Central Lincolnshire Authorities

Central Lincolnshire Local Plan: Climate Change Evidence Base

Task I - Offsetting

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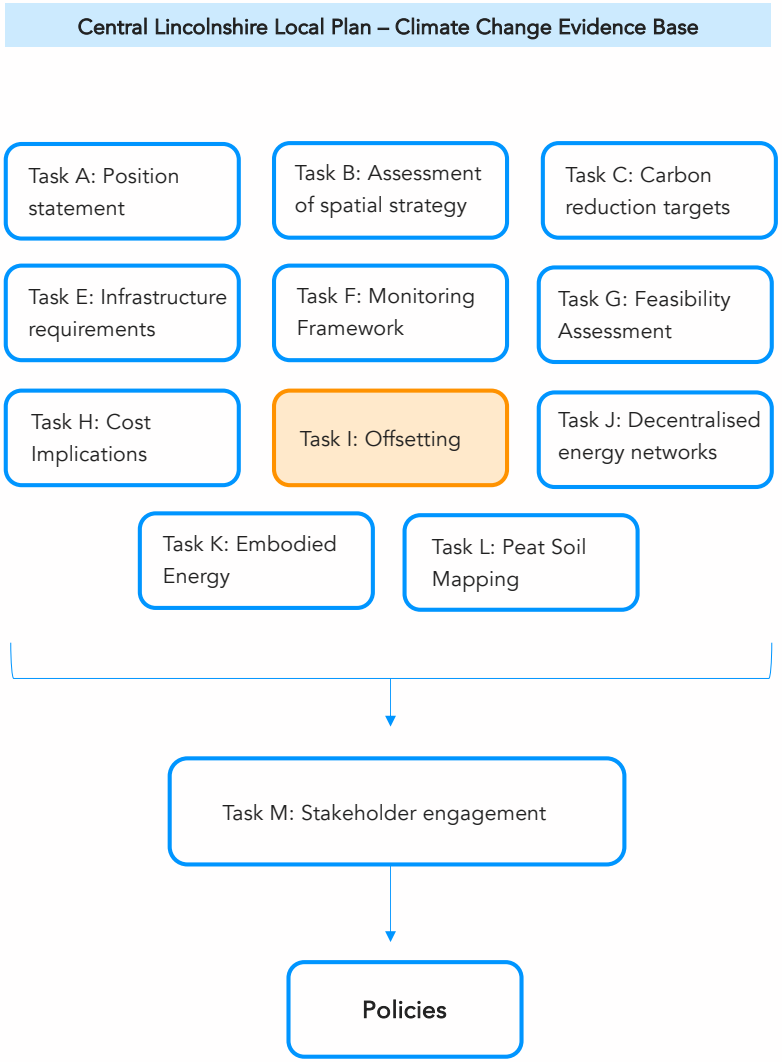
Task I
The potential role of offsetting in the Local Plan

This report assesses the potential role of the Local Plan for offsetting, mainly as a **planning mechanism** for compliance with a Net Zero Carbon new buildings policy but also in its definition covering **carbon removal projects** (e.g. afforestation).

An offset price is recommended along with key offset fund management principles which are based on lessons learned from other carbon offset schemes in the UK.



Contents

1.0.0 Clarifying the concept: what is 'offsetting'?

Concept

1.1.1 If a process cannot comply directly with a target level of carbon emissions, as it is not feasible, a decision can be made to allow the process to be deemed 'compliant' through offsetting.

1.1.2 The most widely recognised form of offsetting is associated with transport. As carbon emissions associated with an aeroplane trip are constrained by the type of fuel used and the average fuel efficiency of the plane some airlines do offer to their customers the possibility of offsetting the carbon emissions associated with their trip by paying into a carbon offset fund which will aim at saving an equivalent amount of carbon elsewhere.

1.1.3 Another significant example of carbon offsetting is the European Union Emissions Trading System (EU ETS) which aims at reducing industrial greenhouse gas emissions cost-effectively. It covers more than 11,000 power stations and industrial plants in 31 countries and covers around 40% of the EU's greenhouse gas emissions.

The debate around offsetting

1.2.1 There is a generally a negative perception around carbon offsetting and sometimes for good reasons. It is sometimes seen as method for an organisation to achieve a standard without complying with its spirit and as a way to save money and avoid/reduce the organisation's responsibility in addressing its carbon emissions in the first place. Any Central Lincolnshire offset scheme must be developed in a way that avoids these criticisms.

