

***"Promoting sustainable energy use.
Engineering sustainable energy supply."***

Introduction & Purpose

This Position Statement describes the IMechE responses, technological opportunities and engineering-led solutions to the major issues of relevance and/or concern in the broad energy field. It expands upon and clarifies the energy theme headline statement quoted above, and outlines the rationale (underlying principles) that will guide delivery of that statement to the theme's various target audiences.

Key Messages

With the facts currently available to us, interpreted in light of the underlying principles set out below, the key messages we communicate to our target audiences in support of the energy theme headline statement are:

Message 1: Go Lean, then Go Green.

The Energy Hierarchy (Fig.1) offers the best framework to guide energy policy and decision making, with demand-side actions to eliminate wastage and improve efficiency being the most sustainable options, and continuing to use fossil fuels in the way we do now being the least sustainable.

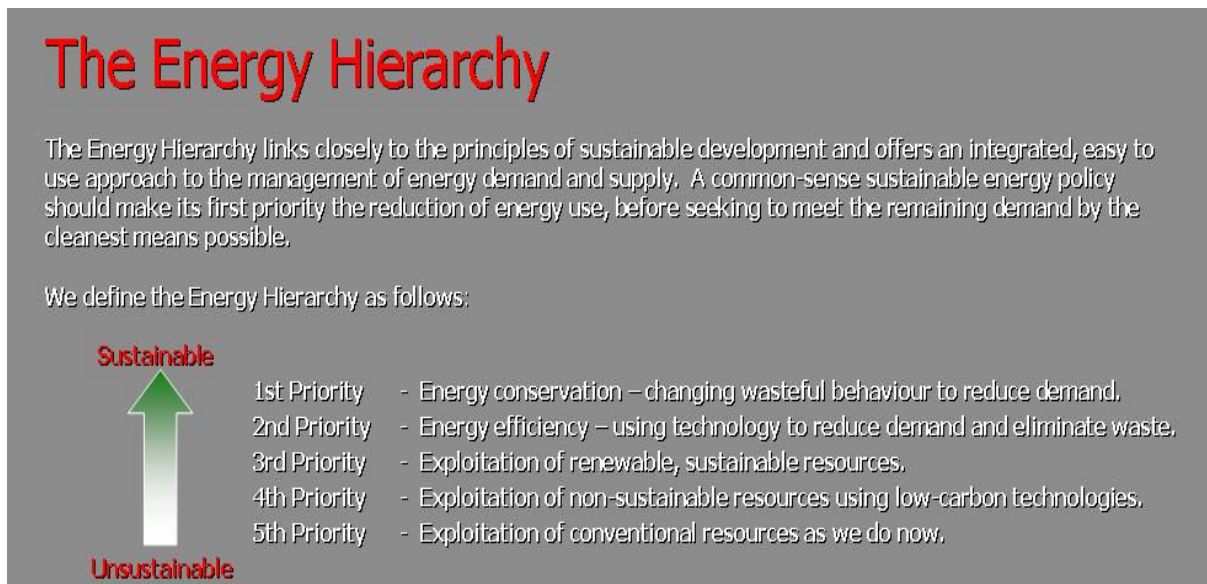


Fig. 1. The Energy Hierarchy

Message 2: Energy = Heat + Transport + Power

Action is needed across the demand and supply-sides of all energy sectors (Fig. 2) – we must pay every bit as much attention to the issues of heat and transport (roughly 80% of energy use in the UK) as we have traditionally paid to electricity supply (less than 20%).

Message 3: Mind the Peaks!

There is growing evidence that we are at or very near to "Peak Oil" and that "Peak Gas" will follow quickly behind. Global fossil-fuel energy markets will therefore increasingly be characterised by resource scarcity and high prices. This further emphasises the need to focus on alternatives (to oil) for transport and (to gas) for space and water heating.

Message 4: Don't Waste the Heat.

Because large centralised generating plants waste so much energy in the form of waste heat (often well over 50% of the input fuel energy), significant overall system efficiencies and sustainability for power generation and heat distribution can be achieved through a more distributed, less centralised model, using low carbon sources such as biomass and "waste".

Message 5: Use All the Options.

Even after exploiting all the opportunities to reduce demand and provide locally-produced, distributed power, there will be a continuing significant role for centralised, grid-based electricity generation. A balanced portfolio of supply options should be preserved to enable competition and secure supplies, with an increasing share from renewables alongside a continuing role for coal, gas (both with carbon capture and storage) and nuclear.

