Key messages

Improving energy efficiency

AUDIT SCOTLAND

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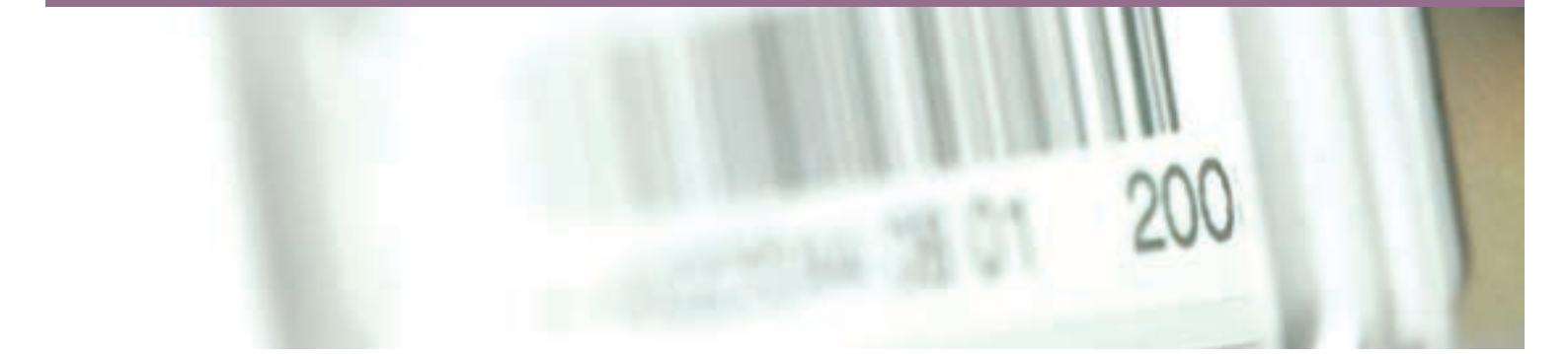


Key messages

Background

1. Climate change represents a serious threat to the world. Most energy is currently produced by the burning of fossil fuels which release carbon dioxide (CO_2) into the earth's atmosphere. CO_2 and other greenhouse gas emissions contribute to climate change.[1] Direct emissions from the public sector account for around two per cent of greenhouse gas emissions in Scotland. However, this figure does not take into account the emissions resulting from the public sector's use of electricity, transport or waste-related emissions, as these are classified separately. Improving energy efficiency can be one of the easiest and most cost-effective ways to reduce CO_2 emissions.[2]

2. Net greenhouse gas emissions in Scotland fell 13.4 per cent from 68 million tonnes of CO_2 equivalent in 1990 to 59 million tonnes of CO_2 equivalent in 2006, largely due to a reduction in emissions from industry.[3] In 2006, Scotland accounted for 9.1 per cent of the UK's net greenhouse gas emissions.[4] Scotland's Climate Change Programme, published in 2006, identifies Scotland's contribution to UK carbon savings. The contribution to be delivered by devolved policies was calculated as a reduction of 6.2 million tonnes of CO_2 equivalent by 2010. An additional Scottish target was set by the then Scottish Executive to exceed this by achieving a further reduction of 3.7 million tonnes of CO_2 equivalent by 2010.[5,6]

3. In addition to the environmental need to improve energy efficiency, there are also financial considerations. In 2006/07, councils, NHS bodies and central government bodies spent at least £224 million on energy.[7,8] The price of electricity and gas doubled between July 2004 and June 2008, while the price of petrol increased by around 38 per cent and diesel by 47 per cent between January 2004 and September 2008.[9] The efficient use of energy can therefore provide a means of delivering more cost-effective public services and help to tackle the financial challenges associated with rising energy costs. It can also contribute to the annual two per cent efficiency target to be achieved by all public bodies.

