



D3.2 Building performance databases inventory

WP3, T3.2

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Introduction

In this deliverable, it will be described the process of inventorying available open-access public and private databases that may be relevant to EPB assessments. These databases play an important role in providing input data for calculations, as well as receiving and storing output data and results related to the tools that are being developed in the project. The inventorying process encompasses the demonstrative ecosystems within the project: Spain, The Netherlands and Austria. In each of these locations, a brief introduction will be given to explain the context of the different databases provided.

Regarding the databases, they have been categorised into three subsections, which are detailed below:

- **National EPC databases:** The section involves identifying national databases that include issued EPCs.
- **Public open-access databases:** This category includes any other public open-access databases that could be relevant to EPB assessments, such as cadastre information, technical inspections or renovations.
- **Private product manufacturer databases:** in this section it is intended to catalogue databases containing information about products, equipment or materials from private manufacturers, such as those related to HVAC, renewable electricity generation products, lighting technologies, etc. The focus here is on the automatic retrieval of parameters from these proprietary databases to serve as input for EPB calculations.

The purpose of collecting these databases is to enrich the different tools created within the project by automatically providing information and storing the output of the tools developed. Consequently, this inventory will undergo continuous evolution throughout the project, adapting to the development of different tools and gaining clarity on their specific requirements.



1. Spain

In the pursuit of creating a comprehensive inventory of open-access databases relevant to the iEPB schema, Spain stands as a pivotal player in the European landscape.

Spain's building data ecosystem is characterised by the coexistence of national and regional databases. The national Cadastral Electronic Site and the Geoportal of Building Energy Efficiency Certificates provide a comprehensive overview of Spain's building stock at the national level. These databases contain information on property characteristics and energy performance assessments, respectively. Regarding EPCs, the management and control responsibilities are decentralized, with each Autonomous Community controlling these matters at the regional level. At the national level, the establishment of the Geoportal of Building Energy Efficiency has been advocated to consolidate and streamline this information, enhancing accessibility. This portal serves as a centralized platform to present information on energy certificates for residential and tertiary sector buildings, fostering energy efficiency initiatives like renovations. It is also designed to be a valuable resource for sector stakeholders, including construction companies, installers, and architecture firms.

This national-level registry is made feasible by recent legislation updates regarding EPCs in Spain (Royal Decree 390/2021). A provision has been added mandating competent bodies in energy certification from the autonomous communities to electronically transmit an extract of the building's energy assessment report in XML format to the Directorate General of Energy Policy and Mines of the Ministry for the Ecological Transition and the Demographic Challenge at the national level. However, since the information is initially compiled by the respective competent body of each autonomous community, a more comprehensive study has been conducted on the disparities in publicly available information within the autonomous communities, as currently outlined in Annex II.

While Spain possesses a wealth of available data, challenges remain in ensuring its accessibility and integration. The subsequent use of these databases will aim to scrutinise the barriers that may be encountered in obtaining data from them, such as access limitations, query procedures, and update mechanisms. These challenges hinder the seamless exchange of information and impede the optimization of building performance assessments and interventions.

Despite the presence of free and accessible data sources, such as the cadastral registry and the energy efficiency certificates database, there is a lack of comprehensive access to all available data. This fragmented approach hinders the ability to fully utilise the available information and limits the potential for cross-tool integration. Additionally, the ability to seamlessly interact between different tools for enhanced efficiency and efficacy in building inspections and interventions is currently lacking.

This discrepancy underscores the need for improved data transfer between tools in Spain. By facilitating the detection of needs and improvements in building practices, enhanced data interoperability can streamline the process of building performance assessments and interventions. This reflection highlights the imperative for Spain to bridge the gap in data accessibility and tool integration for a more effective and streamlined approach to building-related initiatives.

To address the challenges in data accessibility and integration, Spain must prioritize the following actions:

1. **Standardization of Data Formats:** Harmonizing data formats across databases and tools will enable seamless data exchange and reduce the complexity of data integration.
2. **API Development:** Creating Application Programming Interfaces (APIs) for publicly accessible databases will facilitate automated data retrieval and processing, eliminating the need for manual data extraction.
3. **Data Harmonization and Cleaning:** Addressing inconsistencies and discrepancies in data across databases will ensure the reliability and accuracy of building performance assessments.
4. **Metadata Management:** Maintaining comprehensive metadata for each dataset will facilitate efficient data discovery and utilization.
5. **Data Governance and Policies:** Implementing transparent data governance policies will ensure the long-term sustainability of data accessibility and integration efforts.

By addressing these challenges, Spain can unlock the true potential of its rich building data ecosystem, enabling more efficient and effective building performance assessments and interventions. This will contribute to the optimization of building energy performance, reducing energy consumption, and promoting sustainable practices in the Spanish construction industry.