Core principles

1.3.1 Although offset mechanisms can vary in scope and size, the following core principles should apply to the development of any offset fund:

1. **Sustainability:** in order to achieve Net Zero by 2050 (at the latest) and enable a 1.5 degree world, Central Lincolnshire will need to limit carbon emissions in line with its carbon budgets. It is therefore important that offsetting accelerates progress, rather than slow it down. This is a significant risk with offsetting which has the potential to displace responsibility for pollution and unnecessarily delay important decisions.
2. **Additionality:** ensuring that measures funded by the offset fund would not have happened without it (or at least that they are not double counted). This is particularly important concept which will be discussed in the context of the Net Zero Carbon trajectory for all sectors.
3. **Transparency and measurability:** showing where the funding has been spent and what it has achieved is critical as offsetting is often criticised for being opaque and not effective.

(Source: Easyjet)

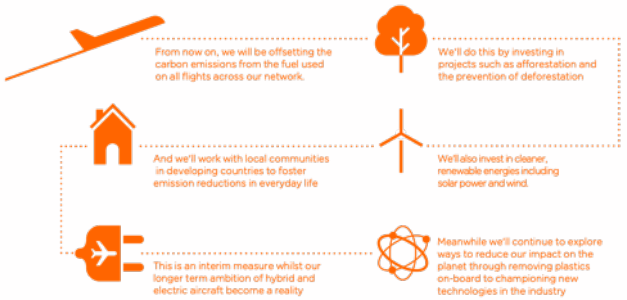


Figure 1.1 Two widely recognised forms of carbon offsetting: An airline's carbon offsetting scheme and the EU Emission Trading Scheme. Interestingly the example above acknowledges that offsetting should be an interim measure while it becomes technically possible to reduce airplanes' carbon emissions significantly. The EU ETS is based on a 'cap and trade' principle with greenhouse gas emissions being regularly lowered.

Figure 1.2 Three key principles of a sustainable and successful offsetting scheme. It needs to accelerate the transition towards a Net Zero Carbon Central Lincolnshire (instead of slowing it down by displacing responsibility), it must ensure that projects would not have happened without it and finally it must deliver its objectives.

2.0.0 Offsetting as a planning compliance mechanism

Who pays and why?

2.1.1 The main application of offsetting relevant to the Central Lincolnshire Local Plan is as a **planning policy compliance mechanism.**

2.1.2 Applications may be required to make an offsetting contribution in order to be deemed 'policy compliant'. This principle has been used by several local authorities in the UK for over a decade now. For example, the Greater London Authority has a 'zero carbon' policy for operational regulated emissions which relies on a minimum on-site carbon reduction complemented by a s106 contribution to 'offset' the residual regulated carbon emissions. In this context, the applicant pays into the offset fund in order to be able to achieve a successful planning consent.

2.1.3 We are suggesting a similar role for Central Lincolnshire: it could be a way for buildings with limited PV generation capacity to comply with the 'Net Zero Carbon' policy.

To offset which type of emissions?

2.2.1 Carbon emissions addressed by offsetting mechanisms to date have mainly been operational carbon emissions: the projected annual regulated carbon emissions of a building over 30 years. It is possible to consider a different approach though, e.g. offsetting contributions could capture operational emissions for a longer period (e.g. 50 years) or other greenhouse gas emissions in the future (e.g. embodied carbon) although that has not been done to date in the UK.

The principle needs to be compatible with Net Zero Carbon

2.3.1 Offsetting should be a mechanism which enables buildings which **cannot technically achieve** Net Zero Carbon on site to be 'deemed' compliant with planning policy. For example, as it is not currently technically possible for a 10-storey block of flats to generate as much renewable energy as it uses on annual basis, the applicant could be able to make a contribution to the offset fund and achieve a successful planning consent. Therefore, it is crucial that offsetting is only accepted in very specific circumstances, and when the following conditions are met:

1. The proposed building must not use fossil fuels for heating.
2. It must have a level of energy consumption compliant with the Energy Use Intensity (EUI) levels set in the Local Plan.
3. On-site renewable energy generation (e.g. through PVs) should be maximised and achieve the required minimum level in the Local Plan.

