pump. The install of the ASHP usually takes less than two days prior to site survey.

Support Schemes for GSHP and ASHP

Renewable Heat Premium Payment (RHPP) – a government scheme that gives money to householders to help them buy certain renewable heating technologies – solar thermal panels, heat pumps and biomass boilers. The scheme originally had a £15m funding pot available and ran from 1st August 2011 until March 2012; a second phase with £25m of funds has been announced, running till March 2013. Grants worth between £850- £1250 for ground or air source heat pump or biomass boiler technologies are only available to homes without mains gas heating already. A smaller £300 grant towards solar thermal hot water panels is available to all households regardless of the type of heating system already being used. It is an interim scheme to support renewable heat installations before the Renewable Heat Incentive (RHI) for domestic systems starts in summer 2013. (No longer available)

RHI – no longer available.

Government Allowances and/or Exemptions for GHSP and ASHP

N/A

Funding available for Capital Costs

N/A

Technology suppliers and services they offer - GHSP and ASHP

Supplier	Product	Services	Contact Information
Ecotech Solar Solutions	Heat pumps	Heat Pump installers	EcoTech Solar Solutions Limited, Unit 22, City Business Park, Belfast, BT17 9HY, Northern Ireland. 028 9099 6697 solar@ecotechsolutions.co.uk
CEI NI Ltd.	NIBE Ground Source Heat Pumps	Ground Source Heat Pumps: • Horizontal Loop • Vertical Loop Installers of NIBE systems, and provide check-ups every 3-5 years.	CEI NI LTD, 25A Aghayaran Road Upper, Castlederg, Co Tyrone, BT81 7YA, Northern Ireland. +44 (0)28 816 70304 info@ceini.co.uk
C2 Energy Ltd	NIBE Ground Source Heat Pumps		C2 Energy Limited, 2 Tullyverry Drive, Greysteel, BT47 3YG, Northern Ireland. +44 (0) 7793279734 terence@c2energy.co.uk
Alternative Heat Ltd	Ground Source Heat Pumps		11 Burrenreagh Road, Castlewellan, County Down, BT31 9HH, Northern Ireland. 02843770700

Northern Periphery and Arctic Programme 2014–2020

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Visit
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Contact
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Tel: +353 (0)94 986 1441
Email: paulineleonard@wdc.ie

Project Partners
GREBE will be operated by eight partner organisations across six regions:

WDC Western Development Commission

Action Renewables – the future of energy, today

Luke Natural Resources Institute Finland

FPN Forskningsparken i Narvik

eri environmental research institute

Fermanagh & Omagh District Council
Comhairle Ceantair Fhear Manach agus na hÓmaí

Innovation Center Iceland

Karelia

About GREBE

GREBE is a €1.77m, 3-year (2015-2018) transnational project to support the renewable energy sector. It is co-funded by the EU's Northern Periphery & Arctic (NPA) Programme. It will focus on the challenges of peripheral and arctic regions as places for doing business, and help develop renewable energy business opportunities provided by extreme conditions.