EU Taxonomy Alignment Methodology Document for Green Commercial and Residential Buildings

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a.s.r.
de nederlandse
verzekerings
maatschappij
voor alle
verzekeringen

CFP
GREEN BUILDINGS

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Intent of this document

ASR Nederland N.V. ("a.s.r.") is a Dutch insurance company operating exclusively in the Dutch market. a.s.r. provides non-life, life and income protection insurance, group and individual pensions, health, travel and leisure insurance, and mortgages for individuals and companies. Moreover, a.s.r. is active as an investor and provides asset management services to institutional clients. The Company has approximately 4,200 employees and is headquartered in Utrecht.

a.s.r. has developed the a.s.r. Green Finance Framework (the "Framework") under which it intends to issue green bonds, which may include public debt and private placements, and use the proceeds to finance or refinance, in whole or in part, existing or future projects that are expected to reduce the carbon footprint and energy consumption of a.s.r.'s investment portfolio, and support energy transition in the Netherlands. The purpose of this document is to provide a methodology explaining the implications of the EU Taxonomy criteria on the selection of Eligible Projects.

CFP Scope of Work

CFP Green Buildings has been asked to provide consulting services to develop a methodology to define the top 15% most energy-efficient residential and commercial buildings with at least an EPC rating A, in the Netherlands and the definition of the NZEB minus 10%. This methodology would form the basis of the selection of assets for the Green Buildings category under a.s.r.'s Eligible Green Asset portfolio, in accordance with the Green Finance Framework. CFP was not asked to investigate the Do No Significant Harm (DNSH) criteria, such as climate change adaptation.

Executive Summary

The purpose of this document is to provide a methodology explaining the implications of the EU Taxonomy criteria on the selection of Eligible Projects. In this case the acquisition and ownership of buildings and the construction of new buildings.

The criteria used for the selection of assets are described below.

Acquisition and ownership of buildings
The EU Taxonomy formulates the Technical Screening Criteria for sustainable buildings built before 31 December 2020 as follows:

- The building has at least an Energy Performance Certificate (EPC) class A.
- As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand.
- For non-residential buildings, building installations are efficiently operated through energy performance monitoring and assessment.

From a prudential and sustainability point of view a.s.r. has chosen to apply criteria for the selection of assets in the Green Building portfolio.

Green residential buildings
Currently registered EPC A labels account for 17.6% of the Dutch residential buildings stock. This implies that EPC A is not automatically within the top 15%. Buildings built since 2011 currently belong to the top 8% green residential buildings expressed in PED. Residential buildings built since 2011 comply with an EPC score of 0.6 or lower, which in most cases, corresponds to an EPC certificate A++. Therefore residential buildings that are built after 2011 and have an EPC rating A are selected for the Green buildings portfolio.

Green commercial buildings
Currently, 9.1% of the Dutch commercial buildings do have an EPC A. This means that commercial buildings with EPC A automatically belong to the top 15%. Efficient operation of building installations is part of Dutch legislation (EPBD III), and a.s.r. meet all criteria in accordance with this legislation.
Therefore commercial buildings with an EPC rating A are selected for the Green buildings portfolio.

Construction of new buildings
The EU Taxonomy formulates the Technical Screening Criteria for the construction of new buildings built after 31 December 2020 as follows:

- The Primary Energy Demand (PED) is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements.
- For buildings larger than 5000 m^2 construction undergoes testing for air-tightness and thermal integrity.
- For buildings larger than 5000 m^2, the life-cycle Global Warming Potential (GWP) of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand.

Green residential buildings

Buildings built since 2021 are 10% more energy efficient than the NZEB requirements when they comply to the following values:

- Ground based houses should have a maximum primary fossil energy usage of 27 kWh/m²/year.
- Flats and apartments should have a maximum primary fossil energy usage of 45 kWh/m²/year.

The NZEB requirements are translated into an EPC rating, expressed as the EP2 score. Therefore, all residential buildings built since 2021 and with an EP2 score that is lower than the maximum threshold for the building type, are selected.

Green commercial buildings

Buildings built since 2021 are 10% more energy efficient than the NZEB requirements when they comply to the following values:

- Offices should have a maximum primary fossil energy usage of 36 kWh/m²/year.
- Retail assets should have a maximum primary fossil energy usage of 54 kWh/m²/year.

