Renocally

Building renovation passports for deep energy renovations

Enabling local authorities to lead the decarbonisation of existing buildings

Challenges and opportunities for developing building renovation passports in support of public authorities in Central and Eastern Europe

Supported by:

Federal Ministry for Economic Affairs and Climate Action

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Abbreviations

BRP	Building renovation passport
CEE	Central and Eastern Europe
DBL	Digital building logbook
EPC	Energy performance certificate
EED	Energy Efficiency Directive
EPBD	Energy Performance of Buildings Directive
IEQ	Indoor environmental quality
iSFP	Individueller Sanierungsfahrplan
NBRP	National building renovation plan
nZEB	Nearly zero-energy building
OSS	One-Stop Shop – bundling different types of energy advisory services
P2E	Passeport Éfficacité Énergetique
ZEB	Zero-emission building

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Enabling local authorities to lead on decarbonising buildings

Building renovation passports (BRPs) are essential tools to make buildings carbon-neutral. BRPs are documents which include a tailored roadmap with several steps. Each step suggests the necessary technical measures required to achieve a higher energy performance through renovation. Building renovation is essential to achieve Europe's climate neutrality objectives and to enable the transformation towards a climate-neutral building stock. Most existing buildings need to improve their energy performance and exchange fossil energy with renewable alternatives. BRPs are key tools to enable this transformation.

The decarbonisation of the built environment requires investments and efforts from a range of stakeholders including policymakers, the construction industry, and researchers. The European Commission has initiated incentives and targets for building renovation in several EU directives, including the Energy Efficiency Directive (EED), the REPowerEU plan and the Energy Performance of Buildings Directive (EPBD) Recast, as part of the Green Deal (2020) to achieve a carbon-neutral economy in 2050.

This guidebook is designed to help local authorities in the Renocally focus countries of Bulgaria, Romania and Slovakia – and also in the wider Central and Eastern Europe (CEE) region – to accelerate building decarbonisation. As owners and managers of public offices, schools and medical facilities, local authorities will play a crucial role in transforming the building stock over the coming decades.

Many local authorities face serious challenges in terms of administration, funding and technical capacity. In smaller CEE public budgets in combination with the lingering consequences of the Covid-19 pandemic, invasion of Ukraine and the subsequent energy crisis, make renovations difficult. But despite these challenges, local authorities have an important opportunity and responsibility to lead by example in the construction sector transition by procuring responsibly and managing their buildings sustainably. This particularly applies to local authorities in CEE, where there are not always national BRP schemes or other support mechanisms available.

The crucial role of local authorities as facilitators and actors in the building transition is explicitly recognised in the EPBD recast (2024):

> *'Since local and regional authorities are critical for the successful implementation of this Directive, they should be consulted and involved… on planning issues, the development of programmes to provide information, training and awareness raising, and on the implementation of this Directive on national or regional level.'*[1]

Nevertheless, the relevance and implications of EU policies are not always clear for local authorities. This guidebook will highlight the legal provisions that are relevant for local authorities in the updated EU policy framework. It will also highlight the potential benefits of BRPs for local authorities, based on practical examples.

This guidebook will:

1. Present BRP design features and success factors of BRP schemes based on European case studies and research projects.

2. Highlight relevant changes in key EU policies and initiatives for national and local authorities, specifically focussing on BRPs and provisions referring to local authorities or public buildings.

3. Provide recommendations for local authorities in Bulgaria, Romania, Slovakia and the wider region to start working with BRPs.

[1] European Parliament legislative resolution of 12 March 2024 on the proposal for a directive of the European Parliament and of the Council on the energy performance of buildings (recast) (COM(2021)0802 – C9-0469/2021 – 2021/0426(COD)) – P9_TA(2024)0129

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How BRPs can support local authorities to renovate public buildings

To make a building carbon-neutral, a deep renovation combining several measures at once tends to achieve the highest energy savings and carbon reductions.[2] Despite being the most environmentally friendly and economical solution in the long term, current deep renovation rates in the EU remain staggeringly low at 0.2% annually: a rapid increase to 3% annually is needed to achieve climate targets.[3] Due to high initial costs and extensive disruption for users, building owners often opt to split a deep renovation into stages, which is known as a 'staged deep renovation'. Thus, for practical reasons, staged renovations seem key to achieve climate-neutral buildings. However, implementing different technical measures in the right order to avoid technological or carbon lock-ins is challenging for building owners. BRPs are tools that tackle these risks by showing how deep renovations can be accomplished for individual buildings through multiple steps, detailing the costs and benefits at each stage. The benefits of BRPs were recognised by EU policymakers in 2018 in the amended Energy Performance of Buildings Directive (EPBD)(2018)[4] with the introduction of optional BRPs.

What is a BRP?

There are many definitions of building renovation passports (BRPs). These definitions originate from existing BRP schemes, national or European policies, or have been coined in research projects. Among existing BRP schemes in Europe, the terms 'renovation passport' (e.g. the Passeport Efficacité Énergétique) and 'renovation roadmap' (Individueller Sanierungsfahrplan) as well as the more generic 'building passport'[5] are used. In practice, the aim of these various passports and roadmaps is comparable: providing a stepwise plan to renovate a building. For consistency reasons this report therefore refers to **building renovation passports (BRPs).**

[2] BPIE (2021) *Deep Renovation: shifting from exception to standard practice in EU Policy.*
[3] BPIE (2020) *On the way to a climate neutral Europe.*
[4] DIRECTIVE (EU) 2018/844 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency.
[5] Sesana & Salvalai. (2018). *A review on building renovation passport: potentialities and barriers on current initiatives.*

The key feature of most BRP schemes is a roadmap describing how a building can be renovated towards a desired performance level. What performance level is desired varies depending on the example analysed or definition reviewed. The importance of the roadmap is illustrated by the simple definition provided in the EPBD recast (2024):[6]

> *'"Renovation passport" means a tailored roadmap for the deep renovation of a specific building in a maximum number of steps that will significantly improve its energy performance'.*

These roadmaps can be linked to other features, which range from information on financial support for renovation measures to building logbooks.[7] Research projects that have analysed or further elaborated BRPs have provided more detailed definitions. A study comparing French, Belgian and German BRPs defined a BRP as:[8]

> *'a document – in electronic or paper format – outlining a long-term (up to 10 or 20 years) step-by-step renovation roadmap for a specific building, resulting from an on-site energy audit fulfilling specific quality criteria and indicators established during the design phase, following a dialogue with building owners'.*[9]

This broader definition suggests that BRPs should focus on a long-term performance goal and be tailored to the needs of building owners. In this broader BRP definition, renovation aspects beyond energy performance can be integrated as well. The EPBD recast definition is most relevant for policymakers to define national voluntary BRP schemes, and will therefore be used as a reference in this guidebook. There is more information on the EPBD recast and the BRP template in EPBD Annex VIII, and in Section 3.1 below.

Figure 1. Funding for different BRP schemes

[6] European Parliament legislative resolution of 12 March 2024 on the proposal for a directive of the European Parliament and of the Council on the energy performance of buildings (recast) (COM(2021)0802 – C9-0469/2021 – 2021/0426(COD)) – P9_TA(2024)0129
[7] Building logbooks are repositories for building information, which can store a variety of building data – including renovation roadmaps or energy performance certificates (EPCs). For more information see EASME (2020) or EASME (2021).
[8] BPIE. (2016). *Building Renovation Passports – Customised roadmaps towards deep renovation and better homes.*
[9] This definition also features in iBRoad (2018), when conceptualising individual building renovation roadmaps.

Several well documented BRP schemes already exist in the EU. Examples like the individueller Sanierungsfahrplan (iSFP) (Germany), BedreBolig (Denmark), Passeport Éfficacité Énergetique (P2E) (France) and Woningpas (Belgium) show the heterogeneity of schemes. For example, the initiation and funding can come from public actors, private actors, or collaborations between these groups (see Figure 1).[10]

The BedreBolig scheme was initiated and funded by construction product manufacturers. The iSFP and Woningpas are publicly initiated, whereby the Woningpas is publicly funded but the iSFP has been only to a limited degree since 2022.[11] The P2E was initiated by a mix of NGOs and companies, with the initial funding provided by the private sector.

Why would building owners implement BRPs in the first place?

BRPs provide recommendations to building owners in the form of a renovation roadmap. Compared to the renovation recommendations in energy performance certificates, BRPs provide additional information to building owners, support the long-term carbon neutrality of buildings and allow upfront investment to be spread over longer periods, while ensuring the renovation measures are implemented in the correct order. This is particularly useful for those who cannot afford a one-step renovation: spreading the process across several steps gives more people the financial ability to carry out deep renovations. Some studies even suggest that staged renovations may lead to lower cumulative CO_2 emissions than single-stage renovations, especially when these single-stage renovations are postponed due to a lack of funding.[12]

1. Tailored information

Tailored recommendations on what renovation measures to take, and what the impact of these measures will be, supports building owners in the complex decision-making process surrounding renovations. Energy performance certificates provide generic recommendations on different measures that can be implemented, but their quality varies between Member States so at best they can only be considered as a first step towards a BRP.[13] The BRP provides information tailored to the building, but also to the sequence of measures and financial capacity of the building owner. In this way, BRPs provide reliable information for investment decisions. BRPs suggest an ideal order for renovation measures and highlight the benefits of combining measures.

2. Spreading investment costs over a longer period and reducing disruption

The high upfront costs for one-step deep renovations are an important reason why building owners hesitate to implement such measures, besides the disturbance caused during the works.

Staged renovations allow building owners to achieve the same energy performance, but in several steps. In this way they do not have to pay the complete sum for the renovation measures upfront but can spread it out over time.

[10] iBRoad. (2018). *The concept of the individual building renovation roadmap.*
[11] Ökozentrum NRW. (2022). *BEG-Reform bringt geringere Förderung.*
[12] Maia, Harringer & Kranzl. (2023). *Staged renovation and the time-perspective: Which other metric should be used to assess climate-optimality of renovation activities?*
[13] See a review of EPC recommendations for deep renovation in different Member States by QualDeEPC (2020).

Surveys among building owners highlight the importance of costs in investment decisions, and also the availability of public funding to implement renovation measures.[14] BRPs can reduce the disruption of single steps made inevitable by the financial capacities of building owners by allowing them to spread investment costs over time.

3. Cost-benefit analysis per step

BRPs give insights on the costs of interventions at each step, for single measures or combinations of measures, and the benefits building owners can expect in terms of energy savings, reduction of energy costs, comfort increases and potentially other dimensions.

4. Correct order of measures and avoiding mistakes

Staged renovations need to be carefully planned to ensure they happen in the right order. For example, if the building is not insulated when the heat source is replaced, the new heating system may be oversized and more expensive than necessary. Renovation passports provide a clear roadmap for step-by-step renovation, helping owners and investors plan the best timing and scope for interventions. For example, they could aim to insulate the roof and replace the windows in a first step, insulate the cavity walls in a second step, and replace the heating system in a third step. Developing renovation passports as a tool for building owners would therefore bring benefits across all Member States.

