TIMEPAC

FINAL CONFERENCE

Barcelona, 4 October 2024

ICAEN – Catalan Institute for Energy

TIMEPAC Towards Innovative Methods for Energy Performance Assessment and Certification of Buildings

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TIMEPAC research project

TIMEPAC is a Cooperation and Support Action (CSA) project, started in July 2021 and ending October 2024

CSA projects coordinate or support research activities and policies (networking, exchanges, trans-national access to research infrastructures, studies, conferences, etc.)

Next Generation Energy Performance Certificates cluster

2019

2020

2021

2022

2023

Qual DeEPC

U-CERT
User-Centred Energy Performance Assessment and Certification

X-tendo

D2EPC

E-DYCE

ePANACEA
Smart European Energy Performance Assessment & Certification

EPC RECAST
ENERGY PERFORMANCE CERTIFICATE RECAST

crossCert
Next-generation of Energy Performance Assessment and Certification

EUB SuperHub

iBRoad2EPC

TIMEPAC
The new EPC for Europe

Smart living EPC

CHRONICLE

iEPB

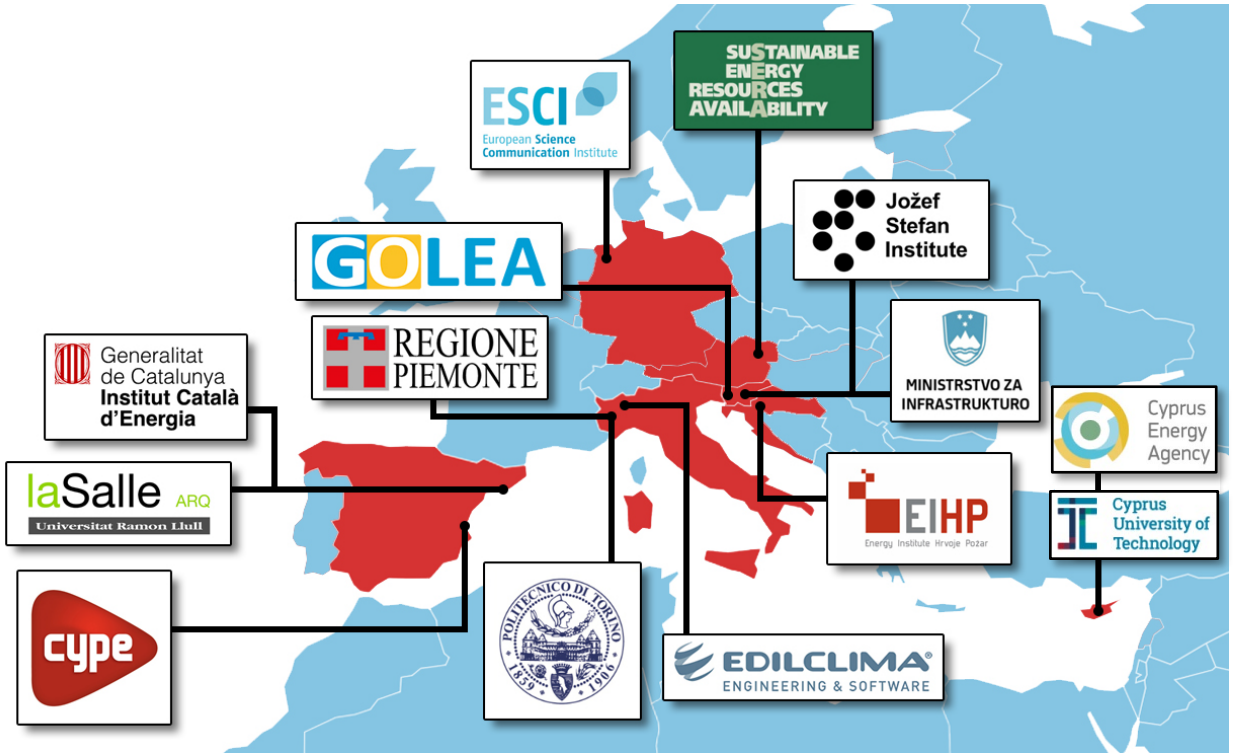
Smarter EPC

tunES

EPBDwise

Consortium

14 partners from 7 EU countries: Austria, Croatia, Cyprus, Germany, Italy, Slovenia, and Spain



