



Building performance assessment towards
Next generation EPCs



Integrating Building Renovation Passports into EPCs for a decarbonized building stock

Vivian Dorizas

BPIE



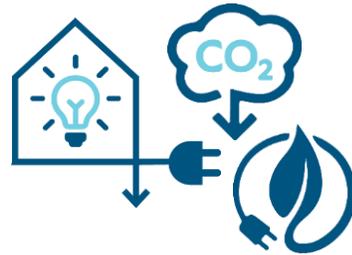
Session 2: Integrating human comfort into energy certification

2030 climate target: at least -55% GHG emissions

☐ *What does it mean for the buildings sector?*



Moving asap from
annual deep
renovation rate of
0.2% to 3%



Reducing GHG
emissions until
2030 by 60%
compared to 2015



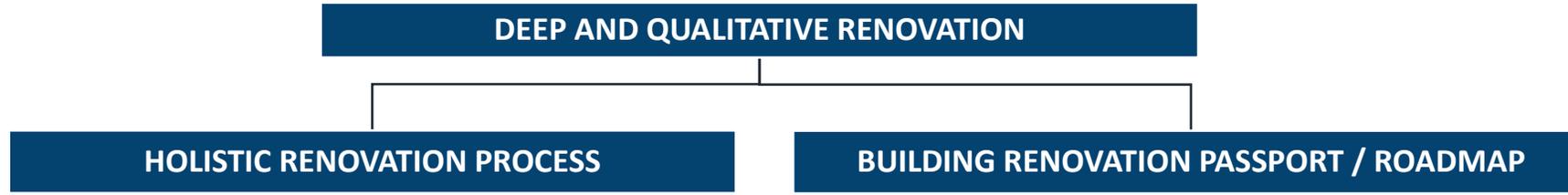
<https://bit.ly/3M0Dwef>



Home renovation
can be a challenge,
especially
step by step



A plan can help



Source: Energiesprong

Detailed Renovation Roadmap

Step by Step Plan

| | ENERGY CLASS G | ENERGY CLASS E | ENERGY CLASS D | ENERGY CLASS B | ENERGY CLASS A |
|-----------------------------------|--|--|--|---|--|
| | Your Building Moment of delivery | Renovation Step 1 When Builder needs to be completed | Renovation Step 2 2025 - 2029 | Renovation Step 3 2030 - 2035 | Renovation Step 4 2035 - 2040 |
| Measures | | <ul style="list-style-type: none"> Add a thermal solar system | <ul style="list-style-type: none"> External Wall Insulation | <ul style="list-style-type: none"> Substitution of the old window Roof Insulation | <ul style="list-style-type: none"> Installation of a heat recovery unit Substitution of the heating system by a heating pump |
| Primary Energy Demand | 250 kWh/m ² a | 210 kWh/m ² a | 160 kWh/m ² a | 100 kWh/m ² a | 50 kWh/m ² a |
| Main Energy Source | Natural Gas | Main Energy Source | Main Energy Source | Main Energy Source | Main Energy Source |
| Final Energy Demand Main Source | 200 kWh/m ² a | 200 kWh/m ² a | 150 kWh/m ² a | 80 kWh/m ² a | 30 kWh/m ² a |
| Final Energy Demand second Source | 20 kWh/m ² a | 10 kWh/m ² a | 10 kWh/m ² a | 15 kWh/m ² a | 15 kWh/m ² a |
| Auxiliary Energy Source | Electricity | Auxiliary Energy Source | Auxiliary Energy Source | Auxiliary Energy Source | Auxiliary Energy Source |
| Final auxiliary Energy Demand | 30 kWh/m ² a | 15 kWh/m ² a | 15 kWh/m ² a | 15 kWh/m ² a | 15 kWh/m ² a |
| Energy Bill | 40000 €/a | 25000 €/a | 18000 €/a | 9000 €/a | 3000 €/a |
| Carbon Emissions | 40 kg/m ² a | 20 kg/m ² a | 20 kg/m ² a | 10 kg/m ² a | 5 kg/m ² a |
| Cost | | Investment Costs for Renovation Step 150000 € Included Costs for Maintenance 150000 € | Investment Costs for Renovation Step 250000 € Included Costs for Maintenance 200000 € | Investment Costs for Renovation Step 250000 € Included Costs for Maintenance 400000 € | Investment Costs for Renovation Step 300000 € Included Costs for Maintenance 200000 € |
| Subsidies | 150000 € | 150000 € | 150000 € | 400000 € | 150000 € |
| Comfort Change | | Changed Comforts | Changed Comforts | Changed Comforts | Changed Comforts |

