SAVE AGE
Save Energy
green energy for elderly

Newsletter No. 3 August 2012

Editorial

The Save Age project enters a new project phase: in the following months our project partners will organize national seminars and workshops for employees and managers of residential and care homes. Participants will leave trainings informed about best practices and best available techniques in the field of energy efficiency and equipped with action plans tailored to the needs of their residential care homes.

Our third newsletter deals with obstacles obstructing energy efficiency improvement and a broad collection of best and worst practices recorded by our project partners in the participating homes. Some attention is also given to the assessment of the saving potential of European residential and care homes.

For more information please visit www.saveage.eu.

Content

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Needs and Obstacles Influencing Energy Efficiency in Residential Care Homes

Energy efficiency has been conquering its space in the residential sector, particularly in residential care homes, as awareness of its benefits is increasing. Our analyses have shown that the Czech Republic, Greece, Portugal, Germany and Slovenia assign to energy efficiency a very important role on the consumption and cost reduction quest. Based on all gathered data, the role of energy efficiency is still minimal in several countries; those countries are France, Italy, Spain, the Netherlands and Sweden. Nonetheless, some common practices already exist, mainly in lighting and hot water systems, which are not mandatory - except in new or renovated buildings. Legislation should be more encouraging, recommending more ambitious values of buildings' efficiency and extend its legal power to older buildings, since those represent the majority of the existing residential care homes.

Nevertheless, all countries have energy policies and/or negotiated agreements with specific targets and a determined timeframe to enhance energy efficiency on buildings. Economic incentives or other financial instruments, such as tax reductions, regional funding, and energy service companies are speeding up this slow change of the energy use paradigm.

Resume of needs and barriers

Most common problems identified	Measures already taken	Top 3 actions needed	Most important barriers
• Lighting	• Motivate staff and residents (instructions and announcement)	• Building envelope	• Financial condition
• Awareness	• Electric equipment	• Heating systems	• Lack of useful information
• Administration		• More energy efficient equipment	
• Behaviour			

Most common problems identified were related to the following areas: **lighting** (whole system and design), **awareness** (lack of knowledge/interest by managers and employees), **administration** (inexistence of past detailed consumption data) and **behaviour** (lack of

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responsibility and control on daily tasks that influence energy consumption, whether by residents or employees).

Some measures have already been taken, especially from those aforementioned countries with a heightened role of energy efficiency. Most of the measures to promote energy efficiency are directed to staff and residents, motivating them with announcements, instructions and scattered information. Electric equipment is also a big target within the institutions.

Problems identified	Country	Topic
Conventional central gas boilers with high temperature radiators used.		Heating
Residential care homes (60%) need new lighting.		Lighting
Lights are turned on all day long (motion detectors are not used).		
Lack of knowledge, interest and/or incentives by managers and employees.		Awareness
No training plan for employees and users regarding energy efficiency.		Employees
Managers of residential care homes assume that employees or building users have some or little/no influence in the energy consumption of their care home.		

There are still many identified actions to be executed by residential care homes, especially regarding heating, ventilation and air-conditioning systems, building envelopes and behaviour issues. Hence, there is a great need of improving effectiveness of systems for heating and hot water preparation, replacing objects with low lifetime period and efficiency, and enhancing commitment of management and roof organization on energy efficiency issues. There are several barriers preventing these needs to no longer be a necessity, two types of barriers are common to almost all countries. Apart from Germany, the biggest barrier is the financial condition, and the second one, pointed by all countries, is lack of good information (quality and/or quantity matter).

Source: Identification of Needs and Obstacles, available at:
http://www.saveage.eu/index.php/en/project-publications

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Best and Worst Practices in Residential Care Homes

To achieve its target of 20 % energy savings by 2020, the EU needs to step up its efforts on energy efficiency. Saving 1 kWh of energy is ten times cheaper than producing 1 kWh of energy, hence residential care homes should start finding and implementing energy efficiency measures. They can be simple or more elaborated, technological or behavioural, with low or high initial investment and having short or longer payback, but there is one thing they all have in common - they will reduce energy consumption, CO_2 emissions and energy costs, while maintaining the elderly's comfort. With the intention to help residential care homes, every Save Age partner gathered what they thought to be the best and worst implemented practices in residential care homes.