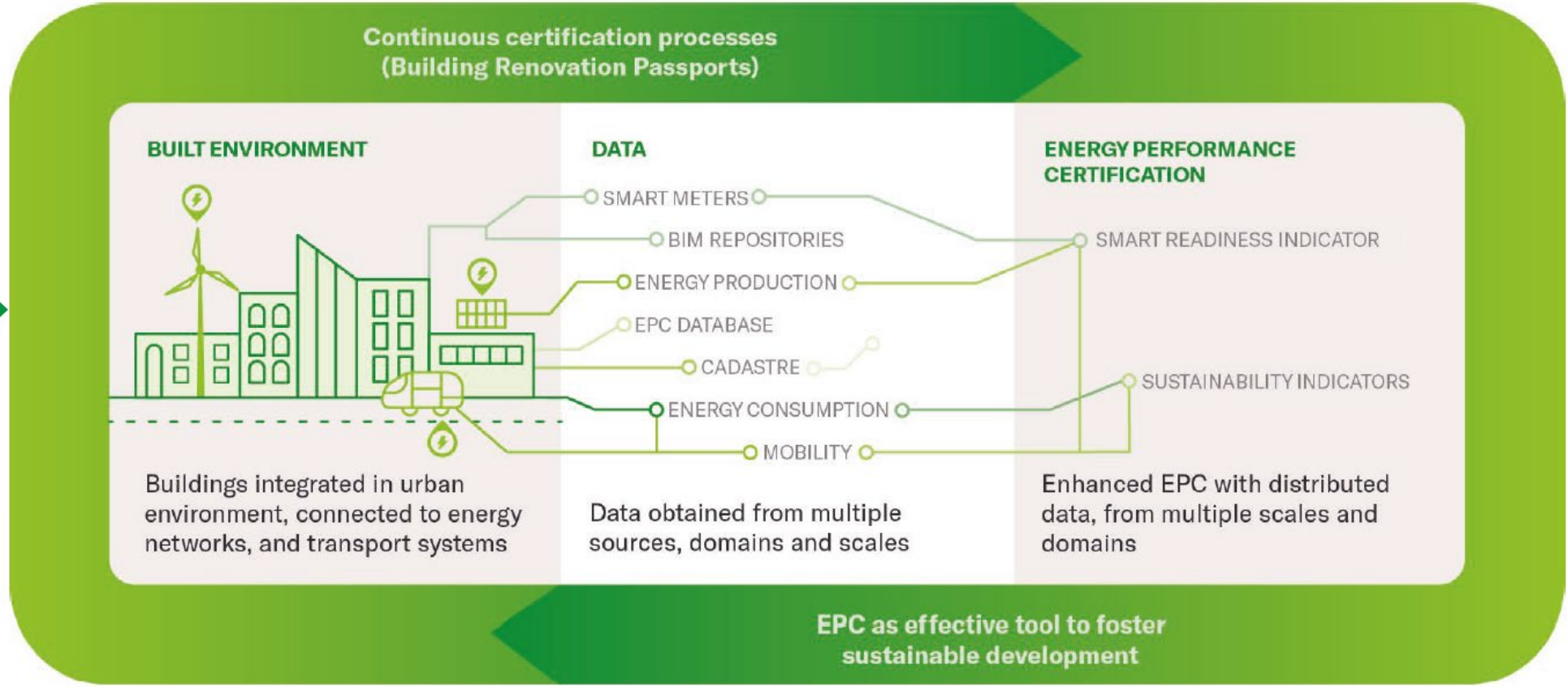
certification public bodies - local energy agencies and consultancies - software developers - research groups - communication agency

- La Salle – FUNITEC (Coordinator) *Spain*
- Jožef Stefan Institute *Slovenia*
- Politecnico di Torino *Italy*
- Institut Català d'Energia *Spain*
- CYPE Soft S.L. *Spain*
- Ministrstvo za infrastrukturo *Slovenia*
- Goriška Lokalna Energetska Agencija *Slovenia*
- European Science Communication Institute *Germany*
- Edilclima, S.r.l. *Italy*
- Regione Piemonte *Italy*
- Institute for Sustainable Energy and Resources Availability *Austria*
- Energy Institute Hrvoje Požar *Croatia*
- Cyprus Energy Agency *Cyprus*
- Cyprus University of Technology *Cyprus*

TIMEPAC A holistic approach to EPC

From one-off certification of an isolated building with a focus on energy performance….

