CONCERTED ACTION
ENERGY PERFORMANCE OF BUILDINGS

Implementation of the EPBD Austria

Status in 2020

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1. Introduction

The EPBD (Directive 2010/31/EU) as amended by Directive 2018/844 has been implemented in Austria by the nine (9) provinces (Länder). It provided an opportunity for the development and harmonisation of a common calculation methodology, as well as for the application of new regulations for technical building systems. The issuance of EPCs was already a fact in several provinces even before implementing the EPBD. The EPBD implementation has resulted in further developed building regulations.

The EPC has become an important tool in April 2012 following the implementation of the EPBD, as well as signing into law the mandatory provision of the EPC (the Energy Performance Certificate Providence Act), which applies to apartment or building purchases and rentals, and its tightening through the imposition of penalties for non-compliance later that same year.

The Austrian national plan for increasing the number of residential and non-residential NZEB by 2020 was first published in 2014 and revised in 2018. The national building regulation directive (OIB Guideline 6) as regards energy efficiency is being tightened in two-year steps to achieve the requirements by 2020. The recast of OIB Guideline 6 was published in spring 2019. Furthermore, Austria has already started defining national goals for 2030 and beyond – based on the Paris climate conference agreement which entered into force in 2016.

2. Current Status of Implementation of the EPBD

In Austria, the implementation of building regulations is under the jurisdiction of the provinces. The Austrian Institute of Construction Engineering (OIB) was assigned to manage the harmonising process of the implementation of the EPBD in the provinces in 2006. The outcome is the OIB Guideline 6, whose contents are implemented in each respective province's building regulations. The recent OIB Guideline 6[1]

was published in April 2019. This directive defines the format of the EPCs and the requirements for the thermal performance of the building envelope, domestic hot water and parts of the technical heating and cooling systems, as well as the minimal consumption of renewable energy.

2.I. Energy performance requirements: NEW BUILDINGS

2.I.i. Progress and current status of new buildings (regulation overall performance)

Requirements in the OIB Guideline 6 for residential buildings differ to those for non-residential (public or commercial) buildings only in including requirements for the maximum energy demand for cooling. The remaining parameters regarding U-values, space-heating demand, the energy efficiency factor, heating and final energy demand are the same for residential and non-residential buildings.

Minimal U-values requirements of the different building elements in the new OIB Guideline 6 (2019) are mostly the same as in the former version (2015). The maximum space heating demand requirement is tightened and requirements for heating energy demand are no longer included. The implementation date of the OIB Guideline 6 (2019) in the building regulations differs in the nine Austrian provinces. Therefore, there are two different effective dates mentioned according to minimum requirements: one valid from entry into force in the Austrian Province until the end of 2020 and one valid starting from 2021 (which is more tightened).

Residential buildings

The minimum requirements for residential buildings are now either:

- a combination of space heating demand, the final energy demand and indirectly the heating energy demand;

New Buildings		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$12 \times (1 + 3.0 / \ell_c)$
	from 01.01.2021	$10 \times (1 + 3.0 / \ell_c)$ Nearly Zero Energy Buildings (NZEB)
Final Energy Demand $EEB_{RC,max}$	from entry into force	Final Energy Demand $EEB_{RB,RK,max}$

Ref: Reference space heating demand for reference climate

RC: Reference climate

RB: Residential building

l_c: Building shape factor

Table 1. Maximum requirements for the energy performance of new residential buildings by heating energy demand.

or, alternatively,

- a combination of space heating demand and final energy efficiency factor (f_{GEE}).

New Buildings		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$16 \times (1 + 3.0 / \ell_c)$
$f_{GEE,RC,max}$	from entry into force	0.80
	from 01.01.2021	0.75 Nearly Zero Energy Buildings (NZEB)

Ref: Reference space heating demand for reference climate

RC: Reference climate

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 2. Maximum requirements for the energy performance of new residential buildings by total energy efficiency factor.

Non-residential buildings

The minimum requirements for non-residential buildings are either:

- a combination of space heating demand, cooling energy demand, and final energy demand;

New Buildings		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$12 \times (1 + 3.0 / \ell_c)$
	from 01.01.2021	$10 \times (1 + 3.0 / \ell_c)$ Nearly Zero Energy Buildings (NZEB)
Space Cooling Demand $KB^*_{RC,max}$	from entry into force	1.0
Final Energy Demand $EEB_{RC,max}$	from entry into force	Final Energy Demand $EEB_{NRB,RK,max}$

Ref: Reference space heating demand for reference climate

RC: Reference climate

NRB: Non-residential building

l_c: Building shape factor

Table 3. Maximum requirements for the energy performance of new non-residential buildings by heating energy demand.

or, alternatively,

- a combination of space heating and cooling demand and final energy efficiency factor.

New Buildings		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$16 \times (1 + 3.0 / \ell_c)$
Space Cooling Demand $KB^*_{RC,max}$	from entry into force	1.0
$f_{GEE,RC,max}$	from entry into force	0.80
	from 01.01.2021	0.75 Nearly Zero Energy Buildings (NZEB)

Ref: Reference space heating demand for reference climate

RC: Reference climate

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 4. Maximum requirements for the energy performance of new non-residential buildings by total energy efficiency factor.

Furthermore, the OIB Guideline 6 (2019) sets new additional requirements concerning the use of RES in buildings and includes measures for the protection of the internal building elements (e.g., walls) against harmful condensation resulting from thermal bridges, as well as improved protection against summer overheating for both residential and non-residential buildings.

2.I.ii. Format of national transposition and implementation of existing regulations

The regulation of energy performance for existing buildings are included in the revised OIB Guideline 6, which was published in April 2019[1].

Following the requirements of OIB Guideline 6 (2019), the calculation method is based on Austrian Standards (ÖNORMs), created by the Austrian Standard institute which is represented in CEN; therefore, the standards used in the OIB Guideline 6 are in accordance with the European Committee for Standardisation.

The main indicators for the energy performance calculation of buildings (space heating demand, useful energy demand, final energy demand, primary energy demand and CO_2 emissions), maximum U-value of the building elements, geometry of the building, energy carriers, heating/cooling systems and domestic hot water systems as well as household appliances are defined in the OIB Guideline 6 or respectively in Austrian Standards (the OIB Guideline 6 refers according to user profiles for lighting, ventilation, humidification to valid Austrian Standards).

The determination of the required maximum space heating demand is based on the cost-optimal verification report[2].

The conversion factors for the energy carriers in the calculation of the primary energy demand have slightly changed to match the electricity mix of the Austrian market and are now expressed in CO_{2eq} instead of CO_2.