2.3.2 If these conditions are not met, there is a high risk that new buildings will need to be retrofitted in the next 30 years. Crucially, it will also make it much harder for the Building Sector to meet its carbon budget.

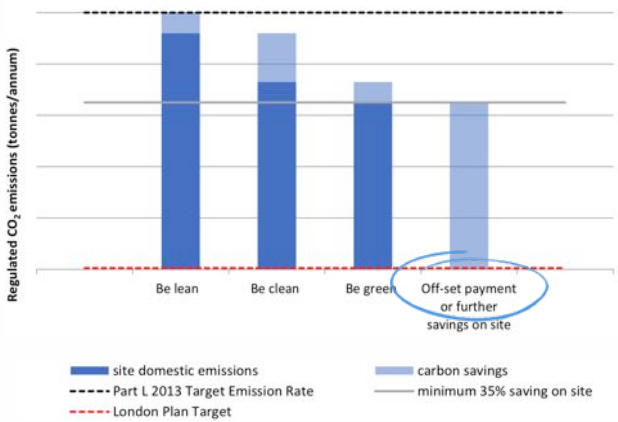


Figure 2.1 Offsetting as a planning compliance mechanism. The above extract from the Greater London Authority energy guidance identifies carbon offset payments as a way to achieve compliance with planning policy. Although further savings on site are encouraged, off-set payments are often favoured (Source: GLA)

Reduced operational energy consumption	**Achieve an Energy Use Intensity lower than the Energy Use Intensity (EUI) required in the Local Plan** (e.g. 35 kWh/$m^2_{building\ footprint}$/yr)	✓
Low carbon energy supply	**No gas connection or fossil fuel consumption on site** (or connection to heat networks using fossil fuels)	✓
On-site renewable energy generation	**Achieve an electricity generation intensity over the requirement in the local plan** (e.g. 140kWh/$m^2_{building\ footprint}$/yr)	✓
Net Zero Carbon energy balance	**Zero annual carbon balance** for the whole development showing predicted energy consumption and renewable energy generation on-site.	✗ (offset role)

Figure 2.2 Planning offsetting scheme. A new building would have to comply with most Net Zero Carbon requirements if it is to be deemed 'Net Zero Carbon policy compliant' through offsetting.

3.0.0 What should be funded with an offset fund?

What should the fund pay for?

3.1.1 Most carbon offset funds in the UK currently pay for a very wide range of initiatives: from low carbon retrofit in social housing to communication campaigns on climate change. Unfortunately, the lack of strategic direction of some of these funds also led to the funding of projects which are not compatible with a Net Zero Carbon future, for example gas boiler replacement schemes. It is therefore crucial for any public offset fund in Central Lincolnshire to have a clear funding strategy.

- Large scale renewable energy generation would add to the annual renewable energy generated in Central Lincolnshire. It would therefore help to achieve the targeted balance between energy requirements of new buildings and renewable energy generation. This could be funded.
- Solar PVs on future new buildings would add even more directly to the targeted balance between energy requirements and renewable energy generated on new buildings in Central Lincolnshire: it could be funded.
- Solar PVs on existing buildings would rely on a solution (additional renewable energy) in another sector (i.e. existing buildings) to achieve Net Zero Carbon for a new building which is not acceptable in our view. If the new building 'sector' was to rely on such a mechanism, it would never be truly Net Zero Carbon in operation in itself.
- Low / Zero Carbon retrofit would also rely on a solution (i.e. a reduced energy demand) in another sector (i.e. existing buildings) to achieve Net Zero Carbon which is not acceptable in our view. It is recommended that the new building and the existing building 'sectors' both try to achieve Net Zero Carbon without transferring responsibility to the other sector. Displacing the responsibility from the new building 'sector' to existing buildings is particularly problematic.
- Reforestation, afforestation and peat restoration have limited potential in Central Lincolnshire and should be only used for 'hard to treat' sectors, not new buildings. It should not be funded from a planning offset contribution.
- No other initiatives should be funded with the offset fund in our view.

3.1.2 The overall conclusion is therefore that only **additional renewable energy generation (on open land and on future new buildings)** should be funded by the **planning** offsetting contributions.

