

Climatic factors

1.1 Introduction climatic factors

Policy context

Kyoto Protocol on Climate Change

Signing up to the 1997 Kyoto Protocol, 38 Countries (plus the EU) have committed to individual, legally-binding targets to limit or reduce their greenhouse gas emissions. These add up to a total cut in greenhouse-gas emissions of at least 5% from 1990 levels in the commitment period 2008-2012. The UK has committed to an 8% reduction (base year = 1990).

Objectives, Targets and Indicators

Achieve a reduction in anthropogenic CO₂ levels to at least 5% below 1990 levels by 2012. Consider afforestation and reforestation as carbon sinks.

Draft Climate Change and Sustainable Energy Bill

The draft Climate Change Bill and accompanying strategy set out a framework for moving the UK to a low-carbon economy. The Bill sets out the Government's blueprint for tackling climate change. The draft bill will be subject to a full public consultation

Key points of the draft bill include:

- A series of clear targets for reducing carbon dioxide emissions - including making the UK's targets for a 60% reduction by 2050 and a 26 to 32% reduction by 2020 legally binding.
- A new system of legally binding five year "carbon budgets", set at least 15 years ahead, to provide clarity on the UK's pathway towards its key targets and increase the certainty that businesses and individuals need to invest in low-carbon technologies.
- A new statutory body, the Committee on Climate Change, to provide independent expert advice and guidance to Government on achieving its targets and staying within its carbon budgets.
- New powers to enable the Government to more easily implement policies to cut emissions.
- A new system of annual open and transparent reporting to Parliament. The Committee on Climate Change will provide an independent progress report to which the Government must respond. This will ensure the Government is held to account every year on its progress towards each five year carbon budget and the 2020 and 2050 targets.
- A requirement for Government to report at least every five years on current and predicted impacts of climate change and on its proposals and policy for adapting to climate change

Objectives, Targets and Indicators

A 60% reduction of carbon dioxide by 2050 and a 26-32% reduction by 2020

Environment 2010: Our Future, Our Choice (EU Sixth Environment Action Programme)

The latest Environment Action Programme gives a strategic direction to the Commission's environmental policy over the next decade, as the Community prepares to expand its boundaries. The new programme identifies four environmental areas to be tackled for improvements:

- Climate Change;
- Nature and Biodiversity;
- Environment and Health and Quality of Life; and
- Natural Resources and Waste.

Objectives, Targets and Indicators

To stabilise the atmospheric concentrations of greenhouse gases at a level that will not cause

unnatural variations of the earth's climate.

Draft Planning Policy Statement: Planning and Climate Change (Supplement to PPS1)

The PPS sets out how planning, in providing for the new homes, jobs and infrastructure needed by communities, should help shape places with lower carbon emissions and resilient to the climate change now accepted as inevitable. When finalised, the PPS will supplement PPS 1: Delivering Sustainable Development. This PPS is currently undergoing consultation.

Objectives, Targets and Indicators

- Climate change considerations should be integrated into all spatial planning concerns, including waste management, and not considered separately;
- In assessing a developments site suitability, planning authorities should take into account the capacity of existing and potential infrastructure (including waste management) to service the site or area in ways consistent with cutting carbon emissions and successfully adapting to likely changes in the local climate;
- Planning Authorities should require provision for sustainable waste management.

Meeting the Energy Challenge: a white paper on energy

This White Paper (DTI, May 2007) sets out the Government's international and domestic energy strategy to respond to these changing circumstances, address the long term energy challenges we face:

- tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and
- ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel.

Objectives, Targets and Indicators

Four energy policy goals:

- to put ourselves on a path to cutting CO₂ emissions by some 60% by about 2050, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond;
- to ensure that every home is adequately and affordably heated.

Climate Change: The UK Programme.

The UK's programme is a significant contribution to the global response to climate change. It sets out a strategic, far reaching package of policies and measures across all sectors of the economy, to achieve the targets set.

Objectives, Targets and Indicators

Cutting UK Carbon Dioxide emissions by 60% by 2050.

PPS 22 Renewable Energy

This Statement sets out the Government's planning policies for renewable energy, which planning authorities should have regard to when preparing local development documents and when taking planning decisions.

Objectives, Targets and Indicators

Regional spatial strategies and local development documents should contain policies designed to promote and encourage, rather than restrict, the development of renewable energy resources, except where these developments are likely to have an adverse effect on designated conservation sites (historic and natural), or designated landscapes. Targets should be expressed as the minimum amount of installed capacity for renewable energy in the region, expressed in megawatts, and may also be expressed in terms of the percentage of electricity consumed or supplied. Targets should be set for achievement by 2010 and by 2020. Regional targets have been set and these have been expressed for each strategic planning authority.