For buildings larger dan 5,000 m² a.s.r. ensures fulfilment of the criteria and will require additional evidence on the presence of robust and traceable quality control processes.
The NZEB requirements are translated into an EPC rating, expressed as the EP2 score. Therefore, all commercial buildings built since 2021, with at least EPC A+++ and with an EP2 score that is lower than the maximum threshold for the building type, are selected.

Residential buildings

Annex I (Climate Change Mitigation) of the EU Taxonomy Delegated Regulation from June 2021, chapter 7.7, formulates the Technical Screening Criteria for sustainable buildings for "Substantial contribution to climate change mitigation" as follows:

- For buildings built before 31st December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31st December 2021 and at least distinguishes between residential and non-residential buildings.
- For the construction of new buildings as of 2021, the PED needs to be at least 10% lower than the threshold set for nearly zero-energy building (NZEB) requirements.

PED refers to the quantity of energy required to obtain the total amount of energy that a dwelling demands from fossil fuels such as gas and electricity. The higher the number of residents or the bigger the living space, the greater the PED. To achieve the required PED of a residential building, sustainability and retrofitting strategies are essential to reduce primary energy consumption and improve the energy rating.

EPC labels in the Netherlands

EPC labels are important instruments that should contribute to enhancing the energy performance of buildings. The certificate can potentially influence builders and real estate owners to increase energy efficiency and implement energy-saving measures in renovation projects.

EPCs have become a requirement for EU Member States to implement as a consequence of the 2002 European Energy Performance of Buildings Directive (EPBD) (2002/91/EC). EPCs play a central role in the context of Article 20 (2) EPBD. The EPBD asks Member States to provide information on the energy performance of buildings to the owner(s) or tenant(s). To illustrate and confirm the energy performance of buildings, an EPC must be published alongside an inspection report on which the EPC is based. The importance of EPCs has increased throughout the years, notably due to the recast of the EBPD (Directive 2010/31/EU) in 2010.

An EPC label therefore aims to indicate how energy-efficient a home is and which energy-saving measures can be implemented. The assigned letter of a NTA8800 energy label is determined based on fossil energy consumption, expressed in kilowatt-hours per square meter per year (kWh/m^2/year). The label classes for homes run from A to G. Homes with the label A are the most energy-efficient (maximum PED of 160 kWh/m^2/year)[1], and houses labelled G are the least energy efficient. A building with an energy label A+++ can be identified as a nearly zero-energy building (NZEB). The label also provides an overview of housing characteristics, such as the housing type, insulation, glazing, and

[1] https://wetten.overheid.nl/BWBR0020921/2021-07-01

heating. The current situation of EPC ratings in the Netherlands is described in the table below.

Table 1 shows that registered EPC A labels account for 17.6% of the Dutch residential buildings stock. This exceeds the top 15% of the national or regional building stock expressed as operational PED, therefore it is necessary to define which buildings belong to the top 15%.

Registered certificates

By the end of 2021, 4.7 million residential buildings in the Netherlands have a registered EPC. Of these buildings, 1.4 million are registered with an EPC rating A. The energy efficiency of existing residential buildings can be determined using three different methods:

A. A more extensive calculation at location (which considers around 150 building characteristics), resulting in the EPC or PED score;
B. A calculation made at a distance, by a certified energy advisor and based on the most important building characteristics (this method was used until December 2020);
C. The provisional energy label provided by the Dutch government.

These first two methods result in a registered certificate, with an EPC which is calculated by certified energy advisors and validated by audited organisations. The provisional energy labels are no longer valid as of 1st January 2021[3].

In 2015, all non-labelled residential buildings were allocated with provisional energy certificates. The Dutch government defines these provisional certificates and are based on building characteristics such as the construction year and the type of building. All buildings built in the Netherlands after 2006 received a provisional EPC rating A if a registered EPC was not provided. In practice, 94.2% of these provisional certificates also lead to a registered label A.

