switch

To the power of renewable energy in the Highlands and Islands

June 2009

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www.hi-energy.org.uk

HI energy
HIGHLANDS AND ISLANDS OF SCOTLAND
HARNESSING NATURE'S POWER

Switch on!

Welcome to the first issue of Switch, the brand new magazine all about renewables in the Highlands and Islands! Inside, you'll find top tips on saving energy, news on renewables projects across Scotland, and how you can get involved.

Two 'CCs' are hardly out of the news - climate change, and the credit crunch. Our feature on eco-gadgets shows you how you can save energy and money with some clever little gizmos, showing 'going green' isn't just for environmentalists anymore. Turn to page 6 to read on. On the front cover is Keith Grammar pupil Amy Adamson, who helped to launch the renewable energy debating competition The Big Green Challenge, with a giant lightbulb moment. Further information on the competition can be found on page 8.

Switch is taking over from Let's Talk Renewables, the magazine created by Highlands and Islands Enterprise as part of its commitment to raising awareness of the important role renewable energy will play in the economic growth of our region and ensuring a secure, sustainable energy future.

Get switched on - where to get advice about renewable energy

If you are interested in finding out more about renewable energy, its development in the Highlands and Islands or how you can switch to alternative forms of energy in your community or home, here are some sources you will find useful:

HI-Energy

The Highlands and Islands of Scotland is home to an abundance of renewable energy resources, appropriate infrastructure and skilled people. Find out more about different renewable energy forms and technologies and how this emerging sector can impact on the region. Fact sheets are available for download and you can also find out more about the projects taking place throughout the region. There are also useful links to other sources of advice and support.

Visit www.hi-energy.org.uk

Highlands and Islands Enterprise

Highlands and Islands Enterprise (HIE) is committed to raising public awareness and understanding about the important role that renewable energy can play in the growth of the Highlands and Islands economy. This website provides help and advice for businesses through its 15 local area offices throughout the Highlands and Islands. This website has help and advice for people thinking of starting their own business or for business owners who need support to grow their enterprise. Find up-to-the-minute news about HIE's developments in the region and the work it is doing to contribute to the economic growth of the region.

Visit www.hie.co.uk

Community Energy Scotland

Community Energy Scotland (CES), formerly known as Highlands and Islands Community Energy Company, is an independent Scottish charity. Providing free advice, grant funding and finance for renewable energy projects developed by community groups to benefit their community, CES delivers the community element of the Scottish Government's Community and Household Renewables Initiative (SCHRI). If you want to fit renewable energy equipment into a building to reduce running costs and use of fossil fuels, CES can assist from installation to project completion. CES has assisted in 200 installations across Scotland. For help and advice about developing a project to generate energy for your community or to read about about the past projects CES has supported, visit www.communityenergyscotland.org.uk

Energy Saving Trust

The Energy Saving Trust is a non-profit organisation that provides free, impartial advice to help you save money and fight climate change by reducing carbon dioxide emissions from your home. There are lots of hints and tips for saving energy in your home from home improvements such as insulation and glazing to buying energy saving recommended products. Find out how energy efficient your home is with the online home energy check.The Energy Saving Trust also has advice and information for people thinking of installing renewable energy technologies in their homes.

Visit www.energysavingtrust.org.uk
Tel: 0800 512 012

The Big Picture

The huge new Glendoe Hydro Scheme, completed by Scottish and Southern Energy earlier this year, collects water 608 metres above Loch Ness to power a 100 megawatt underground turbine. One of Scotland's biggest recent feats of civil engineering, it continues a history of renewables in the Highlands that stretches back to the 1930s. ***Image courtesy of Scotavia Images.***

Focusing on renewable energy

HIE holds focus group session in Inverness

Highlands and Islands Enterprise is working on a campaign to raise awareness and understanding about the important role that renewable energy can play in the growth of the Highlands and Islands economy. As part of this campaign, a focus group session of 10 people from the Highlands was held in Inverness in May.

This session was an opportunity to find out what the general public's view is on renewable energy, what forms of renewable energy they are aware of and whether they understand or are aware of how the development of renewable energy will affect the local economy. It was also used as a way for gaining feedback on the new refreshed and re-designed Switch magazine, which follows on from a previous HIE publication called Let's Talk Renewables.

Feedback from the focus group highlighted that people want to know more about what they can do to reduce their impact on the environment and what savings they can make by switching to alternative sources of energy.

