



ZeroCO2 Buildings in the Light of the New 2018 EPBD

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Introduction

- ▶ The recent amendments [2018/844] to the Energy Performance of Buildings Directive (EPBD) [2010/31/EU] set a clear direction for the full decarbonization of the European building stock by 2050.
- ▶ Every Member State must transpose it into national law by 10 March 2020.

Note : The information and some illustrations pertaining to the changes and updates in the new 2018 directive have been primarily taken from “A GUIDE TO IMPLEMENT THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (2018/844)” by BPIE



Main changes and updates

- ▶ Requirements to define cost-optimal and NZEB energy performance requirements have remained the same.
- ▶ Updates of several key topics:
 1. Long-Term Renovation Strategies (Article 2a)
 2. Mobilizing Investment in Renovation (Article 2a, 10)
 3. Energy Performance Certificates and Building Renovation Passports (Articles 10, 19, 19a, 20)
 4. Smart Readiness Indicator (Article 8, Annex IA)
 5. Calculating Energy Performance (Annex I)
 6. Charging Infrastructure for E-Mobility
 7. Technical Building Systems



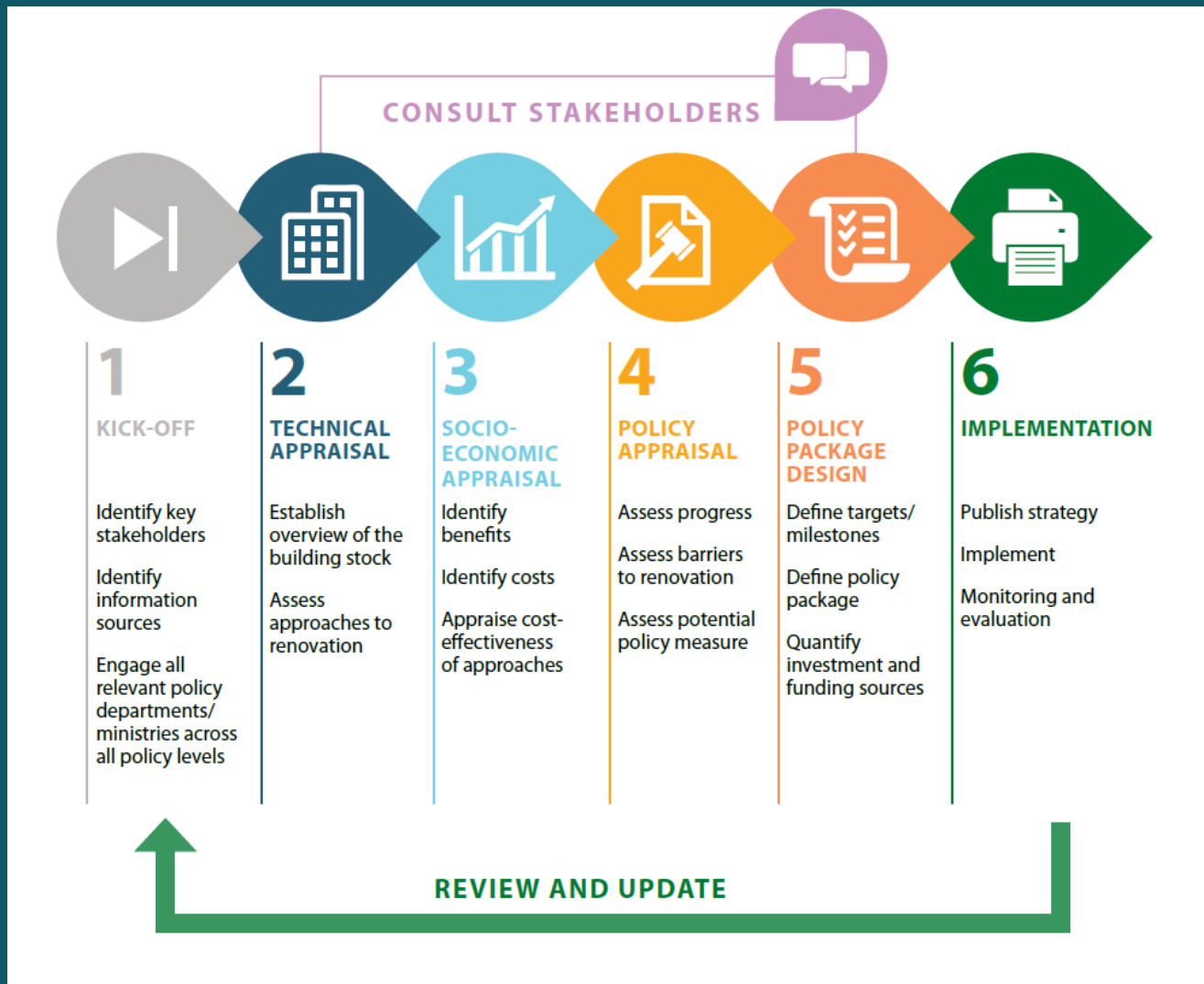
1. Long Term Renovation Strategies



Renovation strategy structure (Ref. BPIE)