Source: iBRoad



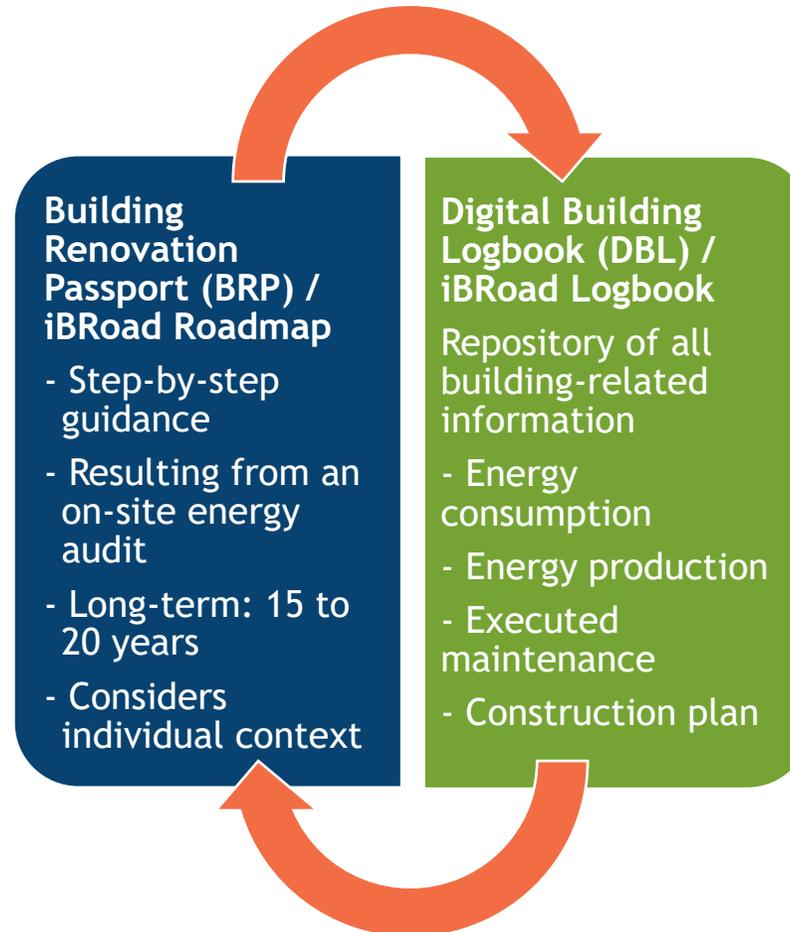
Why a Building Renovation Passport (BRP)?

- With a BRP, ambitious climate targets are implemented.
- Most building owners carry out partial renovations over a certain timespan.

