Bureau of Energy Efficiency

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Augmenting Nature by Green Affordable New-habitat

A Courtyard for Revolutionary Change in Building Energy Efficiency

An International Conference on Building Energy Efficiency

9th-11th September, 2019 | Hotel The LaLiT, New Delhi

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THIS PRESENTATION WAS SHARED BY

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FOR THE SESSION:

"Steps towards Net Zero Energy Buildings"

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Nearly Zero-Energy Buildings

ANGAN Conference

11 September 2019, New Delhi

Buildings team - Unit Energy Efficiency
DG ENERGY, European Commission

Energy Performance of Buildings Directive

Main EU instrument addressing building performance

Energy performance approach:

- Cost-optimal minimum energy performance standards for **new** buildings and **existing** buildings undergoing major **renovation**
- Energy Performance **Certification**
- **Nearly zero-energy building** targets for new buildings

Evaluation of the EPBD

EPBD is effective – it will deliver the 60-80 Mtoe energy savings by 2020

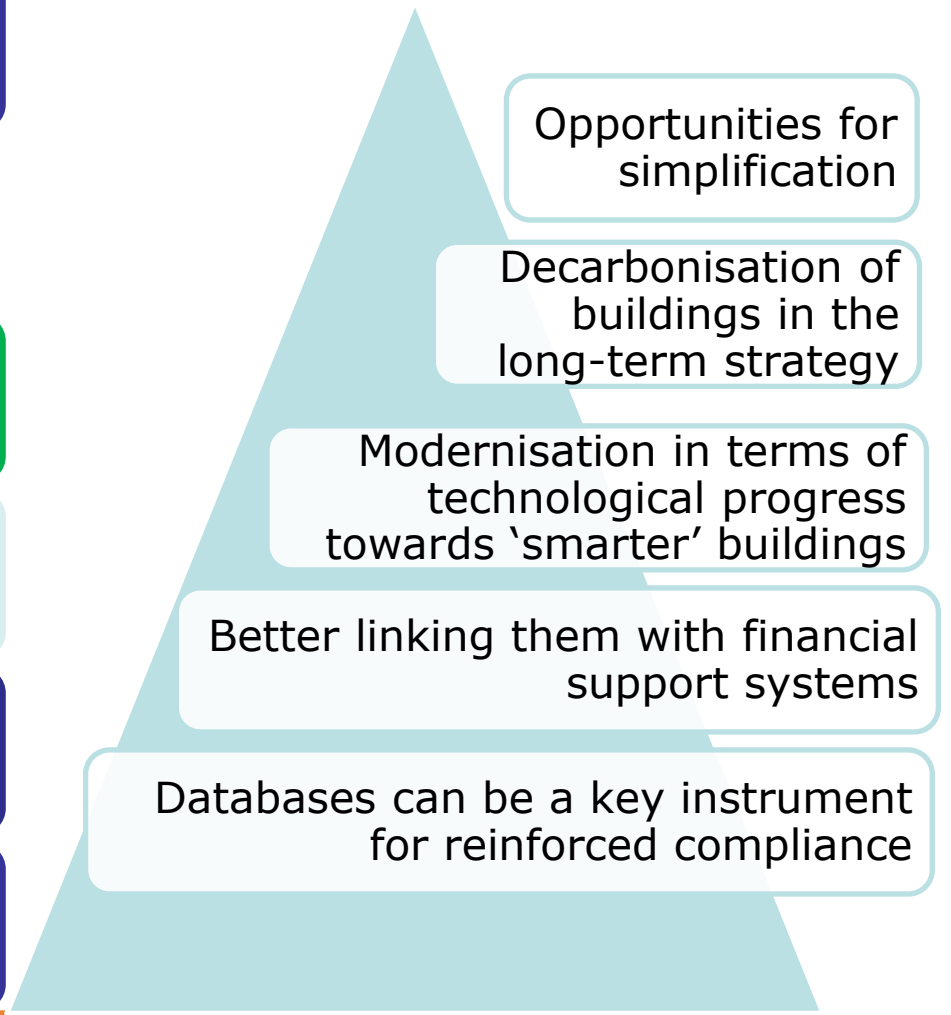
The overall architecture is working (especially for new buildings)

The NZEB sets a 'future-proof' vision for the sector and mobilises stakeholders accordingly

Cost-optimality is an efficient approach to set energy performance requirements

EPCs is a useful demand-driven market tool

Relatively limited regulatory failures



European Commission

Why are NZEBs important?

