THE EUROPEAN 'BUILDING ENVELOPE' INDUSTRY POSITION ON UPSCALING DEEP RENOVATION IN THE CLEAN ENERGY PACKAGE

THREE ESSENTIAL PILLARS TO PUT BUILDING RENOVATION BACK ON TRACK

Reaching a high performance of the building envelope for the EU building stock is essential in achieving the overall ambition of the Clean Energy package, but it is not sufficiently considered in the revision of the Energy Efficiency Directive (EED) and Energy Performance of Buildings Directive (EPBD) proposals. A highly performing building envelope is often taken for granted, but it necessitates a supportive policy framework to be able to bring its true contribution to consumers, business and government alike.

As demonstrated by numerous studies and the European Commission's own impact assessment (i.e. EPBD and Heating and Cooling), reaching a high performance building envelope:

→ Represents the highest cost-effective potential for CO_2 mitigation in Europe, given that over three quarters of Europe's buildings were built before energy performance requirements were installed;
→ Creates the expected growth and job creation in the construction sector;
→ Improves comfort and wellbeing of building occupants and rests at the heart of healthy buildings;
→ Alleviates EU citizens from energy poverty by reducing their energy need.

Our associations represent EU manufacturers of innovative construction products and raw materials for the building envelope. The building envelope is the physical separator between the interior and exterior of a building. Components of the envelope are typically: walls, floors, roofs, windows and doors. We have come together to call for a policy framework that truly up-scales speed and depth of renovation of buildings in the EU.

We draw your attention to the improvements needed on three aspects of the EPBD and EED. These considerations must find a response in the future legislations for more specific measures to enable the building sector to contribute fully to the energy and climate goals of the European Union and thereby honour its commitment to the Paris Agreement.

1. UPSCALING RENOVATION REQUIRES A LINK BETWEEN EED TARGET AND THE CONTRIBUTION OF THE BUILDING SECTOR

Policy recommendations:

→ In the EED Art 1 or Art 3: Complementing the Energy Efficiency target by a clear indication of the contribution expected from building renovation (based on the sectorial decomposition and/or on the renovation rate and depth assumptions in the EED Impact Assessment)
→ In the EPBD Art 2A: Requesting to express the 2030 milestones of the renovation strategies in final energy demand and to align it with the energy efficiency target (based on the sectorial decomposition in the EED impact assessment).

For the EU energy efficiency target to deliver its economic, environmental and societal benefits, it is important to clarify the contribution from the building sector, which should be expressed in absolute final energy demand. According to the EED impact assessment based on cost-effective potential, the lion's share of energy savings to meet the energy efficiency target should come from an increased building renovation rate and depth delivering final energy demand reduction. The potential of buildings was already identified in the 2012 EED. Today's trajectory towards 2020 shows that the energy savings potential in buildings will not be realized despite the fact that the global energy efficiency target will be partly met by the economic downturn. It is therefore essential that the future EU regulatory framework applicable until 2030 and beyond, namely, the EED and the EPBD, secures the key contribution of building renovation.

2. REDUCING ENERGY WASTE IN THE BUILDING: ANNEX 1 OF THE EPBD

Policy Recommendations:

→ EPBD Annex I: The request for an additional indicator on the energy demand for heating and cooling, as implemented in most Member States[1].

→ EPBD Annex I: The proposed discounting of both on-site and off-site renewables puts in jeopardy the logic of reducing energy demand first. The discounting of renewable energy production should not be possible under Annex 1 of EPBD. It could be replaced by a requirement to report the share of primary energy from renewable sources that is generated both on-site or nearby.

