

this house believes the government should focus energy research on renewables only

energy forever?

Renewable energy is so-called because it doesn't use up the earth's resources and can be used over and over again. What counts as renewable or 'clean' energy? Water, wind, geothermal (the earth's heat), wave, tidal, and solar energy can all be used to generate electricity.

Renewables are alternatives to fossil fuels such as oil, coal and gas which will one day run out. They don't create additional waste products (like carbon dioxide produced by burning fossil fuels; or radioactive waste from nuclear power plants).

There are two main reasons to be interested in renewables: climate change and energy security. The UK government has committed to reducing carbon dioxide emissions as part of its effort to limit climate change, but energy demand is continually rising. UK household energy use increased by 18% between 1970 and 2009. So both UK and Scottish governments have set targets for generating electricity from renewables. The Scottish government wants 80% of electricity to come from renewables by 2020.

The Intergovernmental panel on climate change (IPCC: www.ipcc.ch) suggests that as much as 77% of the world's energy needs could be met by renewables by the middle of the century if the right policies are put in place to encourage their development. Most of the 1.4 billion people who don't have electricity live in the developing world, where some of the best conditions exist for harnessing renewable energy.

Concern about having a secure energy supply is also focusing minds on renewables because fossil fuels will one day run out, and more of the world is competing for those dwindling resources.

If a country can't produce enough energy to meet its own needs it has to import energy from other countries. When demand is high, or resources are scarce, prices go up. One country could threaten to stop supplying energy to another, as happened between Russia and the Ukraine in 2006.

pros and cons

There are huge advantages to renewable energy but the technology is still relatively costly. The energy supply is sustainable but the costs are in building turbines or power stations and transporting the energy from where it is generated to where it is needed. The supply is intermittent: sunshine and wind are unpredictable: some days the wind doesn't blow or it's cloudy. Tides are absolutely predictable but the tides don't synchronise with peaks in electricity demand. So a mix of technologies will be needed.

There are other issues to be tackled: many renewable energy sources are distant from the main electricity grid, which means the grid will have to be extended. This means more pylons and additional cost to consumers.

Public opinion is another issue. Local campaign groups have fought plans to put up more electricity pylons or build wind farms, on the grounds that they adversely affect the landscape. Conservation groups have voiced concerns about the potential impact that wave, tidal and hydro projects could have on the environment and ecosystems.

Questions about intermittent supply and transport of renewable energy have led some people to argue for more nuclear power. Nuclear energy is not renewable, plants are expensive to run and there are huge problems in dealing with radioactive waste, as well as safety concerns. However, it is reliable and generating electricity from nuclear power doesn't add to carbon emissions.

Ultimately, choices will have to be made.



Solar panels (photo Greenerthenergy)

fast facts

- Of all European countries the UK gets the most suitable weather for generating renewable energy.
- Spending on renewables is growing rapidly across the world. Developed world countries invested about a third more in renewable energy in 2010 than they did in 2009.
- 101 offshore wind turbines were built around the UK coastline in the first half of 2011.
- Geothermal energy: the centre of the earth is just about as hot as the surface of the sun. That's a mind-boggling 5500°C. But you don't have to dig that deep. Ground water in the top 15 metres can be used to heat hot water in winter and cool buildings in summer.



Geothermal bore hole house
(photo Lydurs/creative commons)

questions to ask

- How long before fossil fuels run out?
- What can replace them?
- How is renewable energy converted into electricity?
- What are the advantages and disadvantages of the various forms of renewable energy?
- Should public opinion influence investment in renewables?

find out more

http://www.bbc.co.uk/schools/gcsebitesize/geography/managing_resources/energyrev1.shtml

The BBC Bitesize site gives a complete run down of the pros and cons of different forms of energy

<http://www.sciencemuseum.org.uk/exhibitions/energy/>

The latest ideas on meeting our growing energy needs
The Renewable Energy Association has a useful section for students

<http://www.r-e-a.net/REA/website/researchers>

environment in fiction

City of Ember

Hoot

Flush

Saving the Planet & Stuff

Jeanne DuPrau

Carl Hiaasen

Carl Hiaasen

Gail Gauthier

alternative motions: this house...

- ...would build wind farms, wave or hydro projects regardless of what people think
- ...would choose nuclear as the best current option for energy supply