…to a comprehensive assessment of the building performance over its lifetime



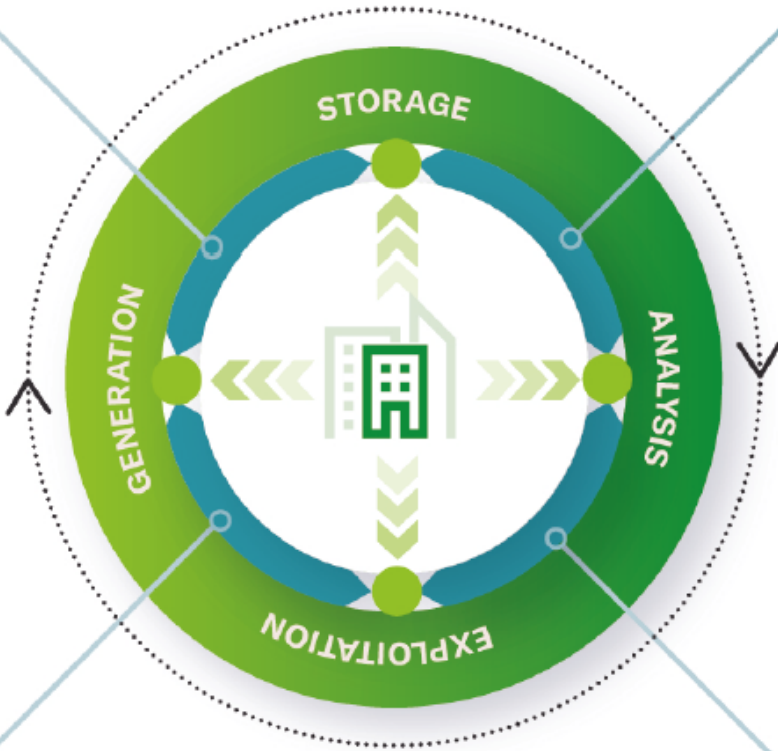
CERTIFICATION VS. ASSESSMENT

EPC seamless data flow

User-friendly environments to access EPC databases, interlinked to other data repositories (BIM, cadastre)

Automatic storage of the certificate in BIM and EPC databases

Analysis of EPC repositories to identify potential areas for building renovation



Enhanced EPC schemes with SRI and sustainability indicators, generated from BIM models

Procedures and tools for large scale statistical analysis of EPC databases

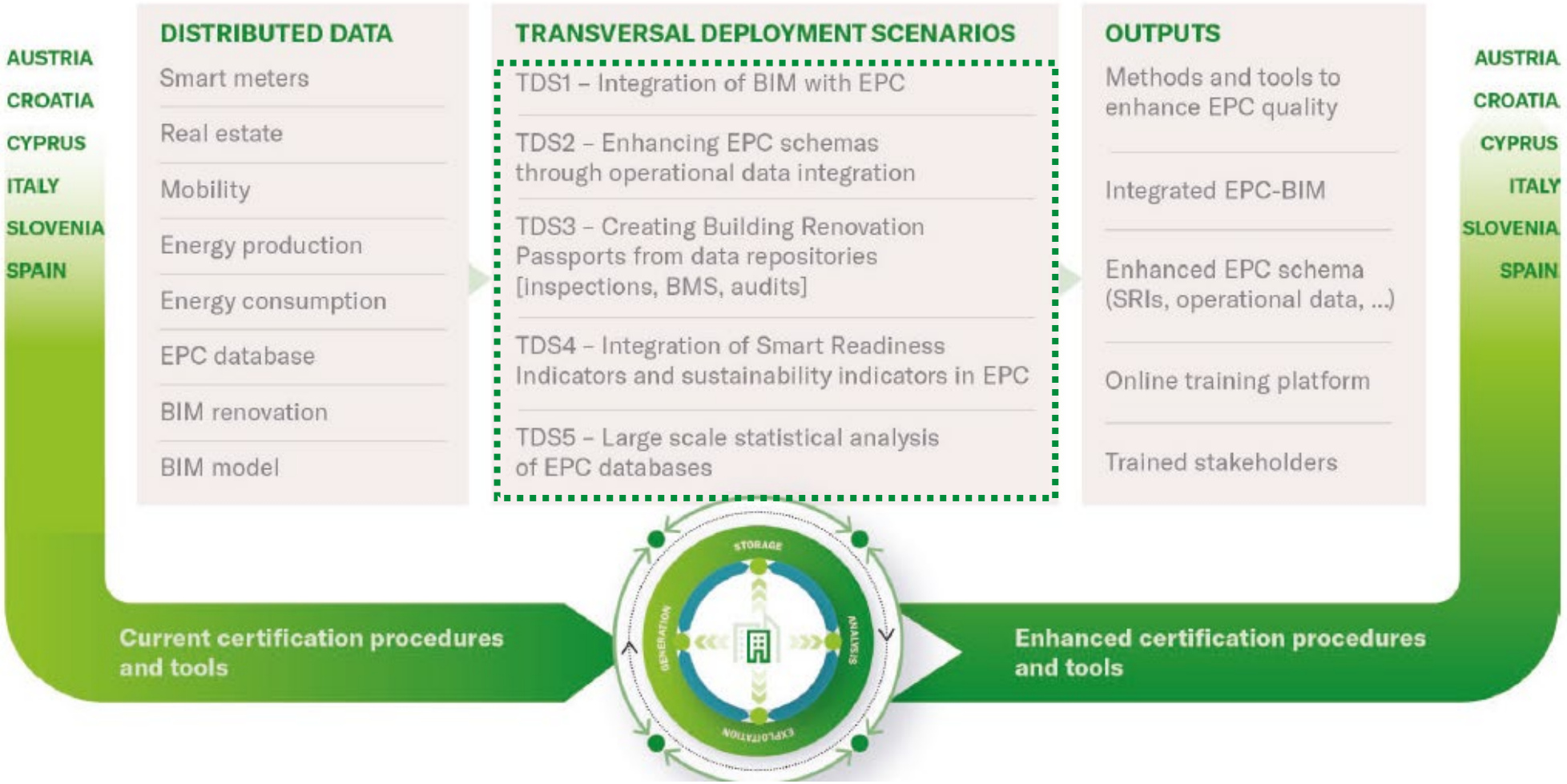
BIM models used to generate EPC to be used in future renovation projects