Given that 80% of energy consumed in a building is for heating and cooling, reducing energy waste should be a key priority (see annex 2). Annex 1 of the EPBD only requires evaluating the building's energy performance by an indicator of primary energy use and opens the possibility to discount renewable energy produced on site or nearby. This discounting possibility is not in line with the definition of 'energy performance of a building'. It weakens the definitions of 'nearly zero energy building' and dilutes the subject matter of the EPBD. It may yield misleading information because a change in the primary energy mix (e.g. an increased share of renewable electricity in the electricity mix) would improve the apparent performance of the building, without actually decreasing energy consumption of the building or improving the thermal comfort of its occupants. The installation of renewable energy production nearby, which is incentivized by other legislations, would actually become an alternative to an improvement of the building envelope, whilst both are needed. The Energy Efficiency First principle should be better acknowledged to recognize the priority to be given to low energy demand, independently from energy supply changes, because of its own value: thermal comfort, reduction of peak demand facilitating a more flexible renewable energy supply, etc. Renewables have an essential role to play towards the achievement of our GHG reduction target but their use needs to be built upon tapping the full energy efficiency potential in buildings. The deployment of renewable energies should be covered by the Renewable Energy Directive.

3. CONSISTENCY & COHERENCY: A VISION FOR THE EU BUILDING STOCK REQUIRES A NEARLY ZERO ENERGY LEVEL APPROACH

Policy recommendations:

→ EPBD Art 2: A definition of a decarbonized building stock should be founded on what is familiar to Member States based on what they already have to deliver post 2020 for new build, and are expected to do via Art 9 for their existing stock. This means in practice a definition explicitly making reference to 'a nearly zero energy standard'

→ EPBD Art 2A: The clarification of the renovation strategies ambition as being the "decarbonisation of the building stock up to a nearly zero energy standard by 2050", as expressed in the EPBD Impact Assessment.

The EPBD impact assessment assumes that a decarbonisation of the building stock will be achieved via the renovation towards a highly energy-efficient (NZEB) building stock. Nevertheless, as the Clean Energy package also aims to decarbonize the electricity supply, the decarbonisation of the building stock may also be wrongly understood as the electrification of heating without action on the energy demand. Covering the heating and cooling demand of the currently inefficient building stock with renewable electricity would not be realistic. It would fail to maximize the potential of a resilient building stock in providing stability to the electricity grid, notably through reducing our buildings' vulnerability to changing weather conditions. Most importantly, it would deprive Europe from all the benefits expected from the EPBD, i.e. jobs and growth, reduction of energy poverty, improvement of comfort and wellbeing, which are the results of deep renovation of the building stock.

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[1] 2peach aps, 2016. Building resilience through buildings codes. Secondary Level Requirements for Heating and Cooling in European Building Codes. By Jens Laustsen & Sophie Shnapp.

SUPPORTING ORGANISATIONS

ANNEX 1 EPBD: EXTRACTS FROM EUROPEAN COMMISSION IMPACT ASSESSMENTS FOR EPBD AND EED

Renovation rate and depth in the residential sector for different scenarios (EED IA part 2 page 75)

Table 9: Renovation rates in the residential sector[75]

(%)	Average renovation rate EU28		Average energy saving % from renovation EU28	
	2015-2020	2021-2030	2015-2020	2021-2030
REF2016	1.5%	1.5%	43.4%	33.3%
EUCO27	1.5%	1.7%	46.8%	51.8%
EUCO30	1.5%	2.1%	47.3%	55.6%
EUCO+33	1.5%	2.7%	48.0%	59.3%
EUCO+35	1.5%	2.9%	48.4%	59.5%
EUCO+40	1.5%	3.1%	50.4%	63.0%

Source: NTUA Buildings model

Final energy demand by sector to achieve different level of energy efficiency target (EED IA p42)

Table 7: Other energy system impacts

Other energy system impacts (2030)	Ref2016[80]	EUCO27	EUCO30	EUCO+33	EUCO+35	EUCO+40
Final Energy Demand (Mtoe)	1,081	1,031	987	929	893	825
Industry	270	269	268	259	251	237
Residential	288	267	243	213	199	169
Tertiary	179	166	152	135	127	108
Transport[81]	344	329	324	322	316	312
Reduction requirement starting from the 2020 final energy consumption target (1086 Mtoe) (Mtoe)	-5	-55	-99	-157	-193	-261
Reduction requirement starting from the 2020 final energy consumption target (1086 Mtoe) (% change)	-0,4	-5,0	-9,1	-14,4	-17,8	-24,0
Final Energy Demand in REF2016 and EUCO27 (Mtoe) and change from EUCO27 (% change)	1,081	1,031	-4.3	-9.9	-13.4	-20.0
Industry	270	269	-0.5	-3.8	-6.7	-12.0
Residential	288	267	-9.2	-20.4	-25.6	-36.9
Tertiary	179	166	-8.6	-18.5	-23.9	-35.0
Transport	344	329	-1.2	-2.0	-3.9	-5.1
Change in Final Energy Demand - compared to 2005 levels (1191.3 Mtoe in 2005) (% change)	-9,2	-13,4	-17,1	-22,0	-25,1	-30,7
Industry[82]	-17,6	-17,8	-18,2	-20,9	-23,3	-27,7
Residential[83]	-6,4	-13,1	-21,1	-30,8	-35,3	-45,2
Tertiary[84]	-2,3	-9,4	-17,1	-26,2	-31,0	-41,1
Transport[85]	-6,3	-10,7	-11,8	-12,5	-14,1	-15,2

