



Tools for assessing Energy Performance in the Services Sector

Recently, Irish researchers have explored the use indicators to profile energy consumption and to inform energy policy in a university. The authors show that analysis using simple indicators can provide interesting insights and usefully inform decisions. They introduce new approaches and tools for assessing energy performance in buildings and how they might be use to improve the energy policy decision making.

Buildings have an important role to play in the abatement of greenhouse gas emissions in order to meet Europe's Kyoto targets. Indeed, it has been estimated that buildings account for approximately 40% of the final energy consumption in Europe. Research has shown that up to 20% of present energy consumption could be saved by 2010 by applying stricter standards to new buildings or to those undergoing refurbishment. In this regard, data on energy end use are essential to developing policies and strategies to reduce energy consumption in buildings. The services sector, which includes both commercial (banking, hotels, retail, etc.) and public services (education, health, local governments, etc.) and is the most heterogeneous of all sectors, has the least amount of energy end use data available. This poses a significant challenge to companies and public authorities attempting to benchmark their energy performance and make informed energy management decisions.

Recently, Irish researchers have used a case study analysis to explore how simple performance indicators have been used to date. To this end, the authors focused on the energy trend analysis carried out for an individual institution of the education/research sub-sector in Ireland, namely University College, Cork (UCC). In Ireland, the service sector has experienced a high growth in energy demand since 1990 (4.1% annually) compared with the EU-15 (1.5% annually). Furthermore, they present new approaches and tools for enhancing the understanding of energy trends and the assessment of energy performance in buildings.

In UCC, an Energy Policy Committee (EPC) was established in 1982 to monitor energy use and to introduce improvements in energy management. The EPC developed an energy monitoring and targeting strategy employing both paper based assessment and building management systems (BMS). The latter consist of an automated building control device that allows the energy performance of a building to be measured. Energy consumption was monitored along with student numbers and the building's floor space. The results indicated that UCC experienced a higher growth in energy demand (4.9% per annum on average) than the sector as a whole over the period 1990-2004. This highlights the dangers of applying the trends for a sector as a whole to individual sub-sectors and institutions.

Previous research had highlighted that the visualisation of bulk energy use alone was not proven to be a driver for effective energy management. Using available data, the authors produced some simple energy indicators, which are simple ratios that relate either energy expenditure or energy quantities to the underlying factors that influence energy demand (e.g. electricity consumed per student or fuel bill per m²). These indicators help to illustrating the energy trends and to better determining the factors influencing these trends.

According to the authors, two key tools can be used in order to assess energy use in detail, which is important in the drive towards energy-efficient performance. In order to obtain accurate data on the actual energy performance of individual buildings, proficient use of BMS is required. And in order to adequately predict the performance of a building, a calibrated building energy simulation tool capable of emulating the building dynamic behaviour is necessary.

Overall, this paper demonstrates that despite the absence of detailed data at sub-sector level, in order to benchmark performance, significant progress can be made in assessing energy performance and in informing energy performance decisions.

Source: B.P. Ó Gallachóir, M. Keane, E. Morrissey and J. O'Donnell (2007) "Using indicators to profile energy consumption and to inform energy policy in a university—A case study in Ireland", *Energy and Buildings* 39:913-922.

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Additional information: Since 1992, the EC's financial instrument for the environment, LIFE, has financed more than 130 projects directly related to energy. Twenty-four examples, including projects focusing on buildings and households, are presented in the recent LIFE-Focus brochure "[LIFE and Energy. Innovative solutions for sustainable and efficient energy in Europe](#)".

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