TIMEPAC Academy

Session 5

Next steps for renovation passports: focus on data and tools

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Overview of presentation

- Introduction on the renovation passport - where do we start from
- The renovation passport in the upcoming EPBD recast
- How do we go from there – data and tools

Focus on building renovation: EPBD

- The **energy performance certificate (EPC)** contains recommendations for improving building energy efficiency, but these are often not specific enough and their implementation is unclear during the 10-year validity period of an EPC.
- In contrast, the **renovation passport (RP)** including renovation roadmap is tailored to a building. It specifies the necessary measures in the right order to avoid lock-in effects and to aim the nearly zero-energy building standard in the medium term and the zero-emission building standard in the long term. User-friendly information and the link to financing are important elements.

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

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-Böhm-Straße 34/36 in Kapfenberg. Housing Association: Siedlungsgenossenschaft Ennstal. Developed and implemented as part of a research project. Completed 2014. https://nachhaltigwirtschaften.at/de/hdz/news/2014/20140811-feierliche-uebergabe-der-plus-energie-sanierung-in-kapfenberg.php

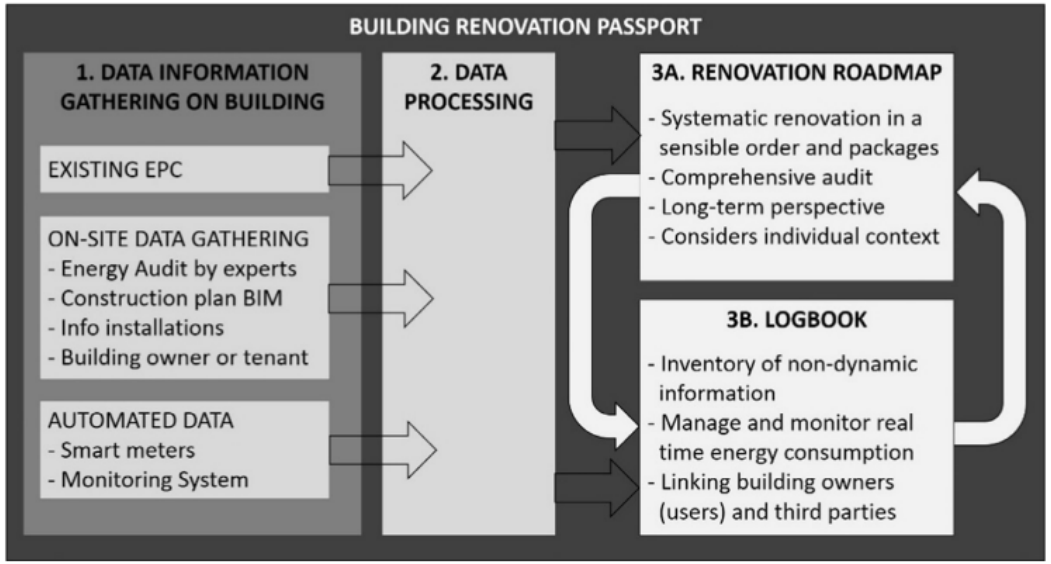
Staged renovation, e.g. Renovation passport, or „Individueller Sanierungsfahrplan“ (Germany)

Source: https://www.co2online.de/foerdermittel/individueller-sanierungsfahrplan/#c171241

A consortium has developed an overall methodology for a customised renovation roadmap for residential buildings. Since completion of the pilot phase in 2016, it can be used as standard in energy advice, both for refurbishment in one go and for step-by-step refurbishment.

A brief overview of the development of the renovation passport: milestone 2018

EU level: Introduced by amending Directive (EU) 2018/844 and detailed by BPIE technical study: Building Renovation Passport (BRP)



European Commission, Directorate-General for Energy, Volt, J., Fabbri, M., Zuhaib, S., et al., Technical study on the possible introduction of optional building renovation passports: final report, Wouters, P. (editor), Publications Office, 2020, https://data.europa.eu/doi/10.2833/760324

National level: Elements of BRP are part of subsidy schemes in several EU Member States. Related processes: energy audits and energy advisory

Country	Short description
France	BRP contains more specific recommendations than the EPC but is also based on default data to keep cost low.
Germany	Mainly for single family houses; several meetings with the building owner; Renovation Roadmap includes also other adaptations which are not energy-related.
Belgium Walloon region	Renovation Roadmap based on a detailed energy audit and the elaboration of specific measures; they are organised in packages, and the whole package must be implemented to get the subsidy.

