

**Cross testing EPCs across Europe:  
Overview of lessons learnt from crossCert**  
Norberto Fueyo, University of Zaragoza

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## What is cross testing?

- Assessing an actual building with both the EPC procedure applicable in its country and those from other countries...
- ... and learning in the process
- Easier said than done!



## Why cross testing? The multiple roles of EPCs

1

### EPCs in the real estate transactions

- “Accuracy” – Performance Gap
- Accessibility – Human centric

2

### EPCs for better living

- Recommendations for energy efficiency
- Indoor comfort (temp, air quality etc), smartness

3

### EPCs for policy making

- National level - Database quality and access at national level
- EU level - Homogeneity across countries

4

### EPCs for bringing together actions and actors (EPC as “the” linchpin)

- Building renovation passports
- Building logbooks
- One-stop shops



# EPCs are not popular

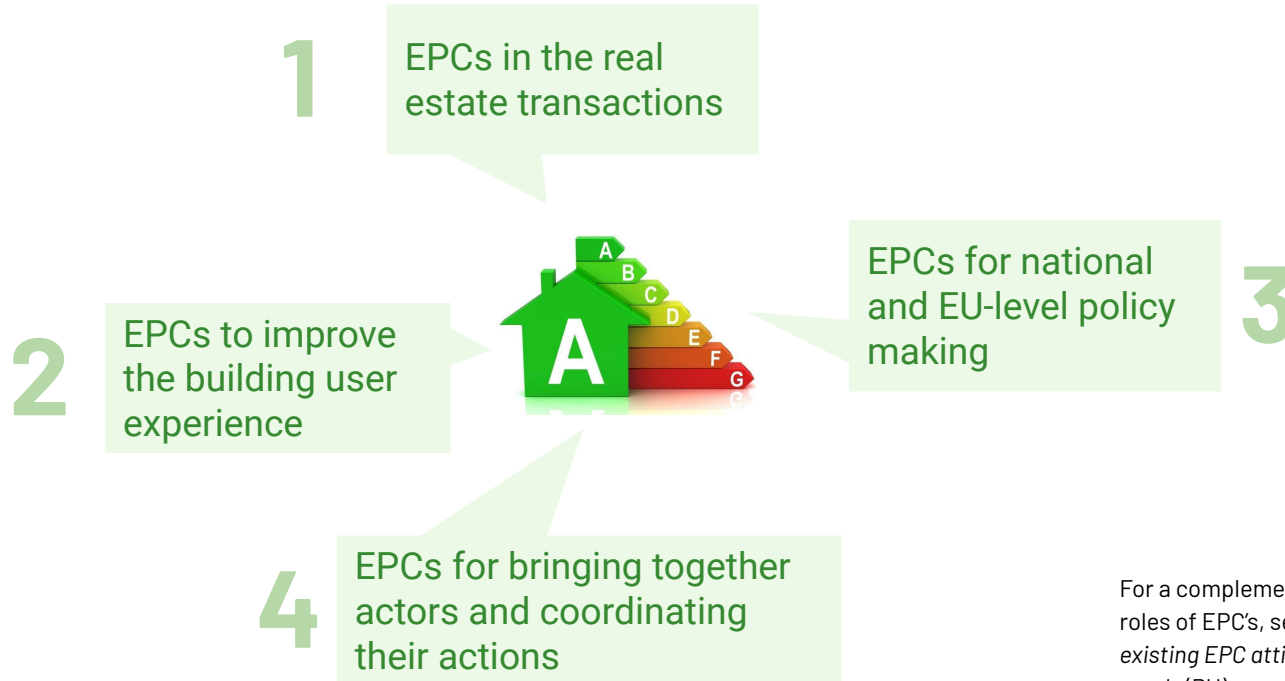


## crossCert D5.1: Report on existing EPC attitudes, expectations and needs (PU)

- EPCs usually **not understood** by building owners or tenants
- Often perceived as **not useful** (“useless bureaucracy”)
- **Not trusted**  
“Current EPCs are **not consistent with actual energy use**, which **decreased the trust** on end users in the overall approach” (REHVA 2021)
- **Not homogenised** (potentially not fair?)  
“The differences in national performance calculation methodologies and input data (e.g. primary energy factors, inclusion on non-EPBD uses) make it impossible to compare national EPC values across Europe” (REHVA 2021)
  
- EPCs are **not “popular”**; but why should they be?

## EPCs serve multiple purposes

- And some of them may be in conflict
- What are the implications for EPBD implementation and for the “Next Generation Energy Performance Certificates”?



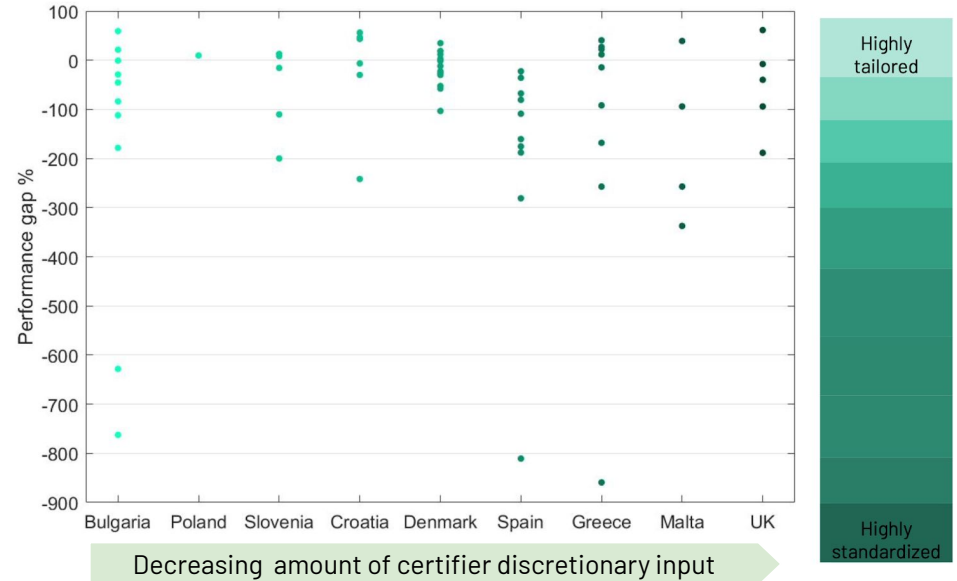
For a complementary view on the multiple roles of EPCs, see crossCert *D5.1 Report on existing EPC attitudes, expectations and needs (PU)*

# Purpose 1: EPCs in real estate transactions



Requirement	Feature
Accuracy?	"Performance gap"
Accessibility	Human centric

- There is evidence of market-value impact of building energy category (roughly about 10% value increase for good ratings)
  - But this depends on the country, of course
- crossCert's performance gap analysis indicates that EPCs are very bad predictors of energy consumption
- And gap largely uncorrelated with how much discretionary input the assessor can have in the EPC



- Sample performance gap for selected buildings in various countries (crossCert D3.2 (PU))
- Colour indicates the level of assessor's discretion

## Purpose 2: EPCs to improve the building user experience

- Current EPCs not particularly useful?

Requirement	Feature	
Save energy	■ Quantified renovation options	Perhaps the main potential contribution of current EPCs to user experience
	■ Energy use optimisation	Current and new EPBD probably not effective
	■ Integration of renewables	New EPDB useful
Improve comfort	■ Automation (SRI)	
	■ Thermal comfort	
	■ Indoor Air Quality	New EPDB useful, but not decisive?



## Purpose 3: EPCs for policy making



### crossCert research

- Are current EPC methodologies “homogeneous” among countries
- See later talk by crossCert’s Prof Dave Jenkins, HWU, on “harmonisation”

### EPBD recast

- New A-G categorisation in EPBD recast
  - A category is universal
  - G is customised to the country

- (We omit other policy aspects, eg combating energy poverty, promoting social fairness)

Requirement	Feature
Drive green policies	<ul style="list-style-type: none"><li>■ Provide homogeneous, reliable data</li><li>■ Be geographically fair</li></ul>

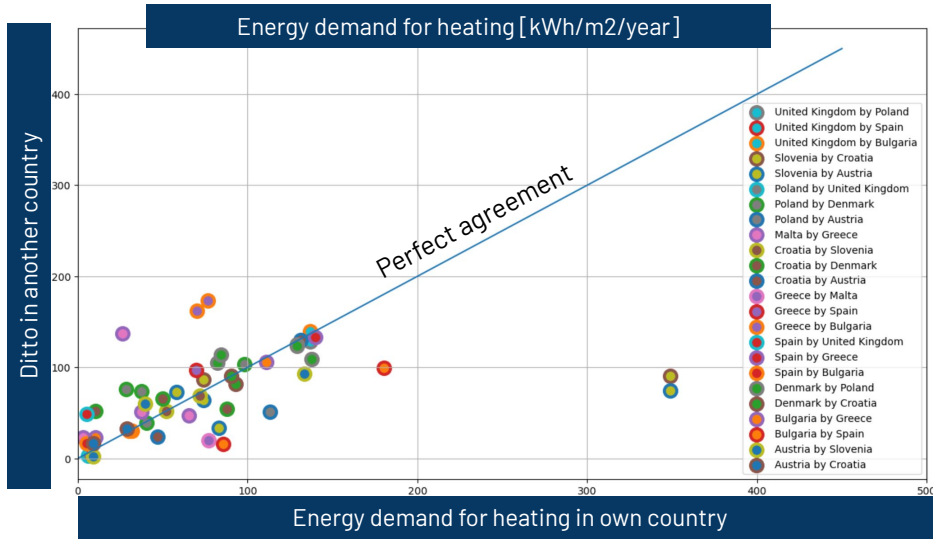


# EPCs for policy making

## Homogeneity among countries



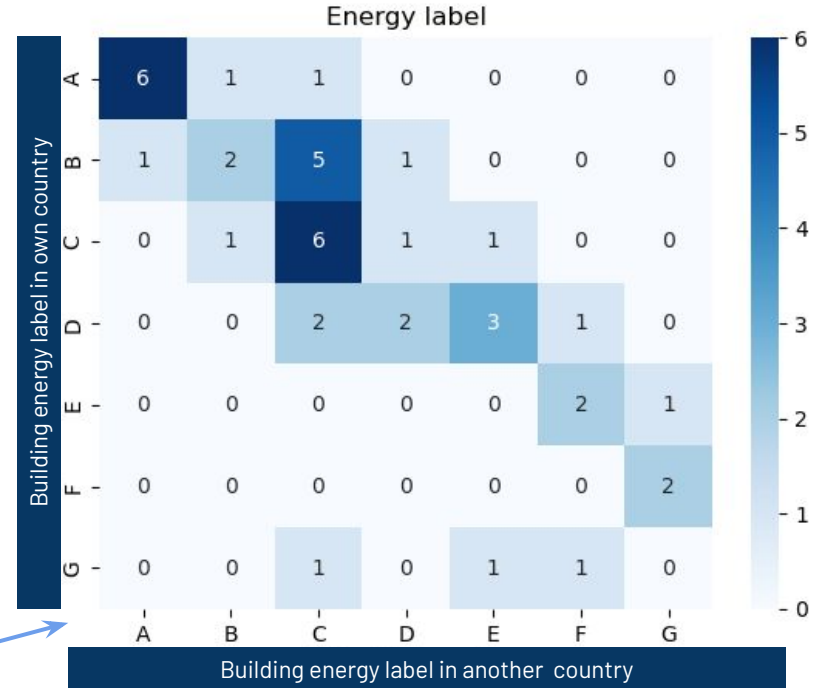
- Expected discrepancy in energy values among countries, (e.g., energy demand for heating)...



Source: crossCert Deliverable D2.5

Number of times that **different** countries assign a given label to the same building (Diagonal: perfect match)

- ...But good agreement in energy labels!



Source: crossCert Deliverable D2.5

■ **However, many caveats!**

# EPCs for policy making

## Databases are crucial, but currently imperfect



### crossCert research

- Varying degree of digitalisation and access across Europe (eg Spain vs Greece)
- Often not good enough for policy making

### EPBD recast

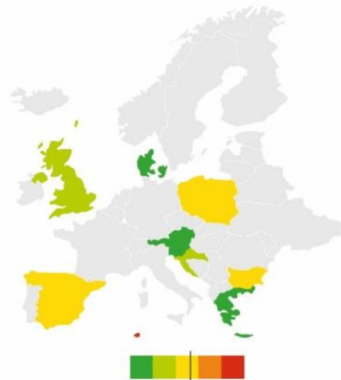
- Slightly higher requirements (EPC data to be stored with results, interoperability of databases); but it is enough?

Information logged in databases (green is better; red is worse)

Building elements

Energy indicators

Recommended measures



Database accessibility	Data extraction	Accessibility rating
Spain	Yes	100%
Poland	No	25%
Slovenia	Yes	75%
Bulgaria	Yes	100%
Greece	No	25%
Croatia	Yes	75%
Austria	Yes	50%
UK	No	50%
Malta	No	0%
Denmark	Yes	100%

## Purpose 4: EPCs as nexus among actors

Requirement	Feature
Renovation	<ul style="list-style-type: none"><li>■ Optimal renovation sequence (Building Renovation Passports)</li><li>■ Detailed energy and financial quantification</li><li>■ Financing</li></ul>
Energy communities	<ul style="list-style-type: none"><li>■ SRI</li><li>■ Demand and production forecasts</li></ul>

Requires accurate models, perhaps beyond EPC's

One-stop shops perhaps need models beyond EPCs

Requires accurate models, perhaps beyond EPC's

# Concluding ideas: The conflicting role of accuracy (AKA performance gap)



We probably need to distinguish between "Certificates" and "Models"

## Certificates (EPCs)

### Uses

- Informing the real estate market
- Informing owners of potential improvements
- Policy making

### Features

- Inexpensive
- Simple rather than accurate
- Geographically fair (harmonised)
- Compulsory

## Models (BIM, BEM, Digital twins)

### Uses

- Onsite energy use automation and optimisation
- Integration of renewables
- Smart homes
- Energy communities
- Detailed economic calculations (eg for financing)

### Features

- Sophisticated (numerical models)
- Accurate (kWh, €)
- Voluntary for residential sect

More accurate but more "customised"

Less accurate, but more "standardised"

## Concluding ideas

- Building energy decisions are the result of complex physics and economics...
- ... and often involve sizeable investments and disturbances



- Does one (EPC) size fit all?

- General perception that EPCs have historically failed to deliver value (to the building user)? crossCert D5.1(PU)
- But can they not be just policy instruments?

## Concluding ideas



- Building energy decisions are the result of complex physics and economics...
- ... and often involve sizeable investments and disturbances



- Does one (EPC) size fit all?

- General perception that EPC's have historically failed to deliver value (to the building user)? crossCert D5.1(PU)
- But can they not be just policy instruments?

*"Ask not what your EPC can do for you, but what you can do for your Planet"*

## Thank you!

crossCert partners are:  
AEA, Climate Alliance, CRES, ECN, ENEFFECT,  
EREN, HWU, IRI UL, KAPE, MIEMA, REGEA, UNIZAR