BENEFIT	DESCRIPTION
Tailored information	Provides building owners with information that goes beyond what they would get in an energy performance certificate (EPC).
Long term plan for climate neutrality	The goal of the BRP is to provide a renovation plan with individual steps along the way, which decrease energy consumption and CO_2 emissions over time. By 2050, all individual steps together lead to a zero-emission building.
Costs and benefits of renovation steps while spreading investment costs	Building owners can see what each renovation measure would cost, and what the benefit of each would be over time in terms of reduced energy consumption (and other non-energy benefits such as increased comfort). This helps in planning interventions and considering trade-offs.
Correct order of renovation measures	Building owners can choose which renovation steps they want to take, but they do have to follow a specific order. This is to avoid negative effects from incorrect procedures, such as bad indoor air quality or build-up of moisture. The correct order also avoids lock-ins and expensive mistakes.

Table 1. Overview of benefits offered by a BRP

[14] For more information see the iBRoad (2018) report on understanding user needs.

What are main design features of a BRP?

The core feature of most BRPs is the renovation roadmap. Depending on what example or research project is inspected, other features are also included. The main elements of the renovation roadmap are depicted in Figure 2:

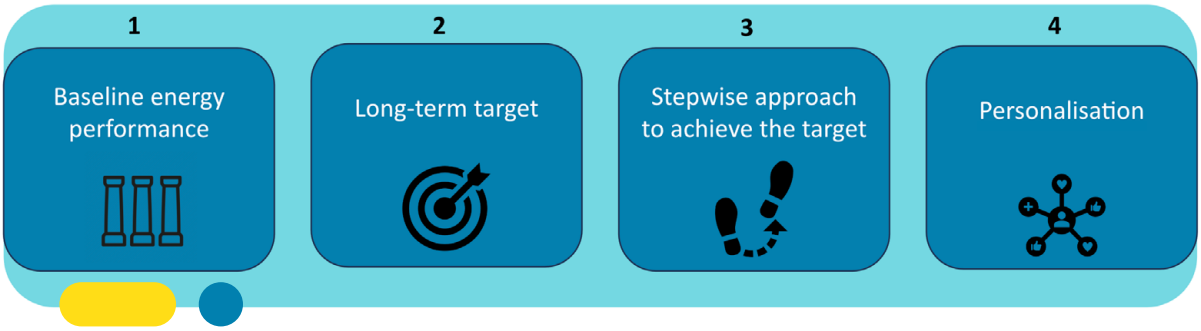

Figure 2. Main elements of renovation roadmap

To establish a renovation roadmap, a baseline energy performance must be established as a starting point. The data foundation for an energy performance baseline is obtained during an on-site audit by an energy auditor. The purpose of the audit is to check the overall energy efficiency of the building, but also to advise the owner and gather additional information, e.g. to find which measures have already been implemented.[15]

Next, the target of the roadmap should be defined. A long-term perspective is important due to the long lifetimes of building parts and the related investment cycles. Besides ensuring that high energy performance and carbon emissions are achieved over time, this gives building owners perspective to spread out investment costs. The goal could either be to achieve a high energy performance (e.g. based on an EPC class or other label),[16] to achieve the best possible energy performance (e.g. as applied in the German renovation roadmap iSFP), or to achieve a zero-emission building (e.g. as defined by the EU Joint Research Council).[17]

A stepwise approach is then created to achieve the target. The essential feature is that for each step – which can contain single measures or combinations of measures – the costs and benefits are clearly shown. The sequencing of the steps is designed so that unintended lock-ins are avoided, and the long-term target can be achieved.

Finally, the roadmap can be personalised. A BRP's core focus is on indicators for energy performance to measure progress towards the target (e.g. the final energy consumption in kWh/m^2/year), but it could also include other elements in the roadmap. Examples of other elements include health and indoor environmental quality (IEQ) considerations (acoustics, light, air quality), the financial capacity of building owners, and an overview of available financing support or further advisory services like one-stop-shops. By integrating other considerations like IEQ that are relevant for the building owner, or policy requirements for a building, BRPs become more useful and can help to stimulate renovation investments.

The roadmap of the German individueller Sanierungsfahrplan is shown below. The **iSFP** is a good example of the visual presentation (see Figure 3), allowing building owners easy to understand graphics of the measures that should be taken to get from the status quo to the desired goal.

[15] BPIE. (2016). *Building Renovation Passports – Customised roadmaps towards deep renovation and better homes.*
[16] Such as the BBC label describing a highly energy performing building in France – as exemplified in the P2E (BPIE, 2016).
[17] JRC. (2023). *Defining zero-emission buildings.*

Figure 3. Example of German individueller Sanierungsfahrplan roadmap. Source GebäudeForum (2023) (translated from German).

How is a BRP issued?

BRPs are issued based on contact between the auditor and building owners. In all existing BRP schemes, the process is initiated by the building owners requesting a BRP, often through an online platform where general building characteristics and other information can be uploaded to facilitate the process. Subsequent steps differ depending on the scheme, as can be seen in Figure 4.

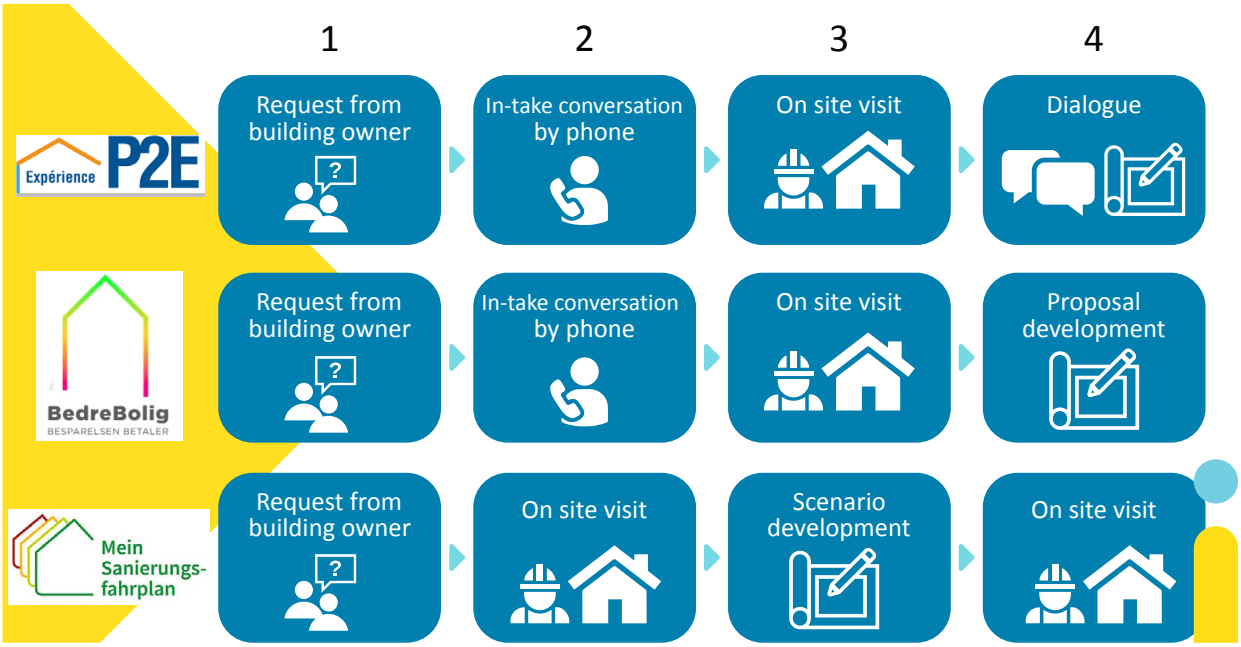

Figure 4. Steps for issuing BRPs in different schemes (iBRoad, 2018)

In the French P2E and Danish BedreBolig schemes, an auditor first calls the building owner to understand their preferences and expectations, explain how the audit will work, and gather initial information on the building status. This is followed by the on-site visit during which the building status and performance baseline are established. After the audit is complete, auditors in the P2E system propose a BRP based on the information inserted in the platform, the needs of the owners, and the technical measures available.[18]

The procedure with the BedreBolig system is similar to P2E in that the building owner requests the BRP through an online platform. During this process, an initial automatic assessment of the building is already provided. Based on that assessment and a conversation with the auditor about preferences, the owners can request an on-site visit. What makes the BedreBolig approach stand out is the questionnaire on comfort (e.g. air quality, light, temperature) besides the questionnaire focussing on energy performance. After the visit, a proposal is made tailored to the baseline and the owner's preferences.

The German BRP involves a first on-site audit and discussion on wishes and needs, following a prescribed checklist. Using dedicated software, the auditor then develops several renovation scenarios based on the status of building parts and the wishes of the owner, and proposes a prioritisation of measures. This proposal is presented to the owner during a second on-site visit, during which there is an option to reach an agreement on implementing measures.[19]

Central to all these approaches is contact between the auditor and the building owner. Communication and reliable assessment of the performance baseline are important to provide the tailored advice necessary for supporting renovation decisions.

BRPs and other building tools and instruments

BRPs are interrelated with other building tools and instruments. Energy performance certificates (EPCs), one-stop shops (OSS), and particularly (digital) building logbooks (DBL) are all instruments that, like BRPs, provide building owners with information about the building and support renovation measures.[20]

Fostering synergies between these tools has the potential to improve data quality and availability for building owners and professionals alike. Possible synergies include, for example, integrating information from the DBL to improve renovation steps in the BRP, storing information about stepwise measures, promoting BRPs through OSSs, or setting goals for BRPs in terms of EPC targets that must be achieved.

Although the building sector has been slower to digitalise than many other sectors of the economy, in recent years digital tools and smart building devices have been entering the market more frequently – but there has not been an even spread among Member States and companies. The EU nevertheless foresees an important role for digitalisation to transform the construction sector.[21] For BRPs, DBLs show particular promise for synergies. Research projects like ALDREN,[22] iBRoad,[23] DemoBLog,[24] the Flemish Woningpas[25] repository or the Portuguese Casa+ platform[26] show different ways in which BRPs can be linked to DBLs. The Global ABC suggests that more comprehensive tools like DBLs should include roadmap elements.[27] The X-tendo project also proposes DBLs to be the 'first step' for developing BRPs.[28] This highlights that it is important for policymakers to align BRP initiatives with other tools like DBLs.

[18] Expérience P2E. Accessible at: https://www.experience-p2e.org/le-p2e/deroulement/
[19] iBRoad. (2018). *The concept of the individual building renovation roadmap.*
[20] See JRC (2021) for more information on OSSs; see QualDeEPC (2020) for more information on EPCs; and EASME (2020) for more information on building logbooks.
[21] European Commission. Commission Staff working document – Scenarios for a transition pathway for a resilient, greener and more digital construction ecosystem. Accessible at: https://ec.europa.eu/docsroom/documents/47996

As a 'common repository for all relevant building data',[29] DBLs can store BRPs or EPCs. The DBL can be linked to actual energy consumption data, but it can also contain public information about soil quality, climate adaptation, or electric mobility (as is the case in the Woningpas). Such information could increase the accuracy of the cost-benefit assessment of steps in BRPs.

Potential interlinkages between building tools and instruments are visualised in Figure 5.