Below, summarized, are the databases included within the Spanish scope:

Category	Databases
EPC Databases	Geoportal of Building Energy Efficiency Certificates
	Registry of EPCs for Buildings in Navarre
Open-access databases related to EPB assessments	Cadastral Electronic Site
	renUEva
	IEEV-CV Cartographic Viewer
	BIM Catalogue of Construction Elements
	Territorial Information System of Navarre
	Meteo Navarra
Private product manufacturer databases	i-DE
	Construction Database of the Valencian Institute Of Building

Table 1. Spanish databases

1.1. EPC databases

GEOPORTAL OF BUILDING ENERGY EFFICIENCY CERTIFICATES (Geoportal de certificados de eficiencia energética de edificios)

BRIEF DESCRIPTION:

Online tool that allows users to access energy efficiency certificates for buildings in Spain. This geoportal is accessible to all users without the need for identification.

LINK:

<https://edificioseficientes.gob.es/es>

DATA INCLUDED IN THE DATABASE:

EPC label: letter, energy consumption and CO2 emissions.

DATA FORMAT:

web

SCALE:

National

REGION:

Spain

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

API

COST:

Free

DATA TEMPORALITY:

Publication year: 2022

Refresh rate: monthly

DATA VOLUME:

4.9 million EPCs (23/11/23)

DATA RESOLUTION:

Dwelling / Building

COMMENTS:

This recently established portal serves the purpose of centralizing EPCs at the national level, addressing the fact that this competency is regional, with each Autonomous Community overseeing its respective area. Being a recent development certain errors have been noted in regions with an independent cadastre, in contrast to most areas where the cadastre is nationally regulated.



REGISTRY OF EPCs FOR BUILDINGS IN NAVARRE
(REGISTRO DE CERTIFICADOS DE EFICIENCIA ENERGÉTICA DE EDIFICIOS DE NAVARRA)

BRIEF DESCRIPTION:

On this website you can carry out procedures relating to the registration of EPCs and consult those currently registered in the Autonomous Community of Navarre.

LINK:

<https://www.navarra.es/es/tramites/on/-/line/Registro-de-Certificados-de-Eficiencia-Energetica-de-Edificios>

SCOPE:

EPC

DATA INCLUDED IN THE DATABASE:

EPC label and report (letter, energy consumption and CO2 emissions and all administrative data relating to the building included in the EPC report).

DATA FORMAT:

PDF

SCALE:

Regional

REGION:

Navarre

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https

COST:

Free

DATA TEMPORALITY:

Publication year: -

Refresh rate: Daily

DATA VOLUME:

-

DATA RESOLUTION:

Dwelling / Building

COMMENTS:

There's an independent EPC database for each Spanish autonomous community. The one corresponding to Navarre is provided as an example.



1.2. Open-access databases related to EPB assessments

CADASTRAL ELECTRONIC SITE (SEDE ELECTRÓNICA DEL CATASTRO)

BRIEF DESCRIPTION:

It is a web platform that provides citizens and businesses with a convenient and efficient way to carry out cadastral procedures.

LINK:

<https://www.sedecatastro.gob.es/>

SCOPE:

Cadastral

DATA INCLUDED IN THE DATABASE:

Real Estate:
Address
Cadastral plot
Cadastral reference
Nature of the property (residential, commercial, office, etc.)
Use of the property (residential, commercial, industrial, etc.)
Built area
Age
Construction features (number of floors, height, etc.)
Date of registration in the property register

DATA FORMAT:

API: CAT (XML), CSV, GeoJSON
Through website: CSV, shapefile, GeoJSON, KML

SCALE

National

REGION:

Spain (except for Basque Country and Navarre)

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

http

COST:

Free

DATA TEMPORALITY:

Publication year: 2007

Refresh rate: Daily (basic data) – Monthly (more detailed data)

DATA VOLUME:

33,533,834 buildings (31/12/22)

DATA RESOLUTION:

Dwelling - building

RENUeva

BRIEF DESCRIPTION:

A tool that allows for the approximate calculation of the energy consumption of residential buildings in Spain, offering various improvement options for energy savings, while meeting the necessary requirements for obtaining Next Generation financial assistance.

LINK:

<https://renueva.five.es/>

SCOPE:

Approximate consumption and estimation of subsidies

DATA INCLUDED IN THE DATABASE:

Basic data: building identification, location, surface area, year of construction, number of dwellings, and occupants.

Construction characteristics: construction type, materials, insulation, carpentry, installations.

Energy consumption: annual consumption of heating, cooling, hot water, and electricity.

CO2 emissions: annual CO2 emissions for heating, cooling, hot water, and electricity.

