

**Energy Efficiency and the
North Sea Region Programme:**

***“Saving Energy, Revitalising
Communities, Creating Jobs”***

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Efficiency in Buildings (EuroACE)**

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Brunstad, Norway, 21 June 2007***

What is EuroACE?

- **The European Alliance of Companies for Energy Efficiency in Buildings**
- **Founded in 1998 by 20 of Europe's leading companies involved with the manufacture, distribution and installation of energy saving goods and services**
- **EuroACE works together with the European institutions to help Europe achieve more sustainable energy use in buildings and significant reductions in carbon dioxide emissions**

Current EuroACE membership

- **Acciona**
- **Aereco**
- **Armacell International**
- **BING**
- **BPB**
- **CRH**
- **Danfoss**
- **Grundfos**
- **Honeywell**
- **Hunter Douglas**
- **Huntsman Polyurethanes**
- **Illbruck**
- **Kingspan Insulated Panels**
- **Knauf Insulation**
- **Paroc**
- **Philips Lighting**
- **Pilkington**
- **Rockwool International**
- **Saint-Gobain Isover**
- **Siemens**
- **Skanska**
- **URSA**
- **VELUX A/S**

Total EU turnover:

- **36,860 million euros**

Total EU employment:

- **173,557 people**

The Tip of the Jobs Iceberg

EuroACE

A transnational partnership working together to achieve:

- **better energy saving policies**
- **new jobs**
- **real energy efficiency improvements in buildings**

North Sea Region Programme, 2007-2013

Priority 4: Promoting sustainable and competitive communities

Objective 3: Promoting energy efficiency in urban and rural communities

“Greater energy efficiency in buildings benefits:

- *individuals*
- *firms*
- *society as a whole.”*

A Tale of Three Cities

Lisbon – Growth, Competitiveness, Jobs

- **Estimated job creation from the two relevant EU Directives (Energy Performance of Buildings Directive and Energy End Use Efficiency & Energy Services Directive) – BETWEEN 65,000 AND 107,500 JOBS.**
- **Estimated job creation from expanded EPBD – 250,000 EXTRA JOBS.**

Gothenburg – Sustainable Development

- **Using energy more efficiently is the best way to reduce our carbon footprint, conserve resources and create warm and comfortable homes.**

Moscow – Security of Supply

- **Using less energy is the simplest and most cost-effective way to reduce our reliance on imported fuel.**



Real Projects!

The Display™ Campaign



European
Municipal Buildings
Climate Campaign

- **A European scheme aimed at encouraging local authorities to publicly display the energy performance of their public buildings using the same label that is used for household appliances**
- **Latest phase of Campaign – since 2006 – encourages municipalities to improve their building performance “Towards Class A”**
- **Annual “Towards Class A Award” for towns which have the best results for their communication campaigns**
- **“Shining Examples” – examples of best practice – are promoted on Campaign website to facilitate knowledge-sharing among municipalities**

Transnational Partnership

- **Energie-Cités** – Association of European local authorities for local sustainable energy policy
- **EuroACE** – European Alliance of Companies for Energy Efficiency in Buildings
- **EnEffect** – Center for Energy Efficiency (Bulgaria)
- **CEMR** - Council of European Municipalities and Regions
- **ACE/CAE** - Architects' Council of Europe

*Project supported by the “Intelligent Energy – Europe”
Programme of the European Community*

