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**MEETMED  
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09 - 11 MAY 2023

MARRAKESH - MOROCCO

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Regional Center for Renewable Energy and Energy Efficiency  
المركز الاقليمي للطاقة المتجددة وكفاءة الطاقة

**meetMED**

Mitigation Enabling Energy Transition in the MEDiterranean region

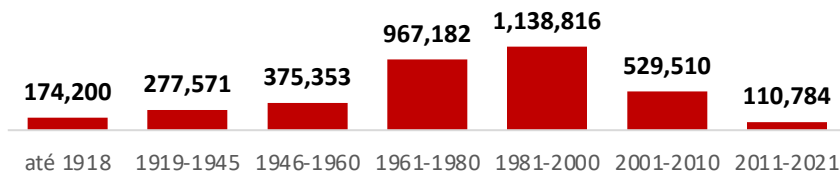
# Session 3 - EPC and EPB standards: Common standards, better certification

Rui Fragoso, Head of Buildings and Efficiency of Resources,  
ADENE, Portugal

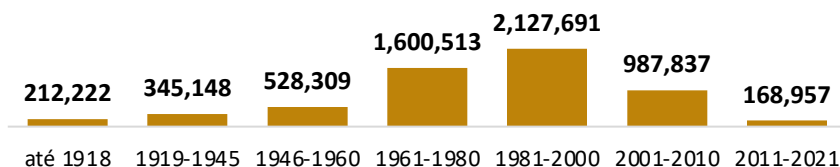
11 May 2023  
Marrakech

# Buildings in the Portuguese context

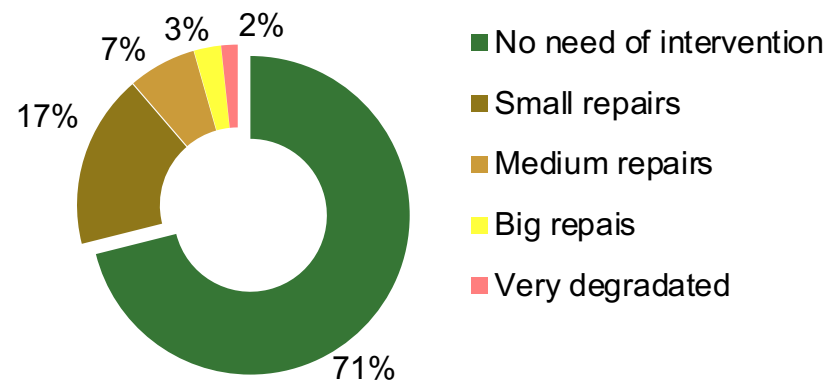