The study

4. Audit Scotland has assessed how councils, NHS bodies and central government bodies are improving energy efficiency in relation to buildings and transport use. We examined a range of issues including:

- whether public bodies demonstrate commitment to improving energy efficiency
- how public bodies are performing against their objectives and targets for improving energy efficiency
- if public bodies are delivering continuous improvement in this area.

5. In the course of the study we:

- reviewed strategic documents
- conducted a survey across councils, NHS bodies and central government bodies to provide a baseline of energy-related activity
- visited 16 public bodies from across the three sectors and interviewed a range of staff.

Key messages

1 Funding has been made available by the Scottish Government and public bodies to improve energy efficiency. While energy consumption in buildings has fallen, spending on energy increased in the three years to 2006/07.

6. The efficient use of energy plays a key role in reducing CO_2 emissions. During 2004/05 and 2005/06, the Scottish Executive provided £20 million to support councils, NHS boards and Scottish Water in improving energy efficiency through the Central Energy Efficiency Fund (CEEF).[10] The public sector has spent £10.1 million of this fund.

7. Public bodies have used the CEEF to successfully implement projects such as fitting more efficient lighting and improving the efficiency of boilers. This fund has also helped to raise the profile of energy efficiency in public bodies and attract additional internal funding which may not have otherwise been made available.

8. In addition to the CEEF, the Scottish Government provides annual funding of around £5.5 million to the Carbon Trust and £4.5 million to the Energy

1 Greenhouse gases include CO_2, methane, nitrous oxide and various compounds containing fluorine. CO_2 is the main greenhouse gas emitted through the production of energy and is the most likely to have the greatest negative effect on the climate.
2 Energy efficiency can be improved by either providing the same level of service with less energy or by providing a greater level of service with the same amount of energy.
3 CO_2 equivalent provides a universal standard of measurement against which the impacts of releasing different greenhouse gases can be measured.
4 *Greenhouse Gas Inventories for England, Scotland, Wales and Northern Ireland 1990-2006*, AEA Energy and Environment, 2008.
5 *Changing Our Ways: Scotland's Climate Change Programme*, Scottish Executive, 2006. (This target is expressed in tonnes of carbon in Scotland's Climate Change Programme, but has been converted to tonnes of CO_2 equivalent in this report for consistency.)
6 Prior to September 2007, the Scottish Administration was referred to as the Scottish Executive. It is now called the Scottish Government. When dealing with the earlier period this report refers to the Scottish Executive but in all other instances it refers to the Scottish Government.
7 This figure is based on £63.1 million for 16 NHS bodies (*Annual National Environment Report 2006/07*, Health Facilities Scotland, December 2007); £125.8 million for 29 councils (Audit Scotland); and £35.6 million for 21 central government bodies (Audit Scotland).
8 The term 'NHS bodies' in this report refers to both territorial and special health boards.
9 *Quarterly Energy Prices*, Department for Business, Enterprise and Regulatory Reform, September 2008.
10 In March 2007, the Scottish Executive agreed to extend the scheme to provide an additional £4 million to the further and higher education sectors.

Saving Trust to undertake energy efficiency programmes across the public, private and domestic sectors. During 2007/08, it is estimated that the Carbon Trust used £1.4 million and the Energy Saving Trust used £2.6 million to fund the work they carried out in the public sector.

9. The public sector has access to a carbon management programme which is run by the Carbon Trust and provides support to help reduce CO_2 emissions. All councils have joined this programme and many noted that participation has helped to secure senior level commitment to prioritising activities to reduce CO_2 emissions. The Carbon Trust is now focusing on rolling out this programme in NHS boards and larger central government bodies.

10. Just over a third of public sector bodies have a specific local budget for investment in energy efficiency measures. Councils allocated over £9.3 million to improve energy efficiency between 2004/05 and 2006/07. Over the same period, NHS bodies allocated over £1.8 million and central government bodies allocated over £500,000.

