

Technical Paper | Greenhouse gas management and energy efficiency – six reasons why you shouldn't get these confused!

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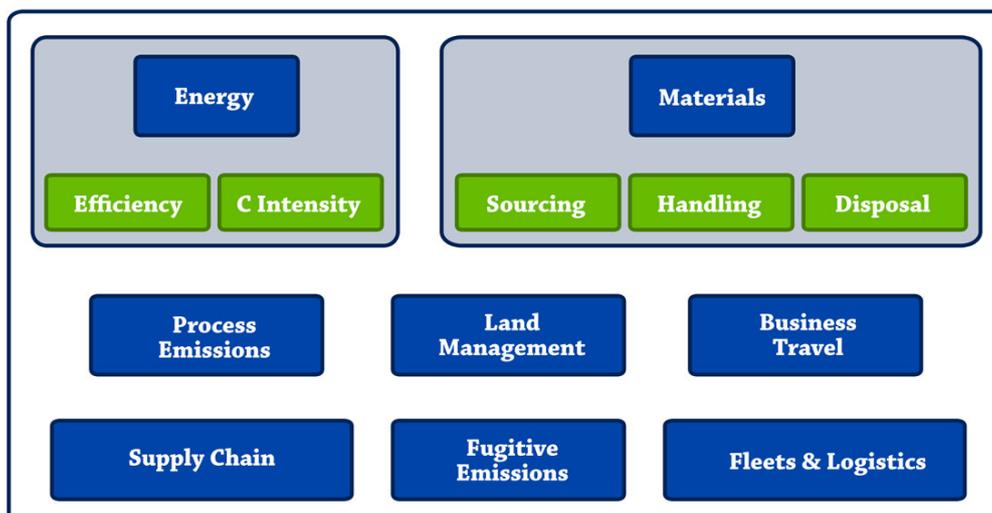
Internal Reviewer: Matthew Brander

Green business reports, articles and even government programmes, such as the Carbon Reduction Commitment Energy Efficiency Scheme (CRC), often bundle greenhouse gas (or carbon) management together with energy efficiency. This simplification should be avoided for the following reasons:

1. Greenhouse gas management covers a much wider range of activities

Energy use in buildings and facilities is just one of several components that should be covered within a GHG management strategy. While energy consumption may be the largest source of GHG emissions in energy intensive manufacturing industries, for many businesses in finance, food, technology, retail, or other services and public sector organisations energy usage represents less than 50% of total GHG emissions.

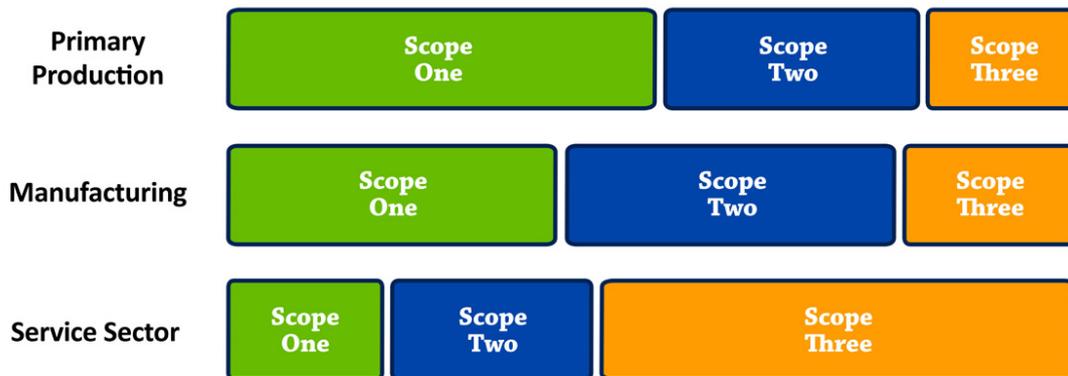
Figure 1. Energy consumption is a sub-set of total emission sources:



If only energy consumption in owned buildings and facilities is considered (scopes 1 and 2), then a large proportion of total emissions within scope 3 are likely to be overlooked. And therefore, a large proportion of total emission reduction opportunities are also likely to be missed.

