

Net-Zero: The practical options and the legal implications and techniques required

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Introduction

- **Reducing energy consumption by becoming more energy efficient**
 - Synthetic fuels
 - Sensor operated lights
- **Switching to a green tariff for power consumption**
- **Using energy from renewable and low-carbon sources**
 - Solar farms
 - Anaerobic digestion facilities
 - District Heating Systems

Introduction

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 - Green procurement
 - Green couriers
 - Embodied Carbon
- **Purchasing carbon offsets**
 - Woodland Trust offset
 - Regulated vs Voluntary offset schemes
- **Green Bonds/ Funding**
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Reducing Energy Consumption

Synthetic Fuels

- The use of synthetic fuels is the only way in the short to medium term to decarbonise transport whilst the technology in relation to other cleaner fuel sources is further developed. This is because:
 - Synthetic fuels can be utilised without a need to modify existing engine or fuel supply infrastructure as they can be easily added to conventional petrol and diesel to help reduce the CO2 emissions from ICE vehicles. Such reduction in CO2 emissions could therefore be achieved immediately upon launch.
 - Synthetic fuels are currently also a lot easier and cheaper to store and transport compared to other alternative fuel sources.

Reducing Energy Consumption

Synthetic fuels

However.....

- Synthetic fuels have lower engine efficiency rates compared to other alternative fuel sources and the most common method of their production, Fischer Tropsch synthesis, still uses fossil carbon sources.
- Further technological development should seek to ensure that non-fossil carbon dioxides are used in the production process of biofuels. Equally, further development of renewable energy sources, such as wind, nuclear or solar power, can assist in ensuring electro fuels are produced in a carbon-neutral manner.

Reducing Energy Consumption

Hydrogen powered vehicles

The technology exists to utilise hydrogen to fuel vehicles. It is particularly suitable for certain types of vehicles - eg refuse collection vehicles which cannot realistically be electrically powered due to the weight of the necessary battery.

However the hydrogen is produced through the use of electricity so it is important that the hydrogen is produced using renewable electricity otherwise the benefit is diminished.

Currently the UK lacks the hydrogen supply infrastructure - this is a chicken and egg type situation.

Reducing Energy Consumption

Electric Vehicles

Providing the electricity is generated from renewable sources, then powering vehicles electrically is a substantial improvement on petrol and diesel.

The infrastructure for charging electric vehicles is growing and it is possible to charge at home. The range of vehicles is also improving.

However there can be precious resources such as lithium and cobalt in the batteries and so battery power ought not to be the only long term motive vehicle solution.

Reducing Energy Consumption

Sensor Operated Lights

- Sensor operated lights, particularly motion sensors, are a valuable tool to ensure that lights are switched off when not in use.
- Motion sensors in commercial buildings are estimated to reduce energy use by up to 30%.
- Sensor operated lights could also have applications for public lighting, such as street lamps.

Switching to a greener tariff for power consumption

Power Purchase Agreements

Businesses, organisations and individuals can all choose to receive power from a greener power provider and by doing so, support renewable energy generation.

Using energy from renewable and low-carbon sources

Solar Farms

- For example the solar farm at Langar - Nottinghamshire Community Energy Ltd
- Supports green community projects annually
- Pays a dividend to shareholders

Using energy from renewable and low-carbon sources

Anaerobic Digestion Facilities

- An essential feature for future bio-energy generation
- More work is required to improve the technology - but in principle eg using vegetable offcuts to generate methane gas is a no-brainer

Using energy from renewable and low-carbon sources

District Heating Systems (“DHS”)

- DHSs involve heat for an area or local community being supplied from a central source to multiple sites for heating, cooling or hot water.
- DHSs reduce carbon dioxide emissions by using centrally generated heat that is consumed by the networks end users and reduce costs of heat for end users.

