



EuroACE

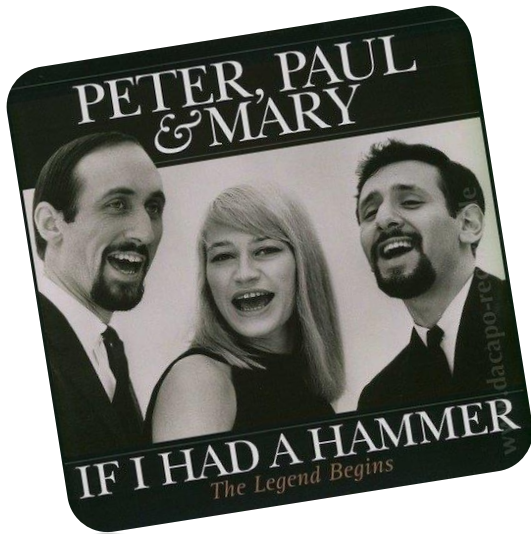
THE EUROPEAN ALLIANCE OF COMPANIES
FOR ENERGY EFFICIENCY IN BUILDINGS

24th June 2016

Informal Session at C4E Forum

If I had a hammer...

***EPBD and EED Revision – How to do better at EU level
to deliver jobs & growth for CEE countries?***



EuroACE

THE EUROPEAN ALLIANCE OF COMPANIES
FOR ENERGY EFFICIENCY IN BUILDINGS



PETER



PAUL



MARIE

Introduction



EuroACE

THE EUROPEAN ALLIANCE OF COMPANIES
FOR ENERGY EFFICIENCY IN BUILDINGS



Adrian JOYCE

Secretary General

EuroACE Members (June 2016)



Cross-Sector Representation



1. Air Cooled Chiller
2. Heat Pump
3. Automated Roller Blind
4. Glazing
5. Regenerative Drive Elevator
6. Floor Insulation
7. Heating Controls: Room Thermostat
8. Automated Exterior Venetian Blind
9. Insulation
10. Insulated Wall System
11. Heating Controls: Radiator Thermostat
12. Heat Recovery Ventilation
13. Humidity Sensitive Air Inlets
14. Heat Pump
15. Automated Roller Blind
16. Humidity Controlled Extract Unit
17. Lighting
18. Sunspace
19. Automated Awning
20. Insulation
21. Sealants
22. Roof Window
23. Solar-control/ Low E-window Film
24. Air Tightness Membrane

EuroACE Members (June 2016)

More than...

... 280 000 employees

... 900 production facilities
& office locations



What is EuroACE?

- Europe's **leading companies** involved with the *manufacture, distribution and installation* of energy efficiency equipment and services in buildings
- **Objective**
To promote **energy efficiency in buildings** on the EU political agenda, raise awareness, provide research data and communicate on available solutions and policies
- We believe that improving the energy efficiency of buildings is the most **cost-effective** method of
 - ✓ Creating (local) employment in industry
 - ✓ Boosting growth and economic competitiveness
 - ✓ Achieving energy security
 - ✓ Meeting carbon reduction targets
 - ✓ Improving health & comfort

The Renovate Europe Campaign

It is calling for an ambitious roadmap to be drawn up on how to

- Triple the **annual renovation rate** of the EU building stock from the current rate of 1% to 3% by 2020
- To ensure that the aggregate result of those renovations leads to an **80% reduction** of the energy demand of the building stock **by 2050**




Local #SME #jobs depend on a thriving #renovation market
@RenovateEurope #NZEB2050

#RenovateEurope #NZEB2050
Local #SME #jobs depend on a thriving #renovation market

The Buildings Sector at EU level

Scale of the Opportunity

- 210 Million buildings (most of them poorly performing)
- Up to 90% still occupied and in use in 2050
- 80 Million Europeans live in damp / leaky buildings (population of CZ + HU + PL + RO + SL)
- Area of Occupied Space \approx 

Impact on Energy Use

41% of EU Final Energy Consumption (2013)
40% of GHG Emissions (2012)

Technologies Exist Today

Reduction of 80% in Energy Use is Possible
With Current Technologies and Processes



Multiple Benefits of Energy Efficiency in Buildings



- **Reinforce economic activity through local jobs in buildings sector**
9% of EU GDP / 11 million workers / 94% SMEs
- **Eradicate energy poverty and deliver lower energy bills**
- **Improve energy security**
- **Improve quality of life**
(health, comfort, productivity)
- **Reduce air pollution**
- **Increased value to property**

EU Policy Relevant for Buildings

EU Roadmaps with a 2050 Horizon

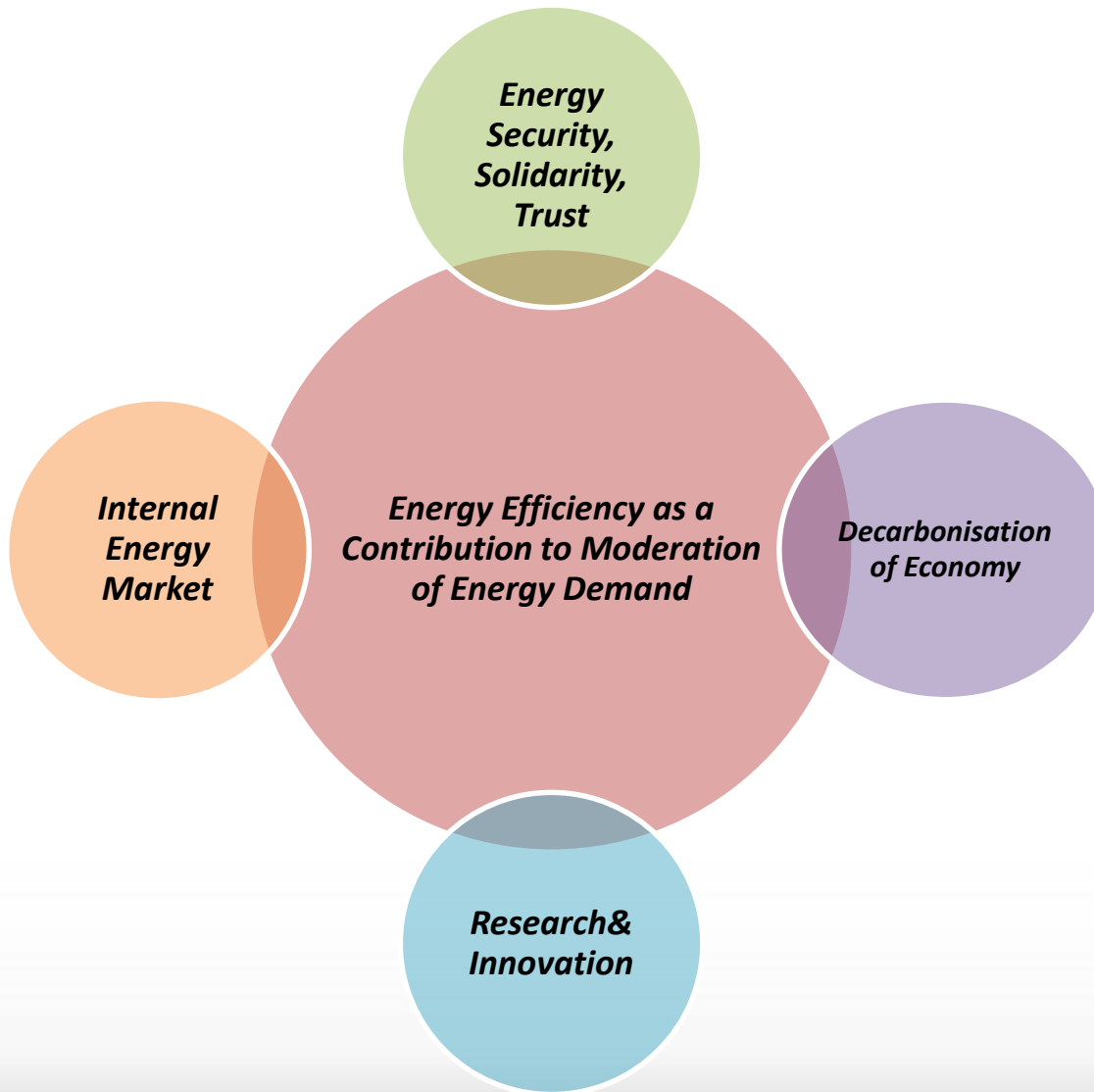
- **Energy** – Mentions Reduction of Energy Demand in Buildings
- **Low-Carbon Economy** – Decarbonisation to about 90% for buildings
- **Resource Efficiency** – Building sector uses 50% of all resources

Climate and Energy Policy 2020 (2030)

- Reduce GHG Emissions by 20% - mandatory (40% by 2030)
- Increase RES share to 20% - mandatory (27% indicative by 2030)
- Increase EE by 20% - indicative
(at least 27% indicative by 2030)



Energy Union Framework



Five Mutually-Reinforcing and Interrelated Dimensions

Priority sector
To be addressed

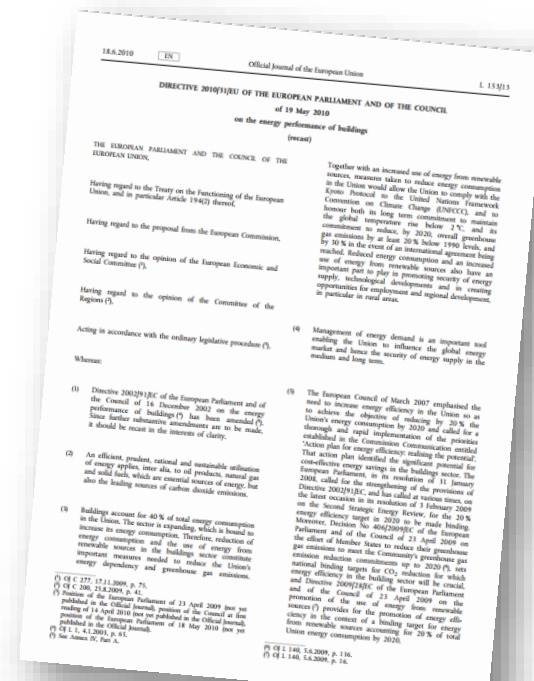
Buildings



EU Directives on Buildings - EPBD

Energy Performance of Buildings Directive (EPBD)

Directive 2010/31/EU (recast) entered into force in July 2010



EPBD - Key aspects

➤ Cost-optimality

Comparative methodology to enable governments to calculate cost-optimal levels for minimum standards of energy performance

➤ Minimum Energy Performance Requirements

- To all New Buildings
- To Existing Buildings when major renovation is undertaken
- Minimum requirements for heating, hot water, air conditioning and ventilation systems

➤ Nearly Zero Energy Buildings (nZEB)

All new buildings to be built to nZEB standards from 2021

➤ Energy Performance Certificates

- Whenever a building is constructed, sold or rented, a certificate detailing its energy performance must be made available
- Public buildings must display EPCs



EU Directives on Buildings - EED

Energy Efficiency Directive (EED)

Repealed Energy Services Directive (ESD – 2006/32/EC) and Cogeneration Directive (2004/8/EC)

Adopted on 25th October 2012 - Transposition deadlines by article



EED – Key aspects

On Energy Supply and Use (with implications for buildings)

- Member States to set **EE National Target for 2020 (Art 3)**
- **Energy efficiency obligation schemes** for energy providers (**Art 7**)
- **National Energy Efficiency Funds (Art 20)**

On Buildings

- **3% Target for renovation** of government buildings (**Art 5**)
 - **National Renovation Roadmaps** for existing buildings (**Art 4**)
-
- Goes Some Way to Addressing Gaps in EPBD
 - Intended to Ensure Achievement of 20% EE Target for 2020

EPBD / EED Review Process

June-October 2015

- Public Consultation / EuroACE Position (website)
- Evaluation work & Studies (EPBD to be 'reviewed' before Jan. 2017)

April-May 2016

- Impact Assessments (policy options) to the Regulatory Scrutiny Board of the European Commission

July 2016

- Inter-Service Consultation within the European Commission
- Decision on Energy Efficiency Target proposal by Commission?

4th October 2016

- EED / EPBD Legislative Proposals + Smart Finance for Smart Buildings presented by the European Commission

November 2016

- State of the Energy Union
- Energy Union Governance (legislative proposal)

October 2016-July 2017

- Negotiations between the European Parliament and the Council of Ministers

European Parliament work

❖ *SAUDARGAS* Report (June 2015) – **Energy Security**

Rejected in Plenary

❖ *GROBARCZYK* Report

(December 2015) – **Energy Union**

Adopted in Plenary

❖ *GRIFFIN* Report

(May 2016) – **Energy Poverty**

Adopted in Plenary

❖ *PIEPER* Report (June 2016) – **Implementation of EED**

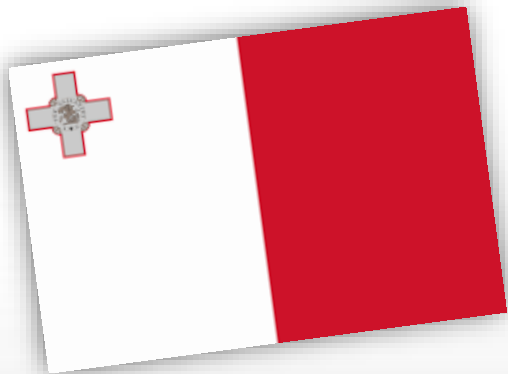
❖ *GIEREK* Report (July 2016) – **Heating & Cooling Strategy**



Council of Ministers

Slovak Presidency (July – December 2016)

- Informal Energy Council (July, Bratislava) on Governance and energy prices /costs
- Ministerial Conference (September, Bratislava) on Sustainable Construction
- Energy Council (December, Brussels) on Energy Efficiency Package



Maltese Presidency (January – June 2017)

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If I had a hammer...

