TIMEPAC The new EPC for Europe

Towards Innovative Methods for Energy Performance Assessment and Certification of Buildings

Project goals and objectives

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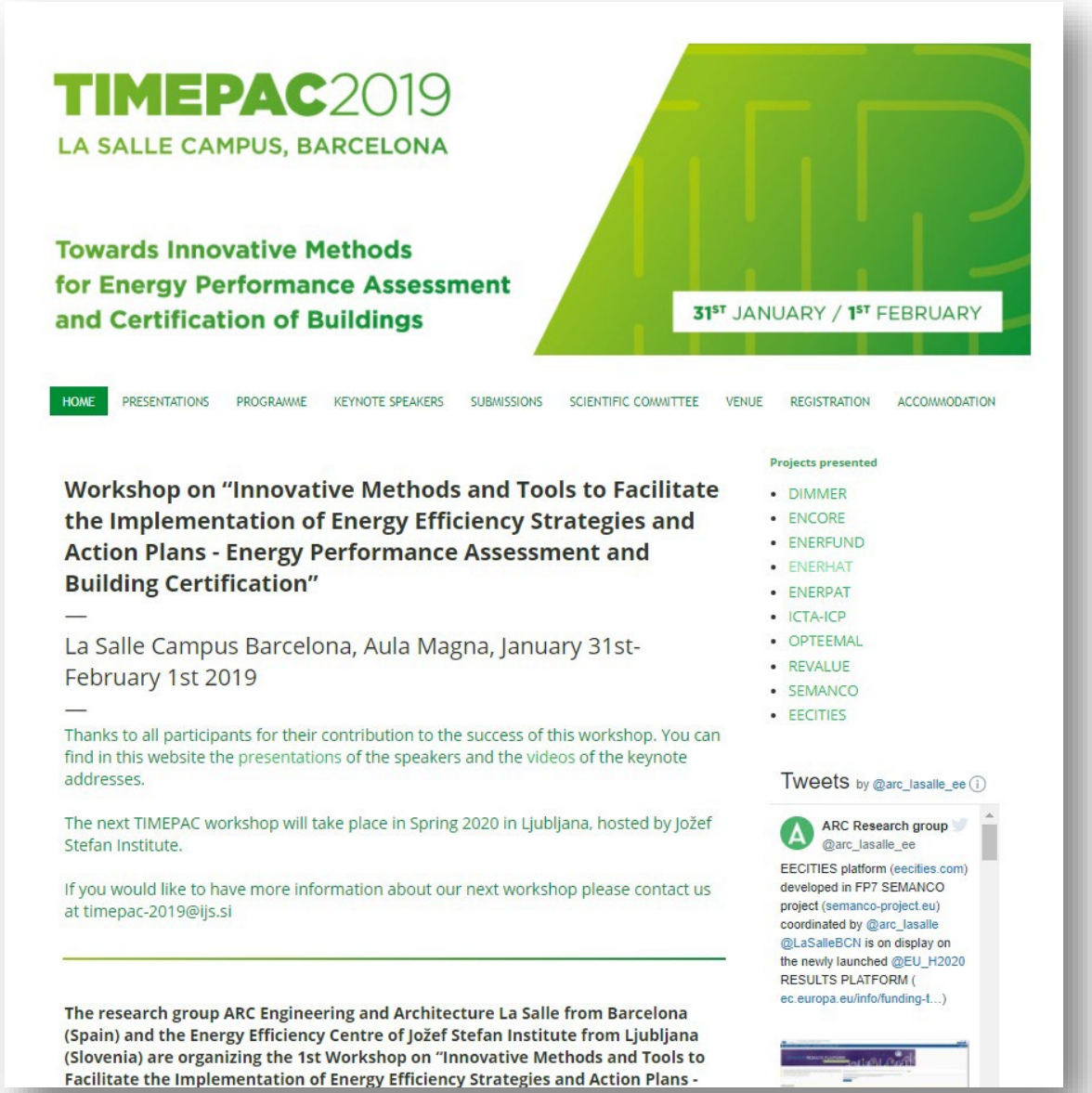
Barcelona, Spain

TIMEPAC 2019

La Salle Campus

Barcelona

Workshop on “Innovative Methods and Tools to Facilitate the Implementation of Energy Efficiency Strategies and Action Plans - Energy Performance Assessment and Building Certification”



http://timepac2019.blogspot.com/

CONSORTIUM

- Energy certification bodies
- Local enegy agencies
- Energy consultants
- Software developers
- Research groups
- Communicaton agency

Participant No.	Participant organisation name	Country
1 (Coord.)	**FUNITEC** - Fundació Privada Universitat i Tecnologia	ES
2	**JSI** - Jožef Stefan Institute	SI
3	**POLITO** - Politecnico di Torino	IT
4	**ICAEN** - Institut Català d'Energia	ES
5	**CYPE** Soft S.L.	ES
6	**Mzl** - Ministrstvo za infrastrukturo	SI
7	**Golea** - Goriška Lokalna Energetska Agencija, Nova Gorica	SI
8	**ESCI** - European Science Communication Institute, gGmbH	DE
9	**Edilclima srl** - Edilclima, S.r.l.	IT
10	**PIEMONTE** - Regione Piemonte	IT
11	**SERA** - Institute for Sustainable Energy and Resources Availability	AT
12	**EIHP** - Energy Institute Hrvoje Požar	HR
13	**OEB** - Cyprus Federation of Employers & Industrialists	CY

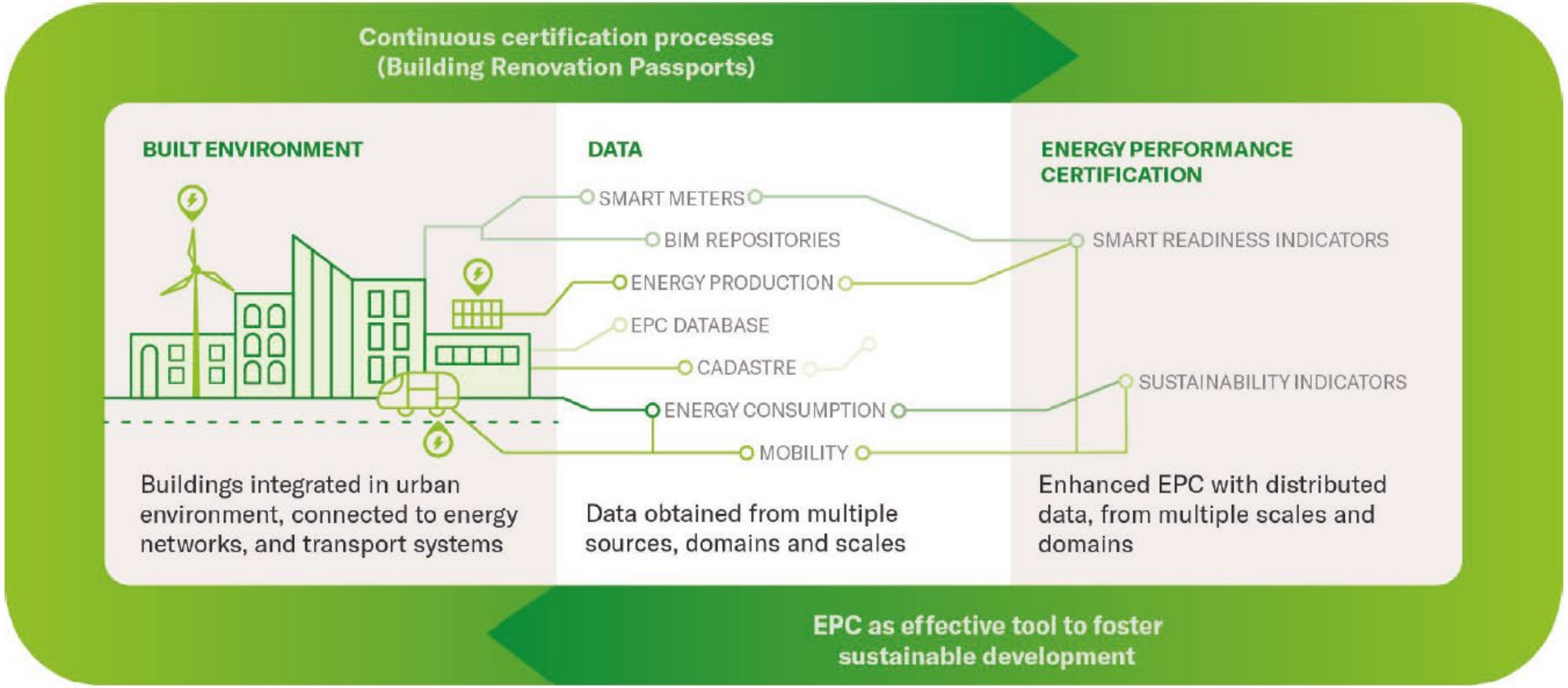
13 organizations from 7 EU countries

Overall project objectives

TIMEPAC will contribute to improving existing energy certification processes, moving from **single, static certification to more holistic and dynamic approaches**, which consider:

- the **data generated** in the overall energy performance certification process, from generation to storage, to analysis and exploitation, and throughout all the building lifecycle, from design, to construction and operation
- **buildings as part of a built environment**, connected to energy distribution and transport networks
- **buildings as dynamic entities**, continuously changing over time