Possible improvements that can be made to the building to reduce its energy consumption and CO2 emissions:

Thermal conditioning: thermal insulation of the envelope, replacement of windows and doors, installation of efficient heating and cooling systems.

Production of hot water: installation of efficient hot water production systems.

Renewable energies: installation of renewable energy generation systems, such as thermal or photovoltaic solar panels.

Other improvements: installation of energy management systems, efficient lighting, etc.

Information on: Available grants, Tax incentives, Financing for the energy rehabilitation of buildings

DATA FORMAT:

PDF, API (JSON)

SCALE

National



Co-funded by
the European Union

REGION:

Spain

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

API

COST:

Free

DATA TEMPORALITY:

Publication year: 2023

Refresh rate: Annual

DATA VOLUME:

33,533,834 buildings (31/12/22). The data corresponds to that of the cadastre because this tool relies on the cadastre for its calculations.

DATA RESOLUTION:

Building

IEEV.CV CARTOGRAPHIC VIEWER
(VISOR CARTOGRÁFICO IEEV.CV)

BRIEF DESCRIPTION:

Map of the Valencian Community, accessible to all users, where a concise report of the official technical inspection of buildings, validated and currently in force, will be displayed.

LINK:

<https://habitatge.gva.es/es/web/arquitectura/visor-cartografic-ieev.cv>

SCOPE:

Data from the official technical inspection of buildings

DATA INCLUDED IN THE DATABASE:

Building identification: address, number of dwellings, construction date, etc.

Conservation status: overall rating of the conservation status, as well as specific ratings for each constructive element.

Accessibility conditions: compliance with universal accessibility regulations.

Energy efficiency: energy rating of the building.

Construction, functional, safety, or habitability deficiencies: identification of detected deficiencies, as well as their severity level.

DATA FORMAT:

Co-funded by
the European Union

API: JSON, CSV

SCALE

Regional: Valencian Community

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

File download

COST:

Free

DATA TEMPORALITY:

Publication year: 2023

Refresh rate: Daily

DATA VOLUME:

101,833 buildings (23/11/23)

DATA RESOLUTION:

Dwelling – Building

BIM CATALOGUE OF CONSTRUCTION ELEMENTS

(CATÁLOGO DE ELEMENTOS CONSTRUCTIVOS BIM)

BRIEF DESCRIPTION:

It provides a comprehensive range of construction solutions. It offers information on their thermal, acoustic, waterproofing, fire protection, performances, etc. The document is primarily aimed at project designers, allowing them to understand the characteristics of the selected construction solutions and thus justify compliance with the requirements established in current regulations. Finally, the generated technical information can be included in the architectural project.

LINK:

<https://cec.f-ive.es/externalDirectLogin>

SCOPE:

Catalogue of Construction Elements

DATA INCLUDED IN THE DATABASE:

Physical and Mechanical Characteristics: dimensions, materials, resistances, etc.

Thermal, Acoustic, Waterproofing, and Fire Protection Characteristics: thermal transmittance, acoustic insulation, water tightness, fire resistance, etc.

Normative Information: compliance with the requirements established in current regulations.



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Additionally, the catalogue also includes information about the cost of construction elements, as well as details about their availability in the market.

Specifically, the catalogue contains data on the following types of construction elements:

Structural Elements: pillars, beams, slabs, walls, etc.

Enclosure Elements: facades, roofs, floors, etc.

Installation Elements: sanitation installations, air conditioning installations, electrical installations, etc.

The catalogue information is available in both Spanish and English.

DATA FORMAT:

IFC

SCALE

National

REGION:

Spain

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

File/IFC download

COST:

Free

DATA TEMPORALITY:

Publication year: 2019

Refresh rate: Annual

DATA VOLUME:

3,000

DATA RESOLUTION:

Construction elements

TERRITORIAL INFORMATION SYSTEM OF NAVARRE
(SISTEMA DE INFORMACIÓN TERRITORIAL DE NAVARRA)

BRIEF DESCRIPTION:

This is the web platform equivalent to the Cadastral Electronic Site but for the Autonomous Community of Navarre (Navarrese data is not included in the National Site) which offers citizens and companies a convenient and efficient way to carry out cadastral procedures.



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the European Union

LINK:

<https://sitna.navarra.es/navegar/>

SCOPE:

Cadastral

DATA INCLUDED IN THE DATABASE:

Real Estate:
Address.
Cadastral plot.
Cadastral reference.
Nature of the property (residential, commercial, office, etc.).
Use of the property (residential, commercial, industrial, etc.).
Built area.
Age.
Construction features (number of floors, height, etc.).
Date of registration in the property register.