Sustainable Communities Plan (Sustainable Communities: Building for the Future) 2003

The Plan sets out a long-term programme of action for delivering sustainable communities in both urban and rural areas. It aims to tackle housing supply issues in the South East, low demand in other parts of the country, and the quality of our public spaces.

Objectives, Targets and Indicators

To transform Regional Planning Guidance into a Regional Spatial Strategy which increases delivery and targets for brown field development; affordable housing issues; in rolling forward annual new housing provision; identifies strategic employment locations; clearly defines transport priorities; addresses waste and renewable energy and reinforces urban and rural renaissance.

Regional Spatial Strategy (RSS14) of the East of England (Draft Revision)

Bedfordshire now lie within the East of England region for planning purposes. RSS14 is based on the principles of the UK's Strategy for Sustainable Development and sets out a strategy to guide planning and development in the East of England to the year 2021. This includes the scale and distribution of provision for new housing and identifying priorities for the environment, transport, infrastructure, economic development, minerals and waste management. It aims to improve the quality of life and sets out proposals which will influence where people choose to work and live and how to move about the region. RSS14 is currently under review – the final RSS14 is due to be published in early summer 2007.

Objectives, Targets and Indicators

Conserve the region's environment, quality of life, local character and natural resources, whilst adapting to climate change.

The Secretary of State's Proposed Changes to the Draft Revision to the Regional Spatial Strategy for the East of England and Statement of Reasons

The document records the Secretary of State's decisions on the recommendations by the Panel who conducted the Examination in Public, and outlines the modified text of the East of England Plan incorporating the Secretary of State's Proposed Changes to be included in the East of England Plan.

Objectives, Targets and Indicators

- promote innovation through incentivisation, master planning and development briefs; and
- encourage the supply of energy from on site renewable and / or decentralised renewable or low carbon energy sources.

Renewable Power Generation targets:

By 2010

At least 1192 Megawatts of installed capacity for renewable energy

By 2020

At least 4250 Megawatts of installed capacity.

These targets are equivalent to 14% of total electricity consumption in the East of England (or 10% excluding offshore wind) by 2010, and 44% (17% excluding offshore wind) by 2020.

Adapting to Climate Change: a checklist for development. Guidance on designing developments in a climate change

This checklist was produced by the 'Three Regions', which includes the East of England Sustainable Development Round Table, London Climate Change Partnership and the South East climate change Partnership to provide guidance for new developments to adapt to climate change.

Objectives, Targets and Indicators

To ensure that the effects of climate change are considered over the lifetime of the development, especially with regards to location and design. The main design issues affected by climate change, which the developers and their design teams will need to consider are:

- Location;
- Site layout;
- Buildings (structure, materials, physical envelope);
- Ventilation and cooling;
- Drainage;
- Water;
- Outdoor spaces; and Connectivity (infrastructure resilience and impact on neighbours).

Waste Strategy 2007 for England and Wales

The Government's vision is of a waste collection and treatment infrastructure where:

- Increasing amounts of waste are separated by householders and other producers themselves for joint kerbside collection. Greater value is derived from unwanted products that can be reused;
- Valuable materials find ready markets as recycle;
- Other wastes have electricity and heat recovered where appropriate;
- Better joining up between municipal and private sectors enables provision of local as well as regional facilities, with plant treating both merchant and municipal wastes wherever practicable; and
- Properly managed landfill (with capture and use of methane gas emitted) is available to take those wastes from which no useful value can be extracted economically from further treatments

Objectives, Targets and Indicators

- Reducing greenhouse gas emissions from waste management by at least 9.3 million tonnes carbon dioxide equivalent per year by 2020 compared to 2006/07

Designing for Sustainability – Luton Borough Council Supplementary Planning Guidance

This document sets out what the Borough Council expects in terms of sustainable design and energy conservation.

Objectives, Targets and Indicators

- Minimise energy requirements by maximising the use of passive and renewable energy sources.
- Maximise the use of natural light and heat.
- Insulate to minimise heat loss.
- Incorporate energy efficient technologies.
- Avoid flood plains and areas with potential flooding risk. Incorporate sustainable drainage principles. Conserve water – incorporate systems to allow use of filtered rain water and re-use of domestic and commercial grey water.

Luton Local Plan (2001 – 2011)

The Local Plan is to guide development and the use of land. It contains policies and proposals for land use and transportation.

Objectives, Targets and Indicators

Utilise passive energy sources and minimise energy and water consumption.
Policy U3 - All proposals for new buildings totalling 1,000 square metres floorspace or more will be required to incorporate renewable power generation equipment to provide at least 10% of the predicted energy requirements for those buildings.