***EPBD and EED Revision – How to do better at EU level
to deliver jobs & growth for CEE countries?***

What do stakeholders from the 'EU bubble' say about the EPBD Review?



EuroACE
THE EUROPEAN ALLIANCE OF COMPANIES
FOR ENERGY EFFICIENCY IN BUILDINGS



Céline CARRE
Vice-President of
EuroACE, Saint-Gobain

Hélène SIBILEAU
EuroACE

EuroACE EPBD Workshop Series



1. The EPBD and the challenge of existing buildings
2. How to improve Energy Performance Certificates?
3. Unlocking financing for energy efficiency in buildings and energy renovation
4. From nZEBs to Smart Buildings, how to put Energy Efficiency First?



EuroACE EPBD Workshop Series



- Around 30 participants each
- Summary of Public Consultation by ECOFYS
- Presentation of EuroACE Position
- Expert point of view
- Discussion with participants
- Production of a Summary Booklet, distributed in Brussels during EU Sustainable Energy Week



The EPBD and the Challenge of Existing Buildings

Take-away from presentations

- EPBD not enough tackling **existing buildings**
- Low renovation rate in the EU
- 17 Member States have introduced a cap on energy consumption in buildings
- **Trigger Points** for building renovation
(within a specific timeframe, when undertaking maintenance work, when renting a property, at change of building use, when changing a boiler, or when extending a building) – diversified set of **solutions adaptable to national context**
- Need for **strategic pathways** at national / local / building level
- **Integrated approach** between different technologies



The EPBD and the Challenge of Existing Buildings

Conclusion - How to address the challenge of existing buildings?

- At **EU level**, with the involvement of national authorities and the collaboration of all actors
- **Empower consumers** to be more active in the renovation process by demonstrating **multiple benefits** of renovation and explaining when are the **best moments** to anchor energy upgrades
- Through defined trigger points for building renovation, adapted to each **segment of the building stock**, and set in the framework of **long-term and stable strategies** which would also help to unlock financing
- These **trigger points already exist in several Member States**, are accepted and deliver benefits to all



How to improve Energy Performance Certificates?

Take-away from presentations

- EPCs are successful **information tools** and have an impact on property value, but do **not trigger energy renovations**
- EPC Recommendations should be more tailored, part of a **holistic plan** which would include wider benefits
- EPCs **from 'pictures' to 'movies'** / user-friendly IT tools
- **Building Passports** initiatives already developed at national level
- Better access and link between **data / financing / skills**
- **Banks** ready to invest (green borrowers less risky) – EPCs central for them



How to improve Energy Performance Certificates?

Conclusion

- Strengthened EPCs key to deliver building renovations in the EU – this means **improving certifiers' skills and enhancing certification** through on-site visits;
- **Increased EPC reliability** is key, not only for achieving energy efficiency and energy renovation purposes, but also **for investors** (to step up the market of green loans) and the **construction sector** (to reward SMEs);
- EPCs must **serve consumers** and make their **lives easier** when deciding on renovation works – the EPC is a tool to **increase** the range of **consumer choices**;
- The best way to deliver to consumers, the construction sector and investors is to transform EPCs into more **dynamic tools – individual Renovation Roadmaps adapted** to each building, including in the way recommendations are formulated.



Unlocking financing for energy efficiency in buildings

Take-away from presentations

- Not an issue of volume of financing or tools
- National long-term **renovation strategies** to be improved & implemented
- Linking **level of financing** to level of energy performance and/or qualified professionals
- Improve access to public funds (reforming **accounting rules**)
- **One-stop-shops** at local level providing independent expert advice (integration of solutions)
- **Aggregation of projects** with common characteristics (e.g. social housing)



Unlocking financing for energy efficiency in buildings

Conclusion

- Developing a **long-term policy objective** for the energy performance of the building stock would give the **financial sector sufficient confidence** to invest
- This shared vision, an nZEB building stock at EU level by 2050, would also give **trust to consumers** at individual level that their projects will be supported, either by public or private financing
- **Independent one-stop-shops** at local level should be further developed to advise consumers in their choices



- **Access to financing** needs to be **better linked** to the level of energy performance to be achieved during building renovation works and to the use of qualified and trained professionals, in order to **incentivise training and quality works**

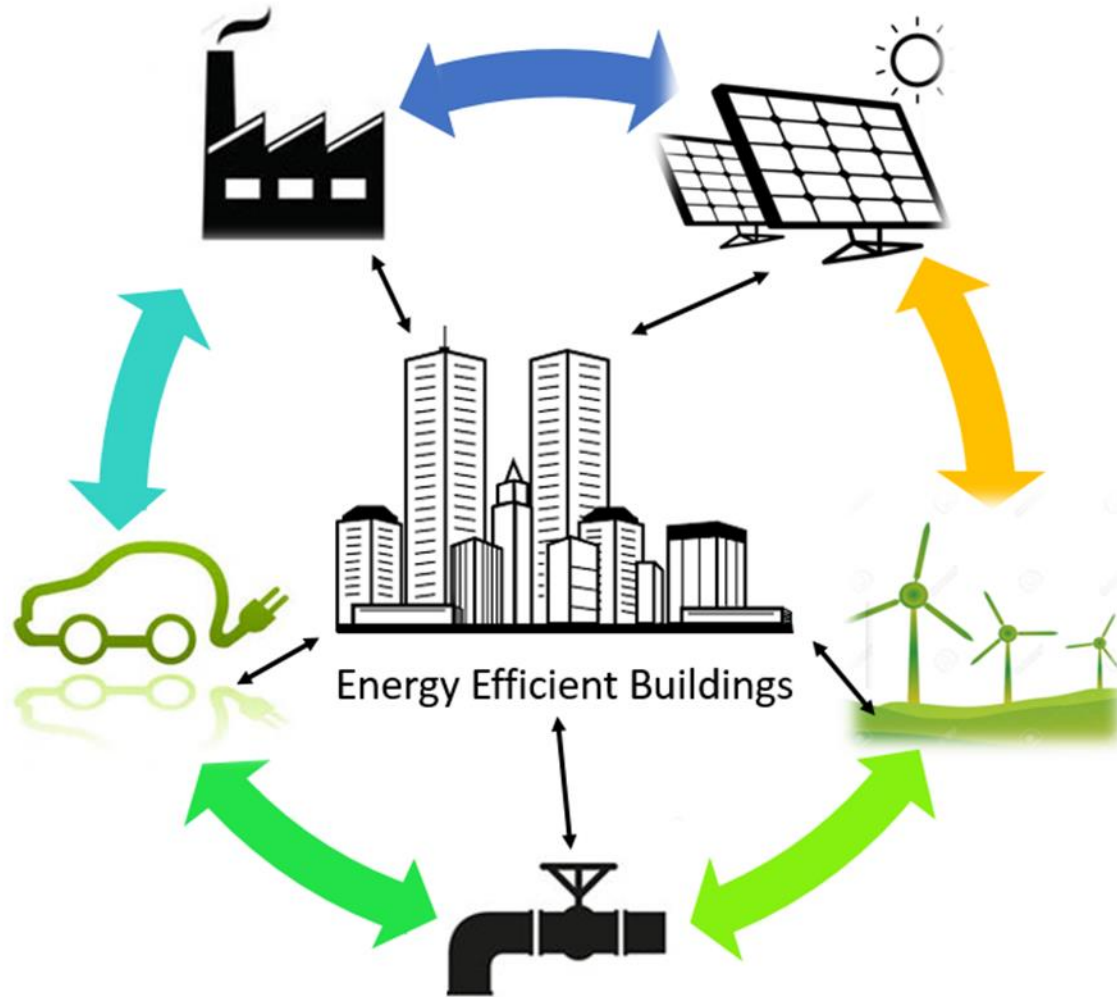
From nZEBs to Smart Buildings, how to put Energy Efficiency First?

Take-away from presentations

- **nZEB definition** to be clarified to apply Energy Efficiency First principle in integrated approach and better link with **existing buildings**
- **Smart Buildings** equipped for demand-response, energy generation and storage
Buildings as energy consumers, producers, managers
- **Consumer** empowerment and benefits (health, comfort, productivity)
- **Better coordination** of EPBD with EED and other pieces of legislation



Buildings as part of the Energy System



From nZEBs to Smart Buildings, how to put Energy Efficiency First?

Conclusion

- The building stock should move towards nZEB at EU level by 2050, as it is the **best starting point for an effective energy transition**; working at local and/or district level can be a valuable basis to achieve this goal
- How well can smart buildings be delivered to consumers? The EuroACE definition, putting **buildings at the centre of the energy system**, gives a comprehensive view of a Smart Building that also **benefits building occupiers**
- The right requirements on **nZEBs** should be effectively implemented for **new buildings**, as they **lead the way for existing buildings**



The EPBD Review, which should keep **a building level focus**, is the right and timely opportunity to embed these concepts into the legislative framework, as it will **set the scene for the building stock in 2030 onwards**.

Conclusion

- Huge expectations from stakeholders in Brussels for EPBD / EED Review
- EPBD should focus not only on new but also existing buildings
- Objective: **nZEB building stock at EU level by 2050**, with flexibility for Member States
- Widening concept of **trigger points** for **energy renovations**
- Strengthened **EPCs** to give consumers more choice, and investors more confidence – lead to Building Passports
- Long-term policy objective key to **unlock private financing**, and better link between volume of financing and energy performance / use of qualified & trained professionals
- Highly **energy efficient buildings** / Smart Buildings as best starting point for decarbonisation of energy system



Let's brainstorm together...

Give us your input on how to improve the content of the EPBD in a CEE country perspective!



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MODERATED
DEBATE I



CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS

Concerted Action EPBD If I had a hammer !

C4E conference

23 and 24 June 2016

Jens Laustsen

Coordinator of CA EPBD

Co-funded by
the European Union



Concerted Action EPBD IV

Concerted Action EPBD IV:

- Started 1 October 2015 and run until March 2018
- All EU Member States plus Norway
- 29 partners – lead by DEA (DK)
- 4 CA plenary meetings will be held
- First meeting November 2015 in Copenhagen
- Second meeting end of May 2016 in Vilnius
- Experts meet and share experience
- Support implementation and maximise outcome of EPBD
- Confidentiality in meetings – Free and open

Lessons learned
and share of best
practice

CA EPBD Meetings



300 – 500 years of experience
with energy performance
measures in the room !





The EPBD Recast

18.6.2010

EN

Official Journal of the European Union

L 153/13

DIRECTIVE 2010/31/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 19 May 2010

on the energy performance of buildings

(recast)

**Major focus on
Energy Performance**

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 194(2) thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

Having regard to the opinion of the Committee of the Regions ⁽²⁾,

Acting in accordance with the ordinary legislative procedure ⁽³⁾,

Together with an increased use of energy from renewable sources, measures taken to reduce energy consumption in the Union would allow the Union to comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), and to honour both its long term commitment to maintain the global temperature rise below 2 °C, and its commitment to reduce, by 2020, overall greenhouse gas emissions by at least 20 % below 1990 levels, and by 30 % in the event of an international agreement being reached. Reduced energy consumption and an increased use of energy from renewable sources also have an important part to play in promoting security of energy supply, technological developments and in creating opportunities for employment and regional development, in particular in rural areas.

- (4) Management of energy demand is an important tool enabling the Union to influence the global energy market and hence the security of energy supply in the medium and long term.



Structure CA IV

New Buildings

Existing Buildings

*Major renovation
Components*

*Information
Finance Incentives*

*Certification
Inspection*

Cert. & Quality Insp.

3 Core Teams

Structure CA IV

**Technical
Elements**

**Policy
Implement**

**Compliance
Capacity
Impact**

New Buildings

*Calculation
Method
CEN adaptation
Standard Values*

Existing Buildings

*Renewable
Energy*

Cert. & Quality Insp.

*Cost Efficiency
Certification
Scales*

Common elements

3 Cross-cutting Teams



CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS

Structure CA IV

Technical
Elements

Policy
Implement

Compliance
Capacity
Impact

New Buildings

Existing Buildings

Cert. & Quality Insp.

Collaboration CA RES & EED

Communication

Internal Communication

External Communication

Incl. Database-driven PDF = Book

EPBD for New Construction

New buildings – performance based building codes:

- Overall performance by construction
- Tightening requirements towards nZEBs in 2020
 - nZEB in public buildings from 1 January 2019
 - nZEB all buildings in 1 January 2021
- Certification of new buildings - EPCs
- Cost optimality

- All MS have Energy Performance requirements for new buildings !