HIE would like to hear your views about this new magazine and renewable energy in the Highlands and Islands, so send your comments to us at renewables@hient.co.uk

POWER UP

Power up and stay in-pocket with micro-renewables

Talk about renewable energy and most people will think of hillsides of towering windfarms, the giant concrete fortifications of dams generating hydro-electricity, or acres of crops being grown for biofuel. But there's a growing market for 'micropower' devices, which offer new ways to harness renewable energy in your own home, with potential benefits to your pocket as well as the environment.

Taming the weather

Some micropower devices are essentially scaled-down versions of the big renewable energy systems reported in the media; these include wind turbines, micro hydro power, and solar panels. Wind turbines and micro hydro are naturally dependent on location and climate, but in many cases these are extremely viable options in the Highlands and Islands, particularly where a remote or rural location makes it difficult to install other systems. These devices are also considered especially suitable for remote locations off the national grid. Hydro devices can be fitted wherever water flows or drops between two levels - for example at a waterfall or a fast-moving stream. These types of devices can be connected directly to the building's electricity system, reducing the amount needed from the grid, thereby reducing your electricity bills. However, getting results from small-scale wind and hydro energy requires careful siting, particularly in the case of micro hydro power.

It might come as a surprise that solar panels are also a practical way of bringing renewable energy into your home - even during the most gloomy conditions that the Scottish seasons can bring. Solar panels gather what is known as 'diffuse solar energy', even when the sunlight is not shining directly on them. Solar thermal energy can provide all the hot water needs of a typical home during the summer and half during the rest of the year, offering a considerable saving on energy consumption.

Efficient homes

There are also increasingly advanced micro-renewable systems on the market which don't rely on the weather outside. One example is micro combined heat and power systems, known as micro-CHP; these extremely efficient systems can create electricity and heat energy at the same time from one fuel source. In most cases, the systems are powered by gas, although they can also use renewable fuels, such as biomass or biogas.

Micro -CHP systems have been undergoing household trials and are expected to become mass-produced this year, backed by major companies such as power giant E.ON.

As well as solar thermal energy from the sky, heat can be extracted from below the ground. Even in the coldest conditions above ground, the temperature below the surface remains constant at around 12°C. Ground source heat pumps literally pump cold water under the ground, where it warms up before returning into the home. Heat exchangers are used to increase the temperature to 30-40°C which is then used in underfloor heating or large radiators. Your heating bill can be reduced by up to £1,000 per year.

Funding

There's a host of reasons to upgrade your home with micro-renewables, not least of which is the money it could save you during this tough period for the economy. Although the initial cost of installation can seem high, in most cases it will repay itself within a few years. The government's climate change policy backs renewable energy generation on all scales. For example, it is expected that combined heat and power (CHP) systems, which form a key part of climate change policy, will produce 10GW of the UK's power by 2010. There are now government-backed schemes and grants to help homeowners and businesses make the move to cleaner energy, such as the Low Carbon Buildings Programme, run by the Department for Energy and Climate Change.

For more information visit:

www.hi-energy.org.uk

www.energysavingtrust.org.uk

www.lowcarbonbuildings.org.uk

Micro-renewables – how much will it cost?

- A 1kW roof-mounted wind turbine will set you back around £1,500, including installation, but could cut your electricity bill by a third every year, and reduce your carbon footprint by half a tonne.
- Micro hydro power projects are more dependent on the site of your building, and systems can cost anything between £4,000 and £25,000. However, micro hydro power provides a very reliable and constant source of power, and in some cases can almost eliminate the need for grid electricity.
- Adding solar thermal equipment to your heating system will cost around £2,000-£3,000, including installation.
- Micro-CHP systems are expected to cost around £3,000 to install once they become available later this year.
- Installing a ground-source heat pump costs between £6,000 and £12,000 but will save £350 to £1,000 per year, depending on how your water is heated at present.
- The Energy Saving Trust operates a renewables scheme to help Scottish householders. Formerly known as the Scottish Communities and Householder Renewable Initiative, the level of support available is up to 30% of costs or £4,000, whichever is less.
- Communities interested in installing micro-renewables in community buildings can receive grants from the new Scottish Government funded CARES - the Communities and Renewable Energy Scheme. The level of support varies. This scheme is administered by Community Energy Scotland through development officers situated all over Scotland.
- The Low Carbon Buildings Programme is currently offering grants of up to £2,500 to homeowners who install renewable energy devices using certified installers. The deadline for applications has been extended until June 2010.

