

## The European Union's programme for India

**Clean Energy Cooperation with India (CECI): Legal and policy support to the development and implementation of energy efficiency legislation for the building sector in India (TA-ECBC)**

**Webinar**

November 16<sup>th</sup> 2018

## **Energy Performance Certification as a tool for market change**

Presenter: Rui Fragoso - ADENE



This project is funded by  
The European Union



Project implemented by  
**EXERGIA S.A. member of  
SACO Consortium**, in  
collaboration with **PwC India**

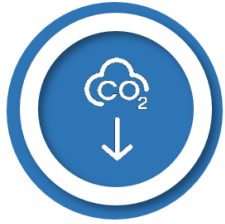
# Content of the presentation

---

## Key topics

- ❑ EU context and targets
- ❑ EU policy in the buildings sector – EPBD
- ❑ The Energy Performance Certificate (EPC)
- ❑ Best practices using the EPC
- ❑ Market impacts

# EU targets



**CLIMATE CHANGE  
REDUCTION  
IN EMISSIONS**



**2020**

**- 20%**

MANDATORY TARGET



**2030**

**- 40%**



**2050**

**- 80%**

EUROPEAN VISION



**ENERGY  
CONSUMPTION  
REDUCTION  
IMPROVEMENT  
IN ENERGY  
EFFICIENCY**



**2020 - 2030**

**- 20% - 32,5%**

MANDATORY  
TARGET

MANDATORY  
TARGET



1ST JANUARY **2019**

**NEARY ZERO  
ENERGY  
BUILDINGS**



**PUBLIC BUILDINGS**



The **public sector** should **lead the way** in the field of **energy performance of buildings**, and **set ambitious targets** for the **buildings occupied by public authorities**.



# ENERGY PERFORMANCE IN BUILDINGS – EPBD

## 2002

- ✓ **Methodology** for calculating the energy performance
- ✓ Minimum **energy performance requirements (EPR)**
- ✓ Focus on **new buildings** and big retrofits
- ✓ **Energy performance certificates (EPC)**
- ✓ **Inspections** on boilers and HVAC systems
- ✓ Qualified **experts**



## 2010

- ✓ **Cost-optimal** levels of EPR
- ✓ **Nearly zero-energy buildings (nZEB)**
- ✓ Additional focus on **existing buildings**
- ✓ **Display of (EPC) Public buildings ....**
- ✓ Financial **incentives and barriers**
- ✓ **Independent control systems**

## 2018

- ✓ Long term **renovation strategies**
- ✓ **Additional focus** besides energy (health, safety, seismic)
- ✓ **Electromobility** and **Smart** readiness indicator
- ✓ **Role of EPC in finance**
- ✓ **Inspections and BAC**

# THE ENERGY PERFORMANCE CERTIFICATE (EPC)

✓ All Member States of EU implemented a **system of certification of the energy performance** of buildings.

✓ The energy performance certificates includes the **energy performance of a building and reference values** such as minimum energy performance requirements in order to **make it possible to compare** and assess its energy performance.

✓ The energy performance certificate includes **recommendations for the cost-optimal or cost-effective improvement of the energy performance** of a building or building unit



EPC sample from Portugal

# EPC IN DIFFERENT CONTEXTS AND ROLES

## 3 main roles for the Energy Performance Certificates (EPC)

- ✓ **New buildings or building units** which are **constructed**



### Main role for the EPC

Evaluate energy **performance** and minimum **requirements**

- ✓ Buildings **occupied by a public authority** and frequently visited by the public



**Leading example** of public authorities and awareness

- ✓ Buildings or building units which are **sold or rented out to a new tenant**

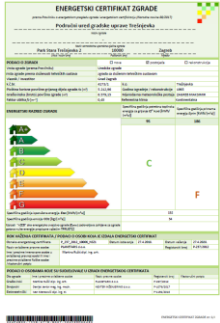


**Promotion and information** to users

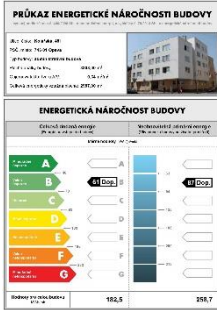
But the EPC can be much more...

# EPC IN EU (some examples)

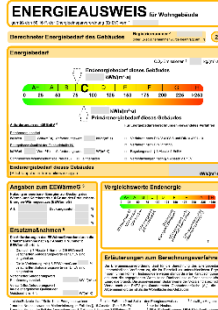
## Different designs of EPC in EU but similar content



**Croatia**  
[\(Link\)](#)



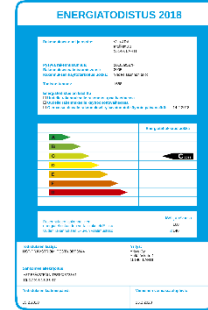
**Czech Rep.**



**Germany**  
[\(Link\)](#)



**Denmark**  
[\(Link\)](#)



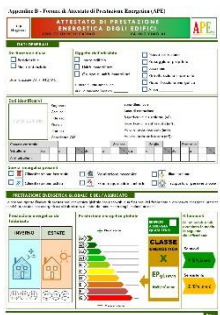
**Finland**  
[\(Link\)](#)



**Belgium(FL)**  
[\(Link\)](#)



**Greece**  
[\(Link\)](#)



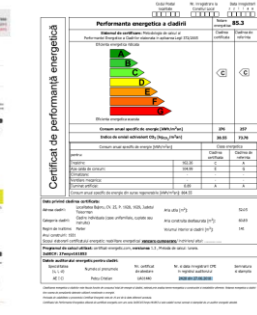
**Italy**  
[\(Link\)](#)



**Netherlands**  
[\(Link\)](#)



**Portugal**  
[\(Link\)](#)



**Romania**  
[\(Link\)](#)



**Slovakia**  
[\(Link\)](#)

### Typical content:

- ✓ Energy label;
- ✓ Energy/CO<sub>2</sub> indicators;
- ✓ Building components & systems description;
- ✓ Improvement measures;
- ✓ Complementary advisory report.