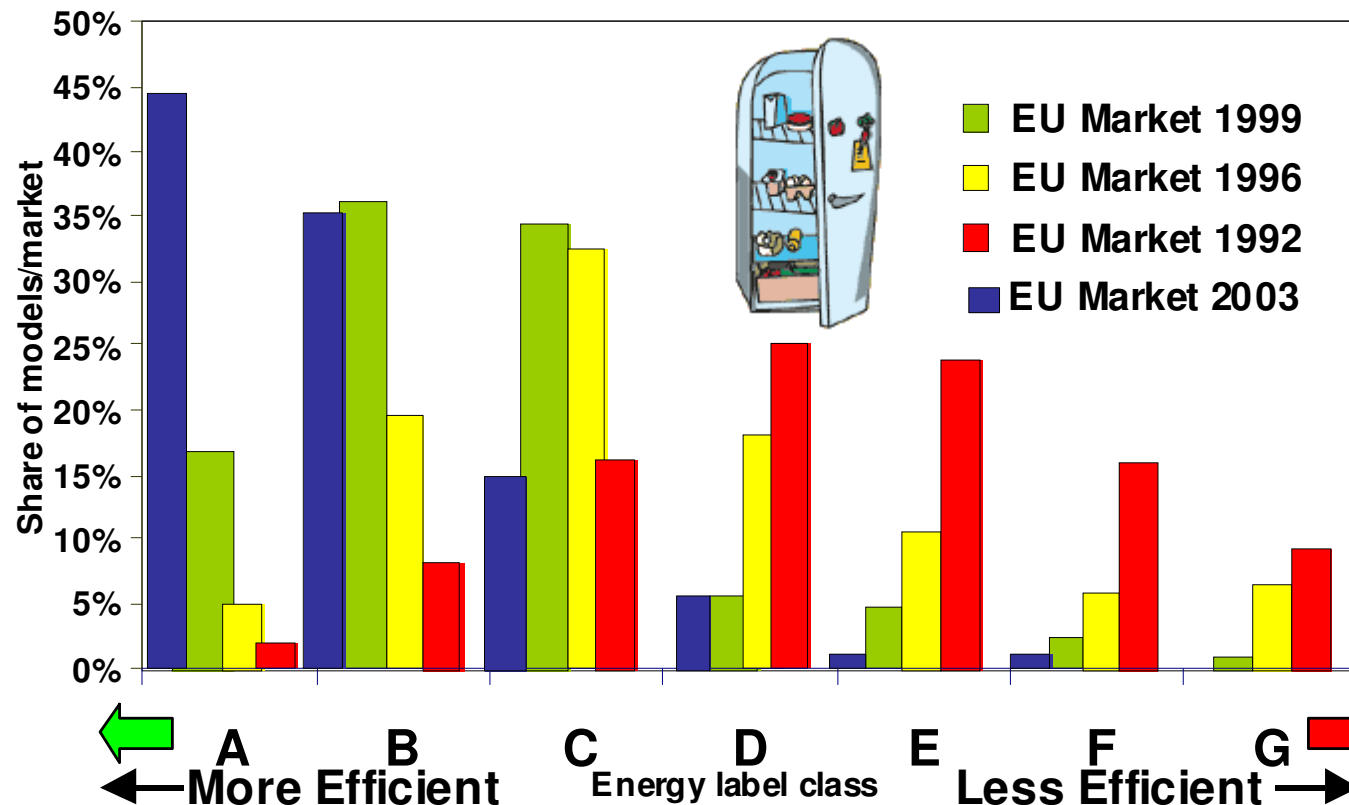
Why is the Public Sector so important?

- **The public sector can engage citizens by **leading by example****
- **Buildings account for nearly **40%** of EU final energy consumption**
- **Energy remains one of the few municipal items where **significant** financial savings can be made**
- **A European municipality of **100,000** inhabitants can spend up to **€1.5m** for the energy requirements of its public buildings**
- **By reducing its energy consumption by only **1%**, it will save **€15,000!****



Why is labelling so important?

How the use of energy labels transformed the refrigerator market in the EU




Same problem, same solution

Energy		Fridge-Freezer
Manufacturer Model		
More efficient		A
A		
B		
C		
D		
E		
F		
G		
Less efficient		
Energy consumption kWh/year (Based on standard test results for 24h)		325
Actual consumption will depend on how the appliance is used and where it is located		
Fresh food volume l Frozen food volume l		190 126

Noise (dB(A) re 1 pW)		
Further information is contained in product brochures		
Norm EN 153 May 1990 Refrigerator Label Directive 94/2/EC		

2005



The Council House

How does this building compare?

European Municipal Buildings Climate Campaign

	Energy Consumption	CO ₂ Emissions	Water Consumption
More efficient			
A			
B			
C			
D			
E			
F			
G			
Less efficient			
Data 2004	212 kWh/m ² /year	26 kg/m ² /year	212 l/m ² /year

Towards a class A building

Simple actions

- Turn off your PC monitor when you go for lunch and when you go home.
- Use natural daylight as much as possible. Turn off lights in empty rooms.
- Don't open windows if you're too hot - ask for the heating to be turned down.
- Can you use the stairs instead of the lift?

Technical solutions

- Adjust heating times to suit weather conditions.
- Install a woodfuel biomass boiler to replace gas fired plant.
- Adjust lighting controls to be more sensitive to daylight.
- Draughtproof all windows and doors.
- Replace all PC monitors with flat screens.