	Energy carrier	f_{PE} [-]	$f_{PE,n.ern.}$ [-]	$f_{PE,ern.}$ [-]	f_{CO2eq} [g/kWh]
1	Coal	1.46	1.46	0.00	375
2	Oil	1.20	1.20	0.00	310
3	Gas	1.10	1.10	0.00	247
4	Biomass	1.13	0.10	1.03	17
5	Liquid bio fuels (standalone production)	1.50	0.50	1.00	70
6	Bio gas (standalone production)	1.40	0.40	1.00	100
7	Electricity mix in Austria	1.63	1.02	0.61	227
8	District heating by renewables	1.60	0.28	1.32	59
9	District heating by fossil fuel	1.51	1.37	0.14	310
10	District heating by high-efficient CHP	0.88	0.00	0.88	75
11	Waste heat	1.00	1.00	0.00	22

Table 5. The conversion factor of energy carriers in the OIB Guideline 6, 2019.

2.I.iii. Action plan for progression to NZEB for new buildings

The first draft of the Austrian national plan on increasing the number of NZEB by 2020 was published in 2012 for residential buildings and 2014 for non-residential buildings, according to OIB[3]. A revision of the national plan took place in 2018. This document was agreed by all nine (9) federal provinces and their requirements will be implemented in the regional building regulations successively until January 2021.

The NZEB is defined as an energy-efficient building with a thermally well-insulated envelope and an efficient heating system.

The minimum requirements for the energy performance of NZEB are shown in Tables 6-7.

Compliance with the requirements of the OIB Guideline 6 can be achieved by two methods:

- Through the provision of the maximum permissible space heating demand and final energy demand of the building. In this case the focus lies on the insurance of a tight building envelope in order to reduce the space heating demand (HWB) (not considering the f_{GEE} factor).
- Through the installation of a very efficient or renewable heating system. In this case the total energy efficiency factor (f_{GEE}) has to be taken into account, which reflects the type of energy use and production. In this method, a slightly higher space heating demand of the building is acceptable.

In both cases, the maximal values for the non-renewable primary energy demand are defined.

	$HWB_{Ref,max}$ [kWh/m². year]	EEB_{max} [kWh/m².year]	$f_{GEE,max}$ [-]	PEB_{max} [kWh/m².year]
valid now	$14 \times (1 + 3.0 / \ell_c)$	using $HTEB_{Ref}$		41
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.85	
based on OIB Guideline 6:2019	$12 \times (1 + 3.0 / \ell_c)$	using $HTEB_{Ref}$		
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.80	
1.1.2021 (NZEB)	$10 \times (1 + 3.0 / \ell_c)$	using $HTEB_{Ref}$		
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.75	

Table 6. Minimum energy performance requirements for new residential NZEB.

valid now	HWBRef,max [kWh/m². year]	EEBmax [kWh/m².year]	$f_{GEE,max}$ [-]	PEB_{max} [kWh/m². year]
	$14 \times (1 + 3.0 / \ell_c)$	using $HTEB_{Ref}$		84
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.85	
based on OIB Guideline 6:2019	$12 \times (1 + 3.0 / \ell c)$	using $HTEB_{Ref}$		
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.80	
1.1.2021 (NZEB)	$10 \times (1 + 3.0 / \ell_c)$	using $HTEB_{Ref}$		
	or			
	$16 \times (1 + 3.0 / \ell_c)$		0.75	

Table 7. Minimum energy performance requirements for new non-residential NZEB.

HWB: Space (useful) heating demand	EEB: Final energy demand	f_{GEE}: Total energy efficiency factor	PEB: Primary energy demand	CO_2: CO_2 emission
HTEB: Heating system - Auxiliary energy demand for the heating system		l_c: characteristic length of the building or building shape factor (V/A) [m]		

Figures and statistics on existing NZEB

In the past 20 years, considerable efforts have been made to reduce energy consumption in the building sector. Implementing new building regulations for the energy demand of buildings and providing subsidies for energy efficiency measures in new buildings and renovations are considered the engine for implementing energy efficiency. This has contributed to the increase in the number of buildings with low energy consumption. The following are best-practice examples of built NZEB in Austria.

Anton Bruckner University, Linz

Type of building: University for music, dance and drama in Linz, Upper Austria

Space Heating Demand: 5 kWh/m² per year

14,600 m² gross floor area

Year of construction: 2015

Picture: Simon Bauer

Dragonerquartier, Wels

Type of building: Social housing in Wels, Upper Austria

Space Heating Demand: 23 kWh/m² per year

Primary Energy Demand: 115 kWh/m² per year

2,750 m² gross floor area

Year of construction: 2017

Picture: OÖ Energiesparverband

Jägermayrhof, Linz

Type of building: Training centre in Linz, Upper Austria

Space Heating Demand: 7 kWh/m² per year

2,750 m² gross floor area

Year of construction: around 1900, renovated and extended in the 1950s and 1970s. Deep renovation in 2016

Picture: OÖ Energiesparverband

2.I.iv. Requirements for building components for new buildings

The maximum U-values for building components are set by the OIB Guideline 6. They apply for new residential and non-residential buildings (Table 8).

Building elements	U-value [W/m²K]
Exterior wall/wall adjoining unheated attic	0.35
Wall adjoining frost free rooms like garage	0.60
Floor on the ground or over basement	0.40
Ceiling between building units (apartments)	1.30
Wall between neighbouring buildings	0.50
Windows and exterior glass doors in residential buildings	1.40
Windows and exterior glass doors in non-residential buildings	1.70
External doors	1.70
Ceiling/roof	0.20
Floor over garage	0.30

Table 8. A selection of U-values of the OIB Guideline 6.

Furthermore, OIB Guideline 6 requires that energy systems of buildings must consider and demonstrate the technological, ecological and economic feasibility of high-efficient systems. In this context, new apartment buildings with more than three (3) building units must have central heating systems (specific exceptions are allowed), and ventilation systems must be equipped with a heat recovery system.

2.I.v. Enforcement systems new buildings

According to Art. 15 (1) of the Austrian Federal Constitutional Law, matters relating to building law generally fall under the jurisdiction of the federal states. The local building police are administered by the municipalities in their own sphere. In most cases, new buildings are subject to approval. In this context, it seems important to note that the majority of construction activities in Austria may only be carried out by one of the persons authorised according to the regulations governing the profession. Through their training, these authorised persons (traders) are also trained in the building regulations, checked and continuously informed of any changes. This ensures that only legally compliant construction activities are carried out. All new buildings and additions and conversions, as well as structural changes and repair work, and all construction activities in general are completed by a review carried out by an independent test engineer or similar. The authorities will be informed of the outcome of this review. It should be noted that building systems fall under building regulations as well as special laws for heating and air conditioning systems, whereby the associated work may only be carried out by authorised persons (traders) as per the regulations for the exercise of the profession. This, in turn, ensures compliance with the construction regulations.