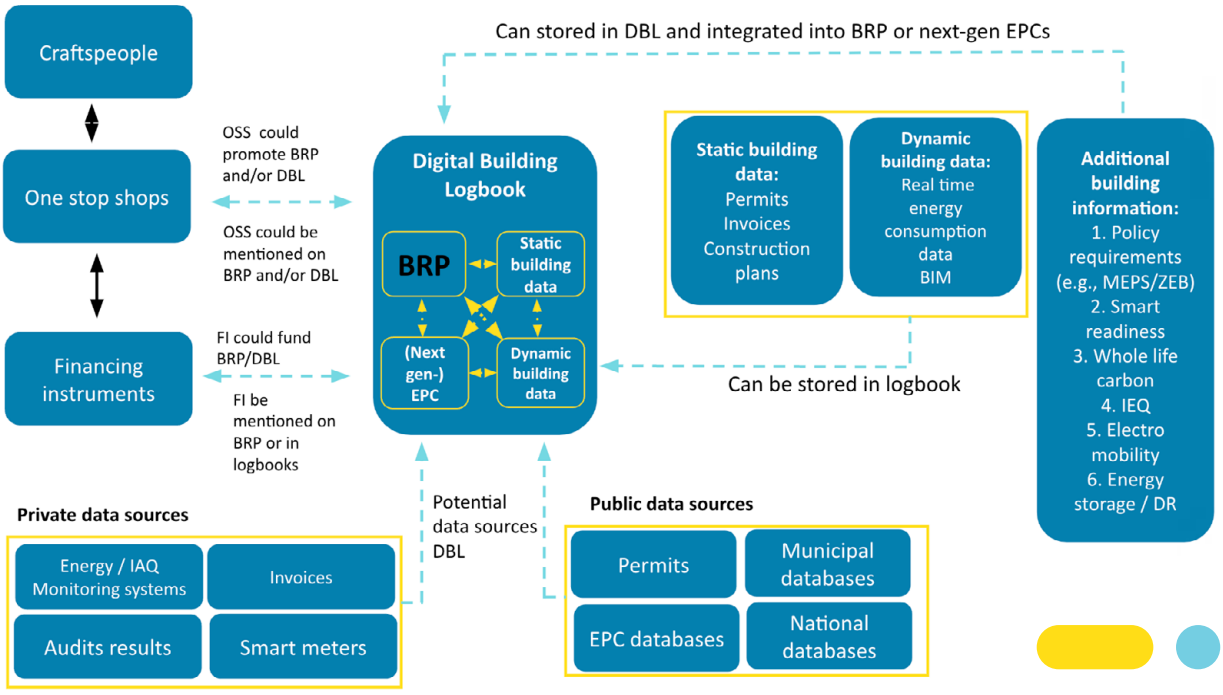

Figure 5. BRPs' existing and optional (dotted) links with other tools

For example, the iBRoad project reviewed possible links between different financing instruments (e.g. tax credits, subsidies) and BRPs.[30] Moreover, several next-generation EPC projects focus on integrating dynamic or additional building information into EPCs or BRPs,[31] e.g SmartLiving EPC or TimePAC.

Other tools such as one-stop-shops (OSS), can overlap with elements within the BRPs. For example, the Danish BetterHome product is an OSS. The overlapping elements with BRPs are its on-site energy audit and tailored renovation advice.

To make it easier for countries to implement BRPs, existing tools should be explored first and their potential for expansion analysed. An example that is well integrated with other building tools is the Woningpas in Flanders (see Figure 6). Combined with its EPC+, the Woningpas is a great example of an integrated tool that offers a renovation roadmap and digital building logbook (DBL) which brings together different sources of data.

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[22] Aldren Project. Accessible at: https://aldren.eu/building-renovation-passport/
[23] iBRoad Project. Accessible at: https://ibroad-project.eu/
[24] Demo Blog Project. Accessible at: https://demo-blog.eu/digital-building-logbooks-pilots/user-experience/
[25] Woningpas Vlaanderen. Accessible at: https://woningpas.vlaanderen.be/over-woningpas
[26] Portal Casa Mais. Accessible at: https://portalcasamais.pt/
[27] Global ABC. (2021). *The building passport: A tool for capturing and managing whole life data and information in construction and real estate.*
[28] Xtendo. (2022). *Implementation guidelines and replicability potential of the innovative features for the next generation EPCs.*
[29] European Commission, Executive Agency for Small and Medium-sized Enterprises, Dourlens-Quaranta, S., Carbonar, G., De Groote, M. et al. (2021). *Study on the development of a European Union framework for digital building logbooks – Final report*, Publications Office, https://data.europa.eu/doi/10.2826/659006
[30] iBRoad (2020) Stepwise and structured.
[31] European Energy Innovation. Accessible at: https://europeanenergyinnovation.eu/Latest-Research/Autumn-2022/Next-Generation-Energy-Performance-Certificates-cluster

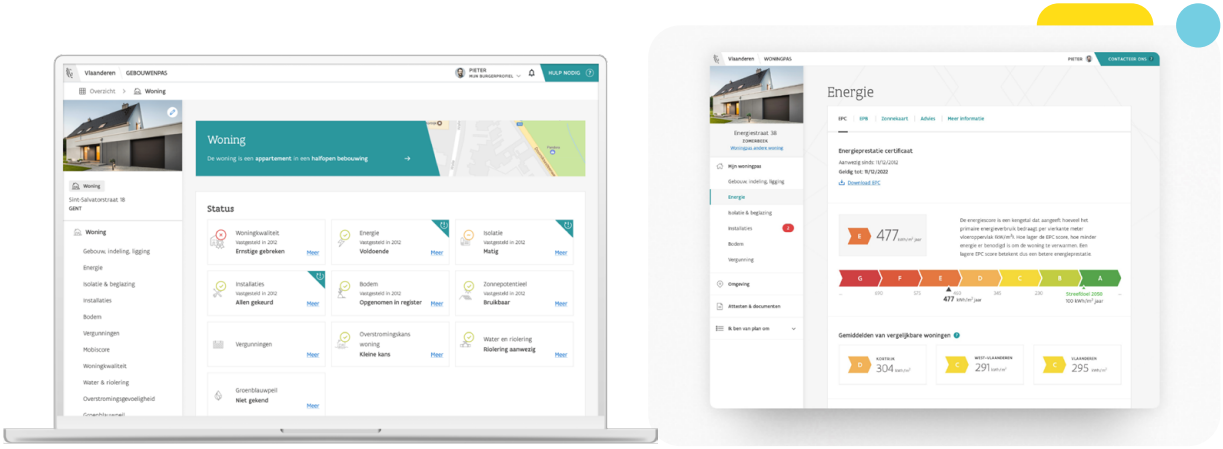

Figure 6. Woningpas web-interface

Besides its roadmap element, the Woningpas contains information on floorplan and location, installations, surroundings and environment, soil, energy, water and sewage, permits, mobility score, insulation and glazing, flooding vulnerability, climate adaptation (drought and rain resilience), and building quality.[32] Building owners can give access to the data in their Woningpas to others, e.g. professionals, and upload information when measures have been implemented.

What are the key success factors for implementing BRPs on a national level?

The successful implementation of BRPs depends on how they address existing market barriers for renovation. These include difficulties in accessing finance or a lack of knowledge of available funding schemes; plus practical aspects like a lack of technical knowledge among building owners about which measures to implement; or the complexity of the renovation process, which involves many actors.[33] Understanding the benefits of renovations and the qualifications of the auditors generating them is also essential.

A review of 33 BRP schemes and related services issued by the Directorate-General for Energy shows that a combination of renovation advice, available financial support, legal requirements and communication campaigns is most promising if BRPs are to be successful.[34] The evaluation of the impact of BRPs suggests that building owners are more likely to implement more measures, other types of measures (e.g. basement insulation), avoid mistakes, and create more insight into meaningful long-term measures. Nevertheless, financial constraints are slowing down the long-term transition and are causing building owners to select less efficient solutions. The authors therefore argue that BRPs are most useful to clarify the benefits of renovation steps and knowledge about how to implement the measures. This highlights the need for an enabling framework alongside BRPs. Figure 7 shows their critical design features and an enabling framework.

[32] Woningpas Vlaanderen. Accessible at: https://woningpas.vlaanderen.be/
[33] iBRoad. (2018). *The concept of the individual building renovation roadmap.*
[34] European Commission, Directorate-General for Energy, Volt, J., Fabbri, M., Zuhaib, S. et al., *Technical study on the possible introduction of optional building renovation passports – Final report*, Wouters, P.(editor), Publications Office, 2020, https://data.europa.eu/doi/10.2833/760324

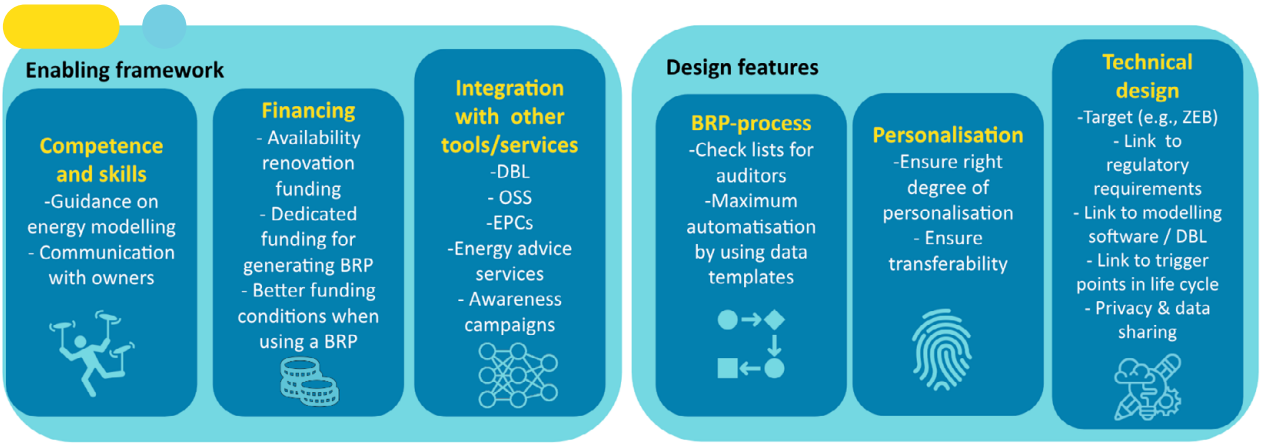

Figure 7. BRP enabling framework and design features implementation, based on iBRoad (2020) and DE ENER (2020)

Enabling framework

An enabling framework could be optimised to focus on regulatory measures, competence and skills, financial support, and integration with other tools.

Sufficiently available financing is essential for the success of BRPs and other measures to support deep renovations. Different systems already exist to support BRP uptake, such as subsidies, bonus-malus systems, or linking BRPs to tax schemes or access to public funding.[35]

The competence and skills of the energy auditors issuing the BRP are important, particularly in energy modelling to accurately model the impact of renovation measures and the knowledge necessary to avoid lock-in effects. Policymakers can support this by funding training activities or by developing energy modelling guidelines. Moreover, local authorities and energy agencies could integrate BRPs into existing renovation advice services (e.g. auditing services or OSSs).

BRPs can also be supported by anchoring them in regulatory measures such as building codes, by mandating them in minimum energy performance standards, or by linking them to energy saving (EED Art 8/9) or renewable energy obligations, or to information measures such as EPCs, OSSs or others (EED Art 22 / EPBD Art). BRPs could also be linked to trigger points such as transaction (sale, rent, change in use), renovation (already planned), or disaster/ incident (flood, fire, earthquake).[36,37]

Design features supporting the successful uptake of BRP on national level

Technical design is the first feature to consider with BRPs. Section 2.5 of this guidebook has highlighted the importance of designing BRP so they can link to existing software for building modelling or enable the import of data from DBLs for establishing the renovation steps.