# EXPERTS ISSUING EPCs

Member States ensure that the **EPC are carried out** in an **independent manner** by **qualified and/or accredited experts**, whether **operating in a self-employed capacity** or **employed by public bodies or private enterprises**.



## Typical approach by EU countries:

- ✓ More **self-employed** than companies;
- ✓ **High degree** – Architects or Engineers;
- ✓ **Experience** in the buildings/energy sector;
- ✓ **Different profiles** according to the type of building;
- ✓ **Training** period before becoming an Expert;
- ✓ **Examination** to be qualified as an Expert;
- ✓ **Complementary training**.



Professional card in  
Portugal (2.000 experts)



# DATABASES OR REGISTERS FOR EPCs

Databases for energy performance certificates shall **allow data to be gathered** on the **measured** or **calculated energy consumption** of the buildings covered.



## Typical uses:

- ✓ **Monitor** building **stock**;
- ✓ Check buildings **compliance**;
- ✓ Support **financial** incentives
- ✓ **Research & Development**

## Portuguese EPC database structure - Residential



Geographic information

**25**  
variables



Buildings ID

**42**  
variables



Buildings characterization

**16**  
variables



Building envelope

**78**  
variables



Technical systems

**54**  
variables



Ventilation

**17**  
variables



Improvement measures

**28**  
variables



Energy Indicators

**53**  
variables

# EPC AS PART OF RENOVATION STRATEGIES

EU countries have drawn up **strategies** to show how they plan to foster **investment in the renovation of residential and commercial buildings.**

Under the revised **Energy Performance Buildings Directive** this strategies should **include:**

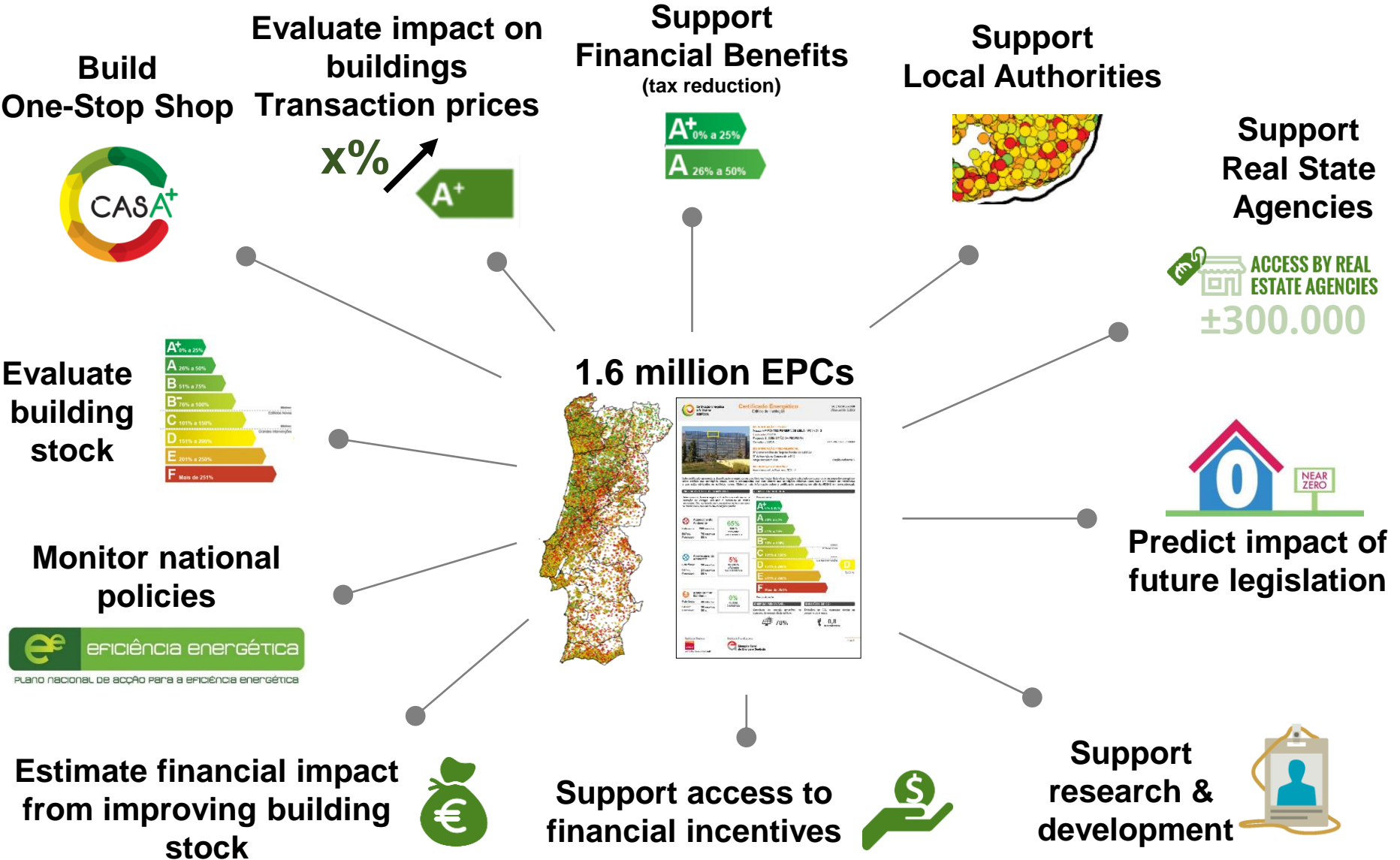
☺ Items were the EPC can play a relevant role

- ✓ An overview of the **national building stock** ☺ ;
- ✓ The identification of **cost-effective approaches** ☺ to renovation relevant to the building type and climatic zone;
- ✓ **Policies** ☺ and actions to stimulate cost-effective deep renovation of buildings;
- ✓ An evidence-based estimate of **expected energy savings** ☺ and wider benefits, such as those related to health, safety and air quality;
- ✓ Support the **mobilisation of investments** ☺ into the renovation.

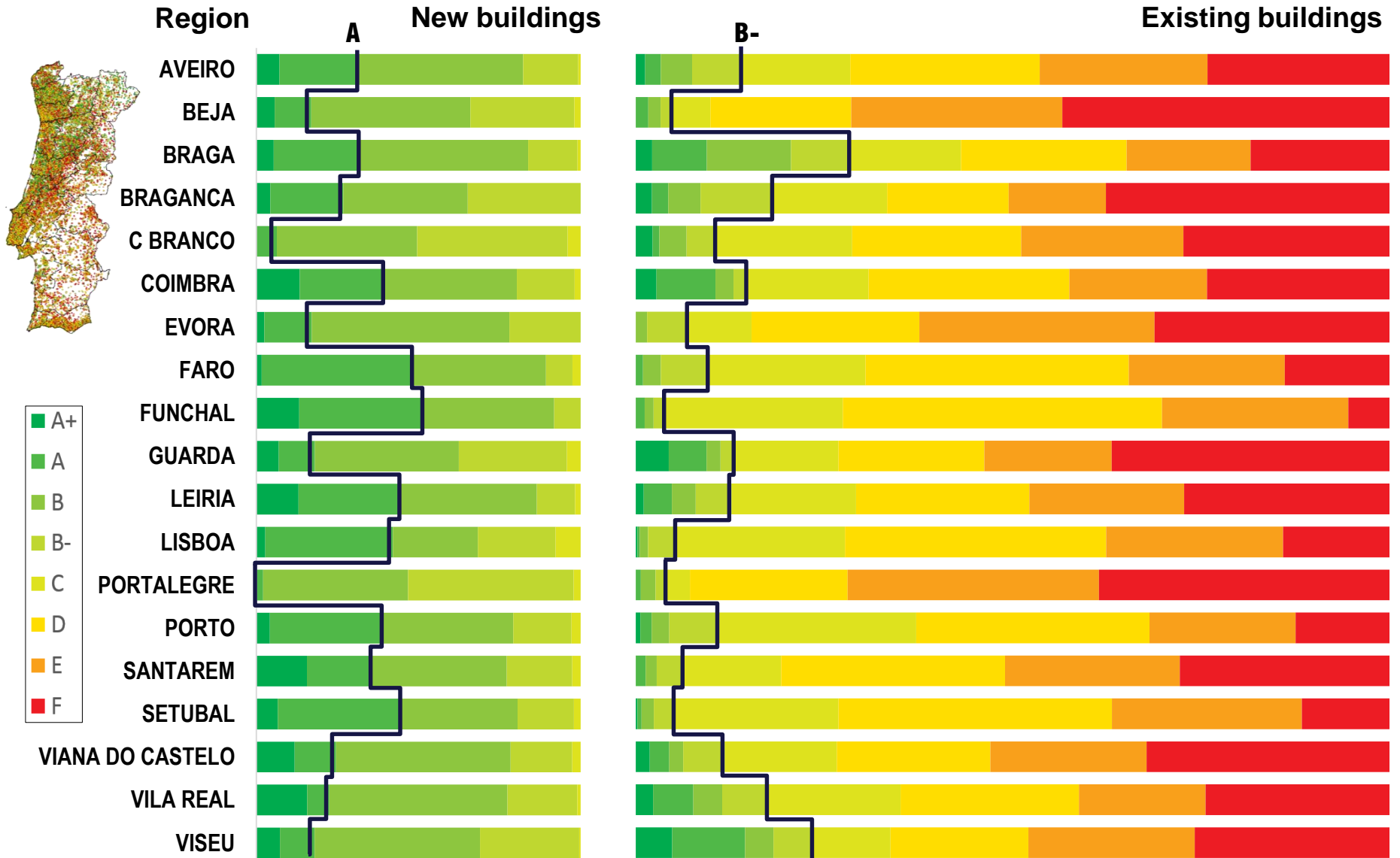
## EU Countries national building renovation strategies

<https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/buildings-under-eed>

# BEST PRACTICES USING EPCs



# Evaluate building stock



# Monitor national policies

The **EPC** is used to monitor the **National Energy Efficiency Action Plan (NEEAP)** in certain areas.

## NEEAP sectors

Transports

Buildings

Industry

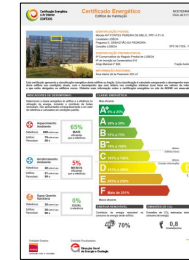
Pub. Administration

Behaviours

“Buildings Energy Performance System”

“Buildings Energy Performance System and Eco.AP”

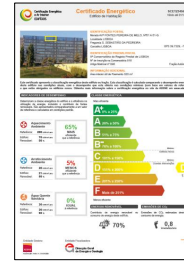
## Housing



## Solar collectors



## Energy Efficiency in the Public Administration



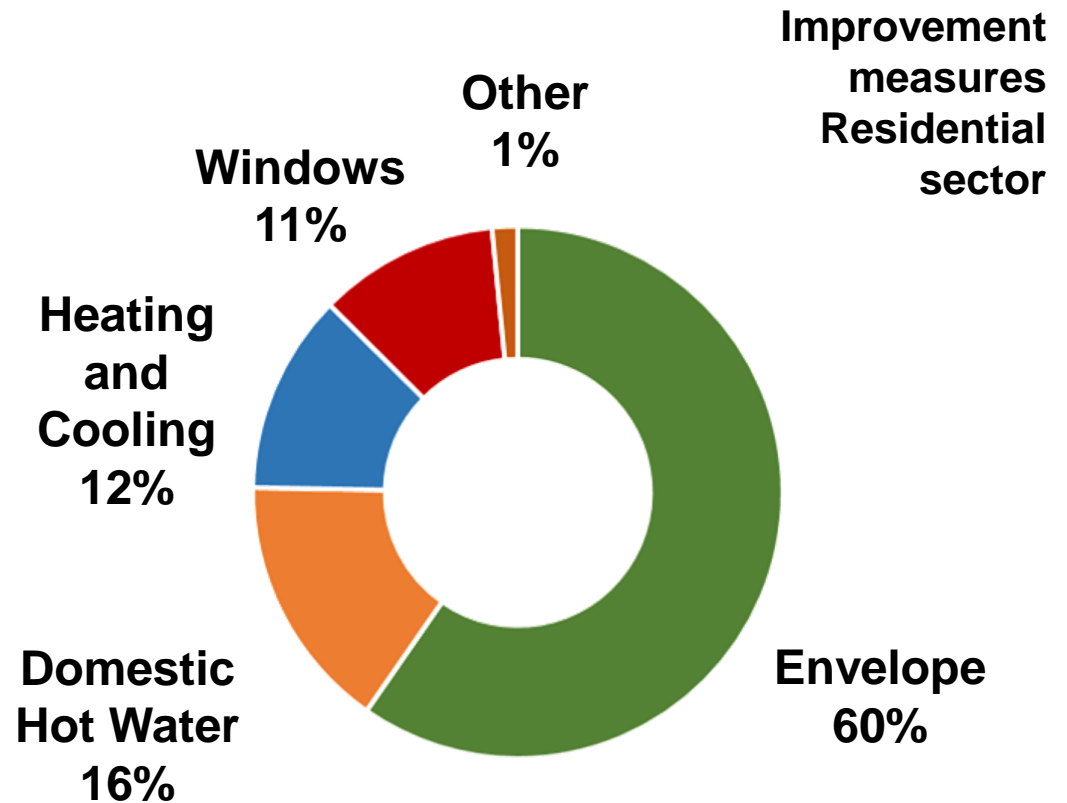
# Estimate financial impact from improving building stock

Identification and analysis of the **financial and energy impact of implementing the improvement measures** identified in the certificates.



INVESTMENT  
**€5.000 Millions**

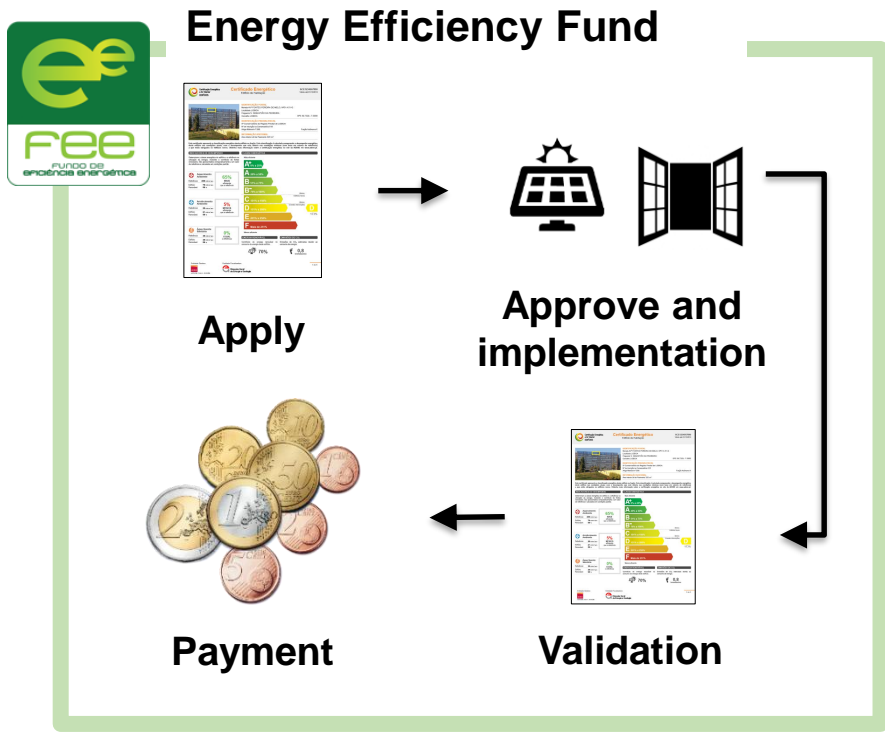
SAVINGS  
**€800 Millions**



# Support access to financial incentives

EPC is used to **assess the need** for energy rehabilitation and **validate the effective implementation**.

Examples of financial schemes:



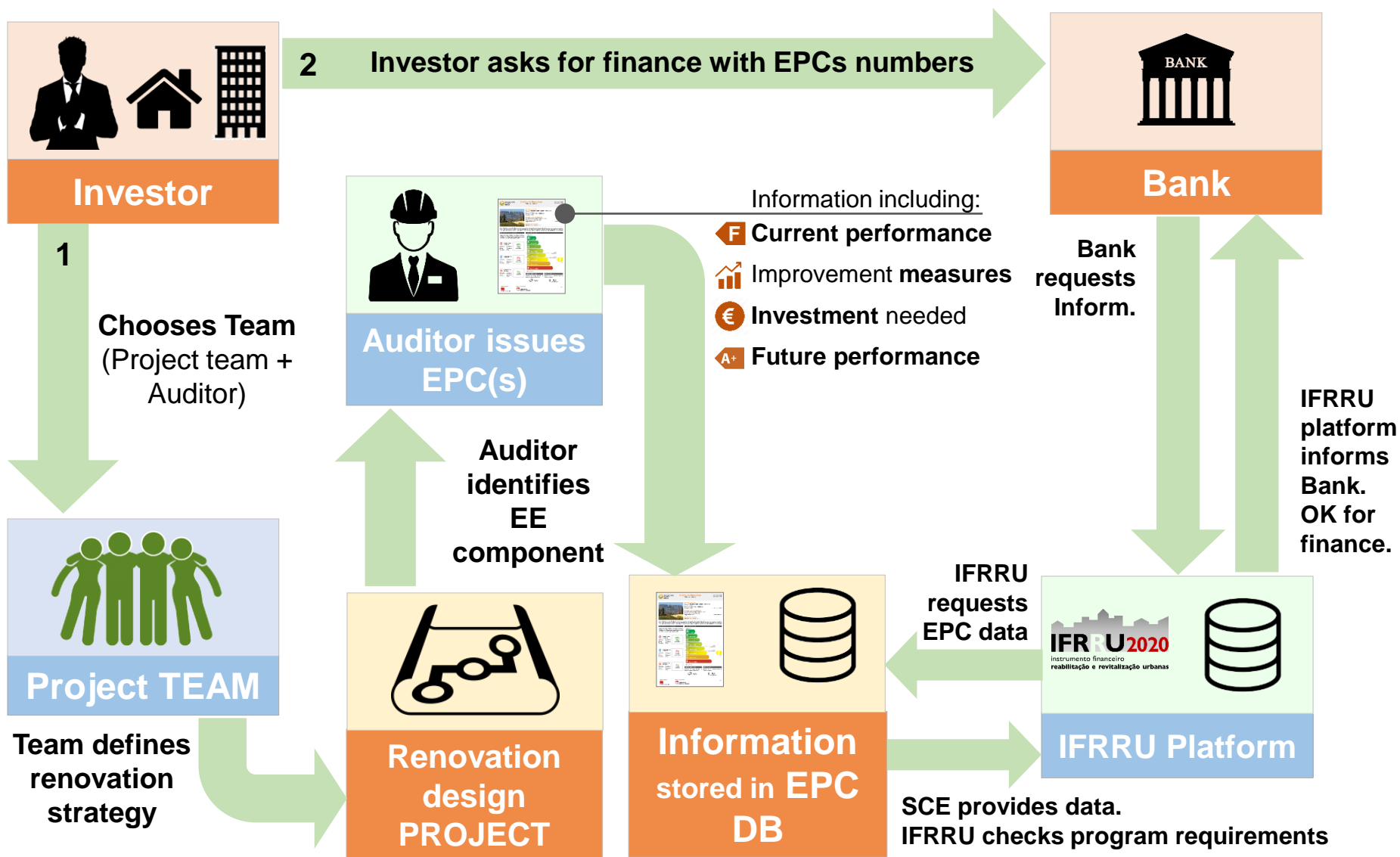
**IFRRU 2020**  
instrumento financeiro  
reabilitação e revitalização urbanas

**IFRRU 2020**

- WHICH INTERVENTIONS?**
  - **Full rehabilitation of buildings** with 30 years or more
- BUDGET**
  - **Up to 1.400 million euros**
- FINANCED MEASURES**
  - All expenses related with **buildings renovation and energy efficiency**



# IFRRU 2020 – using EPC to apply for financing



# Support research & development



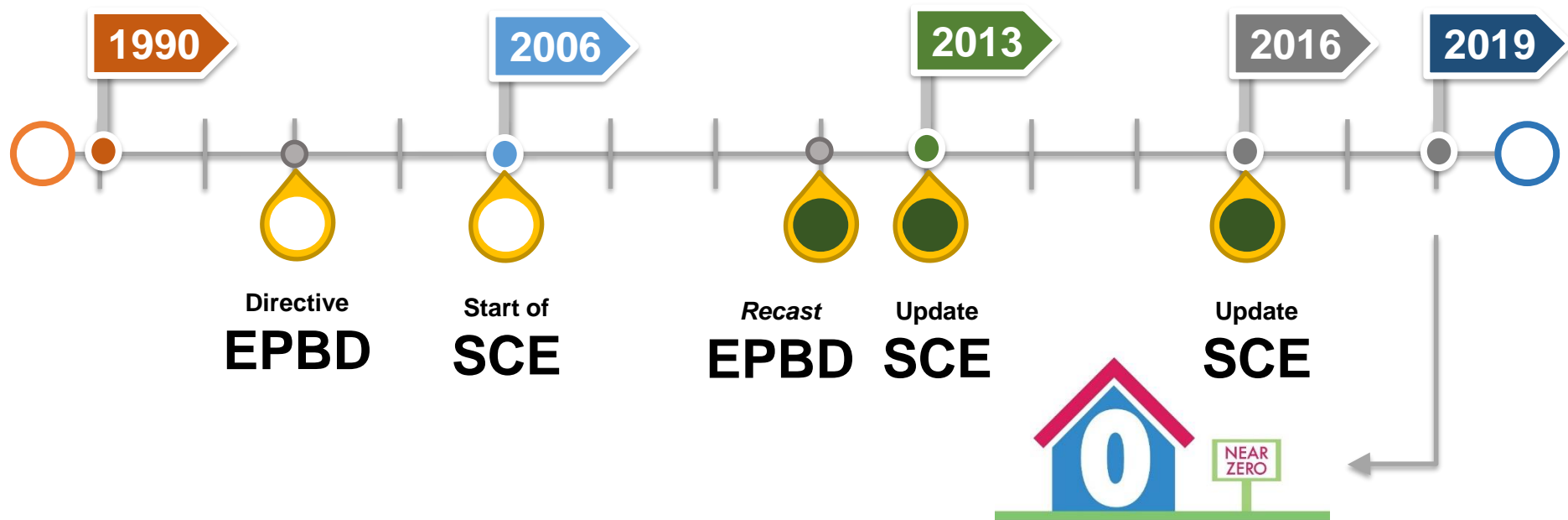
- ✓ The scientific community frequently accesses the EPC database in order to have access to information for research & development purposes.



+200 million variables

# Predict impact of future legislation

The information available in the **EPC DB** allows to **predict the impact in the evolution of energy requirements** by **providing detailed data on the housing stock** and **simulating the planned changes** in advance.



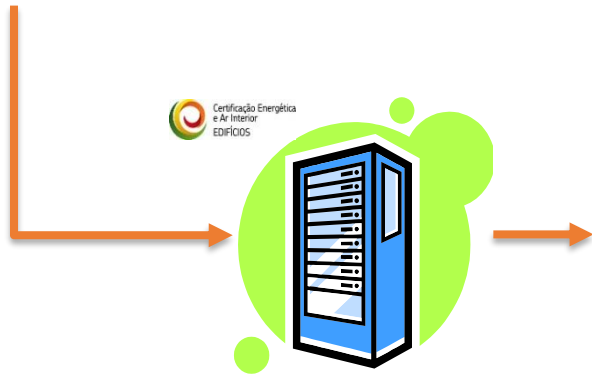
# Support Real State Agencies

- ✓ **Real State Agencies can access the EPC DB to collect and validate information** used for advertising and other purposes.

 **ACCESS BY REAL ESTATE AGENCIES**  
**± 300.000**

Certificate unique ID

Real State Agent ID



EPC number

EPC previous number

Type of EPC

EPC issue date

EPC validity date

Energy class

Energy label

SCE logo

Type of building

Qualified expert number

Qualified expert name

Postal code

Address

District

Municipality

Parish

Locality

GPS coordinates

Building registration n.º

Registration

Unit registration number

Building unit ID

Building description

Typology

Year of construction

Useful area

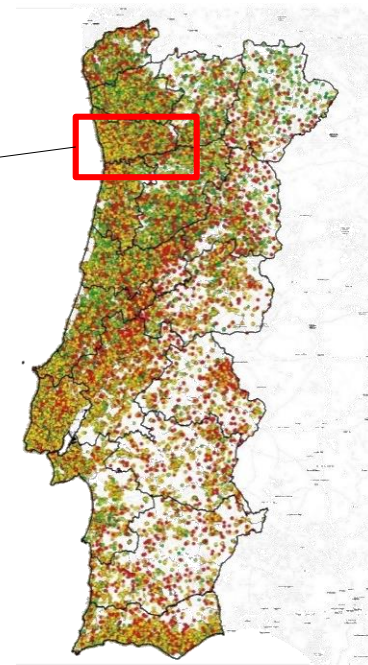
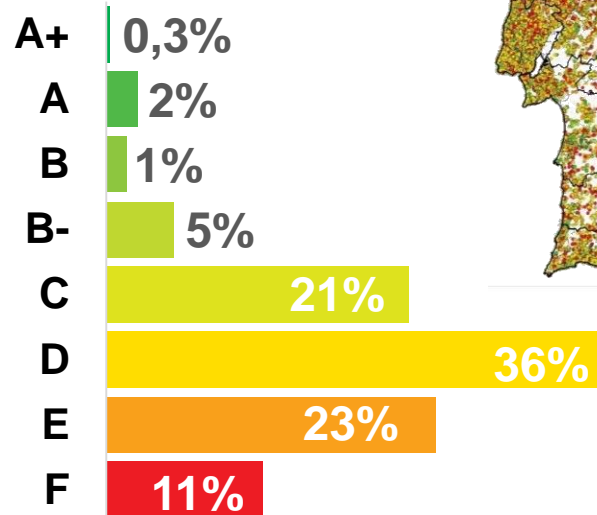
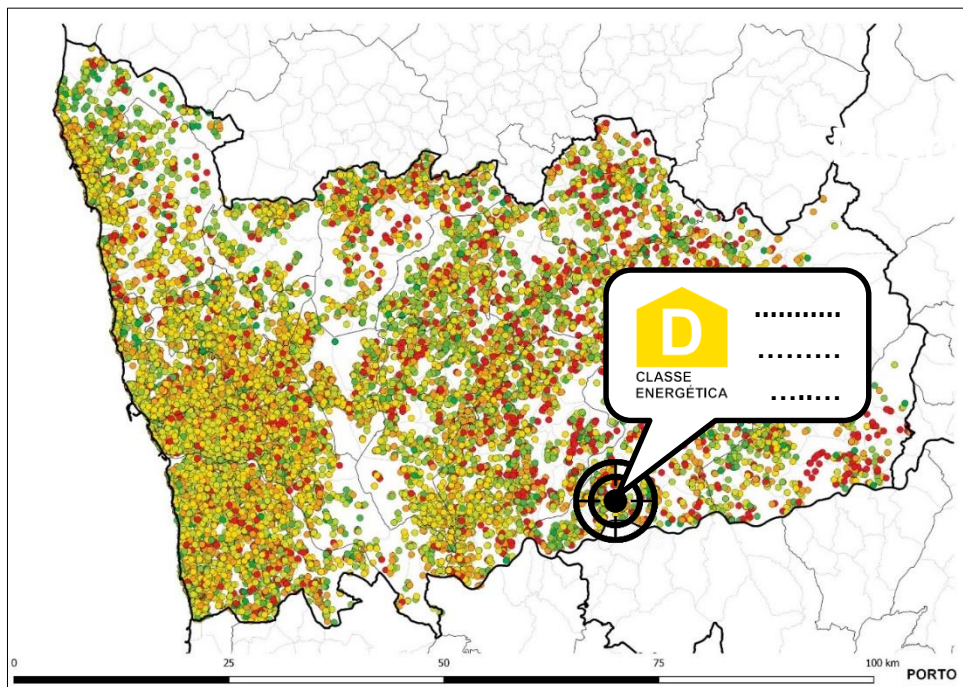
Average ceiling height

Other data



# Support Local Authorities

**Local authorities** can have **access to information** about buildings in their region and better **support policies**.