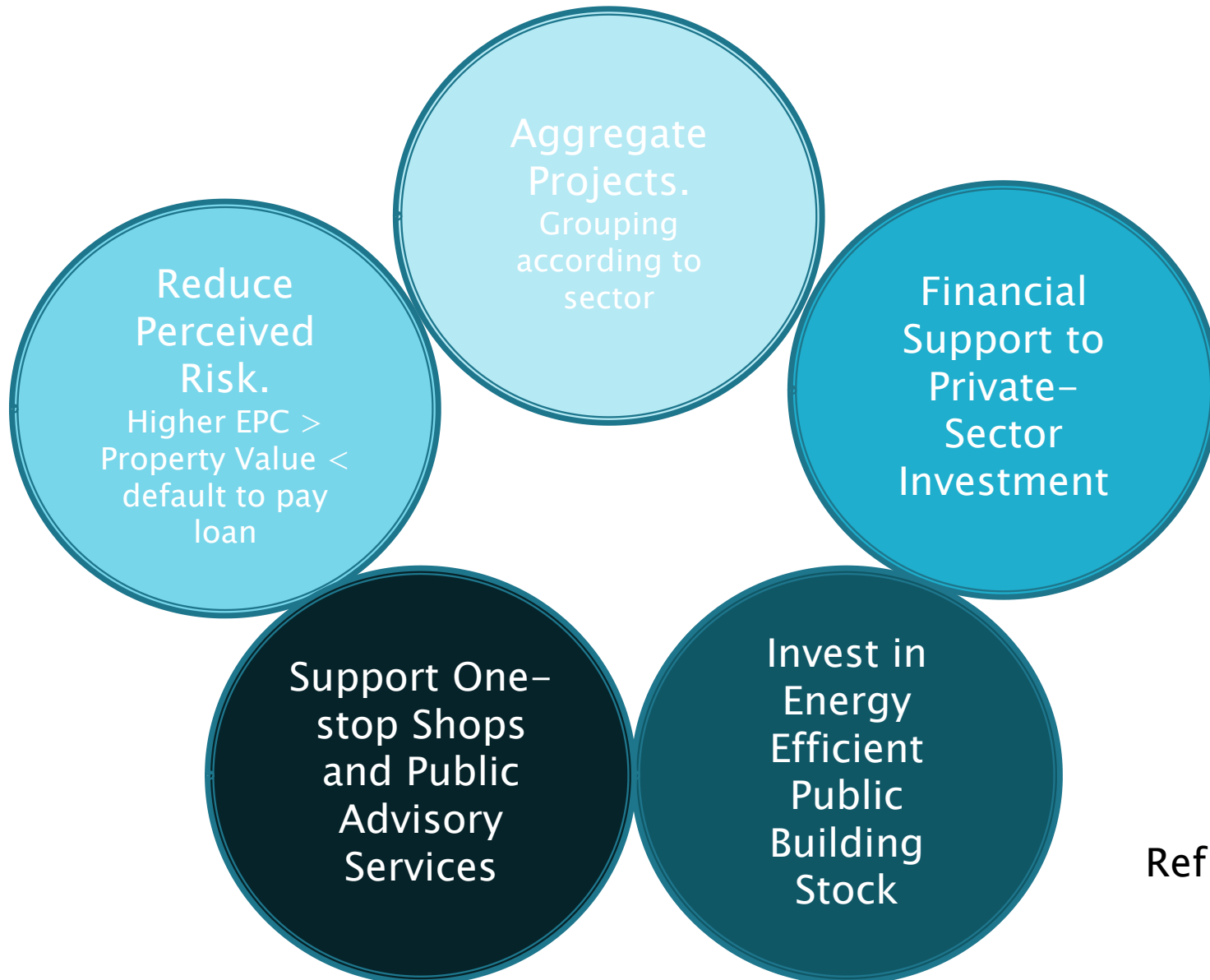


Phases of developing a renovation strategy