Status quo in the EU Member States

Many EU Member States have already implemented elements of the renovation passport, for example:

- As part of subsidy schemes for building renovation
- As a consequence of transposing the amending Directive (EU) 2018/844
- As part of the EPC scheme, if the EPBD has been transposed in a way that energy audits are a precondition for issuing an EPC

What are the new elements according to the upcoming EPBD recast?

- Process is specified
- Digital tool that links with the EPC database and the building logbook
- More indicators and therefore more input data

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.

Annex sets mandatory and optional requirements

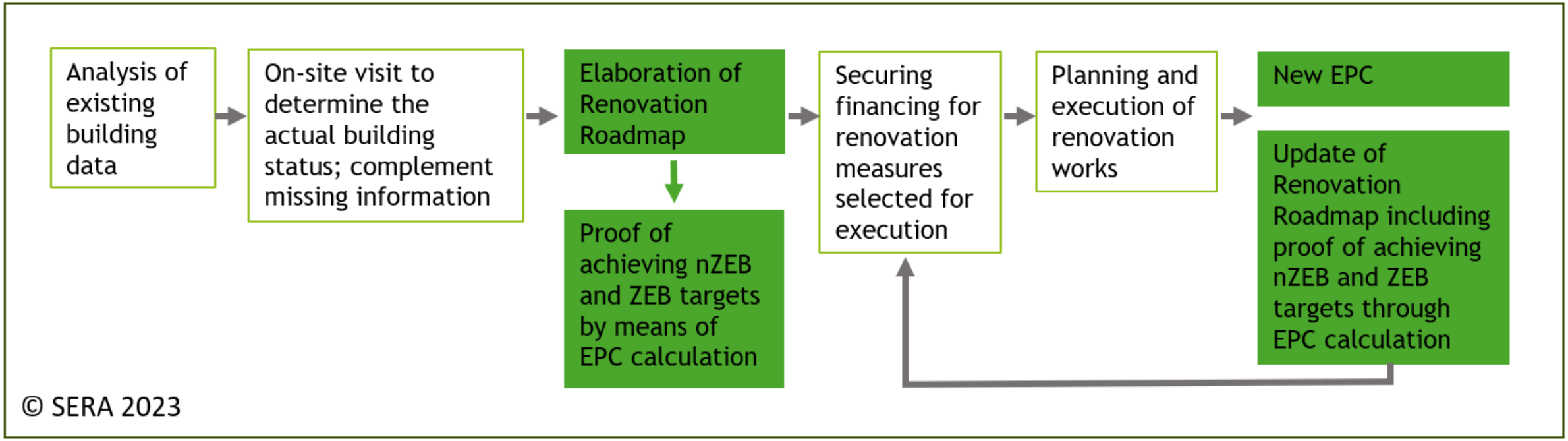
Mandatory:

- **Information on the current energy performance of the building;**
- A graphical representation or graphical representations of the roadmap and its steps for a staged deep renovation;
- Information on relevant national requirements such as minimum energy performance requirements for buildings, minimum energy performance standards and rules in the Member State on the phase-out of fossil-fuel used in buildings for heating and cooling, including application dates;
- A succinct explanation on the optimal sequencing of steps;
- Information about each step, including:
  - The name and description of the renovation measures for the step, including relevant options for the technologies, techniques and materials to be used;
  - The estimated energy savings in primary and final energy consumption, in kWh and in percentage improvement compared to the energy consumption prior to the step;
  - The estimated reduction of operational greenhouse gas emissions;
  - The estimated savings on the energy bill, clearly indicating the assumptions on energy costs used for the calculation;
  - **The estimated energy performance class of the energy performance certificate to be achieved following completion of the step;**
- Information about a **potential connection to an efficient district heating and cooling system**;
- The share of individual or collective generation and self-consumption of **renewable energy** estimated to be achieved after the renovation;
- General information on available options for **improving construction products' circularity and for reducing their whole lifecycle greenhouse gas emissions**, as well **as wider benefits related to health and comfort, indoor environmental quality and the improved adaptive capacity of the building to climate change**;
- Information on available funding and relevant weblinks to the sources of such **funding**;
- Information on **technical advice and advisory services**, including contact details and weblinks to one-stop-shops.