Requirements New Buildings- nZEB

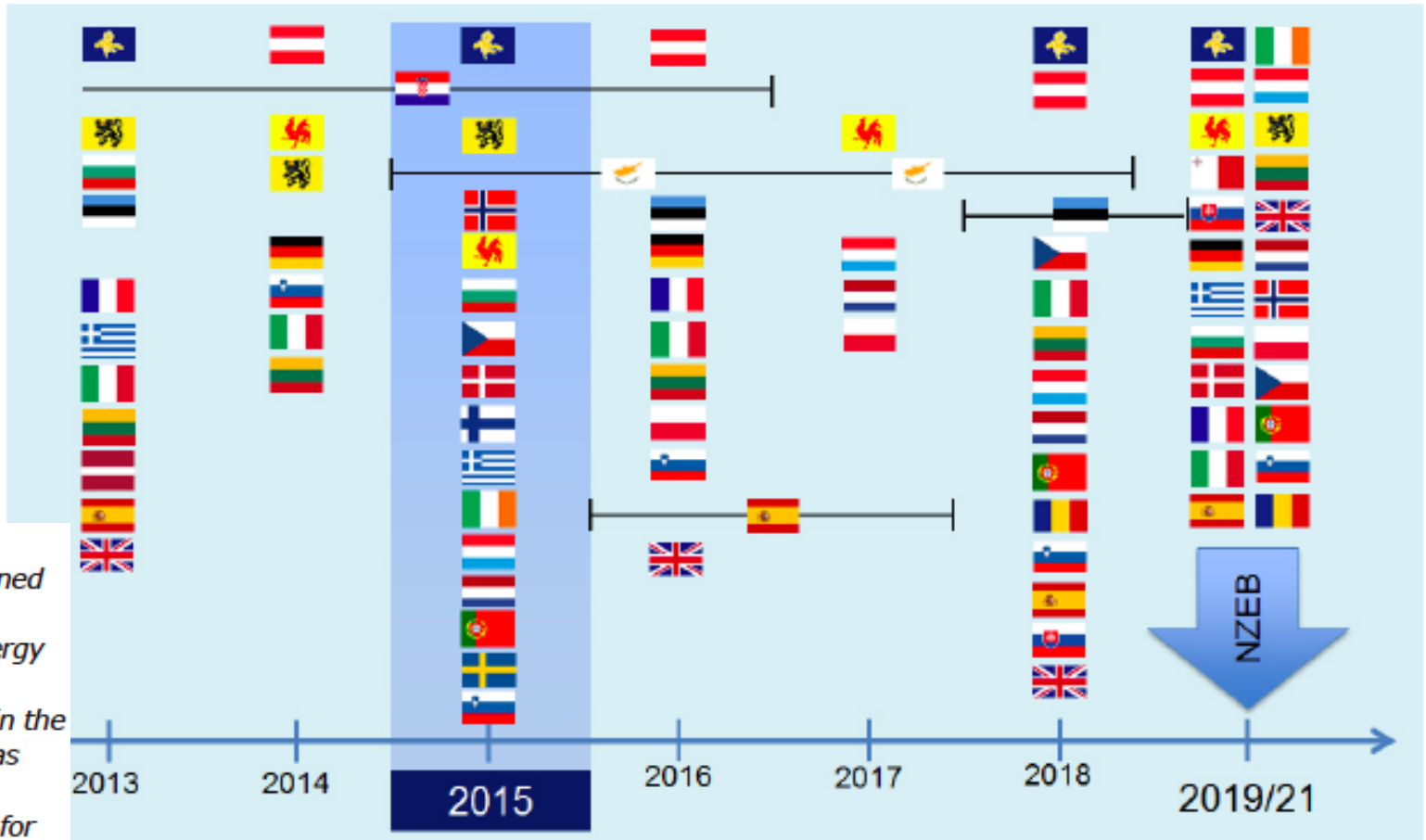
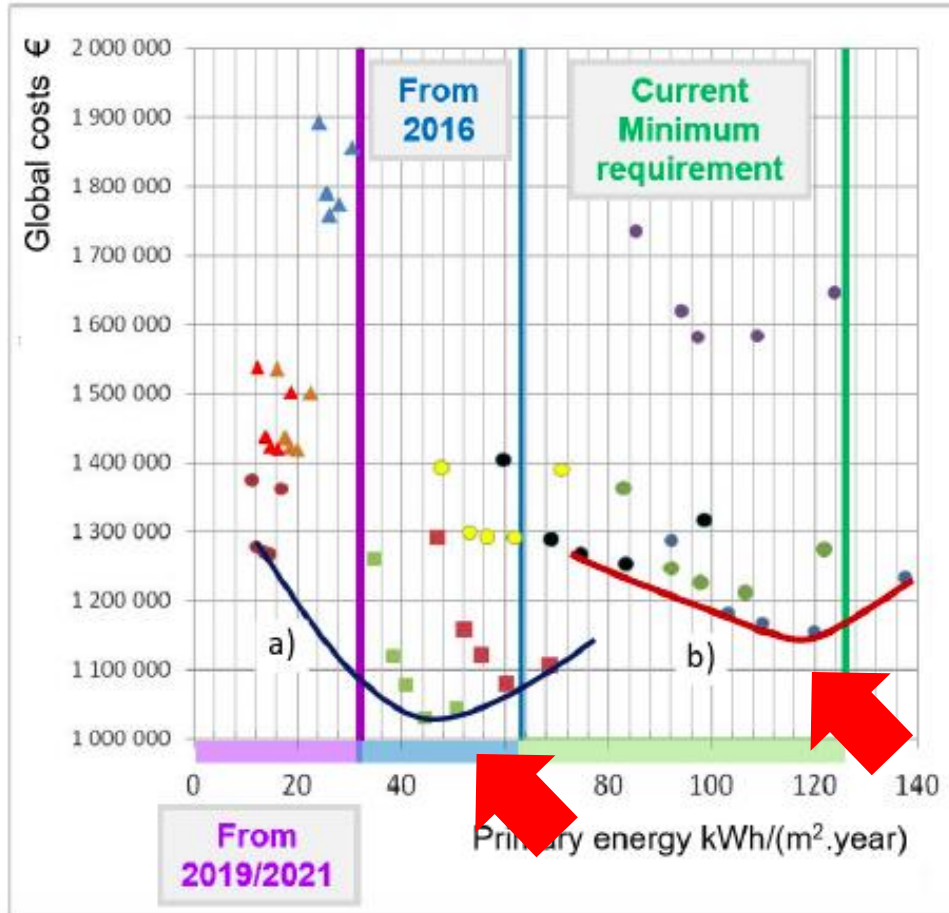


Figure 6:
Timing of planned intermediate targets for energy performance requirements in the different MSs as stated in the national plans for NZEBs, and the deadline for NZEBs

16 + 11 (around 80%)

Cost Optimality



- 1a. District heating-gas
- 1b. District heating-biomass
- 2. Condensing gas boiler
- 3. Condensing gas boiler+heat recovery
- 4. Condensing gas boiler+solar thermal collectors
- ▲ 5. Biomass boiler
- ▲ 6. Biomass boiler+heat recovery
- 7. Air water heat pump
- 8. Groundwater heat pump
- ▲ 9. Biomass boiler+solar thermal collectors
- 1c. District heating-CHP

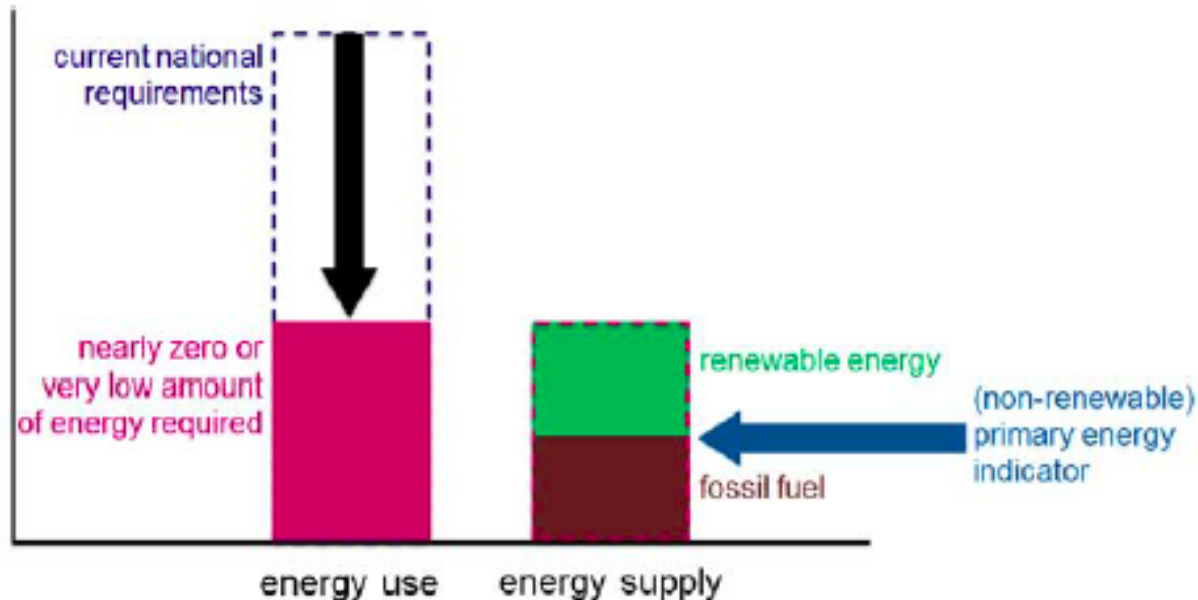
Some countries work with several 100.000 dots
And calculated both today and future.

Large work has been done
on Cost Optimality – LCA's



Requirements New Buildings- nZEB

*Figure 3:
Graphical interpretation of the NZEB definition according to Articles 2
and 9 of the EPBD.*

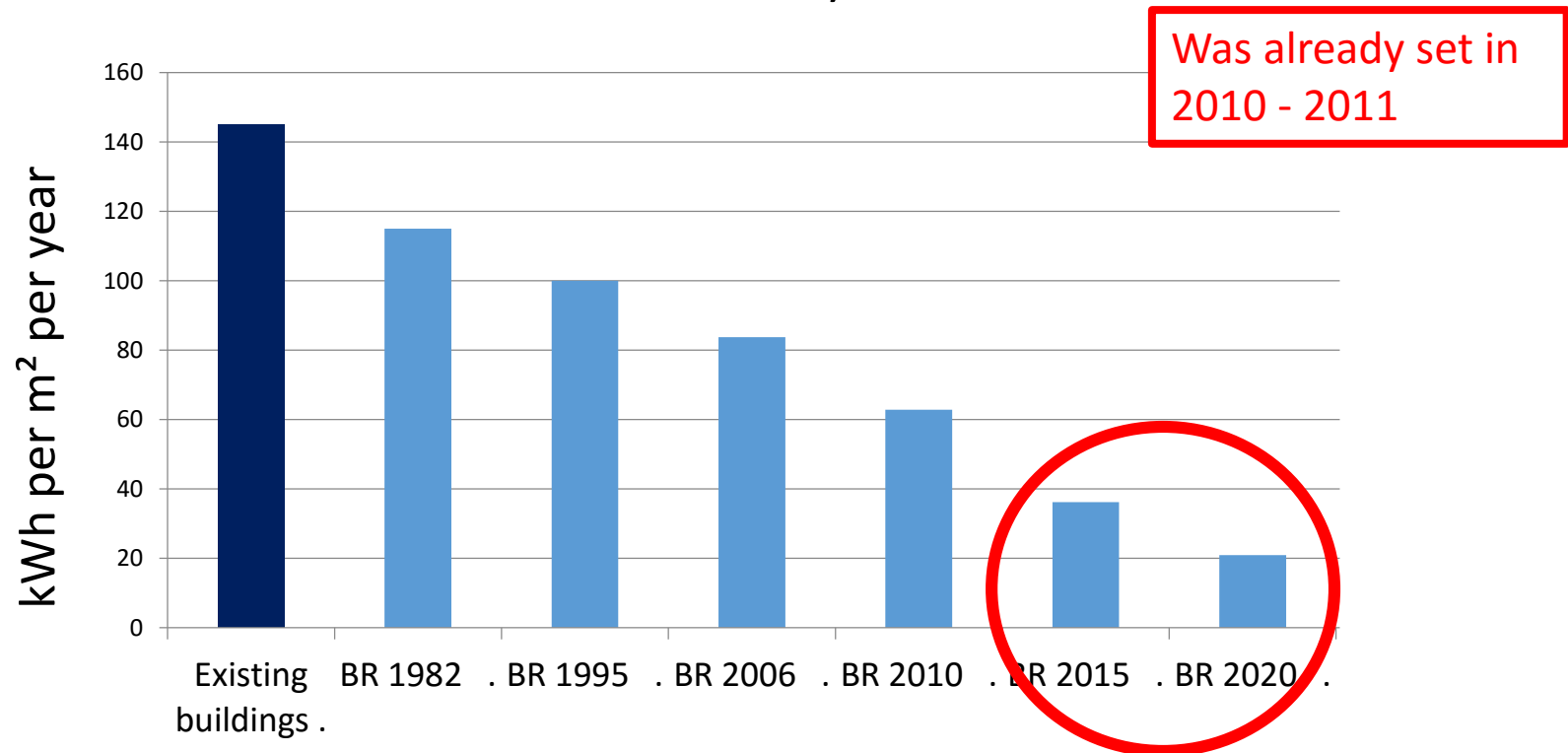


Survey – filled in by half of MS shows that 60 % has defined nZEB standards by April 2015.

Ways to calculate and integrate RES are very different !

