

CHANGES IN OUR ENERGY SYSTEM & HOW THEY MIGHT AFFECT US

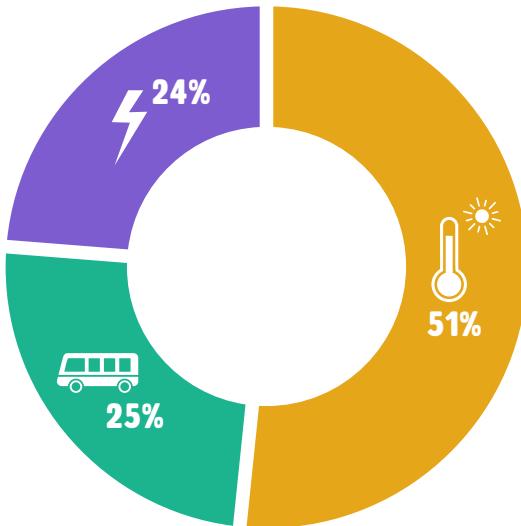
SOME RECENT NEWS ON ENERGY...

We are using less coal and much more renewable energy for producing electricity. For example, in the whole of 2018 we had 1,975.5 coal-free hours (equivalent to 82 days or just under 8 weeks) – in 2019 we have achieved this amount of coal-free hours in just over six months. In June 2019 we lasted for 19 consecutive days without using fossil-fuelled electricity. The UK Government plans to be coal free by 2025.

This is great news but not the whole picture...

WHAT DO WE USE ENERGY FOR?

We use energy for three main purposes:

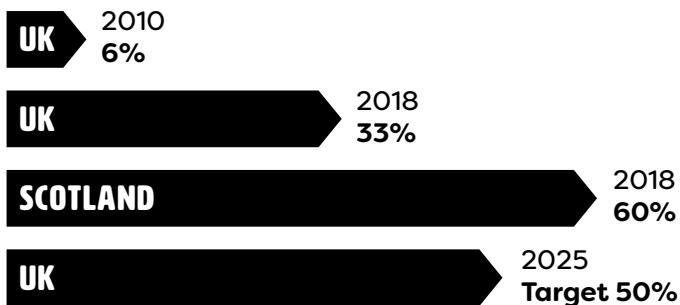


- Electricity – about 24% of our energy use
- Transport – about 25% of our energy use
- Heating and cooling – about 51% of our energy use

WHAT IS CHANGING IN THE WAY OUR ENERGY IS PRODUCED?

MORE OF OUR ELECTRICITY IS COMING FROM RENEWABLE ENERGY

Until recently, most of our electricity came from big power stations using coal, gas, nuclear or large scale hydro. However, over the last 15 years there has been a huge increase in electricity coming from the increasing percentage of renewable electricity as proportion of total electricity production:



As renewable energy comes from the wind, the rain, waves, tides and the sun, and we can't control these sources, we cannot 'turn up' the supply of renewable energy just when we need it. So although our emissions are reduced, we need to introduce much more energy storage with renewables, although having a good mix of renewable sources does help even the supply out at different times of the day and year.

RENEWABLE ENERGY GENERATION IS IN SMALLER UNITS AND SCATTERED ACROSS THE GRID

Unlike the big coal, gas and nuclear power stations which are on the main large power lines, renewable energy turbines, solar panels, biomass units and micro-hydro are dotted all over the country. They are mostly connected to the much smaller power lines where there is less space to take the electricity flows. This means the grid is now full in many areas and it is more difficult and more expensive to get renewable energy onto the power lines unless there is expensive upgrading of the electricity lines to create more space.

Some renewable energy generation is owned by community groups and individuals and this is helping these communities to earn money which they can invest in their local area.

WHAT ELSE IS CHANGING IN RELATION TO ENERGY?

- **Reducing carbon emissions from our transport**

The Scottish and UK Governments each have targets for reducing climate emissions from transport and have set dates by when no new fossil fuelled vehicles can be sold: from 2032 (in Scotland) and 2040 (in the rest of the UK). Both governments have been giving subsidies and support for people and businesses to buy and use electric vehicles and for installing electric vehicle charging points. There has also been support for researching improved options for hydrogen vehicles. Scotland has identified four areas for Low Emission Zones (Glasgow, Edinburgh, Dundee and Aberdeen). 2.7% of new cars are now not fossil fuelled.



- **Reducing carbon emissions from our heating**

Both governments have also set targets for reducing climate emissions from heating. In Scotland these include a reduction of 23% in emissions from heating our homes by 2023 (and more after that!) and making sure at least 60% of homes are insulated by 2020. Most of our homes are heated by gas, oil or biomass and this will need to really change if we are going to meet the 23% target and future targets after that.

The main future options are heating from electric sources (heat pumps and storage heaters), solar thermal (heating water directly through the sun, not through solar PhotoVoltaic (PV) panels) and biomass – with hydrogen maybe becoming more important in the future.

- **We are all being asked to have smart meters in our homes**

Currently all the energy companies are required to encourage their customers to have smart meters installed in their homes and businesses. This is designed to help them read meters remotely, move to a smarter grid capable of having more renewable energy and help everyone understand how much energy they are using.