3.1.3 It is also recommended that all projects funded by the offset should be **located in Central Lincolnshire.** Therefore, the Local Plan should consider favourably renewable energy generation projects which will use this fund (e.g. PVs on new buildings, large-scale wind turbines).

		Purpose	Suitable for funding from **planning** offsetting scheme
Solar photovoltaic panels on new buildings		Additional renewable energy generation	✓
Large scale renewable energy generation		Additional renewable energy generation	✓
Low / Zero Carbon Retrofit of existing buildings		Reduction of energy demand	✗
Solar photovoltaic panels on existing buildings		Additional renewable energy generation	✗
Reforestation. afforestation or peatland		Carbon removal	✗

4.0.0 Setting the offset price at the right level

4.0.1 The traditional approach is based on a carbon offset price. It is expressed in £/tonne CO_2 and may either be stated in relation to the 'annual' shortfall or the 'lifetime' shortfall (the convention is to assume a 30-year duration). The carbon offset price is applied to the residual CO_2 emissions (in this case the shortfall with Net Zero Carbon).

4.0.2 According to a recent report into the cost of carbon used as a planning compliance mechanism for new buildings[1], the risks of a low carbon price are firstly to disincentivise efforts to reduce carbon emissions on-site and secondly to be insufficient to fund projects off-site. These two risks must be avoided in Central Lincolnshire.

Approach 1: A carbon offset price based on the non-traded cost of carbon

4.1.1 **The non-traded cost of carbon** has been the most widely used in the UK so far to inform the carbon offset price in the building sector in the UK to date. This approach was adopted by the Zero Carbon Hub in 2012 which recommended a carbon price of **£60/tCO₂**, i.e. £1,800/tCO_2 over the 30-year period. This value has been used by most Local Authorities which have set up a Carbon Offset Fund in the last few years. If this analysis was to be updated today it would lead to a carbon price of approximately **£105/tCO₂** i.e. £3,150/tCO_2 over the 30-year period for the 'high scenario'.

4.1.2 The issue with this approach is that it is not correlated to the measures which will be funded, creating a very unclear situation, threatening the achievement of Net Zero.

Approach 2: A renewable energy offset price

4.2.1 According to the proposed policy requirements, the feasibility challenge is likely to be due to limited potential PV generation on-site. Therefore, the offset price could be based on the cost of delivering PVs off-site (e.g. on another new building). The cost could be related to carbon or just annual energy generation. Using a reasonable cost rate for a high output PV system with micro-inverters:

a. Assuming the SAP 10.1 factor (i.e. 136 gCO_2/kWh) for electricity, installing additional PVs would cost approximately **£488/tCO₂**. Assuming a lower carbon factor (e.g. 56 gCO_2/kWh[2]), this number would increase to **£1,117/tCO₂**.and with a 10% administration and management fee this would bring it to **£1,229/tCO₂** i.e. £36,870/tCO_2 if applied over a 30-year period.

b. f the offset mechanism was expressed as a renewable energy offset and its price expressed in £/kW (e.g. **£1,000/kW**) or £/kWh (e.g. **£1.5/kWh**).

4.2.2 The latter is our recommendation as the price would be independent from carbon factor changes. It is unlikely that this approach would have any impact on viability. It is just a way to ensure that schemes with limited space for PVs would still pay for them, which would be consistent with other applications.

[1] Towards Net Zero Carbon - Achieving greater carbon reductions on site: The role of carbon pricing, 2020
[2] Average annual carbon factor for grid-supplied electricity for the period 2024-2050 (Source: HM Treasury Green Book Average, 2019)

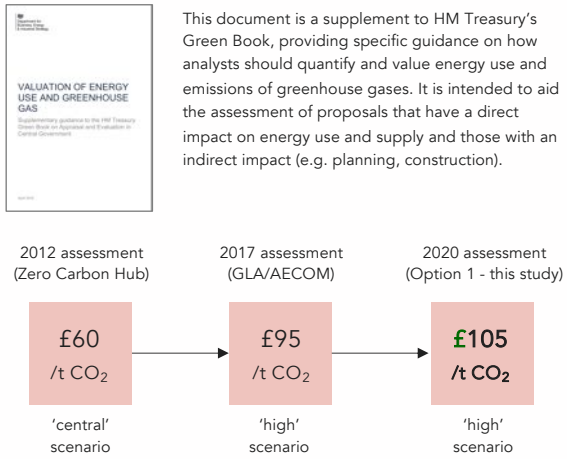


Figure 4.1 The carbon offset price using the traditional non-traded cost of carbon approach is relatively cheap: it does not incentivise carbon reductions on-site and cannot deliver a wide range of energy demand reduction and renewable energy generation projects off-site