Identifying customers for building components and equipment in areas with a potential for renovation

New services for professional certifiers, ESCOs, consultants, building companies, to exploit EPC data in combination with other data sources

Project concept

A comprehensive approach to the use of enhanced EPCs in the future developed in **five Transversal Deployment Scenarios (TDSs)** with the participation of the partner organizations, at a **European scale**.



TIMEPAC research project

To contribute to the transition from traditional building certification methods to a more comprehensive assessment approach:

1. Envisioning future scenarios for enhanced building certification (holistic, dynamic)

2. Verifying the value of outputs for stakeholders involved in building certification and renovation

3. Transferring the knowledge acquired in the future scenarios to relevant stakeholders

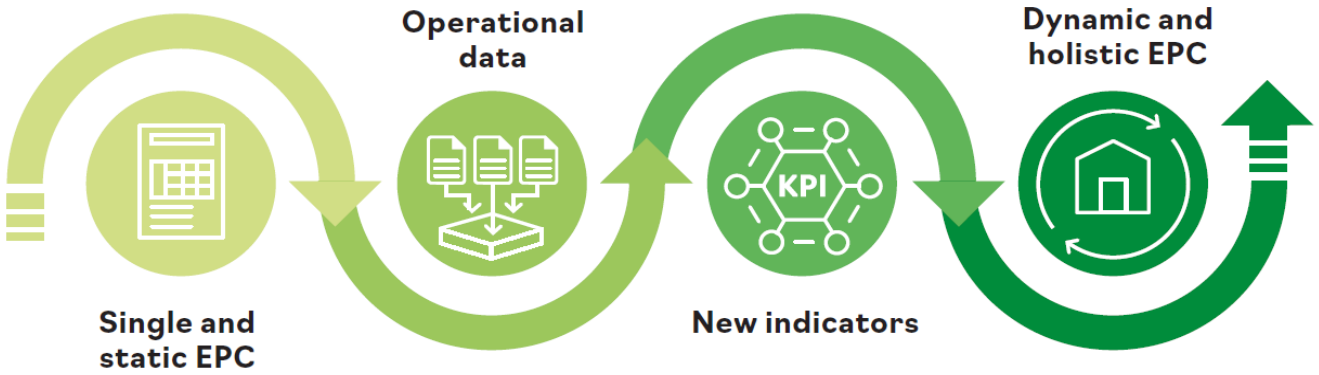
TDS 1- Generating enhanced EPCs with BIM data

BIM can significantly enhance the efficiency, quality, and reliability of EPC generation, particularly throughout the building renovation over time.

- 30 BIM models —five per each each country, Austria, Croatia, Cyprus, Italy, Slovenia, and Spain—were used to generate EPCs using existing certification tools.
- Based on these applications, guidelines have been developed to address current challenges in integrating BIM and EPC.

TDS 2- Enhancing EPC schemas through operational data integration

To make EPCs more reliable and reduce the performance gap, they can be enhanced by integrating operational data and introducing new key performance indicators (KPIs).