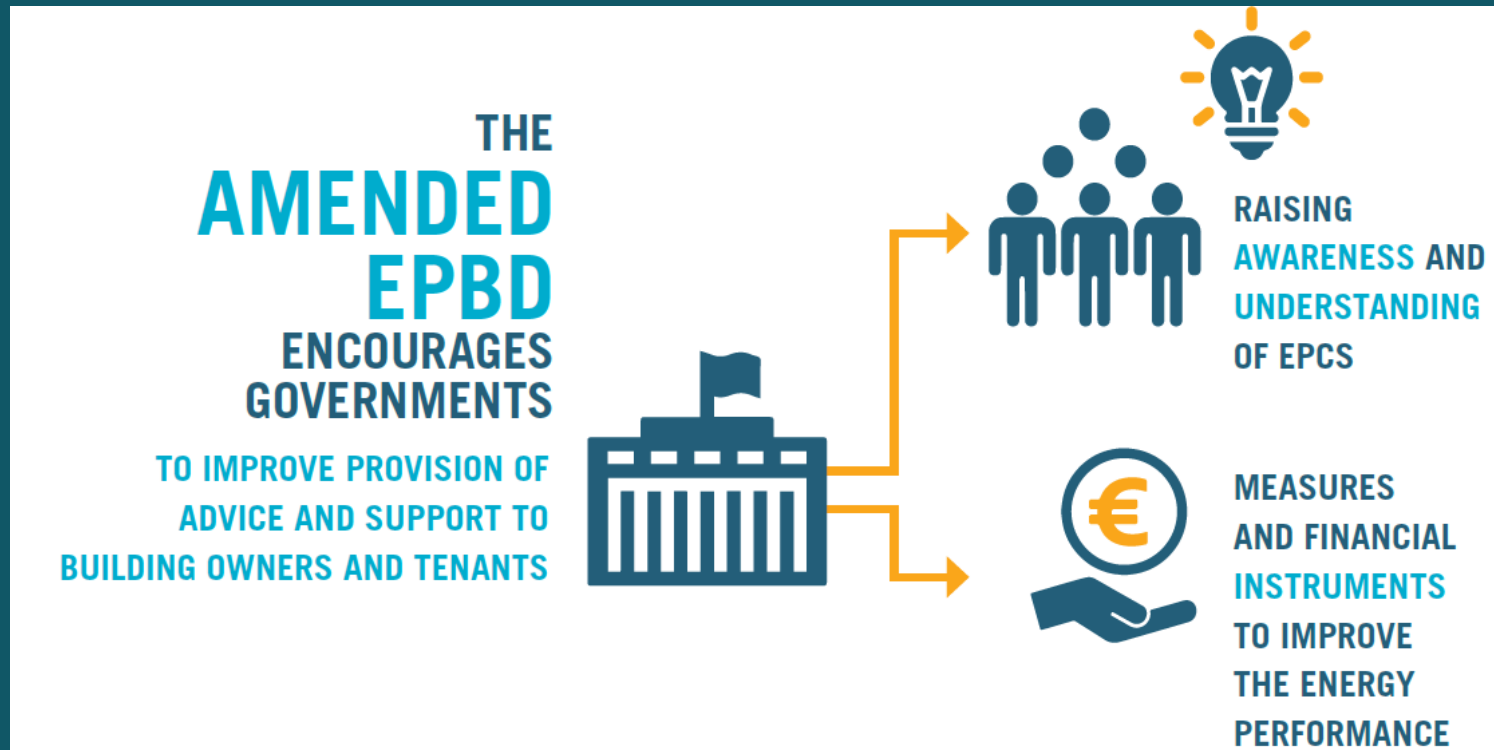
Phases of developing a Renovation strategy (Ref: BPIE)

