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ECOS, UK SNS recommendations on the methodology for the calculation of the energy performance of buildings and the Overarching Standard prEN 15603

Introduction

Following the recast of the Energy Performance of Buildings Directive (EPBD) in 2010, the European Commission issued a standardisation mandate, M/480, for the development of a series of standards to provide the methodologies for the assessment of the energy performance of buildings. The series includes an Overarching Standard (OAS - prEN 15603, currently under preparation) which sets out definitions, boundaries and a modular structure for the other standards of the EPB-series each focused on specific aspects of building performance (e.g. heating, ventilation and lighting). This paper presents the *views of environmental stakeholders*, and aims to address both policy and technical issues to both the European Commission, and the developers of the OAS.

1. Pathway to greater harmonisation

1.1 Methodological scope and default values

The Energy Performance of Buildings Directive (EPBD) calls for a methodology to assess the buildings that considers the main characteristics and factors determining their energy performance.

The Directive makes possible for the methodology to be adopted at national and regional levels, in order to allow variations in climate, historic building practices and national regulations to be taken into account.

However, a harmonisation of methodological approaches would facilitate comparison of national performance across the EU and of individual buildings in different Members States, in turn supporting the internal market and improving consumer information. In addition, it would encourage convergence towards best practice methodologies, thereby increasing the potential for energy saving and resulting GHG emission reductions.

The current version of the Overarching Standard contains templates for a common methodological approach to assess energy performance (Annex A) and a set of default options and values (Annex B) that can be used in the absence of national ones.

While the template outlines a common method, the scope of the assessment can be selected by each Member State – for example it is at the discretion of each country whether to include the energy demand of appliances operating in the given building within the scope of the assessment or not (e.g. Table A.8 in the OAS)

When the default options and values are used in line with Annex B, the scope of the assessment is de facto limited. For example, not all building categories are part of the 'default scope', neither are some services such as indoor transport.

- We fully support the retention of the Annex A templates in any future revised version of prEN 15603. However, we would recommend a harmonisation in the assessment scope to account for all building services in the energy performance calculation, so as to maximise the energy saving potential resulting from the assessment of a given building.
- The default values provided in Annex B should be adjusted accordingly to extend the scope of assessment. Specifically, the performance assessment should cover all building categories as default (table B.2. of prEN 15603) and more building services, such as indoor transport (elevators, escalators) or central IT-infrastructure (servers).

1.2. Energy Performance Certificates

Energy Performance Certificates (EPCs) are a critical tool to encourage pro-environmental consumer behaviour and to incentivise market transformation. However, currently, the level of harmonisation is low, with considerable variations in terms of the assessment scope applied (and resulting indicators), the cost to the consumer, the qualifications of assessors and, generally, reliability.

We believe that a higher level of pan-European harmonization in the indicators displayed (and underlying assessment scope) would contribute to maximising the benefits of this tool and provide the added value compared to other commercial certificates which already exist. The value of a harmonised system of assessment and declaration has been proved by the EU Energy Label for energy-related products which has been a major driving force in incentivising manufacturers to improve the energy performance of their products. In

addition, unlike commercial options, a European methodology could be referenced by national authorities, and be used to publicise the performance rating.

- We advocate a gradual convergence in the assessment scope, indicators displayed and the certificate design to provide a similar level of harmonisation as is already provided by the EU Energy Label.

2. Usability

2.1 Clearly identifying target audiences

The current version of prEN 15603 lacks clarity on its intended target audience (as does in fact the standardisation request).

- We would like to see further clarification of the intended users of the standard and for the target audience to be clearly identified in the standard itself.

2.2 Reducing complexity

The large number of standards produced under the EPBD work programme makes difficult for prospective standards users to identify which of the standards should be used for each specific task.