Energy sources

49 % Fossil	51 % Renewable
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Improving performance by one class could save annually:

The energy consumption of 25 family houses	The CO ₂ emissions of a car going 29 times around the earth	Water consumption for 54780 showers
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For further information
Bristol City Council
Energy Management Unit
Tel: 0117 325435
www.bristolcity.gov.uk

www.displaycampaign.org

Tools available to municipalities

Municipalities taking part in the Display™ Campaign are provided with an online tool that enables them to:

- **calculate** a building's energy, water and CO₂ consumption
- **classify** buildings, from A to G
- **display** results within public buildings using the Display™ voluntary label

Communication Tools (European level)

- **Display™ Website**
- **Display™ Test tool**
- **Towards Class A newsletter**
- **Display™ Dossier**
- **Promotional meetings and study tours**

Communication Tools (local level)

- **Display™ Poster**
- **Display™ and local authority's website**
- **Display™ Communication Handbook**
- **Local media**

Conclusions

The Display™ Campaign:

- is a transnational **public-private** partnership
- enables municipalities to share **best practice**
- **raises awareness** among councillors, building managers and ordinary citizens
- is a **practical and visible** European campaign to fight climate change

Energy Efficiency in the Refurbishment of High-Rise Residential Buildings



Transnational Project with Tangible Outcomes

- **Funded by **International Energy Agency** and **EuroACE**, carried out by the **Association for the Conservation of Energy (ACE)****
- **Examined:**
 - **potential for energy savings when refurbishing high-rise buildings;**
 - **opportunities for and barriers to achieving that potential**
- **Covered 28 countries**
- **Recommended practical and policy solutions**
- **Focused on six case studies of **real refurbishment projects** in ‘old’ and ‘new’ EU countries and Russia**
- **Report, case studies and **practical refurbishment ‘toolkits’** being disseminated throughout all OECD countries**

Six case studies, highlighting practical approaches...

Energy Efficiency in High-Rise Refurbishment Case Study Series
Radomir, Bulgaria



Map of New Region 7

Overview
 The building was built in 1968. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high.

Key performance data
 An energy audit of Block consumption as 375 kWh/m² year
 Space heating - 14 kWh/m² year
 After refurbishment: 242 kWh/m² year

Energy Efficiency in High-Rise Refurbishment Case Study Series
Csanakker Utsa, Hungary



Map of New Region 2

Overview
 Built in 1968, the building was in a poor condition. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high.

Key performance data
 The measured heating energy consumption was 14 kWh/m² year
 After refurbishment: 7 kWh/m² year
 Energy saving: 49 kWh/m² year

Energy Efficiency in High-Rise Refurbishment Case Study Series
Riga, Latvia



Map of New Region 8

Overview
 The building was built in 1968. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high.

Key performance data
 Total building cost: €2
 Total heated floor area: 10,000 m²
 Costs per Apartment: €100,000
 Low E Glazing: €3,400
 Ventilation: €900
 Energy savings: 50 kWh/m² year

Energy Efficiency in High-Rise Refurbishment Case Study Series
Lisken, Portugal



Map of New Region 4

Overview
 The building was built in 1968. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high.

Key performance data
 Total building cost: €2
 Total heated floor area: 10,000 m²
 Costs per Apartment: €100,000
 Low E Glazing: €3,400
 Ventilation: €900
 Energy savings: 50 kWh/m² year

Energy Efficiency in High-Rise Refurbishment Case Study Series
St. Petersburg, Russia



Map of New Region 5

Overview
 The building was built in 1968. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high. The facade is made of concrete panels. The building is 16.0m high.

Key performance data
 Total building cost: €2
 Total heated floor area: 10,000 m²
 Costs per Apartment: €100,000
 Low E Glazing: €3,400
 Ventilation: €900
 Energy savings: 50 kWh/m² year

Energy Efficiency in High-Rise Refurbishment Case Study Series
London, United Kingdom



Map of New Region 0

REACHING NEW HEIGHTS IN RESIDENT PARTICIPATION

The UK is a EU15 Member, enjoys a moderate climate and is populated by some 59.4 million people. Net annual household incomes average €32,300, with an average of 2.9% of this income being spent on energy. High-rise buildings as a percentage of total housing stock is low compared to other countries, at 1.6%.

Overview
 Glastonbury House is owned by Westminster City Council; CityWest Homes, the City Council's Arms Length Management Organisation (ALMO) manages this as well as Westminster City Council's other 22,000 homes. Located in Westminster, at the heart of London, the 22 storey tower was built in 1968 and contains 160 dwellings that were built for general needs. However, the building now provides sheltered housing for older people and it was meeting their particular needs that inspired the project. The goal is to surpass minimum social housing standards in a manner that provides greater support to vulnerable people through technological improvement and through the integration of social and environmental sustainability factors.

Key (predicted) performance data

Space heating energy consumption:

- Before refurbishment: 9830 kWh/flat per year
- After refurbishment: 7000 kWh/m² year
- Saving of around 29%

CO₂ saved due to renewable energy integration:

- 2,385 kg/a

Refurbishment cost:

- €14.48 million

Financing and project management

The Glastonbury House refurbishment is being financed via CityWest Homes, with a budget of €14.48 million. ALMOs are functionally separate from the local authority from which the bulk of their funding is sourced, are capable of entering into public-private partnerships and can source funding through other arrangements. A public-private partnership was formed and funding was secured from a variety of sources including the Westminster City Council General Fund, the Government's Decent Homes, Capital Grants and Receipts, Major Repairs Allowance, and other public funds.