11. Overall energy consumption within public sector buildings is estimated to have reduced by 4.8 per cent over the three years to 2006/07 (Exhibit 1), with an estimated 0.3 per cent reduction in CO_2 equivalent emissions.[11] This has been delivered at the same time as changes in service provision, such as the use of more advanced technology and longer opening hours, which may have increased the demand for energy.

12. Efforts to improve energy efficiency have been greatest in those sectors that spend the most on energy – councils and the NHS – and this is reflected in their performance. Both of these sectors have achieved an overall reduction in energy consumption between 2004/05 and 2006/07. However, there has been a three per cent increase in energy consumption among central government bodies.

13. The overall reduction in public sector energy consumption has not resulted in a reduction in expenditure. Spending on energy has risen by 46.7 per cent between 2004/05 and 2006/07 (Exhibit 1) due to the significant rise in energy prices over recent years.

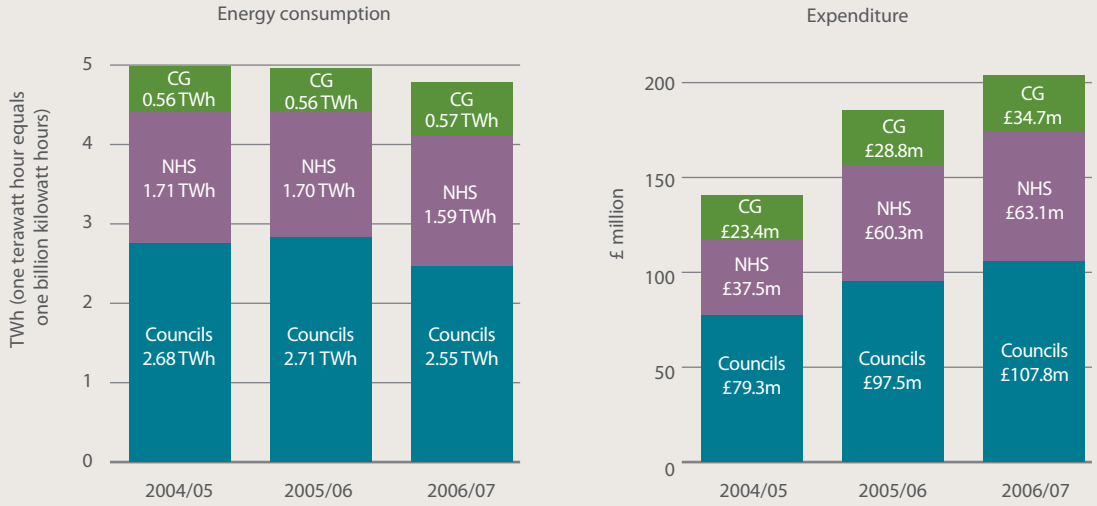
2 There is a need for stronger leadership by the Scottish Government and within public bodies to improve energy efficiency and ensure that the necessary cultural and behavioural changes are made.

14. The Scottish Government has established two targets relating to greenhouse gas emissions which all public bodies are expected to contribute towards:

Exhibit 1

Changes in energy consumption and expenditure across the public sector from 2004/05 to 2006/07

There has been a 4.8 per cent reduction in energy consumption, while expenditure has increased by 46.7 per cent.



Note: This is based on a sample of 22 councils, 16 NHS bodies and 11 central government bodies which provided individual consumption and expenditure data for each energy source used (ie, gas, electricity and oil) over three years. It does not include gas consumption data for Scottish Water as data were not available for 2004/05. The NHS data only reflect consumption and expenditure in hospitals. The total energy expenditure figure quoted in the background section of this report is based on data provided for 2006/07 where the sample size was greater.

Source: Audit Scotland; *Annual National Environment Report 2006/07*, Health Facilities Scotland, December 2007

11 The reduction in CO_2 equivalent emissions is not proportionate to the reduction in energy consumption because of the changes in the balance of energy (ie, electricity, gas and oil) consumed by the public sector between 2004/05 and 2006/07. Each energy source emits different levels of greenhouse gases, therefore the UK Government's greenhouse gas conversion factors have been used to calculate the resulting CO_2 equivalent emissions.