Using energy from renewable and low-carbon sources

Manchester District Heating System

- Manchester City Council's city centre District Heating Scheme: this is an ambitious and high profile DH project in a complex city centre site.
- The Council is planning to provide heat and power to private customers in the area as well as its own buildings, requiring a robust corporate structure and navigating issues such as the interaction between the Public Contracts Regulations and Utilities Contracts Regulations in the context of energy projects.

Using energy from renewable and low-carbon sources

What is on the horizon for DHSs?

- Ofgem Decarbonisation Plan published in February 2020.
- In February 2020, BEIS published a consultation on building a market framework for heat networks, including developing a regulatory system with Ofgem as the regulator.
- Announcement in the spring 2020 Budget that the government will allocate £270 million for a new Green Heat Networks Scheme.
- Energy White Paper “expected in autumn 2020” - maybe?

Reducing Indirect Emissions

Green Procurement

- If your major customer asks you to demonstrate your organisation's environmental credentials - how will your organisation perform?
- If this has not yet happened to your organisation - then plan for it to do so now

Reducing Indirect Emissions

Green Couriers

- Green couriers, such as WeGo can reduce emissions and improve air quality by using:
 - Eco-friendly logistics.
 - Ultra-low emission vehicle fleets and “green hubs” as central charging points.
 - Bicycles in urban areas to reduce congestion/ access pedestrianised areas.
 - Secured compartments on scheduled passenger trains.
 - Intelligent scheduling to reduce unnecessary journeys and boost efficiency.
- “4 tonnes of CO2 saved per year by each cargo bike used instead of a van”.

Reducing Indirect Emissions

Embedded/ Embodied Carbon

- In recent years, operational energy use of buildings has been reduced in a number of ways for example, by improving insulation.
- However, it is embodied carbon that constitutes 20-50% of the whole life (embodied + operational) carbon emissions of a new building and so must not be overlooked.
- Embodied carbon is the carbon footprint of a material i.e. how many GHGs are released throughout the supply chain.
- Emergence of an embodied carbon database to increase awareness.
- Shift in building constructions materials for example, greater use of wood in building construction.

Purchasing Carbon Offsets

Woodland Trust Offset

- Planting trees is a great way to sequester CO2 emissions.
- The Woodland Trust works to:
 - Promote the benefits of woodland creation as a way of reducing atmospheric CO2.
 - Engage with businesses and individuals seeking to reduce their GHG emissions footprint by planting trees.
 - Lobby for greater recognition of the role of woodland in helping to mitigate environmental impact.

Purchasing Carbon Offsets

Not the only solution

“There’s no way we can plant our way out of the climate emergency”

- Carbon offsetting projects should not be used as a substitute for reducing emissions directly.
- A newly planted tree could take up to 20 years to capture the amount of CO2 emissions that a carbon offset scheme promises.
- When trees and plants die most of the carbon “stored” in them is released into the atmosphere.

Purchasing Carbon Offsets

Regulated vs Voluntary Offset Schemes

- The regulated market is governed by the United Nations Framework Convention on Climate Change.
- In contrast, the voluntary offset market has developed separately from government policies and targets. Most voluntary carbon credits are not recorded on external registers, increasing the risk of fraud through double-selling.
- In July 2019, Chris Grayling called for evidence of offsetting carbon emissions produced by transport to help customers make more informed decisions.

Green Bonds/ Funding

West Berkshire Council Green Bond

- West Berkshire Council recently launched the UK's first local green bond in a bid to raise £1 million from residents to fund solar panel installations on five council owned buildings.
- Community Municipal Investment (“CMI”) is a bond/loan mechanism issued by the Council directly to the public. CMIs are thought to have a low risk profile and are comparable to government backed investment instruments.
- “Hailed as a breakthrough in delivering green projects” particularly as Councils are struggling to recover as a result of the pandemic.
- A further five pilot schemes to follow shortly.

But most important of all, do something to make an environmental difference.

Empower the convinced and Convince the empowered.

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