Europe's Approach to the Climate and Building Performance

2006 RESNET Building Performance Conference

March 1, 2006

Steve Baden
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Florida Solar Energy Center

Members of the European Union


Austria


Belgium

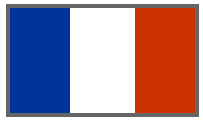

Cyprus


Czech Republic


Denmark


Estonia


Finland


France


Germany


Greece


Hungary

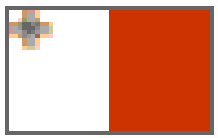

Ireland


Italy


Latvia

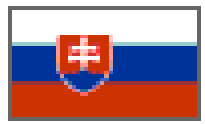

Lithuania

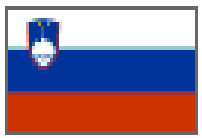

Luxembourg


Malta


Poland


Portugal


Slovakia


Slovenia


Spain


Sweden


Netherlands


Britian


ÍSLAND
NORGE
SUOMI
FINLAND
SVERIGE
EESTI
LATVIJA
LIETUVA
DANMARK
UNITED
KINGDOM
IRELAND
ÉIRE
NEDERLAND
DEUTSCHLAND
BELGIË
BELGIQUE
LUXEMBOURG
POLSKA
BELARUS
RUSSIJA
QAZAQSTAN
UKRAÏNA
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FRANCE
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SCHWEIZ
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ÖSTERREICH
LIECH.
MAGYARORSZÁG
SLOVENIJA
MOLDOVA
ROMÂNIA
HRVATSKA
BOSNA I
HERCEGOVINA
SRBIJA I
CRNA GORA
BÂLGARIJA
PORANEŠNA
JUGOSLOVENSKO
REPUBLIKA
MAKEDONIJA
SHQIPËRIA
PORTUGAL
ANDORRA
MONACO
SAN
MARINO
ESPAÑA
ITALIA
ΕΛΛΑΔΑ
ELLADA
TÜRKİYE
SAKARTVELO
AZƏRBAYCAN
HAJASTAN
IRAN
IRAQ
SOURIYA
LIBNAN
KYTIPOΣ
KYPROS
KIBRIS
MALTA
EL MAGHREB
EL DJAZÂIR
TOUNIS
AÇORES (P)
MADEIRA (P)
CANARIAS (E)
GUADELOUPE (F)
MARTINIQUE (F)
GUYANE (F)
RÉUNION (F)

European Union Directive on the Energy Performance of Buildings (2002/9/EC)

Requirements

+ Establish Common Methodology for Calculating Building Energy Performance
+ Ratings of All Buildings at the Time of Sale/Change of Occupancy
+ New Building Thermal Regulations
+ Annual Inspections of Boilers, Heating and Air Conditioning Systems

Was to go into effect on January 1, 2006

European Union Directive on the Energy Performance of Buildings (2002/9/EC)

Why?

+ Assist Member States in Meeting Kyoto Accord on Carbon Reduction (330 Million Tons by 2010)
+ European Consensus on Energy Efficiency as Priority
+ Buildings Represents 40% of EU's Energy Consumption and Carbon Production

European Union Priority on Energy Efficiency

European Building Performance Directive

“Energy saving is without doubt the quickest, most effective, and most cost-effective manner for reducing greenhouse gas emissions.”

European Union Directive on the Energy Performance of Buildings (2002/9/EC)

Goals

+ Reduce European Building Energy Consumption by 10% by 2010 (20% by 2020)
+ Ratings of 2 Million Existing Buildings by 2010
+ Reduction of 45 Million Tons of Carbon by 2010 (14% of Total Kyoto Target)

Implementation of EU Directive on the Energy Performance of Buildings

- + While Directive Clear In Its Requirements and Goals, It Leaves Member States Great Flexibility in Design & Implementation
- + Strong Risk of Diffusion
  - * Manufacturers concerned that could create barrier for a single European market
  - * Consumer confusion in comparing performance of buildings in different member states

Concerted Action Group

24 Countries Voluntarily Working To:

+ Developing European Philosophy for Energy Efficiency in Buildings
+ Create Common Methodology for Calculating Building Energy Performance
+ Promote Common Practices in Implementing Directive
+ Developing Common Implementation Strategies

Concerted Action Group

Efforts Focused On:

+ Uniform Labeling of the Building Performance of Buildings

+ Developing Europe CEN Standards for Directive

+ Training and Certification of Raters

Labeling of Energy Performance of Buildings

Issues Being Worked On:

+ Organization of Certification Programs
+ Differences Between New and Existing Buildings
+ On Large Buildings – Should the Building or Individual Units by Labeled?
+ Standards for Software and Calculation Methods
+ Identification of Recommended Energy Improvements and Calculating Their Cost Effectiveness

Training and Certification of Raters

Issues Being Worked On:

+ How Many Raters Required in Each Nation?
+ Qualifications of Raters
+ Development of Code of Standards for Raters
+ Quality Assurance Oversight of Raters
+ Insurance Necessary to Cover Rater Liability