Gross final energy consumption - REF2016 and EUCO27 (in Mtoe) and change from EUCO27 (% change)	1,133	1,086	-4	-9	-13	-19
Heating and cooling	485	454	-7	-18	-23	-33
Electricity	302	302	-3	-5	-8	-14
Transport	274	256	-2	-3	-5	-7
Residential sector: Useful energy per energy use (in Mtoe)						
- Heating and cooling	184	169	151	128	118	94
- Water heating and cooking	56	51	46	39	36	29
- Electric appliances and Lighting	48	48	46	46	45	45

Source: PRIMES

Detailed description of measures: renovation strategies for the decarbonisation of the building stock (EPBD IA Annex 6, page 74)

Measure 1A: Set milestones for the decarbonisation of buildings by 2050

The Energy Performance of Buildings Directive will be amended to require Member States to define, as part of their long-term renovation strategies, a roadmap with clear milestones and measures to decarbonise their national building stock up to a nearly zero-energy standard by 2050. In order to clarify the overall obligation, the amendment of the EPBD will also incorporate Article 4 of the EED.

2.1. Buildings: current situation and trends in the residential sector[9]

Space cooling and heating are energy services required for securing a proper indoor thermal comfort. The need for heating and cooling in residential buildings is influenced by three main factors: the efficiency of the building's shell, the efficiency of the heating and cooling supply equipment and the behavior of the occupants. The climate and local weather conditions, *i.e.* outdoor temperature, have a major impact on the energy consumption of buildings and exercised a major influence on how the buildings are constructed and supplied with heat and cool, leading to widely diverging construction traditions and buildings' characteristics in the various Member States. Each factor can affect buildings' consumption significantly. For example too low and too high temperature increase the need for heating or cooling, while the demand decrease with the increase of the energy performance of the building shell or if heating and cooling is supplied through efficient technology and equipment.

Space heating

In the residential sector space heating constitutes the biggest share of energy consumption amounting to 78% of total final energy use. This average masks considerable differences depending on climate, the building type, thermal integrity, activity, etc. While the share of space heating is above 80% in colder climates, in warmer climates it is lower, around 50%. Figure 2-5 presents the amount of energy consumed in 2012 in EU28 only for space heating in the residential sector.

Figure 2-4: Thermal energy consumption per use in the residential sector (2012)