DATA FORMAT:

API

SCALE:

Regional

REGION:

Navarre

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https

COST:

Free

DATA TEMPORALITY:

Publication year: 2001
Refresh rate: Depends on the layer being analyzed

DATA VOLUME:

-

DATA RESOLUTION:

Dwelling – Building - Plot



METEO NAVARRA

BRIEF DESCRIPTION:

Web of meteorology and climatology of Navarra.

LINK:

<https://sitna.navarra.es/navegar/>

SCOPE:

Climate data

DATA INCLUDED IN THE DATABASE:

Temperature, relative humidity, accumulated precipitation, wind speed and direction, solar radiation and total insolation.

DATA FORMAT:

CSV

SCALE:

Regional

REGION:

Navarre

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https

COST:

Free

DATA TEMPORALITY:

Publication year: n.a.

Refresh rate: Instantaneous

DATA VOLUME:

n.a.

DATA RESOLUTION:

n.a.



I-DE

BRIEF DESCRIPTION:

Website of the Iberdrola Group, which manages all the smart meters installed in Spain. Through its customer area, users can consult the hourly electricity consumption registered by their electricity meter, as well as their electricity production if they have one.

LINK:

<https://www.i-de.es/>

SCOPE:

Electricity consumption and generation

DATA INCLUDED IN THE DATABASE:

Electricity consumption and generation

DATA FORMAT:

CSV, XLS(excel)

SCALE:

National

REGION:

Spain

DATA ACCESS:

Closed-access. The data of each smart meter can only be accessed by the holder of the electricity supply contract via a personal account.

COMMUNICATION PROTOCOLS:

https

COST:

Free

DATA TEMPORALITY:

Publication year: n.a.

Refresh rate: Hourly

DATA VOLUME:

n.a.

DATA RESOLUTION:

By smart meter (Dwelling – Building)



1.3. Private product manufacturer databases

CONSTRUCTION DATABASE OF THE VALENCIAN INSTITUTE OF BUILDING (Base de datos de construcción del instituto valenciano de la edificación)

BRIEF DESCRIPTION:

Construction price database

LINK:

<https://bdc.f-ive.es/BDC23/1>

SCOPE:

Construction price database

DATA INCLUDED IN THE DATABASE:

Price and description of work units

DATA FORMAT:

BC3

SCALE:

National

REGION:

Spain

DATA ACCESS:

Open-access (Within the project as it belongs to a project partner. Outside of it, it is not open-access)

COMMUNICATION PROTOCOLS:

API

COST:

Free (It is free within the project. Outside of it, it is paid).

DATA TEMPORALITY:

Publication year: 2007

Refresh rate: Annual

DATA VOLUME:

100,000

DATA RESOLUTION:

Unit of work



2. The Netherlands

When it comes to the built environment and the products and materials used within it, the Netherlands has a variety of data sources and public and private organisations responsible for collecting, serving out and maintaining the data. Unlike Spain, where regional divisions exist, the Netherlands operates on a national level concerning data related to the EPCs. Therefore, the compilation of databases occurs at the national level.

Databases from public bodies are accessible for everyone, but not in all cases for free. Private databases are in most cases also open to everyone. These databases contain among others cadastral information, already provided energy performance certificates, certificated energy performance assessors, product information on energy performance, but also on information for integrating it in the building design process (BIM).

In the context of materials and products influencing the energy performance of buildings, the NTA 8800, the Dutch method for calculating energy performance, enumerates these items. Product suppliers have the opportunity to provide energy performance information in a shared database, but this privilege is contingent upon demonstrating the energy performance of their products or materials. When information is available in this database, its utilisation becomes mandatory in calculating energy performance.

Constraints on data are tied to the frequency of database updates, availability (whether paid or free) and the accessibility of the data. Ideally, data should be consistently up-to-date, freely accessible, and available through an API.

Implementing actions to enhance the data situation for energy performance assessment in the Netherlands, as outlined in Spain, will not only enhance the value and usability of the data but will also unlock its full potential. This applies not only to current obligations under the EPBD but also to future obligations, such as the Environmental Performance of Buildings, serving as a replacement for the MPG¹.

Here is a summary of the databases included in the Dutch context:

Category	Databases
EPC Databases	EP-Online
Open-access databases related to EPB assessments	Kadaster
	PDOK
	3DBAG
Private product manufacturer databases	BCRG
	Cyclomedia
	Kavel10

Table 2. Dutch databases

¹ <https://milieudatabase.nl/en/environmental-performance/>

2.1. EPC databases

EP-ONLINE

BRIEF DESCRIPTION:

Database with energy labels and energy performance indicators

LINK:

<https://www.ep-online.nl/>

SCOPE:

EPC

DATA INCLUDED IN THE DATABASE:

Energy labels and energy performance indicators

DATA FORMAT:

XML, CSV and XLSX

See: <https://www.rvo.nl/sites/default/files/2023-07/Handleiding-Openbare-data-EP-Online.pdf>
-> Chapter 2(Dutch)

SCALE

National

REGION:

The Netherlands

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

API

COST:

Free

DATA TEMPORALITY:

Publication year: No information available

Refresh rate: monthly, with daily changelogs

DATA VOLUME:

No information available

DATA RESOLUTION:

By dwelling / building



2.2. Open-access databases related to EPB assessments

KADASTER	
BRIEF DESCRIPTION:	Datasets about plots and buildings
LINK:	https://www.kadaster.nl/
SCOPE:	Cadastre
DATA INCLUDED IN THE DATABASE:	No information available
DATA FORMAT:	No information available
SCALE	National
REGION:	The Netherlands
DATA ACCESS:	Open-access
COMMUNICATION PROTOCOLS:	API
COST:	Free and paid, based on the information needed
DATA TEMPORALITY:	Publication year: No information available (Offline: 1832). Refresh rate: No information available
DATA VOLUME:	No information available
DATA RESOLUTION:	No information available



PDOK

BRIEF DESCRIPTION:

Public data with a variety of datasets regarding building and infrastructure in the Netherlands

LINK:

<https://www.pdok.nl/>

SCOPE:

Different kinds of datasets about structures in the Netherlands.

DATA INCLUDED IN THE DATABASE:

239 datasets with information about the Netherlands. Could for example be relevant by checking which electricity networks are available in an area. Using that kind of information can help in suggesting the right renovation measures.

DATA FORMAT:

Depends on the dataset, but CityGML is also used.

SCALE:

National

REGION:

The Netherlands

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

WFS / OGC API's

COST:

Free

DATA TEMPORALITY:

Publication year: Depends on the dataset

Refresh rate: Depends on the dataset

DATA VOLUME:

All buildings from the Netherlands, 10 million buildings.

DATA RESOLUTION:

Depends on the dataset



3DBAG

BRIEF DESCRIPTION:

Public dataset of the geometry of all buildings in the Netherlands in LOD 2.2

LINK:

<https://3d.bk.tudelft.nl/>

SCOPE:

Geometry

DATA INCLUDED IN THE DATABASE:

Geometry in different LOD levels up to 2.2.

DATA FORMAT:

CityJSON

SCALE:

National

REGION:

The Netherlands

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

HTTP REST API

COST:

Free

DATA TEMPORALITY:

Publication year: Source data is mostly from 2020

Refresh rate: Unknown

DATA VOLUME:

All buildings from the Netherlands, 10 million buildings.

DATA RESOLUTION:

Building



2.3. Private product manufacturer databases

BCRG

BRIEF DESCRIPTION:

Database with proven declarations and declarations supplied by the manufacturer on energy performance of materials and products.

LINK:

<https://www.bcrq.nl>

SCOPE:

Product specifications

DATA INCLUDED IN THE DATABASE:

Product description and data, energy performance

DATA FORMAT:

No information available

SCALE

National

REGION:

The Netherlands

DATA ACCESS:

No information available (under development; in test phase)

COMMUNICATION PROTOCOLS:

No information available

COST:

No information available

DATA TEMPORALITY:

Publication year: unknown

Refresh rate: bi-monthly

DATA VOLUME:

2163 declarations

DATA RESOLUTION:

Products



CYCLOMEDIA

BRIEF DESCRIPTION:

Paid dataset with a lot of Pointcloud / Photos of buildings in the Netherlands

LINK:

<https://www.cyclomedia.com/nl>

SCOPE:

3D Geometry and images from the Netherlands.

DATA INCLUDED IN THE DATABASE:

Photos and Pointcloud information of existing buildings

DATA FORMAT:

Unknown

SCALE:

National

REGION:

The Netherlands

DATA ACCESS:

Closed-access

COMMUNICATION PROTOCOLS:

Unknown

COST:

Paid

DATA TEMPORALITY:

Publication year: -

Refresh rate: -

It is uncertain what the exact refresh rate of their data is. But probably pretty accurate.

DATA VOLUME:

Not certain, but at least coverage of the Netherlands

DATA RESOLUTION:

Highly detailed information about the existing situation as seen from the street and air. Very detailed because of used equipment for scanning.



KAVEL10

BRIEF DESCRIPTION:

Paid dataset with a lot of Pointcloud / Photos of buildings in the Netherlands

LINK:

<https://kavel10.nl/>

SCOPE:

3D Geometry and images from the Netherlands. Contains less information than Cyclomedia.