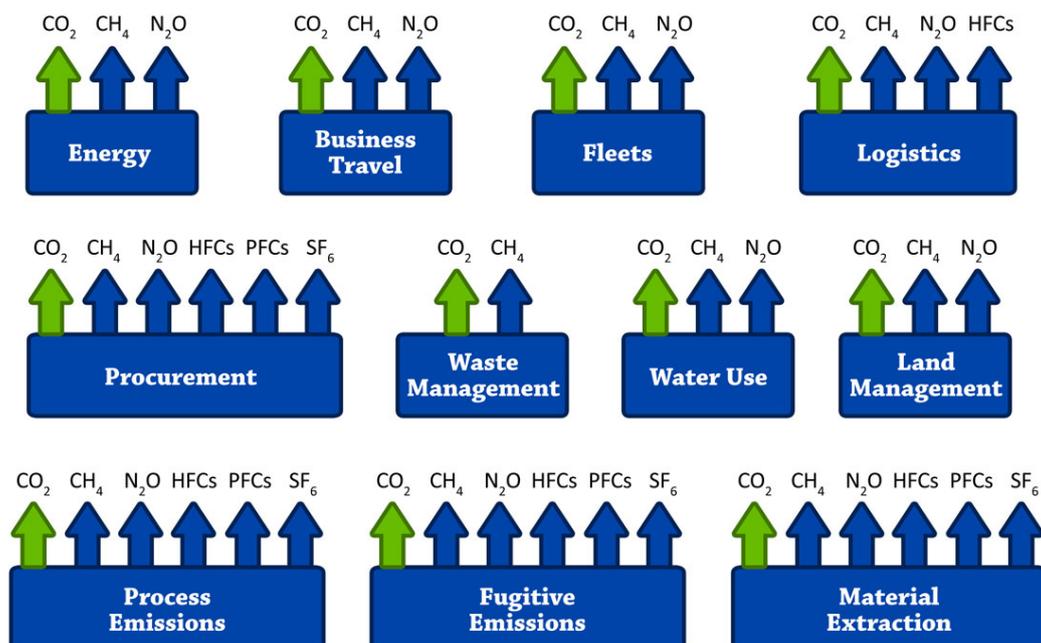
Figure 2. Approximate proportions of average organisational GHG footprints

Typical proportions of an average GHG footprint by sector



2. Greenhouse gas management covers all Kyoto GHGs

If only GHGs from energy consumption are monitored key emissions sources from process gases and fugitive emissions will be missed. This is particularly important for companies in the manufacturing sector, companies that run large refrigeration equipment (mobile and stationary), and those that operate high current electrical switch gear.



3. Efficiency is only part of the story of reducing GHG emissions from energy usage

While improving energy efficiency is nearly always desirable for a business striving to become more operationally efficient it is only part of the story. Total emissions from energy usage are a multiple of usage and carbon intensity (often measured in kgCO₂e per MWh). Different energy sources vary widely in their carbon intensity. For example:

1 MWh UK grid electricity = 545 kgCO₂e

1 MWh of natural gas = 185 kgCO₂e

4. Improvements in energy efficiency should not be automatically assumed to result in emission reductions

While improvements in energy efficiency often represent progress in reducing GHG emissions, the relationship may not be 1:1 and should not be assumed to occur automatically, either at the level of a business or in the economy as a whole.

There are a number of ways in which potential emission reductions from efficiency improvements can be “eaten up” in other parts of a business or economy, through “comfort taking”¹, and financial transfers to other carbon intensive activities. It is therefore important to capture the overall effect of changes in energy usage within a broader GHG accounting framework, such as the WBCSD-WRI Greenhouse Gas Protocol (for businesses) or national GHG reporting systems.

5. Energy efficiency is managed at a different level of detail with energy management applications designed for specific types of assets

Energy efficiency is generally managed at a level of detail relevant to specific assets, e.g. a building or a factory. Modern building management systems often work on a real time basis – measuring consumption and constantly adapt lighting, heating and cooling depending on usage and the internal and external environment. While the overall performance of such systems may be captured within a GHG management system, GHG impacts are normally considered on longer cycles as part of the business strategy and asset renewal planning.

6. Climate change strategy is normally set at a board and financial control level, whereas energy management is an operational cost control issue

A company’s approach to climate change is normally set at board level based on consideration of a company’s corporate responsibility principles, its brand position, current and expected climate legislation, customer or investor demands and its situation in terms of technology, supply chain arrangements and asset renewal. A key consideration is whether a company can benefit from doing

¹ Comfort taking is when the money saved through energy efficiency measures is spent on other goods and services, including further energy consumption, the production and consumption of which generate greenhouse gas emissions.

more in terms of GHG abatement than what is legally required or directly incentivised based on the prices of energy and materials.

A company's energy efficiency policy is normally set within the context of other operational controls, with an emphasis on cost efficiency – either minimising the total cost of running an asset or the unit cost of producing a finished product.

In conclusion

Energy efficiency is an important consideration in business performance but it is not sufficient to base greenhouse gas mitigation strategy on energy efficiency alone. For most businesses, energy metrics do not provide a complete picture of a company's greenhouse gas impacts.