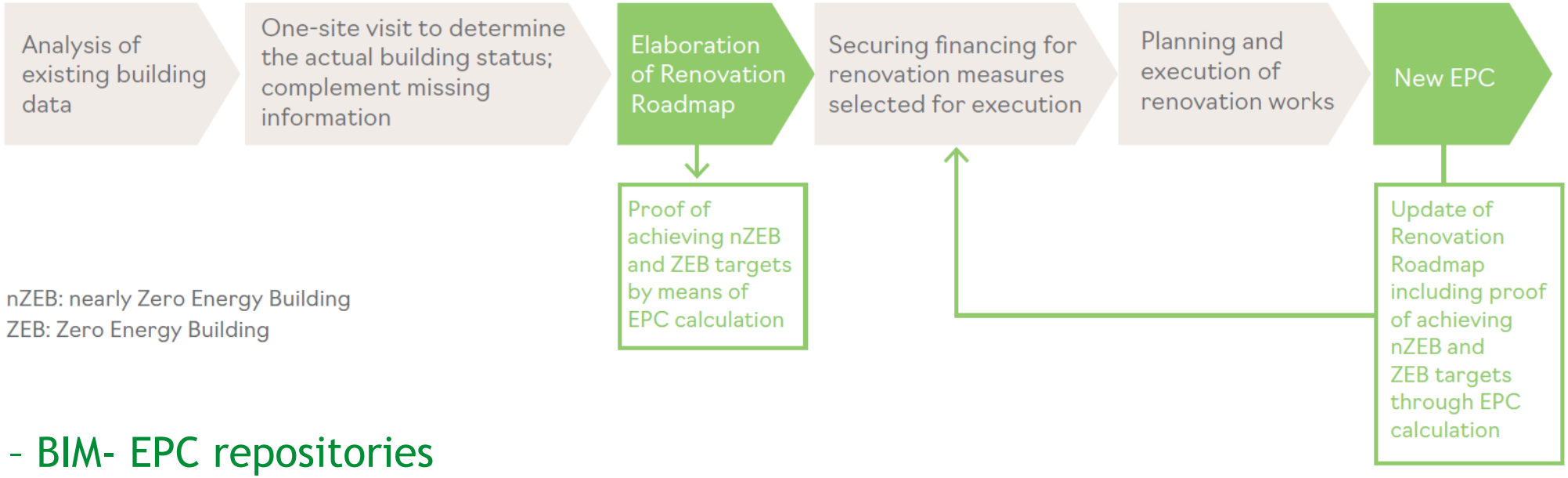
- Economic evaluation of energy efficiency measures (ECMs)
- Indoor environmental quality (IEQ) evaluation
- Building Automation and Control System (BACS) impact assessment

TDS 3- Creating building Renovation Passports from data repositories

Integrating Renovation Passport into the certification dataflow throughout the building lifetime.

Strengths and weaknesses of renovation roadmaps were analysed with regard to:

- **Utilization of databases and software tools**
- **Achieved building performance**
- **Tracking of renovation measures implementation**



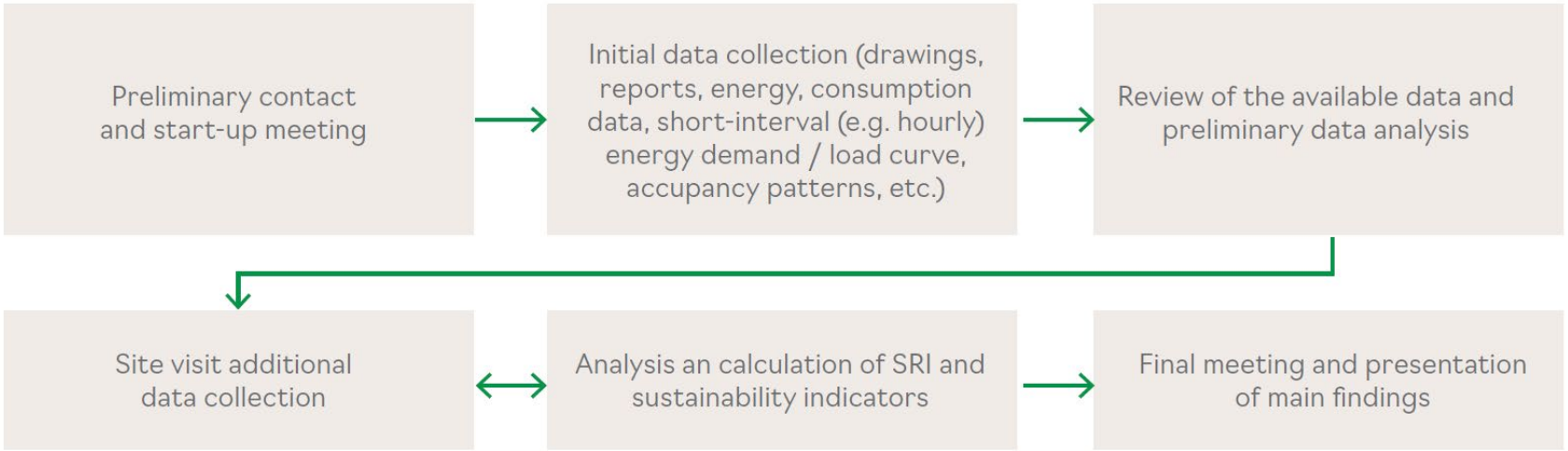
Digital logbook – BIM- EPC repositories

TDS 4- Procedures and services for the integration of the SRI and environmental sustainability indicators in existing EPC tools

Smart Readiness Indicator (SRI) and sustainability rating should be combined with energy auditing and energy-performance assessments.