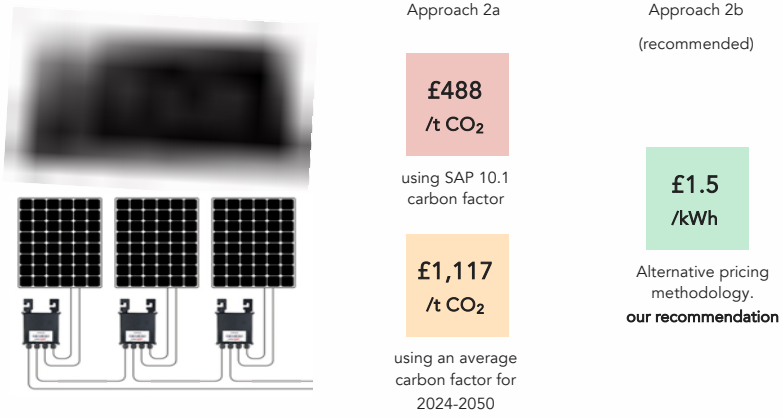


Figure 4.2 If the carbon offset price is to enable the delivery of PVs to save an equal amount of carbon, it should be set at **more than £1117/t CO_2** assuming an electricity carbon factor of 56 gCO_2/kWh (average for the period 2024-2050). The alternative unit which can be used is £/kWh. This could be interesting as it would not vary depending on which carbon factor is being used.

5.0.0 Legal mechanism to collect the funds

Planning contributions: s106 is the mechanism of choice

5.1.1 Section 106 of the Town and Country Planning Act of 1990 allows an applicant to enter into an agreement with the Council so that planning permission can be granted to a development that would not otherwise be acceptable. The amount of the contribution must be negotiated between the developer and the Council. Section 106 agreements have been the key mechanism through which payments have been made to Carbon Offset Funds for planning to date.

5.1.2 CLG Circular 05/05 and regulation 122 provide guidance to Local Authorities on the use of planning obligations and set out five tests that must be met. Planning obligations should be:

1. relevant to planning;
2. necessary to make the proposed development acceptable in planning terms;
3. directly related to the proposed development;
4. fairly and reasonably related in scale and kind to the proposed development;
5. reasonable in all other respects.

5.1.3 It should be noted that there are also constraints with s106 agreements and that they are subject to specific negotiations and to viability limitations.

5.1.4 Additionally, s106 may not be suited to smaller developments as they are not subject to s106 agreements. However, these developments given their low density, are not likely to require the use of the offsetting mechanism.

What if the section 106 is scrapped?

5.2.1 The Planning White Paper titled 'Planning for the Future', proposes scrapping Section 106 and the Community Infrastructure Levy in favour of a nationally set value-based charge for developers. This would represent an issue for the offset fund, as the contribution would not vary depending on whether the scheme has achieved Net Zero Carbon on-site or not.

5.2.2 However, contributions would still be collected and have to be spent locally and so it is still likely to be possible to fund renewable energy generation projects. It is therefore recommended to develop an offset fund in any case to create the mechanism by which sites could apply for funding to pay for additional renewable energy generation.

The five tests which must be met for planning obligations:

(Source: CLG Circular 05/05 and regulation 122)

1. relevant to planning
2. necessary to make the proposed development acceptable in planning terms
3. directly related to the proposed development
4. fairly and reasonably related in scale and kind to the proposed development
5. reasonable in all other respects.

Figure 5.1 Section 106 is currently the mechanism used to collect contributions from an applicant. It has been successful, adequate and better suited than the Community Infrastructure Levy (CIL). Collected funds have to be spent within a set time limit but it should not be a problem so long as suitable projects are identified and ready to go!

Figure 5.2 The Planning White Paper published for consultation in August 2020 proposes to scrap Section 106 and CIL and replace them with a nationally value based charge.