2.II. Energy performance requirements: EXISTING BUILDINGS

2.II.i. Progress and current status of existing buildings (regulation overall performance)

The OIB Guideline 6 includes requirements for heating, cooling and final energy demand for existing buildings undergoing major renovations.

Residential buildings

Tables 9 and 10 show the minimum requirements for the energy efficiency of residential buildings, either as a combination of the requirements of space heating demand, heating energy demand and final energy demand (Table 9), or, alternatively, as a combination of space heating demand and final energy efficiency factor (Table 10).

Major renovation		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$19 \times (1 + 2.7 / \ell_c)$
	from 01.01.2021	$17 \times (1 + 2.9 / \ell_c)$
Final Energy Demand $EEB_{RC,max}$	from entry into force	Final Energy Demand $EEB_{RB,RK,max}$

Ref: Reference space heating demand for reference climate

RC: Reference climate

RB: Residential building

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 9. Maximum value requirements for the energy performance of major renovations of existing residential buildings by heating energy demand.

Major renovation		[kWh/m².year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$25 \times (1 + 2.5 / \ell_c)$
$f_{GEE,RC,max}$	from entry into force	1.00
	from 01.01.2021	0.95

Ref: Reference space heating demand for reference climate

RC: Reference climate

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 10. Maximum value requirements for the energy performance of major renovations of existing residential buildings by total energy efficiency factor.

Non-residential buildings

Respectively, Tables 11 and 12 show the minimum requirements for the energy efficiency of non-residential buildings in the case of major renovations, either as the combination of space heating demand, heating and cooling energy demand and final energy demand (Table 11), or, as the combination of space heating and cooling demand and final energy efficiency factor (Table 12):

Major renovation		[kWh/m^2.year]
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$19 \times (1 + 2.7 / \ell_c)$
	from 01.01.2021	$17 \times (1 + 2.9 / \ell_c)$
Space Cooling Demand $KB^*_{RC,max}$	from entry into force	2.0
Final Energy Demand $EEB_{RC,max}$	from entry into force	Final Energy Demand $EEB_{NRB,RC,max}$

Ref: Reference space heating demand for reference climate

RC: Reference climate

NRB: Non-residential building

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 11. Maximum value requirements for the energy performance of major renovations of existing non-residential buildings by heating energy demand.

New Buildings		**[kWh/m^2.year]**
Space Heating Demand $HWB_{Ref,RC,max}$	from entry into force	$25 \times (1 + 2.5 / \ell_c)$
Space Cooling Demand $KB^*_{RC,max}$	from entry into force	2.0
$f_{GEE,RC,max}$	from entry into force	1.00
	from 01.01.2021	0.95

Ref: Reference space heating demand for reference climate

RC: Reference climate

f_{GEE}: Total energy efficiency factor

l_c: Building shape factor

Table 12. Maximum value requirements for the energy performance of major renovations of existing non-residential buildings by total energy efficiency factor.

The national plan (February 2018) also defines minimum requirements for residential and non-residential buildings undergoing major renovations valid from 1 January 2021. Deviations to these requirements may be undertaken if necessary measures are not feasible[4].

2.II.ii. Regulation on individual parts, distinct from whole building performance

When renovating (with the exception of major renovations) a building or part of a building in building categories 1 to 12[5] by means of individual measures, as well as when replacing a component - regardless of its share in the building envelope - maximum heat transfer coefficients (U-values) may be used in conditioned rooms which are determined by one of the two following methods:

a) Before the renewal of a component or before the major renovation of a building or part of a building, a renovation plan must be drawn up, the aim of which is to achieve the requirements for the major renovation of residential or non-residential buildings. Renewed or thermally improved individual components or steps in a major renovation must not contradict such a renovation concept.
b) Such a renovation plan can be omitted if the maximum heat transfer coefficient for components of the (thermal) building envelope has fallen short of the maximum heat treat transfer coefficient for the building by at least 18% (from 1 January 2021 this becomes at least 24%).

2.II.iii. Initiatives/plans to improve the existing building stock

The first Austrian National Energy Efficiency Action Plan (NEEAP), developed by the Federal Ministry of Science, Research and Economy together with the Austrian provinces, was first published in April 2014 according to Article 4 of Directive 2012/27/EU (Energy Efficiency Directive - EED), and updated in 2018. This plan describes the way towards increasing energy efficiency and standardising the energy efficiency regulations in Austria until 2020, and envisages the increase in demand for energy-efficient services, reduction of energy consumption and simultaneously fighting energy poverty while avoiding nuclear energy. Additionally, the government shall set a good example by speeding up the implementation of energy efficiency in public buildings.

The measures for the building sector focus on the following categories:

- subsidies for residential buildings (e.g., a renovation subsidy like the "*Sanierungsscheck"*[6]);
- subsidies for district heating (e.g., for the installation of a heat transfer station);
- operational and environmental subsidy schemes for companies in Austria (e.g., subsidies for PV installations);
- energy efficiency measures in building regulations (e.g., further development of the OIB Guideline 6).

2.II.iv. Long Term Renovation Strategies, status

The Austrian LTRS document builds on a complete set of data reflecting the actual developments of the last 3 decades for the following parameters:

- Population Development
- Building stock
- Final energy consumption of the buildings
- Resulting GHG emissions

It contains developed scenarios that attempt to determine final energy consumption and GHG emissions against the background of demographic development for the next 3 decades.

Pure trend calculations and expert-based predictions were used to derive a forecast for the years 2030, 2040 and 2050. Extensive preparation was carried out by a working group of the OIB (composed of the Expert Advisory Board for Building Guidelines - sub-group Energy Saving and Heat Protection (SVBRL 6) and the coordination group for the implementation of the EPBD) as well as a stakeholder process. The most important results of this investigation are:

- On the basis of the expected final energy consumption and energy carrier mix, it is possible to achieve savings up to 80% by 2050, as required in the EPBD.
- With the greatest efforts and in the best-case scenario (in particular the existence of an energy supply of approx. 2.5 TWh of green gas), GHG savings of 3 million tons can be achieved in 2030.