Bedford Borough Council Development Plan Document (DPD): Core Strategy and Rural Issues Plan (Submission version)

The Local Development Framework is a series of documents which will gradually replace the Local Plan and deliver the spatial planning strategy for Bedford. These will set out the Council's policies for meeting the community's economic, environmental and social aims for the future where they affect the development and use of land. Preparation of the Local Development Framework will be a continual process with new documents being prepared at different stages to ensure that they are up-to-date.

The Core Strategy will set out the long term vision and overarching policies for the Borough. Consultation is taking place in connection with preparing the 'Core Strategy and Rural Issues Plan'. The DPD was submitted to the Secretary of State on 3 July 2006 and a six week consultation period followed. An independent Inspector will be appointed in May 2007 to consider all representations received in response to the consultation. It is expected that this DPD will be adopted in December 2007.

Objectives, Targets and Indicators

- Climate change, renewable energy and drainage issues are properly addressed.
- Minimise the consumption and use of energy, including fossil fuels by design and choice of materials.
- Achieve a 10% reduction in carbon emissions (below the normal requirement of the Building Regulations in all new dwellings and above a threshold of 500 sq. m. in new non-residential development.
- Follow a sustainable construction code such as that produced by the Building Research Establishment (BREEAM and EcoHomes) and achieve a rating of at least 'very good'; and,
- Developers will be expected to submit a sustainability statement and energy audit with proposals for development.

Mid Beds Local Plan (First Review)

The Plan was adopted in 2004 and guides development and the use of land over the next 10 years. The policies and proposals for land use and transportation are used to give planning advice and form the basis for determining planning applications.

Objectives, Targets and Indicators

- To encourage development that is appropriately located and meets identified needs.
- To encourage the conservation of energy and the development of renewable forms of energy.

South Bedfordshire Local Plan (Review Deposit)

The Local Plan was adopted in 2004 and provides comprehensive planning guidance for development in the area up to the year 2011. It develops the policies and general proposals of the

Structure Plan and relates them to precise areas of land in the area. It sets out policies for environmental planning and management, in particular relating to conservation and improvement of the environment, efficient use of land and resources and the management of traffic.

Objectives, Targets and Indicators

- Conserve resources by promoting energy efficiency and effective use of scarce resources in the design and construction of new development.