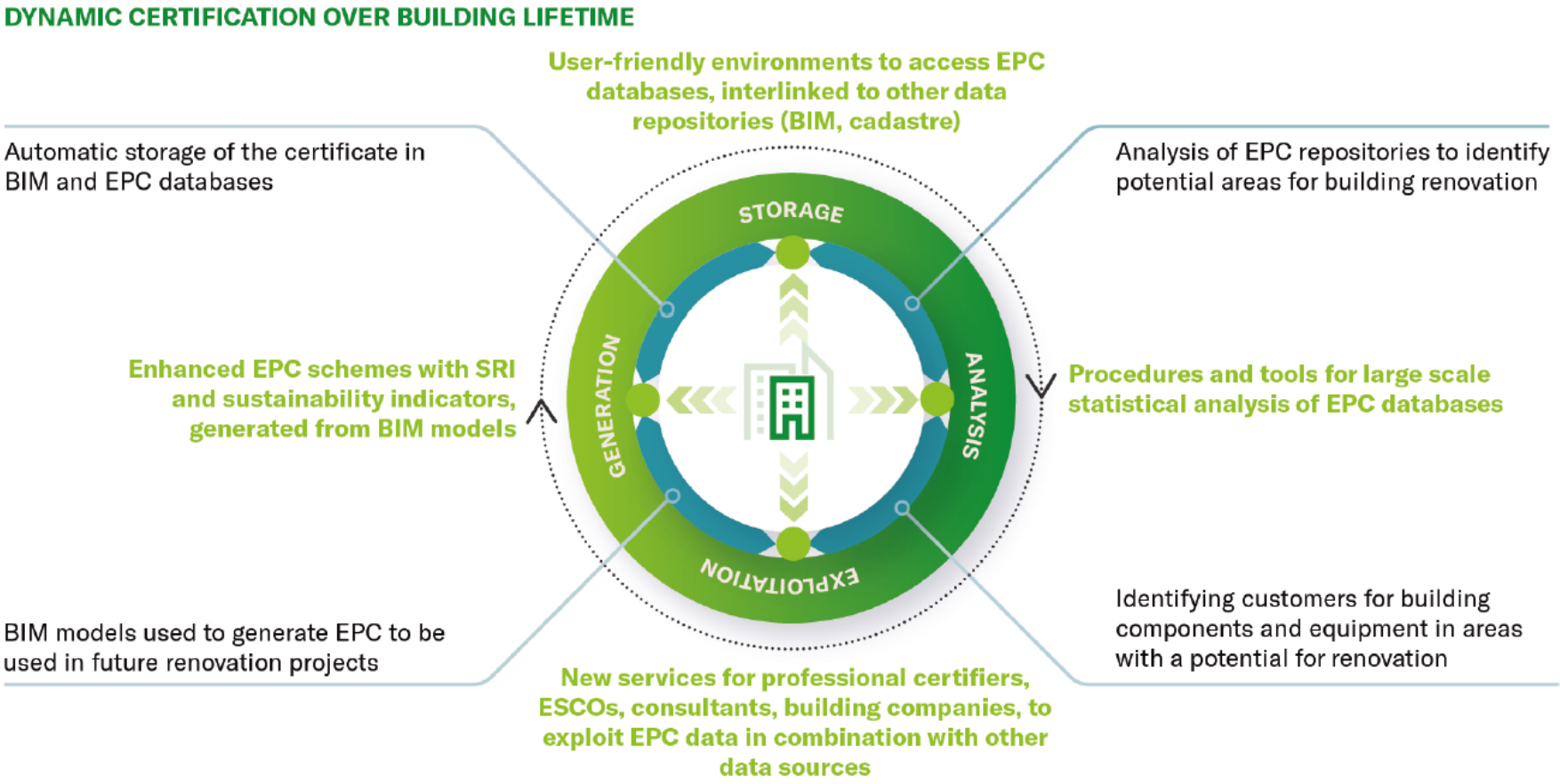
A holistic approach of Energy Performance Certification throughout the whole building lifecycle



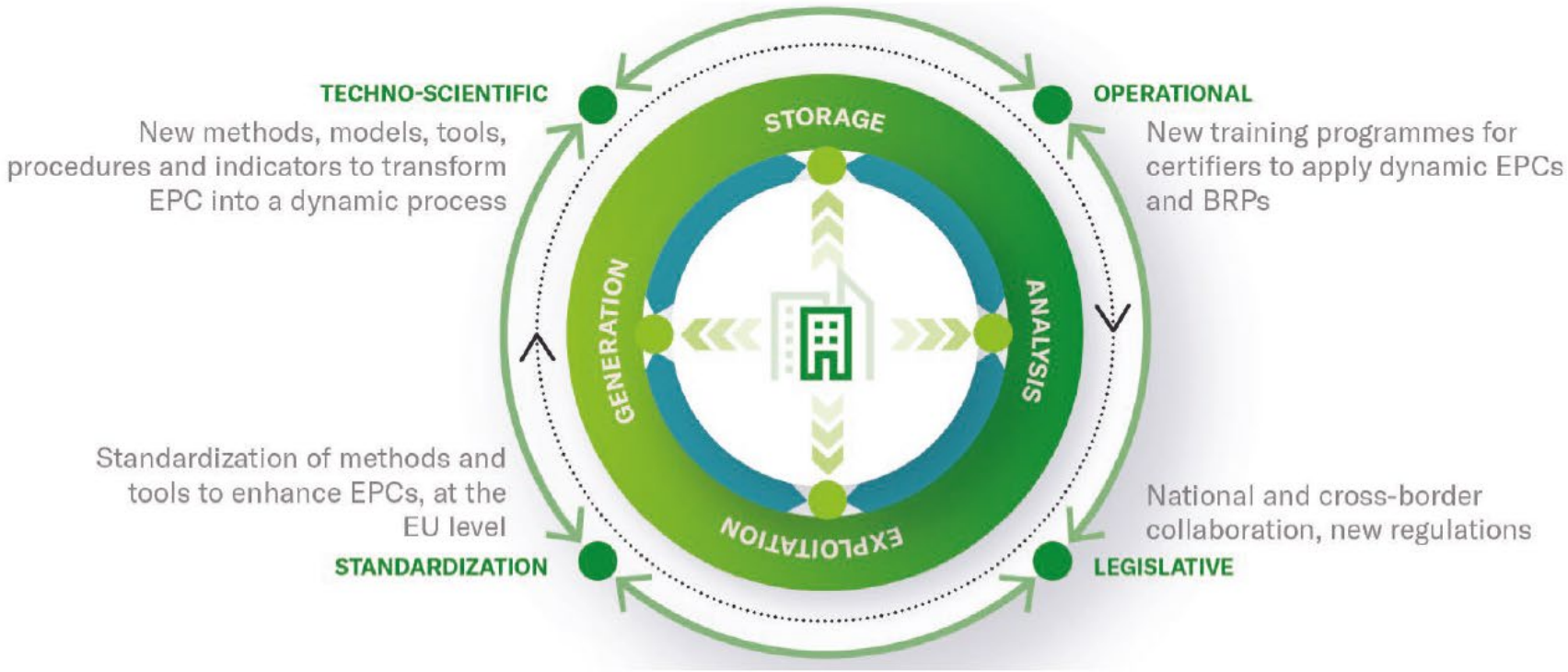
Specific project objectives

- **Data integration from various sources** for more effective Energy Performance Certificates (EPC)
- **To enhance EPCs** with Smart Readiness and other sustainability educators
- **To develop assessment frameworks** based on the integrated data (energy production, urban environment, building data from sensors, smart meters, etc.)
- To facilitate the convergence of **EPCs in Europe using standards**
- **To train professionals** for new and dynamic EPCs
- To make EPC an effective tool to support **building renovation**