Renewables re-energising Scottish communities

Community Energy Scotland (CES) is an independent charity which receives funding support from Highlands and Islands Enterprise (HIE) to help communities across the region get involved with practical renewable energy. CES works to develop renewables projects from the earliest planning stages, through construction right through to making sure they operate smoothly once completed.

Getting the community on the Isle of Eigg wired up to their own, local renewable energy source is a case in point. All 37 households on the island, as well as the five commercial properties, were involved in a scheme backed by CES to deliver local electricity from the island's own natural resources. The cost of the scheme, totalling £1.6m, was found from grants including major funding from the European Regional Development Fund and HIE.

The island was the first in the UK to achieve self-sufficiency from a mixture of micro-scale energy sources, including solar panels, wind power from four new turbines, and hydro electricity - both from existing hydro projects on the island, and a new one which was specially commissioned for the scheme. Having their own source of power means the islanders can achieve better self-sufficiency, and the project is an excellent model for other communities who might want to follow in their footsteps.

Castletown, on the rugged Caithness coast, is another example of a community which has embraced renewable energy. When developing the Castlehill Heritage Centre, the local heritage society was keen to make every effort to make the building sustainable, so they decided to use renewable sources for heating, hot water, and lighting. CES worked with local people to plan and install a 50kW biomass log boiler, which only needs to be stoked once a day during winter and once every three days during the summer. The system caters for all the centre's heating and hot water needs, and wood is certainly not in short supply, with sustainable firewood available from nearby Dunnet Forest.

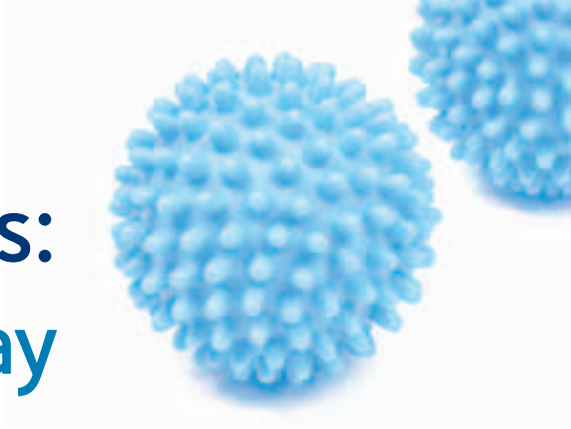
Neil Buchan of Castlehill Heritage Centre receives the commissioning certificate for their biomass central heating boiler.

Nicholas Gubbins, chief executive of CES, says: "It's important that communities take the opportunity now to put renewables at the heart of public buildings. Everyone knows they reduce the impact we have on the climate but, equally importantly, renewables can save people money where it counts.

"Communities around the Highlands and Islands are taking advantage of renewable energy in different ways, and CES is here to support them. Renewable energy sources give communities the power to save money and reduce carbon emissions, and with plenty of grants available to back serious projects, there has never been a better time to bring community buildings into the 21st century."

For more information on the work of Community Energy Scotland, visit www.communityenergyscotland.org.uk.

Eco-gadgets: Go green every day



It's the 21st century and, while we don't yet have flying cars and day trips to the moon, we're all used to the technological wizardry that helps us day-to-day - from electric can-openers to mobile phones. Now, with the world's attention on climate change, there are plenty of 'eco-gadgets' on the market which are not only inexpensive, but will save you heaps of money, while reducing your carbon footprint and helping the environment.

One form of energy loss which we're all guilty of is leaving appliances, such as televisions, on standby. This costs the average household £37 per year in lost energy. For around £15, though, you can buy a kit which lets you easily control your appliances without having to switch every socket off. The two main brands, Bye Bye Standby and Standby Buster, come equipped with a remote control and plug in between the socket and, for example, your TV. This lets you to use the remote control to switch off devices at the socket rather than leaving them on standby.