Guidance on how to deal with data privacy and interfaces whereby owners can share building data easily would enable the integration of BRPs into DBLs, and would allow building owners to give access to information to other parties (e.g. Woningpas).

[35] iBRoad. (2020). *Stepwise and structured.*
[36] European Commission, Directorate-General for Energy, Volt, J., Fabbri, M., Zuhaib, S. et al. (2020). *Technical study on the possible introduction of optional building renovation passports – Final report*, Wouters, P. (editor), Publications Office, https://data.europa.eu/doi/10.2833/760324
[37] iBRoad. (2020). *iBroad Policy Brief.*

What consumes most time during BRP generation is collecting the relevant building data. Optimising the data collection – e.g. by maximising the automation and improving communication between auditor and owners – is important for this. Practical examples include checklists for auditors and fostering data upload on platforms in specific templates (e.g. utility bills, technical data on building parts).

Finding the right degree of personalisation for a BRP, acknowledging demands from building owners, is essential for its utility – even though it might increase its price. Ideally it should be possible to update the personalised part if a building is sold (transferability).

3

EU policy provisions supporting local authorities to renovate buildings

Because an estimated 40% of Europe's energy use and 36% of its GHG emissions are related to buildings, several EU Directives have been opened for revision after the initiation of the European Green Deal (2020), which aims to make Europe the first carbon-neutral continent in 2050.[38] In the Fit for 55 policy package (2021), the European Commission presented a detailed plan to start implementing the Green Deal, with concrete measures to reduce EU carbon emissions by 55% by 2030 (compared to 1990).[39] Among others, the Energy Efficiency Directive (EED), the Energy Performance of Buildings Directive (EPBD) and the more recently drafted REPowerEU plan in response to Russia's invasion of Ukraine support reducing fossil fuel use, increasing energy efficiency, and enabling renewable energy generation in buildings.

The changes in these EU Directives are affecting the way energy is being supplied at the municipal level, and increase the urgency of improving the envelope of the buildings. The following section details the relevant content in the EED, the REPowerEU plan and the EPBD recast, including an explanation of where BRPs can support policymakers and building owners in improving the building stock.

[38] European Commission. (2019). COMMUNICATION FROM THE COMMISSION The European Green Deal. COM (2019) 640 final.
[39] European Commission. (2021). COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. 'Fit for 55': delivering the EU's 2030 Climate Target on the way to climate neutrality.

EPBD recast

The Energy Performance of Buildings Directive Recast (2024) was adopted by the European Parliament on 12 March 2024, and on 12 April 2024 by the European Council.[40] The primary aim of the EPBD recast is to fully decarbonise the building stock by 2050; it ensures that Member States are on track towards decarbonisation by setting intermediary milestones. The update includes both elaboration of existing provisions and entirely new provisions. The aim of this section is to describe the provisions most relevant for implementing BRPs and improving access to financing among local authorities in Bulgaria, Romania and Slovakia. These provisions could also be relevant for other local authorities in the broader CEE region. An overview of all content-related articles and corresponding Annexes is shown in Figure 8.

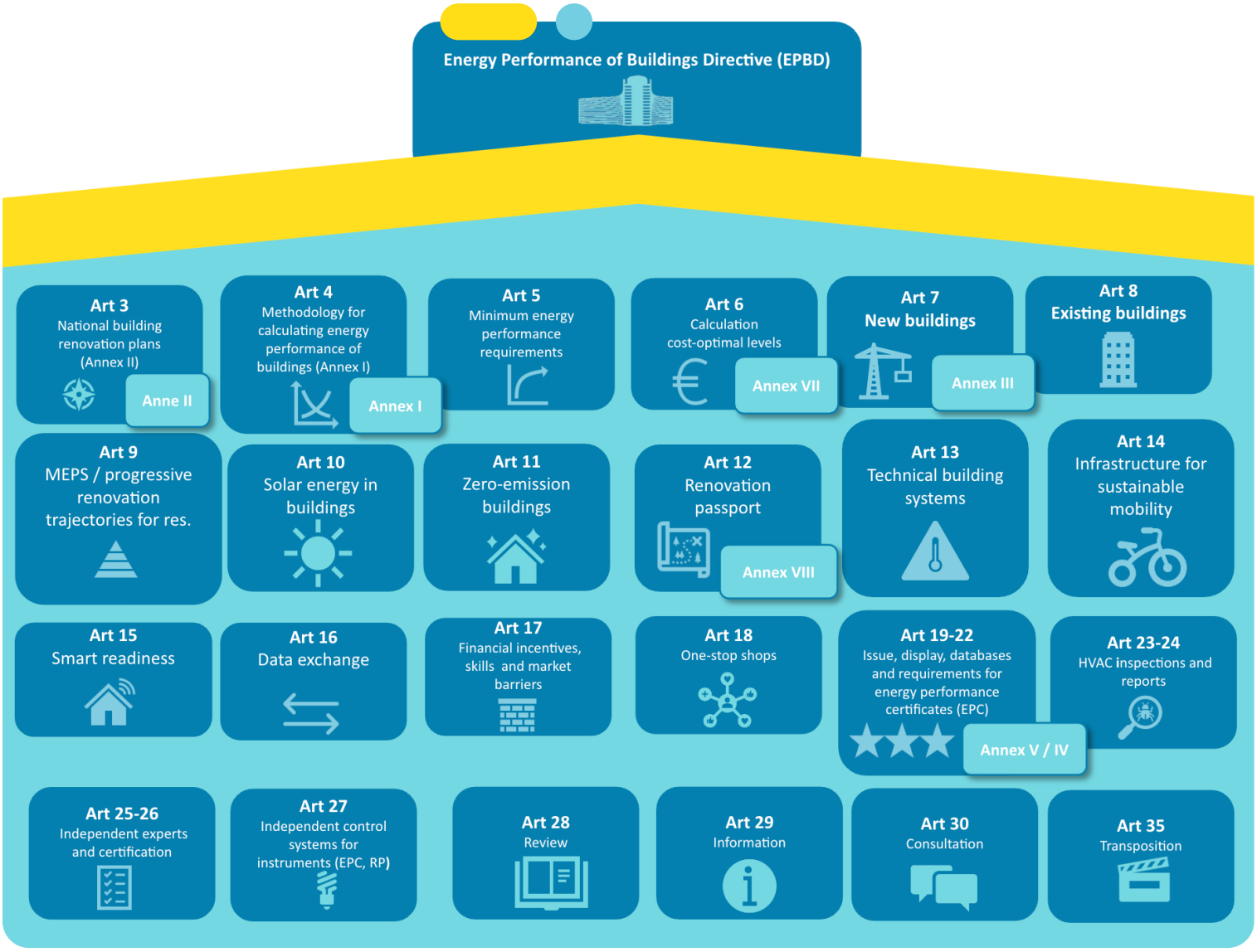

Figure 8. Energy Performance of Building Directive Recast provisions overview

[40] European Parliament legislative resolution of 12 March 2024 on the proposal for a directive of the European Parliament and of the Council on the energy performance of buildings (recast) (COM(2021)0802 – C9-0469/2021 – 2021/0426(COD)) – P9_TA(2024)0129

The following articles are considered most relevant for local authorities to improve access to financing and implement BRPs, and are based on the text in the recast:[41]

- Article 3 National building renovation plans
- Article 9 Minimum energy performance standards (MEPS) and progressive renovation trajectories
- Article 10 Solar energy in buildings
- Article 11 Zero emission buildings (ZEBs)
- Article 12 Renovation passports (BRPs)[42]
- Article 17 Financial incentives, skills, and market barriers
- Article 18 One-stop shops (OSSs)
- Article 19 Energy performance certificates (EPCs)
- Article 29 Information

Article 3

National building renovation plans (NBRPs)

National building renovation plans (NBRPs) describe how Member States will transform their existing private and public buildings into zero-emission buildings (ZEBs) by 2050. This concerns both residential and non-residential buildings. The NBRP is replacing the long-term renovation strategy in the EPBD. As a key aspect, NBRPs have to take up the definition for 'zero emission building' to be developed according to Art. 11, EPBD reacst.[43] NBRPs should summarise characteristics about the building stock (e.g. what types of buildings, climate zones, construction period, and shares of vulnerable inhabitants) and provide a roadmap to renovate buildings including intermediate targets towards 2050. Aspects in NBRPs particularly relevant for local authorities are the overview of implemented and planned policies supporting NBRP implementation and the outline of the investment needs. Governments should include an overview of financing sources and measures in addition to administrative resources for building renovation. Such an overview could point local authorities to essential resources to renovate their public buildings and highlight the available BRP schemes at national level.

These NBRPs must be updated every five years based on a template with mandatory and voluntary elements, provided in Annex II of the directive. The first draft should be presented to the European Commission in December 2025, and a final version on 31 December 2026. To gather input, Member States must set up public consultation mechanisms. The EPBD recast explicitly mentions the importance of involving local authorities in this public consultation, providing a platform for local authorities to share needs, feedback and concerns.

[41] European Parliament legislative resolution of 12 March 2024 on the proposal for a directive of the European Parliament and of the Council on the energy performance of buildings (recast) (COM(2021)0802 – C9-0469/2021 – 2021/0426(COD)) – P9_TA(2024)0129

[42] Whereas the EPBD proposal from the European Commission (2021) still referred to both 'building renovation passport' and 'renovation passport', the EPBD recast adopted by the European Parliament in March 2024 only refers to 'renovation passport. This report will stick with 'building renovation passport' for internal consistency.

[43] More on this under Article 11.

Article 9

Minimum energy performance standards (MEPS) and progressive renovation trajectories

Member States must establish minimum energy performance standards (MEPS) for non-residential buildings, and progressive renovation trajectories for residential buildings.

MEPS for non-residential building define maximum performance thresholds of energy use (kWh/m^2/y) by a specific date. Member States decide whether this concerns final or primary energy use. These thresholds are based on the performance of the national stock of non-residential buildings. Two thresholds must be defined: the 16% threshold and the 26% threshold. The threshold is set based on the national building stock performance in 2020, and the maximum energy consumption threshold is set in such a way that 16% or 26% of all non-residential buildings are above the thresholds. The minimum energy performance standards ensure that in 2030 all non-residential buildings are below the 16% threshold, and 26% in 2033. Building compliance must be checked based on EPC ratings, or other available means.

A different approach is taken for residential buildings. Member States must establish a trajectory for the progressive renovation of residential buildings to meet targets for 2030, 2035, and still-to-be-established targets for 2040 and every five years thereafter. They must ensure that the average primary energy consumption of all residential buildings, expressed in kWh/m^2/year, is reduced by those dates compared to the baseline year 2020 (see Figure 10). More specifically, the average primary energy consumption of residential buildings should be reduced by 16% by 2030 and 20-22% by 2035. Targets for 2040 and later will be set in alignment with the targets in the NBRP. From these renovations of residential buildings, at least 55% of the decrease should be achieved through renovation among the 43% worst-performing buildings.