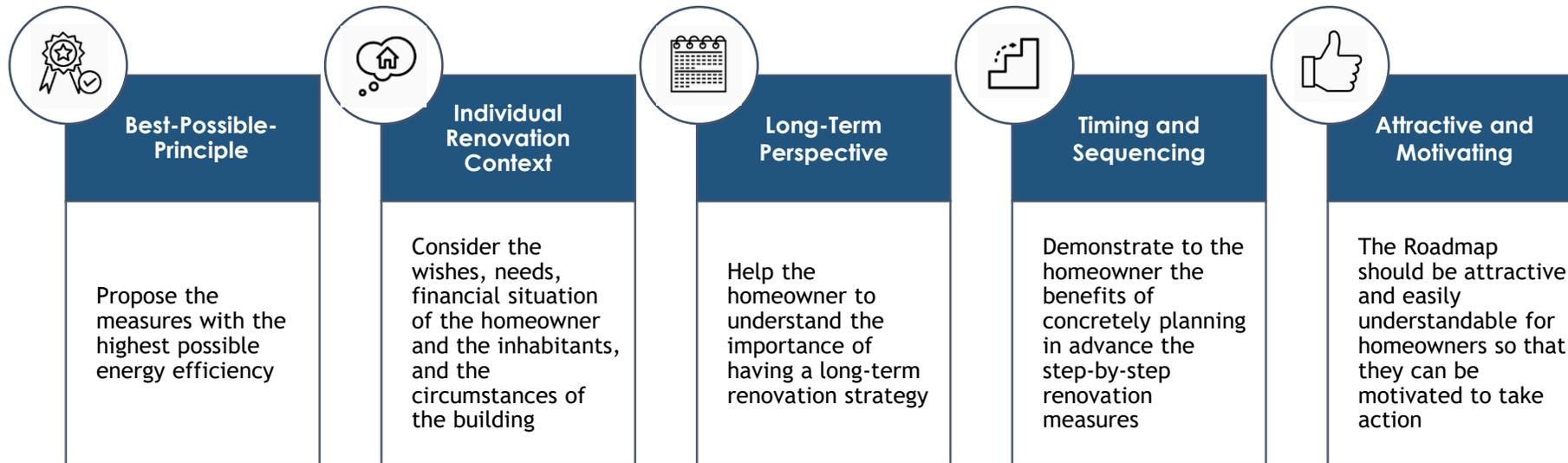


8th June 2022

Looking back at the iBRoad products



Guiding principles for establishing the Roadmap



General objectives



iBRoad2EPC represents the next step in energy performance assessment schemes and certification practices



iBRoad2EPC integrates Building Renovation Passport elements into EPC schemes and establishes the next generation of EPCs