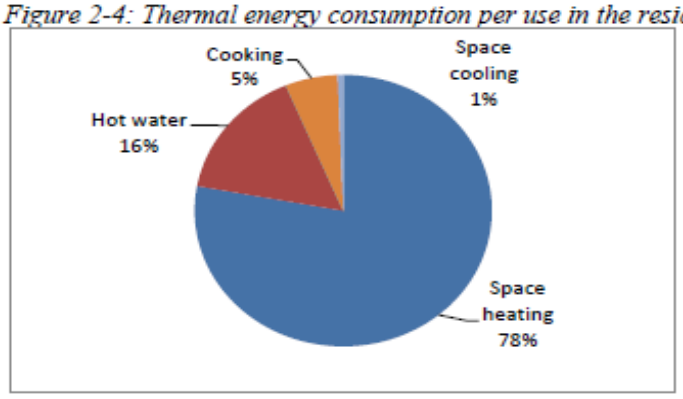
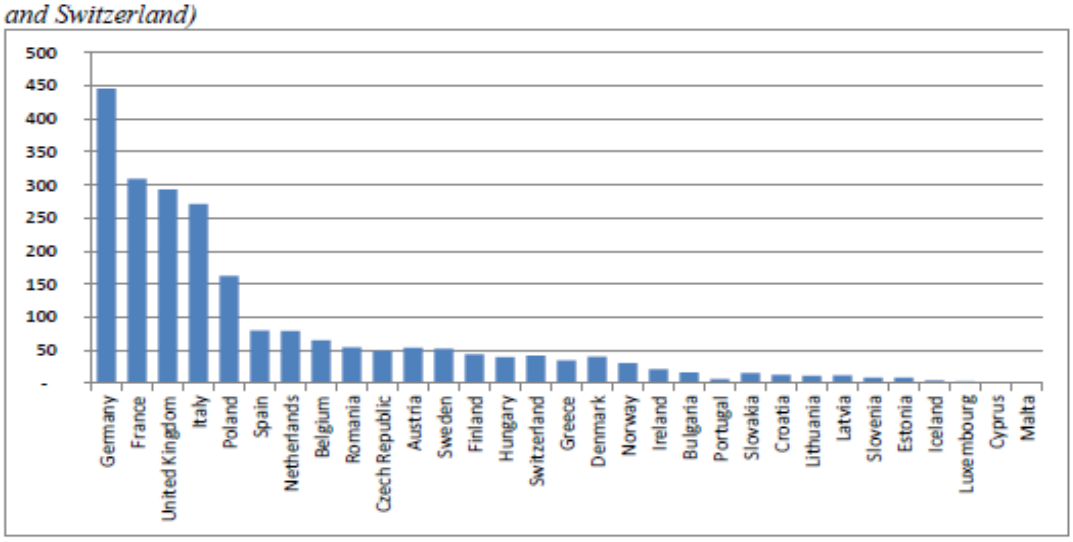
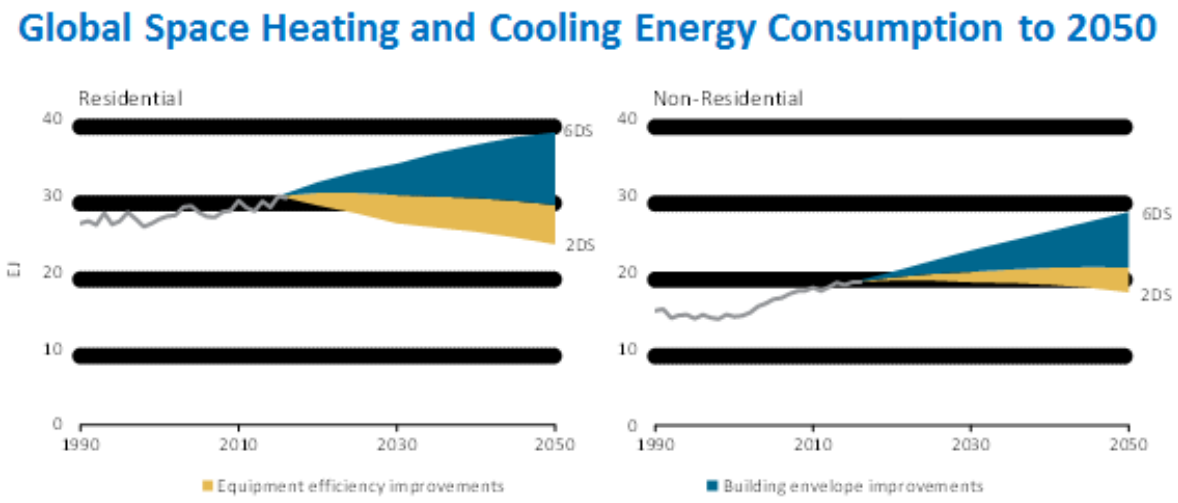


Figure 2-5: Space heating in the residential sector, 2012 (TWh, EU28 + Norway, Iceland and Switzerland)



ANNEX 3: IEA ENERGY TECHNOLOGY PERSPECTIVES 2016



Building envelope improvements (new build and renovations) are critical to achieving 2DS targets