6.0.0 How to set up and manage a successful offset fund

Learning from other planning offset funds

6.1.1 A large number of offset funds are now operated by LPAs. It is important that their advice is considered in the development of the Central Lincolnshire offset fund. The list of local authorities who have operated offset funds for a number of years include:

- Milton Keynes
- London Borough of Tower Hamlets
- London Borough of Islington

Key challenges

6.2.1 The following challenges are considered particularly crucial in the establishment and successful operation of an offset fund:

Validation of contributions

6.2.2 As explained previously, unless the offset fund is selective in terms of the contributions it received, it could well slow down instead of accelerating the transition towards Net Zero Carbon by 2050. A clear validation process should therefore take place. It will be very straightforward for planning applications but could be more complex for voluntary contributions.

Identification of projects

6.2.3 The identification of projects is generally one of the biggest challenges for offset funds. Offset contributions from new buildings which cannot achieve Net Zero Carbon due to a lack of renewable energy generation will fund additional renewable energy generation on new future buildings or as stand-alone renewable energy generation projects. These projects should be relatively simple to identify.

Delivery

6.2.4 The delivery of projects should ideally be done by third parties as it is significantly improves the cost efficiency of the fund. This will require the development of standard contractual and quality assurance measures.

Verification

6.3.1 The offset fund will need to deliver carbon/renewable energy credits and therefore ensure that the intended renewable energy provision are being delivered.

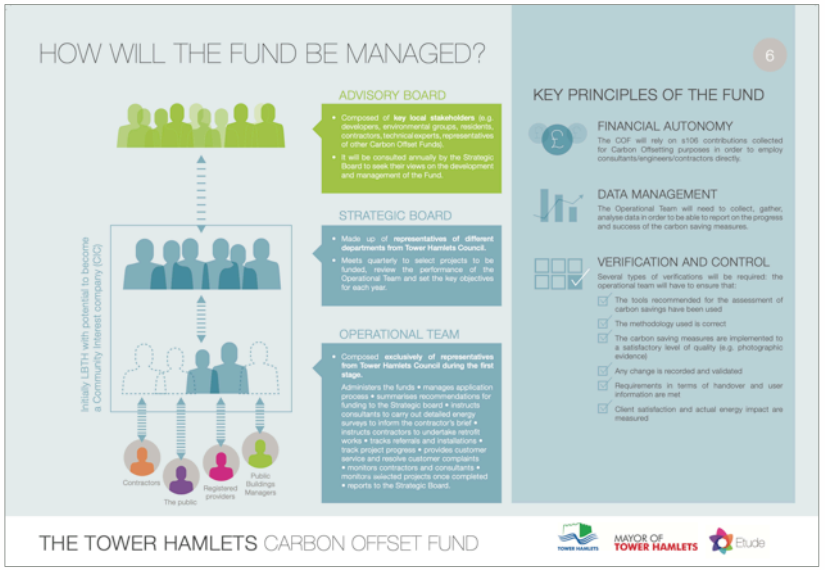


Figure 6.1 Other local authorities have developed and operated offset funds for a long time. Their strategic thinking and their experience of running these schemes should be used to develop the Central Lincolnshire Offset Fund.

Strategic management duties	Operational management duties
Regularly review the reports submitted by the Operational Team	Administer the funds;
Decide on the priorities for the allocation of funds	Summarise recommendations for funding to the Strategic Board/Panel
Regularly review funds collected and spent, and the fund management costs	Work with strategic partners to deliver the projects
Review results achieved	Track progress and installations
Review strategic partnerships	Resolves complaints
	Monitor projects once completed
	Report to the Strategic Board/Panel

7.0.0 Offsetting the 'hard-to-treat' emissions by removing carbon from the atmosphere

7.0.1 Beyond the use of offsetting as a planning compliance mechanism for new buildings, the Local Plan needs to consider the role of carbon removal to offset emissions from 'hard to treat' sectors. These form part of the Net Zero Carbon by 2050 trajectory.

Offsetting residual emissions: a strategy for carbon removals

7.1.1 The work undertaken as part of this Evidence Base has indicated that by 2050, actual GHG emissions will have to be reduced by nearly 90% (compared to 2017 levels).