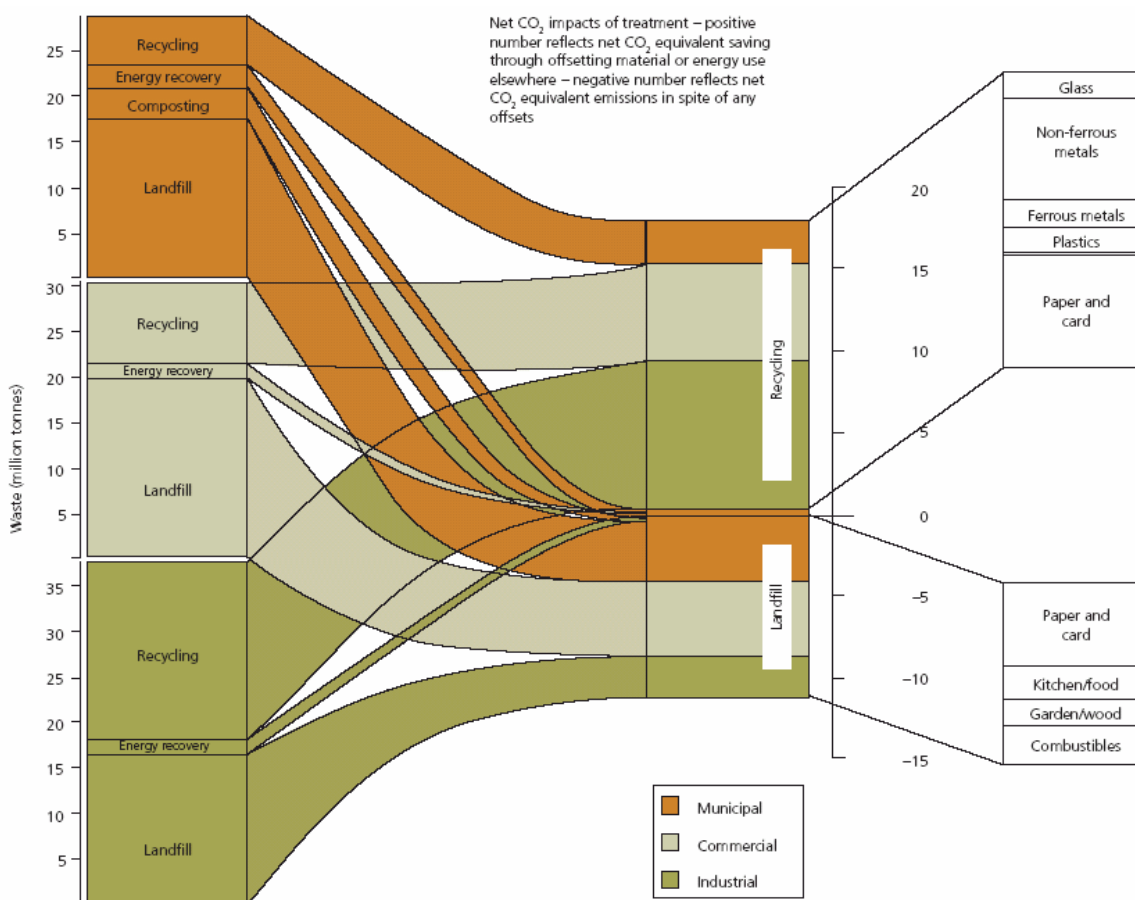
Baseline Review

- 1.1.1 This section reviews generic baseline climatic factors and energy data both nationally and regionally of relevance to Bedfordshire and Luton. The next section of the topic paper outlines how these issues specifically relate to waste management.
- 1.1.2 The overwhelming majority of the world's scientists, as represented on the Intergovernmental Panel on Climate Change accepts that the climate changes happening and that further change is inevitable. Over the last 100 years, the average global temperatures have increased by 0.7°C and sea levels have risen by between 10 and 20 cm (Three Regions Climate Change Group, 2005).
- 1.1.3 The main impacts of increasing atmospheric concentrations of CO₂ and Green house gas (GHG) emissions include:
- Warmer, wetter winters;
 - Hotter, drier summers;
 - Extreme rainfall events may happen twice as often by 2080;
 - Rising sea levels;
 - Possible intensification of the urban heat island effect; and
 - Possible higher wind speeds.
- 1.1.4 Some current UK regional climate change predictions to 2080 from the most recent UKCIP02 climate change scenarios report relevant to Bedfordshire and Luton include:
- Annual average temperatures look set to rise by between 2°C and 3.5°C by the 2080's. The south and east of the UK will most likely see the largest rise in temperature.
 - Temperatures in the south east may rise by as much as 5°C on average, by 2080's, according to the 'high emissions' scenario and over 4°C with the 'medium-high emissions'.
 - Precipitation in winter will increase in all areas of the country, in every one of the scenarios.
 - The summer will see less precipitation than we see now and will therefore be much drier.
 - The 'low emissions' scenario predicts the country to become up to 35% drier. Whereas the 'high emissions' scenario forecasts 50% less rainfall than we experience now, by the 2080's. The largest changes are predicted for the southern and eastern part of England
 - Less snow will fall throughout the UK - a decline of up to 90%.

- 1.1.5 Bedfordshire and Luton lie across two sub-regions of the East of England - the Northern Heartland and the Southern Heartland. The natural areas of the Bedfordshire Greens and Ridges, and the settlement of Bedford all lie in the Northern Heartland. Luton lies within the Southern Heartland. Both currently have issues of water resource availability which are likely to be exacerbated by the effects of climate change (SDRT, 2002).
- 1.1.6 The sub-region of the Northern Heartland is less vulnerable to climate change than many others. The effects of temperature on soil moisture and temperature are the most significant on agricultural and fluvial (river) processes. Subsidence is likely to be aggravated by dry summers brought by climate change and foundations need to be designed to cope with the increased risk. However, this sub-region is not prone to subsidence due to the lesser presence of clay soils (SDRT, 2002).
- 1.1.7 The Southern sub-region contains is most under pressure from development due to its proximity to London. Reduced soil moisture in the summer and autumn, higher annual and seasonal temperatures, and potential deficiencies in water resources could impact on agricultural processes in the sub-region. The risk of subsidence on clay soils is an important localised issue. To some extent, the sub-region will also be subject to risk from flooding from rivers (SRDT, 2002).

Issues associated with Waste Management

- 1.1.8 Waste management techniques can have impacts on climate emissions. If not properly managed, buried or landfilled waste produces carbon dioxide and methane, both of which will enhance the natural greenhouse effect when emitted.
- 1.1.9 The figure below (Waste Strategy 2007) shows annual amounts of waste from key waste sectors (municipal, commercial and industrial) and resulting greenhouse gas emissions (depending on waste management route) from today's waste with a breakdown of current recycling benefits by material. This includes the total of projected landfill emissions over 100 years.
- 1.1.10 The figure shows (on the left) the 100 million tonnes of waste produced annually, broken into the three main sectors (municipal, commercial and industrial) and how much is landfilled, incinerated or recycled. On the right side are shown the net greenhouse gas impacts (in carbon dioxide equivalents) by material.
- 1.1.11 The bottom of the diagram shows that landfilling will have significant negative impacts. Although as much methane as possible is captured for energy use, the remainder is released over the next hundred years or so. On the other hand, recycling of materials saves the energy and emissions that would otherwise be required to extract raw materials. The positive impact is shown at the top right.
- 1.1.12 Energy from Waste facilities or composting of biodegradable materials avoids the negative effects of landfilling (methane emissions) and saves limited amounts of energy or materials. So they have a small positive effect overall.