2. Mobilizing Investment in Renovation



Ref: BPIE

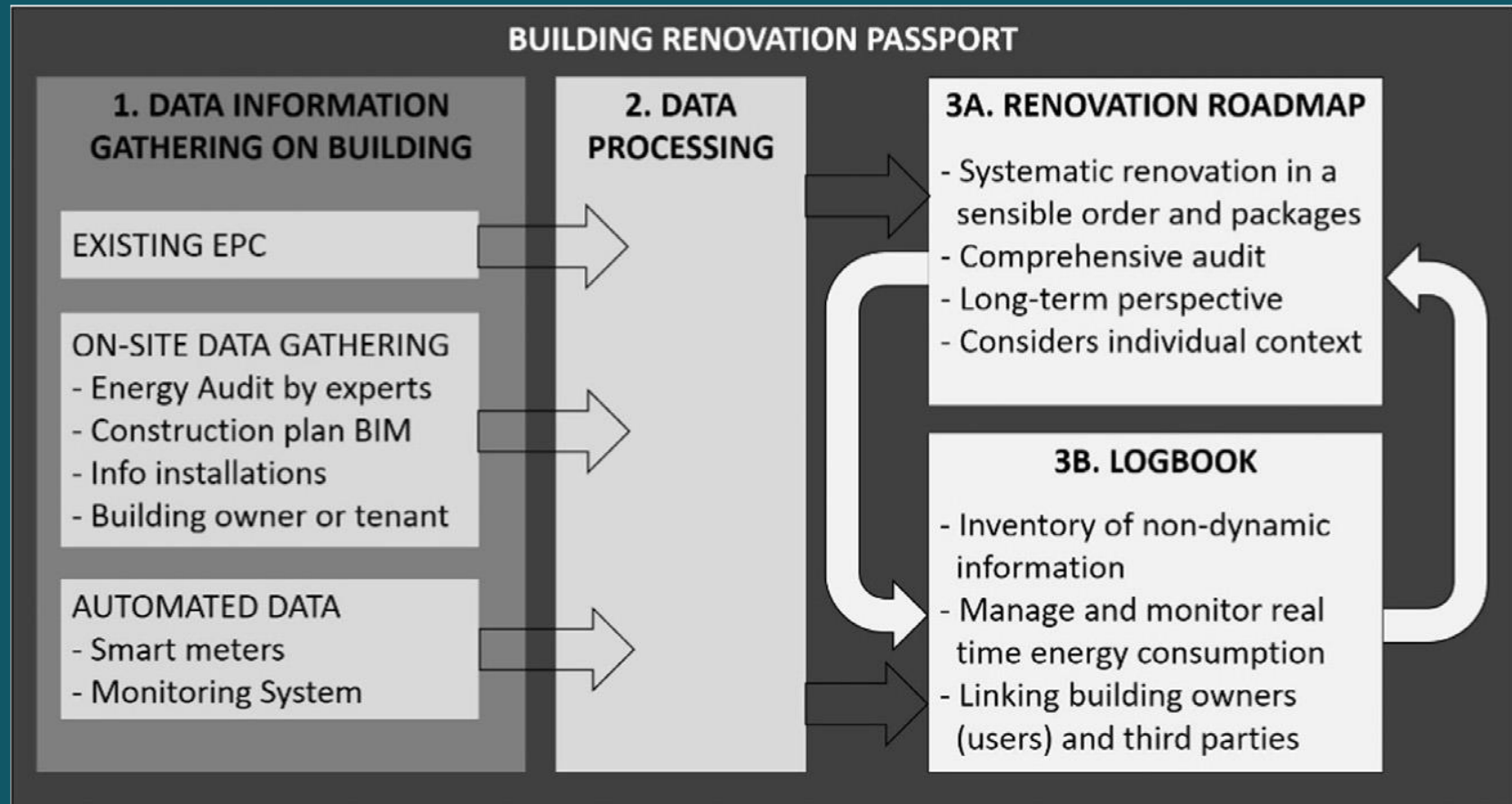
3. Energy Performance Certificates and Building Renovation Passports