DATA INCLUDED IN THE DATABASE:

Photos and Pointcloud information of existing buildings

DATA FORMAT:

Unknown

SCALE:

National

REGION:

The Netherlands

DATA ACCESS:

Closed-access

COMMUNICATION PROTOCOLS:

Unknown

COST:

Paid

DATA TEMPORALITY:

Publication year: -

Refresh rate: -

It is uncertain what the exact refresh rate of their data is. But probably pretty accurate.

DATA VOLUME:

Not certain, most parts of the Netherlands but not all of it.

DATA RESOLUTION:

Highly detailed information about the existing situation as seen from the street and air. Very detailed because of used equipment for scanning.



3. Austria

In Austria, we do have one EPC database per federal state, multiple open access databases and a variety of product databases.

The EPC databases are organized by federal state. So, each of the nine federal states has the option to choose their own way to store and save the EPCs. Styria (the federal region analysed here) is using the same database as six other federal states, ZEUS. But still, there is no connection between the five ZEUS databases and the databases also contain different data and are customized for each federal state individually. ZEUS is not an open access database. Also, the other databases (WUKSEA and EAWZ) are not open access databases.

Generally, there are five different software providers for the EPC-calculation available. Therefore, many APIs are needed to the ZEUS database and also to the others, so all EPCs can get directly transferred to the database of each federal state.

Concerning open access databases, a variety of different data sources are available. The main data source for cadastral data is GIS and the weather data is taken from the Geosphere database. These databases are open access. All in all, the databases are mostly free to use for the calculation, but for certain datasets some fees might occur.

Product specific data can be found in different databases, which collect the product specific key figures. Also, different material specific data is available there. An example is the baubook database, which is needed around 1500 times per month for energy and ecological key figures in different calculation programs. This database contains around 3.700 building products from different manufacturers.

The different materials and product values are provided by more than 400 different manufacturers and dealers. Multiple different materials and manufacturers are represented by these databases, it won't be meaningful to represent some additional manufacturer database or product datasheets as examples here, because this data is already included in the databases presented in the following chapters. If no data is available in the databases, the rated values from the national standard ÖNORM B8110-7 apply.

All in all, the databases are mostly included in the calculation tools, but for the manufacturers, who are listing their products, some fees might occur. The data that is listed needs to be accredited and reviewed regularly.

The following provides a summary of databases within the Austrian scope:

Category	Databases
EPC Databases	ZEUS
Open-access databases related to EPB assessments	GIS
	GeoSphere Austria
	GWR
	Datasheet for historic building constructions and calculation values



Private product manufacturer databases	Baubook
	GET
	Ecobook

Table 3. Austrian databases

3.1. EPC databases

ZEUS

BRIEF DESCRIPTION:

The ZEUS energy certificate database is a centrally established database of the province of Styria for the administration of energy certificates on the basis of the Styrian Building Code, the Housing Promotion Act and other legal provisions such as the Energy Performance Certificate Submission Act. The purpose of the energy certificate database is to map the overall energy efficiency of buildings, facilitate reporting obligations under European law and to make the contents usable for statistical or energy policy objectives. The database can be used by the administration as a central instrument for recording, administration and quality assurance to increase quality and speed up administrative processes.

LINK:

<https://stmk.energieausweise.net/zeus/auth/login/?backurl=%2Fzeus%2F>

SCOPE:

EPCs (regional market)

DATA INCLUDED IN THE DATABASE:

EPCs

DATA FORMAT:

XML, CSV, XLSX

SCALE:

Regional

REGION:

Styria (same software provider as in Salzburg, Carinthia, Burgenland, Lower Austria, Tyrol)

DATA ACCESS:

No

COMMUNICATION PROTOCOLS:

HTTPS

COST:

Yes

DATA TEMPORALITY:

Publication year: 2008 (Styria)



Refresh rate: Instantaneous

DATA VOLUME:

100,000 – 1,000,000 certificates

DATA RESOLUTION:

By building, type and purpose

3.2. Open-access databases related to EPB assessments

GIS

BRIEF DESCRIPTION:

GIS Styria provides spatial data and basic data about the solar radiation and solar potential generated as a planning basis for the provincial administration and external parties

LINK:

<https://gis.stmk.gv.at/wgportal/atlasmobile/map/Planung%20-%20Kataster/Kataster>

SCOPE:

Cadastral

DATA INCLUDED IN THE DATABASE:

Geodata, cadastral

DATA FORMAT:

GIS, PDF

SCALE:

Regional

REGION:

Austria

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https

COST:

Free

DATA TEMPORALITY:

Publication year: 1993

Refresh rate: last refresh always indicated when checking the dataset

DATA VOLUME:

all cadastral data from Styria is digitalized

DATA RESOLUTION:

Properties/buildings (1x1m)

COMMENTS:

GIS provides the geodata of Styria

GEOsphere AUSTRIA

BRIEF DESCRIPTION:

Platform for meteorology and geodynamic

LINK:

<https://data.hub.geosphere.at/>
<https://dataset.api.hub.geosphere.at/app/frontend/raster/historical/inca-v1-1h-1km>

SCOPE:

Climate data

DATA INCLUDED IN THE DATABASE:

Global radiation, mean sea level pressure, relative humidity, 1-hour precipitation sum, air temperature, dew point temperature, wind speed

DATA FORMAT:

CSV/GeoJSON

SCALE:

National

REGION:

Austria

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

API

COST:

Partially (mostly available for free, payment needed for specific data)

DATA TEMPORALITY:

Publication year: n.a.
 Refresh rate: Daily

DATA VOLUME:

n.a.

