Climate Change and Minerals Planning – Mitigation

Climate change mitigation involves reducing greenhouse gas emissions and thus contributing to achieving net zero and to limiting global warming and associated climate change.

Minerals and mineral products are also critical to delivery of mitigation through providing the materials for construction and various technologies including renewable energy installations and equipment, achieving thermal mass and insulation and efficiency of new buildings.

The routes for achieving 'net zero' involve reducing emissions and removing/sequestering greenhouse gases from the atmosphere.

Assessment

In order to identify how to reduce emissions, as part of a climate change assessment that may be required to support a planning application including through Environmental Impact Assessment[1], it will be necessary to understand and quantify what these are and where they are generated.

Estimation and collection of reliable energy use data (electricity, gas, vehicle and machinery fuel) at site level therefore will be of critical importance, with conversion rates applied to derive associated greenhouse gas emissions[2] which may be compared against a baseline (without mitigation).

Various methodologies[3,4] may be employed to assess emissions anticipated throughout the life of the project. The types of emissions assessed need to include:

- Direct (scope 1) relating to combustion of fossil fuels by the reporting company, for example in machinery and vehicles;
- Indirect (scope 2) associated with the consumption of purchased energy and emitted from sources outside of the reporting company's ownership; and
- Other indirect emissions (scope 3) relating to up- or down-stream activities in the value/supply chain out of the reporting company's ownership or control[5].

1 For example, IEMA (2017) EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance https://www.iema.net/preview-document/assessing-greenhouse-gas-emissions-and-evaluating-their-significance

2 https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021

3 Defra/DECC (2009) Guidance on how to measure and report your greenhouse gas emissions https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69282/pb13309-ghg-guidance-0909011.pdf

4 Defra Small Business User Guide: Guidance on how to measure and report your greenhouse gas emissions https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69494/pb13310-ghg-small-business-guide.pdf

5 See also https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf

Scope 3 emissions are often the largest but difficult to assess. As an example, logically these could include the emissions resulting from manufacture of concrete for which aggregates would be used. However, for the purposes of meeting requirements of planning policy, Scope 3 normally should not be required, including in Environmental Impact Assessment, given it is the acceptability the land use that is considered. This is consistent with recent case law[6].

Mitigation

Mineral extraction requires use of heavy machinery in the movement of soil and overburden, the extraction of material, its transportation within a site, its processing and transport onwards to market. These activities typically rely on fossil fuels and so result in emissions of carbon dioxide.

Responses to mitigate the effects of extraction may be strategic, in terms of site location and selection, and more specific at the operational and site level. Minerals can only be extracted where they occur. Development plans normally apply criteria and SEA to identify the most appropriate strategy and location for new mineral extraction (Areas of Search, Preferred Areas and specific sites) which will include accessibility and transport options.

The transport of mineral to market, particularly by road, is likely to represent the largest consumption of fossil fuel and so the consequent emission of greenhouse gases. While land-won sand and gravel is generally supplied relatively locally, access to rail or water, including use of existing infrastructure, provide for lower carbon transport options over longer distances, especially for rock. Industrial minerals and specialist minerals products such as dimension stone routinely supply more distant and international markets. Over the 5 year period to 2018/19 rail freight of mineral products increased by 21% and is now the largest user of the rail network in terms of tonnage[7].

At the site level, mitigation measures include (see over):

6 For example, Court of Appeal judgement that GHG emissions resulting from the use of a material (in that case, combustion of oil drilled from a site) are outside the scope of EIA of the development proposal (for the drilling of oil) and should not be considered as environmental effects of the development for which permission is being sought. https://www.bailii.org/ew/cases/EWHC/Admin/2020/3566.html

7 https://mineralproducts.org/MPA/media/root/Publications/2019/Rail_Freight_Mineral_Products_Working_Together_to_Build_Britain.pdf

Mitigation measure	Example Actions
Reducing energy use and **improving energy efficiency**	Machinery upgrade to energy efficient equipment and vehicles when investments made. Building design and fabric – construction and renovation. Machinery & plant design, planned and preventative maintenance. Internal haulage routing, use of conveyors and pipelines, engine cut-off. Transport to market – use of rail or water where feasible, routeing and management to avoid idling and congestion.
Selection and use of **fuel type**:	Use of biogas, low-carbon hydrogen (dependant on development of supply and infrastructure[8]) or electrically-powered machinery and vehicles (dependant on de-carbonisation of electricity supply). Purchase of low carbon & renewably-generated electricity (green tariff).
On-site **generation and storage of renewable energy**	On-site/estate renewables (solar, wind, biogas) to power on-site processes during the operational phase, or export to the Grid during operational phases and following restoration (Grid access may be a limiting factor).
Carbon capture and sequestration	Site and estate management, and site restoration – habitats commonly established as part of site restoration, especially woodland and scrub, heathland and meadows, and reedbeds - as well as arable are particularly effective at capturing and storing carbon[9]. Recent research[10] indicates that adding 'rock dust' or waste cement to croplands can also achieve large-scale additional sequestration.

8 https://assets.publhing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Hydrogen-Strategy_web.pdf

9 Natural England (2021) Research Report NERR094 Carbon storage and sequestration by habitat: a review of the evidence (second edition) http://publications.naturalengland.org.uk/publication/5419124441481216

10 https://www.sheffield.ac.uk/energy/news/applying-rock-dust-croplands-could-absorb-2-billion-tonnes-co2-atmosphere-research-shows

Mineral Products Association
38-44 Gillingham Street
London SW1V 1HU

Tel 020 7963 8000
Fax 020 7963 8001

info@mineralproducts.org
www.mineralproducts.org

mpa essential materials sustainable solutions