Ref: BPIE

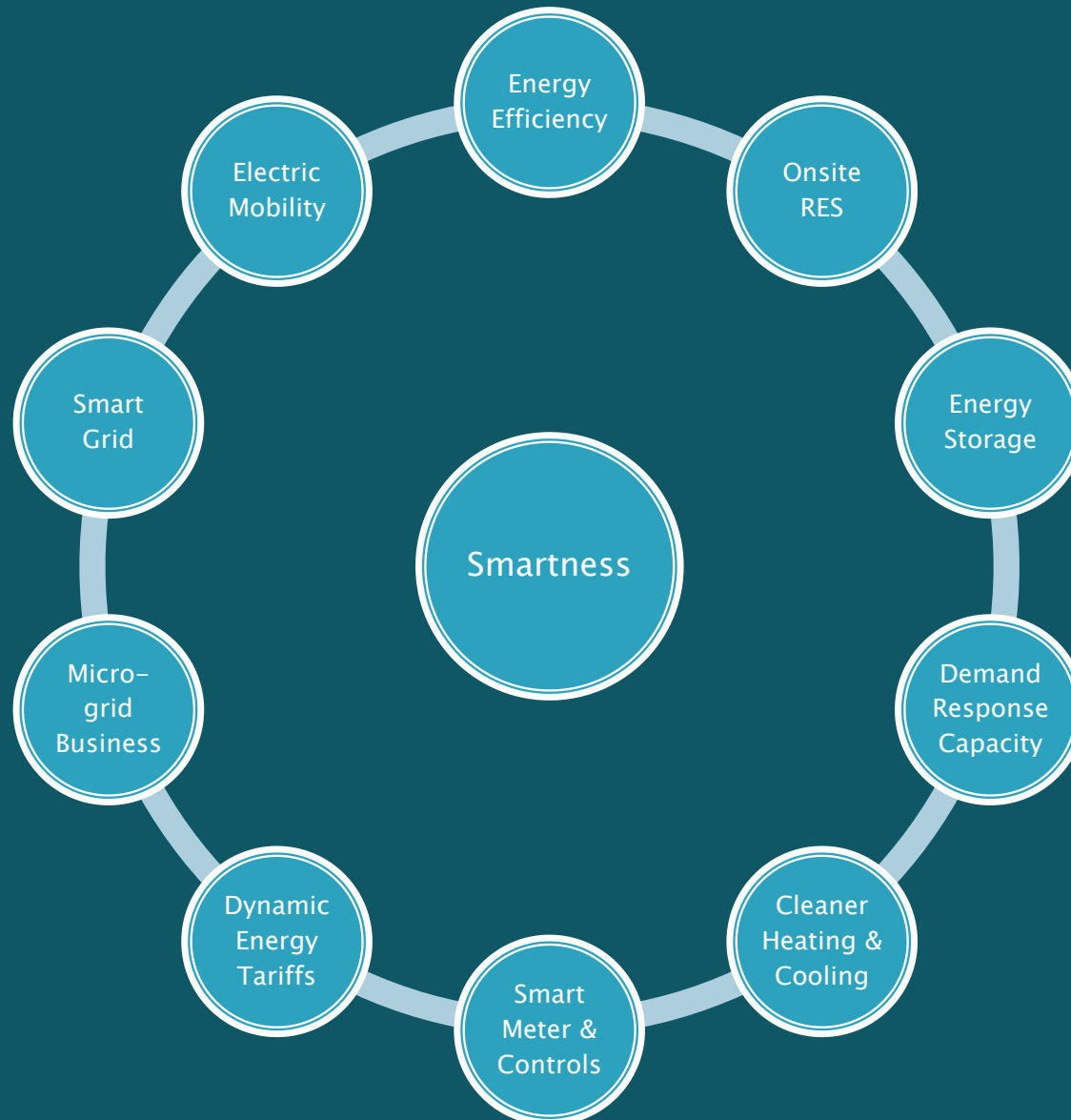


into a building passport for a staged renovation approach to deep renovation



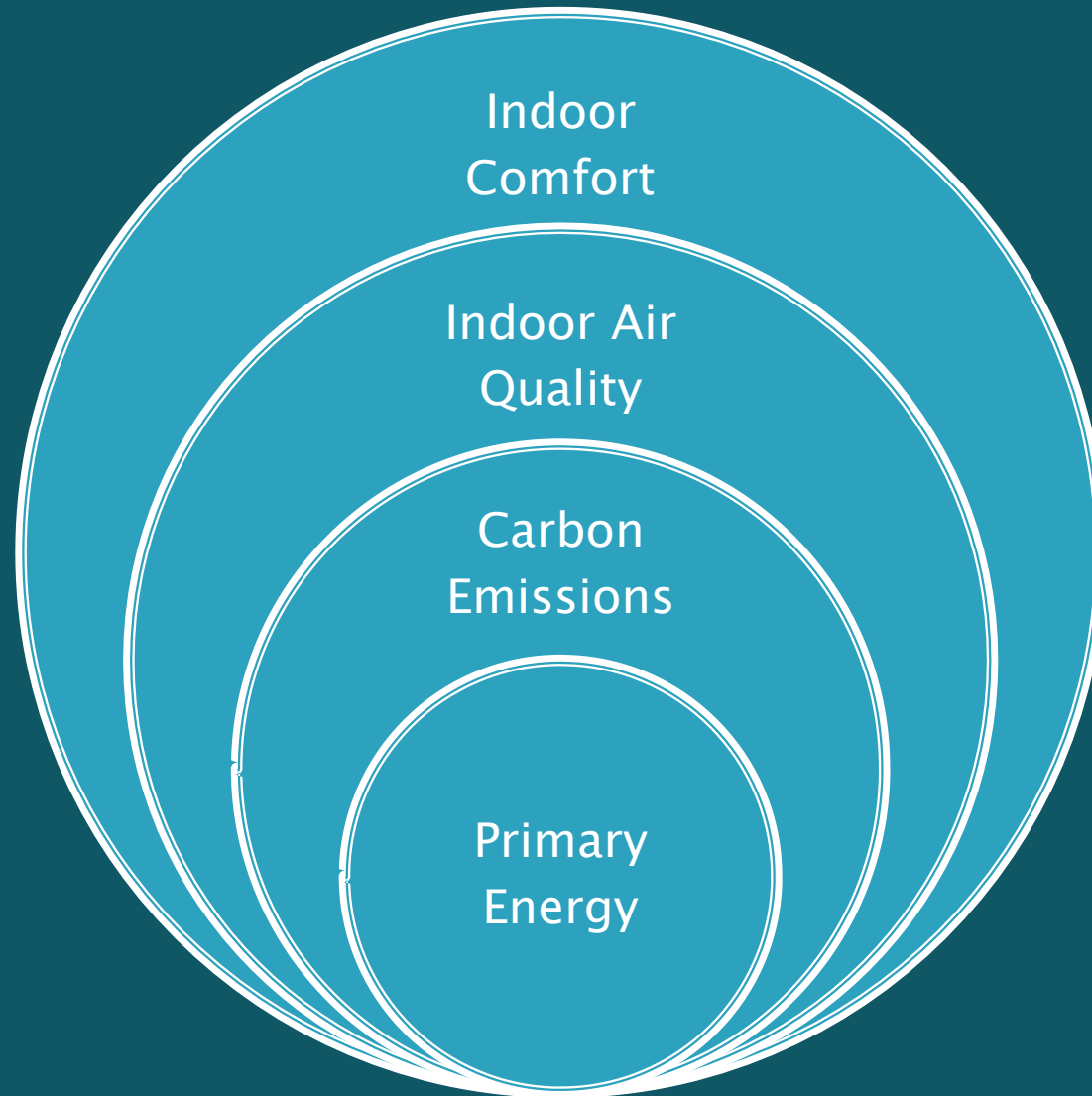
Ref: M.M. Sesana, G. Salvalai /
Energy & Buildings 173 (2018)
195-205

4. Smart Readiness Indicator (SRI) (optional)



Ref: BPIE

5. Calculating Energy Performance



6. Charging Infrastructure for E-Mobility



- ▶ E-mobility will be supported by introducing minimum requirements for car parks over a certain size and other minimum infrastructure for smaller buildings.



Ref: BPIE

Impacts of the ZERO CO₂ project on the the new EPBD directive and way forward



1. kgCO₂eq/(m².y) indicator: A ZeroEnergy building is not necessarily a ZeroCO₂ building. The ZERO CO₂ project calls for a ZeroCO₂ rather than ZeroEnergy Indicator.

ZeroEnergy Indicator makes the general public think about **lower energy costs only**

ZeroCO₂ Indicator encourages the public to think about **saving the environment and achieving carbon neutrality rather than costs only.**

2. Existing buildings: Giving more importance to achieving zero carbon dioxide levels for existing buildings rather than new ones only. This is now a reality in the 2018 EPBD.

