

Session 4

The concept of renovation passport

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Overview of presentation

- The concept of renovation passport and how it enables innovative energy services
- The innovative energy service in this context is an ESCO concept for building renovation (ESCO – Energy Service Company, which provides the technical work including financing)
- Regarding basic introduction to the renovation passport please check TIMEPAC Academy Webinar 2, Session 5 on 5 March 2024

A brief overview of development: milestone 2024 RP according to upcoming EPBD recast

- **Mandatory RP scheme** based on common framework according to EPBD Annex.
- **Voluntary use**, unless the Member State decides to make it mandatory.
- Measures to ensure that building renovation passports are affordable.
- **Option to allow the RP to be drawn up and issued jointly with the EPC. In this case the renovation passport shall substitute the EPC recommendations.**
- **Digital RP** suitable for printing, by a **qualified or certified expert**, following an **on-site visit**.
- Explain to the building owner **the best steps to transform the building** into a zero-emission building well before 2050.
- Member States to provide a **digital tool** for preparing and updating the RP.
- RP to be uploaded to the **national EPC database**.
- RP to be stored in, or can be accessed via, the **digital building logbook**, when established.

Focus on building renovation: Practise

Renovation in one go, e.g. Energiesprong, or individual projects such as the one in Kapfenberg



Multi-unit residential building Johann-Dobner-Strasse 3470 in Kapfenberg. Housing Association: <https://www.epbd.eu/en/epbd-annex-ii-2018>. Source: <https://www.epbd.eu/en/epbd-annex-ii-2018>. Copyright: <https://www.epbd.eu/en/epbd-annex-ii-2018>. License: <https://www.epbd.eu/en/epbd-annex-ii-2018>.

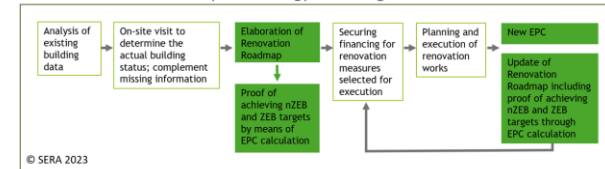
Staged renovation, e.g. Renovation passport, or „Individueller Sanierungsfahrplan“ (Germany)



Source: <https://www.co2online.de/foerderung/individuelle-sanierungsfahrplaene-ifu24/>. A consortium has developed an overall methodology for a coordinated renovation roadmap for residential buildings. Since completion of the pilot phase in 2020, it can be used as standard in energy advice, both for individual events in one go and for step-by-step realisation.

A possible workflow for implementing the RP – availability of tools is different in the Member States

Data repositories → EPC calculation tool including energy model and renovation roadmap tool
 → Separate energy modelling tools and EPC calculation tools



Link between RP and building logbook

In principle, there are two approaches:

1. Software tools create calculation results that are uploaded to a database, ideally via BIM and sometimes still in PDF format. This is the case for Option 1 and Option 3. Challenge: High effort for collection of input data, risk of errors.
2. A BIM offering software creates the calculation results via connected software tools to be executed for further use. This is the case for Option 2. Challenge: Works well within in the same software suite, but problems occur with information transfer via IFC Format.

There are currently mainly three types of building logbook, depending on the situation in each country:

- **Option 1 The EPC database environment:** EPCs, energy advisory reports, renovation passports and subsidy applications for a building are stored in the related specific account. The building owner uploads additional information and give access to this information to third parties (example Province of Salzburg, Austria).
- **Option 2 A BIM offering software:** Level 3 BIM provides a possibility to store data at the same place and with the option of ensuring up-to-date information (example CYPE BIMserver.center).
- **Option 3 Company or institution owned building logbook:** The company or institution keeps all documents in their own database and makes them available via company platform to consultants. If needed for Level(s) calculations, RP, EPC, Green Building Certification, etc. (example European construction company).

Short introduction on ESCO services for building renovation

- The **investment in the renovation of the building will be paid back by the cost savings** due to the reduction in energy costs and other income.
- Economies of scale: a certain level of **energy expenditure and cost savings** is required, otherwise the transaction costs are too high for the investment to pay off.
- ESCO services typically address the **technical building systems and large non-residential buildings**; no improvement of the building envelope, no residential buildings.
- There have been **several attempts to extend the ESCO concept to the building envelope and residential buildings**. To date, there has only been one widely successful approach at European level, provided the national legal framework permits this, namely the **Energiesprong** initiative (<https://energiesprong.org/>).

How to reduce the transaction cost of renovation projects?

- There are several tools available that can display energy related building data on a map and provide companies with valuable information to develop services.
- Display of EPC data on a map can assist project developers in narrowing down areas for detailed investigation and preparation of renovation projects on a larger scale.
- However, this benefit cannot be fully realized due to various reasons.

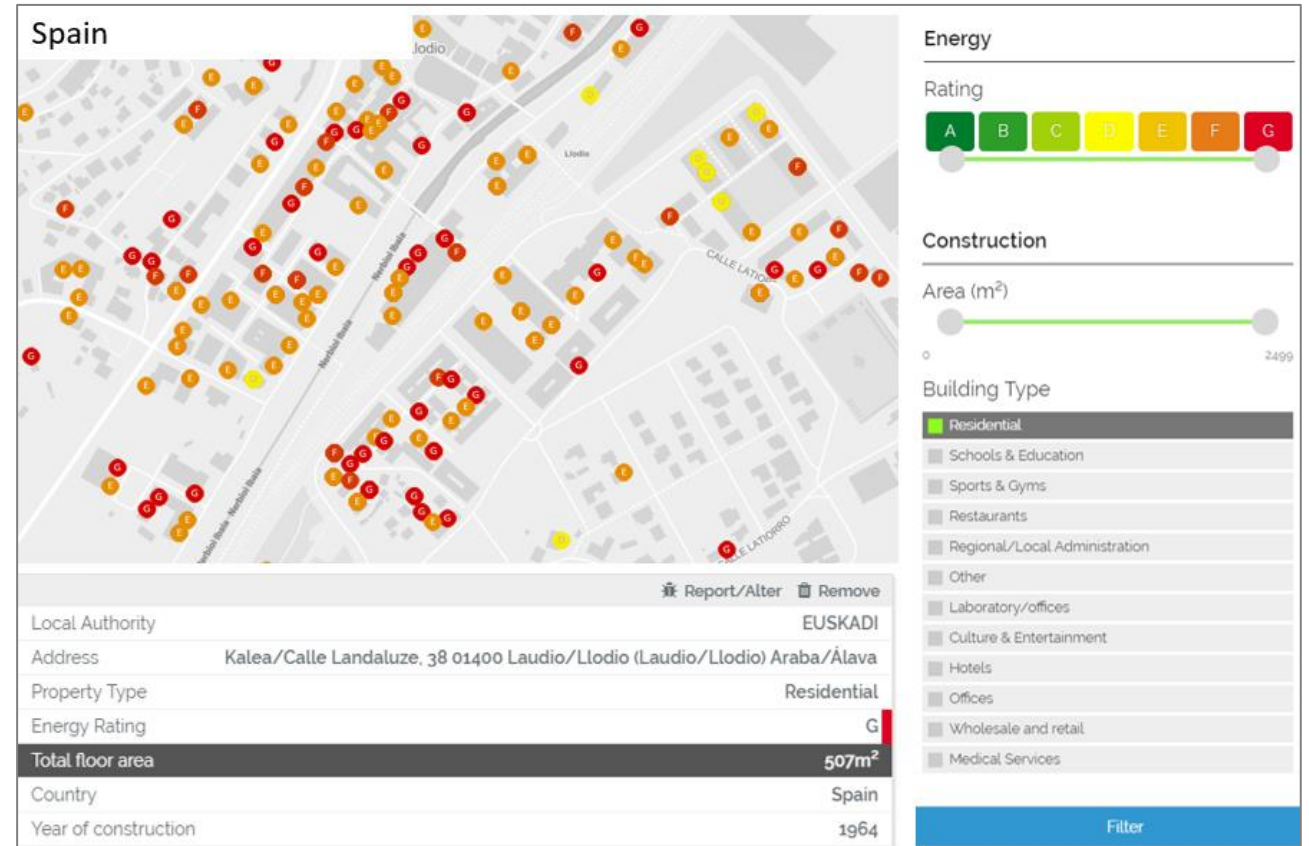


Figure 1: Display of EPC data as suggested by the ENERFUND project (<https://cordis.europa.eu/project/id/695873>)

Displaying EPC data on a map – not yet useful for ESCOs

The main problem that ESCOs face with EPC data: it is not clear if the publicised information about the building relates to the actual status.

- The EPC typically has a validity of 10 years.
- Recommendations are often generic, and implementation is not tracked.
- It is based on standard user behaviour.
- EPCs for existing buildings may be simplified and contain errors.
- The availability of EPCs is not yet nationwide.

The renovation passport complements the EPC and addresses many of the challenges identified.

What is the difference between EPC and RP?		
	Characteristics of the mandatory Energy Performance Certificate (EPC)	Characteristics of the voluntary Renovation Passport (RP)
Building specific	Yes, but not mandatory; for existing buildings: can be based on default values	Yes - it is important for the economic assessment of improvement measures
User specific metered energy consumption	No - based on a given calculation method and standard user behaviour/standard user profile	Yes - it is important for the economic assessment of improvement measures
On-site visit	Not mandatory, depends on the regulatory framework and the purpose of the EPC	Yes - because reliable information about the actual condition must be available
Format of recommendations	Can be general; often not specified	Format is specified by the operator of the voluntary scheme
Tracking the implementation of recommendations	Not mandatory; sometimes possible through the EPC database if it allows for versioning of EPCs of a building, and recommendations are represented by defined data fields	Not mandatory; possible if planned by the operator of the scheme; several possibilities, for example through the EPC database
Purpose	Comparison of buildings in terms of energy performance regardless of user behavior	Initiating and facilitating the renovation of buildings

TIMEPA Academy Webinar 2. Advanced methods and tools for holistic energy renovation of buildings 5. March 2024

Tracking the implementation of renovation measures is essential for accurately presenting the current condition of the building.

Renovation passport as a solution to the challenges: focus on tracking the implementation of improvement measures

Three approaches were identified in TIMEPAC:

Energy audit reports – They contain recommendations how to improve the building's energy performance which can be further developed to form a renovation roadmap. As a prerequisite for tracking the implementation of measures, an energy management system must be in place. Mainly for large non-residential buildings.

EPC database – As a prerequisite, the EPC identifier is the building and not the building auditor or EPC issuer. The EPC database must facilitate the versioning of EPCs and renovation passports over time. For all building types.

BIM offering software – As a prerequisite, a digital twin of the building must exist where changes such as renovation measures are logged. For all building types?
Consider new developments such as digital building permit, etc.

Example | Renovation passport in the province Salzburg, Austria | The path towards Nearly Zero Energy Building

Essentially, the recommendations in the EPC are 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. Thus, by means of comparisons, the measures and the indicators can be tracked.

EPC existing buildings

Tracking the implementation of renovation measures with the EPC database

EPC renovation roadmap

EPC renovation plan



EPC renovation completion

Measures of renovation roadmap partly implemented



EPC existing building

EPC renovation roadmap

Those measures implemented are not included any longer

Automatic check: Is the renovation roadmap available?
Will requirements be achieved?

EPC renovation plan



EPC renovation completion

Measures of renovation roadmap partly implemented



EPC existing building

Member States provisions should enable the benefits of a well-planned Renovation Passport (RP) scheme

Selected provisions of the upcoming recast EPBD:

- Option to allow the **RP to be drawn up and issued jointly with the EPC**. In this case the renovation passport shall substitute the EPC recommendations.
- Member States to provide a **digital tool** for preparing and updating the RP.
- RP to be uploaded to the **national EPC database**.
- RP to be stored in, or can be accessed via, the **digital building logbook**, when established.

Tracking the implementation of renovation measures: what does it mean for your EPC database?

- Already possible?
- Further development necessary?
- New approach needed?

Consider the tracking of renovation measures when designing the mandatory features of the RP scheme.

The BIM-based approach would provide a one-stop solution.

**If you would like more information,
please visit www.timepac.eu or contact us at
office@sera.global**

Thanks for your attention!