

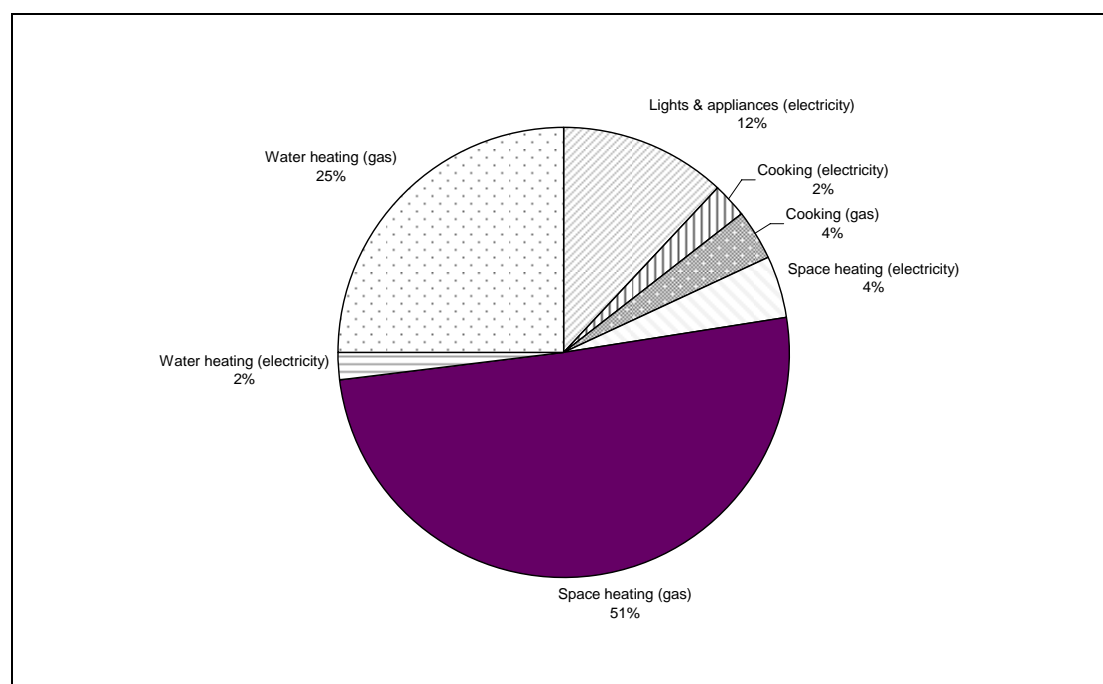
Appendix A: Context for the study

The UK has one of the oldest and least efficient housing stocks in Europe. The 25 million homes in existence in 2003 were responsible for 30% of total energy use and 27% of carbon dioxide emissions in the UK (Defra 2005). In addition, these households accounted for 69% of water consumption (Ofwat 2004) and 9% of total waste, with construction and demolition (for all buildings) accounting for a further 33% of total UK waste (Defra 2005).

Expected increases in population will lead to an increased demand for housing and increasing pressure on resources. The population is projected to continue to rise from current figures of around 60 million, peaking at 66.8 million in 2050, with a corresponding increase in age: by 2050 a quarter of the population will be over 65 – a potentially vulnerable sector (Shaw 2004).

A.1. Energy

Residential energy use is rising more quickly than in the UK economy as a whole, increasing by 17.5% between 1990 and 2003 (DTI 2004). Whilst energy use per household has change very little since 1970, overall energy use in the residential sector has increased by 32%. Many of the savings achieved through reducing heat loss from buildings have been offset by increasing demand (eg for electricity in lights and appliances) and the growth in the numbers of households. Energy use for heating still dominates demand at 60% of the total, with hot water accounting for 20% and the remaining 20% supplying all other needs.



Source: UK Domestic Carbon Model, ECI

Figure 1 Household energy use, 2005

A.2. Land-use

Patterns of land-use are essentially determined through the planning system, which is currently undergoing a period of reform. Legislative changes were incorporated into the Planning and Compulsory Purchase Act in October 2004, the central aim being to make the planning system for England and Wales simpler and more

effective at a regional and local level. Guidance is provided at a national (Planning Policy Statements, replacing Planning Policy Guidance Notes), regional (Regional Spatial Strategy, replacing Regional Planning Guidance) and local (Local Development Frameworks) level, all of which influence the location and nature of housing development and therefore land-use.