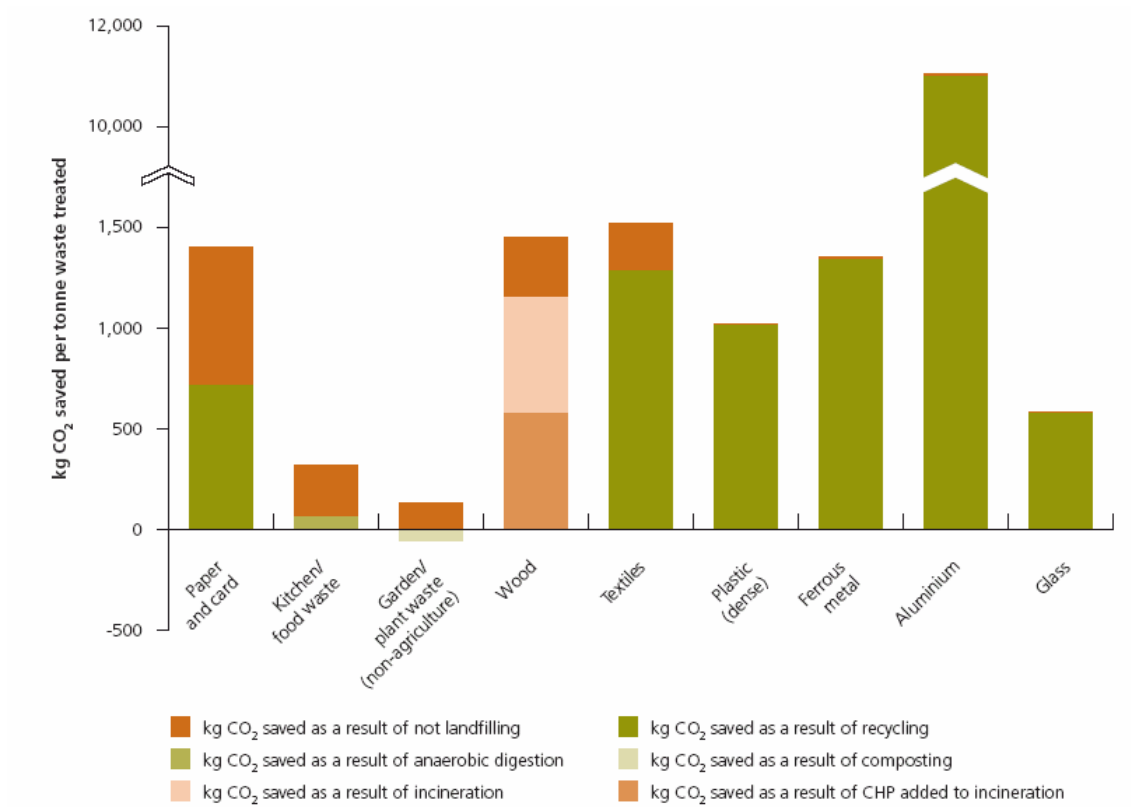


Greenhouse gas emissions from the main waste sectors. Source: Waste Strategy for England (2007)

- 1.1.13 Emissions from waste arise through both its incineration (burning) and landfill (burial). Burning waste releases CO₂ to the atmosphere. Municipal landfill gas composition is controlled primarily by products of microbial reactions in the landfill. Solid waste initially decomposes aerobically; the primary gas product is carbon dioxide. As the oxygen is used up, anaerobic micro-organisms predominate. These bacteria continue to produce carbon dioxide, but the process proceeds into second-stage anaerobic decomposition, where both methane and carbon dioxide are produced at approximately a 50-50 ratio. Methane is a much more potent greenhouse gas than carbon dioxide, trapping more infra-red radiation.
- 1.1.14 Methane and carbon dioxide are the two emitted substances which may significantly influence global warming. In the UK nearly 150 million tonnes (MT) of CO₂ is released every year. Management of municipal solid waste accounted for 3.6 MT (2.4% of the national total). Other important contributors are electricity generation (42 MT; 28.5% of the national total); and transport (21% of the national total). These figures are of moderate or good quality.
- 1.1.15 Methane has a global warming effect which is over 20 times more powerful than carbon dioxide. In the UK about 2.4 MT of methane is released every year. Emissions from municipal solid waste in landfill sites account for 0.7 MT (27% of the national total). Another

