

ALDREN

Alliance for **Deep REN**ovation
in buildings.“

**European Common Voluntary
Certification Scheme,
the tool for harmonized
comparability European wide**

ALDREN Alliance
for Deep **REN**ovation
in buildings



ALDREN WEBINAR, 13.06.2018

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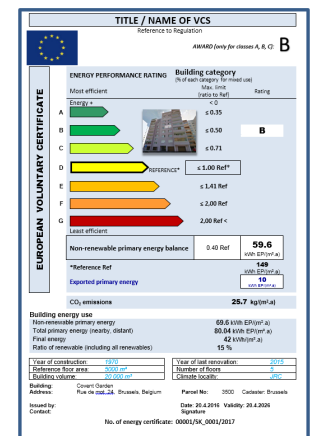
Background

of the

„European Common
Voluntary Certification
Scheme for energy
performance of non-
residential buildings“
(EVCS)

Article 11 (9) of the EPBD

The Commission shall, in consultation with the relevant sectors, **adopt a voluntary common European Union certification scheme for the energy performance of non-residential buildings ...**



What does ALDREN EVCS offer?



- ❖ Support for common language - link of energy performance with different market actors:
 - ✓ financing
 - ✓ assets valuation
 - ✓ comfort and indoor air quality
- ❖ Policy instrument e.g. for subsidies (reliable certificate issued before and after renovation)
- ❖ Create a business opportunity
 - ✓ running the certification at the EU level
 - ✓ training of experts around EU
 - ✓ existing voluntary schemes operators (BREEAM, HQE, IVE, DGNB ...)

**The main
technical
pillars
for harmonized
comparability
European wide**



- ❖ **Calculation methodology**
- ❖ **Indicators**
- ❖ **Performance scale and reference**
- ❖ **Content and template of European Voluntary Certificate**

CALCULATION METHODOLOGY

✓ CEN standards 2017 (M/480)
= the reference methodology

✓ **software** (methodology) **close to the CEN standards** (the hourly calculation step and the scope)

✓ **typical use** (shows intrinsic potential of building)

✓ **climate of the specific location**
instead of national standard climate
(JRC hourly climate data)

Table — Summary of main modular structure of EPB set of standards

	Over-arching	Building (as such)	Technical Building Systems									
Submodule	Descriptions	Descriptions	Descriptions	Heating	Cooling	Ventilation	Humidification	Dehumidification	Domestic Hot water	Lighting	Building automation & control	Electricity production
sub1	M1	M2		M3	M4	M5	M6	M7	M8	M9	M10	M11
1	General	General	General									
2	Common terms and definitions; symbols; and sub	Building Energy	Standards									
3	Applica											
4	Ways Express & Performance Building											
5	category: Building Boundaries	Transmission	control									
6	Building Occupancy and Operating Conditions	Heat Transfer by Infiltration and Ventilation	Distribution & control									
	Preparation of											

The modular structure of new CEN standards 2017

Advantage:

- ✓ all products taken into account in the same way
- ✓ **Common EU market for**
 - software,
 - training of experts

THE ENERGY PERFORMANCE INDICATORS

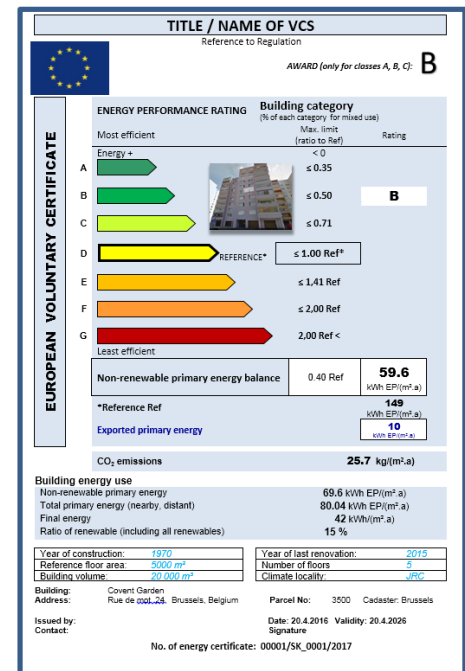
holistic approach for the building classification (rating)

= non-renewable primary energy balance

with potential compensation by exported energy

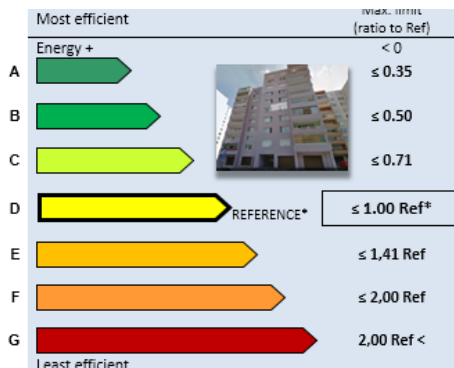
THE ADDITIONAL INDICATORS

- total primary energy,
- final energy / delivered energy,
- share of renewables
- needs for heating and cooling
- CO₂ emissions (environment)