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

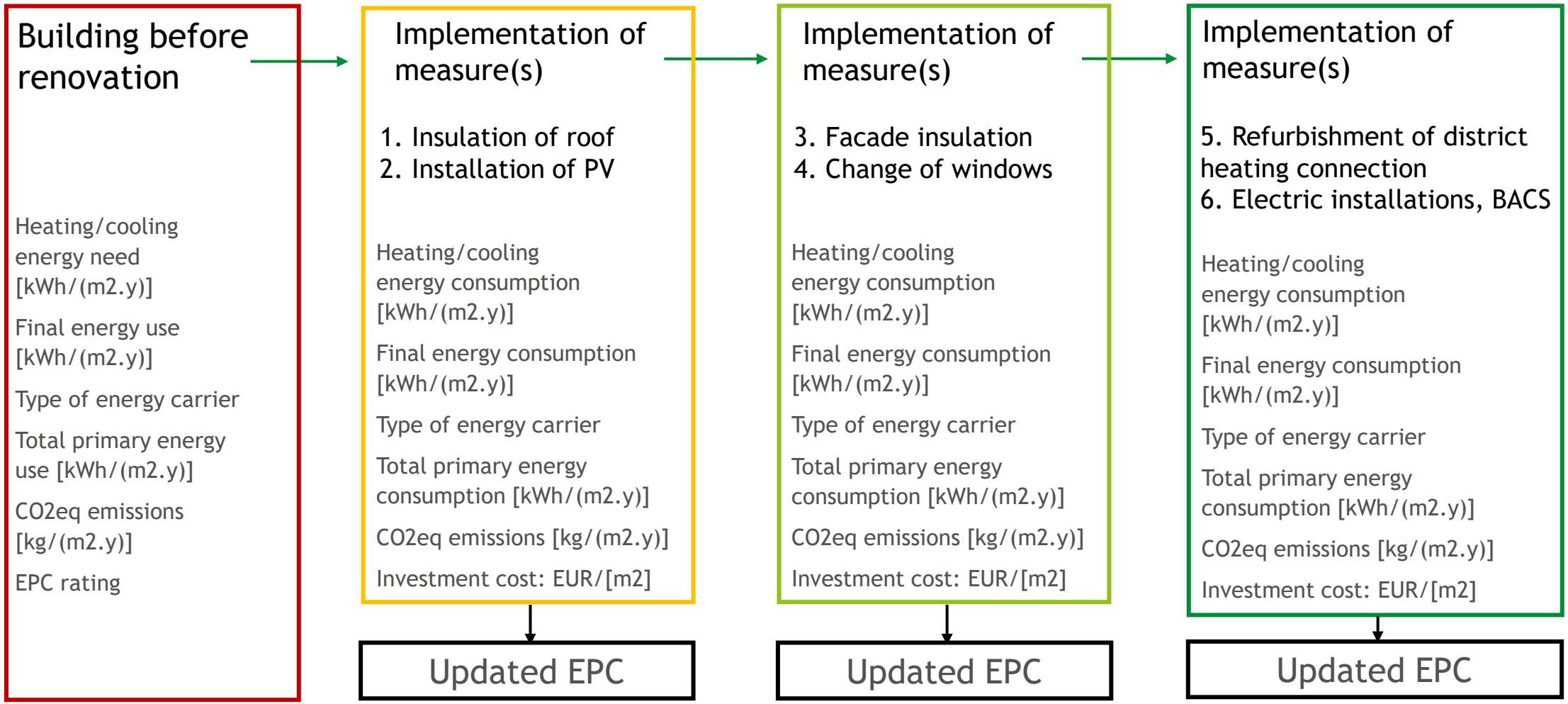
Data repositories → Separate energy modelling tools and EPC calculation tools



***Starting point* = EPC | conventional or created by BIM | in terms of building data and energy performance. *Renovation Roadmaps* are drawn up taking into account additional data such as from on-site visits and energy bills. *Example* of building specific renovation roadmap:**

EPC

Renovation roadmap (based on actual user profile and operational data, information from energy advisory report: on-site visit and interview with owner)