## 3,5 million buildings



## 6 million dwellings

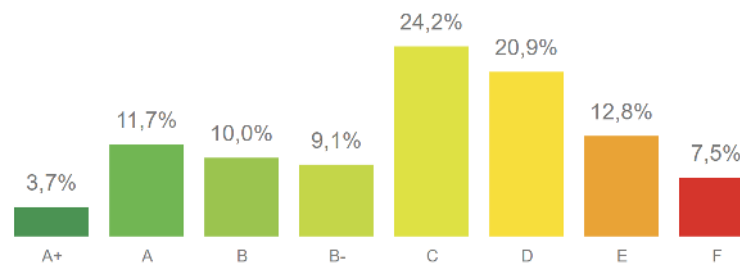


## Buildings conservation status



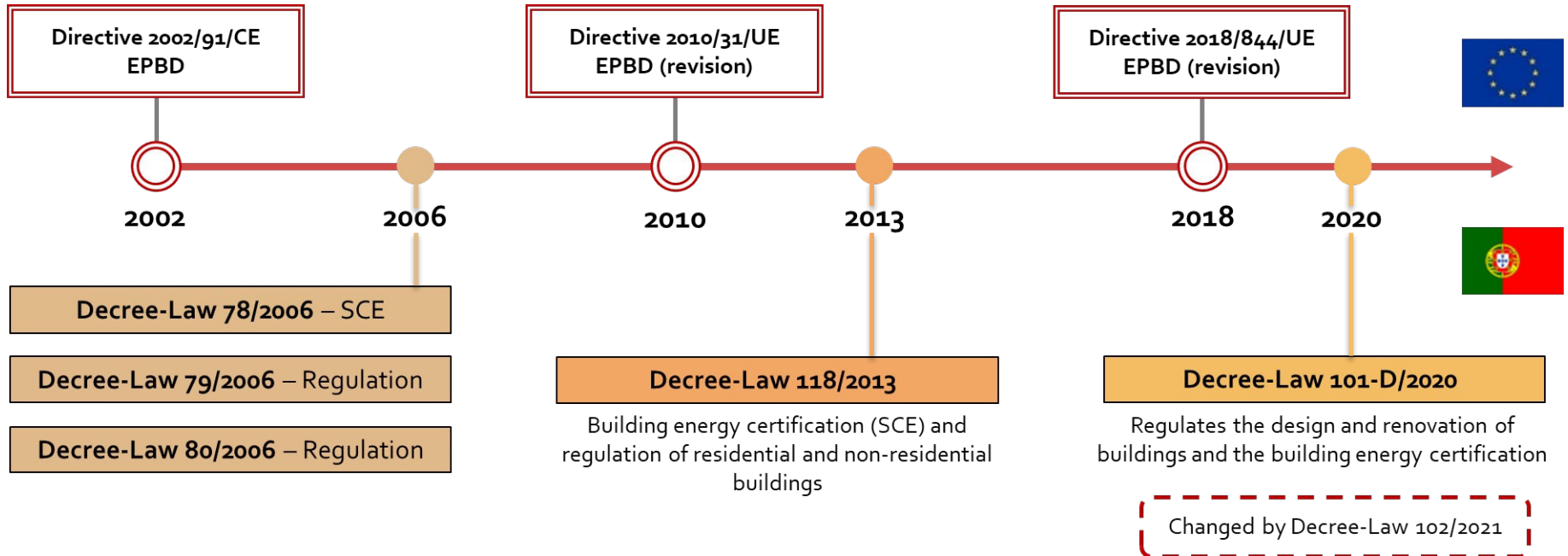
>1 million in need of repairs

## Buildings energy performance



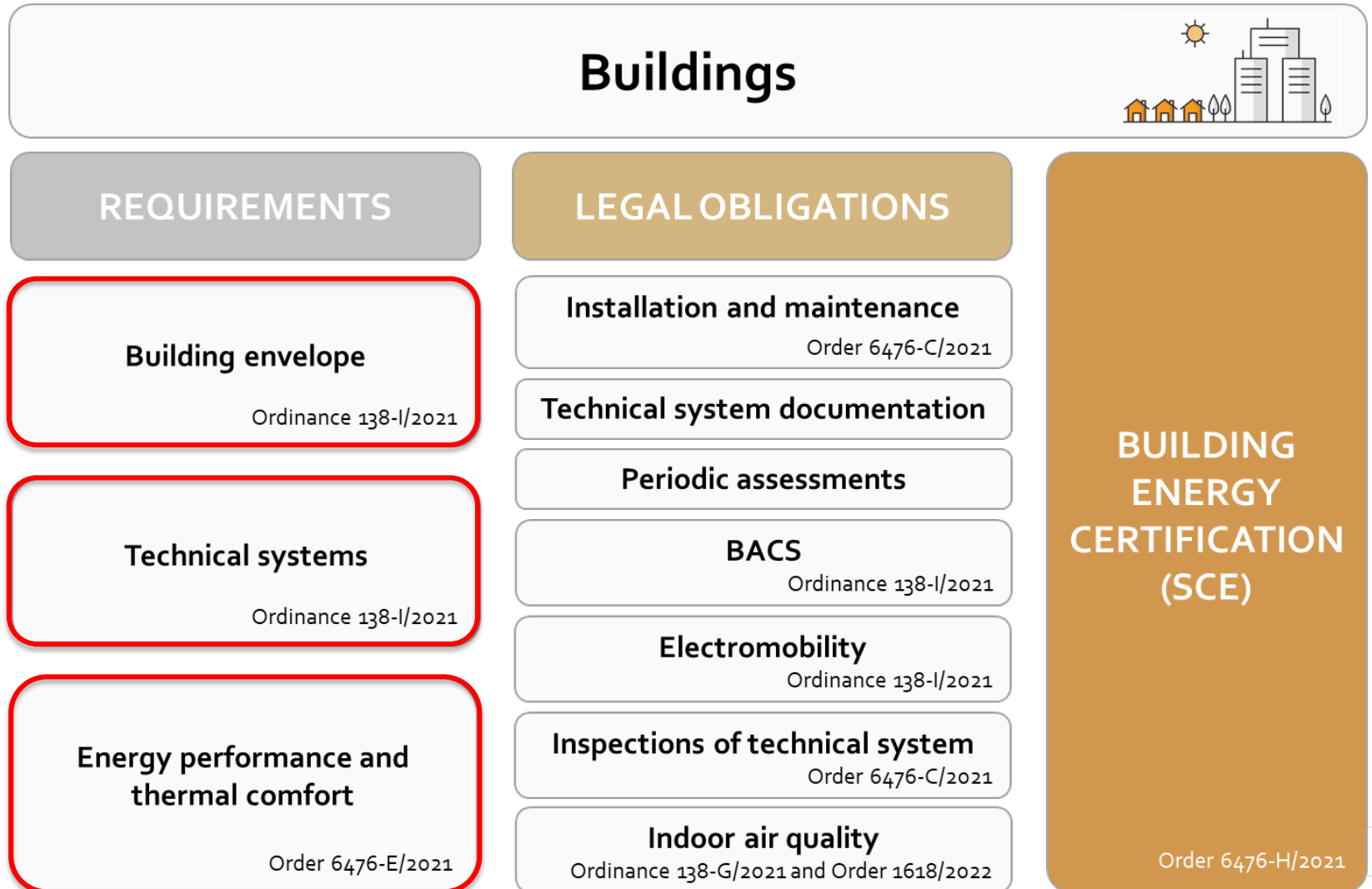
# Energy performance of buildings regulation