The "TIMEPAC Code of Conduct for Smart Readiness and Sustainability Rating" to promote the use of SRI and sustainability indicators:

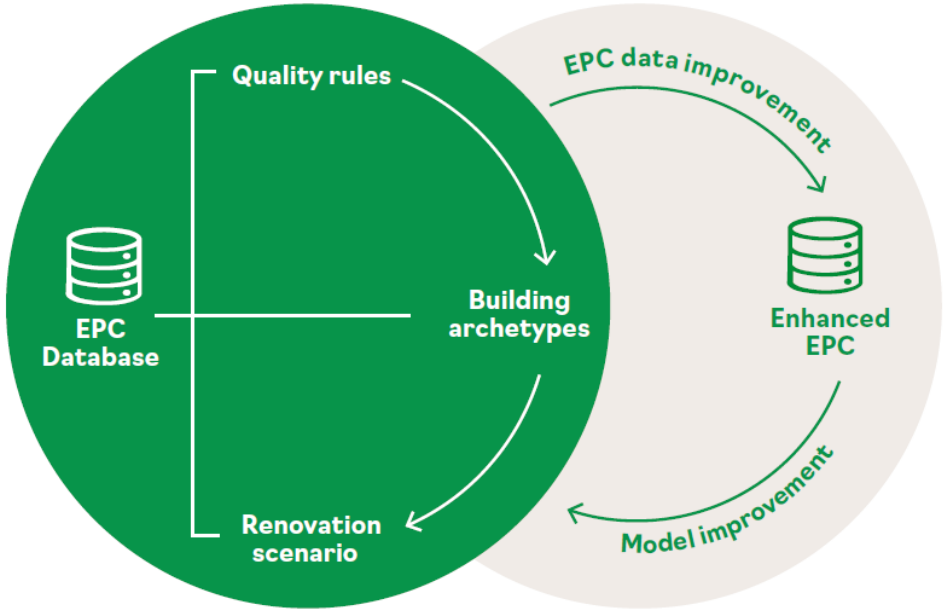
- **Guidelines, values, and principles essential for the successful, professional, and transparent calculation of the SRI**
- **Selected sustainability indicators**



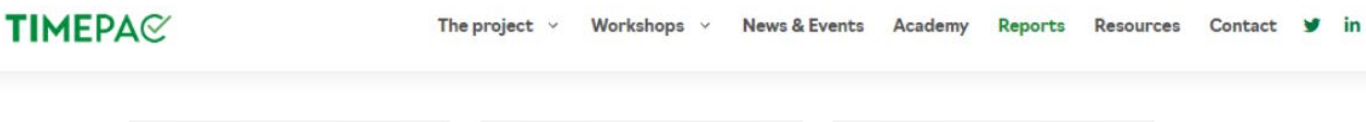
TDS 5- Procedures and services to undertake large-scale statistical analysis of EPCs databases

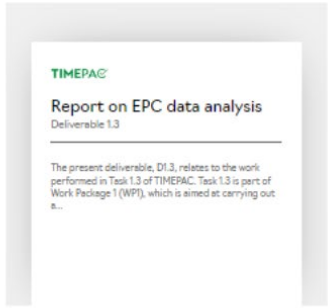
Previously verified EPC data can be used to create building archetypes to plan building renovation at municipal scale.

- Semi-empirical models, which deliver confidence intervals of EPC data
- Library of representative buildings in the participating countries
- Large-scale energy balances and to evaluate the effectiveness of the energy refurbishment scenarios of the building stock



Dissemination / reports





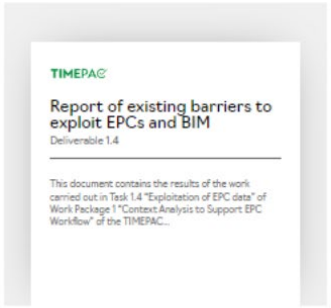
Report on EPC data analysis

Deliverable 1.3

Published October 5, 2022

The present deliverable, D1.3, relates to the work performed in Task 1.3 of TIMEPAC. Task 1.3 is part of Work Package 1 (WP1), which is aimed at carrying out a comparative study of the elements involved in the energy performance certification (EPC) data flow devised...

Read more >



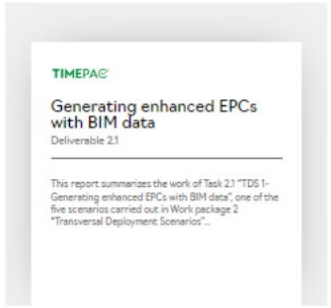
Report of existing barriers to exploit EPCs and BIM

Deliverable 1.4

Published October 5, 2022

This document contains the results of the work carried out in Task 1.4 "Exploitation of EPC data" of Work Package 1 "Context Analysis to Support EPC Workflow" of the TIMEPAC project. The objective of WP1 is to carry out a comparative study of the elements...