2.II.v. Financial instruments and incentives for existing buildings

In Austria, a large number of renovations, especially in the residential sector, are financially supported by subsidy programmes[6] provided by the Austrian provinces. The conditions under which these subsidies are granted focus on the improvement of building quality in terms of higher comfort and better energy performance (i.e., buildings with lower space heating demand and lower greenhouse gas emissions). Most subsidies are distributed in the form of non-refundable payments (one-time non-repayable investment expense).

Federal subsidies[7] (national schemes) on building renovations have been provided since 2009 for privately owned single-family households. The renovation campaign of 2016 *("Sanierungscheck"* 2016[8]) grants financial support for the thermal insulation of roofs, external walls, floors, replacement of windows and exterior doors and for changing the heating system into a renewable heating system. The available grant of federal subsidies lies between 3,000 and 5,000 € depending on the level of renovation (either according to OIB Guideline 6 or with higher quality according to *klima**aktiv***[9] criteria).

There is also a list of on-going individual initiatives in the Austrian provinces. Salzburg, for example, provides a cost-free online energy accounting system for building owners and managers. This programme encourages stakeholders to enter the real energy consumption of their building into the database and to obtain an annual or monthly overview of their energy consumption. By this initiative, the energy consumption of buildings can be monitored both by the owner and by the province[10]. The aim of this initiative is to raise the awareness of the consumers and thus to increase renovation activities.

Austria also managed to effectively mobilise investment through numerous projects of the European Investment Bank (EIB) in the building and energy sectors, which are aimed at reducing GHG emissions by funding increased renovation activity as well as the exploitation of renewable energy sources. This includes the European Local Energy Assistance (ELENA) scheme, where up to 90% of the project development costs are funded by the EIB.

Austria also actively participates in the De-Risking Energy Efficiency Platform (DEEP), which the European Commission has established together with the Energy Efficiency Financial Institutions Group (EEFIG), in order to change the risk assessment approach for investments in energy efficiency measures by potential investors.

2.II.vi. Information campaigns / complementary policies

Since the introduction of the EPBD, comprehensive efforts (annual energy and building exhibitions[11], congresses[12], international conferences and competitions[13]) have been undertaken in Austria to provide information to the public and to professionals. The Austrian regions and their regional energy agencies develop and implement training programmes for different target groups in the building sector and offer comprehensive information campaigns, competitions and energy advice services for building owners and users. For example, the "*Energy Academy*" in Upper Austria offers more than 30 courses every year on building-related technologies and services. In the context of the "*Arge Eba*", the nine (9) Austrian regions offer standardised training for energy advisers[14]. A detailed list and description of all consultancy programmes and information campaigns of the Austrian regions can be found in the Long Term Renovation Strategy (LTRS) from March 2020.

The "*klima**aktiv***" initiative of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management and especially its "*Building and renovation*" programme (launched in 2008) is a main promoter of energy efficiency in buildings in Austria. Since 2012, the yearly granted state prize for architecture and sustainability[15] is awarded to outstanding achievements in energy-efficient buildings.

2.III. Energy performance certificate requirements

The format and content of an EPC is defined by the OIB Guideline 6. This directive recommends the use of four (4) indicators (space heating demand, primary energy demand, CO_2 emissions and a final energy efficiency factor) on the cover page of the EPC.

2.III.i. Progress and current status on EPCs at sale or rental of buildings

In some Austrian provinces, EPCs have been issued for buildings (as a basis for granting subsidies) for many years. In Austria, issuing an EPC became mandatory in 2012 through the federal law "*Energieausweis-Vorlage-Gesetz*"[16] at the point of sale or rent of a building or building unit following the implementation of the EPBD (Directive 2010/31/EU). An EPC has to be provided for both residential and non-residential buildings (commercial and public) and is valid for ten (10) years.

In December 2012, the Federal Law Gazette I No. 137/2006 and its recast No. 27/2012 (EAVG) was tightened by implementing a penalty (up to 1,450 €) if an EPC is not provided by the owner in the case of selling or renting a property.

2.III.ii. Quality Assurance of EPCs

The Austrian provinces regularly conduct random automated EPC controls. EPCs issued for receiving subsidies or for building permits are checked by the authorities in detail as part of the subsidy approval process. If major errors are identified, the EPC is sent back for corrections.

2.III.iii. Progress and current status of EPCs on public and large buildings visited by the public

Displaying the front page (including the labelling) of EPCs in buildings frequently visited by the public is mandatory in all federal provinces. EPCs are displayed in all public buildings owned by public authorities and visited by the public (including the buildings managed by the Federal Real Estate Company (BIG).

The format and content of the EPC for public buildings is also defined in the OIB Guideline 6 and follows the same methodology as the EPC for non-residential buildings.

2.III.iv. Implementation of mandatory advertising requirement – status

Since 2012, if a building or building unit is advertised (either in print or online) for sale or rent, the space heating demand and the total energy efficiency factor (fGEE) must be included in the advertisement.

2.IV. Smart buildings and building systems

2.IV.i. Status and plans on smart buildings

There is a broad range of initiatives for smart cities and smart urban regions funded by the Smart Cities Initiative of Austria's Climate and Energy Fund[17]:

2. IV.ii. Regulation of system performance

In addition to the aforementioned requirements, the OIB Guideline 6 also includes specific mandatory requirements for individual elements used in connection with the renovation of existing buildings, such as minimum requirements for the insulation of the heat distribution system.

Furthermore, Directive 2009/125/EG (the Ecodesign Directive) includes specific requirements for HVAC systems to guarantee the implementation of energy-efficient technologies. This directive enables the European Commission to set mandatory minimum requirements for individual product groups. In Austria, the implementation of Directive 2009/125/EG was provided by the update of the national Ecodesign decree ("*Ökodesign-Verordnung*" 2007). The following relevant mandatory requirements for HVAC systems came into force by decree between 2015 and 2016:

- The decree for space heaters and combination heaters came into force on 26 September 2015, including specific requirements for seasonal space heating energy efficiency, sound power level, emissions of nitrogen oxides and product information (Regulation 107/2009).
- The decree for water heaters and hot water storage tanks came into force on 26 September 2015, including specific requirements for water heating energy efficiency, sound power level, emissions of nitrogen oxides and product information. Furthermore, the decree includes requirements for water pipe stand losses and product information for hot water storage tanks (Regulation 814/2013).
- The decree for ventilation units came into force on 1 January 2016, including specific requirements for energy efficiency, sound power level and product information (Regulation 1253/2014).

.IV.iii. Building Automation and Controls (BACs)

Building Automation and Controls (BACs) in Austria are regulated in Chapter 8.1 of the OIB Guideline 6 as published in March 2019, where detailed specifications for centralised heat emission and heat distribution systems have been provided.