There are two interrelated debates surrounding land-use – first the density of housing, which determines the amount of land required. In recent years, housing developments have been built to very low densities – an average of 25 dwellings per hectare in England. Secondly, the location of these new developments is a key issue – whether to build on brownfield (or previously developed land, PDL) or greenfield sites. On average, between 1996-2001, the proportion of completion rates on PDL was 57%, with the remainder being built on greenfield (Entec 2004). In recent years there has been an attempt to move towards urban regeneration and the redevelopment of PDL in an attempt to limit urban sprawl and minimise encroachment on greenfield. In their 2003 report 'Towards a national brownfield strategy', English Partnerships identified around 66,000 hectares of PDL in England in 2001, although considered just 11% of this to be effectively available for development (English Partnerships 2003).

A.3. Waste

Waste disposal is an issue relating to both land use and climate change. Landfill space is becoming increasingly scarce, particularly in the South East of England, where pressure for development is strongest. Biodegradable waste in landfill is also a significant source of methane, a potent greenhouse gas which contributes to climate change: in 2003, landfill accounted for 20% of total UK anthropogenic methane emissions. It is estimated that around 72% of landfill gas is currently flared or utilised to generate electricity, the remainder being released to the atmosphere (LQM 2003).

Household waste currently accounts for 9% of total UK waste (Figure 2), with 510 tonnes produced in 2003/4, of which 17% was recycled, the remainder sent to landfill or incinerated (Defra 2003).

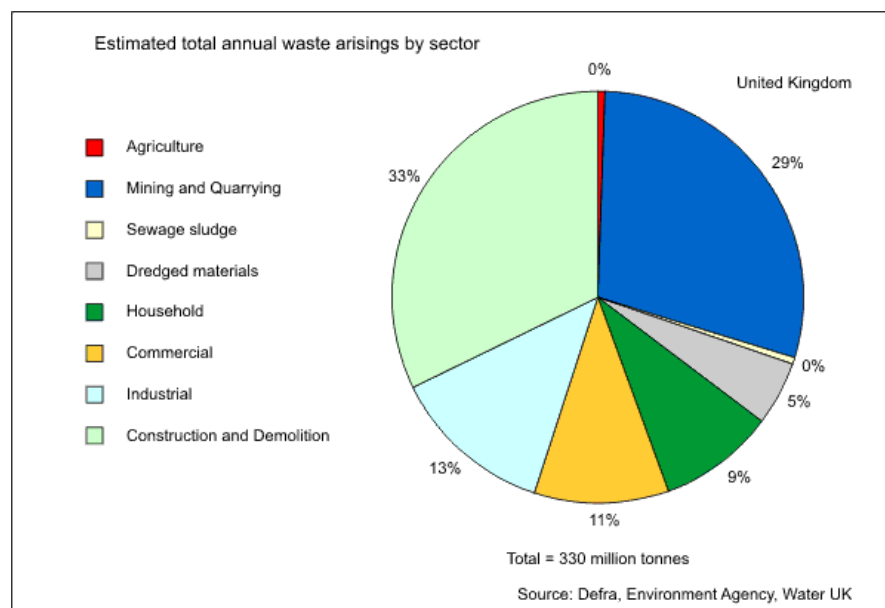


Figure 2 Total UK waste production, 2002/3

In light of the EU Landfill Directive 1999/31/EC, the UK has adopted targets to reduce the amount of biodegradable waste to landfill to 75% of that produced in 1995 by 2010, 50% by 2013 and 35% by 2020 (DETR 2000). The Government has also introduced statutory targets for recycling and composting of household waste in England: 25% by 2005/6, 30% by 2010 and 33% by 2015 (Strategy Unit 2002), whilst Wales has a target of 40% by 2010 (Welsh Assembly 2002), Scotland a target of 55% by 2020 (SEPA 2003) and Northern Ireland has a proposed target of 45% by 2020 (EHSNI 2005).