Member States must implement financial measures to support households in complying with renovations and incentivise stepwise deep renovations financially in alignment with article 17 on financing (more details below) – for which BRPs are important supportive tools. This is relevant for public authorities that must improve the performance of their office buildings, schools, or medical buildings, or, when they own it, social housing.

BRPs are an essential part of an enabling framework for the successful implementation of MEPS and progressive renovation trajectories, ensuring that the worst-performing buildings and their users have feasible strategies to upgrade their buildings. BRPs can provide data on the required renovation measures and expected savings, while ensuring that buildings subject to MEPS implement sensible measures, and show how the right renovation steps can be implemented along a progressive renovation trajectory.

Article 10

Solar energy in buildings

Where technically and economically feasible, Member States must ensure that solar panels are installed on new and existing buildings. From 2027 onwards they must be on all new public buildings larger than 250m^2, and on all existing public buildings with useful floor area larger than:

- 2000m^2 by 31 December 2027
- 750m^2 by 31 December 2028
- 250m^2 by 31 December 2030

This is relevant for all public authorities planning renovations or which own buildings. The requirement will be extended to all non-residential buildings larger than 250m^2 requiring permits for building renovation measures, installing technical systems, or roof construction works by 31 December 2027, and new residential buildings by 31 December 2029.

Article 11

Zero emission building (ZEB)

In the coming years, at the latest by 2030, the Zero emission buildings (ZEB) standard will replace the Nearly-zero energy buildings (nZEB) standard. The ZEB standard is necessary for fully decarbonising the building stock towards 2050. ZEBs are defined as not causing any on-site emissions from fossil fuel combustion. Member States will define the maximum amount of energy consumption per square metre applicable to ZEBs, which can be differentiated between new buildings, existing buildings, building type and climate zone. These maximum thresholds should be at least 10% lower than near-zero energy buildings (nZEB), and are defined by the Member States.

The national definition of ZEB is important, because not only does it set out the goal of the transformation of the building stock, but it also sets a target for individual buildings. As Member States must set up national pathways to transform the national building stock into ZEBs, including public buildings (Art. 3), the new threshold will also be relevant for buildings operated and owned by national and local authorities. This is highly relevant for BRPs, as these set up decarbonisation roadmaps for individual buildings. It is therefore important to align the goals of BRPs to at least ZEB standard to avoid carbon and energy lock-ins.

Article 12

Renovation passports

Member States must implement voluntary BRP schemes within two years after the adoption of the EPBD recast, following a **common framework** provided in Annex VIII of the directive. Governments can decide to make these mandatory. The following BRP definition is provided:

'"Renovation passport" means a tailored roadmap for the deep renovation of a specific building in a maximum number of steps that will significantly improve its energy performance.'

Here, 'deep renovation' refers to a renovation to nZEB level before 2030, and ZEB after 2030. Another term used in the EPBD is 'staged deep renovation', which refers to a deep renovation implemented in a number of steps, as set out in a renovation passport.

The BRPs must be made available in a digital format by a qualified expert following an on-site visit. The expert should offer the building owner the opportunity for a meeting to explain the best steps to achieve a ZEB by 2050. Member States must make efforts to establish a digital tool to prepare and possibly update the BRP, or to allow 'draft' or simplified BRPs that can be updated after renovations. When designing a BRP scheme, Member States must ensure that the BRP can be uploaded to the national database for the energy performance of buildings. When digital building logbooks (DBLs) are available, Member States should ensure that BRPs are compatible and can be stored in them.

Synergies exist between BRPs and energy performance certificates (EPCs). Member States are therefore allowed to issue EPCs and BRPs together, developed by the same expert. When governments choose this option, the BRP replaces the recommendations on the EPC.

Annex VIII – Requirements for renovation passports

The BRP scheme has mandatory elements that should be included, besides optional aspects that could be included (see Figure 11).

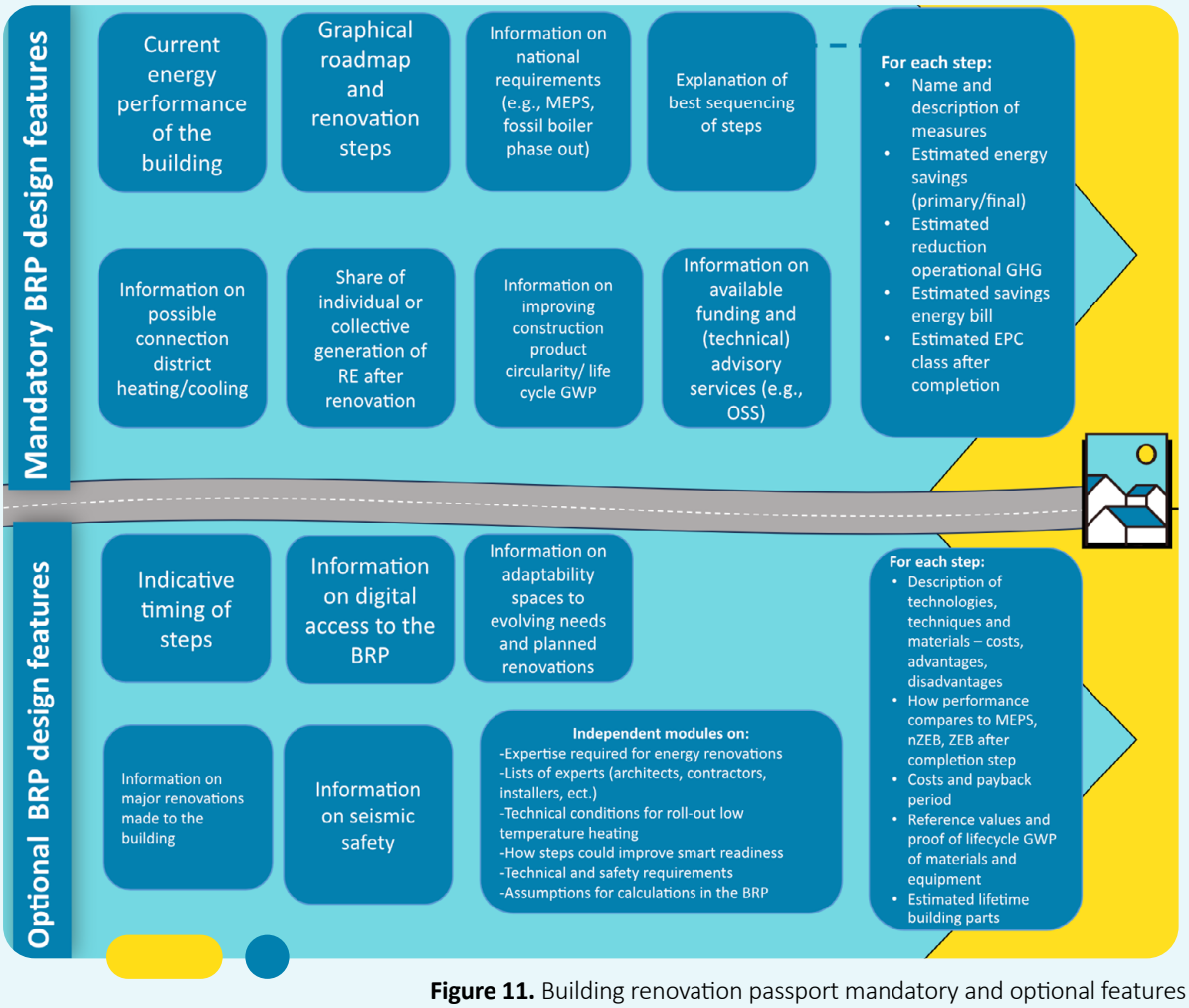

Figure 11. Building renovation passport mandatory and optional features

BRPs should include information on the current energy performance of a building, a graphical roadmap with different steps, information on key policy requirements, and explanation of the right sequencing of steps. Per step, information should be disclosed on the costs and benefits, in addition to energy and emissions saved. Moreover, the BRP should highlight the possibility of connecting to local district heating and cooling, and the share of renewable energy generated after the renovation. The optional requirements either elaborate on the mandatory ones (e.g. more details on costs and methods, contact details of relevant experts, or in-depth clarification of compliance with regulations like MEPS), or introduce additional considerations (e.g. adaptability, seismic safety, or digital access).

BRPs are important tools to upgrade public buildings because they provide information that building owners often lack: which measures to take, what order to implement them in, and what their benefits will be. For public authorities managing a building portfolio, BRPs can contribute to identifying the most cost-effective measures and avoiding costly mistakes through ensuring the right sequence of renovation works.

Article 13

Technical buildings systems

For owners of non-residential buildings, such as public authorities, it is a requirement to optimise the energy use of technical building systems by using energy saving technologies and preparing the building for the integration of renewable energy. Quality standards for indoor environmental quality (IEQ) should be implemented, and non-residential buildings undergoing a renovation to ZEB level (label A) should have monitoring and control devices installed. Besides phasing out fossil fuel boilers in existing non-residential buildings, Member States must install automation and control systems by 31 December 2024 when the system output is larger than 290 kW and by 31 December 2029 when the system output is larger than 70 kW. These systems should allow for the monitoring and benchmarking of energy use and IEQ performance. Automatic lighting control should be installed for non-residential buildings with heating, ventilation, and air-conditioning (HVAC) systems, and be applied for systems with 290 kW by 31 December 2027 and for systems with 70 kW by 31 December 2029.

These provisions related to technical buildings systems might be relevant for local authorities owning larger public buildings, and could help optimise their energy use and save energy. This is relevant for BRPs, as replacing heating systems is an essential part of the staged renovations proposed in the renovation steps set out in BRPs.

Article 17

Financial incentives, skills and market barriers

Member States must provide support measures, appropriate financing and other instruments to tackle market barriers and deliver the necessary investments described in their national building renovation plans (NBRP – Article 3) to achieve a zero-emission building stock in 2050.

Access to finance is essential. Member States should therefore create simple and streamlined applications and procedures for public funding. The high upfront costs, which are a persistent barrier, should also be addressed. European funding from sources like the Recovery and Resilience Facility, auctioning revenues from emissions trading, the Cohesion fund, the Social Climate Fund, InvestEU, and other public funding sources should be utilised.

Moreover, Member States should consider the use of a variety of financial instruments, like mortgage portfolio standards, funds targeting deep renovations, guarantee funds, on-bill schemes, on-tax schemes, reduced tax rates on renovation works/materials, fiscal incentives, pay-as-you-save financial schemes, energy performance contracting, green loans, green mortgages, and energy efficiency loans. Member States should especially incentivise deep renovations through higher administrative, fiscal and financial support.

Available funds and financial tools should be made available to the public transparently and accessibly, and Member States should support project aggregation (for investments). The Commission should provide a voluntary portfolio framework for financial institutions, intended to increase lending volumes for energy renovations. After 1 January 2025 Member States are not allowed to subsidise stand-alone fossil fuel boilers.

These financial provisions must enable easier access to public and private funding for homeowners, but also for local authorities. There is a push to provide transparent information to clarify what funding instruments are available. Linking financing tools to BRPs could be a targeted support measure for Member States to incentivise deep renovations, for example by providing funding for BRPs, or providing fiscal advantages when BRPs are developed for a building.