This institutional structure allowed CityWest to seize the opportunity to pilot the project as an 'intelligent and green' refurbishment. It engaged the services of INTEGRE, an action research network, whose expertise allowed the integration of Decent Homes works with sustainability, innovation and support for vulnerable people. Approximately €2.4 million is tied to specific Decent Homes work. Almost €3 million relates specifically to Decent Homes works which includes some, but not all of the energy efficiency related improvements. For example €20,000 was allocated to the project from a €1.7 million Community Energy Grant allowing the tower to connect to a local CHP-powered district heating system.

Wates Construction was chosen as the partnering contractor following an extensive EU procurement exercise, while Mouchel Parkman are project managing the programme on behalf of CityWest. They administered the tendering of specialised elements of the contract and CityWest benchmarked costs against similar schemes.

General improvements

A new sky lounge is to be added to the roof as a large space for the use of residents and their friends and families. A Health Centre and a Local Neighbourhood Centre are also to be added to the roof.

Figure 1: Before refurbishment

This is one of six case studies as part of the International Energy Agency and EuroACE funded project 'Energy Efficiency in High-Rise Residential Buildings'. Please visit www.euroace.org/energy for the full project report and the other case studies.

IEC/ENEA, EuroACE 2005

“Block One”, Radomir, Bulgaria



- **PHARE-funded Demonstration Project**
- **Public-Private Partnership, including Greek and German contractors**
- **Roof and wall insulation; window improvements; new boiler and heating controls**

Raise the Roof, St Petersburg, Russia



- **Public-Private Partnership, including local authority, Danish Housing Ministry and EuroACE member companies**
- **Extra storey added to help finance refurbishment**
- **Outstanding energy savings**
- **Wide applicability to residential high-rise buildings in Baltic and Nordic states**

Conclusions

- **One in six dwellings** in Europe – 36 million – are in high-rise buildings; in some countries up to half the population live in them
- Average of **28%** energy saving potential
- Annual CO₂ reductions of 35 megatonnes
- **Common solutions** identified through transnational approach
- Results – including **practical refurbishment resources** – being widely disseminated

Baltic Energy Efficiency Network for the Building Stock



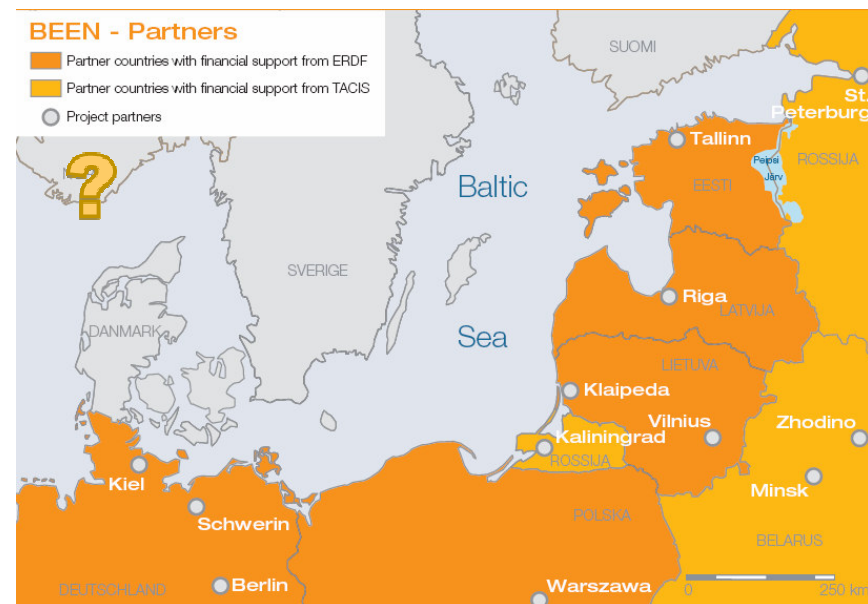
BEEN

Baltic Energy
Efficiency Network
for the Building Stock

- **Transnational project to develop strategies and instruments to promote energy efficient refurbishment of prefabricated residential buildings in the Baltic Sea Region**
- **Part-funded by Interreg IIIB Programme**
- **Seven partner countries: Germany, Poland, Lithuania, Latvia, Estonia, Belarus, Russia**
- **26 partner organisations, including Housing Ministries, municipalities, housing associations**

BEEN there, DONE that?

- **Project duration: July 2005 to December 2007**
- **Project aims to develop optimal technical, legal and financial solutions for refurbishing building stock**
- **Three best practice projects to be implemented in Estonia, Lithuania and Portugal**
- **Applicability to North Sea Region?**
- **More information at www.been-online.net**



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