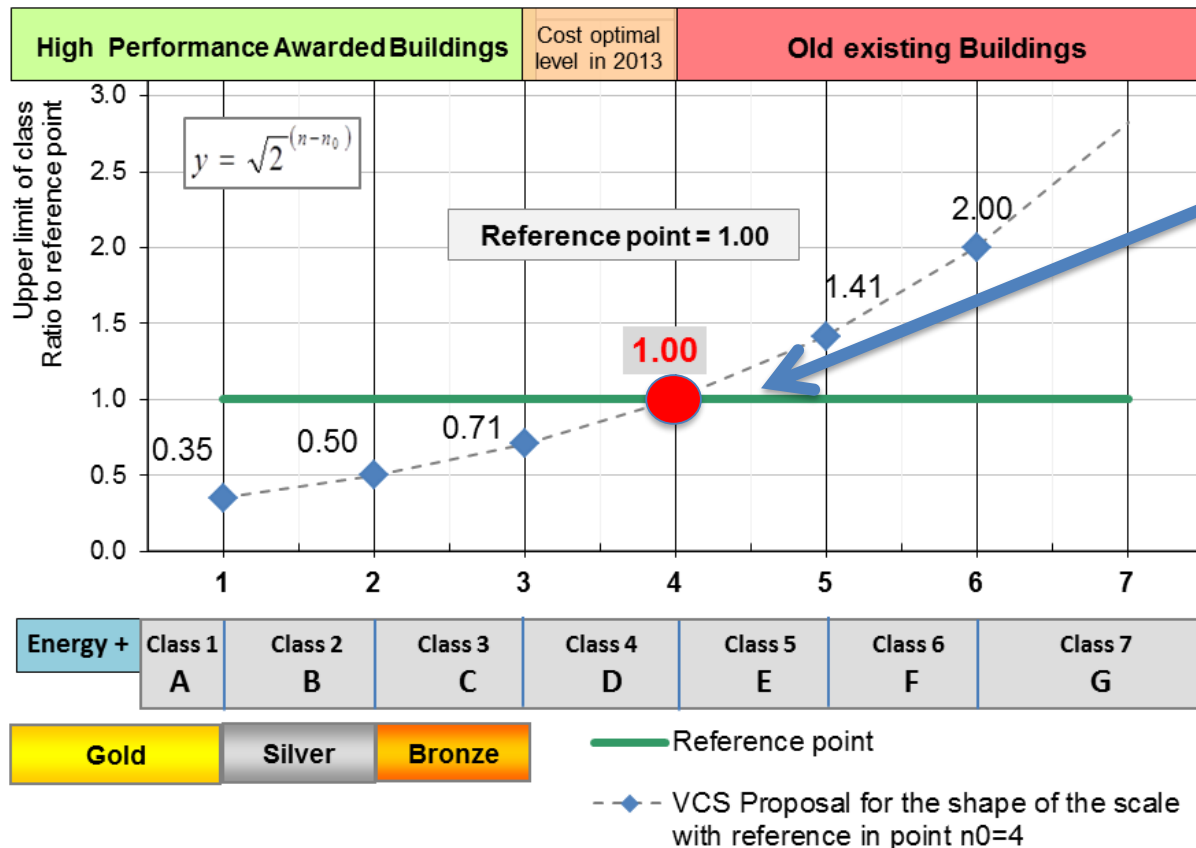


THE ENERGY PERFORMANCE SCALE

- ✓ **one comparable scale** for all countries
- ✓ **one scale** for all building categories
- ✓ **identify and highlight the best buildings** (Voluntary schemes are front runners)
- ✓ suitable for **existing buildings** - provide appropriate resolution to show improvements (shift to better class)



THE ENERGY PERFORMANCE SCALE



One reference point
 ≈ **Cost optimal level (2013)**
 located in the upper limit of
 class „D“.

Current minimum
 requirements
 ≈ class B-C

Class „A“ -
 approximation to the
 NZEB definition

Relative scale - the ratio to the „reference“
Reference = value expressed in kWh/(m².a)

Different options for the
scale and reference
 and consequences will be
 tested.

