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Bringing European Building Policy to Life

# Implementing Renovation Passports

## Policy needs, status quo and best practices

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### About EPBD.wise

EPBD.wise aims to kickstart action to bring to life the recast European Performance of Buildings Directive (EPBD) as part of making EU climate goals a reality. Over the course of three years, project partners worked with public authorities (such as municipalities, energy agencies, etc.) in six European countries: Bulgaria, Greece, Hungary, Poland, Romania and Ukraine. The aim overarching aim was to ensure the design, implementation and evaluation of key provisions to ensure EU buildings align with climate goals. Starting with investigation of needs and good practices in the six focus countries, EPBD.wise builds replicable models to support the widespread implementation of effective measures across Europe.

For more information, follow EPBD.wise on [X](#), [LinkedIn](#) or visit the [website](#).

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## Executive summary

This report documents the collected policy needs regarding the implementation of Renovation Passports<sup>1</sup> (RPs), in general and specifically for the six focus countries (FC) of the EPBD.wise project: Bulgaria, Greece, Hungary, Poland, Romania and Ukraine. Of the six FC, four defined RPs a priority in the context of the project, namely Greece, Hungary, Romania and Ukraine. These countries are subsequently referred to as priority countries and are covered in more detail.

The compilation and review of challenges and policy needs is based on the results of other projects, studies, national contacts with stakeholders and literature review. In the case of the FCs, various discussions and surveys have been carried out, and the list of answers and statements of the focus country contact points (FCCPs) have been analysed and further processed.

The identified policy needs relate to the following topics:

- Ensuring low cost of implementing the RP scheme, avoiding additional burden for the administration.
- Ensuring low cost of RPs for building owners.
- Simplification of handling RPs in connection with Energy Performance Certificates (EPCs).
- Integration of the RP scheme with existing elements, or building on them (if available), to incorporate the experience of previous phases, based on national initiatives or amending Directive (EU) 2018/844.
- Research of the building stock as a basis for designing the RP scheme.
- Efficient data collection and quality assurance processes, reuse of data and interoperability of databases, also in relation to the digital building logbook (DBL).
- Need for facilitators such as regional one-stop shops (OSS).
- Identification of elements to be included in RPs related financing, such as free advice and subsidised loans or non-repayable grants.
- Information and communication campaigns explaining RPs and why they are useful.

A set of general and specific criteria has been developed to describe good practice examples. These criteria relate to the challenges of implementing an RP, and good practice examples are presented that provide a solution for one or more criteria.

In summary, this report provides an analysis of the status quo, including an overview of the policy needs with special attention given to the project FCs with a perspective of EU-wide expansion of RPs, and the compilation of good practice examples.

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<sup>1</sup> Terminology relating to the Renovation Passport: While the work package title refers to the term Building Renovation Passport (BRP) according to amending Directive (EU)2018/844, the up-to-date term according to recast EPBD 2024 has changed to Renovation Passport (RP) which is adopted for the work in EPBD.wise. In relation to the EPBD.wise project, we use Renovation Passport, based on the recast of the EPBD. When we refer to work carried out during the period of the amending Directive 2018/844, we use Building Renovation Passport as this is the correct term.

## List of abbreviations and acronyms

ADEME	<i>Agence de la transition écologique</i> (Agency for Ecological Transition)
AI	artificial intelligence
BIM	building information modelling
BMWK	German Federal Ministry for Economic Affairs and Climate Action
BPIE	Buildings Performance Institute Europe
BRP	Building Renovation Passport (according to amending Directive (EU)2018/844)
BSO	building stock observatory
DBL	digital building logbook
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
EU	European Union
EUKI	European Climate Initiative
FC	focus countries
FCCP	focus country contact point
GIS	geographical information system
INZEB	Initialising Energy Balance towards Zero
MEPS	minimum energy performance standards
NBRP	National Building Renovation Plan
nZEB	nearly zero-energy building
OIB	<i>Österreichisches Institut für Bautechnik</i> (Austrian Institute of Construction Engineering)
OSS	one-stop shops
ROENEF	<i>Asociația pentru promovarea eficienței energetice în clădiri</i> (Romanian association for promoting energy efficiency in buildings)
RP	Renovation Passport (recast EPBD (2024/1275))
ZEB	zero-emission building
ZEUS	<i>Zentrales Energieausweis Umgebungs System</i> (Central Energy Performance Certificate Environment)

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# 1 Introduction

## 1.1 Scope and objectives of the Deliverable

This report documents the collected policy needs regarding the implementation of the Renovation Passports (RP) according to Directive (EU) 2024/1275 (recast European Performance of Buildings Directive (EPBD) 2024) Article 12, in general and specifically for the focus countries (FCs) selected in the EPBD.wise project: Bulgaria, Greece, Hungary, Poland, Romania and Ukraine. Representatives of Greece, Hungary, Romania and Ukraine expressed a priority on RPs in the context of the project; subsequently, these countries are referred to as priority countries.

This report also presents a collection and analysis of good practice examples responding to the identified policy needs. As the recast EPBD 2024 is new and Article 12 is the result of the development of the provisions of Article 19a on the Building Renovation Passport (BRP) of the amendment to Directive 2010/31/EU, the examples of good practice relate to this basis and national experiences.

While the work package (WP) title in the Grant Agreement refers to the term Building Renovation Passport (BRP) according to amending Directive (EU)2018/844, the up-to-date term according to Directive (EU) 2024/1275 has changed to Renovation Passport (RP), which is adopted in the work of EPBD.wise.

According to Directive (EU) 2024/1275 Article 2 Definitions, ‘Renovation Passport’ means a tailored roadmap for the deep renovation of a specific building in an optimum number of steps that will significantly improve its energy performance.

## 1.2 Structure of the Deliverable

The first part of this Deliverable is dedicated to identifying and presenting policy needs. The second part provides an overview of the status quo represented by good practice examples. Good practice examples are described in detail in Annex 2.

## 1.3 Relations to other tasks and deliverables

Methods and procedures for the collection of policy needs and good practice examples have been jointly developed for WP2 zero-emission building (ZEB) and National Building Renovation Plan (NBRP), WP3 minimum energy performance standards (MEPS), WP4 RP, and WP5 EPC. The interrelationships and, in particular, possible synergies among the individual topics are taken into account.

A particularly close link exists between EPCs and RPs, as the energy performance achieved by implementing the renovation measures included in the renovation roadmap has to be demonstrated by the EPC. The building-related data required for both schemes are the same, while the RP requires additional operational data. The purposes of the EPC and the RP are different, however. While the EPC is used to compare buildings regardless of user behaviour and is mandatory in certain situations, the RP explicitly takes user behaviour into account and is intended to facilitate renovation.

## 2 Methods and procedures

### 2.1 Challenges and policy needs

The compilation and review of challenges and policy needs in this Deliverable are based on the results of other EU projects, national projects, national contacts with stakeholders, desktop research and literature review. Particular attention is paid to four out of the six project FCs that have identified RPs as a priority within the EPBD.wise project: Greece, Hungary, Romania and Ukraine. With the objective in mind of replicating results in all EU Member States (MS), the compilation and analysis of policy needs were not limited to the FC.

Status quo analysis and identification of good practice examples include qualitative analysis, stakeholder engagement, legal and administrative screening, and evaluation techniques.

### 2.2 Survey of policy needs in focus countries

The results of a list of questions answered by representatives of FC have been analysed.

### 2.3 Definition of good practice

The compilation of good practice examples is based on both general criteria and specific criteria that apply particularly to the topic of RPs. Criteria were compiled based on the identified challenges and policy needs.

#### 2.3.1 General criteria

In general, good practice examples respond to the challenges outlined in the EPBD.wise Grant Agreement. Based on the identified policy needs, these challenges have been further developed into a set of criteria used to define good practice (as shown in Table 1). As shown, good practice examples can provide a solution and/or a response to one or more criteria as listed in Table 1.

**Table 1** Criteria for selection of good practice examples on RP

<b>Good governance</b>
Collaboration among regional, federal and municipal levels (vertically and horizontally) to tap the full potential of the available data needed to develop the renovation roadmap to a ZEB
Stakeholder participation, including civil society: know-how is available, and is being used in the policy process
<b>Staff shortage in public administration</b>
Overcoming the lack of staff capacity by means of software tools: e.g. roadmap tool for renovation measures, data repositories, building information modelling (BIM), and artificial intelligence (AI)
Raising awareness of the need for personnel resources
<b>Data availability, accessibility and quality for effective policy making</b>
Data quality assurance: input data (reduce range of interpretation); calculation method (reduce range of interpretation)
Data availability and access for understanding the potential impact of policies and different design options
Data availability and access for monitoring progress in the building stock and evaluating policy impacts

<b>Estimation of the impacts, in particular the broader benefits of energy efficiency</b>
The complex interplay among different instruments, effects and measures is considered for assessing the impacts of policy instruments and addressing the energy performance of the building stock
Other benefits such as comfort, health and economic implications are explicitly considered in target setting and decision-making processes
<b>Construction industry and labour and skill shortages</b>
Existence of a robust regulatory framework, e.g. for certified installers
Investments in workforce capacity and upskilling
Addressing fragmented supply chains in the construction sector
Reducing training needs through technology development
<b>Clear presentation of co-benefits</b>
Improved indoor environment and health, and better quality of life
Shelter citizens from energy price hikes
Reduced energy poverty
<b>Financing</b>
EU-Taxonomy alignment: target of major renovation
One-stop shops
Covering the upfront costs for the development of a renovation project (technical assistance)
Financing the investment cost of renovation measures

In addition to the generally relevant challenges, specific aspects are particularly important for the topic of RPs as shown in the next chapter.