Impacts of the ZERO CO₂ project on the the new EPBD directive and way forward



3. Best Practice Examples:

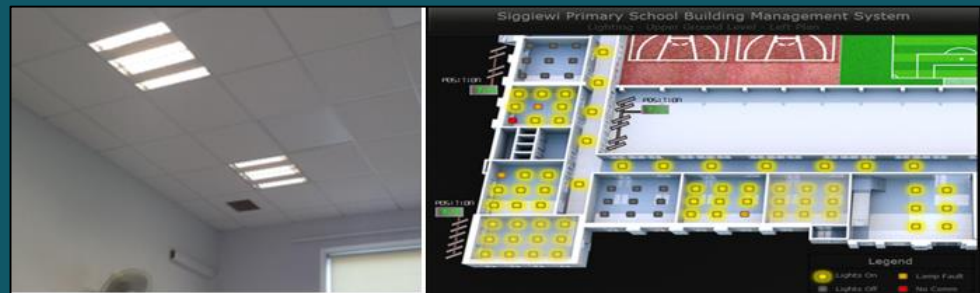
Energy Renovation of Kindergarden in Ptuj (Slovenia)



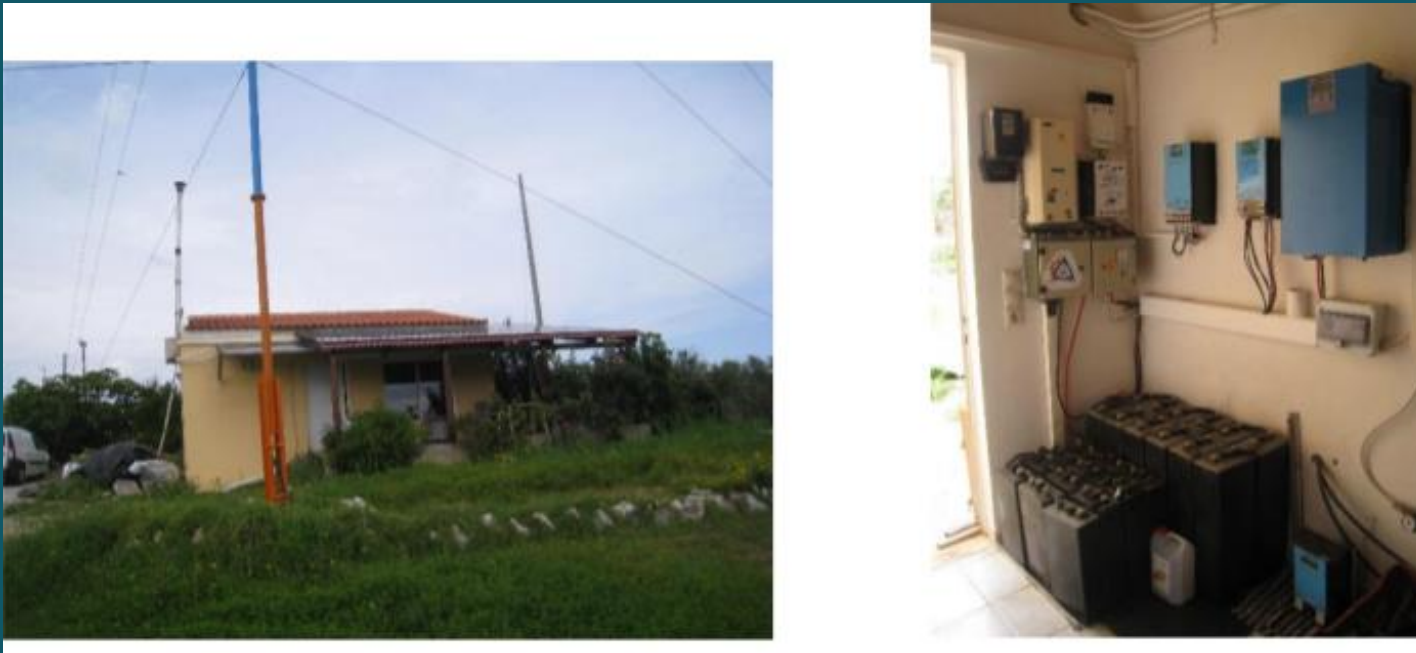
Impacts of the ZERO CO2 project on the the new EPBD directive and way forward



Energy Renovation of a school building in Malta



Impacts of the ZERO CO₂ project on the the new EPBD directive and way forward



Creation of a zero CO₂ emissions commercial building which is not interconnected with the electric grid in Crete

Impacts of the ZERO CO₂ project on the the new EPBD directive and way forward



School with high renewable energy share (Solar thermal systems, borehole geothermal cooling/heating system) in Finland

Impacts of the ZEROCO2 project on the new EPBD directive and way forward



- **Comfort and Indoor Air Quality**: The ZeroCO2 project has ensured that comfort and IAQ are prioritised in best practice NZCO2EB case studies.
- One example: A new energy efficient building football headquarters buildings optimised for IAQ and comfort in Molise (Italy).