EUROPEAN VOLUNTARY ENERGY PERFORMANCE CERTIFICATE ENERGY LABEL

- ✓ Common template
- ✓ Energy Performance class
- ✓ Award (e.g. gold, silver, bronze)

TITLE / NAME OF VCS
Reference to Regulation: AWARD (only for classes A, B, C): B

ENERGY PERFORMANCE RATING
Building category: Office building (for mixed use)
Max. limit (ratio to Ref): Rating: B

Energy performance rating scale (A to G):

- A: < 0.35
- B: < 0.50
- C: < 0.71
- D: < 1.00 Ref*
- E: < 1.41 Ref
- F: < 2.00 Ref
- G: < 2.00 Ref

Non-renewable primary energy balance: 0.40 Ref 59.6 kWh EP/(m².a)

*Reference Ref: 149 kWh EP/(m².a)

Exported primary energy: 10 kWh EP/(m².a)

CO₂ emissions: 7 kg/(m².a)

Building energy use:
Non-renewable primary energy: 69.6 kWh EP/(m².a)
Total primary energy (nearby, distant): 80.04 kWh EP/(m².a)
Final energy: 42 kWh EP/(m².a)
Ratio of renewable (including all renewables): 15.7%

Year of construction: 2010
Reference floor area: 5000 m²
Building volume: 27,000 m³

Building: Covent Garden
Address: Rue de post. 24, Brussels, Belgium
Parcel No.: 3500
Cadastral: Brussels

Issued by: Date: 20.4.2016
Contact: Signature: Validity: 20.4.2026

No. of energy certificate: 00001/SK_0001/2017

OVERVIEW OF THE TOTAL ENERGY PERFORMANCE
Overview of the total energy performance and the composition per energy carrier and building service

Service	Energy need (Building level) (kWh/m².a)	Carrier	Renewable (kWh/m².a)	Non-renewable (kWh/m².a)
Space heating systems:				
Boiler (oil)	10.0	Oil	0.0	10.0
Total	10.0		0.0	10.0
Cooling systems:				
Chiller (electricity)	10.0	Electricity	0.0	10.0
Total	10.0		0.0	10.0
Ventilation systems:				
Fan (electricity)	10.0	Electricity	0.0	10.0
Total	10.0		0.0	10.0
Humidification:				
Fan (electricity)	10.0	Electricity	0.0	10.0
Total	10.0		0.0	10.0
Domestic hot water systems:				
Boiler (oil)	10.0	Oil	0.0	10.0
Total	10.0		0.0	10.0
Lighting systems:				
Fan (electricity)	10.0	Electricity	0.0	10.0
Total	10.0		0.0	10.0
Others services:				
Fan (electricity)	10.0	Electricity	0.0	10.0
Total	10.0		0.0	10.0
Total	50.0		0.0	50.0
Exported energy	10.0		0.0	10.0
Total	60.0		0.0	60.0

Graphical overview on energies:
Monthly energy used for heating and cooling: [Pie chart showing energy use by carrier]
Energy use (per service): [Pie chart showing energy use by service]
Delivered energy (per energy carrier) without exported: [Pie chart showing delivered energy by carrier]

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NEXT PAGES

- ✓ Delivered energy per carrier (costs)
- ✓ Wellbeing indicators
- ✓ Description of constructions / systems
- ✓ Recommendations for improvement with potential energy savings – link with the building renovation passport

DESCRIPTION OF BUILDING AND TECHNICAL SYSTEMS / RECOMMENDATIONS FOR IMPROVEMENT 1/3

System	Description	Recommendations for improvement
Building envelope	Roof: One layer of bitumen-sand on concrete and thermal insulation (10 cm EPS) with PVC membrane.	Recommendation: Increase thermal insulation to 15 cm EPS.
Heating systems	Boiler (oil)	Recommendation: Replace by a condensing boiler.
Cooling systems	Chiller (electricity)	Recommendation: Replace by a more efficient chiller.
Ventilation systems	Fan (electricity)	Recommendation: Replace by a more efficient fan.
Humidification	Fan (electricity)	Recommendation: Replace by a more efficient fan.
Domestic hot water systems	Boiler (oil)	Recommendation: Replace by a condensing boiler.
Lighting systems	Fan (electricity)	Recommendation: Replace by a more efficient fan.
Others services	Fan (electricity)	Recommendation: Replace by a more efficient fan.