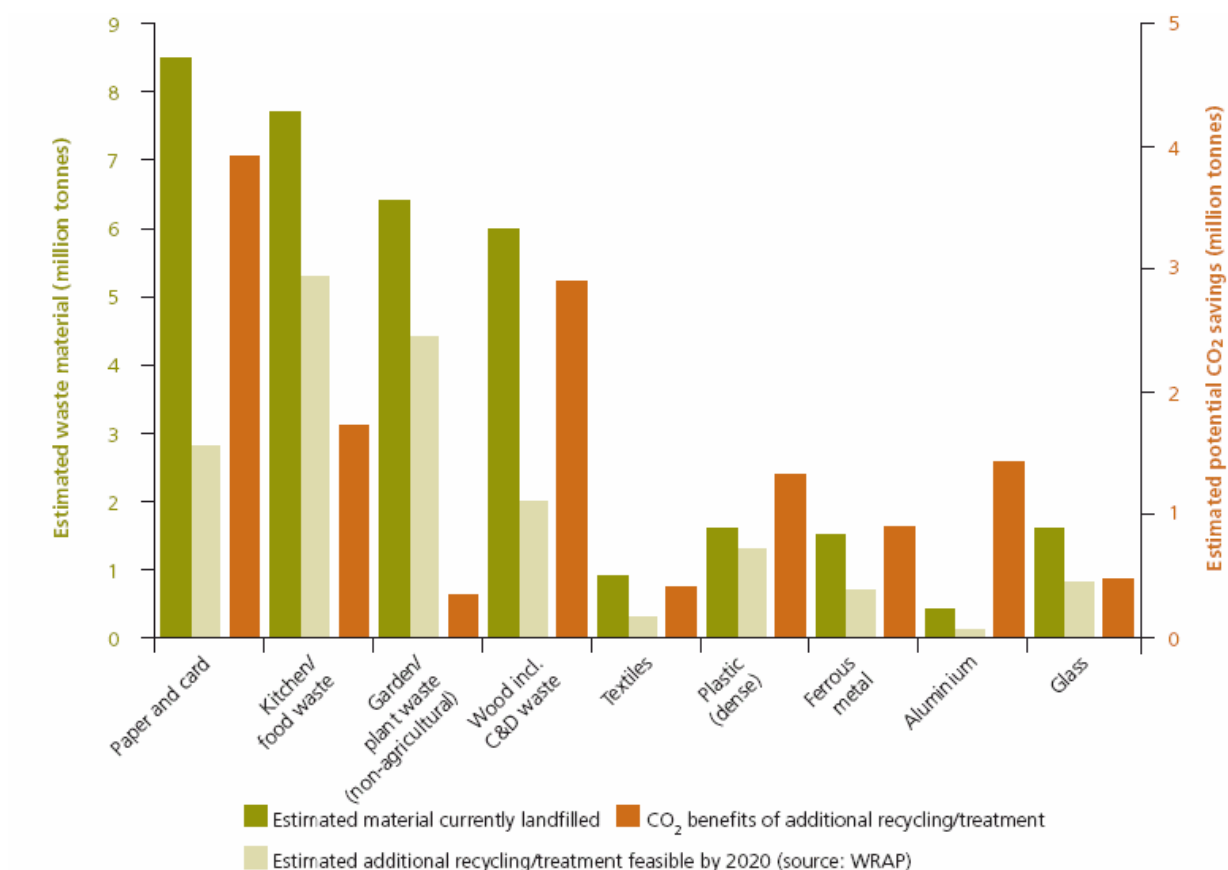
important contributor is agriculture, which accounts for an estimated 1.0 MT (about 40% of the UK total).