Types of European Ratings

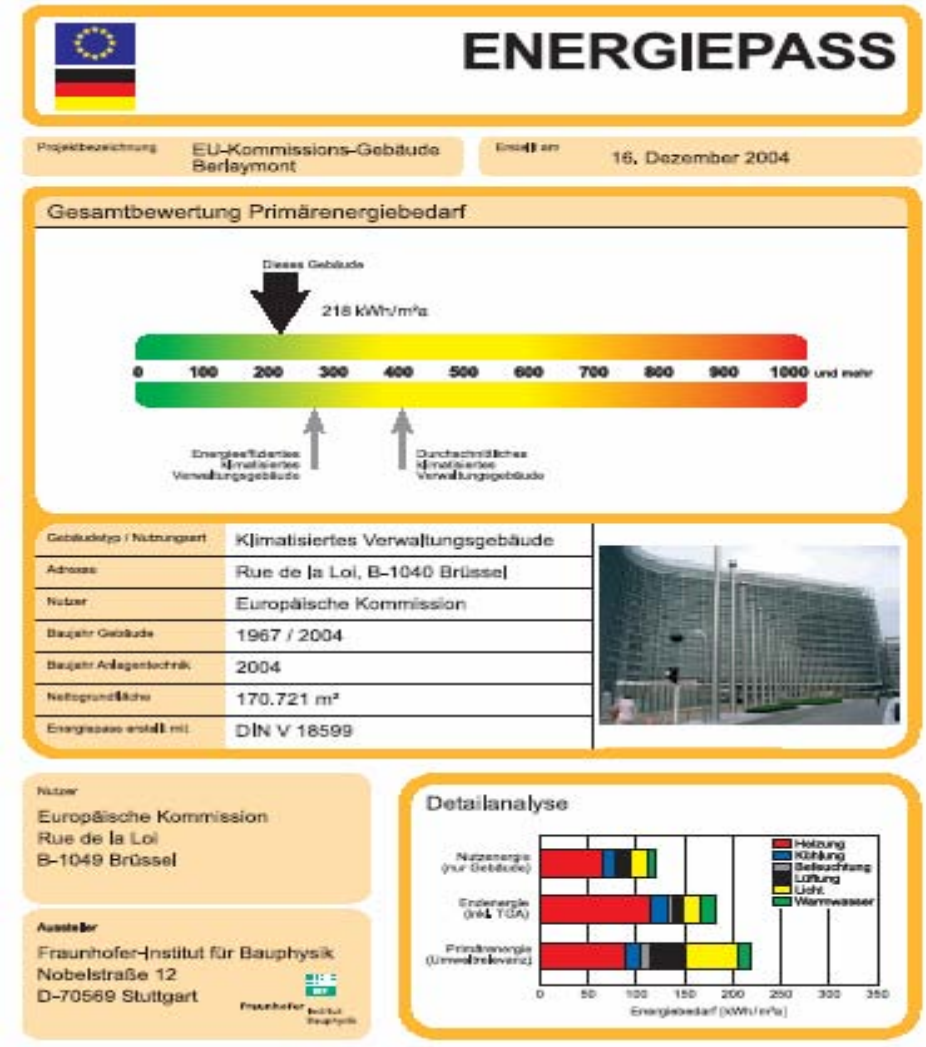
"Asset Rating"

Compares Building Energy Use on Basis of Reference Conditions

"Operational Rating"

Describes Actual Performance of a Building Based upon Occupant Patterns and Utility Bills (Commercial Buildings)

Example of Rating Report - Germany



ENERGIEPASS

Projektbezeichnung: EU-Kommissions-Gebäude Berlaymont

Erstellt am: 16. Dezember 2004

Gesamtbewertung Primärenergiebedarf

Dieses Gebäude

218 kWh/m²a

0 100 200 300 400 500 600 700 800 900 1000 und mehr

Energieeffizientes Klimatisiertes Verwaltungsgebäude

Durchschnittliches Klimatisiertes Verwaltungsgebäude

Gebäudetyp / Nutzungsart	Klimatisiertes Verwaltungsgebäude
Adresse	Rue de la Loi, B-1040 Brüssel
Nutzer	Europäische Kommission
Baujahr Gebäude	1967 / 2004
Baujahr Anlagentechnik	2004
Nettogrundfläche	170.721 m²
Energiepass erstellt mit	DIN V 18599