- Buildings responsible for 40% of energy consumption and 36% of GHG emissions in EU
- Buildings to contribute significantly to GHG emission reductions of around 90% compared to 1990 by 2050
- 75% of the housing stock is energy inefficient, missing the benefits of increased renovation
- Renovation rates are too low

Need to:

- accelerate and finance building renovation investments
- tap the potential of smart building technologies
- increase the use of renewables

Legal requirements for NZEBs
EPBD, 2010/31/EU

Article 2, definition

A building that has a very high energy performance whereby the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including RES onsite or nearby

Article 9 (1)

- **After 31 December 2018**, new buildings occupied and owned by ***public authorities*** are nearly zero-energy buildings
- **After 31 December 2020** ***all new*** buildings occupied are nearly zero-energy buildings

Legal requirements for NZEBs
EPBD, 2010/31/EU

Article 9, National plans

Member States must develop national plans for increasing the number of nearly zero-energy buildings, which shall include:

- *Practical application of the definition, including a numerical indicator of primary energy use in kWh/m^2 per year*
- *Measures to promote NZEBs (also for existing buildings)*

The European Commission's Support

Information on DG ENER website

https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-performance-of-buildings/nearly-zero-energy-buildings

- National plans
- A progress report (2013)
- Information from individual countries (2014),
- A guidance study providing recommendations (2012) and an overview of MS information on NZEBs report 2014)
- JRC Synthesis Report on the national plans for NZEBs, based on the progress of MS (2016)
- Concerted Action EPBD detailed overview of national applications of the NZEB definitions (2014)
- Recommendations (2016) on guidelines for the promotion of nearly zero-energy buildings and best practices - *https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016H1318&from=EN*

Progress towards NZEB targets

National values of primary energy use in kWh/m² per year:

- **Residential buildings:** ranges between 33 kWh/m²per year and 95 kWh/m²per year, with the majority of Member States target aiming at 45 or 50 kWh/m² per year

- **Hospitals** and **other non-residential buildings** remain a challenge in several Member States, with values up to 270 kWh/m2 per year

Numeric benchmarks for NZEB primary energy use indicators at EU level

	Net primary use kWh/(m².y)	Primary energy use kWh/(m².y)	On-site RES coverage kWh/(m².y)
Mediterranean			
Offices	20-30	80-90	60
New single family house	40-55	85-100	45
Oceanic			
Offices	40-55	85-100	45
New single family house	15-30	50-65	35
Continental			
Offices	40-55	85-100	45
New single family house	20-40	50-70	30
Nordic			
Offices	55-70	85-100	30
New single family house	40-65	65-90	25

Next steps:

- Member States to further develop their national plans to create stable outlook for the market
- Improve awareness of demonstration projects on a larger scale, focusing also on renovation of existing buildings into NZEBs
- **Develop workforce skills, ideally through national strategies (i.e. Build-UP Skills implementation)**
- Sector to deliver energy efficiency and RES technologies to market
- Plan **(financial) support** measures to stimulate NZEBs and market development as part of the building renovation roadmaps under EED

How to encourage energy renovation:

- Link energy and non-energy renovations
- Use maintenance, replacements or repairs as opportunity to recommend and perform energy renovation
- Provide information on how best to invest in building renovations
- Provide information on health-related benefits of buildings in good condition
- Promote energy performance certificates and energy labels
- Encourage the provision of information on energy consumption on the energy bill
- Provide capacity building opportunities in energy renovation measures to building professionals
- Get building professionals on board with the energy and climate targets to increase energy renovation recommendations
- Offer favorable financing options for consumers, especially to socio-economic disadvantaged consumers
- Reduce administrative barriers to energy renovation - both for consumers and professionals
- Strengthen cooperation and dialogue between building professionals and with manufacturers

SMART FINANCE FOR SMART BUILDINGS

More effective use of public funds

- Deploying Financial Instruments and flexible energy efficiency and renewable financing platforms
- Building on EFSI II blending with ESIF funds

Assistance and aggregation

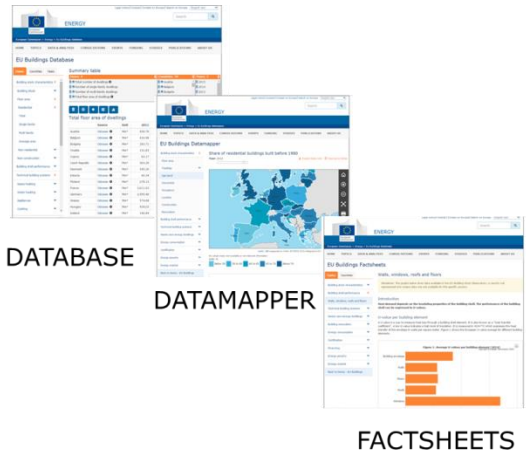
- Supporting the project pipeline at EU and local level
- Project Development Assistance facilities
- "One-stop-shops"
- EIB ELENA (European Local Energy Assistance)

De-risking

- Understanding the risks and benefits for financiers and investors
- The De-risking Energy Efficiency Platform
- Commonly accepted underwriting framework

Need for better data: EU Building Stock Observatory

- Provide a snapshot of the energy performance of the EU building stock
- Set a framework / methodology for the continuous monitoring of the building stock



https://ec.europa.eu/energy/en/eubuildings

Topics covered

1. Building stock & energy needs and consumption
2. Technical building systems
3. Certification
4. Financing
5. Energy poverty & social aspects

Thank you

Unit Energy Efficiency
DG ENERGY, European Commission

https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings