



U-CERT

User-Centred Energy Performance
Assessment and Certification



Web workshop

Building Energy Performance Certificates (EPCs) for the people

30 March 2021, 12h00 – 13h30 CEST

These projects have received funding from the European Union's Horizon 2020 research and innovation programme. The European Union is not liable for any use that may be made of the information contained in this document, which is merely representing the authors' view.



Programme (approximate timings)



12h00-12h05 – **Welcome and general introduction**

by **Simona D'Oca**, Project Manager & Researcher, Huygen

12h05-12h20 – **Keynote presentation**

by **Guillaume Joly**, Sustainable Buildings Officer, The European Consumer Organisation (BEUC)

12h20-12h40 – **Perception about EPC schemes in selected EU countries**

by **Domen Bančič & Jure Vetršek**, IRI-UL

**Maike
Venjakob**

**Lukas
Kranzl**

12h40-13h28 – **Moderated panel discussion + Q&A from the audience**

Spotlight on the [Next Generation EPCertificates cluster of H2020 projects](#)

**Olivier
Greslou**

**Panagiota
Chatzipana-
giotidou**

13h28-13h30 – **Closing remarks**

by **Simona D'Oca**

**Laura
Muhr**

**Michal
Pomianowski**

U-CERT's key objectives

- Introduce a next generation of **user-centred Energy Performance Assessment and Certification Scheme** to value buildings in a holistic and cost-effective manner
- Facilitate convergence of quality and reliability, using the **EPB standards** developed under the **M/480 mandate**, presenting the national and regional choices on a comparable basis
- Encourage the development and application of holistic user-centred innovative solutions, including the **Smart Readiness of Buildings (SRI)**
- **Encourage and support end-users in decision making** (e.g. on deep renovation), nudge for better purchasing and instil trust by making visible added (building) value, using EPC's
- **Strengthening actual implementation of the EPBD** by providing and applying insights from the perspective of all involved stakeholders, facilitated and empowered by the **EPB Center**



[Simona D'Oca](#)





Keynote presentation

“How to make green and healthy housing affordable for all consumers: focus on EPCertificates”

Guillaume Joly, Sustainable Buildings Officer



30 March 2021, 12h00 – 13h30

**Building Energy Performance Certificates
for the people**



Web workshop



BEUC The European
Consumer
Organisation

The Consumer Voice in Europe

Energy Performance Certificates

How to make EPCs consumer-friendly

BEUC presentation to the Workshop U-CERT “Building EPCs for
the people”

March the 30th - 2021



BEUC – the European Consumer Organisation

- BEUC work on Energy: consumers rights in the electricity markets, extended to gas and now district heating.
- New workstream: residential retrofit and energy efficiency, decarbonisation of heating and cooling.
- Renovation wave and the Fit for 55 strategy (EED-EPBD).
- Energy Performance Certificates (EPCs) – originated in 2002 in the EPBD – feedback from BEUC Members.
- EPCs should be designed as a marketing tool, fit in a from A to Z advice and support service to consumers.

General observations from BEUC Members



- Consumers are confused by contradictory, incomplete and biased advice: easy access to information and advice is key.
- Consumers relative lack of awareness should be tackled in a consistent and a timely manner.
- As identified in the EPBD, the consumers the most in need of information on energy performance (and its cost) are prospective buyers and prospective tenants.
- The implementation at the national level is quite diverse: costs, accreditation and skills, adaptation to consumers' profile...
- If EPCs have been of some use, the general observation from our Members is that their reliability needs to be improved.

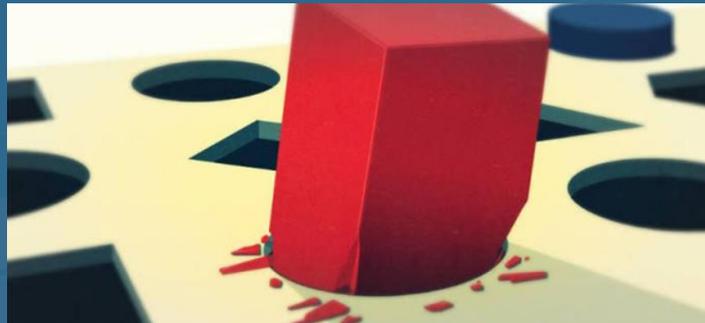
Observations from UK Member Citizens Advice

- A Citizens Advice study highlights the inconsistencies of EPCs as they can vary significantly: a research on past schemes found that different assessors gave the same property a significantly different EPC rating.
- This undermines their key purposes to help consumers to understand and make decisions to improve the performance of their homes.
- It also creates knock-on problems for policies that use EPC ratings for example as qualifying criteria or as a benchmark of success

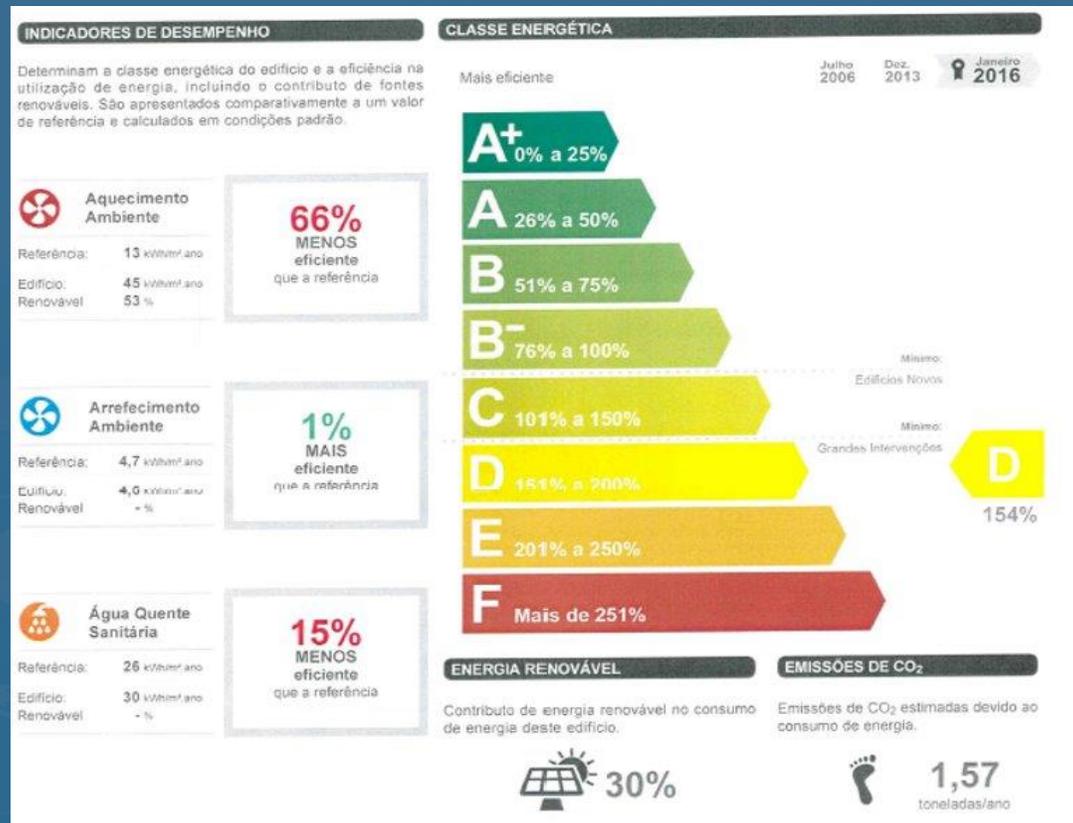


Observations from Portuguese Member DECO

- EPCs are too technical and too complicated to be easily understood by households.
- EPCs can also be inaccurate: an example of tenants in a multi-unit building suggested to install exterior insulation to the flat, when windows were single-glazing and did not lead to recommendations.
- EPCs do not properly factor in each households situation: houses, multi-unit, tenants, owner occupiers.



Observations from Portuguese Member DECO



Clear design by the use of symbols, logos, pictograms, etc.

Observations from Austrian Member Arbeiterkammer Wien

- Misleading key information for multi-unit building with a common external energy supply via district heating, for both space and water heating.
- This is especially true for water heating during summer months, where the influence of district heating is not accurately factored in.
- EPCs only consider central heating in multi-unit, so the buildings with individual heating is poorly estimated.
- District Heating is meant to expand in the EU



Observations from French Member UFC – Que Choisir

- Assessors, their training and professionalism are the key factor that explains EPCs inconsistencies.
- A study from 2017 on 7 homes and 34 EPCs concluded that none of the homes received two consistent EPCs.
- Prices vary from 90€ to 270€, without indication of improved reliability.
- Bribes were observed when EPCs are a condition to access a specific loan (i.e. 0% interest)



Observations from French Member UFC – Que Choisir

- In France, a law voted in November 2018 will come into force in July 2021 and make the EPCs legally opposable: the assessor's responsibility can then be engaged (i.e. after a control, access to loan is refused).
- UFC – Que Choisir is also supportive of:
 - New technical measures to improve the reliability,
 - Improved training and tighter accreditation of assessors,
 - Reinforcing controls.



What do Consumers actually expect as advice?

- Consumers undertake a retrofit project to improve their comfort, which is linked to healthy living conditions. Energy savings are a key component too.
- Regarding health, clear indication on summer comfort and dampness management and ventilation are needed: clear point of improvement of the methodology here.
- Consumers have different profiles:
 - Prospective buyers want to know how much they would have to invest to make the property efficient.
 - Prospective tenants want to know whether the flat of the home they intend to rent will cost a lot, or which improvements could be thought of for their landlord to be involved



What EPCs are and what they should not become

- It should become mandatory for EPCs to include two options, that combine technical and financial aspects, for EPC to be useful to different budget capacities:
- The first option is a “no brainer” one, where the return on investment is guaranteed in the short term, budget is kept low and the project covers 2 to 3 main items (compatible with an incremental logic to achieve higher performance at later steps).
- The second option is a more ambitious one, where projected efficiency gains are higher but so are the costs, with a full retrofit undertaken.



What EPCs are and what they should not become

Compared to energy audits, EPCs are not as precise and accurate. To illustrate, we can draw a comparison with hiking:

- EPCs are the short hike description in terms of the level of difficulty, length, and average timing.
- Energy audits are the topographic map, linked to a roadmap that provides step by step guidance on the road to follow, its intersections, elevation and landmarks.



EPCs are meant to remain marketing tools and should not be considered as substitutes for energy audits. Improving the reliability and content of EPCs does not and should not have to mean more technical content and significantly higher prices.

Key recommendations from the Sustainable Housing position paper

- Energy Performance Certificates (EPCs) should be less technical, easier to read and display more practical information for consumers and installers.
- EPCs should be edited, formatted, laid out and disclosed in such a way that consumers can easily understand and act upon them in a well informed and timely manner.
- EPCs should integrate information from the local market to become more accurate and more consistent so that consumers can have objective comparison ground (i.e. average costs of works)
- Consumers should be able to compare performances and average costs based on local conditions for two different scenarios that combine technical and financial aspects, for each EPCs.

Link - position papers

1. Sustainable Housing

https://www.beuc.eu/publications/beuc-x-2021-019_how_to_make_green_and_healthy_housing_affordable_for_all_consumers.pdf

2. Decarbonisation of heating and cooling

https://www.beuc.eu/publications/beuc-x-2021-017_heat_decarbonisation.pdf



Domen Bančič

U-CERT team's ethnographic research

“Perception about EPC schemes
in selected EU countries”



Jure Vetršek



30 March 2021, 12h00 – 13h30

Building Energy Performance Certificates
for the people



Web workshop

12h20 - 12h40

Perception about EPC schemes in selected EU countries

▸ Domen Bančič & Jure Vetršek



Agenda

- People-centred development – A short introduction
- Ethnographic approach – U-CERT
- Key takeaways
- Discussion & next steps

Why?



ANTHROPOLOGY

Comparative study of people in different societies in order to understand what they do, want, need.

ETNOGRAPHY

Studying the behaviour, habits and practices of people in different cultures, locations and social situation to understand their way of life.

Why?



ANTHROPOLOGY

Comparative study of people in different societies in order to understand what they do, want, need.

U-CERT

Objective 2: Enhancing the new certification schemes to be more practical, reliable, understandable and desirable by a holistic and **user-centred approach**

ETHNOGRAPHY

Studying the behaviour, habits and practices of people in different cultures, locations and social situation to understand their way of life.

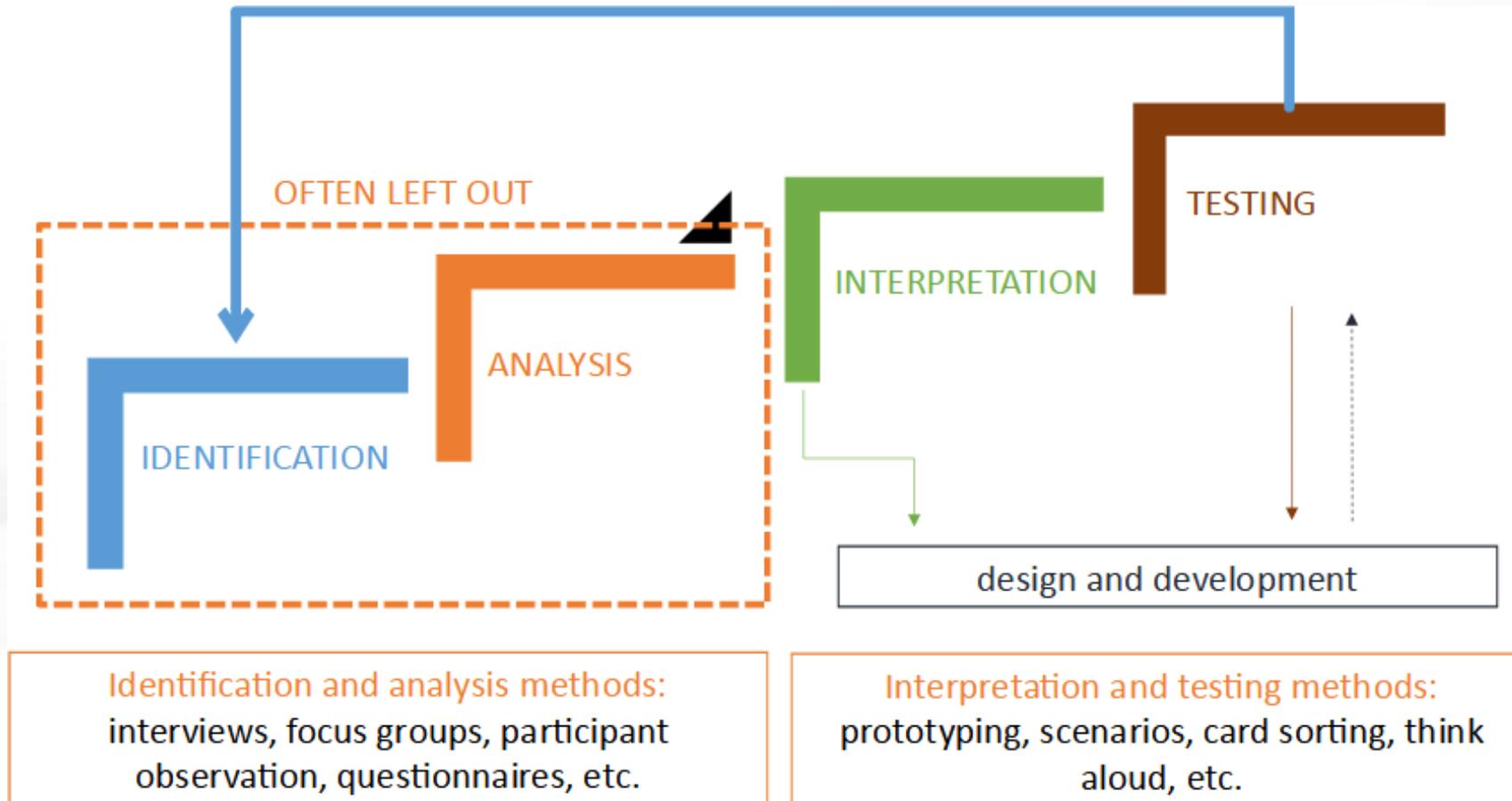
Our “hidden” agenda...

Let's change perception from
'Buildings consume energy'...



...to the fact that
'People use energy.'

People-centered development



U-CERT & people-centred development

- Applied ethnography research in an interdisciplinary environment
- Tailored research methods and analysis for deep(er) understanding of users' perception of EPC schemes.
- Identification and categorization of results for goal-oriented development of prospective U-CERT services and business models

In pursuit of (deep) understanding of EPC schemes we talked to Experts – Expert users – General users

Analysis of users' perception about EPC schemes in U-CERT countries

	Informants and participants		Semi structured interviews	Focus groups
	Total No. (No. of Experts/Users)			
BG	18	(6/12)	11	1
DK	29	(6/23)	10	2
EE	8	(8/0)	/	1
ES	16	(7/9)	12	1
FR	10	(6/4)	3	1
HU	16	(7/9)	11	1
IT	14	(7/7)	14	/
NL	10	(7/3)	9	/
RO	25	(20/5)	5	2
SI	29	(6/23)	10	2
SE	16	(8/8)	16	/
Total	191	(88/103)	101	11

On the field – with experts...

- **How could we make EPCs more useful for the people, more user-friendly?**
 - *“The practical value is for project developers, ok, not for the users. This is the purpose. /.../ Who makes buildings? It is not the users. That’s my perspective.”* (EPC scheme and guideline developer)
 - *“But tell me, how often do you look at your ID card? Except when someone requires you to. This [EPC] is really just an ID or doctor’s certificate for a building. You look at it when you have to, one that has to, not others.”* (EPC issuer)

On the field – with experts...

- **How could we make the existing EPCs better?**
 - *“I mean, it’s a shame... look... why are you opening a topic that is 10 years old in the first place?!”* (scheme and guideline developer)

On the field – with expert users...

- **What is your experience with EPCs? Are they useful?**
 - *“Our EPC... the story goes like so. We have had one made because we had to. We’ve put it up at the reception, on a visible spot, and here the story ends. Sincerely speaking. /.../ It has no functional value.”* (Building manager)
 - *“... as far as comprehensiveness [of EPCs] is concerned, individuals do not understand them. Even I, and I’m from the expertise, but I don’t really understand them.”* (Facility manager)

On the field – with general users...



On the field – with general users...

- **What do you think about EPCs?**
 - “Never seen it.” (building user)
 - Administrative necessity, bureaucratic toy, just another paper, bureaucratic quibble, ...
- Three out of four focus group participants in Slovenia have *never* take a closer look at an EPC.



getikai minőségátvitel

ablak_mua_1,6	ablak (külső, fa vagy PVC)
Hőátbocsátási tényező:	1.60 W/m ² K
Megengedett értéke:	1.15 W/m ² K
A hőátbocsátási tényező NEM MEGFELELŐ!	
Üvegezési arány:	70 %
Üvegezés g értéke:	0.783
Ejszaka társított szerkezet hőv. ellen.:	0.190 m ² K/W
Arnyékolás módja nyáron:	külső
Arnyékolás naptényezője nyáron:	0.100
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Hőátbocsátási tényező:	1.60 W/m ² K
Megengedett értéke:	1.15 W/m ² K
A hőátbocsátási tényező NEM MEGFELELŐ!	
Üvegezési arány:	50 %
Üvegezés g értéke:	0.783
Ejszaka társított szerkezet hőv. ellen.:	0.190 m ² K/W
Arnyékolás módja nyáron:	külső
Arnyékolás naptényezője nyáron:	0.100
ajtó_fa_2rtg_öv	üvegezett ajtó (külső, fa vagy PVC)
Hőátbocsátási tényező:	2.60 W/m ² K
Megengedett értéke:	1.15 W/m ² K
A hőátbocsátási tényező NEM MEGFELELŐ!	
Üvegezési arány:	50 %
Üvegezés g értéke:	0.783
Arnyékolás módja nyáron:	belső
Arnyékolás naptényezője nyáron:	0.600
ajtó_mua_1,6	üvegezett ajtó (külső, fa vagy PVC)
Hőátbocsátási tényező:	1.60 W/m ² K
Megengedett értéke:	1.15 W/m ² K
A hőátbocsátási tényező NEM MEGFELELŐ!	
Üvegezési arány:	50 %
Üvegezés g értéke:	0.783
Bájarati ajtó_lakás	ajtó (külső)
Hőátbocsátási tényező:	2.00 W/m ² K
Megengedett értéke:	1.45 W/m ² K
A hőátbocsátási tényező NEM MEGFELELŐ!	
Talajon_fekvő_padló_+0,90	padló (talajra fektetett)
Tipusa:	padló (talajra fektetett)
y méret:	1 m
Rétegtervi hőátbocsátási tényező:	1.67 W/m ² K
Megengedett értéke:	0.30 W/m ² K
A rétegtervi hőátbocsátási tényező NEM MEGFELELŐ!	
Hőátbocsátási tényező módosító tag:	10 %
Vonalmenti hőátbocsátási tényező:	1.70 W/mK
Fajlagos tömeg:	514 kg/m ²
Fajlagos hőátviteli tömeg:	367 kg/m ²
Hőátviteli tényező kívülről:	0.00 W/m ² K
Hőátviteli tényező belről:	6.00 W/m ² K
Padlószint magassága:	0.9 m

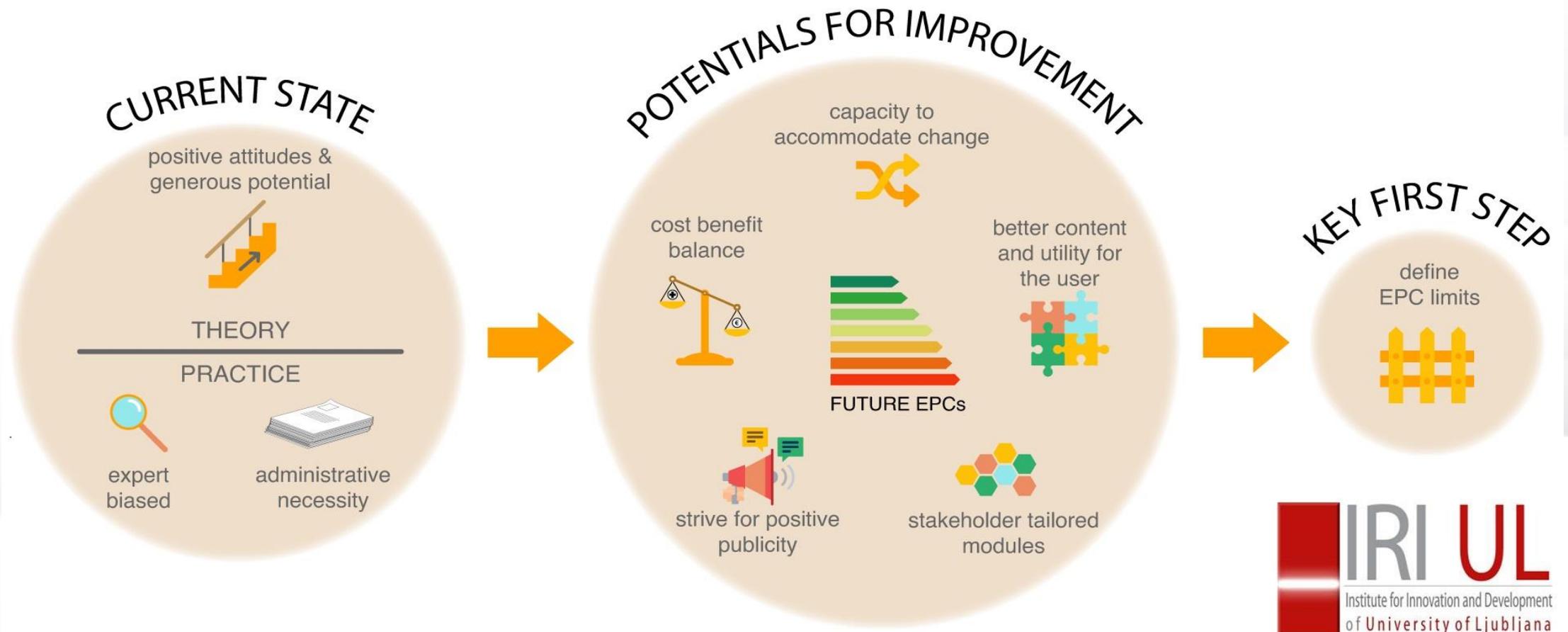
Back to the experts...

- **How could we secure “wide base support” for the EPCs?**
 - *“You issue a law and it becomes widely excepted. /.../ Or to answer the other way around, if we didn’t have it written in the [EPBD] directive, we would never have had implemented this.” (public authority rep.)*

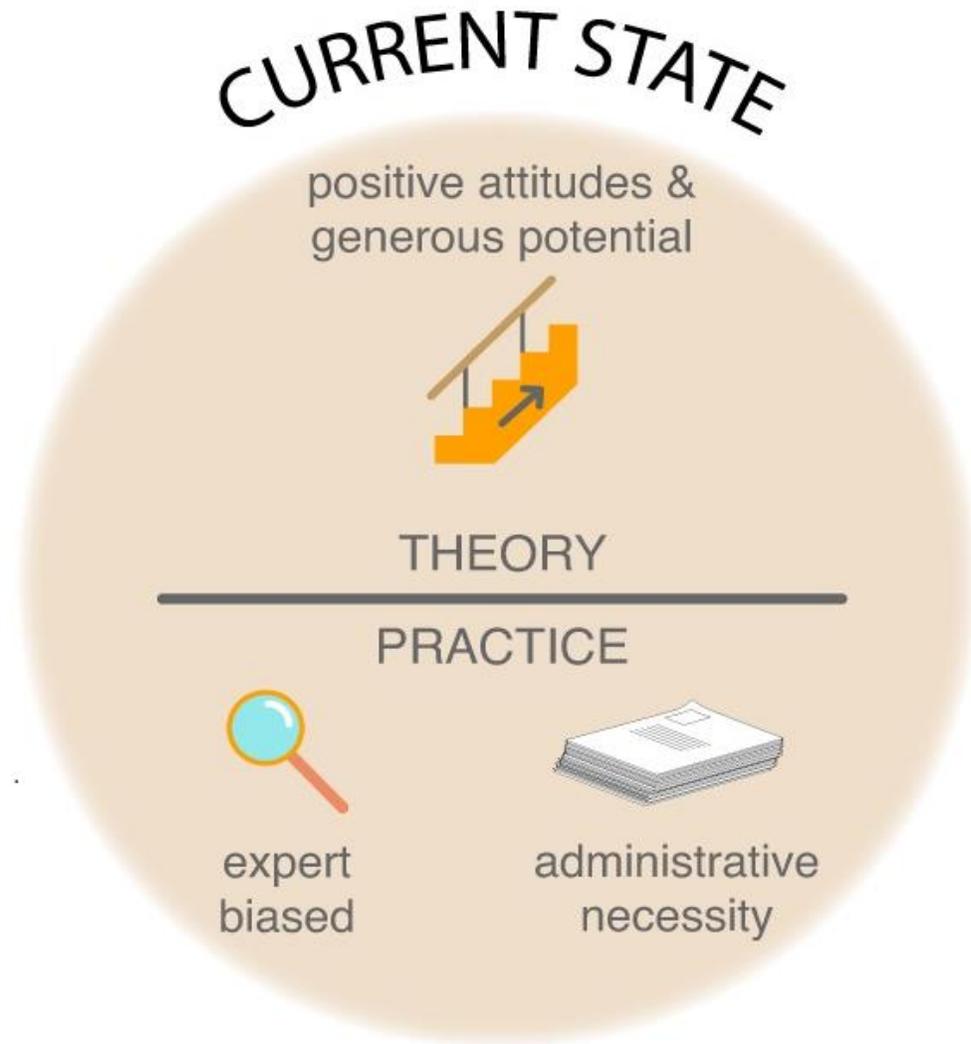
Zoom out

- Whom or what do EPCs *really* serve?
 - Experts vs. people?
 - System(s) vs. people?
- Is enforcement *really* the only way to implement the EPBD standards?
- What are we hoping to achieve?

U-CERT findings



Findings



Existing EPCs

- **Perceived purpose and value of EPCs**
 - Meaningful & useful? How and for whom?
 - *Access to XYZ* (e.g. funding, selling, ...) is a key driver.
 - Not a benchmark for quality housing.
- **Policy implementation, regulation & enforcement**
 - No/limited quality control and enforcement!
 - EPC issuers as an issue – eligibility, education, cost vs. quality etc.
 - Tensions between stakeholders & lack of constructive collaboration.
 - Public authorities and energy experts *are* supportive of development!

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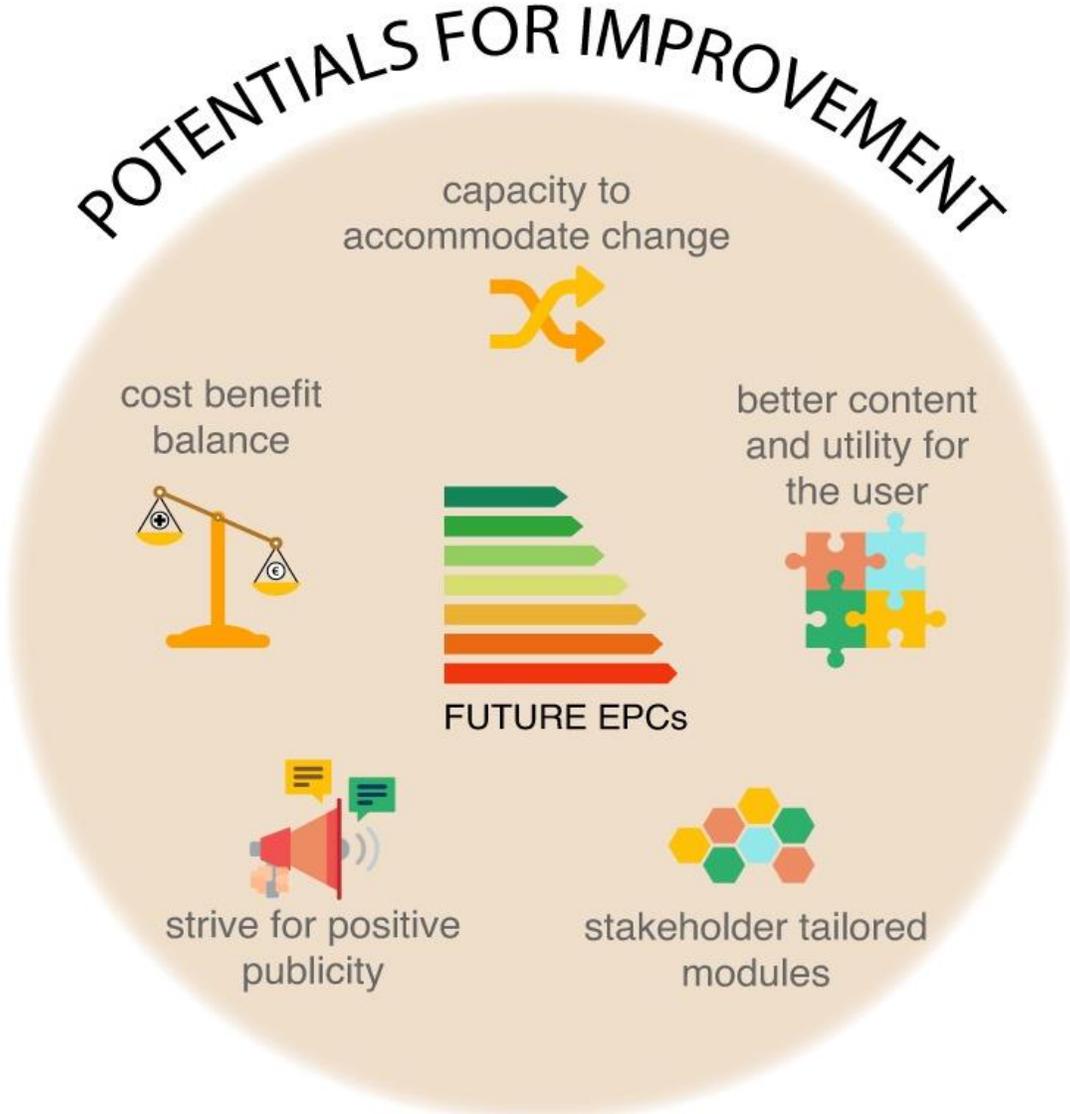
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Existing EPCs

- **People avoid action:**
 - Lack of knowledge and foresight,
 - Lack of motivation and scepticism (e.g. lack of trust),
 - Costs (money, time, energy, socio-cultural currency, ...),
 - Disruption of life and established processes,
 - Particular interests and hidden agendas, etc.

Suggestions



Future

- **Valuable & meaningful in everyday life.**
- **Integrated in the bigger picture** (limits, digitalization, content).
- **User experience and design**
 - Visual (graphic) representation,
 - Content (complexity and contextualization of data),
 - Language & terminology used,
 - Quality of (certification) services.

Future

- Make **energy** more **intuitive** -> **use of buildings**.
- Stress aspects, such as **health, safety, convenience, well-being, comfort** etc.
- **Offer several levels of complexity for a variety of user profiles.**
 - Digitalisation, modular design (tailored to the user profile) etc.
 - Enhance **human-building interaction**.
 - Enable facilitated learning progression of users.

Future

- **Efficient coordination** and **collaboration** between key **stakeholders**
- **Strong public awareness**
 - Positive promotion and publicity.
 - Designated marketing strategies and funds.
- **Practical (real life) value**
 - What makes EPCs valuable and meaningful and for whom?

Key features

Improve the design

- Enable adjustments to complexity of EPCs according to:
 - the **type of EPC users** (knowledge, needs, expectations, interests),
 - **type of buildings** (physical characteristics and built-in purpose or use) and
 - **patterns of use** (human-building interaction patterns, habits and culture of use etc.).
- Provide **clear corelations** between pieces of data and information.
- **Contextualize** energy use, energy costs and IEQ.
- **Enable *meaningful* comparison.**
- Enable more efficient **building use.**

Key features of user-centred EPCs?

Make EPCs a starting point (roadmap) of maintenance and renovation;
one that...

- **triggers** the decision-making,
- **facilitates** renovation projects,
- **serves** as a follow-up reference point for assessing interventions.

To that end...

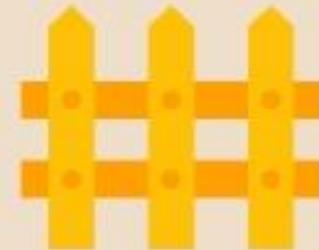
- suggest **scenarios** for typical user profiles,
- suggest viable **case-specific improvement measures**,
- provide **reliable and transparent estimation** of resources and impacts.

Back to the start...

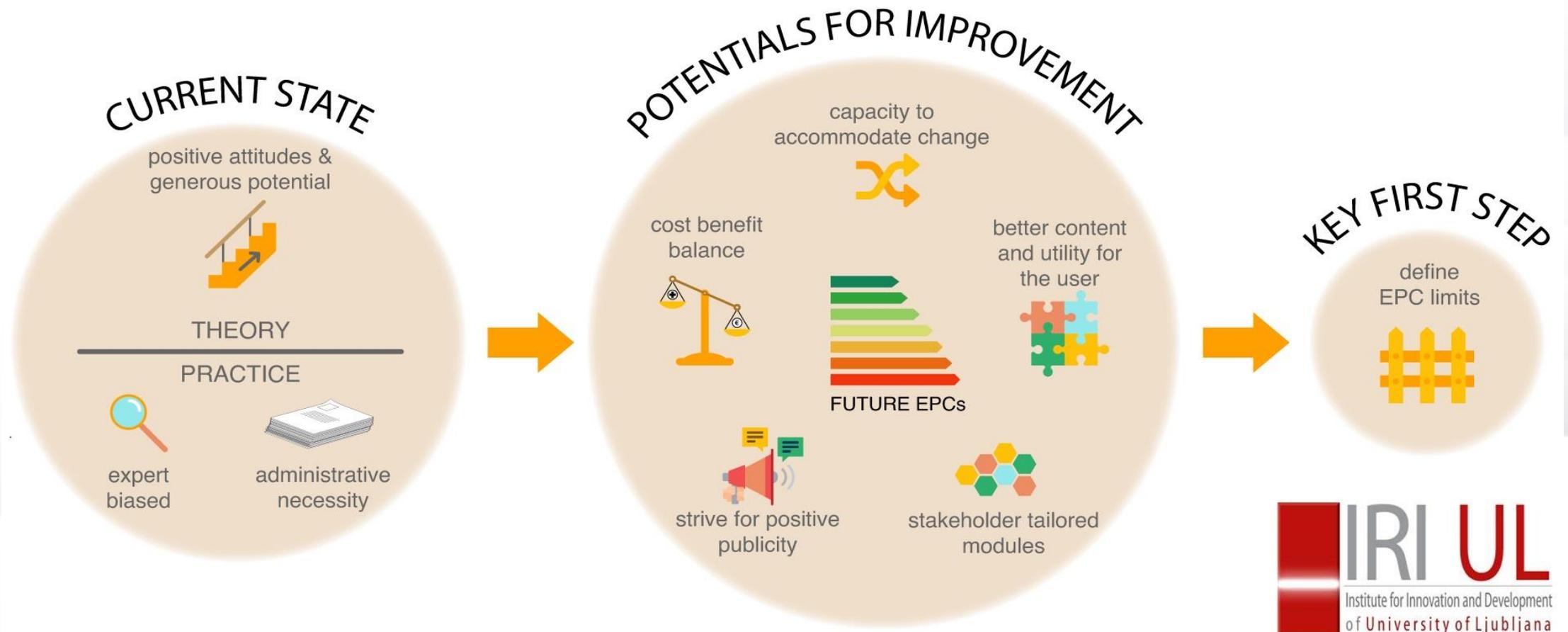
- Where are the **limits** of the EPC concept?
- How do we expect our ideas to turn into **practice**?
- Is **enforcement** through policy and regulation really the only way?

KEY FIRST STEP

define
EPC limits



Findings



THANK YOU FOR YOUR ATTENTION!

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U-CERT
User-Centred Energy Performance
Assessment and Certification





Panel discussion

Next Gen EPCertificates cluster of H2020 projects



Maïke
Venjakob



Lukas
Kranzl



Laura
Muhr



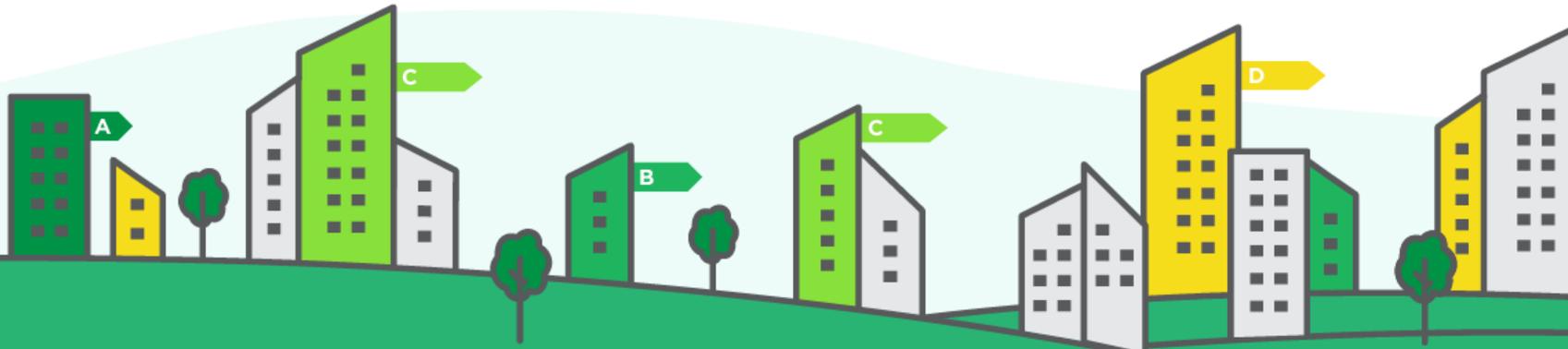
Olivier
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Chatzipanagiotidou



Michal
Pomianowski



U-CERT
User-Centred Energy Performance
Assessment and Certification

QualDeEPC High-quality Energy Performance Assessment and Certification in Europe Accelerating Deep Energy Renovation