Link between EPC and Renovation Passport

Workflow

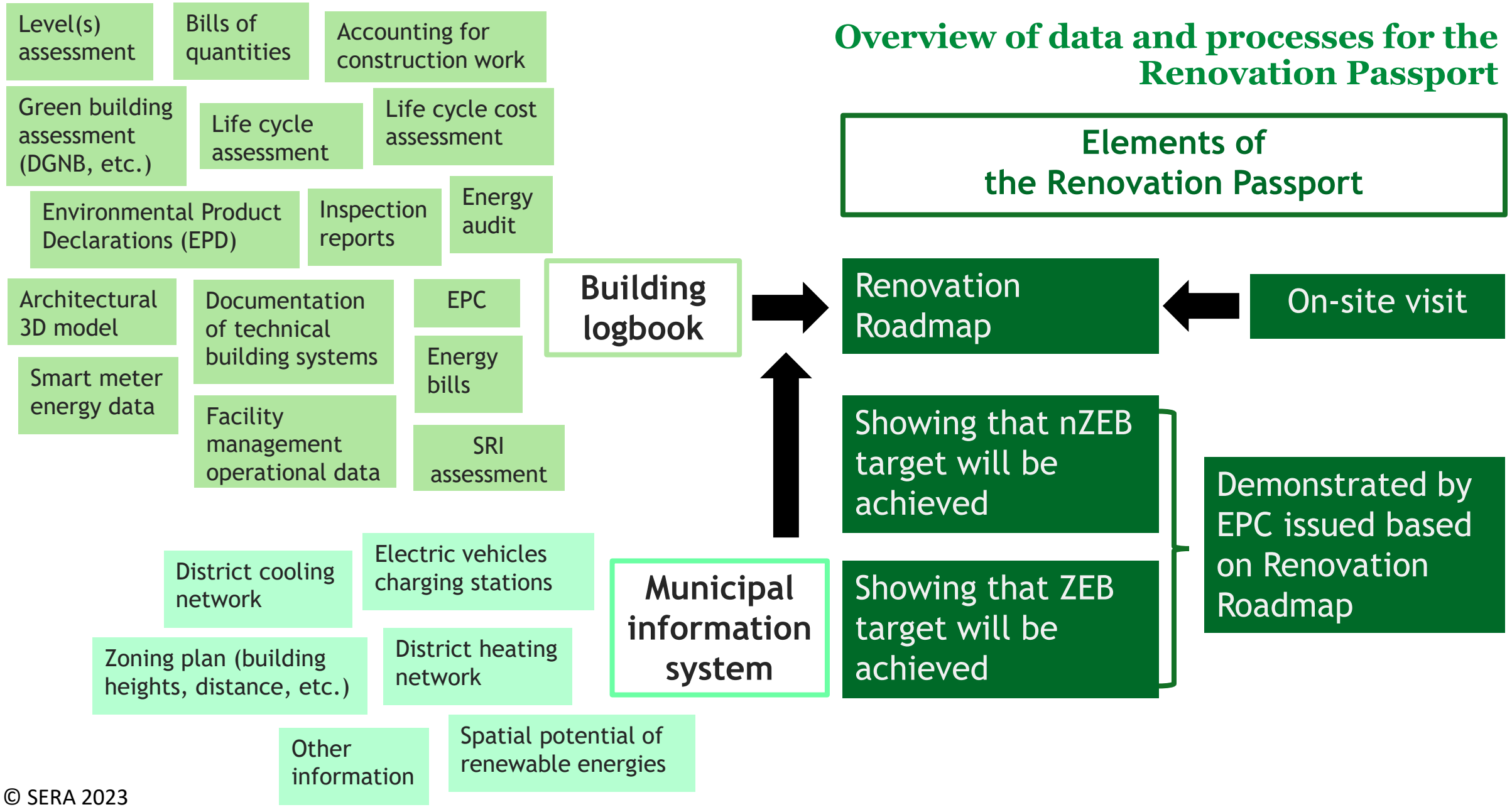
- Renovation passport is closely tied to the EPC
- Upon implementing a measure from the renovation roadmap, a new EPC is issued
- A link with the EPC calculation software package is necessary —> depends on the software tool in the country or the region

In principle, there are two ways to establish the link between EPC and renovation passport, depending on the situation in each country:

1.) The EPC software includes many features, such as energy modelling, is already linked to material databases, and contains a module for developing the renovation roadmap: it is to be further developed to meet all the requirements of the renovation passport.

2.) The EPC software remains a simple tool for proving compliance with legal requirements, but energy modelling and development of the renovation roadmap as well as indicators for real energy consumption, health, comfort, life cycle cost, and climate change adaptation are done with other tools.