TIMEPAC approach - focusing on the overall EPC data lifecycle



TIMEPAC scope

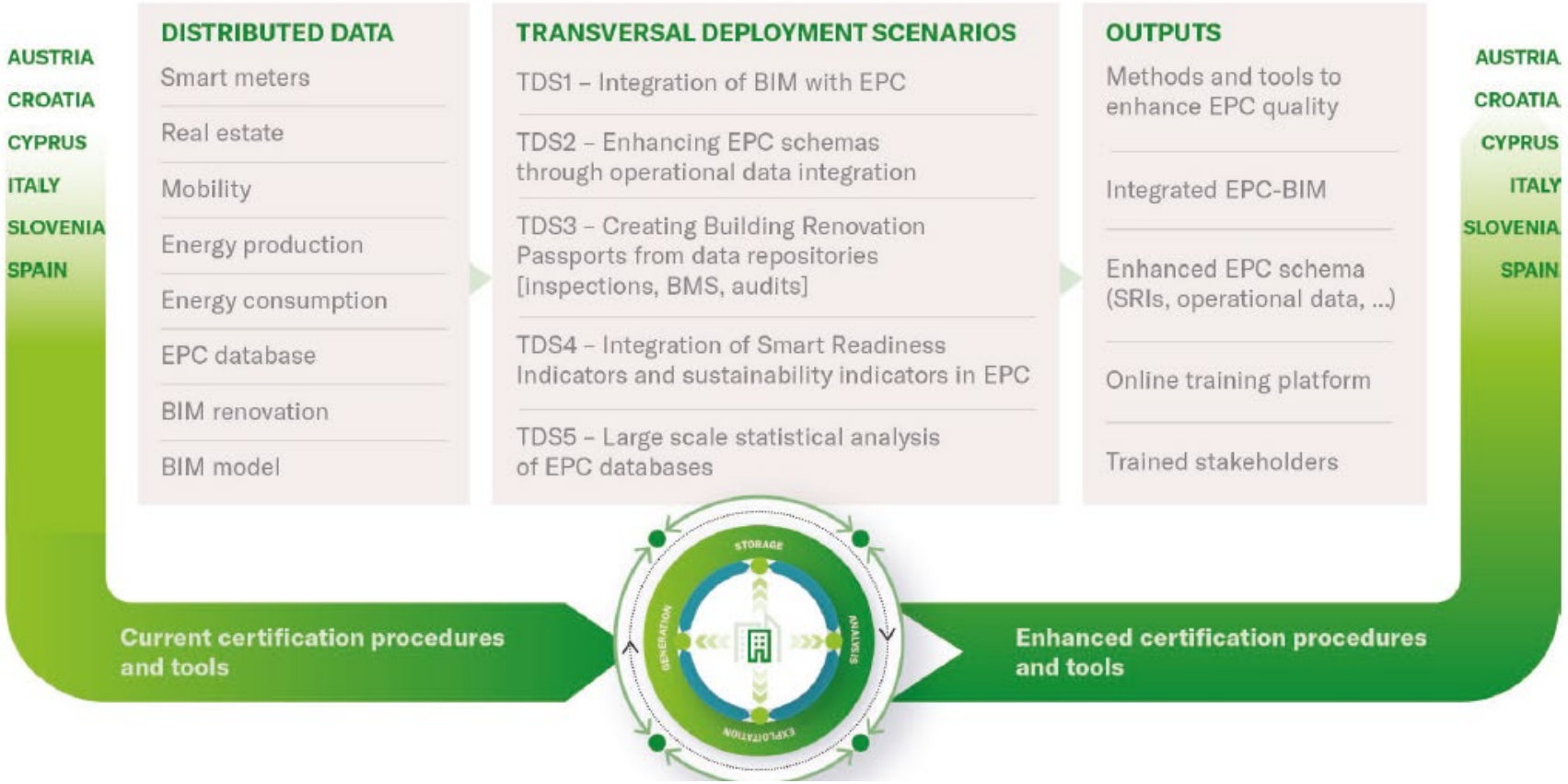


Specific objectives

- To increase the **quality and reliability** of EPC schemas
- To implement EPC schemas with **sustainability and SRIs**
- **To integrate EPC databases with other data sources** in order to improve the efficiency and reliability of EPCs
- **To increase awareness of the need to have EPC enhanced** with other data sources to foster the exploitation of EPC data
- To **provide training materials** including the new methods developed in TIMEPAC

Project concept

Innovative procedures to foster a holistic and dynamic approach to EPC in practice will be developed in **five Transversal Deployment Scenarios (TDSs)** with the participation of the partner organizations, at a **European scale**.



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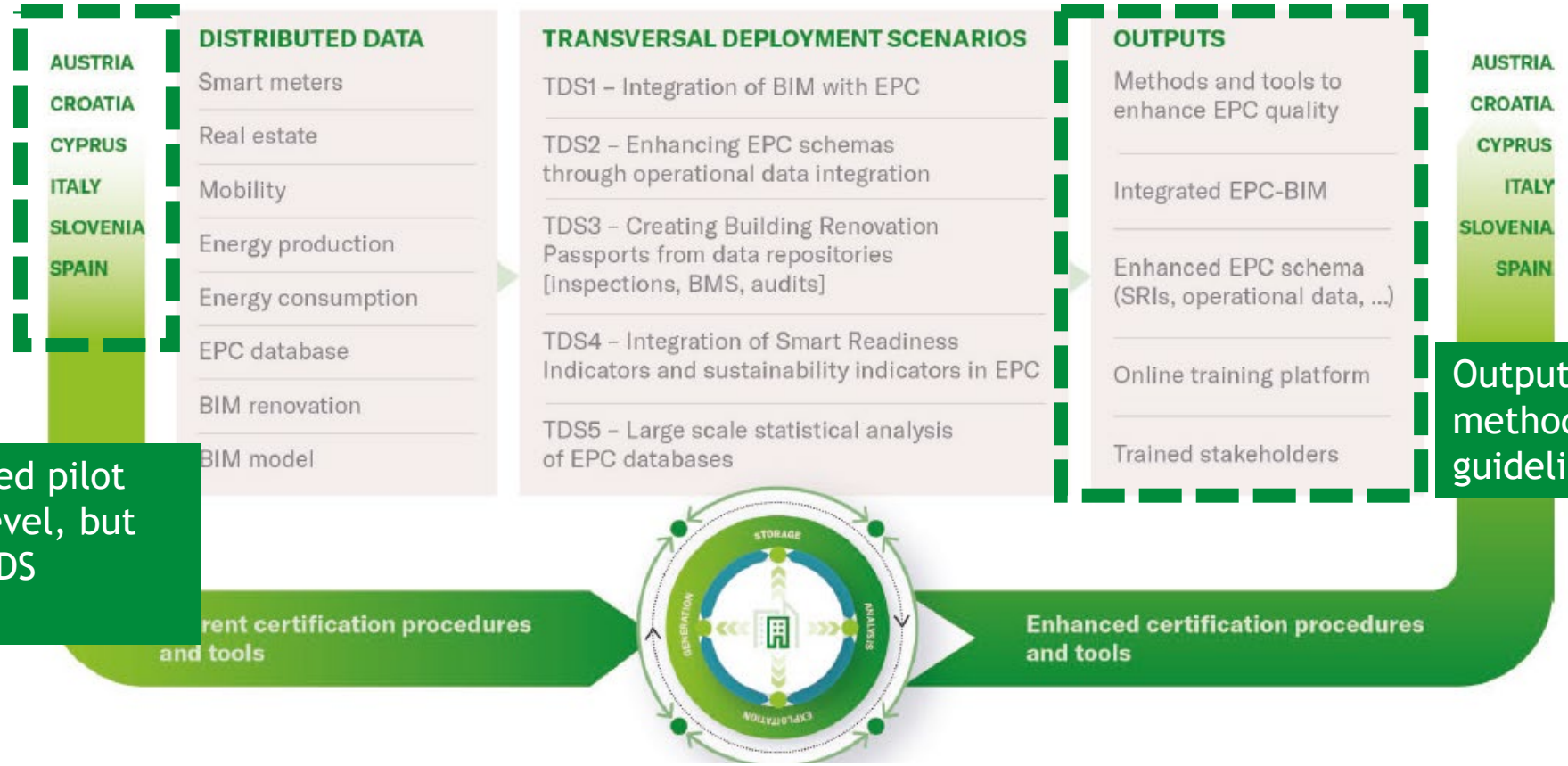


They are not isolated pilot cases at national level, but integrated in the TDS (European scale)

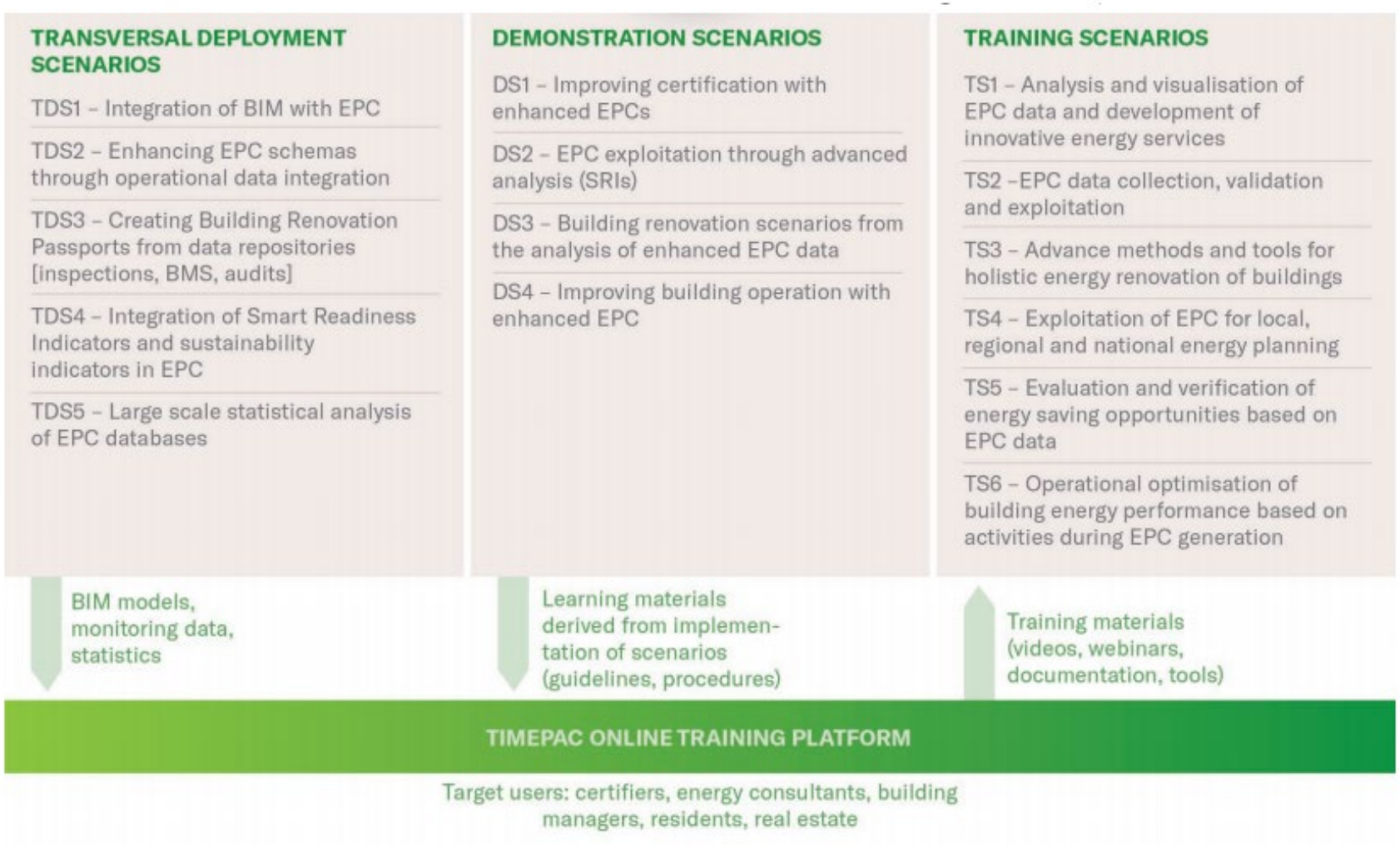
Outputs are methodologies, guidelines, training