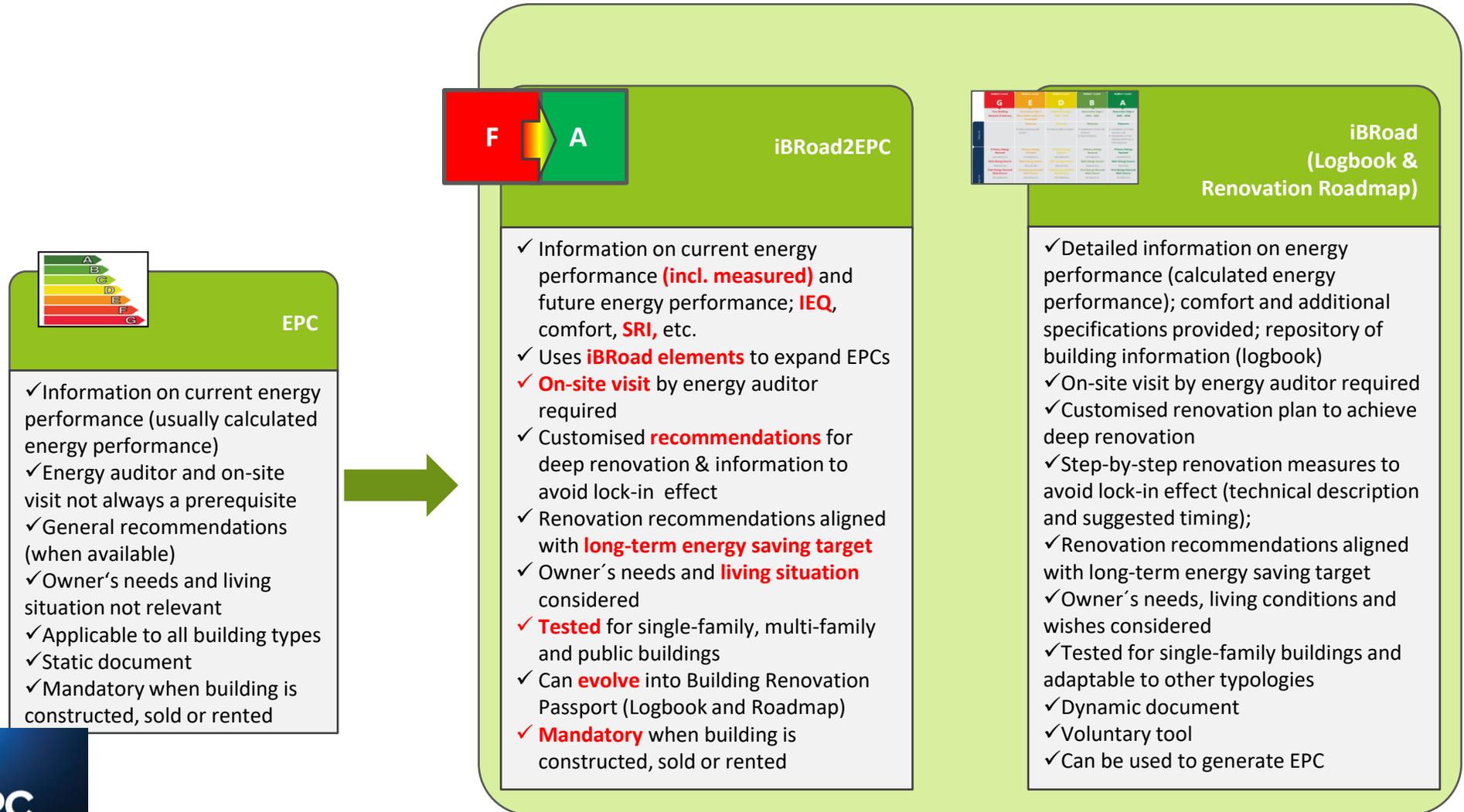


iBRoad2EPC supports building-owners with personalised advice to facilitate stepwise deep renovation



iBRoad2EPC works for residential buildings but also for multi-family and public buildings

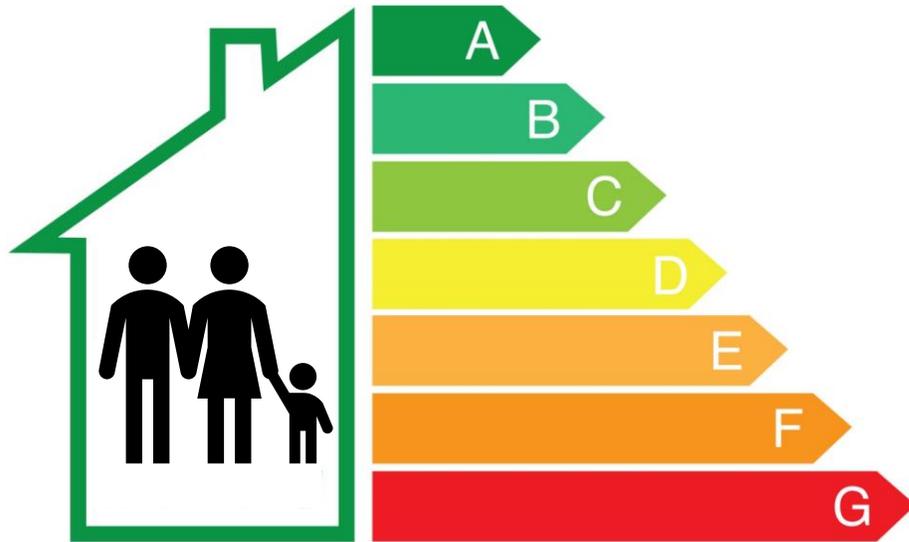
General objectives



Why comfortable indoor comfort is important?

60-90%

of time people spend in indoor environments (homes, offices, schools etc.)¹



Benefits for renovation

- Health and well-being
- Space satisfaction
- Economic (e.g. marketing advantage)
- Psychological
- Productivity



Challenges in developing comfort feature for future EPCs?



BUILDING TYPOLOGY



SCALE



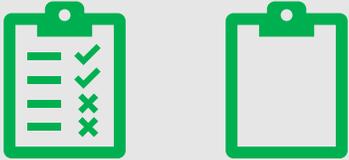
MEASUREMENTS



SCORE/ RATING



BASELINE PERFORMANCE



SURVEYS



INDUSTRY READINESS



BUILDING or ZONE



AFFORDABILITY

How we develop it?



Flexible and adaptable assessment approach based on building typologies (domestic and non-domestic buildings)



Based on four main indicators:

- > Thermal comfort
- > Indoor air quality
- > Visual comfort
- > Acoustic comfort

