

Climate Change: the Chartered Institution of Building Services Engineers (CIBSE) Response to Consultation on Proposals for a Scottish Climate Change Bill

Introduction

CIBSE is the learned and professional body for building services engineers, with a global membership of over 18,000. The Institution exists to 'support the Science, Art and Practice of building services engineering, by providing our members and the public with first class information and education services and promoting the spirit of fellowship which guides our work.'

CIBSE is the standard setter and authority on building services engineering in the UK. It publishes the CIBSE Guide, Codes and other guidance material which are internationally recognised as authoritative, and sets the criteria for best practice in the profession.

Buildings account for almost 50% of carbon emissions. Whilst building services systems which heat, cool, ventilate and power everything within the building are responsible for the bulk of these emissions, innovative services design can dramatically improve their energy efficiency and reduce their emissions. Our members continue to design and create the most environmentally friendly systems in many major projects across the globe.

Whilst many building services engineers design energy using systems for buildings, other CIBSE Members have a professional interest in the operation of building services. Facilities managers are responsible for day to day running of buildings, and seek ways to improve their energy performance and reduce waste. The issue of heat is therefore of paramount concern to the whole membership of the Institution.

The Institution welcomes and supports the proposals for a Climate Change Bill in Scotland, and through this response and through other appropriate means seeks to actively contribute to the continuing development of a low carbon economy both for Scotland and more widely in the United Kingdom, Republic of Ireland and wherever our members work.

Response

As the professional body for building services engineers, CIBSE has been engaged in the discussion of buildings, their contribution to carbon emissions and the effect upon them of climate change for several years. Indeed, CIBSE produced technical guidance to its members in the form of CIBSE TM36: Climate change and the internal environment. Published in January 2005, this was based on the work of a three year collaborative research effort led by Arup and guided by a multi-disciplinary Project Steering Group. Whilst this led to vigorous and well informed debate, it generated a final report intended to serve all in the design team, which emphasized that good environmental design could only be achieved through a team approach. It has been used by architects, engineers, planners, surveyors, developers, and all those concerned with buildings and the effects of climate change upon them.

The work was co-funded by Arup and the Department of Trade and Industry through the Department of Trade and Industry Partners in Innovation Scheme, and a copy of the full technical report, along with a shorter briefing note based on the report are attached with this response for information. This is submitted for the use of the Scottish Government, and for copyright reasons CIBSE request that the full technical report is not made publicly available with this response: the briefing is already freely available.

This response focuses on those aspects of the consultation most relevant to the use of energy in buildings, which is the principal area of expertise of CIBSE members.

As a general observation on the consultation, there is limited discussion of energy. Given that about 40% of primary energy use is buildings related, either through combustion of fossil fuels for heating or electricity generation, there is a very clear link between climate change, buildings and energy use. It is important that policy making and legislation in these areas is consistent, in order to avoid the risk of contrary drivers. As the UK becomes more dependent on imported energy, it will be important that decisions about carbon emissions and decisions about energy are connected and work together.

Paragraph 4.36 notes the challenges in this area, and this is entirely accurate. In paragraphs 4.38 onwards the economics of climate change are discussed, and in 4.54 the Scottish context is outlined. This is helpful, but there is a need for the forward view for achievable energy, and particular electricity generation, strategy to be outlined in greater detail. This is vital when building design decisions about new developments that will operate well into this century are being considered, to enable building designers to make realistic low carbon decisions.

Paragraphs 5.18 – 5.20 and Q1 address the issue of targeting carbon dioxide or carbon dioxide equivalent. For the buildings sector, with the exception of air-conditioning systems using refrigerant gases, the only greenhouse gas relevant is carbon dioxide. Existing policy measures such as the Scottish Building Standards and Energy Performance Certificates address carbon dioxide emissions, and CIBSE recommends that this is appropriate for the built environment sector. It should be noted that as well as fossil fuel combustion for electricity generation, a significant amount of fossil fuel is burnt for heating in buildings.

Paragraph 6.1 raises the question of the carbon reduction trajectory, and it is the subject of Q12. CIBSE believes that it is vital to set interim targets towards the overall goal, otherwise there will be insufficient pressure to deliver carbon reductions in the short to medium term, and, if overall atmospheric carbon dioxide targets are to be met, then greater savings will be needed later.

In relation to the setting of targets, paragraph 5.28 suggests possibly serious perverse incentives. The situation outlined, with Scotland achieving domestic reductions but still generating power solely to satisfy export demand, whilst being held to account for the resulting emissions implies either that the recipients of that power are getting zero carbon electricity (which is a nonsense) or that the emissions accrued by exported power are being double counted, which is also a nonsense. Such perverse or irrational counting arrangements need to be removed from the scheme or they will damage the ability to set and achieve rational targets.

Paragraphs 5.29 to 5.32 illustrate the importance of the hierarchy of energy. This was developed by a consortium of engineering bodies in England and Wales, and is described in the attached paper

Paragraphs 8.1 – 8.11 raise issues connected with the hierarchy. The hierarchy assists in prioritising different generation approaches, as well as the balance between the use of renewables and other generation approaches and the relative merits of demand reduction and its implications for generation. For example, demand reduction could affect the choice of CHP against other renewable technologies, where the reduced demand renders a CHP proposal unviable, for example, or enable a renewable installation to meet residual demand once demand management measures have been implemented.

Paragraph 8.28 raises questions about adaptation: please see CIBSE TM36 for detailed analysis of potential adaptation measures for various buildings and types under various climate change scenarios.

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