- To reduce emissions over the period to 2011.
- To reduce emissions by 80 per cent by 2050.

15. However, the Scottish Government has provided limited direction and guidance to promote improved energy efficiency in the public sector. In March 2007, the Scottish Executive consulted on a draft Energy Efficiency and Microgeneration Strategy, setting out how it intended to support the public sector in improving energy efficiency. The Scottish Government has decided not to publish a final strategy, but intends to develop an action plan instead to identify the actions that need to be taken to improve further energy efficiency in the public sector.

16. Leadership at senior levels is essential to ensure the necessary behavioural and cultural changes take place within public bodies to improve energy efficiency.

17. Public bodies are demonstrating commitment to improving energy efficiency by establishing energy steering groups and appointing dedicated energy teams or officers. However, there is variation in the extent to which these measures have been implemented across the public sector. In 90 per cent of councils, energy management teams or officers are in place, compared to only 59 per cent of NHS bodies and 36 per cent of central government bodies.

18. The roles and responsibilities of energy officers and teams differ across the public sector and there are varying levels of expertise among this group. Public bodies are also facing challenges in recruiting and retaining staff in energy management teams due to a shortage of experienced energy management professionals.

19. It is not solely the responsibility of energy officers or teams to improve energy efficiency, it is the responsibility of all staff. Simple actions such as using video conferencing facilities and switching off computer monitors when not in use can contribute to improving energy efficiency. Public bodies therefore need to improve awareness among all members of staff and change culture and behaviour in order to reduce energy consumption.

20. Since 2006, 11 councils have used a staff training tool developed by the Energy Saving Trust, which aims to change attitudes and behaviour towards energy use.

21. Local 'champions' are one method of promoting improved energy efficiency. They are members of staff charged with encouraging behavioural change and increasing ownership of energy efficiency among colleagues. However, only a small number of public bodies have identified champions with the necessary training and allocated time to ensure this role can be carried out effectively. In addition, this role is often voluntary and the limited authority delegated to these individuals is likely to restrict their effectiveness.

22. There is little evidence of energy efficiency being included within staff induction programmes, which can be used to ensure staff are aware of the organisation's requirement to manage energy efficiently and further help to mainstream this area of work.

23. Not all public bodies are considering energy efficiency when buying goods and services. Even where procurement guidelines make reference to energy efficiency, there is a lack of monitoring procedures in place to ensure there is compliance with these guidelines during the purchasing process.

24. Changing staff behaviour is difficult and remains a key challenge for the public sector, particularly in relation to using transport more efficiently.

3 A robust strategy is central to the coordination of activities to improve energy efficiency, however, there are inconsistencies in the quality of strategies being implemented.

25. Around 70 per cent of public bodies have a specific strategy to improve their energy efficiency and reduce CO_2 emissions, although they vary in quality. Many strategies include aspects of good practice (eg, endorsement by senior management, a strategic action plan, and clear targets which reflect national priorities), however, few cover all aspects.

26. Strategies developed by councils and NHS boards tend to be higher quality than those in place in central government bodies and special health boards. This is likely to reflect their higher level of expenditure on energy.

27. The focus of strategies varies, for example some are specific to energy efficiency while others form part of a wider environmental policy. Strategies refer to a wide range of legislation and policies including Scotland's Climate Change Declaration, the UK Government White Paper on Energy, the EU Energy Performance of Buildings Directive, and the international Kyoto Protocol. The policy framework in relation to environmental performance is complex and limited guidance is provided to assist public bodies in applying this at sector level.