Project methodology

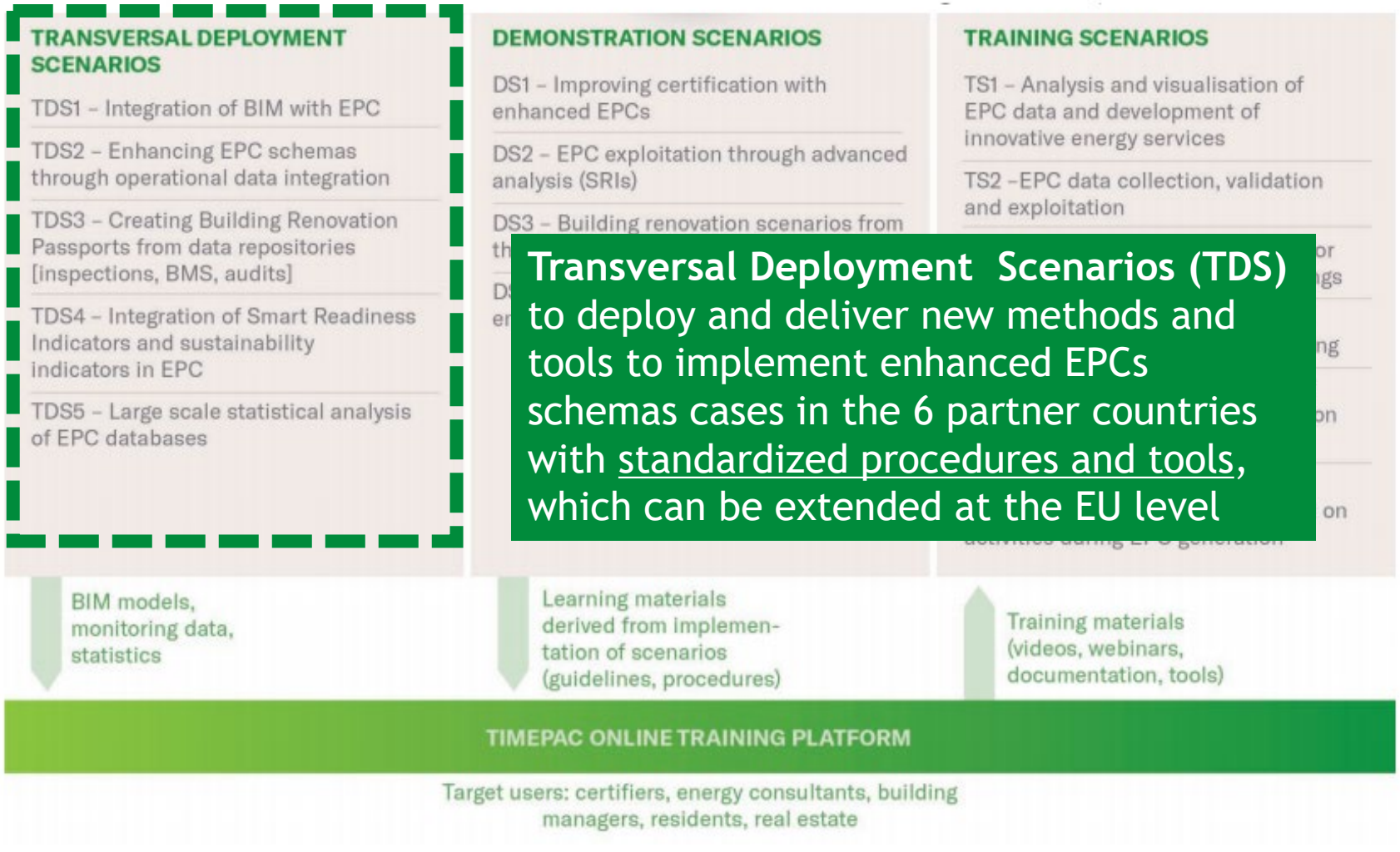
The project methodology is based on a combination of top-down and bottom-up approaches.

- **From the top-down,** a series of relevant issues (at the techno-scientific, operational, legislative and standardization levels) are identified from the current stage of research in the field of EPC
- **From the bottom-up,** an analysis of the current needs and potential for improvement of EPCs will be carried out in collaboration with local stakeholders (energy agencies, consultants, ESCOs)

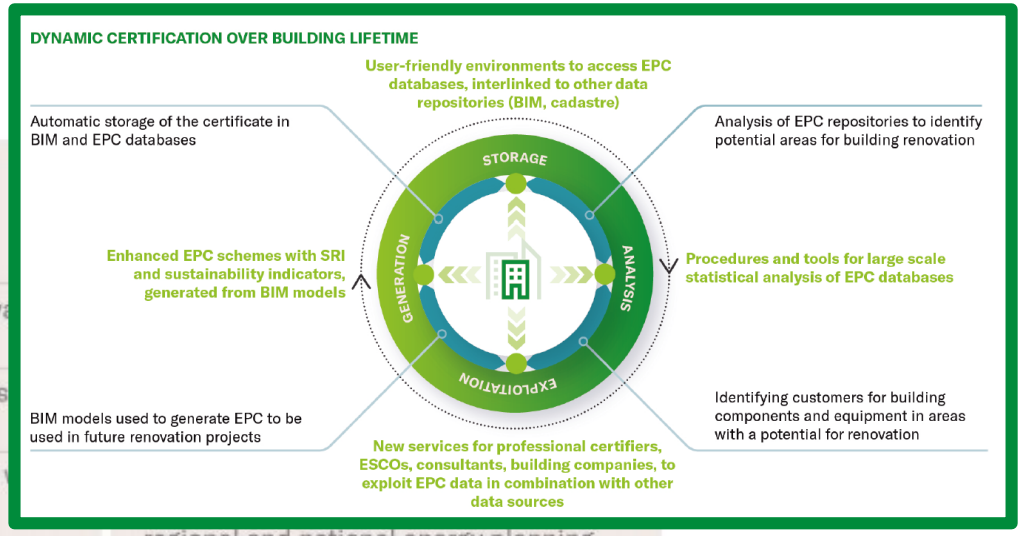
Project methodology



Project methodology



Project methodology



TRANSVERSAL DEPLOYMENT SCENARIOS

- TDS1 – Integration of BIM with EPC
- TDS2 – Enhancing EPC schemas through operational data integration
- TDS3 – Creating Building Renovation Passports from data repositories [inspections, BMS, audits]
- TDS4 – Integration of Smart Readiness Indicators and sustainability indicators in EPC
- TDS5 – Large scale statistical analysis of EPC databases

DEMONSTRATION SCENARIOS

- DS1 – Improving certification with enhanced EPCs
- DS2 – EPC exploitation through adva… analysis (SRIs)
- DS3 – Building renovation scenarios … the analysis of enhanced EPC data
- DS4 – Improving building operation … enhanced EPC

Each TDS encompasses various stages of the EPC workflow (generation, storage, analysis, and exploitation), involving multiple stakeholders (research groups, energy agencies, ESCOs, etc.) and resources (data, tools, methods).

BIM models, monitoring data, statistics

…derived from implemen-tation of scenarios (guidelines, procedures)

…regional and national energy planning

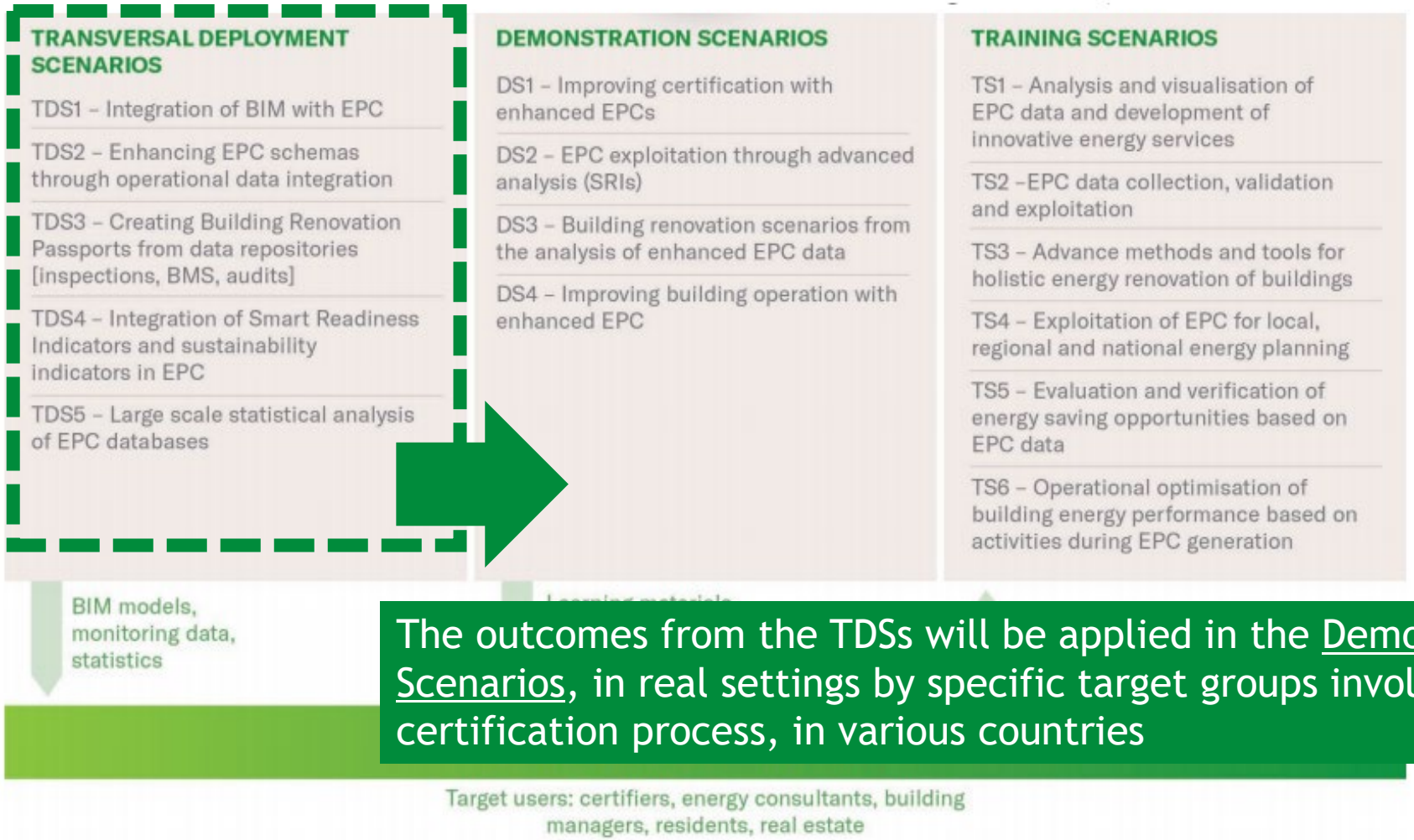
TS5 – Evaluation and verification of …

…training materials (videos, webinars, documentation, tools)