7.1.2 All sectors will have to undergo a significant change in the next 30 years, with some sectors (e.g. aviation) presenting significant challenges. In contrast, the sectors directly impacted by the Local Plan (e.g. buildings, transport) are considered easier to address by the Committee on Climate Change. The residual emissions of these sectors should therefore be absolutely minimal, leaving only emissions which are technically or financially virtually impossible to reduce.

7.1.3 The role of these carbon removals (e.g. **reforestation, afforestation, peat restoration, carbon capture and storage**) will therefore be limited and can only be able to offset all but the hardest greenhouse gas emissions to reduce (e.g. aviation, agriculture). The Local Plan should include a strategy for these carbon removal projects which recognises their role and how it will be achieved gradually.

Further reading

- Task C – Emissions Reductions, Sections 3.10 and 3.11.

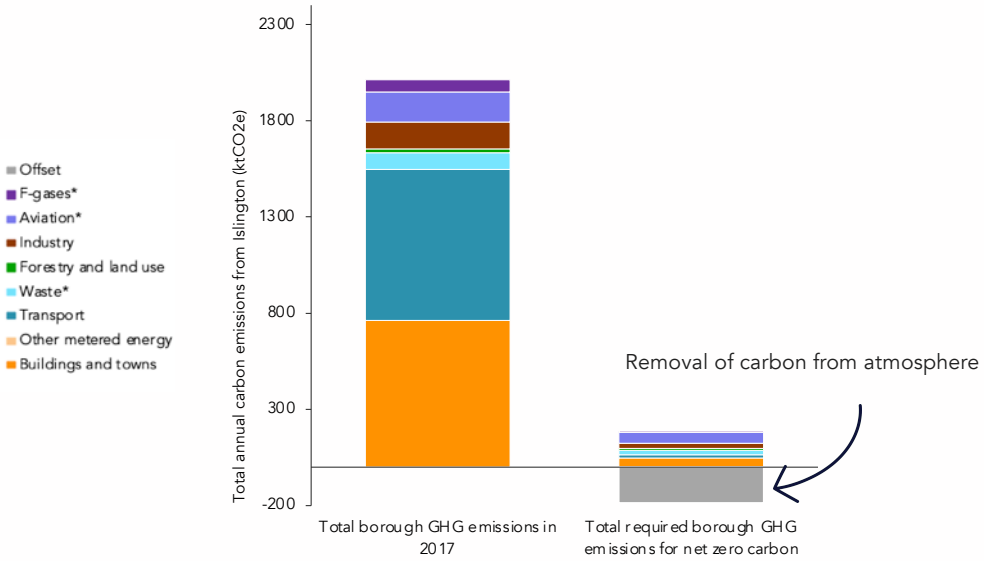


Figure 7.1 Carbon removal projects can only offset emissions from 'hard to treat' sectors, not buildings

Figure 7.2 DRAX Power Station is operating a Bioenergy with Carbon Capture and Storage pilot project, capturing just 1 tonne of CO_2 per day. Carbon removal projects whether passive (i.e. trees) or active (e.g. CCS) should form part of the Local Plan, just as waste management plant are.

References

[1] **Renewable Energy Procurement and Carbon Offset Guidelines (Consultation document),** UK Green Building Council, 2020

[2] **Towards Net Zero Carbon - Achieving greater carbon reductions on site: The role of carbon pricing**, a report for the London Boroughs of Barking and Dagenham, Ealing, Greenwich, Haringey and Westminster by Currie & Brown, Elementa, Levitt Bernstein and Etude, 2020

[3] **Carbon offsetting – Friend or Foe?,** Max Fordham, 2020

[4] **Carbon Offset Funds Survey Results 2019**, Greater London Authority report on the findings of the 2019 Carbon Offset Funds survey, 2019

[5] **Low carbon fund feasibility report**, Etude, 2019

[6] **London Carbon Offset Price**, AECOM, 2018

[7] **Carbon Offset Funds: Greater London Authority guidance for London's Local Planning Authorities on establishing carbon offset funds**, Greater London Authority, 2018

[8] **Review of carbon offsetting approaches in London**, National Energy Foundation, 2016

[9] **The London Borough of Tower Hamlets Carbon Offset Fund**, LBTH-Etude, 2015

[10] **Legacy Communities Scheme - Offset Solutions Study**, London Legacy Development Corporation, 2013

[11] **Allowable Solutions: Evaluating Opportunities and Priorities**, Zero Carbon Hub, 2012