# Support Financial Benefits

Financial regime allows consumer to have access to several benefits linked with the SCE and the EPC class

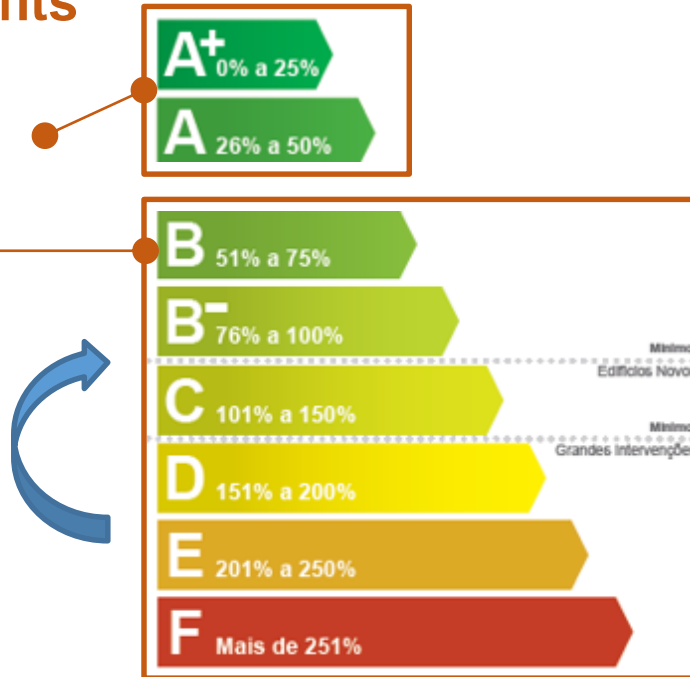
Example:

## Environmental benefits

Up to 25 % reduction in the buildings local taxation

Up to 25 % reduction in the buildings local taxation for renovations improving 2 classes

(duration of 5 years)



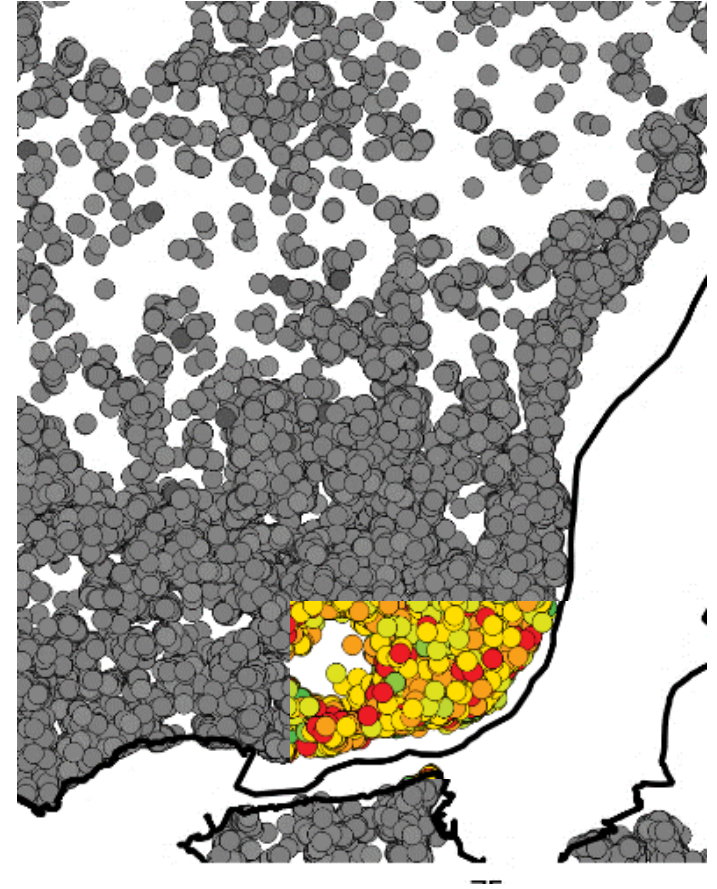
## Building renovation

Buildings local taxation exempt for 3 years

Buildings transaction exempt (if you buy a building and improve it in the next 3 years)  
(A+/A or improve 2 classes)



# Evaluate impact on buildings transaction prices



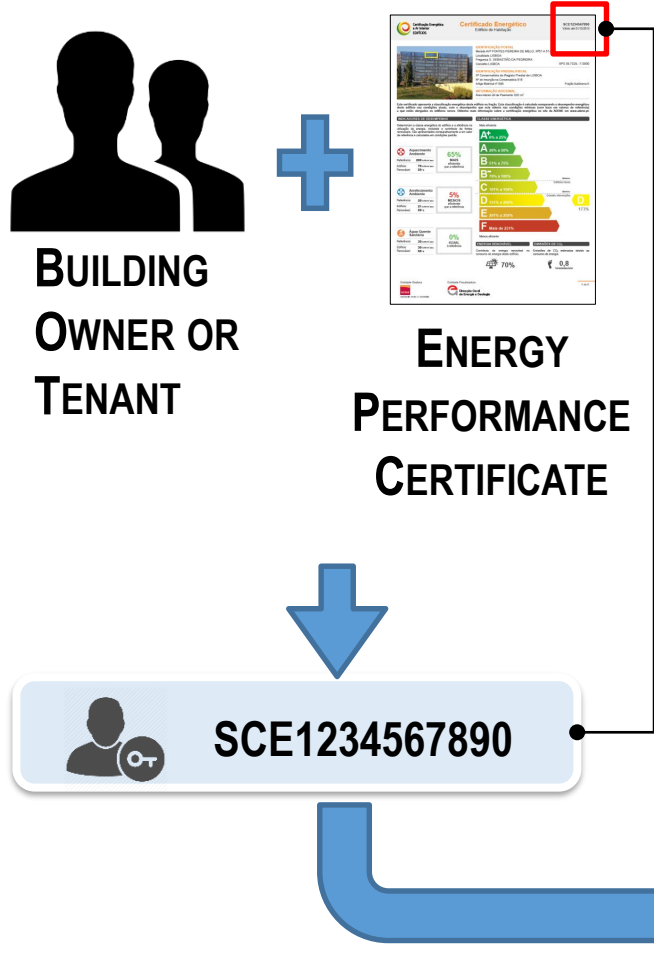
**Transaction prices in the historical center of Lisbon**  
according to classes of energy performance certificates by sqm  
(2015) Source: Confidencial Imobiliário