TIMEPAC ONLINE TRAINING PLATFORM

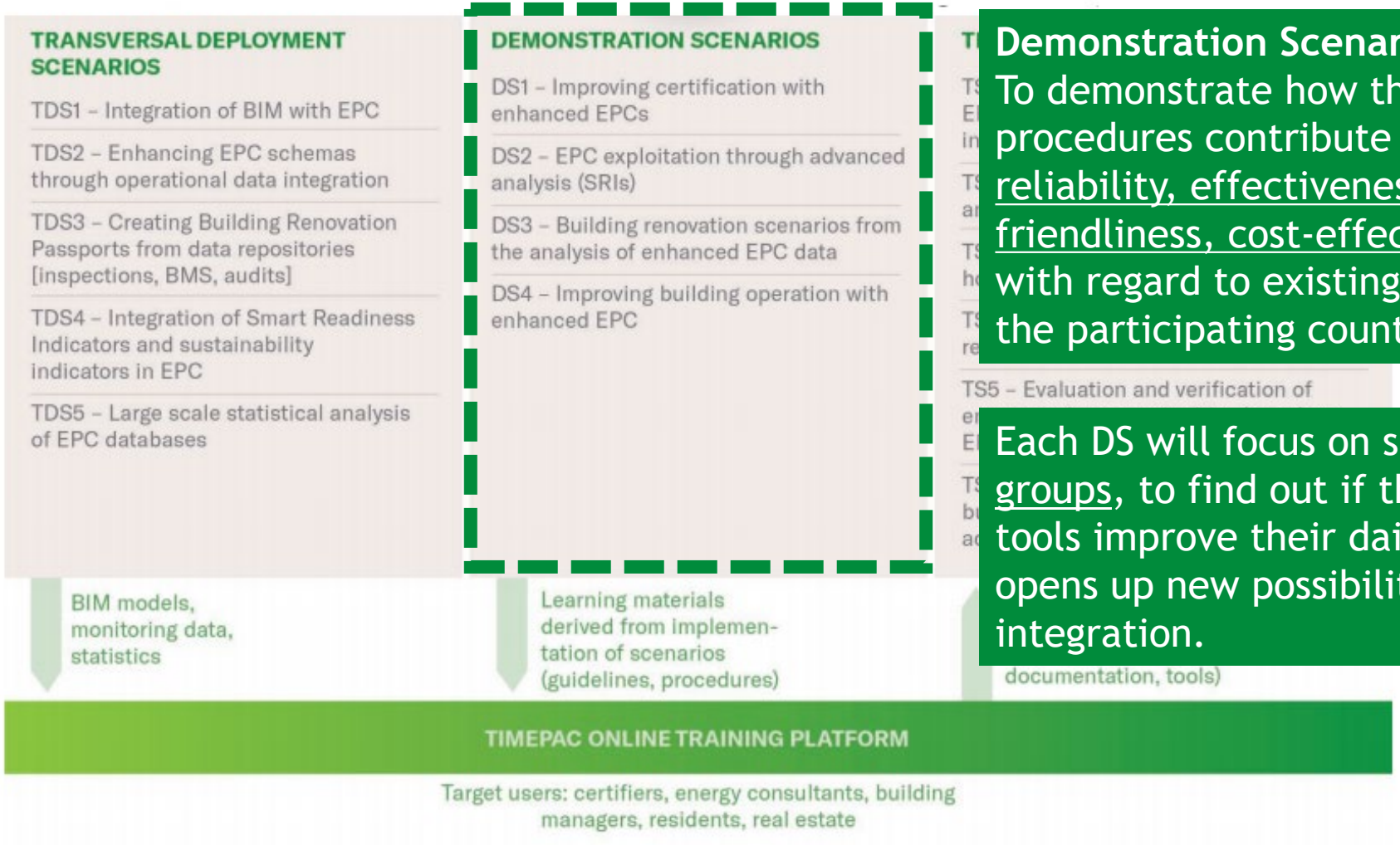
Target users: certifiers, energy consultants, building managers, residents, real estate

Project methodology



The outcomes from the TDSs will be applied in the Demonstration Scenarios, in real settings by specific target groups involved in the certification process, in various countries

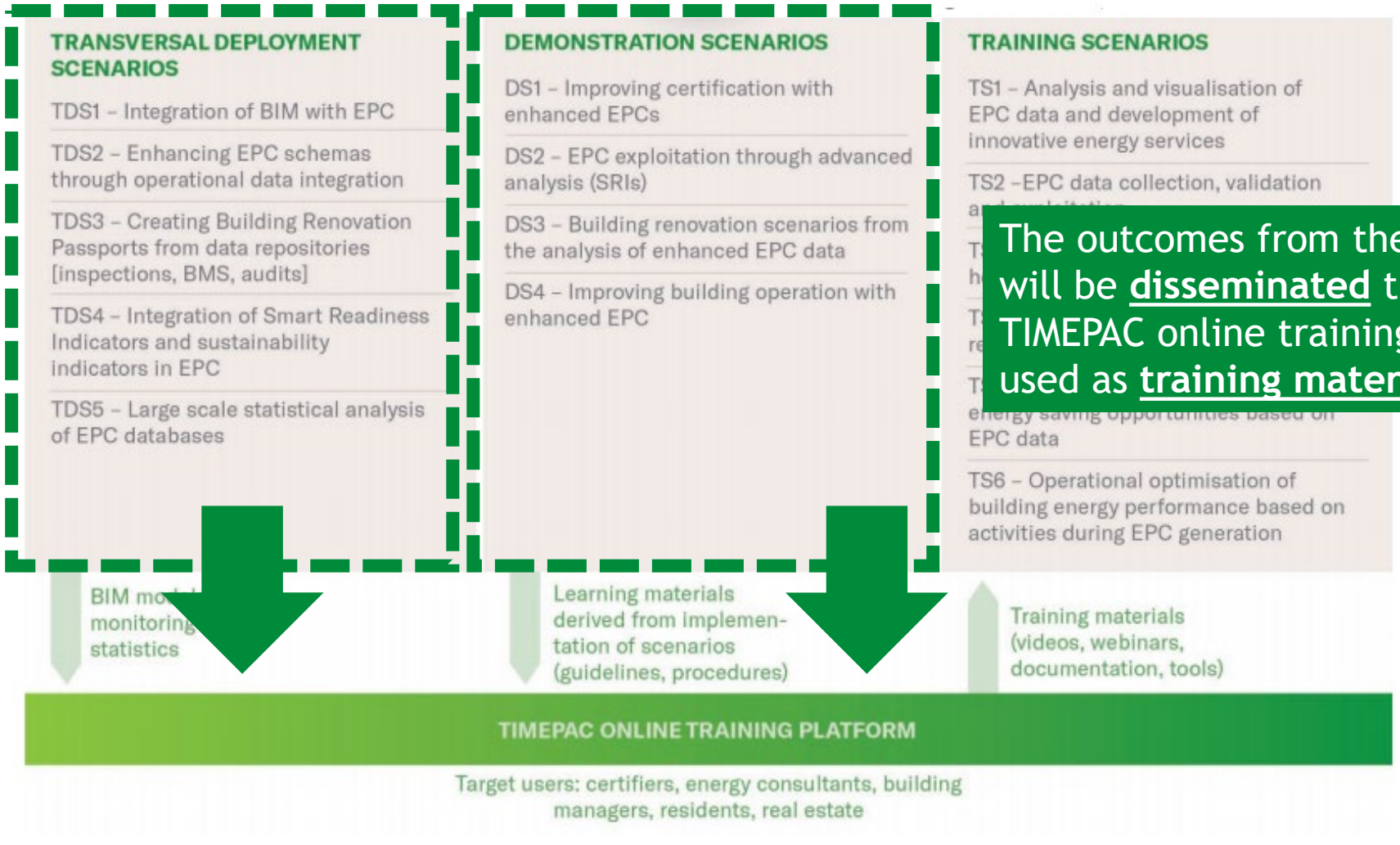
Project methodology



Demonstration Scenarios (DS)
To demonstrate how the enhanced procedures contribute to improve reliability, effectiveness, user-friendliness, cost-effectiveness, etc. with regard to existing procedures in the participating countries