Overview of data and processes for the Renovation Passport



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 XML 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 exported 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.

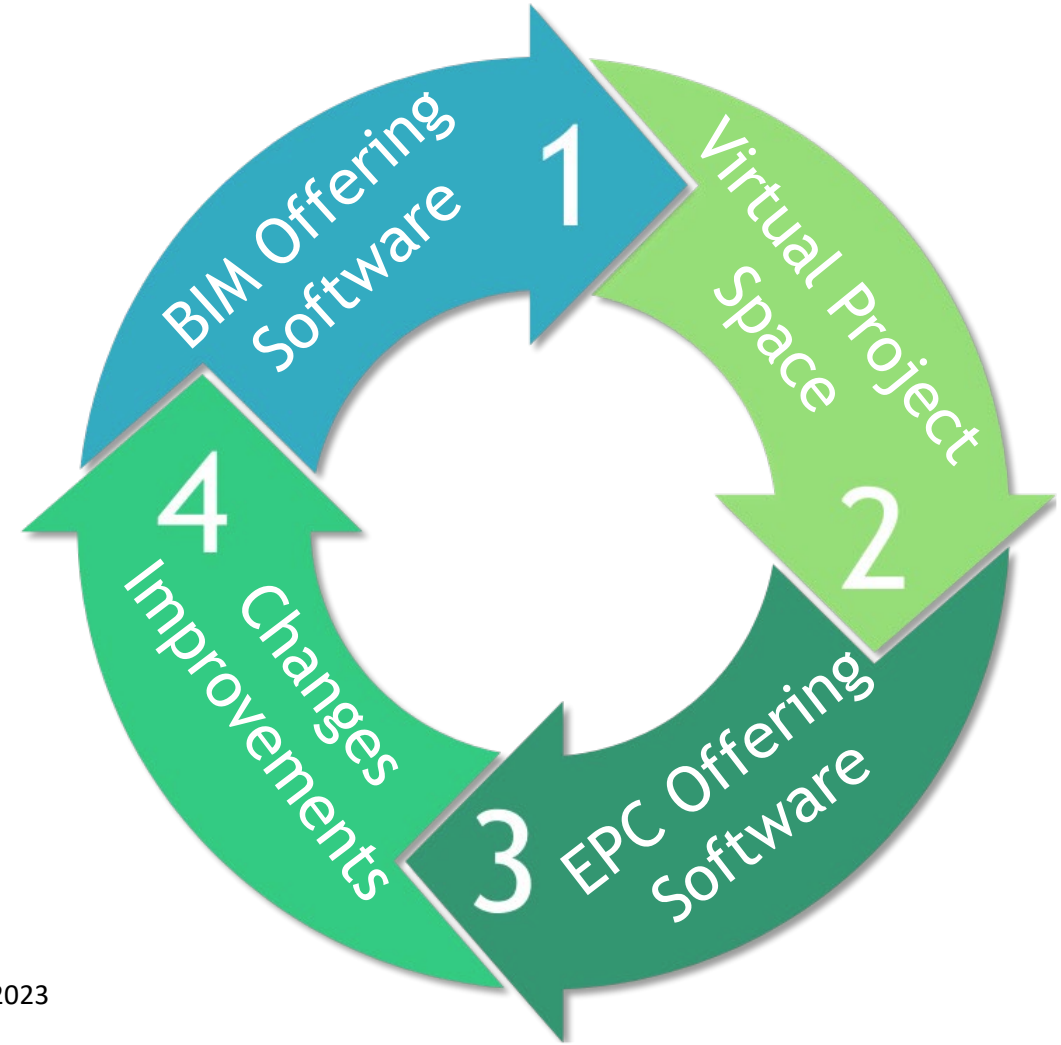
There are currently mainly three types of building logbook, depending on the situation in each country:

- *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).

A BIM based workflow to generate the Renovation Passport in connection with the EPC

- Enabling the implementation of changes to the building model in alignment with the Renovation Roadmap and the generation of a new EPC seamlessly
- BIM-based workflow can serve as an independent method for logging changes to the building, irrespective of the EPC database
- Tracking building refurbishment and verifying achievements

A BIM based workflow to generate the Renovation Passport in connection with the EPC



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If you would like more information, please visit www.timepac.eu or contact us at

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