- 1.1.16 Research has been undertaken by Entec on how climatic change could affect waste management. They found the following potential effects:
- Disruption to supporting infrastructure such as road and rail from increased flooding from surface water, groundwater and drainage systems. This could also affect some on site facilities such as weighbridges and gas and leachate collection systems.
 - Changes in site hydrology and temperature which in turn could affect waste management processes i.e. landfill degradation rates, leachate production and composition.
 - A change in the types and amount of flora and fauna on and around facilities.
 - Increased damage to site buildings from storms.
- 1.1.17 Potential implications resulting from climate change for the waste sector include:
- Warmer temperatures are likely to exacerbate air pollution resulting from traffic and congestion – this may be an issue for waste collection vehicles.
 - Some chemical processes will become more active in warmer temperatures and some pollutants more mobile in more frequent and intense rainfall. Greater care will be required when dealing with waste (especially organic waste). This will include prompt and more frequent collections and better designed management facilities.
 - Pests and vermin are likely to become more active in warmer weather, posing an increased health risk for some types of facility such as landfill or where there is the storage of waste.
- 1.1.18 To reduce the impacts of climate change Bedfordshire and Luton Councils should ensure that their waste development plans incorporate adequate measures to allow for adaptation to the effects of climate change as well as encouraging the reduction of the emissions of greenhouse gases such as Carbon Dioxide and Methane. Policies should take account of the need to mitigate the effects of, and adapt to, climate change through, for example, the reduction of greenhouse gas emissions, the use of renewable energy and taking climate change into account in the location and design of development (DCLG Companion Guide to PPS10).
- 1.1.19 The environmental impacts of wastes and how they are managed differ by materials. Recent studies have considered the relative potential benefits for climate change of the recovery of different materials using a life-cycle approach. The findings suggest significant potential savings in greenhouse gas emissions from greater diversion of certain materials from landfill, through recycling and energy recovery (Source: Waste Strategy 2007).
- 1.1.20 The two figures below show the potential greenhouse gas savings from diverting a tonne of each of the waste streams. And the potential amounts of further waste that could be recovered.



Estimated carbon benefits of diverting different waste materials from landfill¹
(Source: Waste Strategy 2007)

¹ Carbon benefits of diverting waste material away from landfill assuming: paper and card, textiles, plastics, metals and glass are recycled; wood is incinerated with energy recovery; food waste is anaerobically digested, and garden/plant waste is composted.



Estimated carbon benefit of feasible additional treatment by 2020² (Source: Waste Strategy 2007)

1.1.21 Better collection and treatment of waste from households and other sources has the potential to increase England’s stock of valuable resources and also to contribute to energy policy. The potential benefits are higher where recovered materials are of higher quality, material integrity can be maintained and virgin material production is avoided.

Recovering Energy from Waste

1.1.22 Use of landfill remains high by European standards, and recycling levels and recovery of waste as energy, low. While there has been significant improvement in recent years, investment in waste collection and treatment to achieve these objectives in England has been historically low and slow to get off the ground. A number of important new waste treatment technologies (such as anaerobic digestion) have not been established in this country (Source: Waste Strategy 2007).

1.1.23 Recovering energy from waste which cannot sensibly be reused or recycled is an essential component of a well-balanced energy policy. Denmark derives 3.6% of its electricity supply

² Waste currently landfilled, additional feasible treatment by 2020 and relative carbon benefits of additional treatment in 2020 assuming: paper and card, textiles, plastics, metals and glass are recycled; wood is incinerated with energy recovery; food waste is anaerobically digested and garden/plant waste is composted.

from municipal waste. Recent sharp increases in energy prices, and continuing instability in a number of supplier countries, underline the importance of maximising energy recovery from the portion of waste which cannot be recycled. This means using the most efficient technology for the job, and recovering heat as well as electricity where practicable (Source: Waste Strategy 2007).

- 1.1.24 The Renewables Obligation Certificates (ROC) system provides support for electricity produced from the biomass content of waste treated in gasification, pyrolysis, anaerobic digestion and good quality combined heat and power plants. Energy from waste plants are also exempt from the Climate Change Levy (Source: Waste Strategy 2007).
- 1.1.25 The Government's Energy White Paper (2007) set out proposals to band the Renewables Obligation (RO). This presents the opportunity to provide a more targeted level of support to different renewables. A consultation on the RO published alongside the Energy White Paper set out the proposed levels of support under a banded RO, including greater support for anaerobic digestion, gasification and pyrolysis. In addition, there are plans to remove barriers to the burning of secondary recovered fuel (SRF) alongside ROC eligible biomass at co-firing stations and proposals to facilitate the accreditation of eligible schemes by the regulator (Ofgem) through deeming the energy content of mixed wastes. These changes will encourage greater recovery of energy from waste through anaerobic digestion and other energy from waste technologies (Source: Waste Strategy 2007).
- 1.1.26 The electricity derived from the energy recovered in anaerobic digestion is eligible for ROCs. Plants have been situated successfully in light industrial estates within towns, and there is scope for using food wastes derived from both household and business sources. Defra has established an Anaerobic Digestion Policy Network to take forward work on anaerobic digestion and maximise the synergies between the different markets for it.
- 1.1.27 In addition, the digestate, produced by anaerobic digestion has a range of potential uses on land, including as a fertiliser or soil improver.
- 1.1.28 In the longer term, the Government is considering developing a greenhouse gas emissions performance indicator for local authority performance on waste. This would reflect total greenhouse gas emissions from a local authority's waste management activity and fit within the new performance framework. Consideration will be given to the development of a methodology for a local authority waste performance greenhouse gas emissions indicator (Source: Waste Strategy 2007).
- 1.1.29 Energy from waste is expected to account for 25% of municipal waste by 2020 compared to 10% today but less than the 34% by 2015, which was anticipated in 2000 (Source: Waste Strategy 2007).