Within the voluntary klimaaktiv[18] certification scheme there are in addition specific requirements, e.g., for heating systems.

There are also some requirements when applying for comprehensive renovation subsidies like "Mustersanierung" – one has to guarantee a comprehensive monitoring to prove highest system performance after renovation: see the "Leitfaden Mustersanierung"[19].

2.IV.iv. Status and encouragement of intelligent metering

In Austria, metering is one of the regulated activities of the electricity distribution system operators (DSOs) (§ 45 Z 10 ElWOG "*Elektrizitätswirtschafts- und –organisationsgesetz*: *Electricity Industry and Organisation Act*" 2010) . There is a similar decree regulating gas distribution system operators (§ 60 GWG 2011) and a law concerning the metering of heat and hot water consumption (§6 HeizKG "*Heizkostenabrechnungsgesetz*").

The majority of the 6.1 million electrical metering points are still equipped with conventional electromechanical meters. Since the full liberalisation of the electricity market in 2001, about 30,000 customers with an annual consumption of more than 100,000 kWh and a power rating of more than 50 kW have been equipped with intelligent meters.

In an amendment to the Austrian Electricity Act (ElWOG) in 2011, the Minister for Economy was authorised to determine a mandatory rollout plan for intelligent electricity meters. In 2012, the Minister of Economy enacted a decree which obliges the DSOs to install intelligent meters. This decree was amended in 2014 and in 2017. It determines the following programme for the rollout:

- By the end of 2015, all network operators had to submit a rollout plan.
- Eighty per cent (80%) of all customers have to be equipped with intelligent meters by the end of 2020.
- Ninety-five per cent (95%) of all customers have to be equipped with intelligent meters by the end of 2022 within the scope of technical feasibility.

By the end of 2018, the majority of the Austrian DSOs were in the rollout phase. A self–assessment by the DSOs showed that, in December 2018, five (5) DSOs had already completed the rollout, 33 DSOs were in the rollout-phase, 56 DSOs had complemented the tenders and about 20 DSOs were still in earlier stages, e.g., first-try, pilot projects or planning.

About 950,000 customers (15.4% of all customers) were already equipped with intelligent meters. The network operators had another 357,000 intelligent meters already in stock or ordered to be installed in 2019.

According to recent plans, 40 network operators are on track to reach the target of 80% in 2020. Due to delays in the rollout of other network operators, it is expected that the intended overall implementation rate for 2020 will not be achieved. Estimations of the Energy Regulatory Authority assume that, by the end of 2019, about 20% of the customers were equipped with smart meters.

There are no comparable obligations for installing intelligent meters for gas in Austria for the time being.

Articles 14 and 15 of the EPBD (Directive 2010/31/EU) have been implemented according to an agreement[20] between Austrian provinces regarding regular on-site inspections and monitoring of the emissions of HVAC systems.

2.IV.v. Progress and current status on heating systems (Inspection / Equivalence)

Corresponding inspection reports or protocols are collected by the provinces and are made available for inspectors of the provinces (e.g., chimney sweeps which are traditionally responsible for the inspection of boilers). The Austrian provinces have a long tradition of inspections of heating systems regarding emissions and the performance of boilers. The periods of inspections vary based on the kind of energy used, from one

(1) inspection per year (e.g., for biomass boilers) up to four (4) inspections per year (e.g., for gas-fired boilers). Regular inspections fulfilling the specifications of the EPBD were introduced after 2012 by different regulations in the Austrian provinces (the legislative regulations are continually being adapted).

The qualification of inspectors is set in the Austrian trade regulation act ("*Gewerbeordnung*") on a national level.

2.IV.vi. Progress and current status on AC systems (Inspection / Equivalence)

Up until the late 1990s, AC systems were rarely used in Austria except in new non-residential buildings. As a result of the EPBD, performance-related requirements were implemented for new and existing systems.

Vienna started implementing some articles on AC systems in a law concerning the performance and inspection of heating systems (> 20 kW), including dimensioning of boilers and cooling systems (> 12 kW). The other Austrian provinces followed by implementing inspections through different regulations, either by modifying existing clean air acts or laws for heating systems (Burgenland, Tyrol, Vienna) or building codes (Carinthia, Lower Austria, Salzburg, Styria, Vorarlberg), or by ratifying a new act (Upper Austria).

Inspection intervals range from one (1) to three (3) years for a simplified procedure (visual inspection) and from five (5) to 12 years for an additional comprehensive inspection (including a complex performance check (Upper Austria, Styria and Vienna). Lower Austria, Salzburg and Tyrol provide one (1) inspection every five (5) years.

2.IV.vii. Enforcement and impact assessment of inspections

Enforcement and penalties

For the enforcement of inspection laws, penalties are imposed under the relevant laws of some of the Austrian provinces[21], but there are no statistical data indicating frequency and level of penalties, which have yet to be imposed.

Quality control of inspection reports

The Austrian provinces conduct quality controls of inspections reports regularly. Some of the Austrian provinces had combined the first full inspections of heating systems with an information and training for inspectors[22], thus controlling the quality of inspections (mentioned above) and of the inspectors as well. These actions had been supervised by the administrations of the provinces. Results show that many installations had hydraulic problems or had inefficient pumps and/or oversized boilers.

Further information campaigns are based on the results of these actions. The process of quality control is still under development in Austria.

Impact assessment

There are no statistical data about the impact of the regular inspections of heating systems corresponding to the requirements of Article 14, but it can be asserted that the effect of the additional requirements is overestimated, and not as important as the savings potential which could already be earned by the emission limits and minimum performance requirements. Furthermore, Directive 2009/125/EG includes specific requirements for heating systems to guarantee the implementation of energy-efficient technologies.

3. A success story in EPBD implementation

The EPBD (Directive 2010/31/EU) and its amendment 2018/844 stipulates that buildings have to be built and used more energy efficiently. The national implementation of the EPBD is mainly realised by the OIB Guideline 6. The OIB Guideline 6 is successively applied through the regional building regulations and directives. It sets the framework for the buildings' energy performance and defines NZEB 2020. The NZEB standard sets requirements for the efficiency of both new buildings and major renovations as regards the building envelope, heating and cooling systems, and energy supply.

The OIB Guideline 6 was revised in 2019 and the requirements for the energy efficiency of buildings were tightened. The current directive defines not only the lowered maximum space heating demand for new buildings but also the minimum share of the renewable energy carriers in new buildings.

Furthermore, the EPC calculation tools are being optimised by more precise methods in order to meet the new requirements for energy efficiency.

