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D7.4 Energy Use Knowledge Base



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ICT - Information and Communication Technologies Theme

D7.4 European Household Energy Use Knowledge Base

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PP	Restricted to other programme participants (including the Commission Services)	<input type="checkbox"/>
RE	Restricted to a group specified by the consortium (including the Commission Services)	<input type="checkbox"/>
CO	Confidential, only for members of the consortium (including the Commission Services)	<input type="checkbox"/>



European Commission
Information Society and Media

DEHEMS – Digital Environment Home Energy Management System

D7.4 European Household Energy Use Knowledge Base – detailed quantitative information on the day to day, energy decisions of European Citizens, on a service by service basis.

Document Control

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1. Executive Summary

The context of the DEHEMS programme is that Europe has a stated commitment to reduce CO₂ emissions by 20% by 2020, and that households account for 25-30% of European carbon emissions, with 80%+ of household energy used on heating. However, in order to bring about the behaviour change required to achieve these reductions, information regarding the day to day energy decisions made by households is required.

The DEHEMS project contributes to existing knowledge base on domestic energy consumerism by collecting and analysing information obtained via the following methods:

1. Summarising the various data sources cited by existing state of the art studies on domestic energy consumerism so that it can be also used as a basis of comparison for our own results
2. Gathering and analysing data from the responses to DEHEMS household surveys and focus groups
3. Gathering and analysing data from the DEHEMS system, collected at the DEHEMS server

This report sets out how DEHEMS created a framework or knowledge base for these 3 activities and the type of information which was included. The knowledge base itself is available on www.dehems.eu/reports

2. Project and Cycle Objectives

Work Package Objectives

Although the lead was undertaken by WP7, other work packages contributed to this deliverable. Data collection was carried out as part of WP5 & WP7, designing the system and analysing data part of WP2, whilst summarising and presenting it formed part of WP8. The relationship between this deliverable and these work packages is shown below:

	WP Title	WP Objectives
WP2	User Requirements & System Architecture	Systematically define the user requirements for conservation of domestic energy through the use of heating/cooling plant, lighting and appliance use, for each of the three Cycles. This will identify a range of different household types, relevant across European Member States, in various settings. It will define patterns of energy usage, preferences for change, demand for functionality and specify the scope of potential savings based on user feedback. It will further define a taxonomy of appliances, energy usage and User Interface models. The result will be the first detailed empirical view of household preferences in domestic energy resource management services and views on resource management interfaces
WP5	Energy Measurement	Create a database of typical usage that shares statistics of similar households for use in setting best practices and the socialization of those best practices
WP7	Living Labs Behaviour	Establishment of a series of Living Labs across Europe, investigating usage impact of the DEHEMS system through three iterative cycles User generated evidence base to inform system development
WP8	Evaluation and Dissemination	Disseminate key learning and results

Cycle Objectives

Results were collected during three cycles. The use of repeated cycles enabled the action research to progressively iterate and achieve the projects' objectives. However, in order that consistent results were produced across the three cycles, it was important that the design of the detailed quantitative information gathered from living lab participants was done at an early stage. Accordingly, the household survey and the specification of information gathered from the DEHEMS energy sensing system, were completed prior to commencement of Cycle 1 and were shown in the following deliverables:

D2.1 captures household requirements for households and decision makers across Living Labs
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D2.2 sets out the process for collecting information through focus groups

D7.3 includes the household questionnaire

3. Knowledge Base Content

The knowledge base represents the following data, which was gathered and analysed from the:

- Average domestic energy consumption per household, per month/annum for each home in Living Labs
- Profile of major appliances found in the Living Labs including energy source, manufacturer, model, energy ratings, age, etc.
- Conscious energy saving techniques applied in the Living Lab homes.
- Profile of the homes in the Living Labs, such as number of people, income group, house configurations (number of rooms, type of house, etc), energy rating, monthly/yearly energy consumption etc.
- Rationale behind appliance purchases

4. Updated State of the Art

The main thrust of this iterative deliverable was the gathering of data/evidence on the different households and appliances within the Living Labs, and how these consumers used energy, enabling comparisons to be made within and across Living Labs.

There are several organizations that do something similar, but in a wider EU-15 and EU-27 scale, such as ENERDATA, EUROSTAT and most importantly, the ODYSSEE Project. These include:

<http://www.odyssee-indicators.org>

<http://www.enerdata.fr/enerdatauk/publications/index.php>

Data on household consumption is summarized and reported here:

http://www.odyssee-indicators.org/publications/PDF/chapter_4.pdf

Other important reports based on the Odyssee database:

http://themes.eea.europa.eu/Sectors_and_activities/households/indicators/energy/hh06households.pdf

http://reports.eea.europa.eu/eea_report_2005_11/en/EEA_report_11_2005.pdf

DEHEMS European Household Energy Use Knowledge Base adds to these sources of quantitative information on the day to day, energy decisions of European Citizens, on a service by service basis.

As the DEHEMS project progressed, discussions were held with the organisers of the above (particularly Odyssee) with a view to exploring the possibility of including DEHEMS data in existing knowledge bases. As a minimum, data was made public through www.dehems.eu/reports.

It might also be important to gather data that is not already available in the various databases/reports indicated above. In which case, the energy saving techniques and usage patterns may become DEHEMS contributions.

5. Activities Implemented and Objectives Achieved

User requirements had been specified through work package 2, and data from all cycles was collected by the DEHEMS energy sensing system through WP5. Detailed household surveys (see D7.7) were completed with each participating home through the equipment installation process and through an online survey undertaken after each cycle. These surveys were designed to provide the following information:

- Household profile - location, number/age of residents, number of rooms, household income, etc
- Energy profile – energy sources, existing consumption, internet, etc
- Energy saving views and practices
- Household appliances and how they are used
- Online participation and social networking

6. Next Steps

Focus groups occurred following each cycle using an agreed, coordinated process with Living Labs.

Complete results from Cycles 1, 2 and 3 have been collected and analysed in the relevant end-of-cycle reports (D7.5, D7.6 and D7.7). These reports are available on www.dehems.eu/reports