Several topics were target for existing best practices in residential care homes. Some technologies have been identified more times than the others. This can be understood as an indicator of a high potential area to be exploited by residential care homes' managers, in order to achieve energy efficiency. Notwithstanding, all other topics are also very relevant and perhaps, in some cases, more suitable to be implemented.


Installed solar collectors (Greece) and LED luminaires (Portugal)

The use of **solar heating systems** is the most often referred best practice. Usually these systems are for water heating only, but sometimes collectors are also used for space heating, although its efficiency is not as high. The following best practices are also very common: **energy management systems** to control, in real time and according to the needs, building's energy consumption; retrofitting of the **lighting systems** to more energy efficient light sources, and possibly adding light controls and better auxiliary equipment (such as luminaires and ballasts); **laundry** room that concerns the amount of linen used every day and the water expenditure, as well as load shifting and matching supply with demand, best equipment selection, efficient and intelligent ways of drying the laundry;

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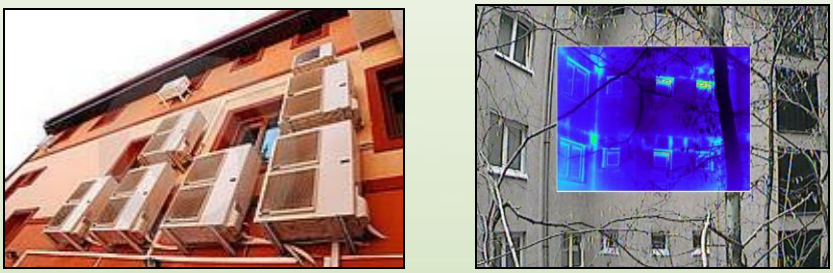
renewable and energy efficient systems with the goal of sustainability by technical innovation, reducing fossil fuels use through a mix of ecological measures, such as solar systems, cogeneration, heat pumps, efficient equipment, etc.

Just like for the best practices, several topics were target for existing worst practices in residential care homes. Again, some technologies have been identified more times than the others. This can be understood as a soft point in residential care homes that has to be dealt with, in order to achieve energy efficiency.

Most often referred worst practices have to do with **heating**, as it should not be done with oil, gas or electricity but with biomass and solar collectors. Heating systems should not heat empty spaces, hence there should be controllable thermostats in each room, and windows and doors should be closed when heating system is ON. Other common worst practices are: uncontrolled **ventilation** often done with heating and cooling systems ON; **air conditioning** with multiple splitters in a single care home and an elevated set point temperature with no programmed ON-OFF period; **behaviour** issues, such as not switching off equipment when not in use and careless use of laundry and kitchen equipment; **insulation** with reduced thickness and existence of thermal bridges and single glazed windows.



Decentralised air-conditioning system (Italy) and opened windows in the heating season (Slovenia)

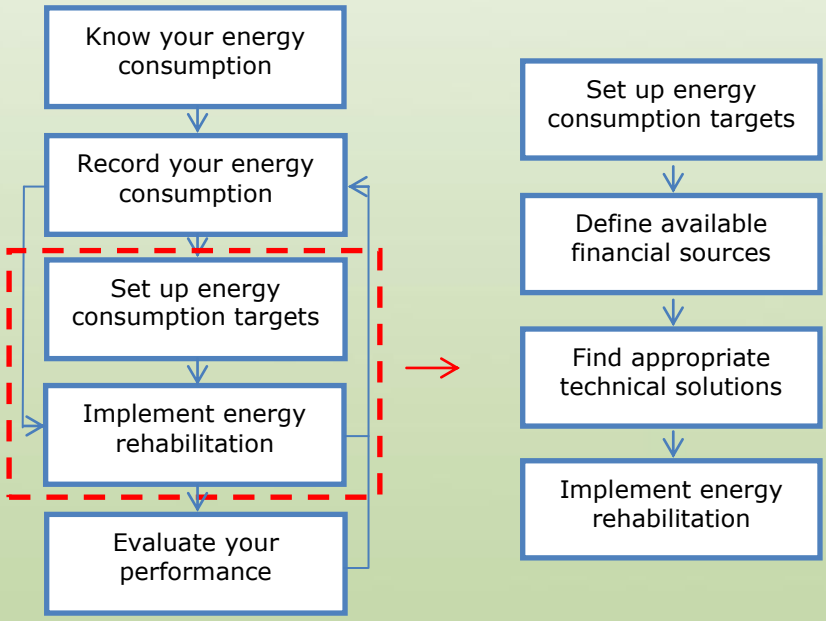
There are multiple ways to be energy efficient and a lot of measures and actions one could take. Some are more suitable than the others according to the type of building, its location and the influence of local climate and surrounding characteristics. For instance, one measure can be very effective in Portugal (solar heating), but will not be as great in Sweden, at least not with the same payback time.