- Enhance EPC assessment, certification, and verification regarding (1) the **quality and cross-EU convergence of EPC schemes**, including building assessment and EPC issuance, design, verification and use; (2) the **link between EPCs and deep renovation**
- QualDeEPC will stimulate such changes by (1) **intensive dialogue** involving the important stakeholders at all levels from the very beginning and (2) **disseminating** its findings among the relevant target audiences in Europe
- **7 development priorities:** 1) Improving the **recommendations** for renovation, provided on the EPCs, towards deep energy renovation, 2) **Online tool** for comparing EPC recommendations to deep energy renovation recommendations, 3) Creating **Deep Renovation Network Platforms**, 4) Regular mandatory **EPC assessor training**, 5) High **user-friendliness** of the EPC, 6) voluntary/mandatory **advertising guidelines** for EPCs, 7) Improving **compliance** with the mandatory use of EPCs in **real estate advertisements**



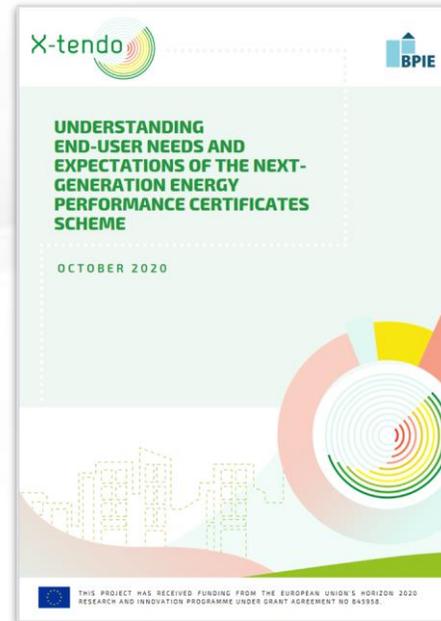
[Maïke Venjakob](#)



X-tendo eXTENDING the energy performance assessment and certification schemes via a mOdular approach



- Main objective: Support public authorities to properly implement, well manage and organise next generation EPCs



- Surveys in 5 countries (PL, PT, GR, RO, DK)
- Sample size of >500 per country, covering home owners, landlords and tenants
- Understand end-users' perception towards the development of the 10 features



Lukas Kranzl



ePANACEA Smart European Energy Performance Assessment And Certification



- The dialogue with end users and other stakeholders of the EPC through thematic workshops is a feedback loop in ePANACEA.
- Empirical research conducted until now: 63 stakeholder interviews and 6 user-needs workshops in 5 pilot countries (ES, BE, FI, AT, GR) and DE.
- **Perceptions of the EPC** ranged from “obligatory document” and “completely standardized” to “the only document mapping the as-built situation” and “policy instrument for the energy transition in the building sector” among interviewees.
- **EPC is used for:** contractual actions, not as decision-making aid: “prospective buyers of a building ask for the EEC without evaluating the actual meaning” (mechanical engineer, Greece).
- **Upcoming participatory actions in ePANACEA:** 2 rounds of user acceptance workshops with end users and other stakeholders.



Laura
Muhr



EPC RECAST Energy Performance Certificate Recast: New toolbox to assess building energy performance and retrofit needs



- **Supporting the work of EPC assessors** through innovative on-site data collection methods, use of measured data and public databases, quality check procedures and model calibration to **improve reliability** of EPCs
- Developing a full prototype of **cloud system toolbox** for EPC assessors
- Co-designing the EPC assessment process and outputs with owners and assessors with an interactive & iterative **user-centered design approach**
- Improving **renovation recommendations** in EPCs with **renovation roadmaps** and linking EPC input/output information with **digital logbooks**
- Collecting recommendations continuously from **public authorities/agencies** and **industrial stakeholders** with an advisory board and mirror group
- Exploiting the **ISO/CEN standards** under Mandate M/480 to **enhance comparability** of the EPC assessment process in partners' countries



Olivier
Greslou



D²EPC Next-generation Dynamic Digital EPCs for Enhanced Quality and User Awareness

- Introduce and establish the concept of **next generation dynamic Energy Performance Certificates** to empower the regular energy classification of buildings and allow for an EU-wide deployment
- Enable **enhanced multi-parameter assessment by the inclusion of new indicators** (energy, smart readiness-SRI, sustainability, human comfort, financial) to facilitate the understanding of buildings energy performance
- Introduce **BIM-based Digital Twins coupled with a state-of-the-art IoT ecosystem** for the near-real time asset and operational energy assessment of the building
- Provide **improved AI-driven assessment recommendations** towards energy efficiency and optimal comfort and foster energy saving consciousness
- Integrate **geolocation and “polluter pays” practices** into the EPC rationale and turn EPCs registries into policy feeding mechanisms



Panagiota

Chatzipanagiotidou



E-DYCE Energy flexible DYNamic building Certification: Greater temporal resolution of energy performance

- To deliver a **methodology for dynamic certification** of buildings based on openly available resources and tools.
- Provide the user with **accurate and clear feedback**, increasing the user's awareness of building operation; user must obtain the information in a clear and concise way, **at the right time to make the interventions** (tenants, owners, the authorities).
- The savings will be achieved through optimizing building performance in a dynamic way, exploiting to the fullest the **free running potential** of the building and **informing the user** so the correct interventions can be made.
- Upcoming action is related to installation of monitoring equipment in **demonstration buildings**: user acceptance, barriers and understanding the purpose of monitoring indoor environment and energy.



**Michal
Pomianowski**



30 March 2021, 12h00 – 13h30, web workshop

Building Energy Performance Certificates for the people



Guillaume
Joly



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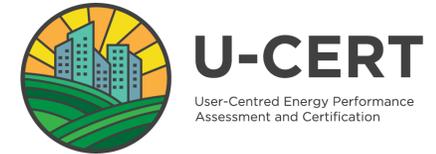
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Simona
D'Oca



Domen
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