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Knowledge extraction from energy certification of buildings – Results from the ENPER-EXIST project

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ABSTRACT

The ENPER-EXIST project was initiated and coordinated by Centre Scientifique et Technique du Bâtiment (CSTB) within the framework of the Intelligent Energy Europe (IEE) programme. ENPER-EXIST involved partners from seven countries (Belgium, Denmark, France, Germany, Greece, The Netherlands, and United Kingdom) on the topic of energy performance standardisation and regulation. One objective of the project was to provide information on the level of building stock knowledge and to collect available data on a broad basis. A second objective was to analyse how this information is being used to make decisions on energy improvements and a third objective was to make recommendations on how to improve the building stock knowledge by using certification schemes. This paper presents the main results of this part of the project (Thomsen et. al., 2007).

Energy certification, as proclaimed in the European Energy Performance Building Directive (EPBD, 2002), offers a unique opportunity for improving knowledge about the building stock. Improved knowledge will make it possible to map the energy efficiency of buildings. In addition, it will provide a basis for benchmarking and for calculating energy saving potentials. Moreover, such information will be an important instrument for political decision-making.

The EPBD offers freedom of choice regarding the method of certifying the energy performance. The individual member state's decision on energy certification may therefore range from simple meter readings to detailed energy audits. However, this decision determines what knowledge it is possibly to extract afterwards, and for what purpose this knowledge can be used. When deciding on the standards of energy certificates, three elements are crucial for the outcome: the character of the data input, the procedure of certification and the form of quality control.

Based on the energy certification schemes existing in Denmark since 1997, this paper contribute with knowledge about the relationship between data, procedure and quality control on one hand, and knowledge that can be extracted on the other. Of special interest is the possibility of extracting data about potential energy saving measures distributed on segments of buildings. Such data can be of great importance for finding methods to overcome human and technical barriers to energy savings in buildings.

1. INTRODUCTION

Applying the EPBD to improve the Energy Performance Requirements to Existing Buildings (ENPER-EXIST) project (2005-2007) involved several work packages (WP's) and this paper focus on the findings in WP3.

Information on available data regarding the existing building stock in each European member state (MS) has been collected from the project partners and with help from industry using their marketing investigations. A pre-questionnaire was circulated to the participants of the ENPER-EXIST project aiming to find the level of available information and to indicate the sources and quality of this information.

Characterisation of existing building stock		at	be	de	dk	fr	gr	lt	nl	uk
No. of buildings	Total, Res	X	X	X	X	X	X	X	X	X
	Total, non Res	X	X	X	X		X		X	X
Area / type	Total, Res		X	X	X	X	X	X	X	
	Total, non Res	X		X	X	X	X		X	X
Typical construction period	Total, Res	X	X		X	X	X	X	X	X
	Total, non Res	X			X		X		X	
Statistical	Total, Res	X	X	X	X	X	X	X	X	X
	Total, non Res	X	X	X	X	X	X		X	X
Estimate	Total, Res						X			
	Total, non Res						X			

Figure 1. Overview of available information on general building stock knowledge distributed on residential and non-residential building sectors – number of buildings, floor area, construction period and quality of information.

In general there is more information available for the