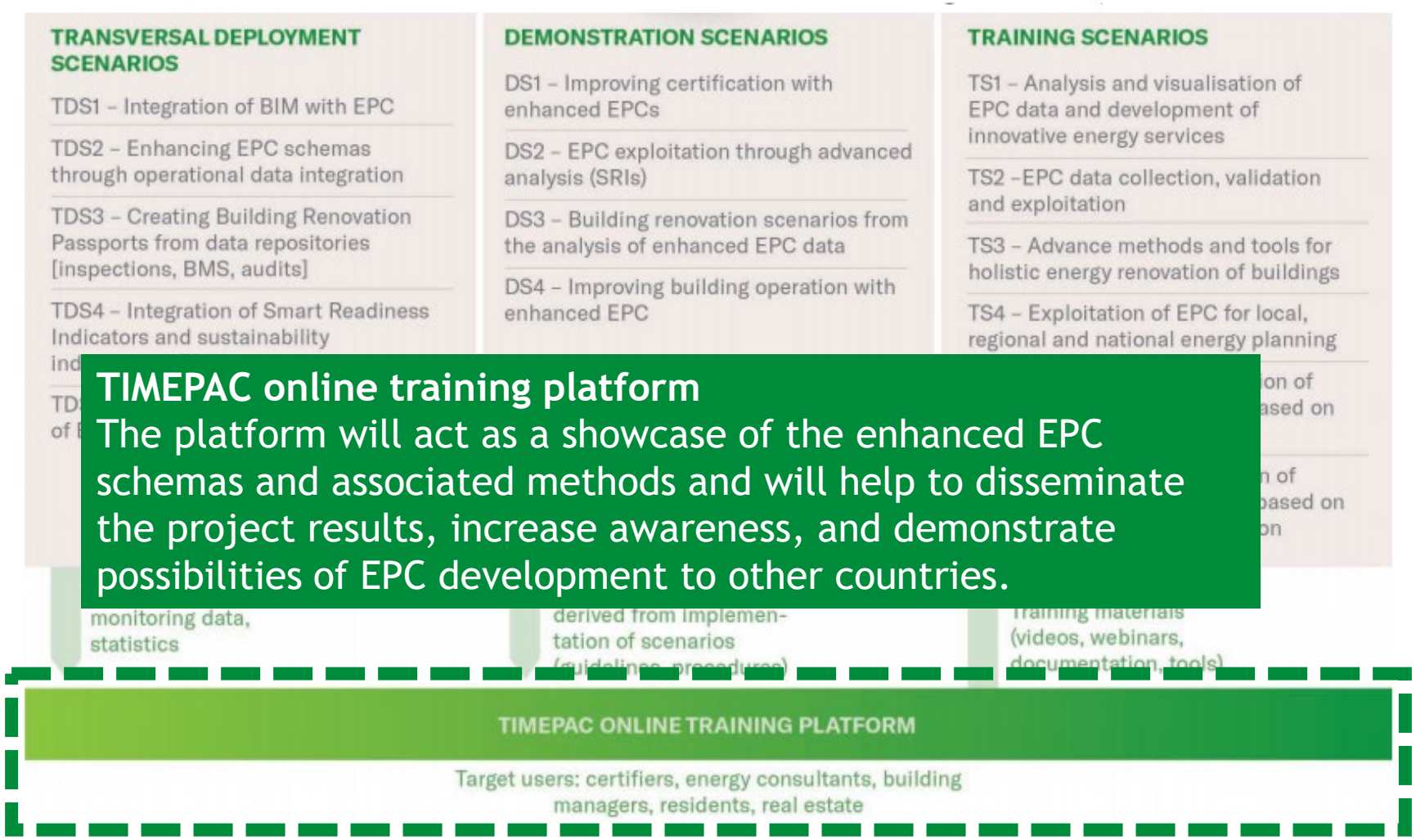
Each DS will focus on specific target groups, to find out if the new methods tools improve their daily tasks and opens up new possibilities for integration.

Project methodology



The outcomes from the TDSs and DSs will be **disseminated** through the TIMEPAC online training platform and used as **training materials**

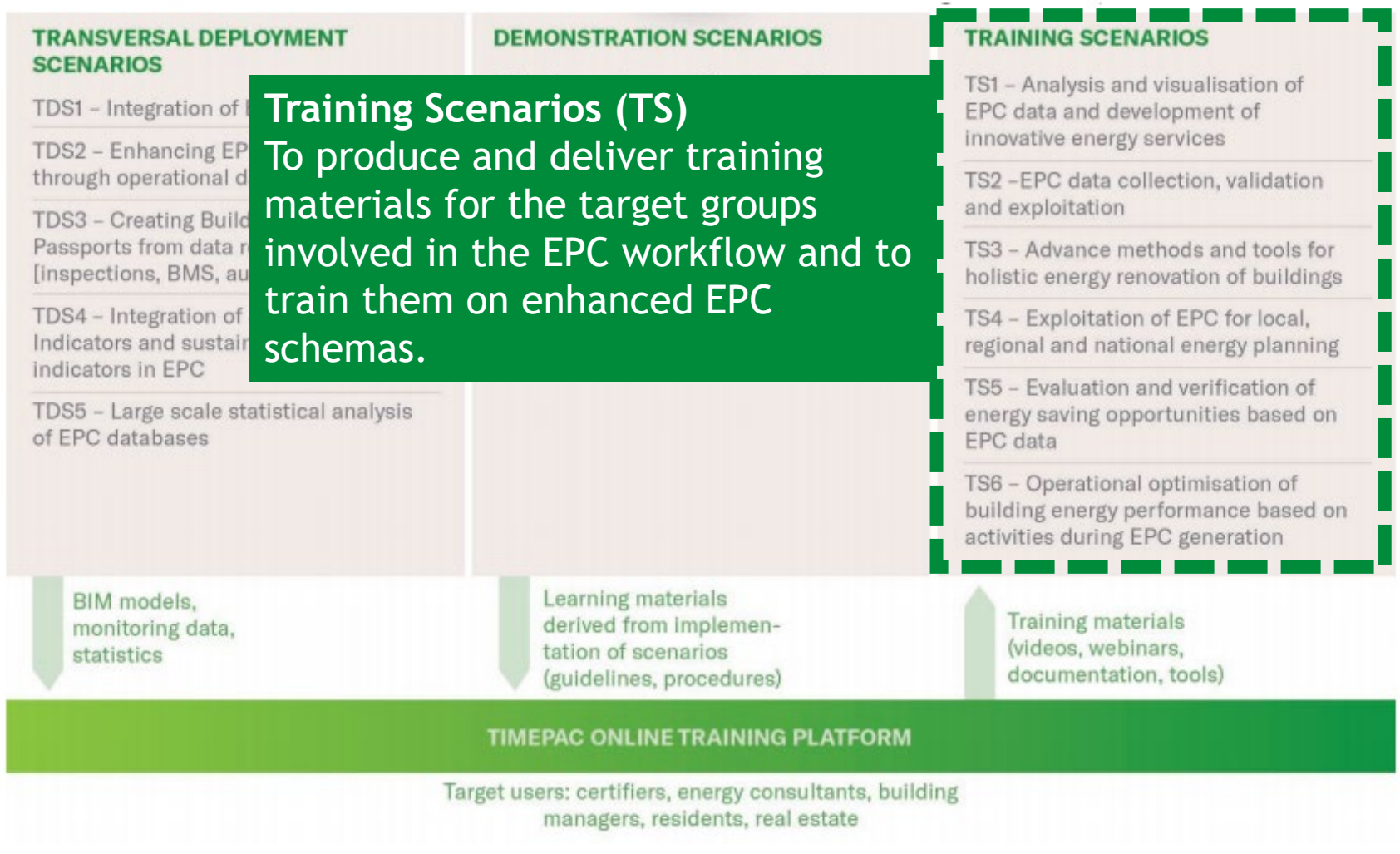
Project methodology



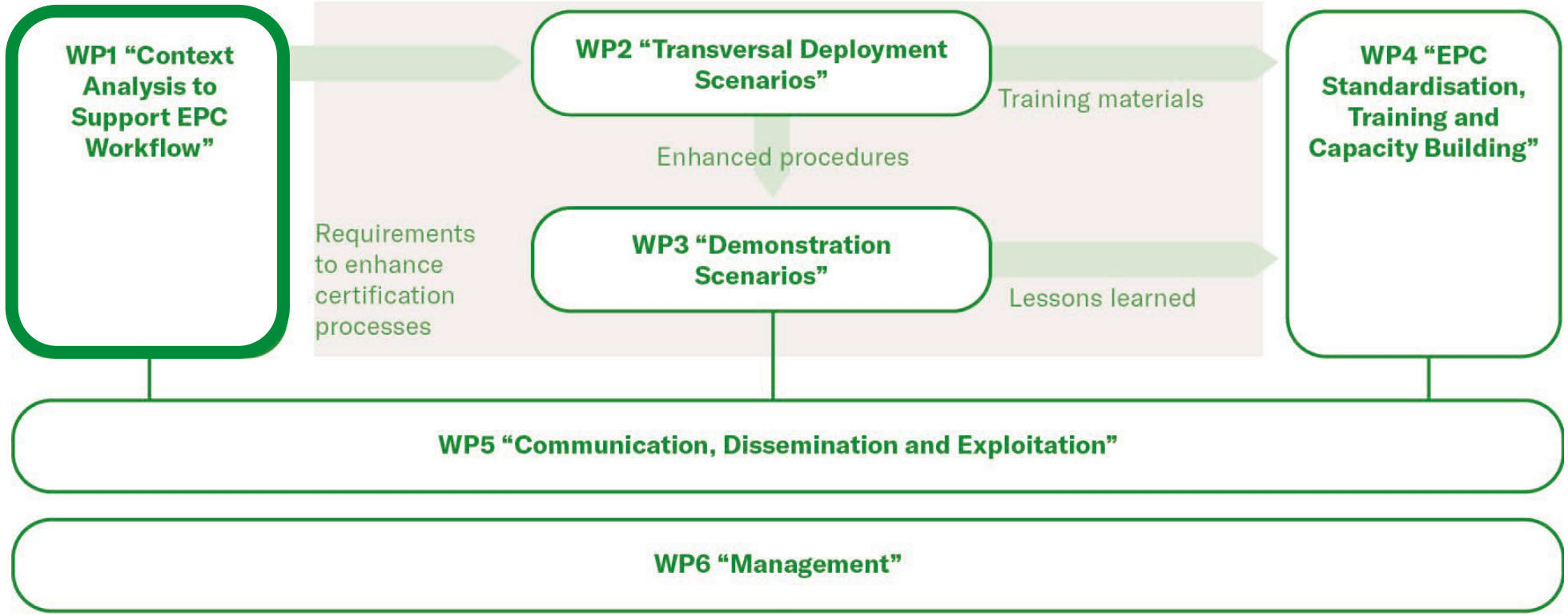
Project methodology

The TIMEPAC platform and the training materials derived from the outcomes of the TDSs and TDs will be used in the training scenarios.