**Additional information** about the **impact** on the real estate market and **house prices** can be found in:

- [https://www.notaires.fr/sites/default/files/CP\\_Valeur%20Verte%20Logement%202016%20-%202017\\_0.pdf](https://www.notaires.fr/sites/default/files/CP_Valeur%20Verte%20Logement%202016%20-%202017_0.pdf)
- [https://ec.europa.eu/energy/sites/ener/files/documents/20130619-energy\\_performance\\_certificates\\_in\\_buildings.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/20130619-energy_performance_certificates_in_buildings.pdf)



# Build One-Stop Shops for Energy Efficiency



A way to connect demand and supply sides

**CASA+** SCE1234567890

- MY HOME** (House icon)
- MY EXPERT** (Person icon)
- MY MUNICIPALITY** (Building icon)
- BUILDINGS ENVELOPE** (Window icon)
- TECHNICAL SYSTEMS AND MAINTENANCE** (Lightbulb icon)
- LIGHTING AND APPLIANCES** (Lightbulb icon) **A+**
- MONITORING ENERGY WATER** (Monitor icon)
- IMPROVEMENT MEASURES** (Bar chart icon)
- ACCESS TO MARKET** (Person icon)
- FINANCING** (Dollar sign icon)
- INSURANCE**
- INCENTIVES**

The screenshot shows a user interface for a digital platform. At the top, there is a logo for 'CASA+' and a user ID 'SCE1234567890'. The interface is organized into three columns. The first column contains three orange boxes: 'MY HOME', 'MY EXPERT', and 'MY MUNICIPALITY'. The second column contains three green boxes: 'BUILDINGS ENVELOPE', 'TECHNICAL SYSTEMS AND MAINTENANCE', and 'LIGHTING AND APPLIANCES' (with an 'A+' rating). The third column contains five light blue boxes: 'MONITORING ENERGY WATER', 'IMPROVEMENT MEASURES', 'ACCESS TO MARKET', 'FINANCING', 'INSURANCE', and 'INCENTIVES'. Each box has a corresponding icon.

# Market impacts

After ~10 years of experience with EPC in EU the following **Market Impacts** are usually observed among different Member States (MS):



- ✓ **Information** – Buyers or renters also base their decision on the buildings performance leading to a better informed decision;
- ✓ **Compliance** – The link between the buildings minimum energy performance requirements and EPC allows better monitoring of compliance;
- ✓ **Demand for better buildings** – Investors are sensitive to the EPC and the impact of the label. Studies show that buildings with better labels sell at a higher price and faster were the others (poorer) face the opposite.
- ✓ **Real Estate Market** – An opportunity for real estate agents to differentiate their offer; Some MS impose a minimum energy label to sell or rent;
- ✓ **Monitoring** – Most MS implemented databases to collect information from EPC allowing them to draw numerous initiatives like the ones presented;

# Market impacts



- ✓ **Skills** – Some MS have developed new qualification schemes to qualify experts dealing with buildings energy performance; Better performing and more complex buildings are also pushing the skills of the construction industry, leading to the need of better training and capacitation; ([BUILDUP Skills initiative](#));
- ✓ **Finance** – Finance its at the very heart of the buildings renovations strategies; Some financial incentives are accessed and monitored base on the EPC and the information stored in DB; Amended EPBD requires MS to link their financial measures for energy efficiency improvements to the targeted or achieved energy savings were the EPC plays a role;
- ✓ **Fiscal incentives** – Taxation at national or regional level is also being implemented base on the EPC and the buildings performance;
- ✓ **Renovation Strategies** – EPC contribute to know the stock, predict impacts and draw measures to include in those strategies.

# Conclusions

- ✓ Most EU Members States (MS) faced similar **challenges implementing EPC schemes**: Accommodate **regional/national** needs; involve **stakeholders**; identify **EPC management** entity; support EPC with a **financial** model; draw a **legal framework** for EPC; train new **experts**; implement **quality control**; define **data access** and management; draw **campaigns** and information, etc;
- ✓ After a few years of EPC existence, MS (and involved stakeholders) are now **collecting the benefits** since EPCs are **contributing** at different levels to **improve the building stock** and deeply **implemented in today's policies** related with energy and buildings;
- ✓ A lot of **experience and information is available** at EU level ([CA-EPBD project](#)) and this is strong contribution to **support the development and implementation of energy efficiency** legislation for the building sector in **India**.

## **EXERGIA Energy and Environment Consultants**

Omirou Str. & Vissarionos 1, 106 72 Athens  
Tel: +30210 6996185, Fax: +30210 6996186

[www.exergia.gr](http://www.exergia.gr)

In collaboration with

## **Price Waterhouse Coopers India**

Building 10, Tower C, Floor 17th, DLF Cyber City  
Gurgaon 122002, Haryana| India  
Tel. +91 0124 3306259

[www.pwc.in](http://www.pwc.in)

## **Project official website**

<http://ace-e2.eu/>