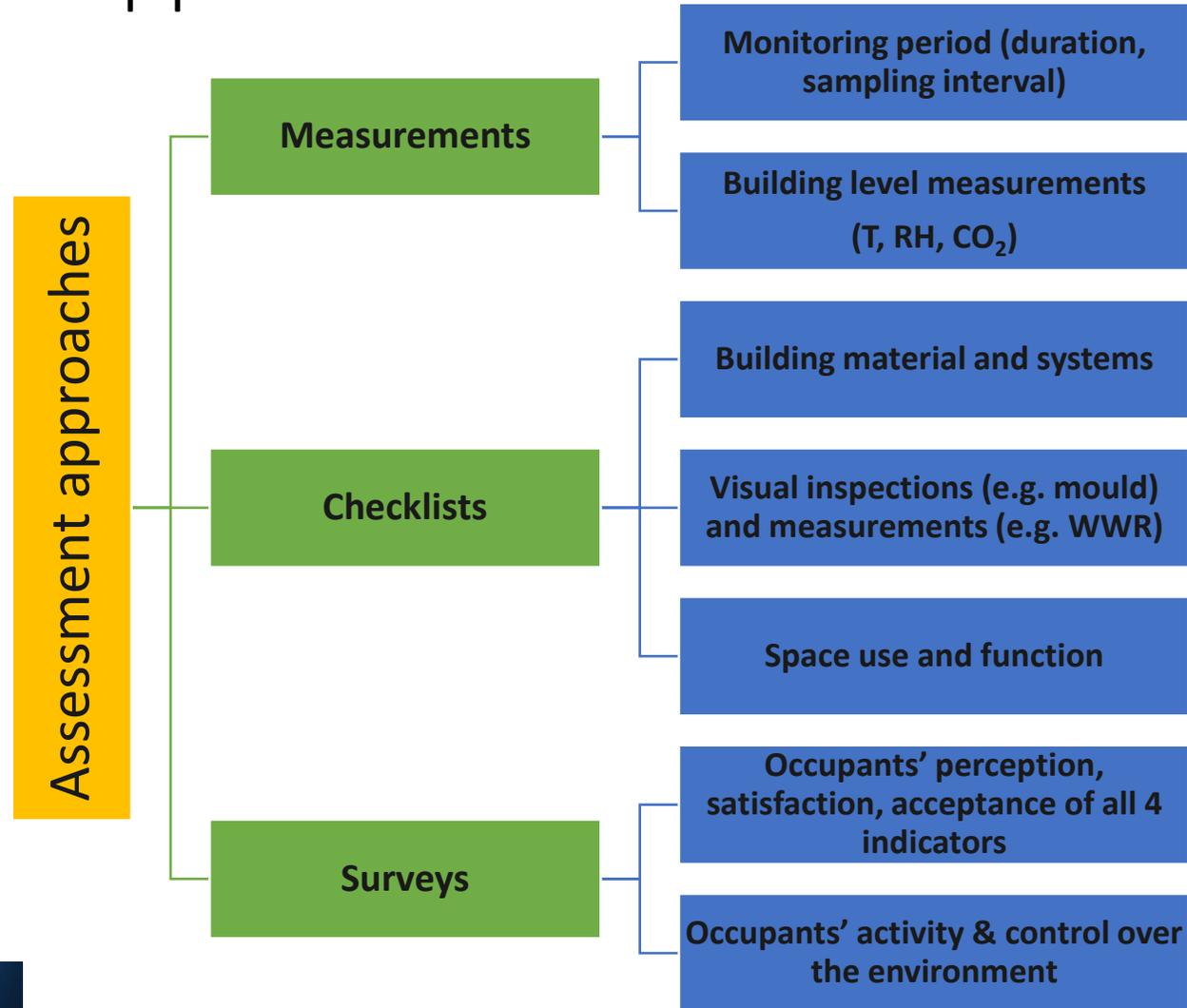


Individual scores for all indicators and a combined rating

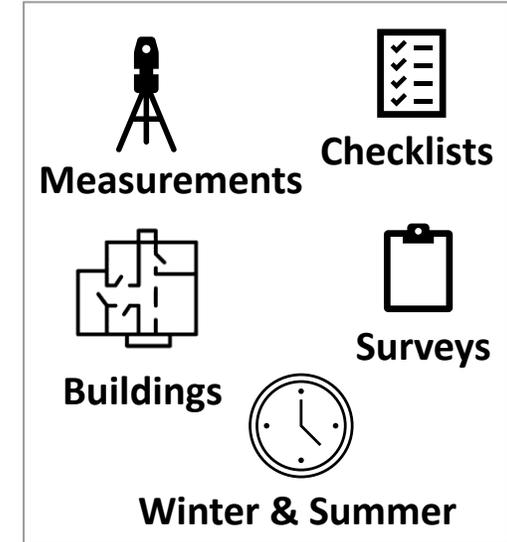
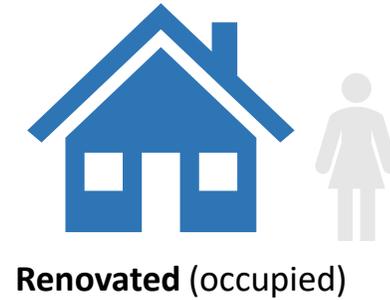