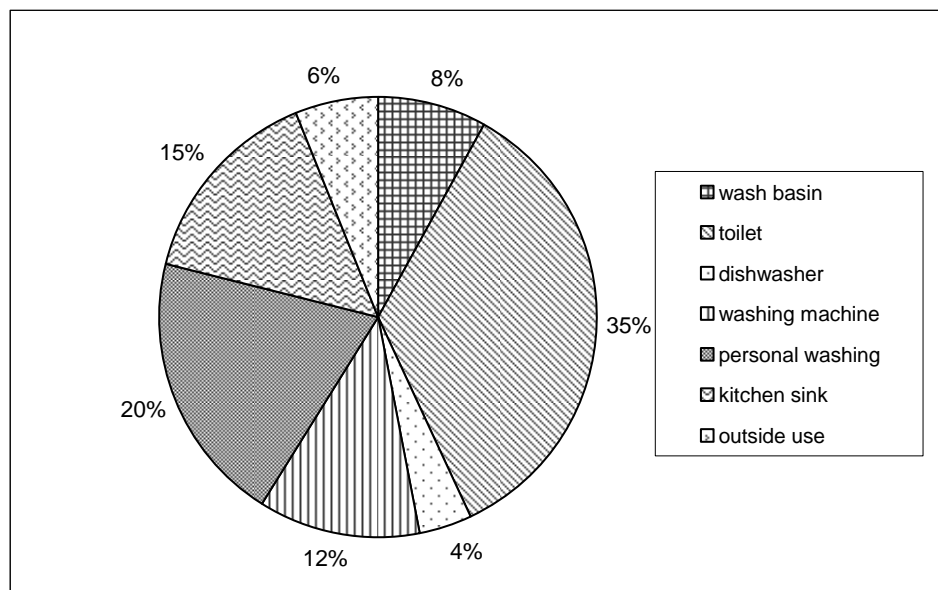
Construction and demolition waste represents 33% of total waste production in the UK (Figure 2), over three times the amount of household waste, and this is at relatively low rates of construction and demolition. The European Commission working document on Construction and Demolition waste suggests that Member States should aim towards combined recycling and re-use targets of 50-75% by 2005 and 70-85% by 2010 (Strategy Unit 2002). In 2001 in England and Wales, only 4% of construction and demolition waste went to landfill, the other 96% being re-used or recycled (Defra 2003). However, in this context re-use and recycling refer to using the material to layer landfill sites or backfill quarries, rather than direct re-use of the materials in construction.

A.4. Water

The main drivers of water demand are similar to those of energy: increasing population, household numbers and decreasing household size, with the efficiency of water-using products and user behaviour playing key roles.

Product policy is not as advanced in this area as in the energy sector – the Water Supply (Water Fittings) Regulations 1999 do specify water consumption limits for washing machines, washer dryers and dishwashers along with maximum flush volumes for new WCs. However, there is no equivalent water-labelling scheme for water-using equipment (although water consumption is included on the energy label for washing machines, washer dryers and dishwashers).

Government water policy does suggest a series of actions to address water demand and supply within households (Defra 2002), but there are no defined targets for reducing water consumption in the existing stock. In addition, the 2003 Water Act (OPSI 2003) aims to promote the sustainable use of water resources and the promotion of water conservation, but, again, contains no specific provisions relating to household consumption. At present, households have the option of installing a water meter, as laid out in the Water Industry Regulations 1999. In 2002, only 21% of properties in the UK had water meters but this figure is forecast to rise to 36% by 2010. The Government has set a target for 50% of households in the South East to be metered by 2020 (MTP 2005). The average effect of metering on consumption is estimated to be a 9% reduction, with a 2-14% variation depending on the volumetric charge (Environment Agency, 2004).