Article 18

One-stop Shops (OSS)

Member States should establish technical assistance facilities and one-stop shops (OSSs) for the energy performance of buildings. The purpose of technical assistance facilities is to provide clear and accessible renovation guidance through information on financial and technical possibilities and solutions. There should be a particular focus on the worst-performing buildings and on households subject to energy poverty. Target groups are households, as well as SMEs and public bodies. Support is also provided to installers and companies providing retrofit services. Holistic support should be made available for different stages of the retrofit project. OSSs provide independent advice and may provide dedicated services to families subject to energy poverty.

OSSs and technical assistance facilities should be evenly distributed over a country's territory, factoring in population size, regions, areas where buildings are inefficient, and other indicators. These OSSs should be established in cooperation with competent authorities and the private sector where relevant. The EU Commission will provide guidelines to establish those OSSs. Clearly, OSSs could be a first contact point supporting local authorities with assessing their building stock, selecting the right buildings for renovation, and highlighting financing possibilities.

This is relevant for BRPs because from one side OSSs could promote voluntary BRP schemes among building owners and users, while BRPs could refer to the services of OSSs related to technical assistance for planning the renovation works or available financial support. The successful implementation of BRPs and OSSs has potential to be mutually reinforcing. Moreover, OSSs will be implemented at the local or regional level, and might closely collaborate with local authorities or even be initiated by them. This highlights the need for capacity-building among public authorities to support the roll-out of BRPs and OSSs.

Article 19

Energy performance certificates (EPCs)

Energy performance certificates (EPCs) express the energy performance of individual buildings in kWh/m^2/year, and include references to regulatory requirements such as MEPS, nZEB and ZEB. This helps building owners assess and compare the performance of buildings. The EPBD recast includes an update of the scaling of EPCs. Within two years after adoption of the EPBD recast, EPCs should comply with the template in Annex V of the EPBD. The scaling should run from A to G, whereby A represents a ZEB, and G covers the very worst-performing buildings. Special provisions apply to Member States that have updated their EPC scaling between 2019 and the adoption of the EPBD recast in 2024.

If a BRP is issued jointly with an EPC, the BRP replaces the EPC renovation recommendations. The validity of an EPC is a maximum of 10 years, and Member States must ensure building owners are invited to visit an OSS if their buildings have an EPC-rating of C or lower, or five years after issuance of their EPC. Member States should also enable simple procedures to update an EPC after a renovation with standalone measures, when measures are implemented following the recommendations in a BRP, or when other certified digital tools are used.

As part of Article 21 (display) and article 22 (databases), public bodies are obliged to display the EPCs of public buildings visibly. The EPCs should be stored in either a central database or a network of interconnected databases. Aggregated and anonymised data of the building stock should be made publicly available. Local authorities should have access to the energy performance data of buildings in their territory to support heating and cooling planning.

EPCs are key tools in establishing the baseline performance of buildings, and support policymakers to monitor progress in improving the energy performance of buildings. There are strong synergies between EPCs, BRPs and OSSs. Local authorities may play a role as an intermediary between building owners and OSSs, and the monitoring efforts of local authorities could be supported by integrating EPCs and BRPs with other digital tools. That would enable easy procedures for updating the EPCs after renovation measures are implemented, which in turn would ensure more accurate performance data for authorities to steer their renovation policies.

Article 29

Information

Member States must provide relevant actors – like building owners, but also local and regional authorities – with information on the practices and methods available to improve the energy performance of buildings. Awareness campaigns should focus on the utility of EPCs, available financing instruments, and technical advice. OSSs are principal tools to provide transparent information. Special efforts should be made for vulnerable households.

Member States must also strive to create dedicated support and training measures for local and regional authorities, energy communities and other actors to promote the objectives of the EPBD recast. The Commission continues efforts to improve and extend its communications about the availability of EU funding. Together with the European Investment Bank and the Local Energy Assistance Facility,[44] the Commission aims to facilitate the use of these funds by national, regional and local authorities.

Communication efforts are essential for implementing the EPBD recast. Local authorities are explicitly recognised as key actors in promoting the objectives of the EPBD recast, and Member States must invest in capacity-building to enable staff to contribute to communications, while the EU institutions aim to improve access to funding for local authorities.

Energy Efficiency Directive (EED)

An important way to reduce carbon emissions is to reduce final energy demand. Fuel that is not burned gives out no emissions. This is exactly what the revised Energy Efficiency Directive (EED) (2023) aims to achieve.[45] The energy efficiency first principle is at the heart of the EED and aims to ensure that cost-effective energy efficiency measures are actually implemented. This helps to reduce dependence on fossil fuels and facilitates the efficient use of renewables.[46] The EU Commission's initial EED proposal (2021) was made more ambitious as part of the REPowerEU plan (2022), aiming to decrease fossil fuel use and increase energy security in response to Russia's invasion of Ukraine; the revised EED was adopted in 2023 and entered into force on 10 October 2023.

The EED established the overarching binding target to reduce European energy consumption by 11.7% by 2030. While the target is the first binding target for energy savings at EU level, the Member States' targets are still indicative. The savings are to be achieved by Member States' national contributions, including through annual energy saving obligations, whereby each Member State must achieve from 1.3% (2024-2025) to 1.9% (2028-2030) energy savings. Reducing the energy consumption of buildings is essential to achieve these energy saving obligations. Certain articles in the EED directly call upon public authorities to reduce energy demand. These articles and their relevance for local authorities are presented below.

The EED recast entered in force in October 2023. The transposition period will end in Oct 2027.[47] The EED is subdivided in several chapters (see Figure 12). The description of relevant articles for public authorities and BRPs is presented below, and is based on the text in the recast.

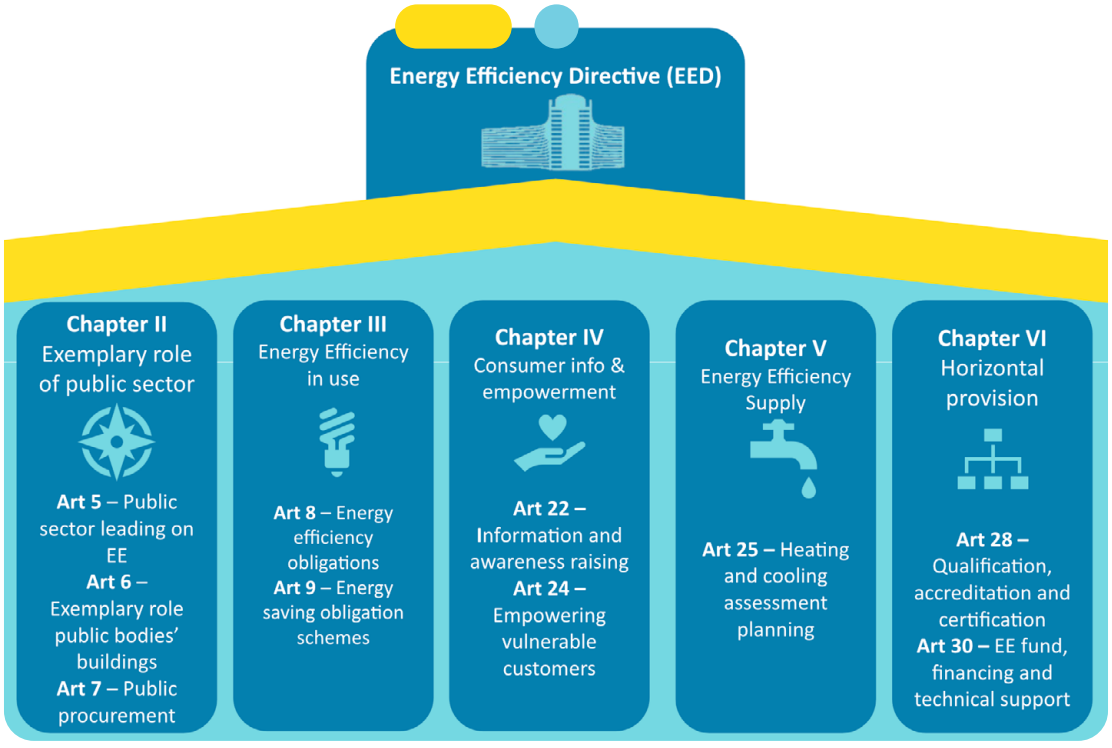

Figure 12. Energy Efficiency Directive

[44] European Investment Bank. (n.d.). ELENA – European Local Energy Assistance. Accessible at: https://www.eib.org/en/products/advisory-services/elena/index.htm

[45] European Commission. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

[46] European Commission. (n.d.). Energy Efficiency First principle. Accessible at: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficiency-targets-directive-and-rules/energy-efficiency-first-principle_en

[47] European Commission. Directive (EU) 2023/1791 of the European Parliament and of the Council of 13 September 2023 on energy efficiency and amending Regulation (EU) 2023/955 (recast).

Chapter II

Exemplary role of public sector

Article 5 enshrines the leading role of public authorities in the area of energy efficiency. Member States must ensure that the final energy consumption of all public bodies combined is reduced by at least 1.9% each year, compared to 2021. Some temporary exceptions apply to smaller public bodies (e.g. municipalities with populations lower than 50,000 or 5,000 inhabitants). The article requires Member States to support public bodies in taking energy efficiency improvement measures, also considering wider benefits beyond energy efficiency (e.g. air quality), to provide guidelines, and facilitate competence-building. Specifically, Member States must encourage the improvement of the energy performance of buildings owned or occupied by public bodies. This is highly relevant for municipalities as they will play a key role in reducing energy demand, but they must also make efforts to reduce their own demand. BRPs are tools that support municipalities to invest in the right measures to reduce demand, and show how much energy can be saved by investing in additional measures. BRPs therefore help local authorities to prove their exemplary role in energy savings.

Article 6 specifically stresses the exemplary role of public bodies' buildings. Public authorities, municipalities included, are required to achieve a 3% renovation rate of the total floor area owned or occupied by public bodies into at least nZEB or ZEB. This applies to buildings with a useful floor area larger than 250m^2. To monitor progress, a national database should be established of heated/cooled buildings occupied by public actors, and information on building stock characteristics, renovation and energy performance may be linked to the EU building stock observatory. When public buildings have BRPs, local authorities have the data necessary to renovate those buildings with the highest energy savings and the most affordable measures. BRPs will therefore enable public authorities to reach the 3% renovation rate.

Article 7 covers public procurement, and of relevance is that when procuring for large sums of money energy efficiency concerns should be taken into account. When considering renovation of buildings, for which services need to be procured, a BRP would be the ideal tool to ensure that energy savings are achieved within the available public budget.

Chapter III

Efficiency in energy use

Article 8 sets out national-level energy saving obligations. Member States need to save energy corresponding to annual energy sales to final customers starting at 0.8% but increasing to 1.9% annually compared to an average of three years preceding 2019. The contributions of municipalities and public authorities to these targets is essential for compliance. Implementing renovation measures in line with a BRP could support the reduction of energy demand in buildings operated by local authorities, and ensure that local authorities deliver their fair share to national energy saving obligations.

Article 9 enables Member States to develop 'energy efficiency obligation schemes' as a way to oblige public and private energy sector actors to support the achievement of the energy saving obligations in Art 8. Member States may appoint "obliged parties" among key players in the energy market (e.g. distribution system operators, energy distributors, or retail energy sales companies), and oblige them to achieve energy savings among final customers (e.g. building owners). These obligated parties collaborate with local authorities and social services to promote energy efficiency among energy-poor households or in social housing. For example by renovating buildings or creating financial support for improvement measures integrated into national funding and auditing schemes.