Source: Best and Worst Practices, available at:
http://www.saveage.eu/index.php/en/project-publications

Energy Saving Assessment

Project partners have set themselves a goal to calculate energy consumption in all European residential care homes and to estimate the energy saving potential. The optimum scenario to extrapolate data with our benchmarking tool would be to acquire all required input (heating degree days, net area, year of construction, number of residents and number of employees). However, gathering data as heating degree days and year of construction of residential care homes is a very time-consuming process with a great potential of inconclusive results. As a result, our assessment was based on the number of residential care homes per country and the number of residential care homes' residents per country.

Energy saving is calculated in terms of reduction of the actual energy consumption, assuming that the desired indoor conditions in residential care homes have been achieved. The rate of energy saving depends on a specific building and is subjected to decisions of building managers and the availability of financial resources. Energy rehabilitation of residential care homes' buildings should follow the procedure given in the following figure, carrying in mind that it should be a continuous procedure.



Energy rehabilitation procedure in residential care homes

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Because selection of the most appropriate energy improvement intervention should be a subject of a separate study for each residential care home, some possible interventions have been recorded. The following list of interventions is indicative and by no means exclusive.

Category	Intervention
1 – no changes	-
2 – behaviour changes	Leaflets, regular informing, comparing energy consumption
	Seminars and personal informing/advising
	Energy management techniques
3 – small investments	Replacement of heating, ventilation and air-conditioning systems with high energy performance systems
	Installation of external or internal wall insulation
	Installation of roof, slab insulation
	Installation of appropriate shading devices
	Installation of high energy performance lamps and luminaires
	Installation of heat recovery system
	Installation of ceiling fans and renewable energy system
	Replacement of glazing and fenestration system
	Installation of Building Management System
4 – big investments	Combination of measures given for category 3

The overall energy saving potential is based on the benchmark results and the arithmetical difference between the available figures and the average value of the correlated countries. Accuracy of calculations is based on the number of the input data variables available. The following table presents the possible energy savings following three possible scenarios: A – pessimistic, B – intermediate and C – optimistic.

	Actual data	Energy rehabilitation scenarios		
		A	B	C
Final energy consumption in kWh/resident/year	13,158	11,250	10,526	9,441
Reduction of final energy consumption in kWh/resident/year		1908	2632	3717
Reduction of final energy consumption in %		14.5%	20%	28.25%
Total energy conservation (GWh/year)		**7,343**	**10,128**	**14,306**

If you want to check energy saving assessment for your country, please visit www.saveage.eu.

Source: Energy Saving Assessment, available at http://www.saveage.eu/index.php/en/project-publications.

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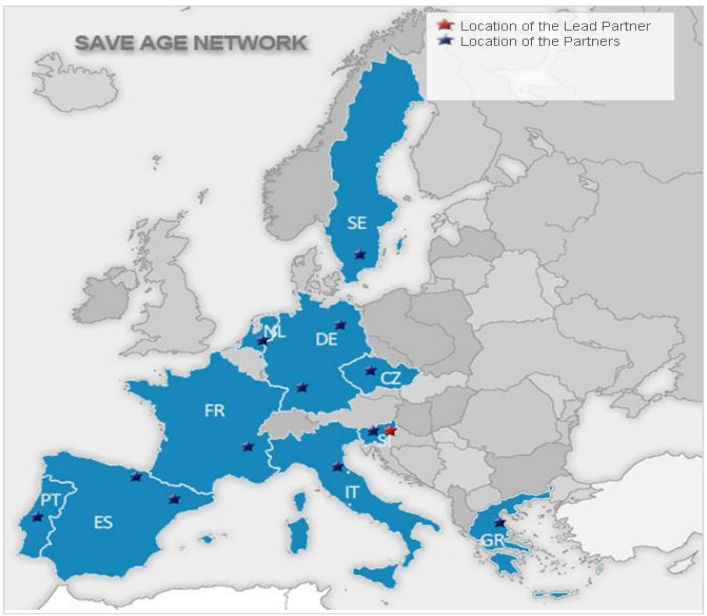
Participating Partners In 10 European Countries



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