Read more >



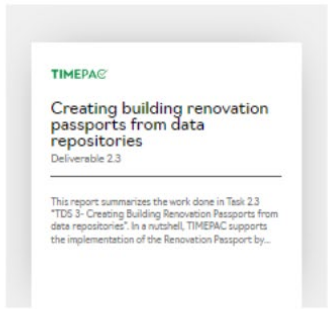
Generating enhanced EPCs with BIM data

Deliverable 2.1

Published November 16, 2023

This report summarizes the work of Task 2.1 "TDS 1- Generating enhanced EPCs with BIM data", one of the five scenarios carried out in Work package 2 "Transversal Deployment Scenarios" (TDS). This work package is concerned with the creation of future scenarios with the aim...

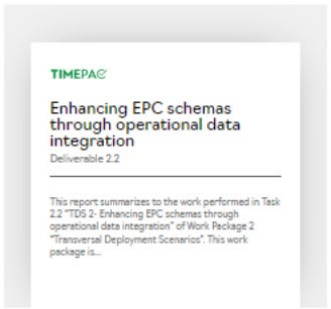
Read more >



Creating building renovation passports from data repositories

Deliverable 2.3

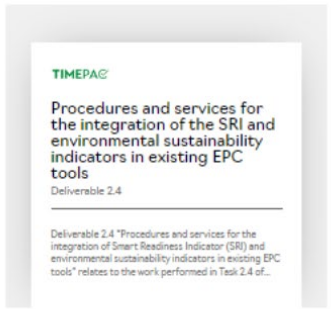
Published November 13, 2023



Enhancing EPC schemas through operational data integration

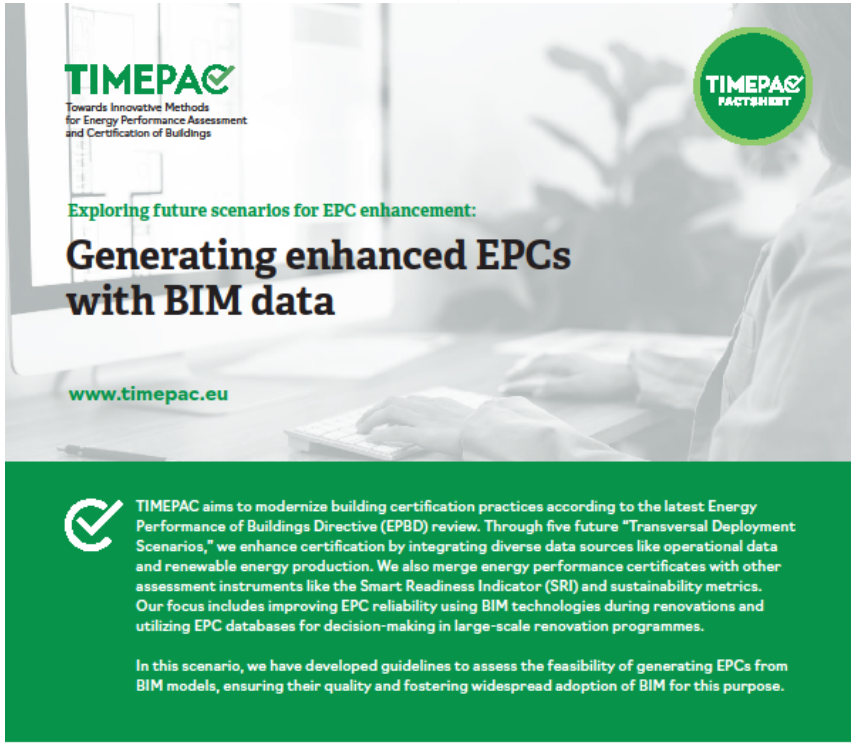
Deliverable 2.2

Published November 16, 2023



Procedures and services for the integration of the SRI and environmental sustainability indicators in existing EPC tools