BRPs could be useful tools for energy saving obligation schemes, because they highlight the possible savings of specific renovation steps. In that way, obligated parties could assess how much energy would be saved by implementing sensible renovation measures for (public) buildings.

Chapter IV

Consumer information and empowerment

Article 22 relates to information and awareness-raising. Member States must collaborate with local authorities to ensure information is available on energy efficiency improvement measures, individual actions and financial support. Member States should take action to promote efficient energy use, e.g. through targeted advisory services, exemplary projects, OSSs or other digital tools. BRPs are tools that provide advice to building owners and should be linked to OSS and other tools, and therefore are ideal tools to be promoted under this article.

Article 24 aims to empower vulnerable customers. It is important for municipalities to keep in mind that energy-poor households should be a priority when renovating buildings and providing energy services. BRPs could be tailored to financial capacity and refer to special financial support for energy-poor households.

Chapter V

Heating and cooling assessment and planning

Article 25 requires public authorities to engage in heating and cooling assessment and planning. This includes a requirement for larger municipalities to have heating and cooling plans, ensuring energy efficiency first. These plans must provide a strategy to replace inefficient heating and cooling appliances in public buildings. BRPs are ideal tools to ensure the replacement of heating systems is well aligned with other renovation measures like insulation or renewable energy generation.

Chapter VI

Horizontal provisions

Article 28 aims to ensure the availability of qualification, accreditation and certification schemes. More specifically, Member States must establish certification, qualification and training schemes for energy efficiency-related professions, where necessary, to meet market needs.

Article 30 focusses on financing, particularly by requiring Member States to establish a national energy efficiency fund, financing and technical support (Art. 30). Member States must establish financing facilities for energy efficiency improvements and support combinations of grants, technical assistance and financial instruments. Member States should also support local expertise and the exchange of best practice. This is an opportunity for municipalities to exchange experiences, for example experiences with developing BRPs or accessing different types of renovation financing, which would play an instrumental role in generating the funding and expertise needed to renovate more public buildings. Moreover, attention should be given to increasing funding options like energy efficiency lending products (e.g. green mortgages or loans) and to encouraging loan guarantee facilities for energy efficiency investments.

REPowerEU

The REPowerEU communication from the European Commission was published in 2022 in response to the Russian invasion of Ukraine and the subsequent spike in energy prices within EU Member States. The aim of the plan is to reduce fossil fuel consumption and increase energy efficiency and renewable generation capacity in EU Member States. The plan comprises two main parts: addressing the immediate emergency, and eliminating European dependence on Russian fossil fuels (see Figure 13). The second part is especially relevant, as the strategy suggests dependence on Russian fossil fuels can be eliminated through energy efficiency measures, switching heating systems, and renewable solar energy generation.[48] Following the initial REPowerEU plan, an EU Solar Energy Strategy was published elaborating how more solar energy can be generated in the short and medium term, including through an EU solar rooftop initiative.[49]

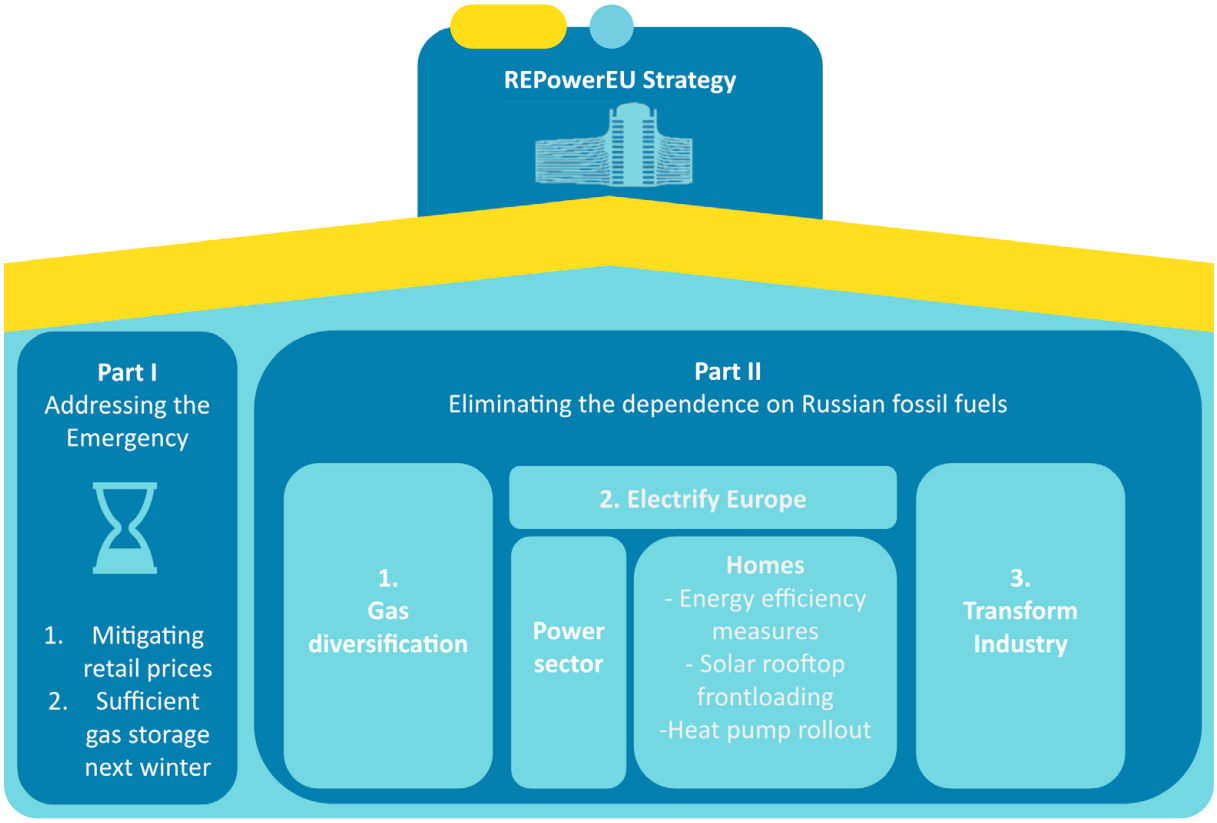

Figure 13. REPowerEU Strategy

The energy efficiency first principle is now more relevant for all sectors, according to the EU Commission, whereby demand response and supply-side measures should go together.

[48] European Commission. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. REPowerEU: Joint European Action for more affordable, secure and sustainable energy. COM (2022) 108 final.

[49] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS – EU Solar Energy Strategy. SWD (2022) 148 final.

Particularly relevant for municipalities is the section on electrifying Europe, mostly the section focussing on homes. The plan foresaw direct impact for 2022, when the strategy was published, but also additional savings for 2030. The measures for homes included:[50]

- Energy efficiency measures saving 10 billion cubic metres of gas (BCM) by 2020 and an additional 14 BCM on top of the Fit for 55 package by 2030.
- Active acceleration of solar rooftop PV systems, with the aim to have increased by 15 TWh in 2022, saving 2.5 BCM.
- Installing 30 million heat pumps by 2030, saving 35 BCM in 2030, including installing 10 million units between 2022 and 2027.

These measures would be enabled through faster permitting, but also by further developing the value chain for solar and wind energy. The solar rooftop initiative was initiated in 2022 to unlock solar potential and overcome barriers hindering the fast roll-out of PV. This is relevant for Article 10 on solar energy in the EPBD recast.

EU policy takeaways

The recast EPBD, EED and REPowerEU plan highlight the importance of building renovation, and the essential contribution and exemplary role of public authorities at national and local level in achieving climate targets and reducing dependence on fossil fuels in the building sector. These policies set out targets that must be achieved by public authorities to meet required renovation rates, and BRPs are key instruments that can support national and local authorities in achieving them.

During the EPBD recast transposition timeline, Member States will have to establish voluntary BRP schemes. These schemes have the potential to function as a connecting element between different provisions within the EPBD, but also across directives. BRPs are practical tools that support home-owners on the ground to take financially and environmentally smart decisions by carefully planning renovation measures in several stages.

EPBD recast: implications for BRP schemes and local authorities in CEE

- All Member States introduce BRPs as voluntary tools in alignment with Annex VIII of the EPBD. The target of BRPs will be a “deep renovation” to nZEB until 2030 and ZEB from 2030 onwards for individual buildings. Member States have the flexibility to tailor national BRP schemes to the local context by including optional design features.

[50] European Commission. COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. REPowerEU: Joint European Action for more affordable, secure and sustainable energy. COM (2022) 108 final.

- Local authorities are key players in the implementation of the EPBD recast. BRPs are primary tools supporting local authorities to renovate their buildings to required EU and national standards, to implement no-regret renovation measures towards nZEB or ZEB performance, and to point building owners to available financial support.

- BRP schemes should be developed to be machine readable, and they will be most effective when carefully aligned and integrated with other digital tools like DBLs, EPCs, OSSs and transparent information on available private funding and public financial support.

- Local authorities should receive support from EU and national institutions to build capacity and receive transparent information on available technical, administrative and financial assistance.

- The national building renovation plans (NBRPs) will summarise the efforts to transform the building stock, including describing measures taken related to financing and the nationally available BRP schemes. Member States should consult local authorities when drafting the NBRP to ensure their concerns and needs are considered, and to ensure local authorities can share their expertise and experience.

- Public authorities should ensure the installation of solar energy on rooftops of public buildings in alignment with the specified timeline. This could also be reflected in the BRP, by ensuring that roof insulation and solar PV installation are well aligned, thereby avoiding expensive mistakes.

- Technical systems will need to enable monitoring of energy consumption, benchmarking performance on IEQ, and be combined with lighting controls following the timeline set out in the EPBD recast. This might apply to public buildings with large HVAC systems, and updating these systems is best done following the sequence of measures proposed in a BRP.

EED: implications for BRPs and local authorities in CEE

- BRPs could be suitable tools to support efforts to renovate buildings and, in line with EED articles 5 and 6, to ensure the exemplary role of public authorities by setting out roadmaps to decarbonise public buildings.

- BRPs could be linked to energy saving obligation schemes and help achieve national energy saving obligations, for example when measures implemented to save energy demand in buildings are implemented following suggestions in a BRP, while the energy savings could be tracked when the BRP is updated after renovation works have been implemented.

- BRP pilots, like in Renocally, are great exemplary projects. Municipalities could help promote BRPs as a good example of an advisory measure and information tool relevant for Article 22.

- BRPs could support the replacement of heating systems at the optimum moment, as part of the heating and cooling planning requirement for Article 25.

- Training schemes for energy auditors for BRPs could be established in the context of Article 28.

- Public authorities should renovate 3% of their buildings annually. BRPs would be instrumental in selecting the right measures and in ensuring the worst-performing buildings are renovated.

REPower EU: implications for CEE and local authorities

- Heat pumps and solar PV should be integrated in buildings; during renovations BRPs can help to optimise the dimensions of heat pumps, and also ensure that measures are taken in the right sequence.