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DESCRIPTION OF BUILDING AND TECHNICAL SYSTEMS / RECOMMENDATIONS FOR IMPROVEMENT 3/3

POTENTIAL ENERGY SAVINGS AFTER REALIZATION OF RECOMMENDED MEASURES

Service	Quantity	Energy need (kWh/m².a)	Energy need (kWh/m².a)	Savings (kWh/m².a)	Savings (%)
Space heating systems:					
Boiler (oil)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Cooling systems:					
Chiller (electricity)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Ventilation systems:					
Fan (electricity)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Humidification:					
Fan (electricity)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Domestic hot water systems:					
Boiler (oil)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Lighting systems:					
Fan (electricity)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Others services:					
Fan (electricity)	10.0	10.0	5.0	5.0	50.0
Total	10.0	10.0	5.0	5.0	50.0
Total	50.0	50.0	25.0	25.0	50.0

Non-renewable primary energy balance: 0.40 Ref 49 kWh EP/(m².a)

*Reference Ref: 149 kWh EP/(m².a)

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EUROPEAN VOLUNTARY ENERGY PERFORMANCE CERTIFICATE

THE OPTIONS FOR MARKET UPTAKE

- stand-alone voluntary energy performance certification, compliant with the EPBD requirements
- energy module taken up by existing environmental certification schemes providers (i.e. BREEAM, IVE, HQE, DGNB)
- recognized by the policy makers at the European, national or regional level as an complement to the national certificates for some purposes (e.g. subsidies, compare buildings at the EU level)



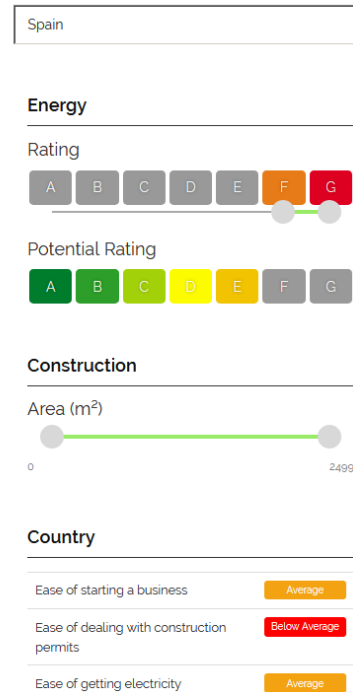
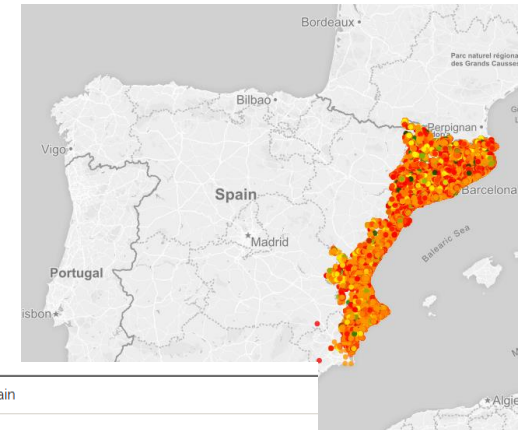
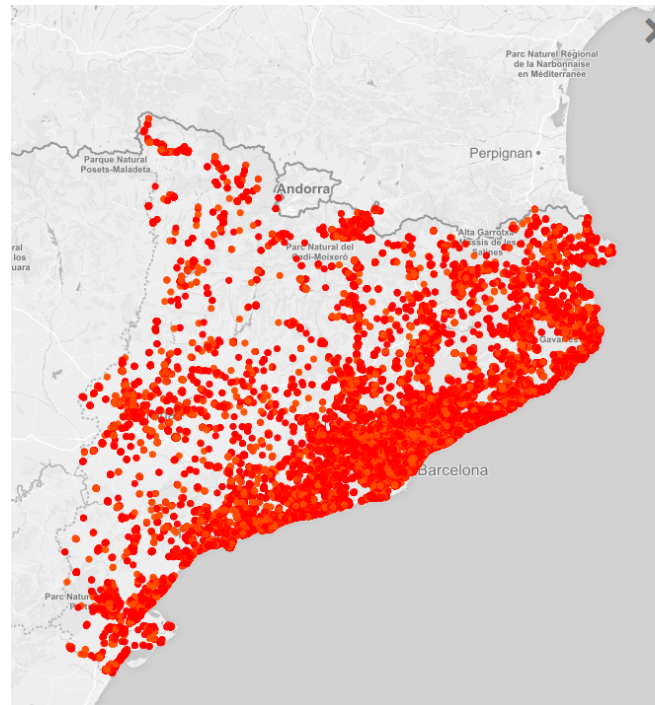
The ALDREN project aims

Example of potential large scale impact

Identification of buildings with low energy performance (classes F-G).

ENERFUND tool
<http://app.enerfund.eu/>

Focus on high impact
(large buildings of poor quality,
large renovation potential ...)





Join us!

ALDREN ALLiance
for Deep RENovation
in buildings



www.aldren.eu

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