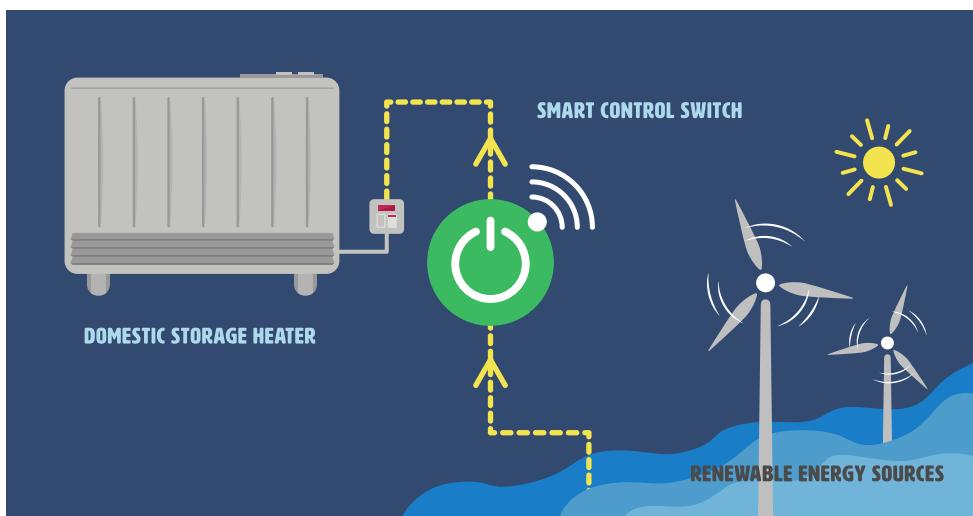
- **The cost of electricity will vary over the day and night**

The government is changing the regulation of electricity costs, so that electricity prices will be higher in the early evenings, when we all use more electricity, and much cheaper in the morning and at night when we use less, with different prices for each half hour.

WHAT ARE SOME OF THE ISSUES RELATED TO THESE CHANGES?

- We need to be more energy efficient and reduce how much energy we use – turning things off when we don't need them, insulating our buildings, and using energy efficient light bulbs and appliances. There is some government support to help us do this, especially for those who cannot afford to do it all privately.
- Electricity could be used near to where it is produced, so it does not have to travel far on the grid, e.g. having more solar panels on homes and other buildings and using this electricity in the building. This is manageable at the moment only if you own your own individual property and have enough money to buy the equipment. If you live in a tenement or share a building, it is much harder as the current regulations make it difficult to share locally produced electricity between neighbours. We are lobbying those who make the regulations on energy to try and make this easier in the future.

- We could be a bit more flexible on when we use energy, so we use it more at times when it is most available. We could do this by using smart technology that switches appliances on automatically when energy is most available and turning them off when there is less energy available. This is called being ‘flexible’ with our energy use. Economy 7 and Economy 10 are examples of being rewarded for using energy at different times to reduce peak demands for energy. But we could be even more flexible to exactly match when we have more or less energy, which can be different each day and over different seasons. Different tariffs are coming on to the market to encourage us to do this and in the future customers could earn an income from being flexible about when they use energy.
- We could also store renewable energy that is being produced but not being fully used right away, so it can be used later when we need it. For example, we could store electricity from solar panels in the middle of the day when we are not using it all, in batteries or other storage methods. Similarly, we could store extra wind energy when it is being produced in the middle of the night when we are not needing electricity so much. Electric vehicle batteries also store energy and could put it back on the grid when they are parked up.



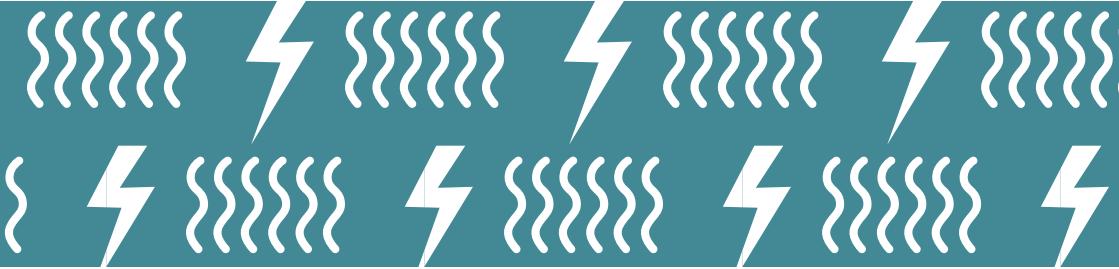
WHAT DOES THIS MEAN FOR YOU?

ARE THERE SOME GOOD OPPORTUNITIES AS WELL AS CHALLENGES FROM THESE CHANGES?

- If you switch to using an electric car (by buying one or hiring one by joining a shared electric car scheme) you could save a lot of money on running costs. It is much cheaper to charge an electric vehicle than to buy petrol and diesel. Electric vehicles also have much lower repair costs.



- Electric bikes are an option for shorter journeys – you don't need to buy one, there might be an electric bike hiring or sharing scheme in your area.
- Switching to using an electric vehicle also reduces pollution, resulting in health improvements.
- When electricity bills change to having different electricity charges at different times of day, you could save a lot of money on your electricity bill if you use energy more when it is cheaper (in the mornings and at night) and use it less when it is expensive (in the early evening).
- You could also earn an income (or get a cheaper energy tariff) if you are flexible about when you use electricity – to help the grid match electricity supply and demand better.
- You could join a local energy project to see if you could get help doing things with others in your street such as sharing an electricity storage system or getting insulation done in your building. You could find out whether local community groups are trying to help local people do this.



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