Nutzer

Europäische Kommission
Rue de la Loi
B-1049 Brüssel

Aussteller

Fraunhofer-Institut für Bauphysik
Nobelstraße 12
D-70569 Stuttgart

Detailanalyse

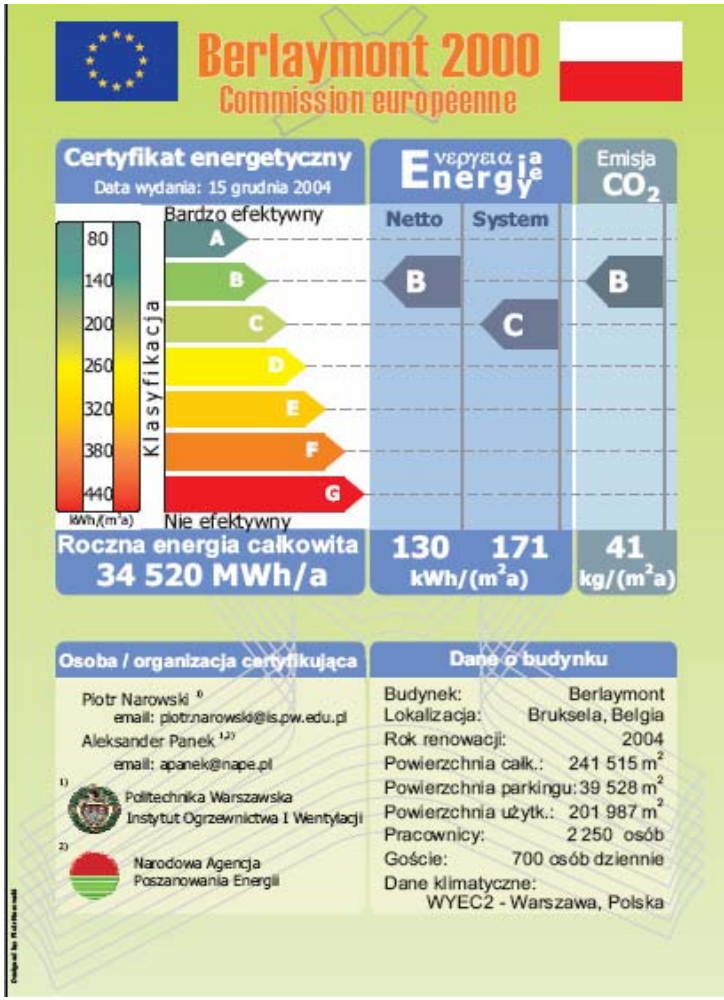
Nutzenergie (nur Gebäude)
Endenergie (inkl. TGA)
Primärenergie (Umweltrelevanz)

Heizung
Kühlung
Beleuchtung
Lüftung
Licht
Warmwasser

0 50 100 150 200 250 300 350

Energiebedarf (kWh/m²a)

Example of Rating Report (Poland)



Status of Directive

+ **Directive Will Not Be Fully in Force Until 2009**

+ **Only Two Nations Implementing (Denmark and Italy)**

+ **Austria, Belgium, Germany, Latvia, Lithuania, Poland and Slovakia Parliaments Have Enacted Necessary Legislation**

Major Bottleneck

Many Countries Have Not Decided the Qualifications of Raters

+ **Tens of Thousands of Raters Needed Across EU**

+ **It Will Take Time to Train and Certify Such a Large Number of Individuals While Preserving the Effort's Credibility**

Monetizing of Energy Savings

Article Seven of Directive

Requires Member States to Facilitate Financing of Energy Improvements Recommended by the Rating

Monetizing of Energy Savings

Carbon Trading

A Key Element of Kyoto Accord is Development of a Carbon Saving Trading Mechanism (Modeled after US Clean Air Act)

Los Angeles Times Projects trading in emission credits "Could become a $40 billion market by the end of the decade"

Monetizing of Energy Savings

EU "White" Certificates

+ **Utility Required Energy Saving Goals – Government Certifies Amount and Life of Savings**
+ **White Certificates Can be Sold or Traded**
+ **Italy and United Kingdom Implementing and Under Preparation in France and Netherlands**

RESNET/EU Dialog

In September 2005 Steve Baden and Philip Fairey Presented at the EU Conference on the Energy Performance of Building Directive

+ Agreement reached that a formal dialog will be developed between EU Concerted Action Group and RESNET

Potential Benefits of RESNET - EU Dialog

+ Common Methodology for Calculating Building Energy Performance

+ Establish International Protocol for Verification of Building Energy Savings for Carbon Trading

+ Gain Knowledge of Rolling Out Comprehensive Building Performance Initiative

Lessons From EU

Example of What Can Happen if Governments Place a Priority on Action and Agree to Cooperate

" The European Union sees the Directive on Energy Performance of Buildings as helping Member States in meeting their Kyoto commitments.

Many developing countries fully recognize the essential role of energy efficiency in addressing these multiple challenges. Europe therefore needs to set an example in this respect, leading to the development of new policies, cooperation and technologies that can assist the developing world to address this challenge."

Policy Commitment Leading to Market Transformation

German Photovoltaic Example

German Government Pays $.54 kWh for Power Produced by System (Consumer pays cost of system and installation)


Eugen Schneider
Heizung · Sanitär · Blechnerei · Solaranlagen
HOLMES
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Energy