Affordable and time-efficient assessment

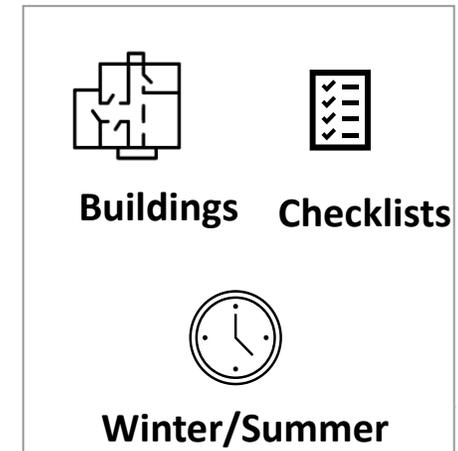
Assessment approaches



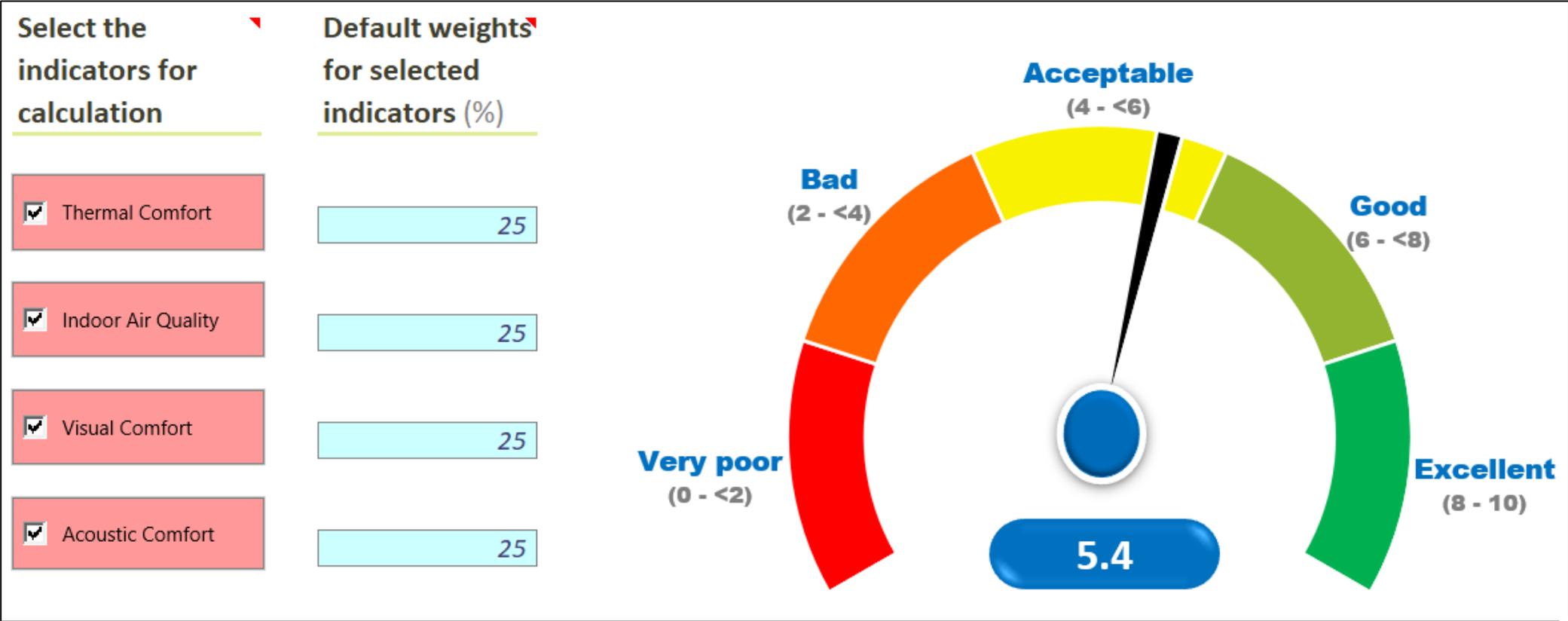
Comfort Operational Rating Procedure (CORP)



Comfort Asset Rating Procedure (CARP)



Display of overall rating and score



Project Team: 12 organisations from 9 countries



Implementing countries 
 Consortium 



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Vivian Dorizas, Project Manager BPIE

Vivian.Dorizas@bpie.eu