Another type of product which has come on the market recently is the home energy monitor. This takes the form of a transmitter and receiver; the transmitter clips onto the cable going into your electricity meter, and the receiver can then be placed somewhere where you can read it. The home energy monitor tells you how much electricity you are using, and while it doesn't itself reduce your energy use, it will make you realise how much is being used. It will also let you see where you could cut down, by helping you identify which devices in your home are energy-guzzling culprits. Home energy monitors vary in price according to how much information they relay - but don't expect to pay more than £100. Devices on the market include the DIY Kyoto Wattson and units made by OWL, Efergy and Ecosaver.

Although more effective and eco-friendly than taking a bath, showers are another key source of wasted energy within the home. According to the makers of the ECO Showerdrop, which monitors how much water you use, a typical person only needs 35 litres of water to wash. The meter shows a figure of a person which fills up as you shower, showing how much water you have used. This fun device is great for kids and anyone who is guilty of spending too long in the shower, and as well as saving time and water, it will save you up to £180 in heating bills every year, and costs only £12.

There are energy efficient devices for every part of the home. You can save energy with specially-designed toasters, kettles, vacuum cleaners and slow cookers. However, energy-saving gadgets aren't all based on clever electronics: some are just simple ideas that work well. DryerBalls are one example: pop two of these spiky spheres into your tumble dryer, and as they spin with your clothes, they heat up and dry them from the centre, saving up to 25% of the energy required.

Most of us are carrying more personal devices these days, such as mobile phones and personal music players. There are now easy ways of powering these gadgets with renewable energy. One device which has become increasingly popular is the solar charger; this is a portable solar panel which can connect to nearly any pocket device to charge it up. Examples include the Freeloader Globetrotter, and the Solio range of chargers - used by everyone from African tribesmen to polar explorers and even Barack Obama. At around £40, they are an investment that will save you money in the long run.

In our gadget-filled world, it's more important than ever to make sure we aren't using excess power. Investing in eco-gadgets will save you energy and money - and you'll never be lost without a socket for your phone charger again!

web sites

DIY Kyoto - www.diykyoto.com/uk
Efergy - www.efergy.com
Solio - www.betterenergy.co.uk
EcoKettle and Showerdrop - www.ecokettle.com
Dryerballs - www.dryerballs.co.uk
Energy Saving Trust – www.energysavingtrust.org.uk

Top 5 ways to save energy

Living a more energy efficient lifestyle doesn't just save the environment – it can save you a significant amount of money too. The Energy Saving Trust suggests this could be as much as £340 per year. Here are our top ten everyday ways of saving energy, which all of us can do

1 **Lighten up –** Energy-saving light bulbs last ten times longer than standard ones, and each one saves around £45 in electricity costs over its lifetime. With standard light bulbs being phased out by retailers, the price of energy-saving bulbs has never been lower, and there's never been a better time to make the switch.

2 **Invest in microrenewables –** The initial investment in a small-scale source of renewable energy within your own home will be repaid time and again by the savings you make in energy costs. See page 4 for our feature on microrenewables. There is also help available for some renewables installation costs, such as the Energy Saving Trust Home Renewables scheme.

3 **Don't snoop on your oven –** We're all tempted to open the oven door to see how our food is coming along – but every time you open the door at least 20% of the heat escapes. Only open the oven door if you really need to.

4 **Decisions, decisions –** Likewise, don't open your fridge or freezer for too long. Just opening a fridge can reduce the temperature inside by 30%, so decide what you're looking for before you open that door!

5 **Adjust your thermostat –** You can reduce on unnecessary heating bills and save energy by lowering your thermostat. Hot water thermostats should be set between 60-65°C, while room thermostats should be at 18-21°C (or 23°C if there are elderly or very young people in the home).

For more information on saving energy day-to-day, call the Energy Saving Trust on 0800 512 012, or visit their website at www.energysavingtrust.org.uk which offers tips and advice as well as an interactive tool to work out how much energy you can save in your home.

Head start on renewables for primary schools

Teachers and pupils at primary schools across the Highlands and Islands have been introduced to renewable energy by an initiative funded by Highlands and Islands Enterprise (HIE).

As part of the project, toolkits were created and distributed to around 200 schools in the Highlands and Islands. The toolkits aim to raise awareness of how renewable energy can be harnessed, and why it is important. The toolkits encourage youngsters to learn through hands-on play, and include specially designed games, information cards, quizzes, model kits, experiments and activities. The toolkits were developed by HIE and the Educational Resource Partnership, a Highlands-based company set up by teacher Pat Thornton and her colleague Liz Balharry, and were trialled at Balnain Primary School, where Pat is also a teacher.