DATA RESOLUTION:

Location, date

COMMENTS:

GeoSphere provides climate data for specific locations

GWR**BRIEF DESCRIPTION:**

Register of buildings and apartments

LINK:

portal not accessible for public

SCOPE:

Building and housing register

DATA INCLUDED IN THE DATABASE:

Address and building data

DATA FORMAT:

xml

SCALE:

National

REGION:

Austria

DATA ACCESS:

Closed-access

COMMUNICATION PROTOCOLS:

No information available

COST:

Free

DATA TEMPORALITY:

Publication year: ~ 2010

Refresh rate: twice a year

DATA VOLUME:

2.5 million addresses of properties – 2.9 million building addresses – 6.3 million units of use



DATA RESOLUTION:

Building

COMMENTS:

Central building and housing register, administrative register, no open access for individual data and data protection reasons.

DATASHEET FOR HISTORIC BUILDING CONSTRUCTIONS AND CALCULATION VALUES

BRIEF DESCRIPTION:

Catalogue of calculation values for old building constructions

LINK:

https://www.ea-stmk.at/wp-content/uploads/2023/09/Altbaukonstruktionen_und_Rechenwerte.pdf

SCOPE:

Old building constructions and calculation values

DATA INCLUDED IN THE DATABASE:

Material, description, age, thickness, u-value

DATA FORMAT:

PDF

SCALE:

National

REGION:

Austria

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

Non-existent

COST:

Free

DATA TEMPORALITY:

Publication year: 1994 (last refresh: 2012)

Refresh rate: non-existent

Data refers to: 1900 – 2005



DATA VOLUME:

80+

DATA RESOLUTION:

Building component

COMMENTS:

Datasheet for old guide values and calculation values

3.3. Private product manufacturer databases

BAUBOOK

BRIEF DESCRIPTION:

Baubook provides guide values for building materials as well as specific product and material data

LINK:

https://www.baubook.at/zentrale/?URL_R=https%3A%2F%2Fwww.baubook.at%2Fm%2FPHP%2FInfo.php%3FSI%3D2142738860&SW=5

SCOPE:

Catalogue of Construction Elements

DATA INCLUDED IN THE DATABASE:

Product description, technical details of the products, ecological parameters, manufacturer of the materials

DATA FORMAT:

XML

SCALE:

National

REGION:

Austria

DATA ACCESS:

Open-access (registration needed)

COMMUNICATION PROTOCOLS:

https

COST:

Free



DATA TEMPORALITY:

Publication year: 2001

Refresh rate: determined by the product owner or the manufacturer, who is entering the information, all data not older than two years is labelled as up to date

DATA VOLUME:

+3,700

DATA RESOLUTION:

Building products from different manufacturers

COMMENTS:

Baubook provides a platform for all manufactures to add their products and product-specific details, but as well provides guide values and characteristic values for materials.

GET

BRIEF DESCRIPTION:

Database for building services

LINK:

<https://www.produktdatenbank-get.at/#/>

SCOPE:

Catalogue of heating and warm water in building services

DATA INCLUDED IN THE DATABASE:

Product description, technical details of the products, ecological parameters, manufacturer of the materials

DATA FORMAT:

JSON

SCALE:

National

REGION:

Austria

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https



COST:

Free

DATA TEMPORALITY:

Publication year: 2012

Refresh rate:

DATA VOLUME:

>1.000

DATA RESOLUTION:

Products

COMMENTS:

Database for boilers, collectors, storage, biomass heating, heat pumps, solar energy and ventilation, managed by the country of Salzburg.

ECOBOOK**BRIEF DESCRIPTION:**

Reference work for building materials, windows and building services components.