Danish Building Codes

Gross energy including heating, cooling, ventilation and hot sanitary water

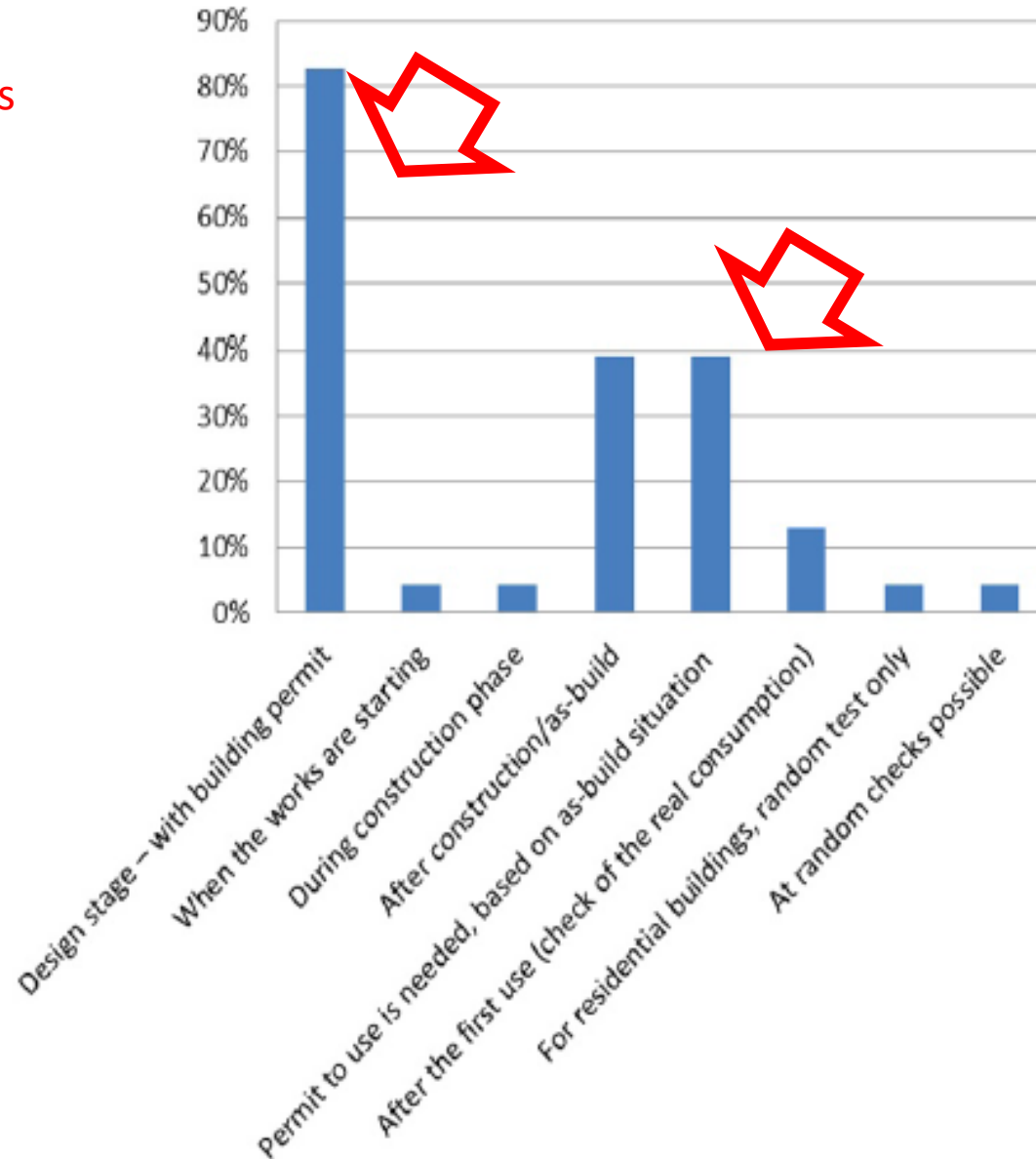
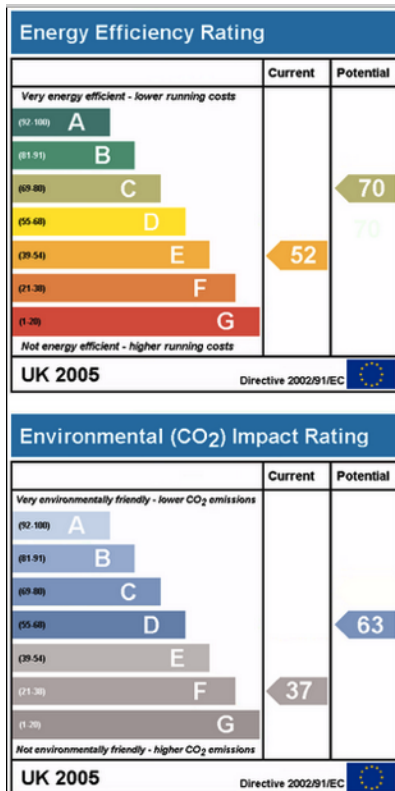


In Danish action plans for a CO₂ neutral society it is the target that all building will be positive in the future (year still to be decided)

Control for New Buildings

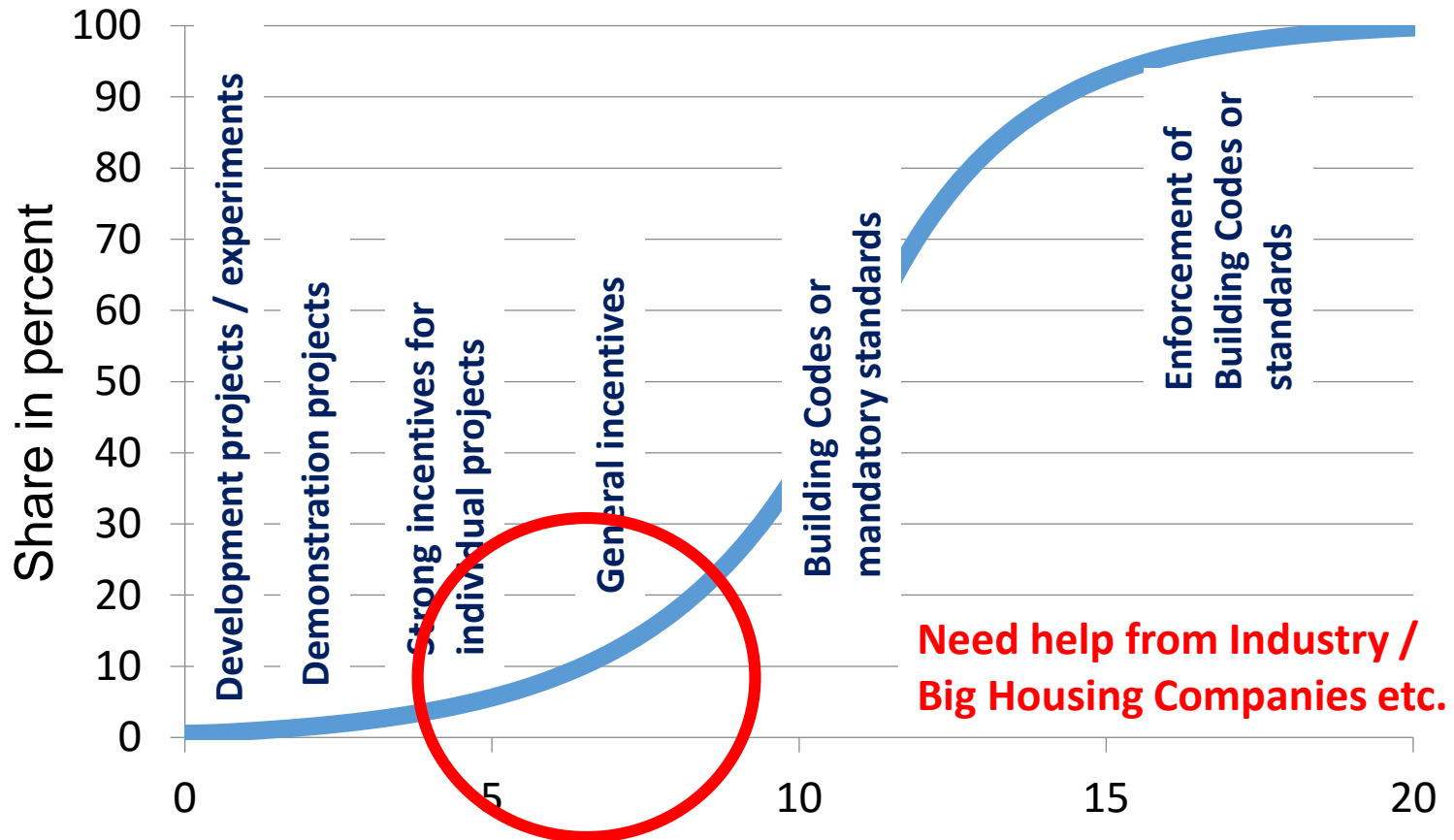
Most member states do multiple checks

And use EPCs to document compliance



Market Penetration

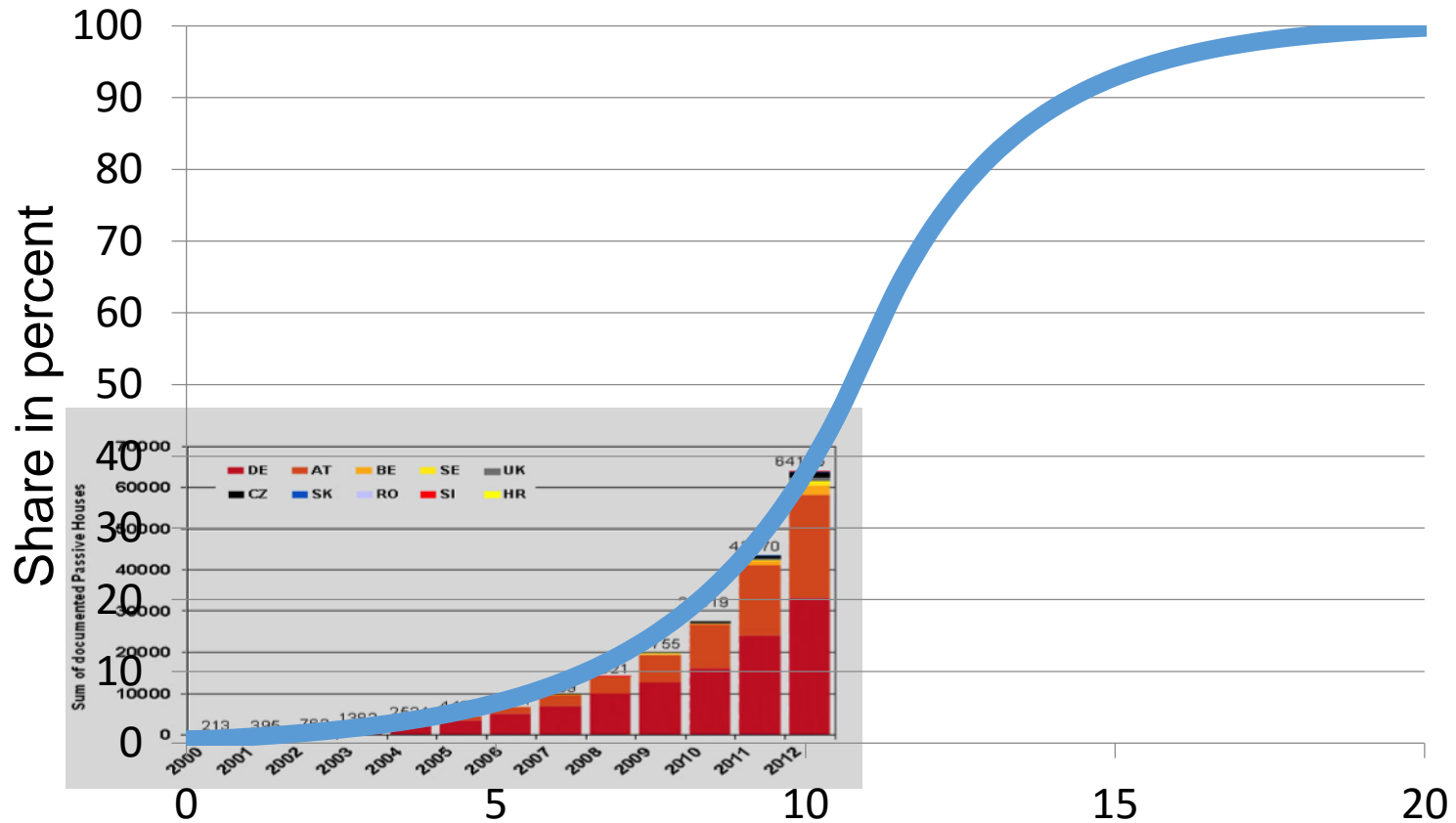
Policies to implement high energy performance