The implementation of Article 12 of Directive 2010/31/EU regarding the provision of EPCs is set by the federal law ("*Energieausweis-Vorlage-Gesetz*"). The energy performance of the buildings through their EPCs contributes to raising awareness in the real estate market and makes the expected energy costs more transparent. Therefore, energy efficiency and building quality become more relevant for consumers.

Raising awareness is also achieved through promotion activities, information campaigns and awarding best-practice examples. Thanks to these activities, the heating demand of buildings, especially residential, has been continuously decreasing (Figure 1).

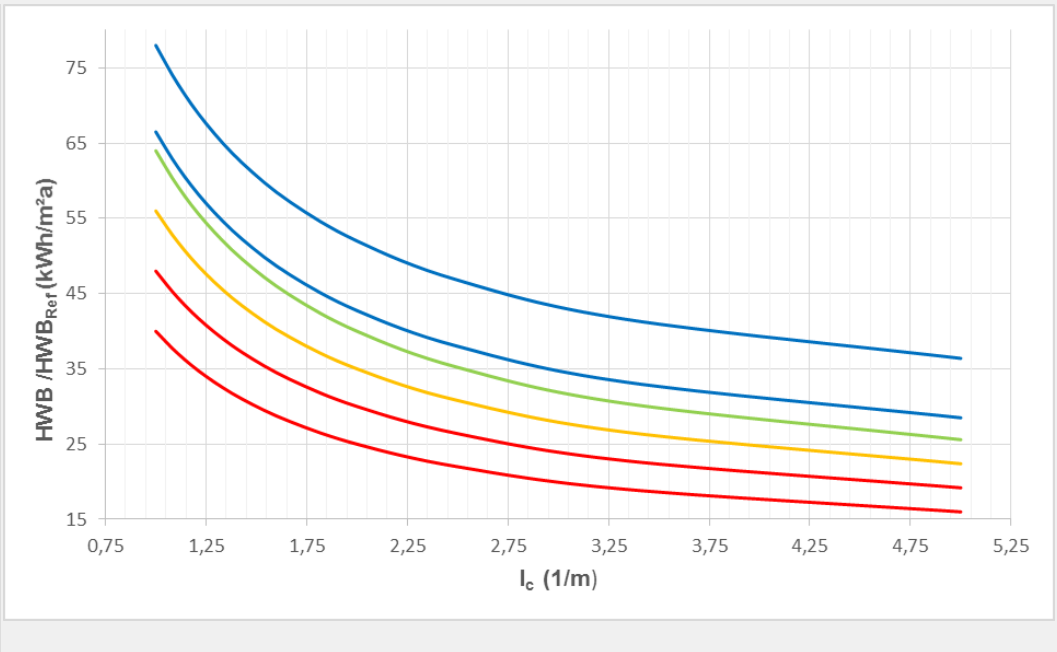

Figure 1. Development of space heating demand requirements for new domestic buildings in the Austrian provinces. Sources: OIB Guideline 6*:2007 (blue lines),* OIB Guideline 6*:2011 (green lines), OIB-GL6:2015 (yellow lines) and* OIB Guideline 6*:2019 (red lines).*

The stronger energy efficiency requirements for buildings according to the EPBD (targets for 2020) have driven the building sector towards decarbonisation. In this context, the implementation of complementary tools and control systems (such as the EPC, its implementation, and the carrying out of inspections) are the foundation for harmonising building regulations across federal provinces.

4. Conclusions, future plans

Austria has taken many steps to fulfil the requirements set out by the EPBD. The national implementation of the EPBD and attaining the Austrian energy efficiency and climate protection goals determine important efficiency criteria for buildings, either newly built or renovated.

The relevant articles of Directive 2010/31/EU as amended by Directive 2018/844 have been implemented in the building regulations in all Austrian provinces. The definition of NZEB for 2020 for residential and non-residential buildings has been defined in a national plan[3] which contains the minimum requirements for new buildings and major renovations. A further recast of the OIB Guideline 6 (2023) is presently under preparation.

The Austrian regions and their regional energy agencies offer comprehensive information campaigns, competitions and energy advice services for building owners and users as well as international conferences. They develop and implement training programmes for different target groups in the building sector.

Also, the Austrian klima**aktiv**[24] initiative, which is the Austrian climate protection programme, promotes voluntary quality standards for buildings (for new constructions and renovations as well as infrastructure, ecological building construction materials and indoor air quality). Furthermore, the Austrian klima**aktiv** initiative provides training for professionals and disseminates information to homeowners and companies. Since 2004, the initiative is one of the most influential systems for implementing energy efficiency. Every year, projects are awarded equally for their architectural value as well as their quality with respect to ecology, energy use, and social and economic sustainability in this programme. The klima**aktiv** platform will continue setting best practice examples for the promotion of sustainability in buildings.

At present, the Austrian government is working on the goals for 2030 and beyond (2050). Different scenarios for this period show a high range of potentials for the reduction of GHG emissions in the building sector. These potentials focus mainly on energy-efficient renovations and energy-efficient household appliances. The reduction of energy (mainly space heating demand) for the residential and non-residential sector is still the main factor for reaching the goals of 2030 and beyond.

In order to achieve the ambitious climate goals, increasing the rate of renovations as well as achieving a high energy performance in the construction and renovation of buildings is necessary. The renovation necessity increases due to building age and constant associated repair and maintenance measures. Therefore, it is necessary to implement ambitious renovation standards at the earliest possible stage. In addition to the reduction of space heating demand, increasing the use of energy-efficient heating systems and RES are very important measures to reduce GHG emissions in the building sector. By all accounts, the increased launching of subsidies for environmentally friendly buildings supports the achievement of these goals.

Implementing the ambitious goals of the Paris Agreement (COP21) is being achieved in many ways in Austria. These are summarised in the National Energy and Climate Plan (NECP) for Austria for the period 2021-2030 (submitted in December 2019) and the Long Term Renovation Strategy (LTRS) (submitted in March 2020).