LINK:<https://www.ecobook.at/>**SCOPE:**

Catalogue of Construction Elements

DATA INCLUDED IN THE DATABASE:

Product description, technical details of the products, ecological parameters, manufacturer of the materials

DATA FORMAT:

PDF/xml

SCALE:

National

REGION:

Austria + International

DATA ACCESS:

Open-access

COMMUNICATION PROTOCOLS:

https



COST:

Free

DATA TEMPORALITY:

Publication year: No information available

Refresh rate: determined by the product owner or the manufacturer, who is entering the information

DATA VOLUME:

9,000+

DATA RESOLUTION:

Products

COMMENTS:

Contains direct access to technical installations, boilers, thermal baths, photovoltaics



4. Conclusions

As a first conclusion, it is important to highlight that the process of categorizing various types of databases has revealed a significant challenge. The term "public open-access databases" is expansive, occasionally encompassing databases that also fit into the "private product manufacturer database" category. This complexity arises because, in certain countries, open-access databases may contain information about equipment or materials from private manufacturers. As a result, a distinction has been established, clarifying that the second category (open-access databases) pertains to data at the city, building or dwelling scale. Conversely, the third category (private product manufacturer databases) encompasses data at the scale of construction elements (such as facades, roofs), products or materials (such as insulation, windows, boilers, heat pumps).

Upon analysing the databases included in each country, this comprehensive assessment of open-access public and private databases relevant to EPBs assessments in Spain, the Netherlands and Austria reveals a diverse landscape of data availability and challenges. Each country has its unique characteristics and sets of databases, contributing to the broader understanding of building energy performance.

Spain's building data ecosystem is rich, with both national and regional databases. However, challenges in accessibility and integration hinder the full potential utilization of available information. The lack of comprehensive access to all data sources and the fragmented approach highlights the need for improved data transfer between tools. Addressing the issues previously mentioned will enhance data interoperability, promoting efficient building performance assessments and interventions.

The Netherlands presents a national-level approach to building data, with public and private databases providing a range of information, including cadastral data, energy performance certificates and product information. The constraints in data availability, update frequency, and access costs underscore the importance of implementing actions similar to those recommended for Spain. Standardization, API development and transparent data governance can enhance the value and usability of building data for energy performance assessments.

Austria exhibits a decentralized approach with EPC databases organized by federal states and a variety of open-access databases for cadastre, climate data and product information. The challenges lie in the lack of open access to certain databases and the need for multiple APIs to transfer EPCs to individual databases. The recommended actions include improving open access, standardizing data formats and ensuring regular accreditation and review of listed products in manufacturer databases.

In all three countries, the availability of open-access databases is crucial for streamlined EPB assessments. Standardization, API development and transparent governance emerge as common themes for overcoming challenges and improving data interoperability. These recommendations aim to unlock the true potential of building data ecosystems, fostering sustainable practices and energy-efficient interventions in the construction industry. As the project evolves, continuous adaptation of the inventory to specific tool requirements will be essential for its success, ensuring its integration and facilitating the data collection process.

Annex I: Building performance databases inventory table

This annex contains a table compiling the information regarding all the databases included in this deliverable. Attached below is a link to the inventory, available for download in Excel format:

https://descargas.five.es/archivos/iEPB/3.2_Building_performance_databases_inventory.xlsx



Annex II: Comparative Analysis of Public EPC Information in Spain

As previously mentioned in the deliverable, the management of databases related to EPCs in Spain is decentralized, falling under the jurisdiction of autonomous communities. For this reason, a comparative assessment has been conducted to evaluate the publicly available EPC information across Spain's autonomous communities and cities. Simultaneously, the number of EPCs held by each autonomous community has been catalogued, along with those available by province, where such information is accessible. The existing national legislation governing EPCs in Spain (Royal Decree 390/2021) offers minimal guidelines regarding these regional databases, mandating only that energy efficiency certificate databases facilitate the collection of energy consumption data upon registration. This loose regulation has resulted in considerable variation in data accessibility and quality across regions, as is evident from the analysis provided below.

All the aforementioned information is available in the Excel file that can be downloaded through the following link:

https://descargas.five.es/archivos/iEPB/ES_EPC_Mapping_updated.xlsx

In total, there are 17 Autonomous Communities and 2 autonomous cities in Spain. Information has been obtained for 13 of them, with the relevant information not obtained for Andalusia, Castilla-La Mancha, Ceuta, Extremadura, the Community of Madrid and Melilla.

Further examination reveals that consistent data points are limited to only a few categories across all regions, including property addresses and CO₂ and primary energy consumption labels. Additionally, many regions provide supplementary details such as building type, issuance dates and cadastral references. Asturias, Catalonia and the Basque Country exhibit particularly comprehensive data, while La Rioja, Cantabria, Galicia, the Valencian Community and Murcia lag in data coverage.

This analysis has been conducted in pursuit of greater standardization and harmonization of information available to the general public, aiming to facilitate national-level analyses without necessitating direct inquiries to governmental bodies. However, such harmonization is far from occurring, as evidenced by the significant disparity in the categories displayed by each database or the inaccessibility to these databases in certain communities.