4

Recommendations for local authorities implementing BRPs

Local authorities have significant opportunities to leverage BRPs to enhance building renovation efforts. Local authorities can take several preparatory steps to successfully implement BRPs as outlined in the recast of the EPBD. First-hand experience from Renocally colleagues in Romania and Bulgaria involved in generating BRPs is presented in the following two case studies, as well as a synthesis of their benefits and recommendations for their implementation.

BRP experience from Bulgaria and Romania

Experience implementing BRP in Romania – from Bodgan Potlogia – Director Ae3R Ploiesti

The Energy Efficiency and Renewable Energy Agency Ploiesti-Prahova (Ae3R Ploiesti) coordinated the development of a first BRP for a medical centre in the Lipanesti municipality with a local energy auditor.[51] *At this stage there is no official BRP scheme in Romania, so the iBRoad project method*[52] *was followed. Input data for the BRP were obtained from officially approved EPC software.*

The first important steps were to request the mayor to designate a contact person within the administration for the energy auditor. An internal contact person is essential for obtaining the necessary information for the BRP from different departments. The life of the auditor gets significantly easier when the municipality has all data available, which is more likely the case with more recently constructed buildings. For older buildings, documents are sometimes unavailable, which requires a more thorough on-site investigation from the auditor to collect the necessary information.

[51] Mauricio (2023) *First Renovation Pass for Medical Centre in Prahova.*
[52] iBRoad Project. Accessible at: https://ibroad-project.eu/

The collaboration with the municipality was constructive, and the necessary information about the medical centre was shared without issues. The benefit of the BRP is that it gives clarity on the costs, which then can be considered when evaluating the municipal budget. Within the municipal budget, certain amounts are allocated for renovation projects. Having a BRP made, you know what amounts to reserve for specific renovation measures. Better financing instruments could further improve renovation activities.

Recommendations based on the Romanian experience

BRP training should be organised at national level for municipal employees, by the organization which does the training for certified EPC auditors. Auditors for buildings receive regular training regarding changes in legislation or applicable standards. A less technical approach would be useful for the technical staff in municipalities responsible for gathering up the documents for the auditors or for submitting energy efficiency and renewable energy supply projects for funding.

For now, local authorities are obliged to issue and display EPCs only for public buildings with a surface larger than 250 square metres. However, having BRPs for all public buildings, including smaller ones, would provide better insights into the energy needs of the municipality.

Another way that municipalities could be supported would be to enable the use of existing energy audits[53] of public buildings as primary data inputs for the BRP. Not having to re-do audits for each building would ease municipal budgets.

Implementing works in alignment with BRPs is not yet compulsory by law, and whether funds from the municipality are allocated to renovate buildings remains a political decision for local councils. There therefore remains a high risk that councils will not invest sufficient funding in renovation.

A recommendation for other municipalities interested in developing BRPs is to assign a trained specialist to implement them. Generally speaking, it would be very helpful to have Romanian BRP software aligned with other instruments.

Experience implementing BRPs in Bulgaria – Kamen Simeonov, Project Manager, EnEffect

The Centre for Energy Efficiency – EnEffect – has been pioneering several BRPs in Bulgaria in the context of iBRoad, EUKI Our Buildings, and more recently Renocally. In Renocally, EnEffect is already developing two BRPs, for a kindergarten and a community centre. In the absence of an official BRP scheme in Bulgaria, the iBRoad tool is being used in combination with the municipalenergy.net platform (developed within the EUKI-funded MEMS project) for developing renovation plans and policies.

The first steps to take includes selecting the buildings for renovation, by identifying buildings where the potential benefits of renovation would be the largest. Energy aspects are key, but there is also the social dimension to consider. Once a building is selected, a site visit should be scheduled, the energy consumption should be analysed, and the wishes and feedback of owners and users should be collected.

EnEffect has experience working with municipalities and residential building owners. Although most residential building owners have liked the outcomes of the BRP, not all have been willing to invest in the measures it outlines.

[53] In Romania energy audits are valid for a period of up to 10 years, if no energy efficiency improvement measures are implemented.

The increase in energy prices may have reduced people's willingness or ability to pay. Municipalities, on the other hand, have shown more interest in implementing measures suggested in the BRP: some have actually invested to implement all the measures at once, while others have taken the stepwise approach. The stepwise approach is particularly relevant for smaller municipalities with smaller buildings and renovation budgets. For larger municipalities, using a single platform – such as a building logbook or the municipalenergy.net platform – allows for buildings to be compared and helps in planning renovations.

To facilitate data collection, it is very helpful if there are experts working on the maintenance of the building, or if there are specialists storing and processing building data. These experts can usually express clear goals for the BRP and provide the necessary data. If this is not the case the data collection (e.g. energy consumption or technical documents and drawings) might be more time-consuming. Therefore, a recommendation for municipalities wanting to implement BRPs is to determine the building with most potential for renovation (energy savings or social function), find an experienced auditor, provide as much information as possible, and together agree the minimum desired results of the first renovation step. By agreeing on the minimum desired results, the limited available grant funds could be used to renovate buildings, even when energy saving potential and financial parameters (e.g., payback) of the renovation projects could theoretically be higher.

The overall BRP process could be facilitated by a national tool for developing BRPs, linked to national EPCs. The iBRoad2EPC project is piloting a BRP linked to EPC schemes.

BRP benefits and recommendations for designing and implementing BRP schemes

BRPs' effectiveness will depend on their capacity to tackle existing market barriers: lack of information, difficulties accessing financing, and choosing the right renovation measures. This guidebook has highlighted the strengths of and methods behind existing BRP schemes, and has highlighted EU policies like the EPBD, EED and REPowerEU that assume the establishment of BRP schemes throughout the EU. These policies provide an enabling framework to achieve the ultimate goal of a decarbonised European building stock.

Local authorities are key to a successful transition in the building sector, and they wear different hats simultaneously: as building owners or managers, as actors close to small and medium-sized construction companies, and as hubs within local networks. Local authorities must therefore be empowered through capacity-building, get better access to finance, and be consulted about the development of national strategies and instruments, including BRPs.

Even though BRP schemes are available in some Member States, there are still many in which this is not the case. BRP experience and capacity-building in these latter countries is mainly based on ongoing research projects. The Renocally project, in which context this guidebook has been developed, is one of these projects. The focus of Renocally is on developing BRPs in Bulgaria, Romania and Slovakia. The recommendations in this guidebook are relevant for municipalities in these focus countries, but they also apply to other local authorities in the region and the wider EU.

Considerations for developing national BRP schemes

The design determines the outcome. The second section of this guidebook shows that BRPs must include relevant critical design features and be supported by an enabling framework. The BRP generation process should ideally be automated and supported by dedicated software. Checklists for auditors should ensure the quality of the BRPs.

The technical design of the BRP should inform building owners about regulatory requirements (e.g. MEPS) and the target (e.g. nZEB or ZEB), as well as consider trigger points for renovation in the maintenance cycle of buildings. By personalising BRPs to the conditions of specific building owners, their needs and wishes can be reflected in the renovation steps. A supportive enabling framework should focus on capacity-building to ensure competence and skills among relevant staff, sufficient financing for implementing renovation measures, and integration with other building-related tools. Examples of such tools are EPCs, OSSs, DBLs, and related databases. Integration with the BRP should also be technically feasible.

Generally, local authorities should be involved in the design and implementation of BRP schemes. They contribute experiences from different perspectives. Local authorities own and manage public buildings but might also play a role as data provider for DBLs or initiators or facilitators of OSSs. Their involvement in the design of national BRP schemes could help avoid unnecessary flaws in these schemes.

A successful transition in the building sector must consider the needs of users. BRPs should therefore also include non-energy benefits of renovations, to realise their full potential for increasing the quality of life and wellbeing of inhabitants. By setting up a national BRP scheme including IEQ, BRPs can help to optimise indoor environmental quality as well as improving energy performance, which is particularly important for public buildings such as schools, hospitals and municipal housing.

The decarbonisation of the building sector requires that building owners have access to sufficient financial support, transparent information, and knowledge on which renovation measures to implement and when. Several instruments are currently being developed to tackle these market barriers, but it is clear that BRPs are an indispensable part of the solution.

Why BRPs are useful tools for local authorities

BRPs provide an overview of the expected energy and emissions savings of specific renovation measures, and ensure that the measures are implemented in the right order (avoiding expensive mistakes). When a BRP highlights which measures should be taken first and what the expected benefits are, this could be a first step in applying for available funding programmes at regional, national or EU level.

Local authorities might not have deep pockets to fund building renovations, and they need to spend the budget that they do have available wisely. Developing BRPs can support local authorities with effective spending of the (limited) municipal renovation budget on the buildings and measures which will have the highest benefits, and help them carefully manage the costs.

The public sector has a leading role to play in decarbonising the building stock. Local authorities are close to businesses and home-owners, and therefore have a special opportunity to lead by example. BRPs are instruments that can support this by providing information on the best measures for renovating public buildings. Renovating and improving energy performance of buildings by using BRPs sets a good example for residents and companies in the municipality, besides providing it with experience and expertise. BRPs are therefore highly relevant in the context of the EED requirements for energy efficiency (Art. 5 and 6) relating to the exemplary role of the public sector.

Practical considerations for local authorities wanting to develop BRPs for public buildings

Based on the Renocally project, some lessons can be drawn that might be useful for other local authorities intending to develop BRPs for their own buildings. Within Renocally, BRPs are developed based on the methods of the iBRoad project.[54] However, these recommendations might apply in the context of national BRP schemes as well. It is important to assess and select inefficient buildings that might benefit more from renovation measures, and to develop BRPs for these buildings. When developing a BRP, it is essential to involve experienced EPC and/or BRP auditors with the relevant expertise in tandem with municipal staff. Competent and experienced municipal staff make developing BRPs much easier, therefore it is important to invest in training and capacity-building on the energy performance of buildings.

One concrete way in which the BRP development process can be made more efficient is to appoint contact persons within the administration to collect information from different departments and to provide this to the BRP auditor. The BRP auditor should consider both energy and non-energy (e.g. social or health) aspects of renovations in the BRP design, as non-energy matters are often very important to building users. If non-energy benefits are secured by renovation measures, this will increase support for the measures. Another important consideration is to use existing energy management software and calculation tools, when no dedicated BRP software is available. Finally, local authorities can benefit from sharing insights and lessons within regional and national fora to shape national BRP concepts and ensure others do not have to reinvent the wheel.

Recommendations for the development of national BRP schemes

- Ensure a supportive enabling framework and the critical technical design features of BRPs.
- Align and integrate BRPs with other tools like EPCs, OSS, DBL.
- Ensure local authorities are consulted in the development of BRP schemes.
- Develop BRP schemes which include IEQ indicators.

Direct benefits of developing BRPs for local authorities

- BRPs present energy and emissions savings and help in the selection of cost-effective measures.
- BRPs enable effective spending of limited budgets and avoid expensive mistakes.
- BRPs enable municipalities to lead by example through the renovation of public buildings.

Recommendations for local authorities wanting to implement BRPs for the public in the absence of a national BRP scheme

- Select buildings with high potential.
- Involve experienced EPC and/or BRP auditors.
- Invest in capacity building among municipal staff.
- Appoint contact persons within the administration.
- Consider both energy and non-energy (e.g. social or health) aspects of renovations.
- Consider existing energy management software and platforms.
- Share insights with regional/national authorities to improve national BRP schemes.

[54] iBRoad (2019) The iBRoad field test experience.

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