The End

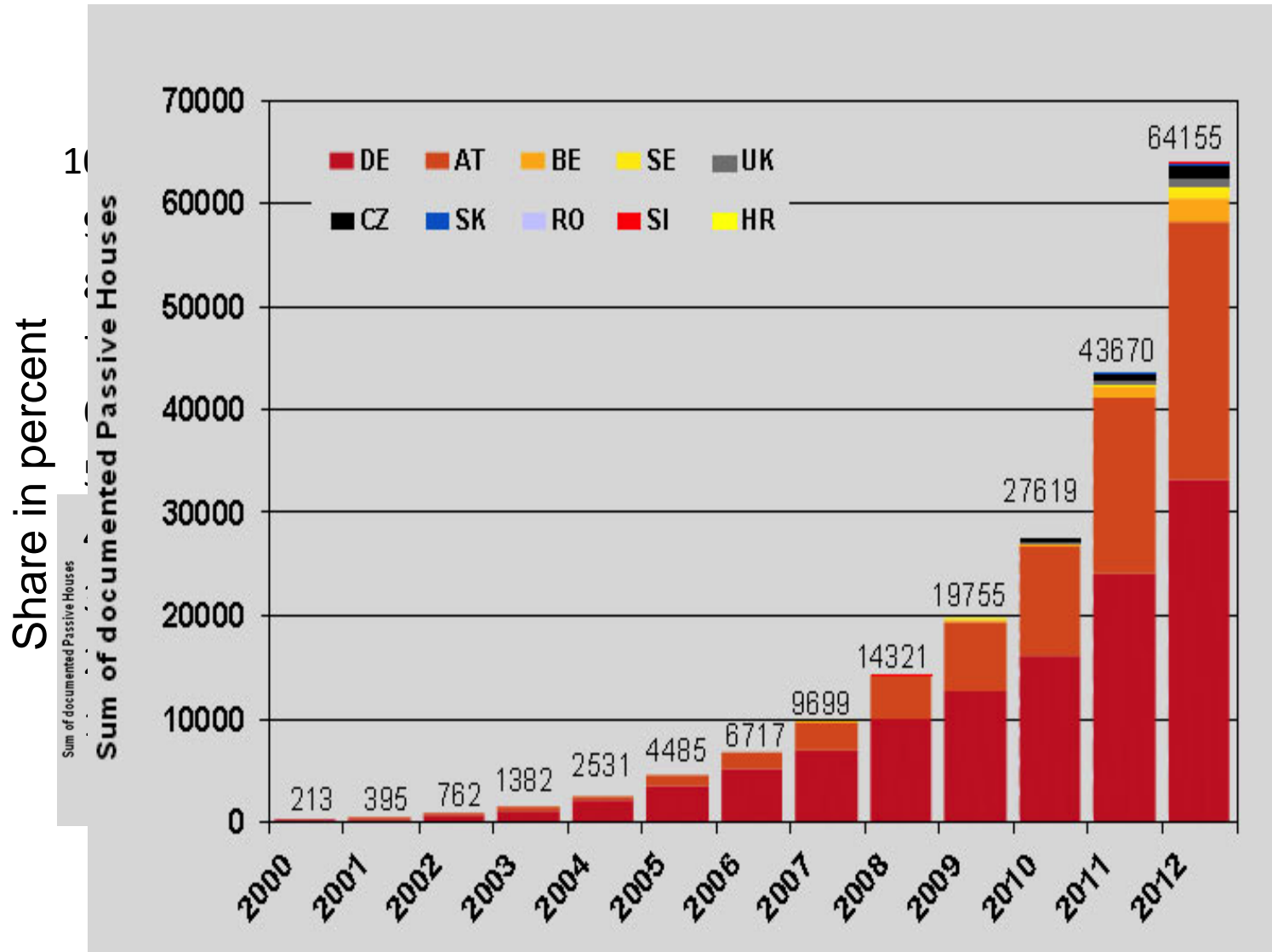
Passive house trends

Policies to implement high energy performance





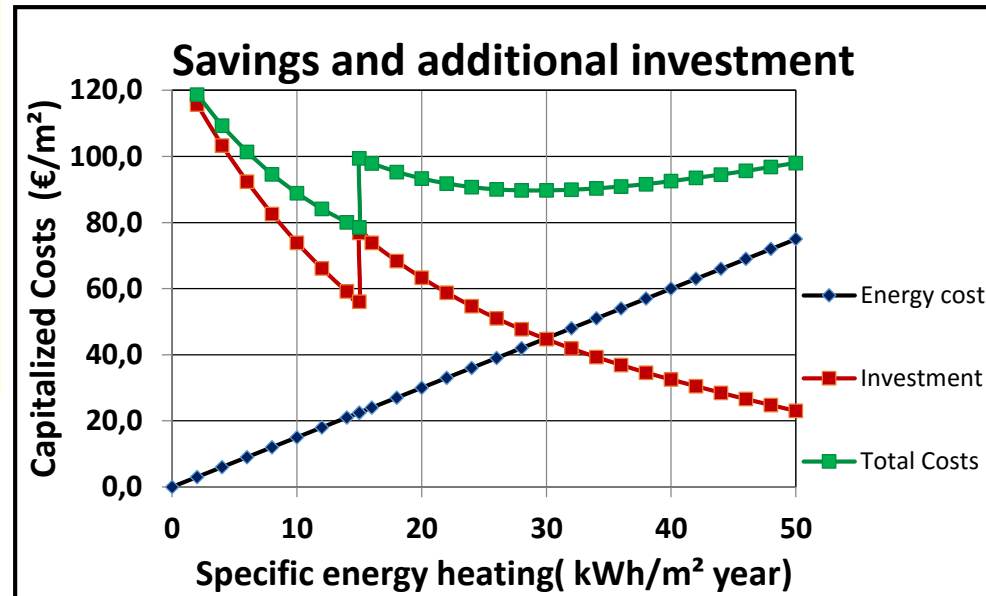
Passive house trends



Concept Passive House



Sophienhof Frankfurt / Germany
15 kWh / m² per year
Extra costs = 3-5% of total costs
Payback = 9-10 years



Existing Buildings

The largest challenge
is in existing buildings

Existing Building Stock

Most European Buildings in 2030 are already built

– even for 2050 a very large share is out there today !

Only around 1 % is built new every year in most MS

Need to address existing buildings

- And they have a much higher energy use

Solving the big problem:

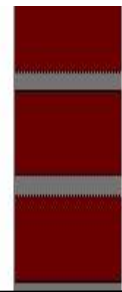
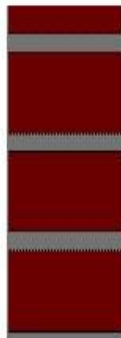
- Means addressing existing buildings

- Maybe as much as 3 % deep renovation per year



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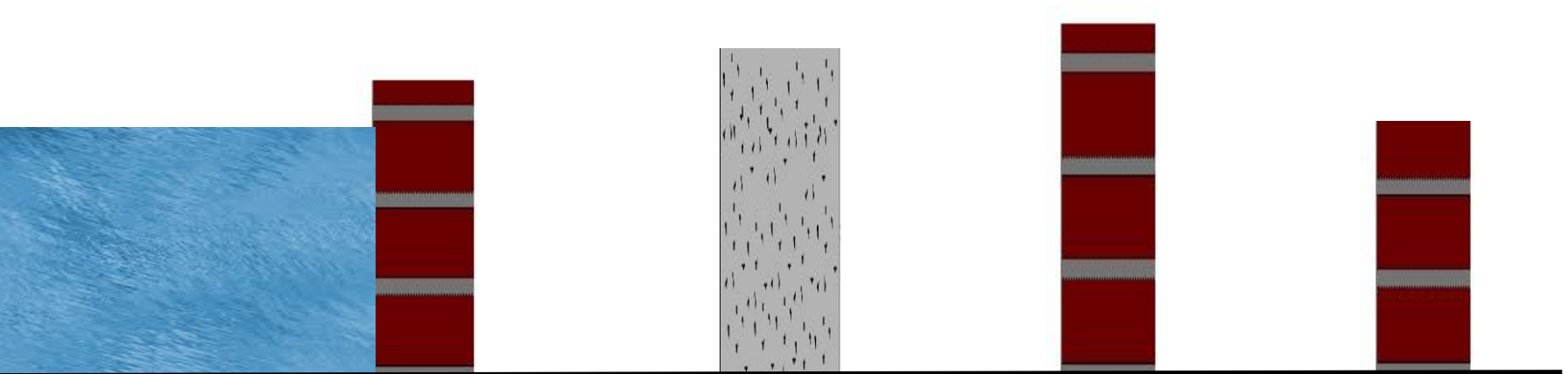
Need to Remove All Major Barriers





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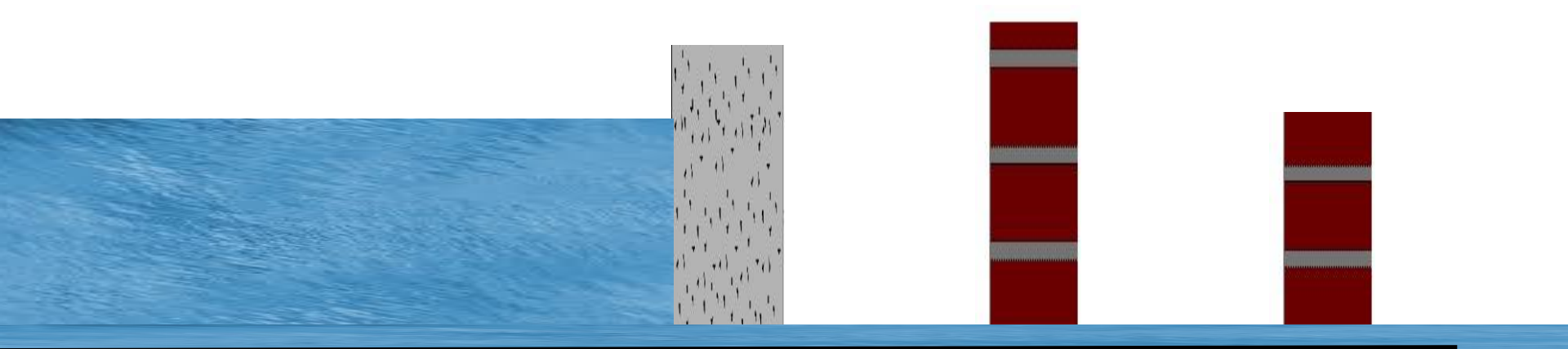
Need to Remove All Major Barriers





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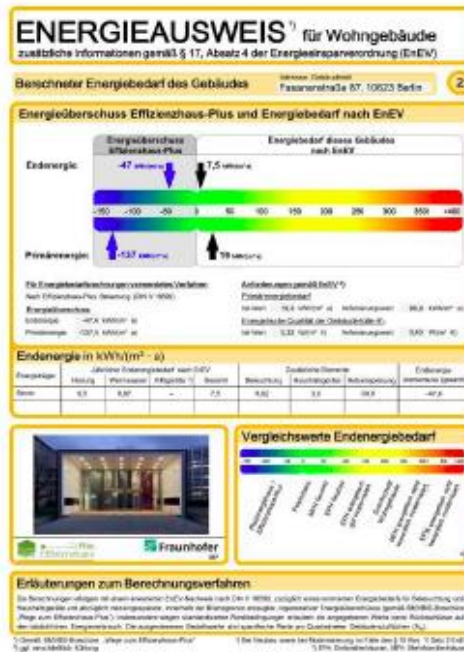
Need to Remove All Major Barriers



Certification Systems

**But:
How to activate ?
Focus on quality**

Germany



3.1.3 Making the EPC more user-friendly for the general public

Although there is more awareness of energy efficiency among consumers thanks to the EPC, much improvement is still necessary. Regarding the market impact of increased demand for energy efficient buildings, a German study shows that consumers' expectations about the EPC are still partly wrong, with the conclusion that the EPC is too technical and complicated for consumers to understand it. These conclusions are shared by most of the MSs represented at the Concerted Action EPBD. The UK, Germany, and Portugal have already

Figure 4: Example of the 2014 EPC and the draft of the new Italian EPC (2015).

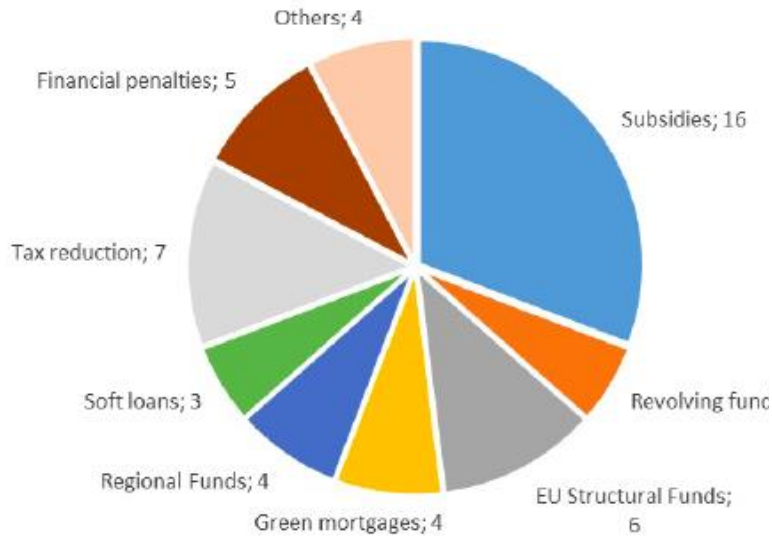


Diversity !

All countries have systems in place

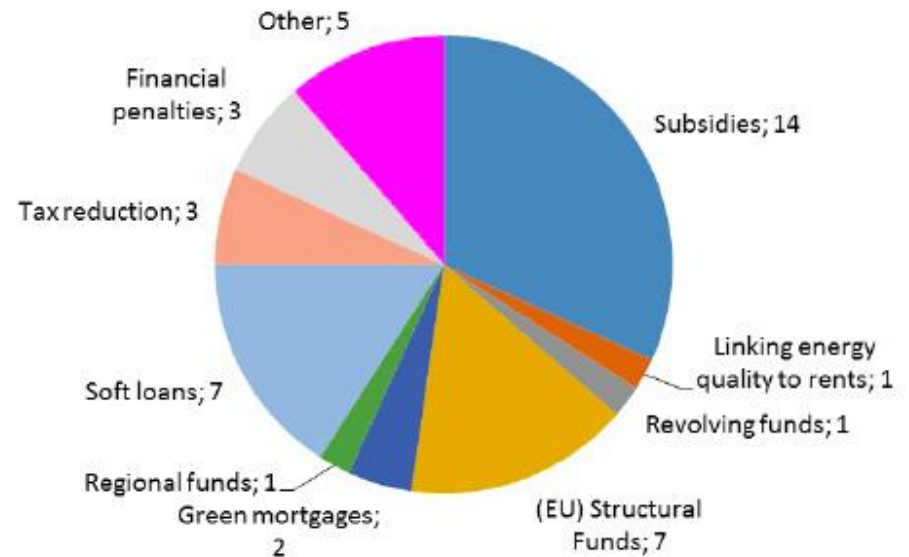
Finance and Incentives

Types of financial instruments in EU countries



**Many different options
based on national
context**

Future plans for financial instruments in EU countries



Surveys on finance
and incentives



CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS



Co-funded by the Intelligent Energy Europe
Programme of the European Union



2016

Implementing
the Energy Performance
of Buildings Directive (EPBD)



www.epbd-ca.eu

Book from CA 3

Read more:

CA IV: <http://www.epbd-ca.eu/>

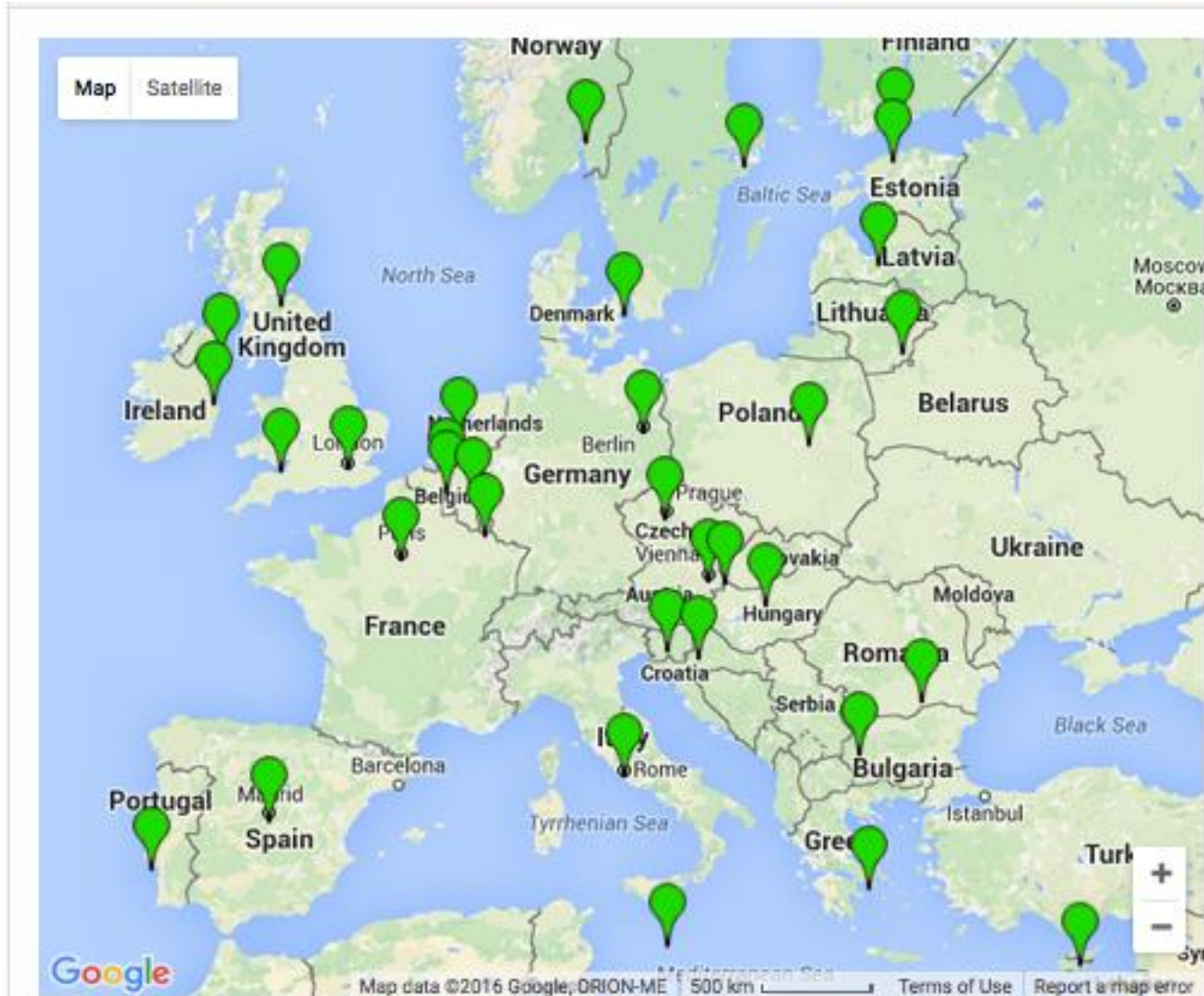
CA 3 book:

<http://www.epbd-ca.eu/ca-outcomes/2011-2015>

CA 3 book also uploaded in separated pdf's under country information



<http://www.epbd-ca.eu>





CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS



CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS

Implementation of the EPBD in Bulgaria

STATUS IN DECEMBER 2015

1. Introduction

Actions for increasing energy efficiency have already been applied for a few decades in Bulgaria. This report outlines the development of the legal and technical measures to improve energy efficiency in buildings.

The report presents an overview of the application of the principles of the Energy Performance of Buildings Directive (EPBD), Directives 2002/91/EC and 2010/31/EC. It outlines the development of regulatory measures set up to ensure mechanisms for reducing energy consumption in buildings in Bulgaria. In addition, an attempt is made to identify guidelines for future mechanisms to continue to improve buildings' energy efficiency.

The Minister of Energy is responsible for the implementation of all directives on energy efficiency (including Directive 2010/31/EC). All plans and programmes, including those in the building sector, are covered by the National Action Plan for Energy Efficiency (NEEAP). The Minister of Energy coordinates implementation in all sectors and produces reports on the execution of the NEEAP.

The Ministry of Energy is in charge of implementing state policy to increase energy efficiency in final energy consumption and the provision of energy services in Bulgaria. The Ministry of Regional Development and Public Works is responsible for the development and implementation of technical rules and regulations in the field of energy

performance of new and existing buildings, the implementation of projects related to the renovation of residential buildings and the improvement of energy efficiency in residential buildings. The Sustainable Energy Development Agency (SEDA) implements the national policy on improving energy efficiency of both end-use energy and energy services.

Bulgarian legislation had by 2005 already introduced some principles of Directive 2002/91/EC. The next steps to build on this were:

- >The Energy Efficiency Act, promulgated in State Gazette No. 98/14.11.2008, with further amendments to the Act promulgated in State Gazettes No. 35/03.05.2011 and No. 38/18.05.2012.*
- >The next Energy Efficiency Act was promulgated in State Gazette No. 24/12/03/2013. The latest amendments to this act are State Gazettes No. 59/05.07.2013, No. 66/26.07.2013, No. 22/03.11.2014 and No. 33/11.04.2014.*
- >The Law on Energy Efficiency transposed the Directive 2010/31/EC into national legislation and also entered into force on 11 April 2014.*
- >The most recent Energy Efficiency Act is promulgated in State Gazette No. 35/05.15.2015, and it transposed both directives: Directive 2010/31/EC and Directive 2012/27/EC. An interdepartmental working group was established to develop the regulations under the new law, with a November 2015 deadline for drafts.*



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CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS

Thank you for your attention

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Co-funded by
the European Union



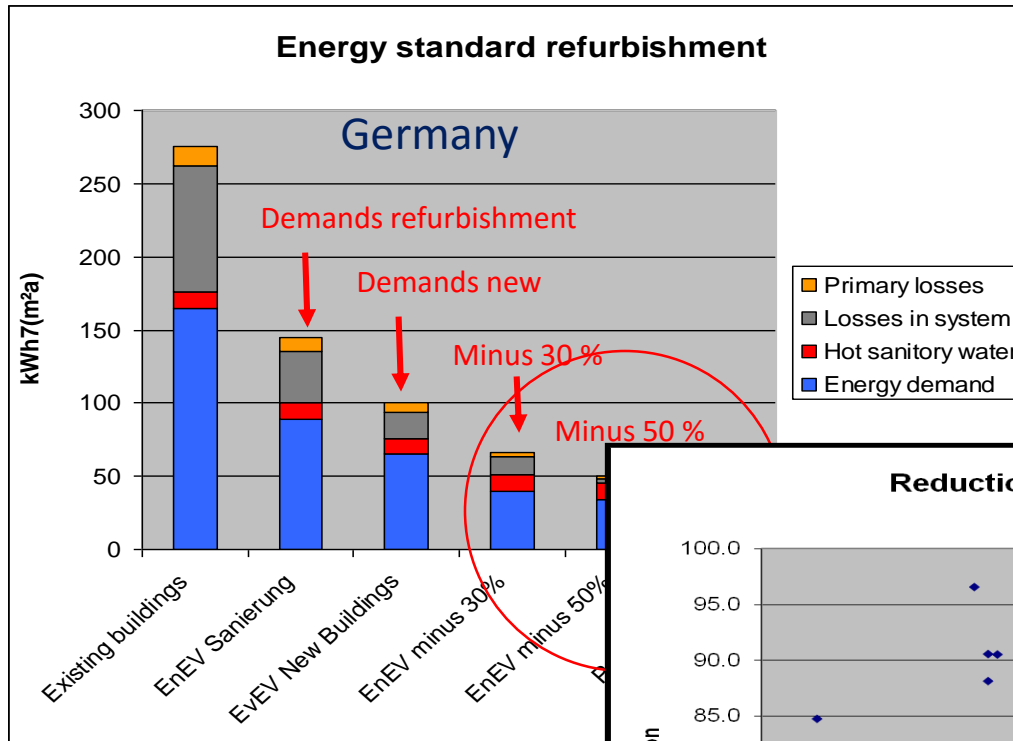


CONCERTED ACTION
ENERGY PERFORMANCE
OF BUILDINGS

Extra Material

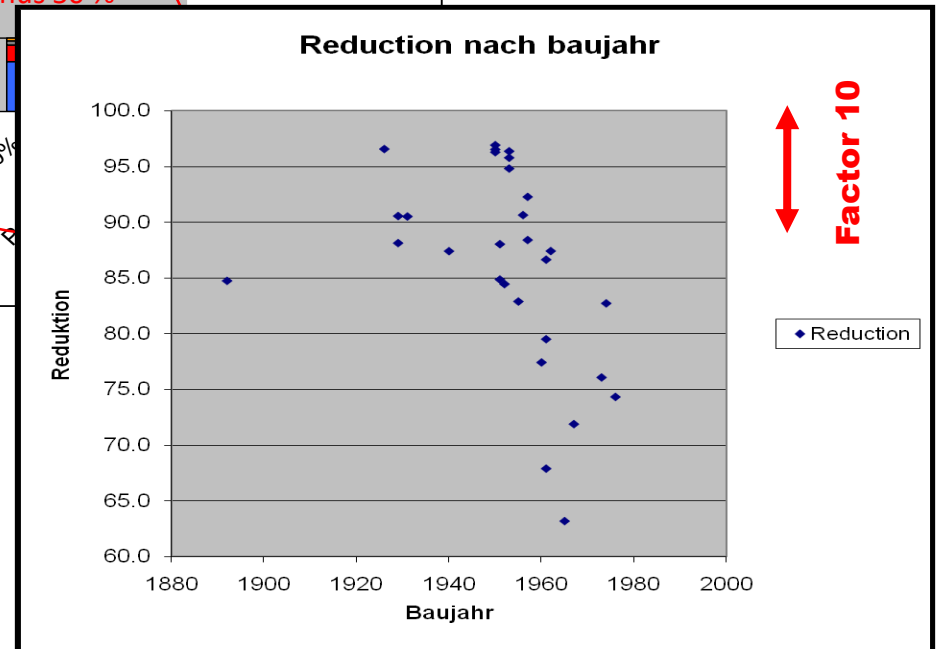


German Better than new !



**Very Best practice
Renovation
in Germany
Factor 10**

As renovation !





Better than new !

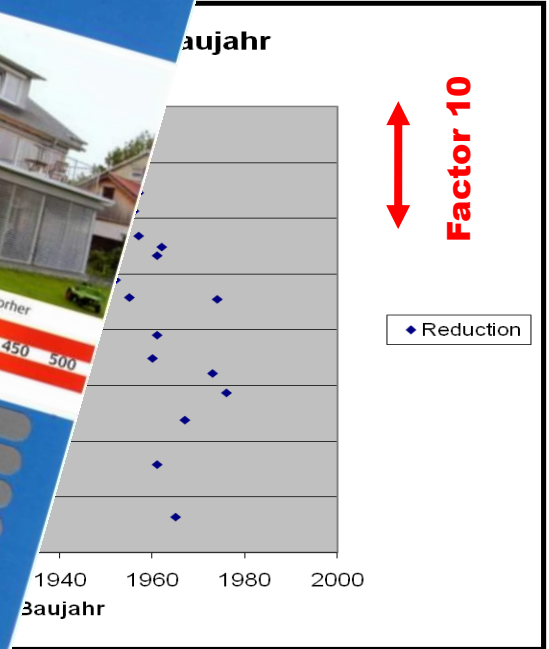
Energy standard refurbishment



*Very Best practice
Renovation
in Germany
Factor 10*



Baujahr



Factor 10

28 kWh/m² - 91 % 28 kWh/m² - 88 % 22 kWh/m² - 89 % 44 kWh/m² - 83 % 21 kWh/m² - 96 % 35 kWh/m² - 90 %

RESIDENTIAL ENERGY EFFICIENCY



Lithuania key statistics:

- Population – approx. 3 million
- 66% of population lives in multi family buildings built before 1993
- 97% privately owned, only 3% municipal rental stock

Problems:

- poor Soviet construction standards, little maintenance
 - inefficient heating systems and engineering equipment
 - bad quality windows, roofs, intersections huge energy losses
- most buildings in poor condition, lack of proper management

> most of Lithuanian households are not satisfied with their homes



Old model for housing modernisation in Lithuania

1. Home owners on their own initiative prepare investment projects, take loans and implement modernisation

The main problems of this model:

- lack of homeowners initiative
- fear to take a loan
- Low trust on the results after renovation



1. GOOD FOR HOME-OWNERS: GREATER COMFORT, LOWER BILLS, ADDED VALUE

Experience from energy efficiency upgrading projects in multifamily buildings shows the combination of measures:

- replacement of windows and external doors,
- insulation of external surfaces: roofs and walls,
- modernization of heating substations and balancing of heating systems

**Enourmous
Potential**

reduce energy consumption about 50-70 %.