Message 6: Buildings Old and New.

Significant opportunities exist in the built environment sector. Priorities include a major refurbishment programme to improve the energy efficiency of existing houses, the rapid implementation and enforcement of higher standards for new buildings and the provision of better advice and financial support for on-site energy supply (micro-generation) technologies.

Message 7: Less is More!

A clear and workable integrated long term Government transport policy is required together with appropriate and adequate financial incentives. The policy should aim to encourage a better balance of transport usage (passenger and freight), favour the most environmentally friendly solutions and promote increased use of public transport.

Message 8: Renewables, Now!

The UK has an abundance and wide range of renewable energy sources available to it. We welcome the 15% by 2020 UK target for renewable energy set recently by the EU. It is achievable, but not with existing policies. A step change in the scale of ambition, reach and delivery of Government action is urgently required.

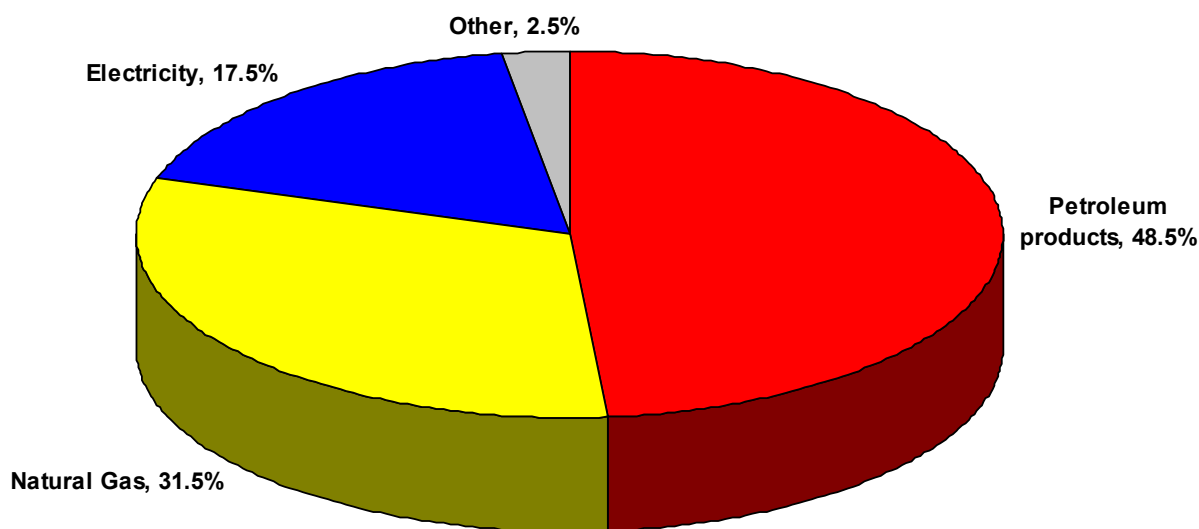


Fig. 2. Final UK energy consumption by fuel, 2006 (Source: DUKES 2007)

Underlying Principles

In delivering the headline theme statements, the Institution will establish and report facts relevant to the specific theme. It will also provide guidance and advice and lobby decision makers to adopt specific measures and policies, based on its own interpretation of those facts. This is often a highly subjective process. To help ensure the resulting pronouncements are robust, consistent and appropriate, we will use the following guiding principles:

- We support the principles and practices of Sustainable Development, as described in the IMechE Sustainable Development Position Statement.
- We use the word “sustainable” in its broadest sense, embracing concepts such as energy security, cost effectiveness, environmental stewardship, ethics and stakeholder dialogue.
- We support technological innovation, particularly in areas that inspire young people and provide major future business opportunities.
- Engineering and technology development on their own cannot address all the issues; we recognise the potential and need for behavioural, societal, political and organisational change.
- Markets and legislation are tools to be used to contribute to a sustainable future, not necessarily constraints on that future.
- We accept the findings of the Intergovernmental Panel on Climate Change (IPCC) and the Stern Review; that modern global warming is real and largely man-made. It can be cost-effectively addressed only if tackled urgently and aggressively.
- We are a Learned Society, not a trade association or trade union. We will be open-minded, gather evidence from a wide variety of national and international sources, and make pronouncements on the basis of what we perceive to be best for society, the environment and economy at large.
- We will, wherever possible, lead by example and promote engineering and engineers as able to achieve great things and thus be the key deliverers of a sustainable future.