### 2.3.2 Criteria specifically addressing the Renovation Passport scheme

The most important aspects of the RP scheme are set out in Table 2. They have been compiled by analogy with the EPC scheme (shown in Figure 1), modelled upon the TIMEPAC report on Creating BRPs from data repositories,<sup>2</sup> and are based on the results of the survey presented in Table 3.

**Table 2** Elements of the RP scheme

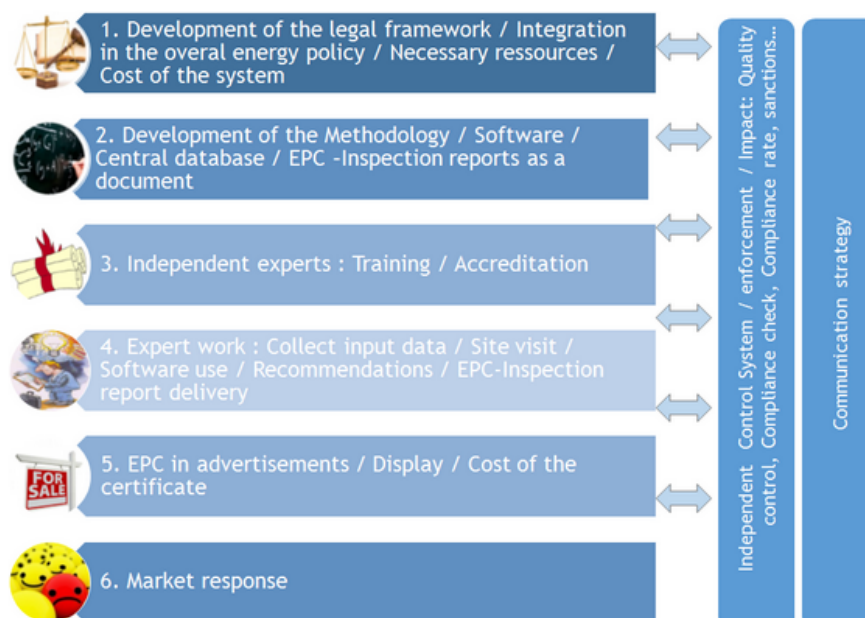
<b>Criteria</b>	<b>Exemplary elements (depending on building type, characteristics may vary)</b>
Legal framework	RP is part of an EPC
	RP is a stand-alone document
Types of RPs	Based on energy advice and resulting renovation roadmap, coaching for implementing the measures: assistance for tendering and contracting
	Based on energy audit and safety check
	Based on energy audit and energy cost (of the previous 3 years)
Methodology	Input data
	Algorithms

<sup>2</sup> Susanne Geissler et al. (2023), *Creating building renovation passports from data repositories*, Timepac. Available: <https://timepac.eu/reports/guideline-for-creating-renovation-passports-from-data-repositories/>

	Indicators
	Rating
Software tools	For the time-saving application of the methodology
Experts	Entry level
	Training
Advertisement, market response	RP is part of a subsidy scheme and is EU-Taxonomy compliant

The elements required to implement workable EPC systems and regular inspection of heating and air-conditioning systems (as shown in Figure 1) can serve as a basis for identifying the policy needs for implementing RPs. Six steps are necessary to develop a workable scheme and to ensure the overall quality of the system. The independent control system and the communication strategy are two overarching elements for the whole process.

**Figure 1** Steps in the Energy Performance Certification and regular inspection scheme process<sup>3</sup>



## 2.4 Template for good practice description

Based on the information provided in the previous chapter, EPBD.wise developed a template for the documentation of good practice examples. The template is designed to allow examples of good practice to be linked to policy requirements and is provided in Annex 1. Good practice documentation is available in Annex 2.

<sup>3</sup> X. Loncour, N. Heijmans (2018), *Certification, Control system and Quality*, Concerted Action Energy Performance of Buildings, Copenhagen. Available: <https://epbd-ca.eu/ca-outcomes/outcomes-2015-2018/book-2018/ct/certification-control-system-and-quality-update>

## 3 Policy needs regarding implementing the RP scheme

Specific attention is paid to the FCs. With a view to transferring the results, the compilation and analysis of policy needs must not be limited to the FCs but must also include the other EU Member States.

### 3.1 Desk research to identify policy needs

Policy needs were identified during the elaboration of the EPBD.wise project proposal and complemented by desk research covering European as well as national projects, programmes and initiatives.

#### 3.1.1 European projects, programmes and initiatives

This report deals with the experience gained in connection with RPs in accordance with Directive (EU) 2024/1275. As the recast EPBD is a new provision, this report relies on experience and materials developed from the earlier Buildings Performance Institute Europe (BPIE) report, *Building Renovation Passport: Customised roadmaps towards deep renovation and better homes*<sup>4</sup> as well as the voluntary and general approach outlined in the amending Directive (EU) 2018/844. The BPIE report served as a starting point for many projects, defining the BRP according to amending Directive (EU) 2018/844 as a dynamic instrument to be used and updated over time along the renovation path to deep renovation. The current definition of the RP, according to Article 12 and the related Annex of the recast EPBD, builds upon the earlier BRP. As such, opportunity exists to learn from past activities.

Several European projects dealing with further developing the EPC, including aspects of the RP, were reviewed in February 2024. Most of them belong to the so-called 'new EPC cluster of projects'. Selected information on aspects of these projects that relate to the RP is shown in Table 3: e.g. the end date of the project; how elements of the RP are implemented (as a single document or integrated into the EPC); or data sources used (such as BIM, geographical information systems [GIS] or AI). As most of these projects were carried out under the amending Directive (EU) 2018/844, they address the BRP, taking into account the evolution towards the recast EPBD 2024, which started with the Commission proposal published on 15.12.2021.<sup>5</sup>

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<sup>4</sup> BPIE (2016), *Building Renovation Passport – Customised roadmaps towards deep renovation and better homes* (Nov. 2016, 2nd edition), Buildings Performance Institute Europe, Brussels. Available: <https://www.bpie.eu/publication/renovation-passports/>

<sup>5</sup> European Commission (2021), *Proposal for a Directive of the European Parliament and of the Council on the Energy Performance of Buildings (recast)*, European Commission, Brussels. Available : <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0802>

**Table 3** Relevant European projects, programmes and initiatives for the RP

Project URL and project end	FC Case Studies	Elements of projects relevant for the RP	Data sources
<a href="#">ALDREN</a> 09/2020		ALDREN BuildLog and the ALDREN RenoMap are complementary to the EPC (non-residential buildings)	Eurostat, BSO
<a href="#">OneClickRENO</a> 10/2026		RPs on a GIS-based web environment	GIS
<a href="#">EPC RECAST</a> 12/2023		Develops the structure of a passport	Not yet available
<a href="#">iBROAD</a> 12/2020	Bulgaria, Poland	Renovation roadmap and logbook for single-family houses	Energy audit, EPC
<a href="#">iBroad2EPC</a> 8/2024	Bulgaria, Greece, Poland, Romania	Builds on results of the iBRoad project; covers apartment buildings and public buildings	European Commission 2017, statistics of the countries
<a href="#">D2EPC</a> 8/2023	Greece – nZEB (nearly zero-energy building) Smart House, Thessaloniki	The roadmapping tool feeds relevant BRPs	AI, calculation engine, BIM based digital twin
<a href="#">QualDeEPC</a> 8/2022		Planning renovation activities and necessary financial resources; <a href="#">list</a> of renovation platforms	Energy audit
<a href="#">X-tendo</a> 8/2022		Toolbox for public authorities and implementing agencies; cost-effective approaches to deliver tailored renovation recommendations	Not specified
<a href="#">ePANACEA</a> 5/2023	<a href="#">Greece</a>	The EPC automatically feeds the BRP; potential linkage with DBL; Regional Exploitation Boards ( <a href="#">REBs</a> ) platform	EPC feeding BRP
<a href="#">TIMEPAC</a> 06/2024		A guideline was developed for <a href="#">Creating building renovation passports from data repositories</a>	Different data sources
<a href="#">SmartLivingEPC</a> 06/2025	Greece	Fully compatible with digital logbooks and RPs; aims for energy certification at neighbourhood scale	BIM
Note: all links last accessed on 29/02/2024			

### 3.1.2 National projects, programmes and initiatives

An overview of available information is presented in the paragraphs below.

**Belgium / Flanders region:** The free digital [Woningpas](#) (housing passport) was first released in December 2018. It is available to the building owner with the e-ID (electronic identification) or token, and offers access to information about the building, the environment and other certificates. Information about the building includes data on energy consumption, insulation, installations, general building characteristics, solar potential, accessibility rating and dwelling quality. It displays the EPC and a renovation roadmap, including reference to renovation costs and available grants. The environmental description includes information about flood

sensitivity, spatial planning, air quality, etc., and is visualised in the form of maps. Finally, owners have an overview of all the certificates they need if they wish to rebuild, sell or buy the house. By means of a useful roadmap, owners can tell whether their plans are executable, answering questions such as 'What do I need?' and 'Where and how should I apply?'. Homeowners can authorise potential buyers and architects to consult the *Woningpas* information. They can also upload documents from their own computer and complete the data available in the *Woningpas*, including renovation measures, in a useful timeline (De Meulenaer et al. 2020).<sup>6</sup>

**Belgium / Wallon region:** In the project BE REEL, the housing audit was supplemented by an energy roadmap, which summarises the building's path to deep renovation, in the form of individual steps to be followed to achieve the 'A' label. The tool provides personalised recommendations to achieve this, accompanied by the respective costs. The energy roadmap provides the user with:<sup>7</sup>

- A visualised overview of the potential energy improvements of the building compared to the overall entire building stock objective (label A). If this objective cannot be achieved, the auditor will explain the reasons in the report.
- The ability to determine the path of renovation to be followed to achieve this objective.
- The ability to chart the phases of the works while having a global vision of the renovation project, so as to anticipate the coordination of future works, avoiding the lock-in effects resulting from a poorly planned renovation.
- The ability to quantify the costs of the works and the gains generated by them.
- A depiction of the co-benefits of renovation linked to comfort, health, the property's real estate value or environmental impacts.