## Transposition and impact in Portuguese Legislation



# Energy performance of buildings regulation

## Legislation framework

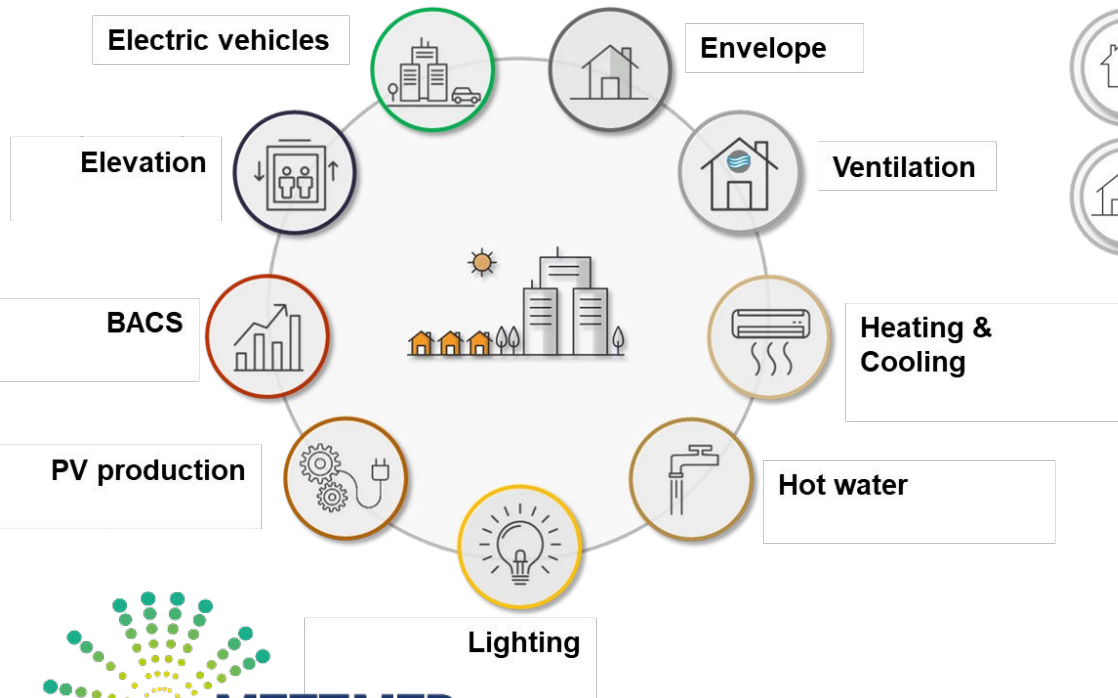



# Energy performance of buildings regulation

## Legislation framework

### Building components requirements

### Energy requirements



Energy performance requirements 



Comfort requirements 



Energy performance certificate

## Common general framework for calculation of EP of buildings in the European Union



The Energy Performance Buildings Directive (EPBD) set the following:

- The **energy performance of a building** shall be determined on the basis of **calculated or actual energy use** and shall reflect **typical energy use for space heating, space cooling, domestic hot water, ventilation, built-in lighting** and other technical building systems.