Source: SDC 2005 based on Environment Agency figures

Figure 3 Water consumption in housing by end use, 2005

A.5. Policy

Within the Government, there has been an increased focus on housing in the last few years, particularly in terms of meeting demand and projected growth. In February 2003, the UK Government released its Sustainable Communities Plan outlining a long term programme of action over the next 30 years for tackling the long-term undersupply of housing with 'a new approach to how we build and what we build' (ODPM 2003). This document contains a strong emphasis on building sustainable communities, but has been criticised by the UK Parliamentary Environmental Audit Committee for not actually addressing environmental sustainability (EAC 2005). The Communities Plan identifies four key growth areas in the South East with the potential to accommodate an additional 200,000 homes by 2016 over and above the levels of 930,000 currently planned in Regional Planning Guidance. Present construction rates are at around 186,000 per annum. The Communities Plan was followed by publication of the Barker Review in 2004, providing recommendations on how to improve the functioning of the housing market. Barker proposed building a further 70,000-120,000 houses each year in England to address the rising trend in house prices (Barker 2004). In addition, the Egan Review of Skills for Sustainable Communities (ODPM 2004), dealt with the necessary level of skills, behaviour and knowledge required to deliver the Communities Plan.

Part L (energy) of the Building Regulations is currently the main policy mechanism through which the environmental performance of new buildings is addressed through the setting of minimum building and construction standards. The planned revision for 2006 will set maximum carbon dioxide emissions targets for whole buildings and introduces mandatory air pressure leakage testing. In conjunction with these revisions, the Government has also announced an immediate review, led by ODPM, to identify measures to increase the sustainability of existing buildings. In addition, the Sustainable and Secure Buildings Act, passed in 2004, extended the scope of the Building Regulations to address protection and enhancement of the environment, sustainability and security. The Act contains a number of obligations relating to fuel and power usage, metering, building emissions and reporting on micro-generation facilities within the housing stock.

Alongside the Building Regulations, the Sustainable Buildings Task Group, set up in October 2003 by the UK Government, recommended the establishment of a new Code for Sustainable Buildings (CSB), in their report 'Better Buildings, Better Lives' (SBTG 2004). This document focused on how to raise the sustainability standards of design and construction, with an emphasis on new housing, setting out best practice standards on energy efficiency, flood resilience, water consumption, greenhouse gas emissions and waste production. From April 2006, all new residential developments will be required to meet the standards set out in the CSB. The ODPM has recently produced a consultation paper on the draft code, with a deadline of 6 March 2006 (ODPM 2005a).

At a European level, the Energy Performance of Buildings Directive is due to be transposed into UK law by January 2006. The aim of this legislation is to minimise energy consumption in all buildings through strict minimum standards for new build and large refurbishment projects, energy certification of all buildings and regular mandatory inspection of boilers and air-conditioning equipment. The imminent implementation of the EPBD has been one of the main driving forces behind the forthcoming revisions to the Building Regulations. However, preparation for the EPBD is behind schedule with many of the key issues still to be resolved by ODPM, the likely result being that the UK will be in breach of the Directive (ENDS 2005).

In terms of planning, ODPM issues Planning Policy Statements and Guidance Notes which set out over-arching principles for planning policy. Of particular relevance are Planning Policy Statement 1 (ODPM 2005b), which addresses the delivery of sustainable development through the planning system, and Policy Guidance Note 3, which provides guidance on a range of issues relating to the provision of housing (ODPM 2005c).

The growth in housing provision and legacy of the existing housing stock is set against the backdrop of climate change and degradation of the natural environment. In its Energy White Paper, the UK Government adopted the challenging target of a 60% reduction in carbon dioxide emissions by 2050 (DTI 2003), as originally suggested by the Royal Commission on Environmental Pollution (RCEP 2000). In the shorter term, the UK has a greenhouse gas reduction target of 12.5% of 1990 levels by 2010, as part of a European Union collective target of an 8% reduction under the Kyoto Protocol. The UK Government had also set a more demanding target of a 20% reduction in CO₂ emissions by 2010, but recently admitted that it is not yet on target to meet this pledge.

As part of the wider context, the UK Government launched its new strategy for sustainable development, *Securing The Future*, on 7 March 2005 (HM Government 2005). This lays out the five guiding principles for sustainable development as the basis for policy in the UK. Each of the five principles apply to reducing the environmental impact of housing and creating a more sustainable urban environment, in particular, the commitments to 'living within environmental limits' and 'ensuring a strong, healthy and just society'.

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