**The Netherlands:** The online tool [Verbeter je huis](#) (Improve your home) supports homeowners and homeowner associations in improving the energy efficiency of their buildings. It offers a user-friendly energy calculation that can take into account user behaviour, tailored advice on energy efficiency measures, and a step-by-step approach to making the house ready for disconnection from the natural gas grid. In addition, it provides information about suppliers and companies that can carry out the necessary measures. The tool also provides information on how to finance the measures, with links to support programmes and banks offering attractive 'green' mortgages. This tool is based on the 'Energy Saving Explorer' calculation tool.<sup>8</sup>

**France:** The OSS [Oktave](#) is the name of the integrated home energy renovation service launched in 2015 by the *Grand Est* region (where it is located) and the French Agency for Ecological Transition (ADEME, *Agence de la transition écologique*). The service was set up

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<sup>6</sup> M. Meulenaer, K. Triest, et al. (2020) *Implementation of the EPBD – Flemish Region Status in 2020*, Concerted Action Energy Performance of Buildings, Copenhagen. Available : <https://epbd-ca.eu/wp-content/uploads/2022/10/Implementation-of-the-EPBD-in-Belgium-2020-%E2%80%93-Flemish-Region.pdf>.

<sup>7</sup>B. Fourez, R. Gilot, Arnaud Collard, et al. (2020), *Implementation of the EPBD – Walloon Region Status in 2020*, Concerted Action Energy Performance of Buildings, Copenhagen. Available : <https://epbd-ca.eu/wp-content/uploads/2022/10/Implementation-of-the-EPBD-in-Belgium-2020-%E2%80%93-Walloon-Region.pdf>

<sup>8</sup>Gerelle van Cruchten (2020), *Implementation of the EPBD – The Netherlands Status in 2020*, Concerted Action Energy Performance of Buildings, Copenhagen. Available : <https://epbd-ca.eu/wp-content/uploads/2021/12/Implementation-of-the-EPBD-in-The-Netherlands-2020.pdf>.

to meet the requirements of the French Green Growth Energy Transition Law (*Loi relative à la transition énergétique pour la croissance verte*), which calls for the building stock to meet at least BBC-standards (*bâtiment basse consommation*) by 2050. The *Oktave* service provides comprehensive support including advice, financial engineering and project management assistance. This initiative is part of broader efforts in France to enhance building energy efficiency and support sustainable development, in line with national and European energy policies. To make effective contributions to achieving the targets, *Oktave* was incorporated as a *Société d'Économie Mixte* (SEM; a semi-public company) in July 2018, with the following shareholders: The Grand Est Region, Procivis Alsace, the Banque des Territoires and the Caisse d'Épargne Grand Est Europe. *Oktave* is financially supported by the European Investment Bank and works closely with ADEME.<sup>9</sup> (*Oktave* can be consulted in more detail in Annex 2, Good Practice example #8.)

**Austria:** At the federal level, the amending Directive 2018/844 was transposed in a way that recommendations of the EPC can be substituted by a renovation plan and a BRP under certain conditions (OIB 2019). At provincial level, certain subsidy schemes require the submission of a renovation plan that corresponds to the renovation roadmap, which is part of the RP. This is combined with energy advice services and access to finance and is usually part of a framework that corresponds to the concept of an OSS according to recast EPBD 2024. One example is *Hauskunft*<sup>10</sup> in Vienna. A voluntary assessment scheme, the *klimaaktiv* building standard, awards an honour to existing buildings if a renovation concept (*sanierungsfahrplan*<sup>11</sup>) is presented, demonstrating that the required building performance will be achieved if the stepwise renovation is implemented. The process is monitored, with buildings being checked every two years to ensure that planned renovation measures are actually implemented.

### 3.1.3 Summary of results regarding policy needs

Desk research identified the challenges and related policy needs for implementing the RP as described below.

**Cost of issuing an RP:** To keep cost for RPs low, there is a need for a different and tailored design of RP schemes depending on the building type. A first differentiation is necessary between residential and non-residential buildings; then, within the residential segment, a differentiation is necessary between single-family houses (SFHs) and apartment buildings. Within the non-residential segment, differentiation is needed among offices, educational buildings and other uses.

**Building related data for issuing an RP:** Experts need access to existing building data in a format that can be used to develop the renovation roadmap and calculate required indicators.

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<sup>9</sup> Oktave, website of Oktave. Available: <https://www.oktave.fr/> (accessed 29/02/2024)

<sup>10</sup> Hauskunft, website of Hauskunft. Available: <https://www.hauskunft-wien.at/> (accessed 29/02/2024)

<sup>11</sup> Klimaaktiv (2022), *klimaaktiv Sanierungsfahrplan: Schritt für Schritt zur Klimaneutralität* [klimaaktiv renovation roadmap: step by step to climate neutrality], Federal Ministry, Republic of Austria. Available: <https://www.klimaaktiv.at/bauen-sanieren/gebaeude-deklarieren/sanierungsfahrplan.html>

**Availability of tools for issuing a RP:** Experts developing the renovation roadmaps need affordable software tools to calculate the required indicators.

The results of the desk research also show that RP schemes for residential buildings, or elements of such schemes, exist in some MS. Common success factors include:

- offer service for building owners to improve their homes
- integration of the service into an OSS
- personal on-site support as well as digital support, and
- a digital platform with building data.

With regard to implementing the RP according to recast EPBD in MS, specific adaptations are needed. They may relate, for example, to achieving the ZEB target and to displaying the new indicators, which must now also be shown in the RP.

## 3.2 Interviews and workshops to identify policy needs

### 3.2.1 Activities at European level

The Concerted Action EPBD brings together all MS and provides a platform for discussion and exchange of information. Work carried out in the plenary meetings in relation to the RP resulted in the following publicly available conclusions:<sup>12</sup>

“Analyses of current projects and initiatives and discussions offer the following conclusions to be considered when elaborating the BRP concept:

1. It is important to specify the purpose of the BRP to avoid false expectations; detailed provisions will probably vary, depending on the target group and building type. Owners of single-family buildings will have different needs compared to facility managers of multi-unit residential buildings.
2. It is important to integrate elements (e.g., logbook) which have already been established in some countries, and not to impose a new scheme.
3. Any differences from EPC recommendations should be made clear.
4. Actual implementation of measures needs specific planning, and this requires considerable effort, which needs to be paid for.
5. Step-by-step renovation requires suitable financing tools.”

### 3.2.2 Activities at national level

#### National TIMEPAC workshops in Austria

As part of the project-related tasks of TIMEPAC, project partner SERA Global organised stakeholder workshops in major cities (Vienna, Styria, Carinthia and Salzburg) in four Austrian regions over the period October 2023 to January 2024. The topics included challenges for the

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<sup>12</sup> Geissler, S. (2022), *CT3 Existing Buildings Status in 2022*, Concerted Action Energy Performance of Buildings, Copenhagen. Available: <https://epbd-ca.eu/wp-content/uploads/2022/10/CT3-Existing-Buildings-%E2%80%93-Status-in-2022.pdf>, (accessed 07/03/2024)

practical implementation of the RP and Renovation Concept/Renovation Roadmap, as well as for the extended EPC with the links to data repositories and BIM, with a focus on operating data. More information on the results of discussions on the RP can be found in the [SERA Working Paper<sup>13</sup>](#) on TIMEPAC.

### 3.2.3 Summary of results regarding policy needs

It is important to recognise that renovation roadmaps can vary in their degree of detail. Some may be presented as slightly more detailed recommendations in a sequence; others may already contain requirements for executing measures, such as specifications for window and wall connections.

The level of detail of the renovation roadmap has impacts on the cost of the RP and on the actual implementation of renovation measures. Additional steps that are required from the renovation roadmap to the actual renovation plan (on which the tendering and commissioning of the renovation work are based) can pose barriers.

Implementing renovation measures is crucial with regard to the requirements of the NBRP according to Directive (EU) 2024/1275. Ideally, RP schemes are designed such that useful information can be delivered into the NBRP.

## 3.3 Questionnaire to focus countries to identify policy needs

### 3.3.1 Identification of policy needs by focus country

Questionnaires were drafted by the EPBD.wise consortium partner BPIE. They also called for an online meeting between the project representatives and the six focus country contact points (FCCPs). The goals of the calls were to:

- Establish a first contact between the FCCPs and the consortium's researchers.
- Determine which of the five policy elements (MEPS, ZEB, NBRP, RP or EPC) the EPBD.wise team would be working on in each FC.

### 3.3.2 Greece: Summary of the online call (29/01/2024) and the written questionnaire response

As a Member of Renovate Europe for the last 10 years, INZEB (Initialising Energy Balance towards Zero) is the national partner for Greece, based in Athens. Their partners deal mostly with the technical and social aspects of energy efficiency (e.g. poverty mitigation and energy democracy), with funds coming from participation in EU projects. INZEB represents the country coordinator for the EU climate pact. They are the only experts in Greece with technical advice for mitigation and diagnosis of energy poverty.

A summary of the call is presented by topic in Table 4.

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<sup>13</sup>Geissler, Susanne, et al. (2024), "The TIMEPAC Renovation Passport - Challenges and resulting recommendations based on stakeholder workshops held in the capital cities of four Austrian regions", a working paper based on the results of the *project TIMEPAC funded under grant agreement No. 101033819 as part of the call LC-SC3-B4E-4-2020 – Next-generation of Energy Performance Assessment and Certification*, SERA global – Institute for Sustainable Energy and Resources, Vienna. Available : <https://cordis.europa.eu/project/id/101033819>

**Table 4** Status quo in Greece, based on the call

	Topic	Answers from the call, Greece
1	Financing	<ul style="list-style-type: none"> <li>• Experience exists with financing schemes of existing buildings</li> <li>• There is a need for specific financing mechanisms and to map buildings accordingly, as a basis for designing such mechanism</li> <li>• No OSSs exist in Greece</li> </ul>
2	Building stock	<ul style="list-style-type: none"> <li>• The government and policymakers need to evaluate groups of buildings that are serving a specific purpose</li> <li>• Most of the building stock was built before 1980</li> <li>• Buildings built between 1980 and 2010 can be considered insufficiently insulated under current regulation</li> </ul>
3	The Government and the Ministry of Energy and Environment	<ul style="list-style-type: none"> <li>• The government should force the establishment of OSS</li> <li>• Training is being provided for ministry officials on how RPs are produced and developed</li> </ul>
4	RP	<ul style="list-style-type: none"> <li>• A refined definition is needed</li> <li>• Implement with the ministry (see item 3)</li> </ul>
5	The RP and links to EPCs	<ul style="list-style-type: none"> <li>• EPCs have not been updated since 2017; an update will follow, with the possibility to combine the RP and the EPC</li> <li>• Expert training and training materials are needed</li> </ul>

**The EPC linked to the RP:** Greece already has a functioning EPC framework, which is currently undergoing an update as it has not been revised since 2017. As part of this, the link between the RP and specific national programmes to improve energy efficiency is being strengthened. This should be done within an EPC framework and would drive the introduction of RPs. In an endeavour to minimise the costs, effort and time required for the end-user (be it the authority, planner and certificate issuer, or homeowner) to create the RP certificate, simplification is required in terms of easier operability and execution through digital support. With regard to detached and semi-detached houses, the aim should be to minimise costs for all parties involved. This means that it must be cost-effective for the planners and create savings for homeowners. This can be guaranteed through a certificate characterised by modules tailored to the user, offering expandability and flexibility. It is hereby noted that representatives at the meeting emphasised the importance of following up and building on the findings of existing initiatives, such as iBRoad2EPC.

An information and communication campaign should also be launched to explain what an RP is and why building owners need one.

**Building stock:** The majority of the Greek building stock was built before 1980. Buildings constructed between 1980 and 2010 may be considered inadequately insulated under current regulations. There is a need to group buildings with the same characteristics that fulfil the same purpose. Clustering differentiated building types and their special uses can support grouping them for renovations to save costs and effort. For this purpose, a special assessment of such clustering can be introduced by political decisionmakers.

**Financial challenges:** Based on the link between RPs and EPC in Greece, a requirement should be made for subsidising the costs of issuing these certificates by energy experts, possibly through a national energy efficiency programme. Tax exemptions linked to the issuing of EPCs should also be considered. With regard to one of the most widespread issues – i.e. legalisation of buildings without building permits – the cost of a certificate (RP and EPC) could

lead to a reduction in fines. It is very important that support focuses on measures to ensure the successful implementation and mobilisation of private-sector investment.

**Data:** The use of a link with existing tools and databases (such as EPC database, EPC software, cadastral data, and digital building ID data) should be envisaged.

Facilitators, such as regional OSS, are essential.

### 3.3.3 Hungary: Summary of the online calls (01/02/2024) and the written questionnaire response

Project partner ÉMI provided the requested information on the status quo of the situation in Hungary. ÉMI is a non-profit, limited liability company for quality control and innovation in buildings. It is based near Budapest, in Szentendre. The company provides certifications and developed the ÉMI Construction Knowledge Center, a centre of innovation that has potential to lay the foundation for developing domestic energy-conscious buildings.

**Table 5** Status quo in Hungary, based on the call

	Topic	Answers from the call, Hungary
1	Financing	<ul style="list-style-type: none"> <li>Supporting programmes to install solar panels for 3 years</li> <li>Some renovation subsidies are starting in the non-residential segment, such as PV panels on schools</li> </ul>
2	Building stock	<ul style="list-style-type: none"> <li>Mainly heated by gas (coal in the past)</li> <li>Single family houses (in villages) typically have brick or stone walls with no thermal insulation</li> <li>Some zero energy houses exist</li> <li>In large city centres with over 100-year-old buildings, the trend is more towards demolition than renovation</li> </ul>
3	The Ministries	<ul style="list-style-type: none"> <li>The Ministries are closely working with the Chamber of Commerce, which is on charge of the EPC</li> </ul>
4	RP	<ul style="list-style-type: none"> <li>New regulations: see point 5</li> <li>The RP should have a very strong technical, organisational and financial background; it should emphasise the importance of OSS</li> <li>Special cases exist in which it is not possible to change historical facades; generally existing buildings do not have to reach the same requirements as new ones</li> <li>Presentation of good practice examples is needed</li> </ul>
5	The RP and links to EPCs	<ul style="list-style-type: none"> <li>Since 2013, some 1 528 000 EPCs have been issued</li> <li>A new decree on energy efficiency from the government, with EPC requirements, regulates the inclusion of the RP in the EPC; lack of implementation remains problematic</li> <li>Lack of software tools</li> <li>The new EPC (11 pages) is the RP part of the EPC. It contains additional information, such as what kind of intervention building owners could/must undertake and how the renovation will work</li> </ul>
6	Information and communication	<ul style="list-style-type: none"> <li>Information campaigns needed to shift the public mindset</li> <li>Communicate the holistic approach of the renovation process</li> </ul>
7	Data collection	<ul style="list-style-type: none"> <li>New research on the building stock could be beneficial</li> </ul>

**The EPC linked to the RP:** In Hungary, the new regulation (ÉKM Decree 9/2023 (V.25), which came into force on 1 November 2023, regulates inclusion of the RP in the EPC. At present, it is not clear how this will work in practice. Clear technical descriptions, training and the use of digital tools are needed.

**Building stock:** The building stock in Hungary consists mostly of SFHs in villages, built in brick or stone construction without thermal insulation, interspersed with new buildings as well as zero-energy houses. Large city centres, on the other hand, have building structures that are over 100 years old. The stock is mainly heated with gas (previously with coal, then with oil), so the implementation of renewable energy sources is very important. This confirms the need for differentiation among different types of buildings – old and new buildings, village structures, urban structures – to achieve an adequate renovation rate.

**Financial challenges:** As there is a lack of more numerous and efficient subsidies, non-interest-bearing loans or non-repayable grants would be the most effective measures.

**Data:** New research on the building stock could be beneficial to indicate the different building epochs and store it in a single database.

### 3.3.4 Romania: Summary of the online calls (31/01/2024) and the written questionnaire response

ROENEF is an NGO, established in 2019 in Romania, that promotes energy efficiency in buildings. All members are industry leaders, with 13 companies representing producers or providers of solutions for increasing energy efficiency.

**Table 6** Status quo in Romania, based on the call

	Topic	Answers from the call, Romania
1	Financing	<ul style="list-style-type: none"> <li>• ROENEF contributed developing financing for programmes to improve the energy performance of buildings: these include two programmes for SFHs and one for public buildings</li> <li>• Working on allocating money for different financing programmes and to improve the depth of renovation and the rules to ensure the standards are high</li> <li>• Expand subsidies, grants and financing options dedicated to energy-efficient renovations; this includes introducing new incentives to encourage deeper renovation efforts</li> </ul>
2	Building stock	<ul style="list-style-type: none"> <li>• nZEB has been mandatory for new buildings since 2023</li> </ul>
3	Ministry of Regional Development, Ministry of Energy, the Ministry of Environment, Ministry of Investment and European projects	<ul style="list-style-type: none"> <li>• Since 2019, ROENEF has worked directly with the ministries to support them</li> </ul>
4	RP	<ul style="list-style-type: none"> <li>• Support is needed in: sharing best practices; how other countries achieve deep renovation; questions of financing; and the link with EPC, which is important because of an approach to substitute the recommendations by a more precise plan in the RP and challenges to keep it low-cost</li> </ul>
5	The RP and links to EPCs	<ul style="list-style-type: none"> <li>• Lack of professionals and experts</li> <li>• Lack of training</li> </ul>
6	Information and communication	<ul style="list-style-type: none"> <li>• Presenting best practice examples to the government</li> </ul>

		<ul style="list-style-type: none"> <li>• Implement educational campaigns to inform the public about the benefits of energy-efficient renovations</li> </ul>
7	Energy audits	<ul style="list-style-type: none"> <li>• To be an auditor, a technical university degree and some years of experience are required.</li> <li>• Guidance on training and capacity is needed</li> </ul>
8	Data acquisition and analysis	<ul style="list-style-type: none"> <li>• ROENEF conducted research to promote technologies to improve energy efficiency. It now wants to make a standard of using deep renovation and accelerate the deep renovation process of the building stock</li> <li>• No relevant data on numbers of worst-performing buildings</li> <li>• Lack of data analyses</li> </ul>

**RP:** In Romania, it is possible to set up the RP in such a way that lessons can be learned from existing programmes from all over Europe – rather than starting from scratch. The systems of EPCs and RPs linked with digital logbooks and renovation schedules, which have already been tried and tested in various EU regions, could be used as a basis. The Romanian system could be designed, from the outset, to reflect previous findings regarding effort and costs. It would serve to simplify the matter and save costs and could be implemented in Romania.

### 3.3.5 Ukraine: Summary of the online calls (25/01/2024) and the written questionnaire response

The following table shows the summary of the online call with the Ukrainian project partner HMRSC.

**Table 7** Status quo in Ukraine, based on the call

	Topic	Answers from the call, Ukraine
1	Energy Efficiency Department in Ukraine	<ul style="list-style-type: none"> <li>• A detailed EPC exists</li> </ul>
2	RP	<ul style="list-style-type: none"> <li>• Establish a system to maintain, monitor and support renovation passports (OSS)</li> <li>• Emphasise and promote the benefit of an RP</li> </ul>
3	The RP and links to EPCs	<ul style="list-style-type: none"> <li>• No requirement exists for each residential unit to have an EPC or to have one for sale of real estate</li> <li>• Requirements are in place to issue an EPC for all buildings undergoing reconstruction with use of state funds, and when technical assistance/international donor funding is being used</li> </ul>
4	Information and communication	<ul style="list-style-type: none"> <li>• Assistance in presenting best practice examples, specifically from countries similar in geographical and economic development</li> <li>• Expand the network by bringing every stakeholder involved in the renovation process on board to discuss the issues</li> </ul>
5	Energy audits	<ul style="list-style-type: none"> <li>• Lack of financing</li> </ul>
6	Data acquisition and analysis	<ul style="list-style-type: none"> <li>• Lack of an accessible, reviewed and updated database though all issued certificates are in a database.</li> <li>• Lack of links among expert databases and those of energy auditors</li> <li>• Lack of analyses</li> </ul>

At the beginning of the EPBD.wise project, when the questionnaire was sent out and answered, the focus of the Ukrainian partner was initially on of MEPS, NBRP and ZEB. As the project progressed, interest in the RP increased, resulting in an exchange from MEPS to RP.

For this reason, no catalogue of questions and answers is available. The following summary covers input from the succession of bilateral discussions on specific questions held at the project meeting in Brussels on 23/04/2024 and the essence of the online calls.

**The EPC as part of the RP:** RPs are not present in Ukraine. However, the EPC requires specific recommendations for energy efficiency measures to be carried out on a building. In this respect, the EPC partially serves as an RP. At the same time, the government is working on introducing energy audits for buildings, with a more thorough review of building structures, technical systems and energy characteristics as a prerequisite for some renovation projects with financial support from the government.

In Ukraine, the most important thing is to support the government in implementing the RP. Ukraine already has a high-quality EPC framework with valuable content that needs to be adapted. The clear benefits of an RP are to increase the renovation rate, promote renewable energy and provide people with a tool that is easy to understand. The existing EPC already lists recommendations for renovation stages and improvements to materials, including costs. This makes it possible to integrate the new RP as part of the EPC, substituting the recommendations.

### 3.3.6 Summary of questionnaire results

FC representatives gave weighty insights into the policy context in the countries under review. Despite differences in the various stages of implementing the cadastre, data access or statistics relating to the building stock, many stakeholders (e.g. homeowners, property managers or companies) are already demanding suitable modules to implement renovations cost-effectively. FC representatives repeatedly stated that there is a lack of accelerating factors to increase the renovation rate, including financing, which plays a central role in helping countries achieve the 2050 targets. The FCs that prioritised the RP as one of the most important policy elements are the priority countries Hungary, Greece, Romania and Ukraine. Results are summarised in more detail below.

**Greece:** Stakeholders emphasise the need to simplify handling of the RP in connection with the EPC. In addition, it is of utmost priority to launch an information and communication campaign explaining the RP and why it is useful. Various databases are already in use in Greece, which should be utilised further such that the RP can be integrated therein. While facilitators (such as regional OSS) are essential, the fact that the country consists of a mainland and many islands, makes action in this regard difficult.

**Hungary:** RPs should be linked to the EPC according to the new regulation [ÉKM Decree 9/2023 (V.25)]. New research on the building stock could be beneficial for the design of effective RP schemes. Subsidising free advice, loans or non-repayable grants would be the most effective measures.

**Romania:** The RP needs to be designed to incorporate the experience of previous phases. The systems of EPCs and of previously voluntary RPs – in association with digital logbooks and renovation schedules that have already been tried and tested in various EU regions – could be used as a basis. The RP could be designed, from the outset, to reflect previous findings regarding effort and costs. This will simplify the process and save costs.

**Ukraine:** Clearly emphasises the relevance of the RP and the need to highlight its benefits in order to integrate it into existing schemes and databases (even if such tools are currently non-operational due to unfortunate known reasons).

## 4 Good practice examples and status quo analysis

The work is strongly informed by EU projects and national activities that address topics and policies pertinent to Directive (EU) 2024/1275, as outlined in Chapter 3.

Directive (EU) 2018/844 provided for voluntary implementation of the BRP. A feasibility study,<sup>14</sup> based on Article 19a by BPIE and INIVE and on several European projects, has been carried out to document the state of play and investigate options for implementing the BRP. Some MS (e.g., Austria) have transposed and implemented the BRP on a voluntary basis, meaning some lessons learned are available. Subsequently, a number of good practice elements were identified and compiled; where required, additional research was conducted.

Good practice examples are documented based on the template available in Annex 1. Individual good practice descriptions follow in Annex 2.

### 4.1 Summary of good practice examples

The Member States and FC are at different stages of implementing the RP, and depending on their current status, they will take different steps forward. Therefore, the good practice examples represent a pool of options that can be adopted or used as inspiration for developing RP schemes. This chapter provides short descriptions and detailed information for each good practice example is available in Annex 2.

#### 4.1.1 Legal framework: RP as part of EPC databases

In the province of Salzburg, Austria, recommendations in the EPC can be replaced by the specific RP. Implementation of a given measure is linked to the updating of both the EPC and the RP. A software tool is available to develop the renovation plan, which can be linked with the EPC calculation software. The software makes use of the EPC data and adds additional data, such as metered energy consumption. Thus, by means of comparisons, the measures and indicators can be tracked. All information is uploaded via XML interface to the EPC database.

#### 4.1.2 Good governance: harmonisation of regional approaches in a MS

The OIB (Austrian Institute of Construction Engineering) guidelines serve to harmonise construction engineering regulations across all of Austria, including provisions on building energy performance, which fall under the competence of the nine Austrian provinces. The provisions are issued by the OIB and adopted by the provinces into their Construction Law. The OIB is a federal institution; among others, it is tasked with harmonising provincial approaches by means of the OIB guidelines. OIB Guideline 6 addresses the EPBD transposition. In the 2019 issue, it introduced the BRP in accordance with the amending Directive (EU) 2018/844. Under certain conditions, the recommendations in the EPC may be

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<sup>14</sup> BPIE, Directorate-General for Energy (European Commission) and INIVE (2020), *Final report – Technical Study on the Possible Introduction of Optional Building Renovation Passports*, Publications Office of the European Union, Luxembourg. Available: <https://op.europa.eu/en/publication-detail/-/publication/a38ea088-aead-11ea-bb7a-01aa75ed71a1/language-en>

substituted by the BRP, which includes a renovation roadmap. The federal guideline for regional transposition saves administrative costs and effort in implementation of RP systems.

#### **4.1.3 Implementing the measures: energy advisor, renovation coach**

The province of Carinthia, Austria, issued (in 2024) a funding guideline that regulates the tasks of initiating and performing a renovation process, the necessary qualifications of experts involved, and the associated funding. It comprises two modules: 1) energy and renovation advice; and 2) coaching the implementation of renovation measures. Tasks of the energy advisor include writing an energy advisory report, including a renovation roadmap. Energy advisors are required to pass the exam of two specific courses, undergo evaluation of their work, and participate in regular courses to update their know-how on technical issues (problems and solutions). Tasks of the renovation coach include assisting the homeowner in implementing renovation measures. They are required to have a professional engineering license and be associated to an architectural office. Grants are available for the work of both the energy advisor and the renovation coach.

#### **4.1.4 Data access: Building Logbook by ZEUS**

Building owners have access to a unique account in the EPC database environment that stores all EPC versions, energy advisory protocols and funding applications (uploaded via XML interface by the responsible consultants). In addition, building owners can store metered energy consumption data and upload additional building information, such as drawings. Owner can make all information accessible to third parties.

#### **4.1.5 Tools: iBRoad2EPC Software**

iBRoad2EPC is an EU-funded project working on linking the EPC with the RP. iBRoad2EPC builds on the results of the iBRoad project (2017-2020), which delivered a model for the stepwise deep renovation of buildings. iBRoad2EPC aims to form the bridge between EPCs and the RP. It also aims to connect the RP to the EPC, expanding, improving, and broadening their format and joint scope to consider additional features, e.g., indoor environment and smart technologies.

#### **4.1.6 Renovation Roadmap: *Sanierungsfahrplan***

The *Sanierungsfahrplan* in Germany is a strategic tool designed to guide homeowners and property managers through energy-efficient building renovations. Overall, it aims to make energy-efficient renovations more accessible and systematically planned. The tool provides a customised, step-by-step plan, tailored to the specific needs and conditions of the building and outlining energy-saving measures and improvements. A thorough analysis of the building's current energy performance is conducted, identifying areas for potential upgrades. A roadmap emphasises a long-term approach to renovations, spreading improvements over time to make them more manageable and cost-effective. The roadmap includes information on available subsidies, grants and financing options to help fund the renovation measures.

#### **4.1.7 Enhancing competencies of municipalities: *Renocally***

*Renocally* (02/2023 – 01/2025) enhances the capabilities of municipalities in Bulgaria, Romania and Slovakia to meet Fit-for-55 compliance and climate targets. This initiative is part of the European Climate Initiative (EUKI) by the German Federal Ministry for Economic Affairs and Climate Action (BMWK). Five examples in Romania are relevant: a medical centre, three

town halls and a kindergarten demonstrate the benefits of using the RP. The main advantage of a RP for a building is that it provides an accurate overview of the building's energy efficiency and identifies solutions for improvement. In the first year of the *Renocally* project, it became clear that the challenge of collecting data on site is a main obstacle to creating an RP for public buildings. Often, no technical documentation exists for the building, so an analysis must be done by a professional. This step is crucial for assessing the feasibility of a building refurbishment.

## 4.2 Summary of status quo analysis

Elements of the RP according to Directive (EU) 2024/1275 have been implemented in several regions of MS (as shown in Chapter 3). Different approaches and examples, some of which have been used successfully for years, form the basis for implementing the RP for buildings.

Two approaches can be used to tackle this: namely, the RP as part of the EPC or the RP as an independent document resulting from a separate scheme. For the former, recommendations in the EPC can be replaced by the specific RP. For the latter, the scheme can be based on an existing energy advisory scheme (such as have been in place in Austrian provinces for many years).

The EPBD recast is to be nationally or regionally implemented. Even if the RP is the competence of the regions, a harmonised approach is possible and can have advantages for cost-efficient implementation in terms of training offers, provision of software tools and operation of quality assurance procedures.

The renovation roadmap concept exists in different levels of technical detail and for different building types. This has impacts on the cost of setting up and running the RP scheme, on the cost of individual RPs, and on what is required in terms of communicating the benefits of the RP to the target groups.

Supporting building owners to finance retrofits is a key element of existing schemes, which can include free advice, subsidised loans, non-repayable grants and tax-related instruments.

The DBL is an essential element of the RP scheme, but it is still in its infancy. It has great potential in terms of efficient data collection and quality assurance processes, data re-use and database interoperability, but various legal and practical issues need to be resolved.

## 5 Conclusions for further work in the project

Based on the findings from the analysis carried out, specific aspects will be addressed in more detail in the subsequent phases of the EPBD.wise project. Of particular importance is the issue of the advantages and disadvantages of a harmonised approach to RPs within a country, as opposed to regional implementation in decentralised government systems. In addition, distinction is needed between aspects that must be addressed by legislation and those that can be addressed by market forces. It is also important to identify relevant provisions in other legal frameworks that may facilitate or hinder the implementation of the RP, including potential synergies with legislation other than the EPBD.

There are issues relevant to the RP that overlap with the EPC, such as the qualification and training for experts, the EPC database, and the integration of the scheme into the OSS to be set up under the recast EPBD. Another important issue is the DBL, with the following questions to be answered: Who has data sovereignty? Who feeds the DBL? And who has access?

The DBL will need specific attention as it creates opportunities not only for businesses but also for authorities in terms of easier manageability of assessment schemes.

These points highlight the need for the next steps on the RP in the EPBD.wise project to intensify collaboration with the work on the EPC in order to leverage synergies.

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## Annex 1: Template for good practice description Renovation Passport

EPBD.wise	Good Practice #1
Author: Name and organisation	Date: Month yyyy
Contributors: Name and organisation, Name and organisation, Name and organisation, Name and organisation	

### Renovation Passport | Example [ ... ]

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input type="checkbox"/>	Software tools	<input type="checkbox"/>
Tracking implementation of measures	<input type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

Legend: Tick the appropriate box

Short description of good practice - summary	
Text	Image / Figure
Text	
Text	
Text	

### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	
Administrative	
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input type="checkbox"/>	<input type="checkbox"/>
Non-residential buildings	<input type="checkbox"/>	<input type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>

Scale addressed	
Building	<input type="checkbox"/>
Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		


Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input type="checkbox"/>		Regional administration	<input type="checkbox"/>
Consultants	<input type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)				Other (explain)

Legend: Tick the appropriate box or add explanation

Detailed description of good practice	
<p>Description of elements that work well</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p>	<p>Image / Figure</p>
<p>Description of the enabling environment</p>	<p>Image / Figure</p>

<p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p>	
<p>Description of success factors</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p>	<p>Image / Figure</p>
<p>Lessons learnt and recommendations</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p> <p>Text</p>	<p>Image / Figure</p>

## Annex 2: Good practices

### Good practice #1

EPBD.wise	Good Practice #1
Author: Susanne Geissler (SERA global)	Date: 01/2024

#### Renovation Passport | Example RP as part of EPC database

General challenges addressed		Specific challenges addressed	
Good governance	<input type="checkbox"/>	Legal framework	<input checked="" type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input checked="" type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input checked="" type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input type="checkbox"/>	Software tools	<input checked="" type="checkbox"/>
Tracking implementation of measures	<input checked="" type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

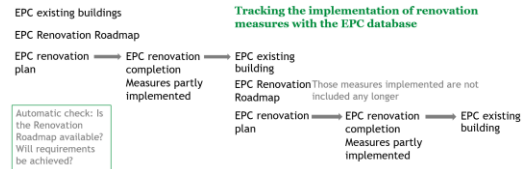
Legend: Tick the appropriate box

### Short description of good practice - summary

In the Province of Salzburg, the recommendations in the EPC can be replaced by the specific Renovation Passport. The implementation of a measure is linked to the updating of the EPC and to the updating of the Renovation Passport. A software tool is available to develop the renovation plan that can be linked with the EPC calculation software. It makes use of EPC data and adds additional data such as metered energy consumption. Thus, by means of comparisons, the measures and the indicators can be tracked.

All information is uploaded via XML interface to the EPC database.

Exemplary implementation of the concept of Renovation passport in the province of Salzburg: Tracking the implementation of renovation measures by means of Renovation roadmap and EPC database.



### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	
Administrative	Software, EPC database environment
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed	Scale addressed	
	Small	Large
Residential buildings	☒	☒

Scale addressed	
Building	☒

Non-residential buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		

Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration	<input type="checkbox"/>
Consultants	<input checked="" type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)				

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p>Description of elements that work well</p> <p>The energy advice processes are already closely linked to the structure of the EPC database environment.</p>
<p>Description of the enabling environment</p> <p>A software tool with a connection to the EPC database via XML interface is available.</p>
<p>Description of success factors</p> <p>(*) Political will and commitment of the administration.</p> <p>(*) Sufficient resources for further developing the database environment.</p> <p>(*) Collaboration with software providers.</p>
<p><b>Lessons learnt and recommendations</b></p> <p>Updating the renovation roadmap and the EPC after implementation of renovation measures is essential. Only this way, the actual status of the building is documented which is important for real estate valuation and thus also financing.</p>

## Good practice #2

EPBD.wise	Good Practice #2
Author: Susanne Geissler (SERA global)	Date: 01/2024

### Renovation Passport | Example OIB Guideline

General challenges addressed		Specific challenges addressed	
Good governance	<input checked="" type="checkbox"/>	Legal framework	<input checked="" type="checkbox"/>
Staff shortage in public administration	<input checked="" type="checkbox"/>	RP is part of EPC	<input checked="" type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input type="checkbox"/>	Software tools	<input type="checkbox"/>
Tracking implementation of measures	<input type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

Legend: Tick the appropriate box

Short description of good practice - summary	
<p>In Austria, the EPBD elements related with the building law are implemented at the level of the federal provinces, and there are nine provinces. The OIB is a federal institution, and among others, is tasked with harmonizing provincial approaches by means of the so-called OIB Guidelines. OIB Guideline 6 addresses the EPBD transposition, and with the issue 2019, the Building Renovation Passport according to amending Directive (EU)2018/844 was introduced in the following way: under certain conditions, the recommendations in the EPC may be substituted by the BRP which contains a renovation roadmap.</p>	<p><b>Austrian example: EPC and Renovation passport</b></p> <p>At least two measures from a list of measures to be included in the renovation plan (renovation roadmap) for individual measures to avoid lock-in effects</p> <p>Can be substituted by the Renovation passport if staged measures meet the minimum requirements of a major renovation. Renovation passport becomes part of the EPC Technical Annex. (OIB RL 6 2019)</p>

**Characteristics and detailed description of solution**

Context addressed	
Technical	
Legal	Guideline at federal level, to harmonize transposition at provincial level
Administrative	
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Non-residential buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>

Scale addressed	
Building	<input checked="" type="checkbox"/>
Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		


Legend: Tick the appropriate box or add explanation

Target group(s) addressed			
Building owners	<input type="checkbox"/>	Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>	Professional associations	<input type="checkbox"/>
Energy companies	<input type="checkbox"/>	Municipal administration	<input type="checkbox"/>
Architects, engineers	<input type="checkbox"/>	Regional administration	<input checked="" type="checkbox"/>
Consultants	<input type="checkbox"/>	Federal administration	<input type="checkbox"/>
Other (explain)		Other (explain) Law makers	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice	
<p>Description of the elements that work well</p> <p>The provision builds on the experience gained from the energy advice process which has been successful since many years and results in a renovation concept. This applies mainly to homeowners of houses for one or two families. This type of houses takes approximately 70% of buildings while regarding apartments, it is around 50%, and 50% are in multi-unit residential buildings.</p>	<p><b>Gebäudebestand in Österreich 2021</b> (Vergleich 2001 2,05 Mio. Gebäude)</p> <p>Gesamt: 4 909 430 Wohnungen 2 374 777 Gebäude in Österreich</p> <p>1 533 534 Wohngebäude mit 1 Wohnung (64 %)</p> <p>292 702 Wohngebäude mit 2 Wohnungen (12 %)</p> <p>217 930 Wohngebäude mit 3 und mehr Wohnungen (9 %)</p> <p>216 785 andere Gebäude (9 %)</p> <p>Knapp zwei Drittel der Gebäude sind Einfamilienhäuser</p> <p>1 939 679 Mietwohnungen</p> <p>53% der Wohnungen in Wohngebäuden mit mehr als 3 Wohnungen: 2 593 938 Wohnungen</p> <p>Gemeinnützige Wohnbauvereinigungen, Wohnungseigentümergeinschaften, Mietwohnungen</p> <p>Büros, Schulen, Lagerhallen, Spitäler, etc. (inkludiert alle öffentlichen Gebäude)</p> <p>Vorgabe: Renovierungsrate 3% laut EED recast</p> <p>Quelle: <a href="https://www.oelb.at/Themen/Objekte/2021/ausgaben_Schule_und_Wohnungssektor_2021.pdf">https://www.oelb.at/Themen/Objekte/2021/ausgaben_Schule_und_Wohnungssektor_2021.pdf</a></p>
Description of the enabling environment	OIB is an association in which all Austrian provinces are members. It is the platform for developing a consensus for the harmonised implementation of provincial laws in the building sector.
Description of success factors	(*) Political will and a formal structure of the platform. (*) Pressure from the construction industry because small-scale different regulations mean higher transaction costs for the economy.
Lessons learnt and recommendations	Harmonisation of regional approaches takes time and is a stepwise process. A long-term vision is necessary, and advantages need to be communicated.

### Good practice #3

EPBD.wise	Good Practice #3
Author: Susanne Geissler (SERA global)	Date: 01/2014

#### Renovation Passport | Example Energy advisor, Renovation coach

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input checked="" type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input checked="" type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input checked="" type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input checked="" type="checkbox"/>	Software tools	<input type="checkbox"/>
Tracking implementation of measures	<input type="checkbox"/>	Experts	<input checked="" type="checkbox"/>
		Entry level – qualification	<input checked="" type="checkbox"/>
		Training	<input checked="" type="checkbox"/>
		Advertisement	<input checked="" type="checkbox"/>
		Market response	<input checked="" type="checkbox"/>

Legend: Tick the appropriate box

#### Short description of good practice - summary

The province of Carinthia has issued a funding guideline in 2024 that regulates the tasks initiating and performing a renovation process, the necessary qualification, and the associated funding. Tasks of the energy advisor: energy advice protocol including

renovation concept. Qualification needed: pass the exam of two specific courses, undergo evaluation of the work, participate in regular courses to update the know-how on technical issues (problems and solutions). Tasks of the renovation coach: Assist the homeowner in implementing the renovation measures. Qualification needed: Professional engineering license, architectural office. Grants are available for the work of the energy advisor and the renovation coach.

### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	Legal provisions regulating tasks and funding of renovation process
Administrative	
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Non-residential buildings	<input type="checkbox"/>	<input type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		

Scale addressed	
Building	<input checked="" type="checkbox"/>
Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input checked="" type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration	<input type="checkbox"/>
Consultants	<input checked="" type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)			Other (explain)	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p><b>Description of elements that work well</b></p> <p>The experts involved in the process are organised in a network that is under the guidance of the provincial administration.</p>
<p><b>Description of the enabling environment</b></p> <p>The activity is well-founded. It builds on the experience gained with energy advice. The organisational structure of the energy advice service is used as a basis.</p>
<p><b>Description of success factors</b></p> <p>(*) An offer is made to homeowners in response to a specific need.</p>
<p><b>Lessons learnt and recommendations</b></p> <p>The renovation coach is a supplementary service designed to ensure that the renovation measures listed in the renovation concept are implemented as effectively as possible.</p>

### Good practice #4

EPBD.wise	Good Practice #4
Author: Susanne Geissler (SERA global)	Date: 01/2024

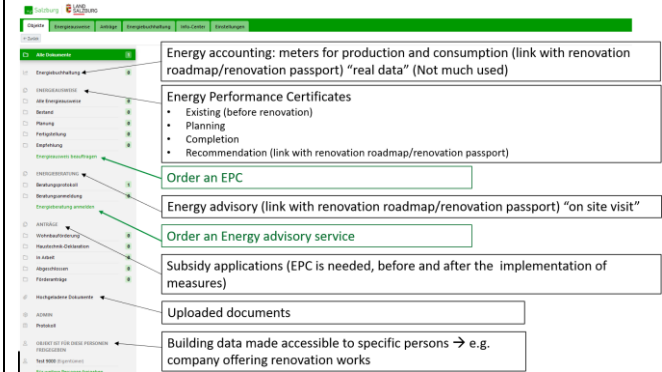
### Renovation Passport | Example Building Logbook by ZEUS

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input checked="" type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input checked="" type="checkbox"/>
Data availability for effective policies	<input checked="" type="checkbox"/>	RP stand-alone document	<input checked="" type="checkbox"/>
Data accessibility for effective policies	<input checked="" type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring the implementation of measures	<input type="checkbox"/>	Software tools	<input checked="" type="checkbox"/>
Tracking the implementation of measures	<input type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

Legend: Tick the appropriate box

### Short description of good practice - summary

The building owner has access to a unique account where all EPC versions, energy advisory protocols, funding applications are stored (uploaded via XML interface by the responsible consultants). In addition, the building owner can store metered energy consumption data and upload additional building information such as drawings. The owner can make all information accessible to third parties.



### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	Legal provisions the EPC database environment is based on
Administrative	IT solution developed in collaboration with Software companies
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	☒	☒
Non-residential buildings	☒	☒

Scale addressed	
Building	☒
Neighbourhood	☐

Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		

District	<input type="checkbox"/>

Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input checked="" type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input type="checkbox"/>		Regional administration	<input checked="" type="checkbox"/>
Consultants	<input type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)			Other (explain)	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p>Description of the elements that work well</p> <p>The database environment has been constantly further developed in view of future needs. Procedures related with the EPC, energy advice and funding applications are used to collect data which can be used for policy making.</p>
<p>Description of the enabling environment</p> <p>There are legal provisions regulating the procedures related with the database environment.</p>
<p>Description of success factors</p> <p>(*) Political will and commitment of the administration.</p> <p>(*) Sufficient resources for further developing the database environment.</p> <p>(*) Collaboration with software providers.</p>
<p><b>Lessons learnt and recommendations</b></p> <p>Many building owners do not make use of the opportunity to record energy consumption data and to upload additional building documents.</p> <p>Benefits need to be communicated, and architects and engineers should be given authorisation to maintain the digital building logbook on behalf of the building owner.</p>

### Good practice #5

EPBD.wise	Good Practice #5
Author: Susanne Geissler (SERA global)	Date: 01/2024
Contributors:	

### Renovation Passport | Example iBRoad2EPC Software

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input type="checkbox"/>
Data availability for effective policies	<input checked="" type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring the implementation of measures	<input type="checkbox"/>	Software tools	<input checked="" type="checkbox"/>
Tracking the implementation of measures	<input type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

Legend: Tick the appropriate box

### Short description of good practice - summary

iBRoad2EPC is an EU funded project working on linking the EPC with the Renovation Passport.

Coupling iBRoad2EPC with national software via API (work in progress)



### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	
Administrative	Software tool
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed	Scale addressed	
	Small	Large
Residential buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Non-residential buildings	<input type="checkbox"/>	<input type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>

Scale addressed	
Building	<input checked="" type="checkbox"/>
Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Other (explain)			
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Legend: Tick the appropriate box or add explanation

Target group(s) addressed			
Building owners	<input checked="" type="checkbox"/>		Scientists
Property managers	<input type="checkbox"/>		Professional associations
Energy companies	<input type="checkbox"/>		Municipal administration
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration
Consultants	<input checked="" type="checkbox"/>		Federal administration
Other (explain)			Other (explain)

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
Description of the elements that work well Not available
Description of the enabling environment Not available
Description of success factors Not available
Lessons learnt and recommendations Not available

## Good practice #6

EPBD.wise	Good Practice #6
Author: Bettina Sticher	Date: 04/2024

### Renovation Passport | Enhancing competencies of municipalities


Source: Renocally<sup>15</sup>, Romania

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input checked="" type="checkbox"/>
Data availability for effective policies	<input checked="" type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input checked="" type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring the implementation of measures	<input type="checkbox"/>	Software tools	<input checked="" type="checkbox"/>
Tracking the implementation of measures	<input type="checkbox"/>	Experts	<input type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input checked="" type="checkbox"/>
		Advertisement	<input type="checkbox"/>

<sup>15</sup> Source: <https://www.bpie.eu/renocally/> Renocally is a collaborative effort between research organisations, think-tanks, and industry professionals at the leading edge of the built environment. Checked on 07/05/2024.

		Market response	<input type="checkbox"/>
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Legend: Tick the appropriate box

Short description of good practice - summary	
<p>Renocally enhances competences of municipalities in Bulgaria, Romania and Slovakia to reach Fit-for-55 compliance and climate targets. This project is part of the <a href="#">European Climate Initiative</a> (EUKI) of the German Federal Ministry for Economic Affairs and Climate Action (BMWK). It is the overarching goal of the EUKI to foster climate cooperation within the European Union (EU) in order to mitigate greenhouse gas emissions.</p>	 <p>Enabling local authorities to lead the decarbonisation of existing buildings  <small>Challenges and opportunities for developing building renovation prospects in support of public authorities in Central and Eastern Europe</small></p> 

### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	EPC database
Administrative	Software tool
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input type="checkbox"/>	<input type="checkbox"/>

Scale addressed	
Building	<input checked="" type="checkbox"/>

Non-residential buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Other (explain)		

Neighbourhood	<input type="checkbox"/>
District	<input type="checkbox"/>

Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input checked="" type="checkbox"/>		Municipal administration	<input checked="" type="checkbox"/>
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration	<input checked="" type="checkbox"/>
Consultants	<input checked="" type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)			Other (explain)	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p>Description of the elements that work well</p> <ul style="list-style-type: none"> <li>*The collaboration with the municipality was constructive, and the necessary information about the medical centre was shared without issues</li> <li>*Having a RP made, you the municipality knows what amounts to reserve for specific renovation measures.</li> <li>*Within the municipal budget, certain amounts are allocated for renovation projects.</li> </ul>
<p><b>Lessons learnt and recommendations</b></p> <ul style="list-style-type: none"> <li>*RP training should be organised at national level for municipal employees, by the organization which does the training for certified EPC auditors.</li> <li>*Having RPs for all public buildings, including smaller ones, would provide better insights into the energy needs of the municipality.</li> <li>*Support to municipalities: to enable the use of existing energy audits of public buildings as primary data inputs for the RP, not having to re-do audits for each building would ease municipal budgets.</li> <li>*It would be very helpful to have the future Romanian RP software aligned with other instruments, and to assign a trained specialist to implement them.</li> </ul>

### Good practice #7

EPBD.wise	Good Practice #7
Author: Bettina Sticher	Date: 5/2024

### Renovation Passport | Renovation Roadmap `Sanierungsfahrplan`<sup>16</sup>, Germany

General challenges addressed		Specific challenges addressed	
Good governance	<input type="checkbox"/>	Legal framework	<input checked="" type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input checked="" type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input checked="" type="checkbox"/>
Financing	<input checked="" type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input checked="" type="checkbox"/>	Software tools	<input type="checkbox"/>
Tracking implementation of measures	<input checked="" type="checkbox"/>	Experts	<input checked="" type="checkbox"/>
		Entry level – qualification	<input checked="" type="checkbox"/>
		Training	<input checked="" type="checkbox"/>
		Advertisement	<input type="checkbox"/>
		Market response	<input type="checkbox"/>

<sup>16</sup> <https://www.co2online.de/foerdermittel/individueller-sanierungsfahrplan/#c171241> .Checked on 27/05/2024

Legend: Tick the appropriate box

Short description of good practice - summary
<p>The 'Sanierungsfahrplan'(renovation roadmap) is designed to show homeowners and property managers how they can refurbish their buildings step by step to save energy and reduce CO2 emissions. A certified energy consultant draws up the renovation roadmap individually for each building. Specific measures and their chronological sequence are suggested. The roadmap contains concrete proposals, such as insulation, heating renewal, window and door replacement and the use of renewable energies. It shows which investments are necessary and what benefits (e.g. savings in energy costs) can be expected. The roadmap also provides information on possible subsidies and financial incentives provided by the federal government, federal states or local authorities. The renovation roadmap is not a short-term project, but a long-term plan that is often implemented over several years. All measures and progress are documented in order to monitor the success of the refurbishment and make adjustments if necessary. This roadmap helps to organise the renovation process systematically and efficiently.</p>

### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	Legal provisions regulating tasks and funding of renovation process
Administrative	
Societal	
Economic	

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Non-residential buildings	<input type="checkbox"/>	<input type="checkbox"/>

Scale addressed	
Building	<input checked="" type="checkbox"/>
Neighbourhood	<input type="checkbox"/>

Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		

District	<input type="checkbox"/>

Legend: Tick the appropriate box or add explanation

Target group(s) addressed				
Building owners	<input checked="" type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input checked="" type="checkbox"/>		Professional associations	<input type="checkbox"/>
Energy companies	<input checked="" type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration	<input type="checkbox"/>
Consultants	<input checked="" type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)			Other (explain)	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p><b>Description of elements that work well</b></p> <p>The renovation roadmap is tailored to each building. This means that it takes into account the specific circumstances and needs of each building, resulting in realistic and realisable measures.</p>
<p><b>Description of the enabling environment</b></p> <p>The renovation roadmap has had a well-founded legal framework since 2012. The organisation of energy consultants is well organised and offers ongoing further training.</p>
<p><b>Description of success factors</b></p> <p>Combination of individual customisation, technical expertise, transparent planning and financial incentives that all work together to make the energy-efficient renovation of buildings effective and attractive</p>
<p><b>Lessons learnt and recommendations</b></p> <p>Integrating the `Sanierungsfahrplan` with broader urban planning and sustainability initiatives to maximize impact.</p>

### Good practice #8

EPBD.wise	Good Practice #8
Author: Bettina Sticher	Date: 5/2024

#### Renovation Passport | One-stop shop `Octave`

General challenges addressed		Specific challenges addressed:	
Good governance	<input type="checkbox"/>	Legal framework	<input type="checkbox"/>
Staff shortage in public administration	<input type="checkbox"/>	RP is part of EPC	<input type="checkbox"/>
Data availability for effective policies	<input type="checkbox"/>	RP stand-alone document	<input checked="" type="checkbox"/>
Data accessibility for effective policies	<input type="checkbox"/>	Specific type of RP	<input type="checkbox"/>
Data quality for effective policies	<input type="checkbox"/>	Methodology	<input type="checkbox"/>
Estimation of impacts (broader benefits)	<input type="checkbox"/>	Input data	<input type="checkbox"/>
Industry and labour and skill shortages	<input type="checkbox"/>	Algorithms	<input type="checkbox"/>
Clear presentation of co-benefits	<input type="checkbox"/>	Indicators	<input type="checkbox"/>
Financing	<input checked="" type="checkbox"/>	Rating	<input type="checkbox"/>
Ensuring implementation of measures	<input checked="" type="checkbox"/>	Software tools	<input checked="" type="checkbox"/>
Tracking implementation of measures	<input type="checkbox"/>	Experts	<input checked="" type="checkbox"/>
		Entry level – qualification	<input type="checkbox"/>
		Training	<input type="checkbox"/>
		Advertisement	<input checked="" type="checkbox"/>
		Market response	<input checked="" type="checkbox"/>

Legend: Tick the appropriate box

#### Short description of good practice - summary

Advisors supports either homeowners or co-owners from project inception to handover. After a free initial site visit to analyse the needs the advisors propose a suitable work plan and then assist in selecting the appropriate contractors based on jointly defined

specifications. Throughout the project, the specialists coordinate and monitor the contractors' work. Furthermore 'Octave' provides specialized financial services for energy renovation projects, creating an optimal financing plan tailored to the project and identifying all available funding sources. 'Octave' assists in preparing the necessary administrative documents for funding applications. Additionally, the service pre-finance eligible grants to serve as a deposit for banks, safeguarding your borrowing capacity.

### Characteristics and detailed description of solution

Context addressed	
Technical	
Legal	
Administrative	
Societal	
Economic	'Octave' not only identify all available funding sources, the pre-finance eligible subsidies.

Legend: Allocate a topic

**Technical:** e.g. construction types, materials, heating and cooling systems, electricity supply

**Legal:** e.g. federal or regional/municipal responsibility; relation with building regulation, energy audit, RES legislation

**Administrative:** e.g. is the unique definition of building address and unit address available or not; databases, tools

**Societal:** e.g. how is energy poverty dealt with

**Economic:** e.g. which subsidy schemes exist on what basis

Built environment addressed		
	Small	Large
Residential buildings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Non-residential buildings	<input type="checkbox"/>	<input type="checkbox"/>
Office	<input type="checkbox"/>	<input type="checkbox"/>
Educational	<input type="checkbox"/>	<input type="checkbox"/>
Health	<input type="checkbox"/>	<input type="checkbox"/>
Other (explain)		

Legend: Tick the appropriate box or add explanation

Scale addressed	
Building	<input checked="" type="checkbox"/>
Neighbourhood	<input checked="" type="checkbox"/>
District	<input type="checkbox"/>

Target group(s) addressed				
Building owners	<input checked="" type="checkbox"/>		Scientists	<input type="checkbox"/>
Property managers	<input checked="" type="checkbox"/>		Professional associations	<input checked="" type="checkbox"/>
Energy companies	<input type="checkbox"/>		Municipal administration	<input type="checkbox"/>
Architects, engineers	<input checked="" type="checkbox"/>		Regional administration	<input type="checkbox"/>
Consultants	<input checked="" type="checkbox"/>		Federal administration	<input type="checkbox"/>
Other (explain)			Other (explain)	

Legend: Tick the appropriate box or add explanation

Detailed description of good practice
<p>Description of elements that work well</p> <p>Interested homeowners can use the tool 'Assistance simulator' ('Simulateur aides') which is integrated on the website. They will discover the eligibility for renovation grants by answering three questions.</p>
<p>Description of the enabling environment</p> <p>They offer an extended range of services, including consultancy, financial services and project management support.</p>
<p>Description of success factors</p> <p>For the entire Grand Est region, this means over 38,000 renovations per year.</p>
<p><b>Lessons learnt and recommendations</b></p> <p>Comprehensive Support is Crucial: Oktave's holistic approach, offering both technical and financial support, has proven essential for the successful implementation of energy renovation projects. Homeowners benefit significantly from having a single point of contact that assists them through every step of the process.</p> <p>Tailored Financing Solutions: Providing customized financial packages, including pre-financing and assistance with grant applications, helps make energy renovations more accessible. This approach ensures that more homeowners can undertake renovations without financial strain.</p> <p>Importance of Pre-financing: Advancing grants and bonuses (such as MaPrimeRénov' and the Oktave bonus) helps bridge the funding gap and acts as a deposit for banks, facilitating better borrowing conditions for homeowners.</p> <p>Local Authority Engagement: Collaboration with local authorities enhances the credibility and reach of the program. Local grants and incentives, in addition to national ones, can significantly boost participation rates.</p> <p>Energy Savings Awareness: Educating homeowners about the long-term benefits of energy savings is crucial. Oktave's success highlights the need for raising awareness about both environmental impacts and cost savings.</p> <p>Recommendations:</p>

**Expand Geographical Reach:** Extending similar services to other regions in France could replicate the success seen in Alsace, contributing to nationwide energy efficiency improvements.

**Increase Public Awareness:** More robust marketing and educational campaigns can help inform the public about available services and the benefits of energy renovations.

**Streamline Administrative Processes:** Simplifying the application and approval processes for grants and financing can encourage more homeowners to undertake renovation projects.

**Foster Public-Private Partnerships:** Strengthening collaborations between government bodies, financial institutions, and private companies can enhance resource allocation and service delivery.

**Continuous Feedback and Improvement:** Regularly collecting feedback from participants and stakeholders can help refine the program and address any emerging challenges effectively.