Trends

- 1.1.30 Over the last 100 years, the average global temperatures have increased by 0.7°C and sea levels have risen by between 10 and 20 cm.
- 1.1.31 The main impacts of climate change include:

- Warmer, wetter winters;
 - Hotter, drier summers;
 - Extreme rainfall events may happen twice as often by 2080;
 - Rising sea levels;
 - Possible intensification of the urban heat island effect; and
 - Possible higher wind speeds.
- 1.1.32 The climate change scenarios report relevant to Bedfordshire and Luton include:
- Annual average temperatures to rise by between 2°C and 3.5°C by the 2080's. The south and east of the UK will most likely see the largest rise in temperature.
 - Precipitation in winter will increase in all areas of the country.
 - The summer will see less precipitation than we see now and will therefore be much drier.
 - The 'low emissions' scenario predicts the country to become up to 35% drier. Whereas the 'high emissions' scenario forecasts 50% less rainfall than we experience now, by the 2080's. The largest changes are predicted for the southern and eastern part of England
 - Less snow will fall throughout the UK - a decline of up to 90%.
- 1.1.33 The sub-region of the Northern Heartland is less vulnerable to climate change than many others.
- 1.1.34 The Southern sub-region is under increasing pressure from development due to its proximity to London. Agriculture is under threat from reduced soil moisture in the summer and autumn, higher annual and seasonal temperatures, and potential deficiencies in water resources.
- 1.1.35 With a business as usual scenario the emissions of Greenhouse gases will increase.

Scoping Consultation

Key Issues and Implications for Waste Planning

- The topic paper should refer to energy from waste rather than incineration.
- It is important to recognise that although burning waste may not be considered strictly renewable energy, at least the waste has had a useful life first so it is lower in carbon than fossil fuels.
- With regard to the point about climate change disrupting supporting infrastructure such as road and rail from increased flooding from surface water, groundwater and drainage systems; it should be recognised that site management and drainage should negate these. The SA team feel that it is important to recognise that site drainage must be designed to reflect future climate change and this is something the plan can influence for waste management sites.

- Government’s energy policy is important – government is moving towards local energy distributions networks thus lending more weight to localised CHP plants. Can there be policy signals in LDFs to integrate CHP plants into growth areas or link CHP to certain developments (WIXAMS. NIRAH)? CHP from waste is slightly more difficult but is certainly not impossible.

Comments on the Objectives for the SA

- Can we recognise that energy recovery can be split into different technologies with different efficiencies with CHP being at the top?
- The term innovation in the first SA objective suggests that newer technologies are better than older one – this isn’t always the case. Best practice would be a better term.

Relevant objectives for the SA

1.1.36 Taking into account all of the above information the following objectives and indicators have been chosen for the SA. The Government’s *Planning for a Sustainable Future – White Paper* has made it clear that future guidance on SA will make clear that where SA is undertaken, the appraisal of impacts on climate change will be a priority.

SA Objectives	Appraisal Questions. Does the plan...
<ul style="list-style-type: none"> • The Waste DPD should encourage development and best practice in renewables and energy efficiency and seek to provide impetus towards a low carbon economy, particularly in terms of providing CHP. 	<ul style="list-style-type: none"> • Reduce the potential for green house gas emissions caused by waste management? • Encourage the development of renewables and energy efficiency within the waste sector?

Sources of data

- The Carbon Trust www.thecarbontrust.co.uk
- The Metrological Office / Hadley Centre www.metoffice.gov.uk/research/hadleycentre/index.html
- Waste & Resources Action Programme www.wrap.org.uk
- Department for Transport ALSF-T programme – Joint Industry protocol and key stakeholder initiatives.
- Improvement and Development Agency - www.idea-knowledge.gov.uk
- The Three Regions Group (2005) – Adapting to climate change: a checklist for development. Guidance on designing developments in a changing climate.
- East of England Sustainable Development Round Table (SDRT, 2002) – Living Within Climate Change of East of England.
- Department for Communities and Local Government (2006) Planning for Sustainable Waste Management: Companion Guide to Planning Policy Statement 10.
- Potential Impacts of Climate Change on Waste Management <http://publications.environment-agency.gov.uk/pdf/SX1-042-TR-e-p.pdf>

- http://www.ace.mmu.ac.uk/Resources/Fact_Sheets/Key_Stage_4/Climate_Change/27.htm
- Waste Strategy for England 2007 (Defra 2007)
- Meeting the Energy Challenge: a white paper on energy (DTI, 2007)

Data Gaps

None identified