Endnotes

1. OIB Guideline 6*: Energy saving and heat retention of both residential and non-residential buildings*, March 2019.
2. "*OIB-Dokument zum Nachweis der Kostenoptimalität der Anforderungen der OIB-RL6 bzw. des Nationalen Plans gemäß Artikel 4 (2) zu 2010/31/EU)*", February 2018.
3. oib.or.at/sites/default/files/nationaler_plan.pdf, February 2018.
4. Because of construction reasons or building law.
5. https://nachhaltigwirtschaften.at/resources/sdz_pdf/innovative-gebaeude-in-oesterreich-technical-guide-2017.pdf
6. https://www.umweltfoerderung.at/privatpersonen/sanierungsscheck-fuer-private-2020-efh.html
7. '*Wohnbauförderung*': residential building subsidy.
8. National *Sanierungscheck* 2016: renovation cheque.
9. *klima**aktiv*** is the Austrian climate protection initiative and part of the Austrian climate strategy and is on voluntary basis.
10. Right now, over 1,500 buildings are participating in this programme.
11. g., *Bauen & Energie Messe*, www.bauen-energie.at/; www.energiesparmesse.at
12. g., BauZ!, www.bauz.at; www.wsed.at
13. g., Climate Protection Prize, www.klimaschutzpreis.at; www.energiestar.at
14. g., www.energyacademy.at
15. klimaaktiv.at/bauen-sanieren/staatspreis.html.
16. EAVG: Federal Law Gazette I No. 137/2006 and its recast No. 27/2012.
17. https://smartcities.at/city-projects/austrias-smart-cities-and-smart-urban-regions/
18. https://www.klimaaktiv.at/erneuerbare/erneuerbarewaerme/Heizungssysteme.html
19. https://mustersanierung.at/foerderungen/mustersanierung-2019/ (only in German)
20. Agreement Art. 15a B, -VG for small combustion plants, combustion plants and CHP plant.
21. g., in Carinthia, up to 4,000 € or Styria, up to 20,000 €.
22. Like Carinthia: 2,500 inspections; Styria: 1,000 inspections.
23. https://nachhaltigwirtschaften.at/resources/sdz_pdf/innovative-gebaeude-in-oesterreich-technical-guide-2017.pdf
24. klimaaktiv.at

Annexes - Key Indicators & Decisions

Key Indicators & Decisions – General Background

no	Key Indicators & Decisions – General Background	Description / value / response	Comments
01.01	Definition of public buildings (according to article 9 b)	The requirement of article 9 b contains an implicit definition	Article 9 b was implemented in clause 4.2 of OIB Guideline 6, edition April 2019
01.02	Definition of public buildings used by the public (according to article 13)	The requirement of article 13 contains an implicit definition	-
01.03	Number of residential buildings	2011: 1,978,794 (2,191,280 – 212,486) residential buildings (1) 2011: 427,098,474 m² (1,978,794 x 99.0 m²) (2)	1) Statistical yearbook 2017, Chapter12 “Wohnen Tabelle 12.04”, Statistics Austria (2) Overview of the results – “Wohnungsgröße, MZ, 19.3.2015”, Statistics Austria
01.04	Number of non-residential buildings	2011: 312,064 non-residential buildings (including “other buildings”)	(1) Statistical yearbook 2017, Chapter12 “Wohnen, Tabelle” 12.04”, Statistics Austria (2) Statistical yearbook 2017, Chapter12 “Wohnen, Tabelle 12.05”, Statistics Austria
01.05	If possible, share of public buildings included in the number given in 01.04	no data available	-
01.06	If possible, share of commercial buildings included in the number given in 01.04	2011: 36,334	Statistical yearbook 2017, Chapter12 “Wohnen, Tabelle 12.05”, Statistics Austria
01.07	Number of buildings constructed per year (estimate)	2011: 2,290,858 (1) 2001: 2,046,712 (2) 2001-2011: ≈24,415 per year	(1) Statistical yearbook 2017, Chapter12 “Wohnen Tabelle 12.04”, Statistics Austria (2) Statistical yearbook 2011, Chapter12 “Wohnen, Tabelle 12.04”, Statistics Austria
01.08	If possible, share of residential buildings constructed per year (estimate, included in the number given in 01.07)	2011: 1,978,794 (1) 2001: 1,764,455 (2) 2001-2011: ≈21,434 per year	(1) Statistical yearbook 2017, Chapter12 “Wohnen Tabelle 12.04”, Statistics Austria (2) Statistical yearbook 2011, Chapter12 “Wohnen, Tabelle 12.04”, Statistics Austria
01.09	If possible, share of non-residential buildings constructed per year	2011: 312,064 (1) 2001: 282,257 (2)	(1) Statistical yearbook 2017, Chapter12 “Wohnen Tabelle 12.04”, Statistics Austria

no	Key Indicators & Decisions – General Background	Description / value / response	Comments
	(estimate, included in the number given in 01.07)	2001-2011: ≈2,981 per year	(2) Statistical yearbook 2011, Chapter12 “Wohnen, Tabelle 12.04”, Statistics Austria
01.10	Useful floor area of buildings constructed per year in million square meters (estimate)	2011: 6,751,443 m² residential (1)(2)(3) 2011: 1,623,084 m² non-residential (1)(2)(3)	(1) Statistical yearbook 2017, Chapter12 “Wohnen Tabelle 12.04”, Statistics Austria (2) Statistical yearbook 2011, Chapter12 “Wohnen, Tabelle 12.04”, Statistics Austria (3) Overview of the results – “Wohnungsgröße, MZ, 19.3.2015”, Statistics Austria

Key Indicators & Decisions – New Buildings

no	Key Indicators & Decisions – New Buildings	Description / value / response	Comments
02.01	Are building codes set as overall value, primary energy, environment (CO_2), reference building or other		
02.02	Requirements for energy performance of residential buildings in current building code	$f_{GEE} \leq 0.80$	See OIB Guideline 6, edition April 2019, clause 3.1 f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building
02.03	Requirements for energy performance of non-residential commercial buildings in current building code	$f_{GEE} \leq 0.80$	See OIB Guideline 6, edition April 2019 clause 3.2. f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building
02.04	Requirements for energy performance of non-residential public buildings in current building code	$f_{GEE} \leq 0.80$	See OIB Guideline 6, edition April 2019, clause 3.2. fGEE = relation between final energy demand of the building and final energy demand of the corresponding reference building
02.05	Is the performance level of nearly zero energy (NZEB) for new buildings defined in national legislation?	Yes	See OIB Guideline 6, edition April 2019, clause 4.2. OIB-Document on definition of the nearly zero energy building in the “National plan” dated 28 March 2014, which was amended in February 2018.
02.06	Nearly zero energy (NZEB) level for residential buildings (level for building code)	$f_{GEE} \leq 0.75$	See “National plan” dated February 2018 f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building
02.07	Year / date for nearly zero energy (NZEB) as level for residential buildings (as indicated in 02.04)	01.01.2021	See OIB Guideline 66, edition April 2019, clause 4.2
02.08	Nearly zero energy (NZEB) level for all non-residential buildings (level for building code)	$f_{GEE} \leq 0.75$	f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building See “National plan” dated February 2018