Project methodology



Current status of the development



Current status of the development

Task 1.2

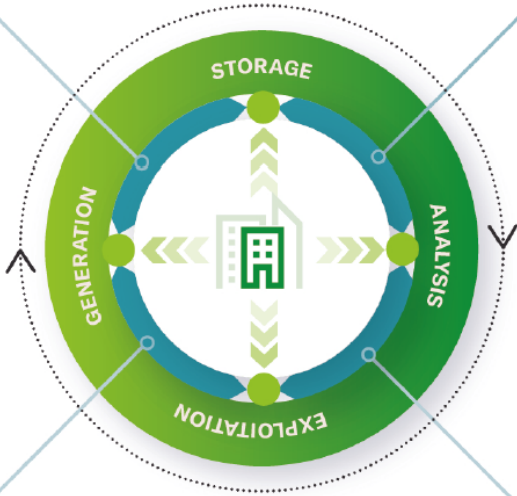
User-friendly environments to access EPC databases, interlinked to other data repositories (BIM, cadastre)

Automatic storage of the certificate in BIM and EPC databases

Analysis of EPC repositories to identify potential areas for building renovation

Task 1.1

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



Procedures and tools for large scale statistical analysis of EPC databases

Task 1.3

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

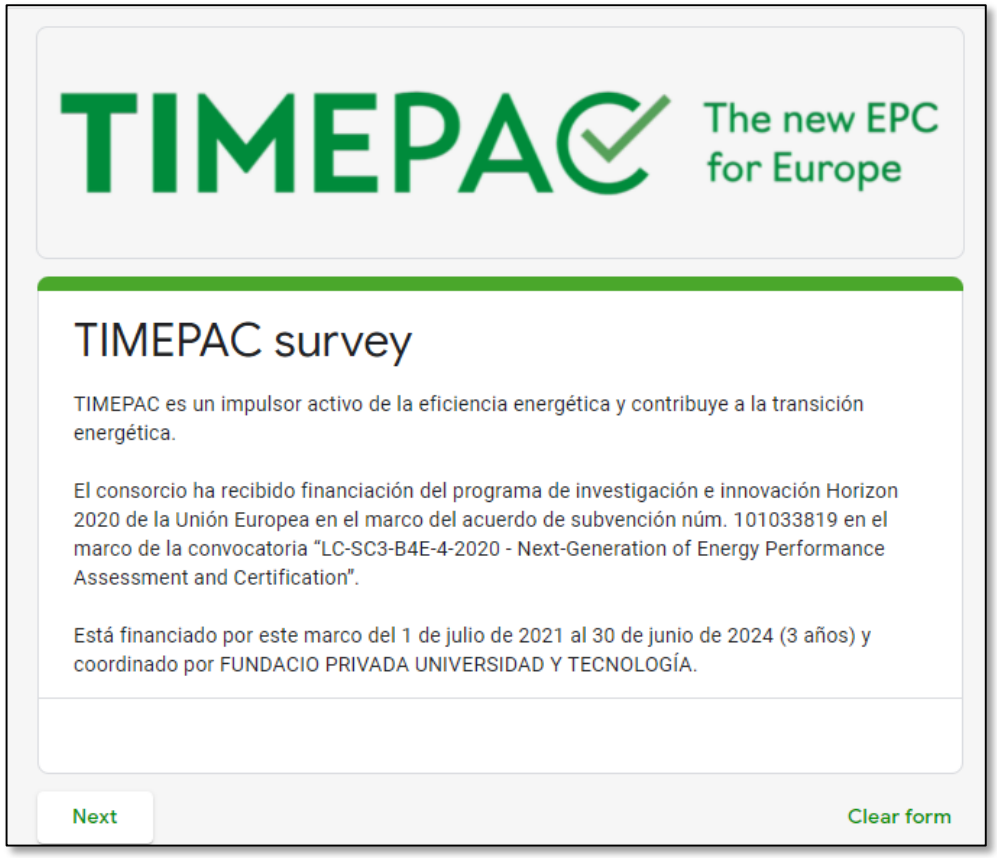
Identifying customers for building components and equipment in areas with a potential for renovation

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

Task 1.4

“Context Analysis to Support EPC Workflow”

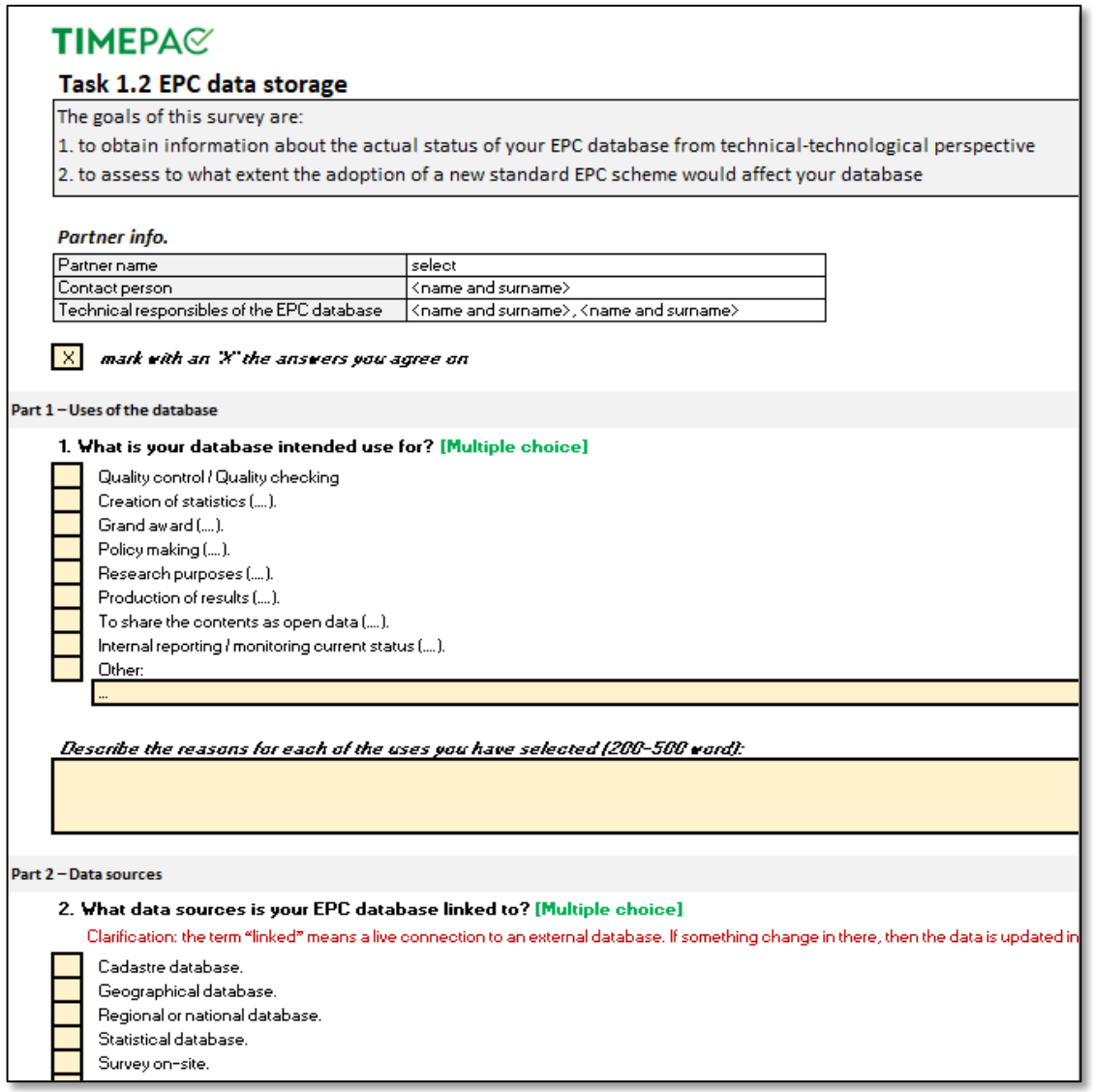
Task 1.1 To identify and characterize deficiencies of current EPC generation



Survey: End-user perception on energy performance certificates

“Context Analysis to Support EPC Workflow”

Task 1.2 To audit the current status of the ECP storage systems to find limitations end deficiencies to support the new EPC schemes



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Task 1.2 EPC data storage

The goals of this survey are:
1. to obtain information about the actual status of your EPC database from technical-technological perspective
2. to assess to what extent the adoption of a new standard EPC scheme would affect your database

Partner info.

Partner name	select
Contact person	<name and surname>
Technical responsibles of the EPC database	<name and surname>, <name and surname>

☒ *mark with an 'X' the answers you agree on*

Part 1 – Uses of the database

1. What is your database intended use for? [Multiple choice]

- ☐ Quality control / Quality checking
- ☐ Creation of statistics (….).
- ☐ Grand award (….).
- ☐ Policy making (….).
- ☐ Research purposes (….).
- ☐ Production of results (….).
- ☐ To share the contents as open data (….).
- ☐ Internal reporting / monitoring current status (….).
- ☐ Other:

…

Describe the reasons for each of the uses you have selected (200-500 word):

Part 2 – Data sources

2. What data sources is your EPC database linked to? [Multiple choice]

Clarification: the term “linked” means a live connection to an external database. If something change in there, then the data is updated in

- ☐ Cadastre database.
- ☐ Geographical database.
- ☐ Regional or national database.
- ☐ Statistical database.
- ☐ Survey on-site.