Source: Vilma Vaičiūnienė – Renovation Strategy Vilnius 30 May 2016

Existing Buildings

Existing existing
buildings tend to
follow the new ones

But have many
specific challenges

Renovation Strategies

Joint Research Centre,
Renovation strategies

Need for collaboration
with CA EED

Renovation was a large
part of our meeting in
Vilnius:

- Stakeholder
meeting 30 May
- Sessions on CA

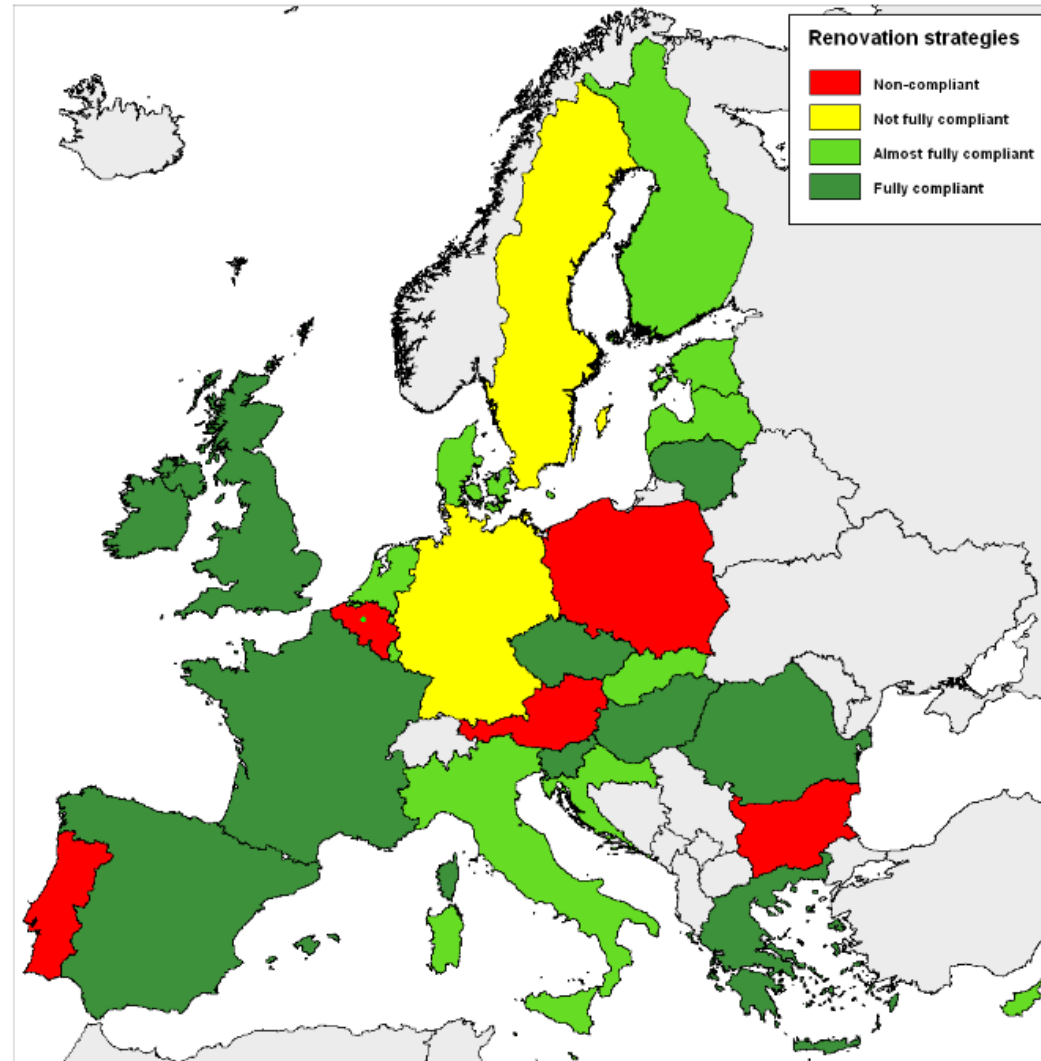
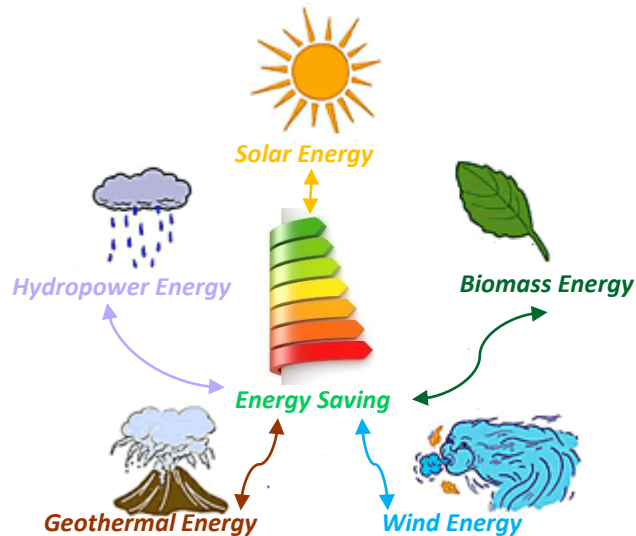


Figure 3: Map illustrating the result of the evaluation of the renovation strategies



C4E Forum, June 24th, 2016

2016: An opportunity to stop clogging legislation & to unleash the 4th Industrial Revolution in Europe?



www.openexp.eu

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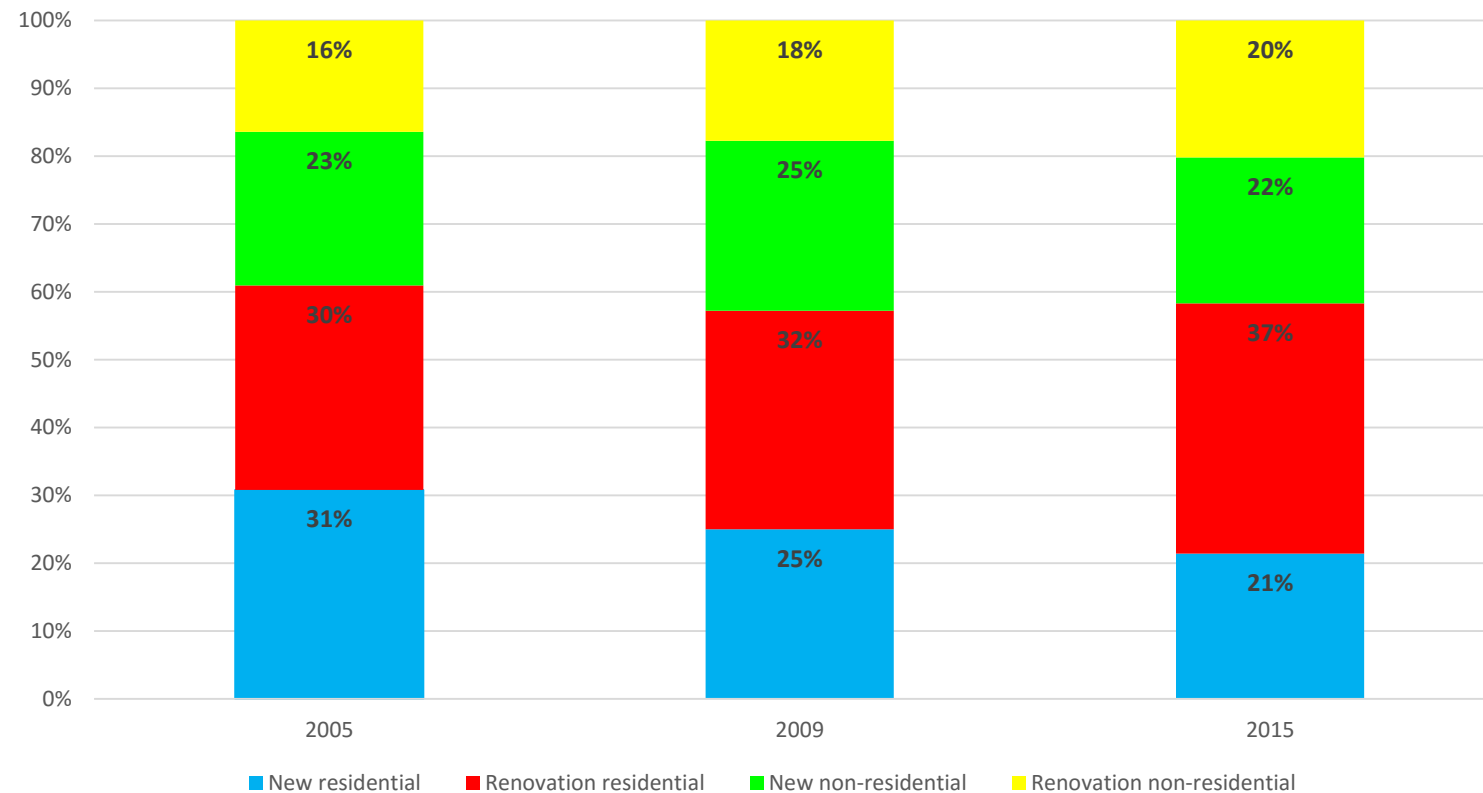
*Making the Negawatt
dream a global reality*



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The renovation market overtook the market of new buildings in 2009 in EUROCONSTRUCT* area

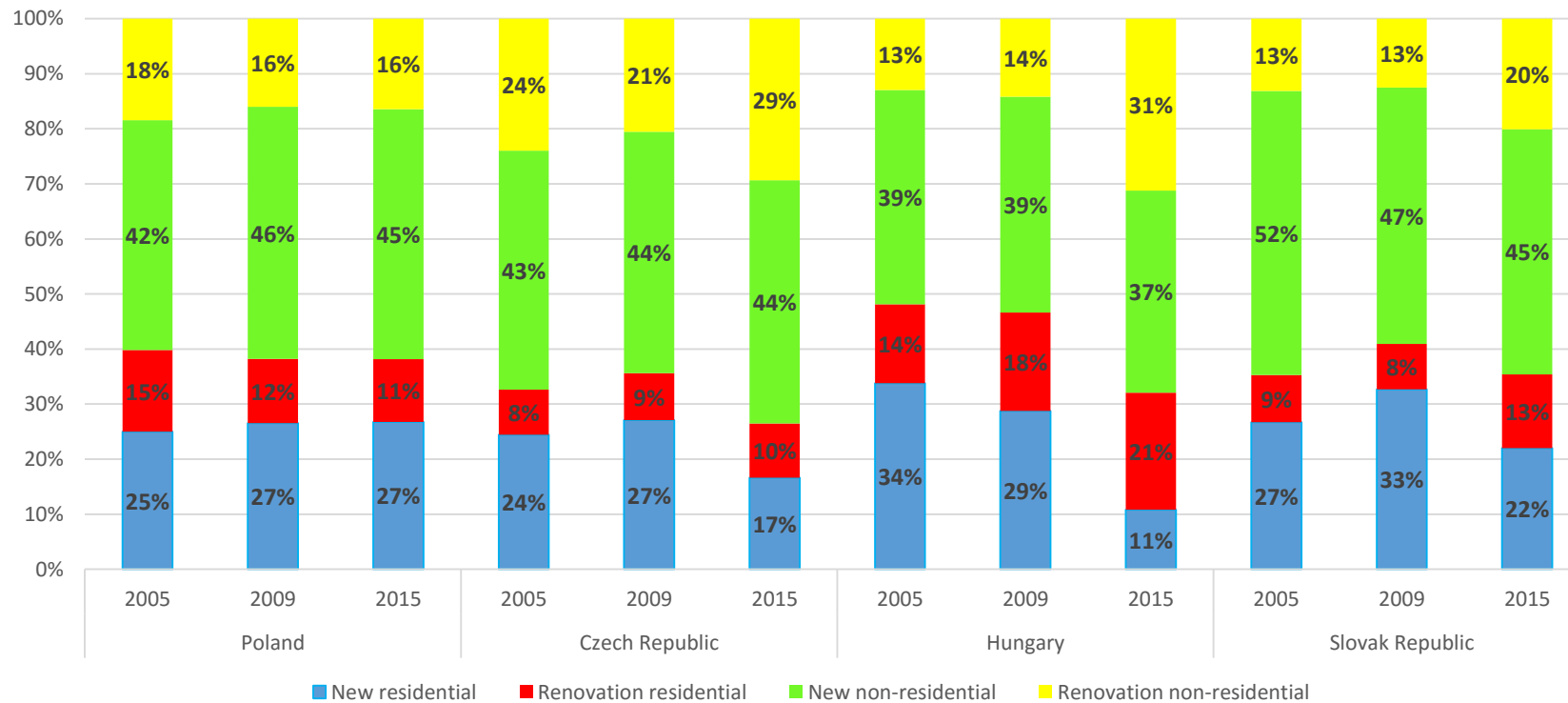


*EUROCONSTRUCT area includes : Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Poland, Portugal, Slovak Republic, Spain, Sweden, The Netherlands, United Kingdom
The turnover of the building sector in EUROCONSTRUCT area represented 75% of the total EU building turnover in 2013

