

Personal Development Resources

Understanding if its more sustainable to use biofuels (eg wood, vegetable oil, biogas) for heating than fossil fuel gas, oil or coal?

Quick Guide



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In this quick guide we aim to provide an overview of the 7 Key Themes to ESDGC relating to the above topic



1. Choices & Decisions

The choice is between a range of options, not just either/or. Each choice would have different implications. More detailed information might be needed, such as: what is the source of the biofuel, or fossil fuel and how is it extracted or transported? The fuel that is possible also depends on the operating system, and a heating system designed for one fuel cannot easily be converted to another form of fuel.

Biofuels can come from waste cooking oil or biogas from sewage or slurry, from locally grown wood, pellets made from wood waste from the furniture or construction industry, or from intensively grown crops grown on land that could be used for food growing, or that has been clear felled from original forest to take advantage of subsidies. Each of these have their own implications. Gas and oil can come from the Middle East, Russia, the North Sea, the Arctic, or from tar sands.

Coal can come from open castmines or deep mines, in this country or abroad. There is a range of different extraction methods with different environmental risks, and companies vary in their policies and procedures.

You can also use a heat pump to heat buildings, which uses electricity, but is highly efficient.



2. Identity and Culture

What is the impact on the culture of origin, on other cultures and on our own?

Using local wood chip or pellets might benefit local culture in the UK. Using vegetable oil from clear felled forest land in the Amazon might be very detrimental to indigenous rain forest culture.

In some parts of the world (eg. Nigeria, Siberia) the oil industry has had a negative impact on the life of the local people.



3. Wealth and Poverty

Does this product have a beneficial or detrimental effect on the distribution of wealth locally and globally?

There is much evidence that the policy to grow more biofuels on land previously used for growing food has led to rising food prices and food shortages world wide.

Oil extraction in Nigeria has caused pollution of fish ponds and farmland damaging the ability of rural people to make a living



4. The Natural Environment

What is the impact on the natural environment locally and globally?

Planting woodland to harvest sustainably for fuel can have a positive impact on the natural environment, creating diverse habitats for wildlife.

Biofuel is sometimes grown on land where ancient forest or other important wildlife habitat has been cleared to plant bio-fuel crops. This can be even less sustainable than using gas or oil.

The extraction of fossil fuels can cause catastrophic pollution, such as the devastating effect of oil spills, or the destruction of temperate forest in Canada to extract oil from tarsand.



5. Health

How does this product affect health locally and globally, in all the stages of production and use?

Burning coal can have an adverse effect on health, through air pollution.



6. Climate Change

How does the production and use of this product affect the climate? What is its carbon footprint?

In theory biofuels are carbon neutral, but if they are intensively grown using artificial fertilizers and heavy machinery they will have carbon dioxide emissions from this.

Similarly if they are grown on land that has been felled from original forest this will have implications for the footprint.

The fuel with the smallest footprint would be biofuels from waste materials. Biofuels grown locally in coppiced woodland or under a sustainable management system would also have a low footprint. Carbon dioxide emissions from heating can be reduced by better insulation and more efficient systems. It is possible to construct buildings that are zero carbon.

Each fossil fuel has a different carbon footprint. Coal produces two and a half times as much carbon dioxide as oil or gas, simply as a result of its chemical structure. In addition each fuel has a footprint from the extraction and transport.



7. Consumption & Waste

Is this product made from finite or renewable resources? How can it be recycled at the end of its useful life?

Biofuel from local sustainably managed woodland is a renewable resource, taking carbon dioxide from the air as it grows and releasing it when burned. Biofuel from waste is very sustainable. This can be waste vegetable oil turned into heating oil, or it could be methane from waste products such as slurry or from domestic or industrial waste, or from waste organic products such as waste food.

Fossil fuel is a non renewable resource, and there are signs that the world has already used more than half of the total supply. This turning point is known as peak oil after which oil becomes progressively harder to extract and more expensive.

Conclusion

On balance at the moment our expert would:

Explore all the insulation options first, then consider the efficiency of the present heating system. If it is near the end of its life you might consider a new system, and could convert to local wood fuel, biogas, or even install a heat pump.