https://timepac.eu/reports/

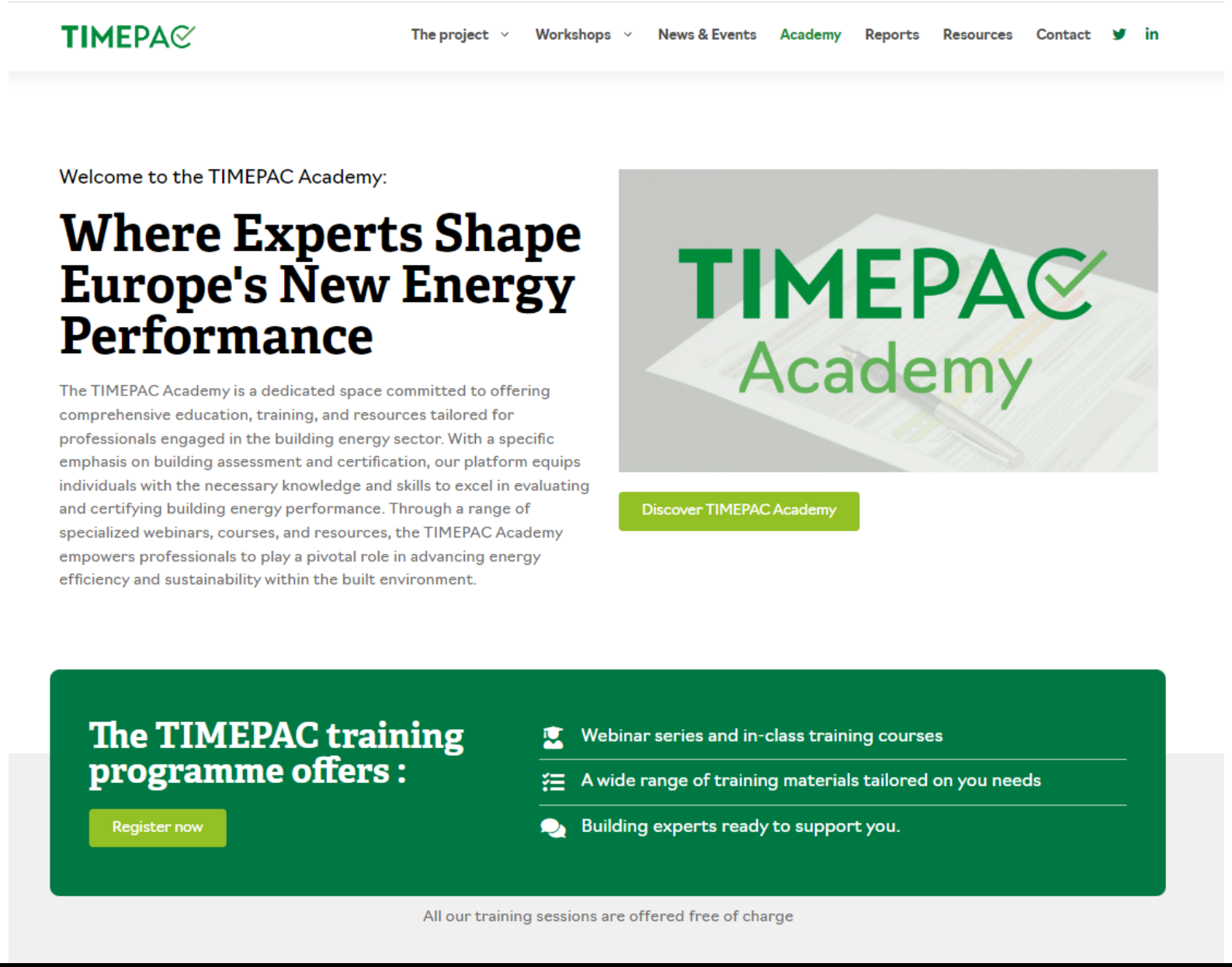


Using BIM to support building renovation

The last EPBD recast recommends that architects and planners apply digital modelling and simulation technologies during the planning, designing, building, and renovation of industrial or residential buildings to assess and improve their energy performance. Moreover, it encourages the use of digital twins to reflect the real-time status of buildings over successive renovations during their lifetime and to incorporate them in the calculation of the Smart Readiness Indicator.

A seamless integration of BIM models with energy simulation tools can enhance the quality and reliability of Energy Performance Certificates (EPCs) and facilitate building renovation. Furthermore, this integration can support the transition from a one-off certification to continuous assessment of building performance over time, taking into account both the building and its environmental impact. In this regard, these technologies can aid in the creation of Renovation Passports and become a part of building logbooks, while also being utilized to calculate life-cycle global warming and the Smart Readiness Indicator (SRI). Utilizing BIM as a source of data can enhance the accuracy of input to simulation and certification tools, and the successive updates of the digital model can reflect the evolving characteristics of the building. Furthermore, by adhering to standardized open interoperability procedures, BIM data can be seamlessly integrated into the EPC generation process, regardless of the specific modelling and simulation software being used.

https://timepac.eu/resources/



- 6 online webinars (next one November 5, 2024 within BUILD UP)
- 8 in-class training in 6 countries
- ~900 participants in the training activities
- There is a need for continuous training of professionals to enhance building performance certification in line with the last EPBD

https://academy.timepac.eu/

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Barcelona, 4 October 2024

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If you would like further information, please contact us at

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