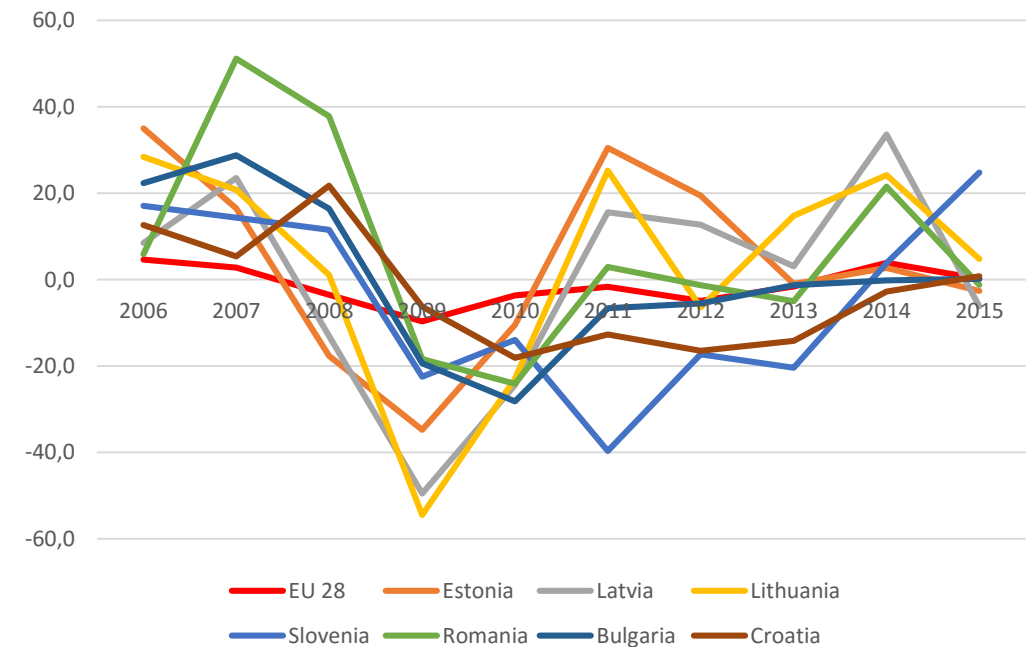
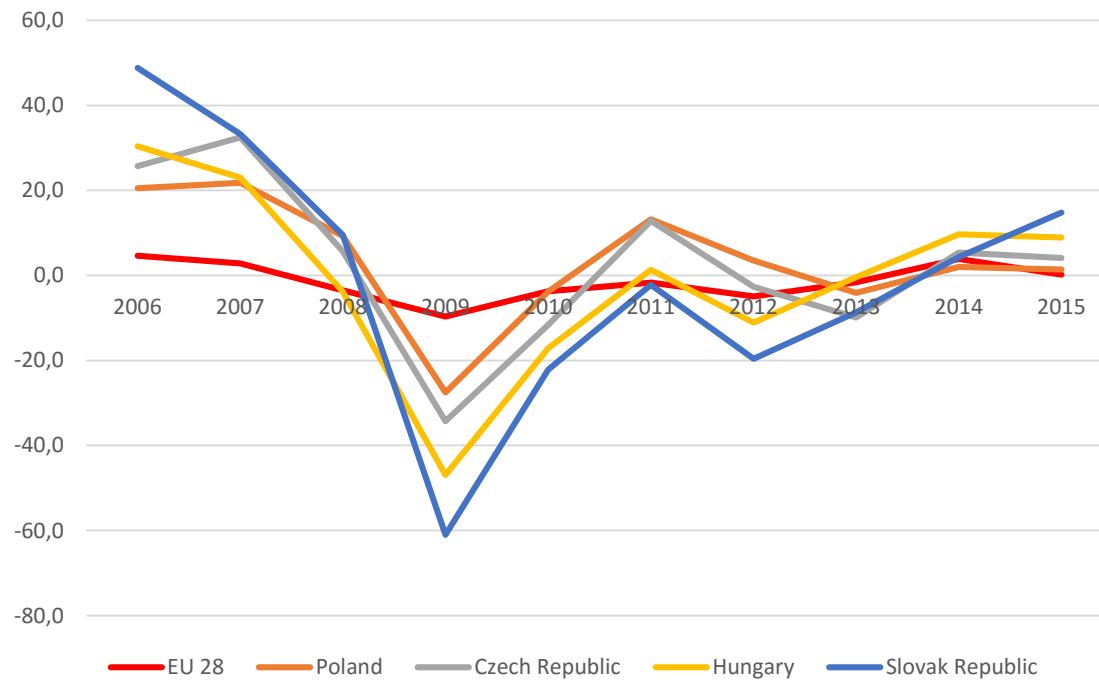




Hungary is the only country in the East where the renovation market has overtaken the market of new buildings



The construction of new buildings in CEE countries is above the EU 28



Volume index of production (% change compared to the previous year)

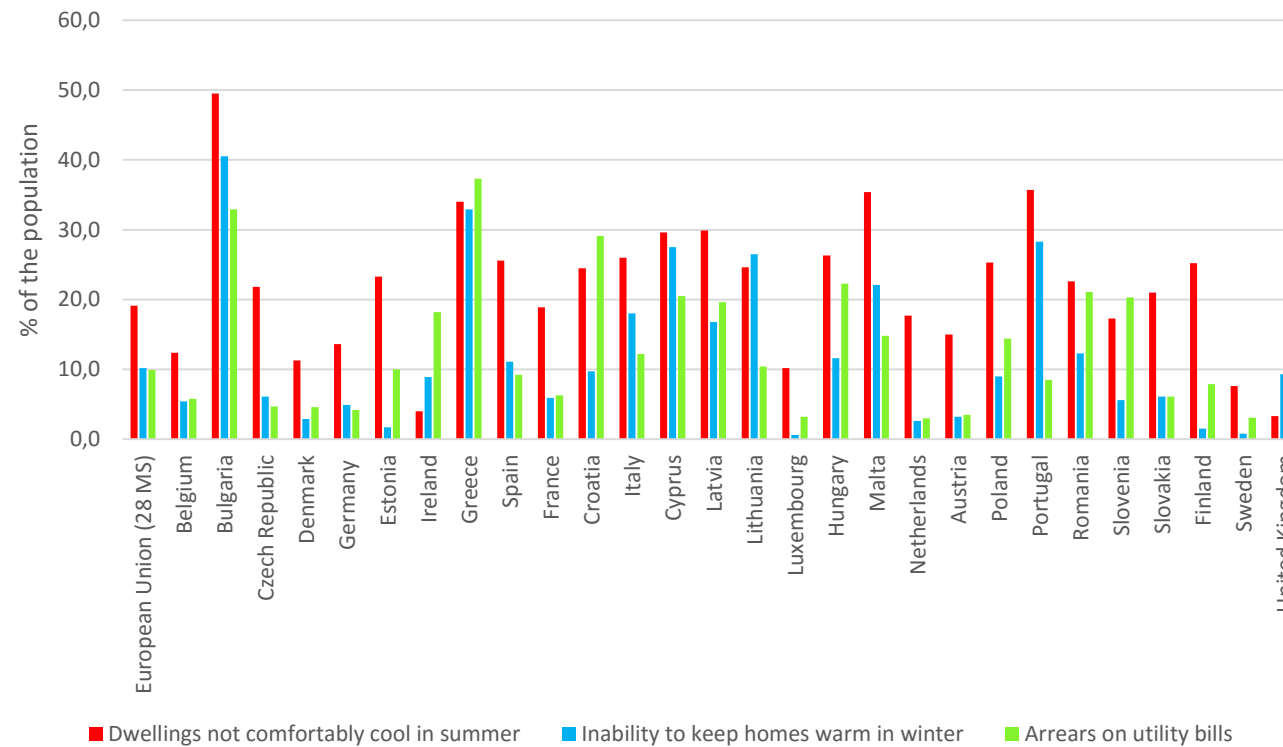


EU energy renovation: an emerging market of EUR109 billion and 882,900 jobs

	EE market new buildings (M€)	EE market existing building (M€)
Poland	3330	1286
Czech Republic	1358	674
Hungary	359	396
Slovak Republic	311	156



Energy renovation would ensure equal access to energy services to all EU citizens





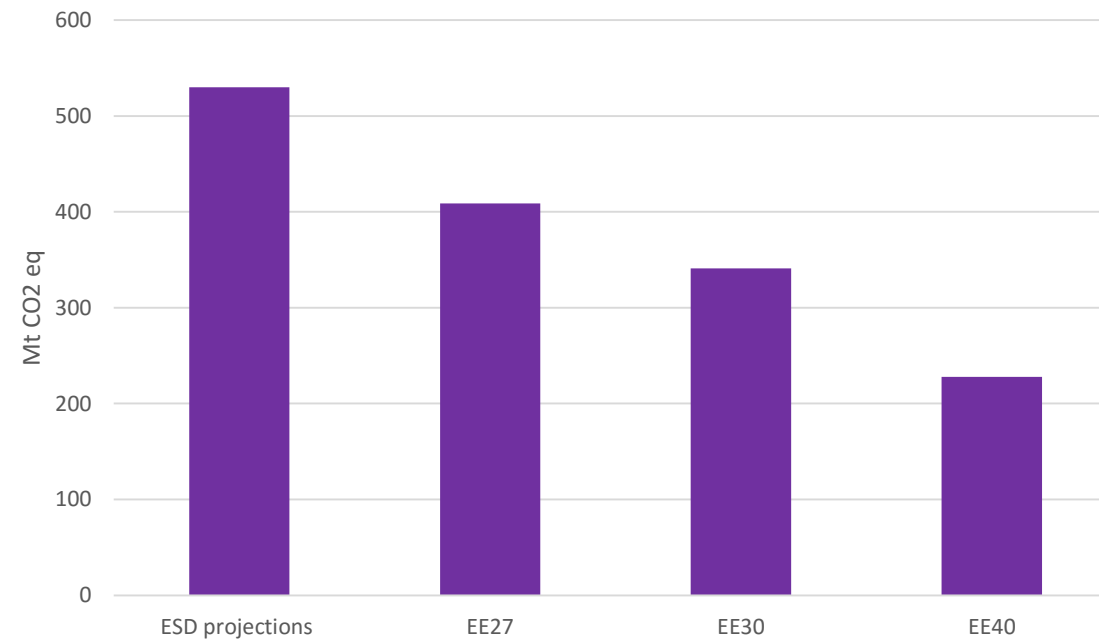
14 EU policy instruments target carbon and energy savings in buildings

1. Energy Performance Building Directive (EPBD)
2. Cost-optimum methodology regulation
3. Energy Efficiency Directive (EED)
4. Renewable Energy Directive (RED)
5. Ecodesign Directive
6. Labelling Directive
7. Emission Trading Scheme Directive (ETS)
8. Effort Sharing Decision (ESD)
9. Mechanism for Monitoring and Reporting (MMR)
10. Directive on Internal Market in Electricity (IME)
11. Directive on Internal Market in Gas (IMG)
12. State Aid Regulation
13. Multiannual Financial Framework (MMF)





Aligning Member States 2030 ESD projections with those considered for the decarbonisation scenarios is needed





2/3 of the MSs have set an energy and/or carbon reduction target for buildings

Country	Energy savings target	Country	Energy savings target
Austria	3% reduction of heating consumption by 2020 compared to 2013	Greece	Renovation of at least 80% of the existing building stock by 2050
Belgium Flanders	4288 GWH energy savings in final energy consumption and 4581 GWH energy savings in primary energy consumption by 2020	Hungary	Annual energy savings of 49PJ over the period 2013-2020
Croatia	80% GHG emission reduction by 2050	Ireland	-Nearly Zero Emissions Building stock by 2050 -33% energy savings in public buildings by 2020
Czech Republic	45% reduction in heating consumption by 2020 compared to 2013	Latvia	Energy savings of 186 GWh in public buildings over the period 2014-2020 as a result of the implementation of the 3% annual renovation rate (Article 5)
Denmark	35% net energy reduction in heating and hot water by 2050 compared to 2011	Lithuania	Energy savings of at least 500 GWh of thermal energy by 2020
Estonia	Annual energy savings of 3.5PJ	The Netherlands	-Renovation of 300.000 dwellings annually by at least two energy label steps -Average social rental property to achieve at least energy class B of the Dutch label by 2020 -80% of private rental to achieve at least energy class C of the Dutch label by 2020 -Average energy class A for the overall building stock by 2030
Finland	Energy savings of 8% by 2020 and 37% by 2050	Slovakia	Energy savings of 6928.6 GWh by 2030
France	-60% reduction of final energy consumption by 2050 compared to 2010 -Renovation of 500.000 dwellings annually starting from 2017 -Before 2025, all privately owned residential buildings with primary energy consumption of more than 330 kWh/m ² have to be renovated	Slovenia	-Energy savings of at least 16% by 2020 in final energy consumption -Energy savings of at least 30% by 2030 in final energy consumption -Almost carbon-free building stock by 2050
Germany	Savings of 377 PJ per year over the period 2008-2020	Sweden	Energy savings of 12 % to 25% for heating and hot water final energy consumption by 2020
Gibraltar	Energy savings of 6.7 GWh of primary energy consumption by 2020 and 88.8 GWh by 2050		



Electricity and gas taxes do not encourage households to save energy

	Electricity taxes per consumption bands					Gas taxes per consumption bands		
	C < 1000 kWh	1000 < C < 2500	2500 < C < 5000	5000 < C < 15000	C > 15000 kWh	C < 20 GJ	20GJ < C < 200GJ	C > 200GJ
Bulgaria	0,0163	0,0160	0,0160	0,0160	0,0160	0,0072	0,013	0,0130
Czech Republic	0,0510	0,0358	0,0236	0,0203	0,0181	0,0158	0,0202	0,0190
Estonia	0,0350	0,0340	0,0340	0,0340	0,0340	0,0093	0,0161	0,0139
Croatia	0,0455	0,0329	0,0309	0,0298	0,0290	0,0110	0,0182	0,0174
Latvia	0,0554	0,0555	0,0554	0,0553	0,0550	0,0129	0,0152	0,0152
Lithuania	0,0385	0,0383	0,0380	0,0373	0,0362	0,0073	0,0108	0,0113
Hungary	0,0274	0,0252	0,0243	0,0237	0,0252	0,0417	0,047	0,0442
Poland	0,0382	0,0328	0,0312	0,0303	0,0299	0,0163	0,0227	0,0209
Romania	0,0388	0,0385	0,0381	0,0378	0,0372	0,0174	0,0166	0,0174
Slovenia	0,1065	0,0686	0,0505	0,0394	0,0318	0,0668	0,0763	0,0713
Slovak Republic	0,0451	0,0323	0,0285	0,0252	0,0225	0,0046	0,0062	0,0056



Energy Renovation: An industrial project for Europe



A380

**Airbus A380
company**

**A380 financial
operations**

**A380
Engineering**

**A380 Aircraft
structure**



nZEB stock

**Energy Renovation
Facilitator**

**Risk sharing
pool**

**Engineering &
architecture
firms**

**Cluster of energy
renovation
industries**





Efficiency First policy Framework for buildings

- **One single, streamlined climate and energy framework directive to transform the EU building stock from being an energy waster to being highly energy efficient and energy producer**
- **Carbon and energy savings targets for 2050 with 2020, 2030 and 2040 milestones**
- **New governance structure:**
 - **EU Energy Renovation Facilitator**
 - **EU Risk Sharing Facility**
 - **EU energy renovation industry (aggregators of components)**
- **Industrialisation of energy renovation: moving from component – based energy renovation to Net Zero Energy Renovation Kits**



Thank you for your attention

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