28. The integration of energy strategies within operational plans is uncommon. Councils are most likely to incorporate the improvement of energy efficiency in their corporate plan. Ten councils include energy efficiency targets in their corporate plans, and a further 12 highlight improving energy efficiency as an objective. This may help to give energy efficiency a high profile and ensure activities to reduce energy consumption are prioritised.

29. Few public bodies have an organisation-wide action plan outlining how objectives and targets to improve energy efficiency will be achieved, or identifying individuals responsible for specific actions.

4 There is a lack of formal monitoring and reporting of progress in improving energy efficiency by public bodies and the Scottish Government.

30. Just over 70 per cent of public bodies have set targets aimed at improving energy efficiency. Of these, 44 per cent have targets relating just to buildings, 25 per cent have targets relating to buildings and transport, and one per cent have targets relating just to transport. All NHS bodies are expected to adopt a national target to reduce energy consumption by two per cent each year between 2001 and 2010.

31. More accurate information on energy consumption is needed. Only 68 per cent of public bodies collect meter readings across their estate to provide accurate data on energy use and to validate utility bills. Public bodies which share floor space in a building with other organisations face difficulties in obtaining reliable energy consumption data. These issues need to be addressed in order to provide an accurate picture of energy consumption across the public sector.

32. There is a lack of data available in relation to fuel consumption and resulting emissions. Just over half of all public bodies that have a vehicle fleet have established systems to collate data on fuel consumption. Even fewer have broadened these systems to monitor business travel and staff commuting.

33. Where targets have been established, the frequency of reporting against energy efficiency objectives and targets is variable. Of those public bodies with targets, 61 per cent report progress to senior management teams monthly or quarterly, 32 per cent report six monthly or annually, and seven per cent report on an ad hoc basis or not at all. Ad hoc reporting arrangements make it difficult to monitor what progress has been made in improving energy efficiency.

34. All councils reflect the need to reduce CO_2 emissions within their Single Outcome Agreements which have been agreed with the Scottish Government. Councils are also required to report annually from April 2009 on their progress towards addressing climate change as part of Scotland's Climate Change Declaration.

35. The Scottish Government has delegated responsibility for monitoring the environmental performance of the NHS to Health Facilities Scotland. NHS bodies report against the national target for the NHS through Health Facilities Scotland's annual environment report.

36. The Environmental Performance of Public Bodies Initiative, which was launched by the Scottish Executive in 2004, requires the majority of central government bodies to report performance against their environmental targets on an annual basis. However, there is currently no system to monitor and assess performance or any requirement for central government bodies to provide evidence to verify their performance.

Recommendations

The Scottish Government should:

- demonstrate leadership by providing clear guidance for all public bodies on the actions that are required to improve energy efficiency and reduce CO_2 emissions
- establish robust monitoring arrangements to ensure the performance of public bodies in improving energy efficiency can be accurately assessed and reported publicly against national and international targets
- work with the public sector to disseminate good practice, coordinate networks to share information and establish appropriate energy efficiency benchmarks.

The public sector should:

- ensure that effective strategies are in place to improve energy efficiency and reduce CO_2 emissions throughout all areas of public sector activity. These strategies should be supported by comprehensive plans detailing the actions to be taken to achieve agreed objectives and time-related targets
- ensure that senior staff play a key role in improving energy efficiency and reducing CO_2 emissions through leading on the implementation of strategies
- identify and implement a coordinated programme to raise awareness of energy efficiency among staff. Public bodies should actively seek expert advice and input to design programmes which focus on encouraging changes in culture and staff behaviour
- ensure staff with the necessary skills are made available to support implementation of energy efficiency activities. Formal reporting frameworks should be used to monitor progress against the aims, objectives and targets outlined in energy efficiency strategies
- collect accurate and consistent data on energy consumption within all sites which they own or lease and in their transport use. Public bodies in multiple occupancy buildings need to work with landlords and other occupiers to establish procedures for identifying local consumption data
- ensure that energy efficiency is considered in the procurement of goods and services and in the planning and design of major capital projects.

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