- The **energy performance of a building** shall be expressed by a numeric **indicator of primary energy use in kWh/(m<sup>2</sup>.y)** for the purpose of both **energy performance certification and compliance** with minimum energy performance requirements.
- Member States shall **describe their national calculation methodology following the national annexes of the overarching standards**, namely ISO 52000-1, 52003-1, 52010-1, 52016-1, and 52018-1, developed under mandate M/480 given to the European Committee for Standardisation (CEN).

## CEN standards on Energy Performance of Buildings (EPB)

The SET of **53 standards** is based on a holistic (systemic) approach:

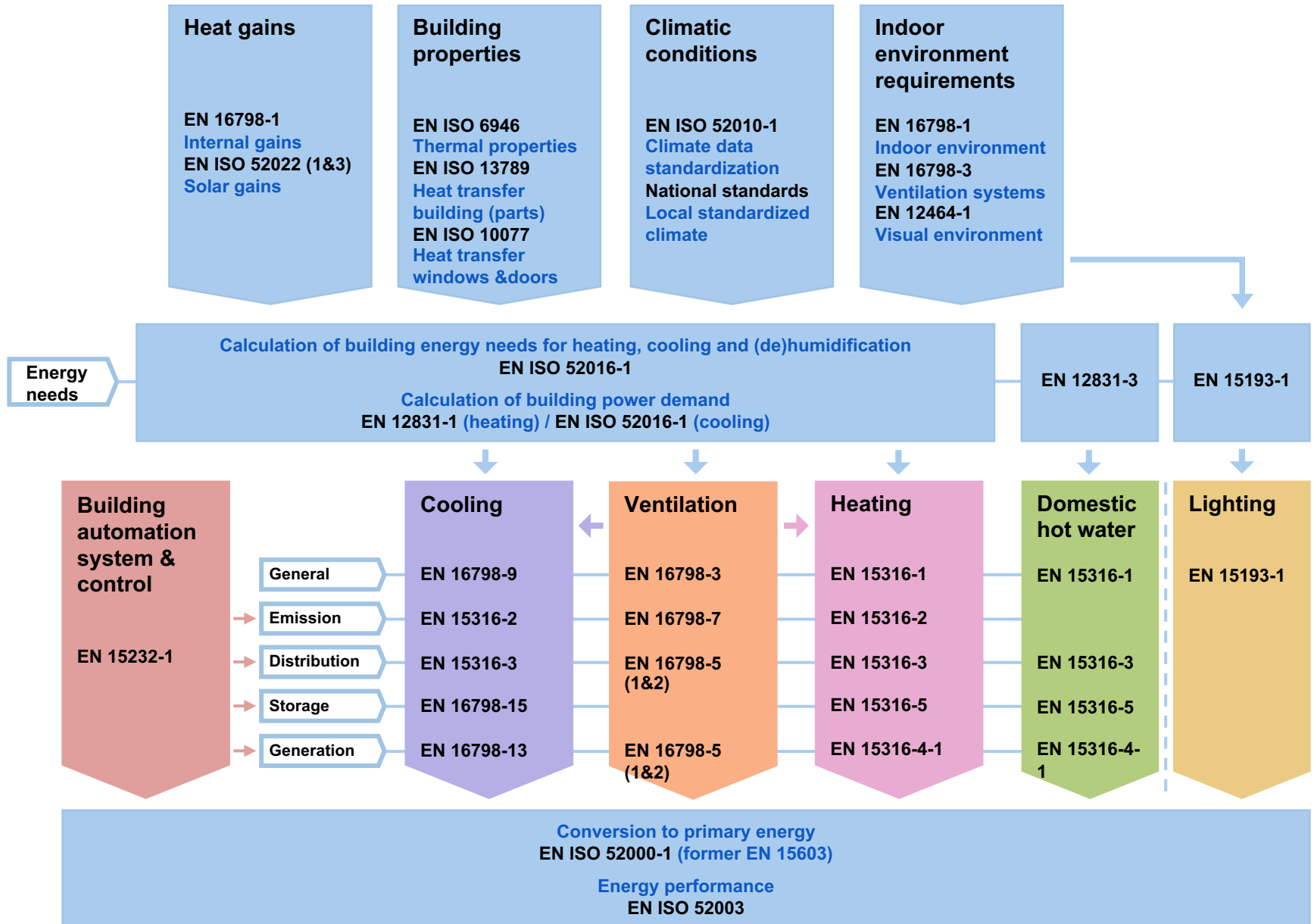
To assess the integrated impact on the energy performance of buildings (EPB) covering:

- Heating, cooling, ventilation, DHW, lighting and the impact of building automation and smart controls
- Also covering energy-using and renewable energy producing appliances
- Respecting the IEQ requirements

All published in 2017-2018

Full and coherent set of 53 European EPB standards (CEN) and subset (key EPB standards) also already at global level (ISO): **The (EN) ISO 52000 family**







# EU Standards in legislation

## The example from Buildings Automation and Control Systems EN 15232 standard

Mandatory in following non-residential buildings

New buildings

When BACS are renovated

Every building with an effective rated output<sup>(\*)</sup> ( $P_c$ )  $\geq 290$  kW by 31.dec.2025

<sup>(\*)</sup> heating and cooling systems

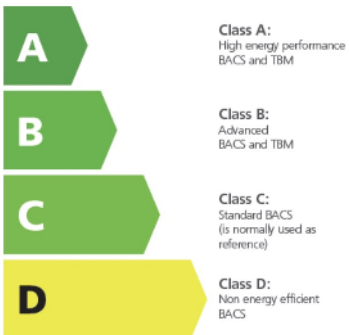
Class requirement for  $P_c \geq 290$  kW

Between 1.jul.2021 and 31.dec.2024

**Class B**

From 1.jan.2025

**Class A**



Class A:  
High energy performance  
BACS and TBM

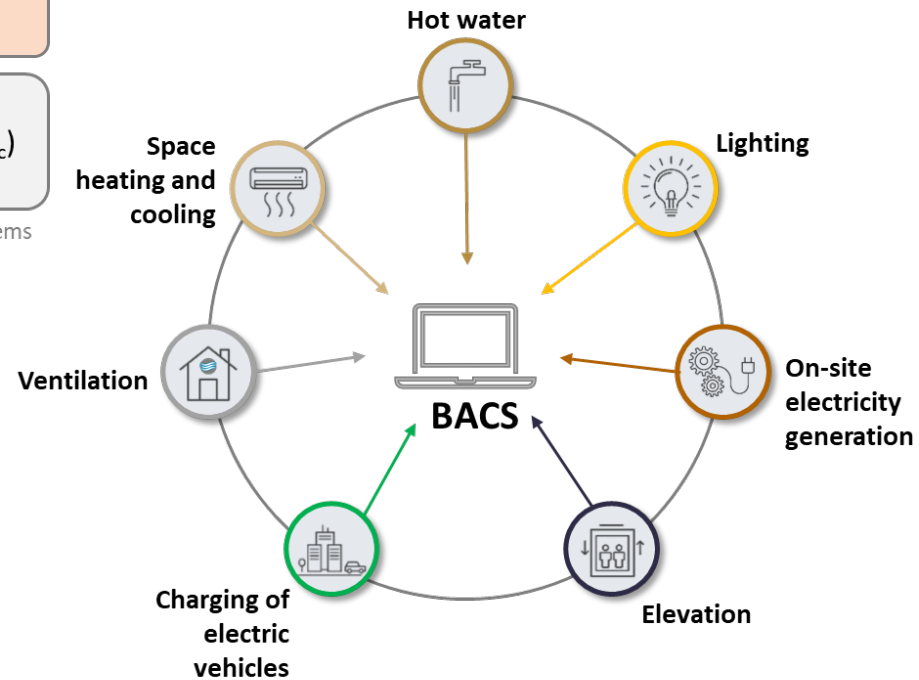
Class B:  
Advanced  
BACS and TBM


Class C:  
Standard BACS  
(is normally used as  
reference)

Class D:  
Non energy efficient  
BACS

Determined according  
to EN 15232<sup>(\*)</sup>

<sup>(\*)</sup> Revoked by ISO 52120




 Chapter 6, Attachment II  
Ordinance 138-I/2021

# EU Standards in legislation

## The example from Buildings Automation and Control Systems

### Using EN 15252 BAC efficiency factors

Current legislation allows the evaluation of the **impact of BAC functions on building energy performance** by using BAC efficiency factors. The factors are related to the annual energy use of a building.

 **Diário da República, 2.ª série** **PARTE C**

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Nos edifícios de comércio e serviços, para efeitos de avaliação DEE, e de acordo com o referido na Norma EN 15232-1, podem ser considerados os fatores  $F_{BACS,th}$  e  $F_{BACS,el}$  nas parcelas de consumo de energia correspondentes. No entanto, este procedimento apenas pode ser considerado caso as ferramentas de simulação dinâmica existentes no mercado não permitam simular os algoritmos de controlo que se pretendem implementar no edifício, de acordo com a referida norma.

Possibility to consider the  $F_{BACS}$  factors from EN 15232-1 when the software, for simulating the energy performance of the building, do not allow the simulation of the control algorithms intended to be implemented in non-residential buildings

Non-residential building types	Overall BAC efficiency factors $f_{BAC,el}$			
	D	C	B	A
	Non energy efficient	Reference	Advanced	High energy performance
Offices	1,10	1	0,93	0,87
Lecture hall	1,06	1	0,94	0,89
Education buildings (schools)	1,07	1	0,93	0,86
Hospital	1,05	1	0,98	0,96

# EU Standards in legislation

## Pros

- ✓ Supports **harmonization** of the various measures improving energy efficiency of buildings and their energy using systems
- ✓ Increase the **accessibility, transparency and objectivity** of EP-assessment of buildings and connected energy infrastructure
- ✓ **Avoid new trade barriers** for energy related products and services in Europe and beyond
- ✓ **Adopt the same structure for EP assessment procedures:** The starting point for national/regional building codes on EPB

## Cons

- ✓ Wide range of technical information which **requires a great effort** for fully comprehension
- ✓ **Not accessible to all parties freely.** Standards must be bought and paid.
- ✓ **Not immediate applicable.** Calculation and software solutions must be developed according to the standards adopted.



# Contact us!



Mitigation Enabling Energy Transition in the MEDiterranean region  
**Together We Switch to Clean Energy**

For any inquiries or comments, please  
don't hesitate to contact us

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