Survey on use and specifications of EPC databases

“Context Analysis to Support EPC Workflow”

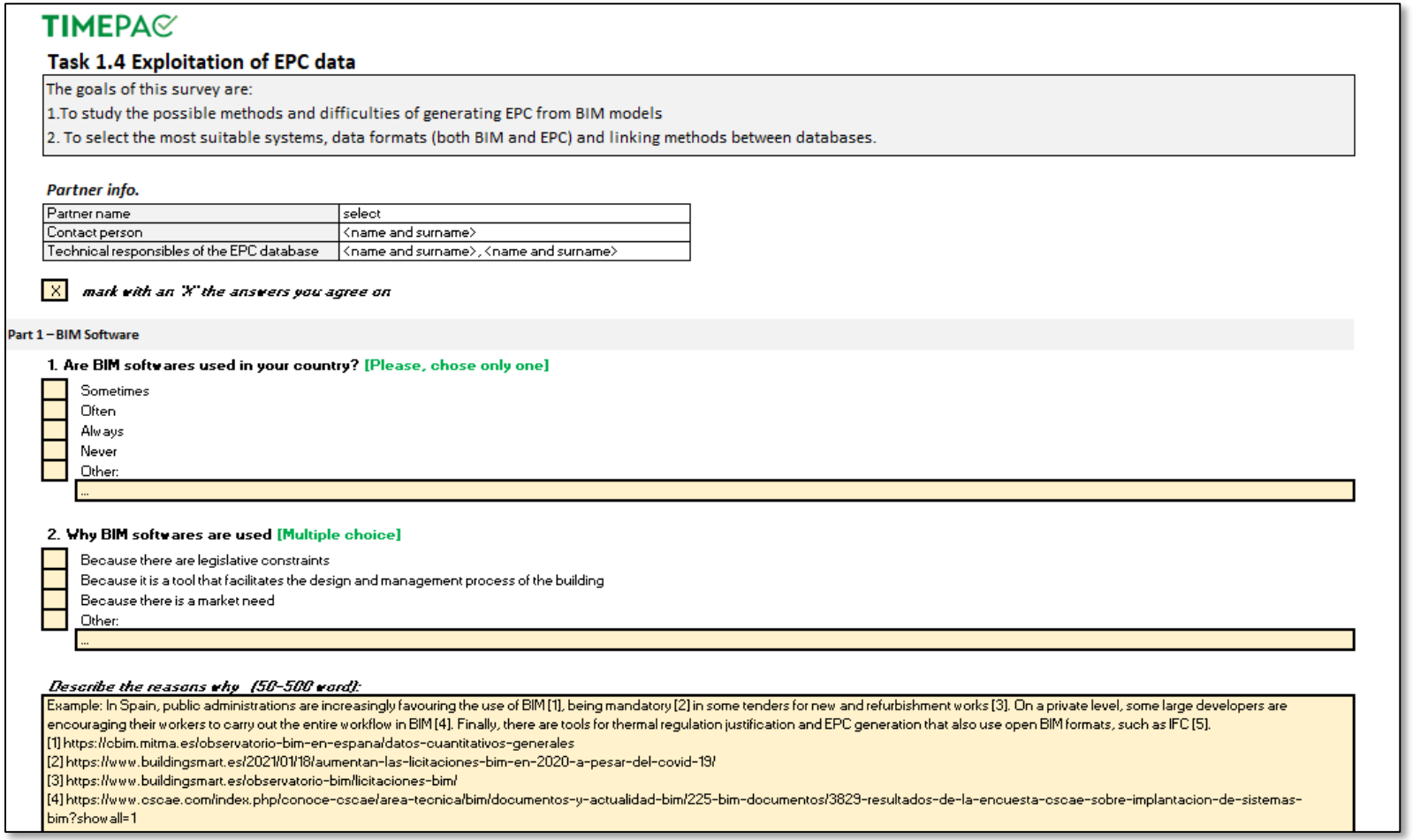
Task 1.3 To identify of deficiencies and potential improvements for EPC data analysis

	Name	Description	ITALY			CROATIA			SPAIN			SLOVENIA			AUSTRIA		
			POLITO / EDIC / RP			EIHP			FUNITEC / ICAEN / CYPE			JSI / MaI / GOLEA			SERA		
EPC information on the assessed object, tool and assessor	Assessed object	Building, part of a building or portfolio of buildings that is the object of the energy performance assessment	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Application type	Motivation for issuing the EPC (new construction, building renovation, rental, sale, etc.)	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC				XML	OAD	EPC
	Adopted simulation software	Simulation software used to create the energy model	XML	OAD	EPC				XML	OAD	EPC				XML	OAD	EPC
	Assessor's information	General information on the technician in charge	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	EPC ID code	Unique identifier for the EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
General information about the building	Geographical location	Geographic location defined by the longitude and latitude	XML	OAD	EPC				XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Building address	Collection of information to give the location of the building	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Cadastre informations	General cadastral data on the properties listed in the cadastral databank	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Number of building units	Number of section, floor or apartment within a building which is designed or altered to be used separately from the rest of the building	XML	OAD	EPC				XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Building typology	Certain size and geometry of a building (single-family house, terraced house, multi-family house, apartment block, etc.)	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC			
	Building constructive typology	Type of building construction (e.g. reinforced concrete skeleton, load-bearing masonry building, etc.)	XML	OAD	EPC				XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Building use	Classification of buildings and/or building unit related to their main use or their special status, for the purpose of enabling differentiation of the energy performance	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Information of building property	Information about private or public property of the building	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Year of construction	Year of construction of the building	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Year of last renovation	Year of the last renovation of the building	XML	OAD	EPC	XML	OAD	EPC							XML	OAD	EPC
	Climatic region	Climatic area in which the simulated building is located	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
	Degree days	Cumulative hourly temperature difference (sum of all hourly differences) between the outdoor air and a base temperature over a given period (heating or cooling	XML	OAD	EPC							XML	OAD	EPC	XML	OAD	EPC
	Thermally conditioned floor area	Thermally conditioned floor area of the thermal zone	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC	XML	OAD	EPC
		Volume inside the building envelope of the conditioned															

Survey: Data collection on the quality of EPC schemes

“Context Analysis to Support EPC Workflow”

T1.4 To study the possible methods and difficulties for generating EPC from BIM models and to select the most suitable systems, data formats (both BIM and EPC) and linking methods between databases.



TIMEPAC

Task 1.4 Exploitation of EPC data

The goals of this survey are:
1.To study the possible methods and difficulties of generating EPC from BIM models
2. To select the most suitable systems, data formats (both BIM and EPC) and linking methods between databases.

Partner info.

Partner name	select
Contact person	<name and surname>
Technical responsibles of the EPC database	<name and surname>, <name and surname>

☒ *mark with an 'X' the answers you agree on*

Part 1 – BIM Software

1. Are BIM softwares used in your country? [Please, chose only one]

- ☐ Sometimes
- ☐ Often
- ☐ Always
- ☐ Never
- ☐ Other:

...

2. Why BIM softwares are used [Multiple choice]

- ☐ Because there are legislative constraints
- ☐ Because it is a tool that facilitates the design and management process of the building
- ☐ Because there is a market need
- ☐ Other:

...

Describe the reasons why (50-500 word):

Example: In Spain, public administrations are increasingly favouring the use of BIM [1], being mandatory [2] in some tenders for new and refurbishment works [3]. On a private level, some large developers are encouraging their workers to carry out the entire workflow in BIM [4]. Finally, there are tools for thermal regulation justification and EPC generation that also use open BIM formats, such as IFC [5].
[1] https://obim.mitma.es/observatorio-bim-en-espana/datos-cuantitativos-generales
[2] https://www.buildingsmart.es/2021/01/18/aumentan-las-licitaciones-bim-en-2020-a-pesar-del-covid-19/
[3] https://www.buildingsmart.es/observatorio-bim/licitaciones-bim/
[4] https://www.cscae.com/index.php/conoce-cscae/area-tecnica/bim/documentos-y-actualidad-bim/225-bim-documentos/3829-resultados-de-la-encuesta-cscae-sobre-implantacion-de-sistemas-bim?showall=1

Survey: Integration of BIM and EPC

“Context Analysis to Support EPC Workflow”

T1.5 Guidelines and recommendations for enhancing EPC to achieve a seamless workflow applicable at the European level

NextGenEPCertificates Cluster

Smart Readiness Indicator platform

December 16, 2021, from 09.30 to 12.00 (CET)

The SRI platform supports working groups focusing on specific elements of the SRI, for instance on exchanging SRI testing experiences, methodological aspects or aspects related to the assessment and implementation of the SRI such as the service catalogues or the design of the SRI certificate.

TIMEPAC 21 workshop

Session 1 - Legislative context and requirements for deep renovation of EU building stock

Contributing to supporting and promoting newly developed certification schemes, procedures, guidelines and tools for the evaluation of energy performance of buildings throughout the EU.

Session 2 - Enhancement of Energy Performance Certificates

Through the integration of data sources (energy consumption, sensors, etc.), fostering interoperability of EPCs with BIM and Building Renovation Passports, and including new sets of indicators (SRIs and other sustainability indicators).

Session 3 - Managing of active buildings and the use of innovative technologies in order to enable smart energy services

Large-scale statistical analysis of integrated data for exploiting RES energy production, supporting e-mobility and foster building renovation programmes

TIMEPAC The new EPC for Europe

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

leandro.madrazo@salle.url.edu

Thanks for your attention!