To help teachers understand renewable energy topics and use the toolkit in a meaningful way in the classroom, ERP also ran continual professional development (CPD) sessions. Over 150 teachers have taken part in the sessions, which were held across the region, from Argyll to Shetland.

Anna Allan, senior development manager at HIE, says:

"Renewable energy has been identified as key to the growth of the Highlands and Islands economy.

"To effectively build this sector, HIE aims to raise awareness and understanding of the important role that renewable energy and energy efficiency will play in the development of the region. Engaging with the public is a key part of increasing this understanding, and the work that we are doing in schools underlines our commitment to spreading the renewable energy message to families and communities."

Pat Thornton (second left) and Liz Balharry (far right) help Balnain Primary School pupils, (L-R) Archie Drennan, Rebecca Reid, Natasha Robinson and Jody MacLean, to get to grips with the Renewable Energy Toolkit.

Sandwick pupils set a course for Iceland

To help a new generation of young Scots learn and understand more about renewable energy, schools from across the Highlands and Islands took part in a debating competition called the Big Green Challenge. Debaters from across the Highlands and Islands took part in the competition, which was organised by Highlands and Islands Enterprise.

Over 120 pupils from 25 schools, fielding 43 teams, took part in the competition which was open to secondary pupils in 1st to 3rd year. Three pupils from Sandwick Junior High School in Shetland triumphed over their competitors, Portree High School, to win the competition and will take their prize-winners' trip to Iceland this June.

The trio, pupils Saibh Finlayson, Ceidiog Saxelby and Joe Christie from Sandwick Junior High, will travel together with their teachers, Donald Murray and Yvonne Malcolmson, to visit a number of renewable energy-related locations, including the famous Blue Lagoon, a naturally-heated lake and the Geysir region, famous for its spouting hot springs.

The Grand Final of the Big Green Challenge was held at the Scottish Parliament in Edinburgh. The competition, now in its second year, aims to give young people a better understanding of renewable energy and the issues surrounding it.

Joe Christie, one of the debaters from the Sandwick Junior High School team, shares his experiences from the Big Green Challenge, "I had never done any form of debating prior to the Big Green Challenge, so to stand up in front of an audience and make my argument was a completely new experience to me. I really enjoyed the whole process of researching the issues, setting out my speech and presenting it to my opponent. I've developed a real talent for debating and it has certainly helped me in my English classes at school.

"There are plans for the development of a large wind farm in Shetland and as part of our preparation we were given coaching by Viking Energy, the company involved in the wind farm project. This was very useful as it helped to increase my awareness and understanding about the renewable energy developments that are happening in my area and I'm now very interested in how this project progresses.

"The Big Green Challenge has certainly helped me make more informed about renewable energy and energy in general. Prior to the competition I was on the eco-committee in the school, so I did have some awareness about renewable energy but the competition has opened my eyes to the different forms of renewable energy. For example I had never heard of biofuels before the competition. So it has really given me a much more in-depth view and even now after the competition has finished, I'm still really interested to hear what is going on within the sector.

"Going to Holyrood for the Grand Final of the competition was a major highlight for me and it felt really special to be part of a big event and be standing in the Scottish Parliament making our speech. It was a very memorable and exciting occasion and getting involved in the competition has led me to consider a career which involves public speaking. Working with my team was great fun and I've made new friends from the other teams that took part."

Tavish Scott, MSP for Shetland (second left) meets the winners of the Big Green Challenge competition, Sandwick Junior High: (L-R) Saibh Finlayson, Ceidiog Saxelby and Joe Christie, with their teachers Donald Murray and Yvonne Malcolmson.

Teacher Donald Murray says: "It's a great tribute to the pupils that they have come so far in this competition, both in terms of their public speaking and the research they carried out on renewable energy. Yvonne Malcolmson, one of my colleagues who also helped me to coach the team, was a fantastic support for the children; she spent a lot of time working with them to research the topics. We both learned a great deal from being involved and we would definitely put forward a team to participate in the competition again.

"We are all very excited about the trip to Iceland, which will be a fantastic reward for the effort they put in during the Big Green Challenge."

For more information on the Big Green Challenge, visit www.thebiggreenchallenge.co.uk

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If you would like to receive this magazine again please sign up by sending your name, address and email address to tyoung@trickerpr.com