FIGC Headquarters building in Molise (Italy)

Impacts of the ZEROCO2 project on the the new EPBD directive and way forward



Renovation of multi-apartment buildings in Kaunas (Lithuania) for energy efficiency and improved thermal comfort

Impacts of the ZERO CO₂ project on the new EPBD directive and way forward



Thermal rehabilitation of social housing buildings in Aix-en-Provence (France) for improved energy efficiency and thermal comfort

Impacts of the ZERO CO₂ project on the new EPBD directive and way forward



- **Smartness**: Partner regions from France, Italy and Crete have devised action plans to promote the self-consumption of energy generated from PVs and to implement smart grids. The new EPBD has taken a step via the introduction of the Smart Readiness Indicator (SRI).
- **Education to end users**: Partners from Lithuania, Malta and France have identified in their action plans the importance of educating users to reduce their energy consumption. While the New EPBD encourages such actions, it does not sufficiently stress on its urgency.

Impacts of the ZERO CO₂ project on the new EPBD directive and way forward



- **Social housing**: Policies from partner regions in Slovenia, Finland, and France put forward measures to promote the energy performance improvement of Social Housing buildings. Malta has also put forward an action plan to perform a pilot project involving the renovation of a social housing block.

Unfortunately, the EPBD fell short of identifying any sector (such as social housing), where **mandatory renovation** and aggregate projects need to be considered, despite the fact that in all EU MS, social housing buildings perform very badly in terms of energy efficiency.

Policy Actions of the ZEROCO2 project and the new EPBD directive



- **One-stop shop** : Malta included the need to set-up a one-stop shop in its action plans to provide technical advice to the general public who would like to achieve NZCO2EB. Although not mandatory, the importance of **one-stop shops is highlighted** in the new 2018 directive.
- **EPC database**: This requirement has also been discussed in the ZeroCO2 project as to collect required building stock data to enable effective policy making. The importance of such database **has been** highlighted specifically in the new 2018 EPBD directive.
- **Protection of solar rights** : The issue of solar rights protection has been discussed throughout the project as one of the main barriers for the implementation of renewable energy source. The need to tackle the solar rights issue by MS **has not** been specifically mentioned in the new EPBD directive.

Policy Actions of the ZERO CO₂ project on the new EPBD directive and way forward



- **Harmonisation of energy performance calculation methodologies and EPB standards:** With the introduction of the new EPB standards, the harmonisation of energy performance methodologies between MS has taken a step in the right direction. However, there are still some issues to be resolved for improved objectivity and harmonisation. Issues include :1) Eco-design regulations **do not** always refer to the applicable standards for testing procedures of technical building systems and 2) the EPBD directive **does not** refer to the building automation and control systems EPB standard (EN15232-1) BAC efficiency level to objectively explain the BACS level MS requires to comply to.
- **Energy Performance Certification:** The new EPBD directive has specified the need for MS to inform the public of the importance of EPC certificates to improve their acceptability. The action plan for Malta has identified an innovative way of improving the public perception of EPCs. This can be accomplished by encouraging banks to calculate higher loan limits for potential property buyers based on the energy performance rating of the property.

Policy Actions of the ZERO CO₂ project and the new EPBD directive



- Energy Performance Contracting: Energy Performance Contracting has been identified in the new EPBD as one of the mechanisms to mobilize investment in renovation. However, this mechanism has proven **unsuccessful** in MS such as Malta given both the low price for electricity and the lack of Zero energy demonstration projects. There is therefore an increased need for Public Authority buildings to take the lead in undertaking deep energy retrofit projects and to monitor the improvement in energy performance transparently (as suggested in a ZeroCo₂ action plan for Greece) to increase knowledge and reduce risk for ESCOs.

Conclusions



- The Interreg-Europe project ZeroCO2 could not have come at any better time, setting a new policy direction towards zero carbon dioxide buildings.
- 12 good practice projects and these have been publicized on the Interreg Europe platform.
- 40 policy action plans have been proposed and these are being monitored until March 2020.
- Over 50 participants and stakeholders have shared their experience and learnt from each other.
- Over 12 sites depicting high efficiency buildings have been visited.
- The ZeroCO2 project is in line with the 2018 EPBD spirit.
- The implementation of the 2018 EPBD can be enhanced by taking inspiration from the ZeroCO2 project.
- High priority areas have been identified for more effective implementation of the EPBD

Thanks for your attention



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