- We recommend that a table or diagram is produced which clearly identifies the target groups of the user (i.e. inspection, design, etc) and this is presented together with a summary of the content of each standard to enable potential users to identify the correct standards required for their specific task. This should be made available free of charge prior to purchasing any standards.
- Table 9 of Section 6 in the current version of prEN 15603 could be used as a starting point.

Furthermore, the standards produced under different parts of the EPBD work programme often direct users to other standards for definitions and explanations of symbols, which not only makes the implementation of individual standards more complex, but also more costly.

- Essential definitions and symbols should be included in every standard where they are referenced or, as an alternative, should be presented in the OAS.

3. Definition of NZEBs

The definition of Near Zero Energy Buildings (NZEBs), as set out in the EPBD, is currently weakly worded and allows room for interpretation. Furthermore, we believe that the definition could be strengthened through appropriately defined quantitative thresholds.

- We would like to see the inclusion of quantitative thresholds that clearly defines NZEBs in terms of assessed energy performance.

4. Energy performance

4.1 Energy produced on-site/exported energy

Our primary goal is that the EPBD facilitates the reduction of energy demand of buildings and thereby mitigates the damage of GHG emissions associated with the production of energy.

Allowing the subtraction of energy produced on-site or exported energy from the energy demand of a given building would distort the true energy performance of the building. It would not effectively stimulate a reduction in energy use, but would instead signal that, as long as energy is produced by renewables, there is no need for an overall demand reduction.

- We strongly advocate that, for the determination of the energy performance of a building, the energy produced on-site or exported energy is not subtracted from the energy demand.

At the same time, we recognise that on-site energy production, in particular from renewable sources, should be encouraged as it addresses concerns both over the environmental energy production and over energy security.

- For the purposes of implementing the current EPBD recast, we therefore advocate the introduction of a **dual rating scale** that distinguishes between energy demand reduction and on-site energy production and gives greater weight to absolute reductions in energy demand.[1]
- The dual scale can be combined into a single performance value for the purposes of performance classification.

4.2 Calculated and measured performance

A combination of both calculated and measured performance is needed to capture real energy demand and to identify opportunities for energy saving through changing user behaviour. *Measured performance* takes into account parameters that have a significant impact on the energy performance of the building after the design stage, e.g. user

[1] This methodology could be introduced in the standards and the overall building score could be presented as a weighted average of the two ratings in the end-user certificate. This would ensure that consumers are made aware of the potential need for further demand reduction measures, without losing the incentive to take up energy-production measures.

behaviour, installation and maintenance of building service systems such as heating/cooling systems.

Therefore, the consideration of both calculated and measured performance methodologies would allow for the comparison of expected and real energy performance and enable recommendations/interventions for improvements.

- Ratings based on measured energy consumption can be used to set benchmarks and would therefore like to see the OAS cover both calculated and measured performance and both should be used as they provide information on different aspects of building performance.

- The standard should recognise that user behaviour, installation and maintenance of systems are critical to a building's actual versus its theoretical performance. The EPB series of standards should develop methodologies to facilitate optimal installation, maintenance and inspection for major building systems, and which could be accompanied by recommendations addressed to the building occupants on how to maximise energy savings.

- Where appliances are to be considered within the scope of the performance assessment, consistency with product standards such as those developed in the context of the Ecodesign Directive should be sought, with the view to optimise the efficiency of the whole system.

5. Primary Energy use and additional requirements

The OAS designates primary energy use as the principal energy performance indicator. This is a meaningful indicator, as it allows, to a certain extent, for energy losses during energy production and transfer, as well as the environmental impact of energy sources to be taken into account.

However, one sole indicator for the energy performance of an entire building does not allow for the identification of the energy saving potential of different energy saving measures and thereby may perversely incentivise the least effective measures. For example, greater, long-term savings achieved by interventions such as insulation will not be encouraged compared to low-cost instant changes the lighting system or the algorithms of a building automation system.

- We therefore support the use of additional indicators for individual aspects of building performance, such as heating and cooling, to allow the identification of measures with the highest energy saving potential.

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