no	Key Indicators & Decisions – New Buildings	Description / value / response	Comments
02.09	Year / date for nearly zero energy (NZEB) as level for non-residential buildings (as indicated in 02.06)	01.01.2021	See OIB Guideline 6, edition April 2019, clause 4.2
02.10	Are nearly zero energy buildings (NZEB) defined using a carbon or environment indicator?	Yes	See “National plan” dated February 2018, maximum value
02.11	Is renewable energy a part of the overall or an additional requirement?	Both	See OIB Guideline 6, edition April 2019, clause 5.1.3 and 5.2.3
02.12	If renewable energy is an additional requirement to NZEB, please indicate level	Various	See OIB Guideline 6, edition April 2019, clause 5.1.3 and 5.2.3
02.13	Specific comfort criteria for new buildings, provide specific parameters for instance for airtightness, minimum ventilation rates	Yes	$n_{50} \leq 1.5$ for mechanical ventilated buildings $n_{50} \leq 3.0$ for non-mechanical ventilated buildings $v_{Ventilation}$ = 36 m³/h.cap (Corresponding to RAL2 in EN 13779:2005) $q_{i,heat}$ = 22°C (Corresponding to Cat.I in EN 16798:2019) $q_{i,max}$ = 1/3* $q_{NAT,13}$+21,8 °C (Corresponding to Cat.II in EN 16798:2019) see Austrian Standard ÖNORM B 8110-5

Key Indicators & Decisions – Existing Buildings

no	Key Indicators & Decisions – Existing Buildings	Description / value / response	Comment
03.01	Is the level of nearly zero energy (NZEB) for existing buildings set in national legislation?	No	NZEB for Existing Buildings not required by Article 9 of 2010/31/EU
03.02	Is the level of nearly zero energy (NZEB) for existing buildings similar to the level for new buildings?	No	NZEB for Existing Buildings not required by Article 9 of 2010/31/EU
03.03	Definition of nearly zero energy (NZEB) for existing residential buildings (if different from new buildings)	N/A	NZEB for Existing Buildings not required by Article 9 of 2010/31/EU
03.04	Definition of nearly zero energy (NZEB) for existing non-residential buildings (if different from new buildings)	N/A	NZEB for Existing Buildings not required by Article 9 of 2010/31/EU
03.05	Overall minimum requirements in case of major-renovation	$f_{GEE} \leq 1.00$	See “National plan” dated February2018 f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building
03.06	Minimum requirements for individual building parts in case of renovation	The renovation of individual parts has to follow a retrofit concept that has to be fixed in advance. The minimum requirement to be reached by the fully renovated building is $f_{GEE} \leq 0.95$	See OIB Guideline 6:2019, clause 4.3.2 f_{GEE} = relation between final energy demand of the building and final energy demand of the corresponding reference building
03.07	National targets for renovation in connection to Long Term Renovation Strategy (number or percentage of buildings)	N/A	
03.08	National targets for renovation in connection to Long Term Renovation Strategy (expected reductions and relevant years)	N/A	

Key Indicators & Decisions – Energy Performance Certificates

no	Key Indicators & Decisions – Energy Performance Certificates	Description / value / response	Comment
04.01	Number of energy performance certificates per year (for instance average or values for of 3-5 years)	-	Due to the Austrian federal structure with 9 “Länder” and approximately 2,100 municipalities with a variety of responsible authorities and because of the fact that there is no obligation for a national energy certificate and inspection database, there is no data available.
04.02	Number of EPCs since start of scheme	-	Due to the Austrian federal structure with 9 “Länder” and approximately 2100 municipalities with a variety of responsible authorities and because of the fact that there is no obligation for a national energy certificate and inspection database, there is no data available.
04.03	Number of EPCs for different building types		
04.04	Number of assessors	-	In Austria approximately 40,000 persons are authorised to issue energy certificates, albeit it is not nationally registered how many of them actually issue energy certificates.
04.05	Basic education requirements for assessors	Tradesman, civil engineers	According to decree *BMWFJ-30.599/0087-I/7/2009 and* *BMWA-91.510/0032-1/3/2007*
04.06	Additional training demands for assessors	Continuing education process	Requested by regulation of the federal government for self employed e.g. BGBl 156/1996 §14(8)
04.07	Quality assurance system	Regulated in the framework of the rules for professional conduct	
04.08	National database for EPCs	No	According to EPBD not compulsory
04.09	Link to national information on EPCs / Database		

Key Indicators & Decisions – Smart Buildings and Building Systems

no	Key Indicators & Decisions – Smart Buildings and Building Systems	Description / value / response	Comment
05.01	Is there a national definition of smart buildings?	No, but information is provided by publications like the brochure "Innovative buildings in Austria - Technical Guide"[23] in the frame of the Austrian "Building of Tomorrow" and "City of Tomorrow" programmes (Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology).	
05.02	Are there current support systems for smart buildings?	A strong support scheme is set up for BIM within building projects by building SMART Austria, the national initiative for Open BIM (Building Information Modelling). The programme “City of Tomorrow” also provides support but is not exclusively focused on “smart” buildings.	
05.03	Are there currently specific requirements for technical building systems (for instance in building codes)?	Requirements are defined in the OIB Guidelines and are part of the EPCs. Some Austrian regions formulate some additional technical requirements for their regional housing subsidy schemes.	
05.04	Are there current requirements for automatics (for instance in building codes)?	The EPBD requirements are followed.	
05.05	Chosen option A or B for heating systems (inspection or other measures)	Option A	
05.06	Number of heating inspections; reports per year (if option A)	-	Due to the Austrian federal structure with 9 “Länder” and approximately 2100 municipalities with a variety of responsible authorities and because of the fact that there is no obligation for a national energy certificate and inspection database, there is no data available.
05.07	Chosen option A or B for cooling systems	Option A	

no	Key Indicators & Decisions – Smart Buildings and Building Systems	Description / value / response	Comment
	(inspection or other measures)		
05.08	Number of air-conditioning / cooling system inspections; reports per year (if option A)	-	Due to the Austrian federal structure with 9 “Länder” and approximately 2100 municipalities with a variety of responsible authorities and because of the fact that there is no obligation for a national energy certificate and inspection database, there is no data available.
05.09	Is there a national database for heating inspections?	No	
05.10	Is there a national database for cooling / air-conditioning inspections?	No	
05.11	Are inspection databases combined with EPC databases for registration of EPCs and inspection reports?	No	
05.12	Link to national information on Inspection / Database		

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