EPC rating	EPC Score (NEN 7120)	PED in kWh/m²/year (NTA 8800)	Registered certificates	% of total certificates	% of total building stock
A	<1.20	0 < PED < 160	1,409,239	30.1%	17.6%
B	1.21-1.40	160 < PED < 190	781,388	16.7%	9.8%
C	1.41-1.80	190 < PED < 250	1,205,171	25.8%	15.1%
D	1.81-2.10	250 < PED < 290	557,100	11.9%	7.0%
E	2.11-2.40	290 < PED < 335	329,198	7.0%	4.1%
F	2.41-2.70	335 < PED < 380	204,680	4.4%	2.6%
G		>2.70 > 380	190,426	4.1%	2.4%
Total			4,677,202	100.0%	58.4%

Table 1: EPCs in The Netherlands[2]

[2] Source for EPC labels: https://www.ep-online.nl/. Retrieved on 01-01-2022.
[3] https://www.rijksoverheid.nl/onderwerpen/energielabel-woningen-en-gebouwen/vraag-en-antwoord/wat-is-een-geldig-energielabel

To calculate the percentage of EPC A rated dwellings as a percentage of the total residential building stock, there are some limitations. The impact, however, of both limitations on the definition of the top 15% green residential buildings in the Netherlands is negligible.

- The quantity of registered and provisional certificates is based on the EP-Online database. This database is owned and maintained by the Netherlands Enterprise Agency (RVO) and includes all EPCs. The database includes certificates of multi-purpose buildings (e.g., office combined with housing) and houses with a recreational purpose. The Kadaster[4] (national Land Registry Office) does not include these buildings in the residential building stock.
- The total residential building stock also includes national and regional monumental buildings. Monumental buildings might have an EPC label, however it is not mandatory. There are 31,637 national residential monuments and 55,801 regional monuments, according to CBS[5].

Determining the top 15% of regional residential building stock

When selecting a year of construction, it is recommended to align it with the year a new Building Code is introduced. This is because buildings will have an improved energy efficiency in order to comply with the Building Code requirements. The Building Code that was introduced in 2011 requires an EPC score of 0.6 or lower, which corresponds to an EPC rating of A+. This EPC score is based on the NEN7120, which describes the methodology for determining the EPC score

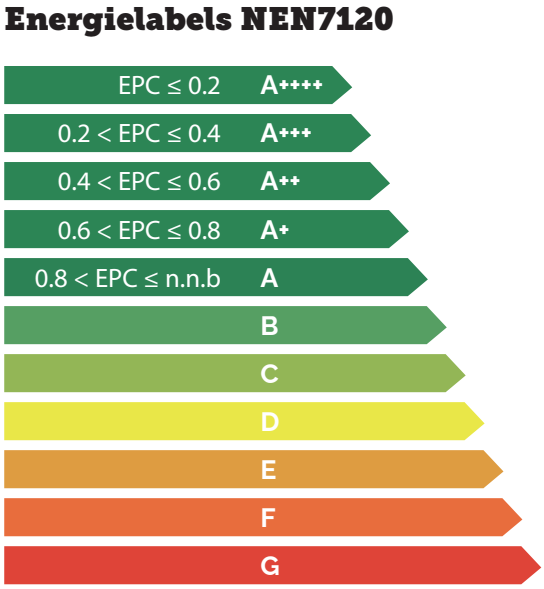

Figure 1: Correspondence between EPC scores and energy labels[6]

Development of the EPC requirements

The Dutch Building Regulation sets out energy efficiency requirements for different building types using an EPC score. For example, the Dutch Building Code 2000 requires an EPC score of 1.0 or lower.

These EPC scores of buildings improve based on the introduction of a new Building Code. The correspondence between building years and the EPC score is shown in figure 2. Over time, the Dutch Building Regulation became more stringent in energy-efficiency and sustainability requirements for new buildings, resulting in a more efficient PED. Therefore, new buildings built according to the most recent regulation are

[4] https://www.kadaster.nl/

[5] CBS: Centraal Bureau voor de Statistiek. Most recent data is used, which dates from July 2022.

[6] https://wetten.overheid.nl/BWBR0020921/2021-07-01

likely to have improved efficiency compared to older buildings complying with older regulations. Therefore, the building's year of construction can be used to define the top 15% of most energy-efficient residential buildings in the Netherlands.

Since 1st January 2021, the NEN7120 has been replaced by the NTA8800. The NTA8800 also calculates the EPC score, but uses the Primary Energy Demand. Table 2 shows the limits of the energy label classes according to the NTA8800. These limits are expressed in PED.

Although both methodologies of the NEN7120 and NTA8800 are not entirely comparable, the expected PED of an EPC A++ would be below 75 kWh/m^2.

The table below lists new buildings built between 2000 and 2025[8], based on the Kadaster database.

The table shows that the houses built between 2011 and 2021 represent approximately 8% of the total Dutch residential building stock, which means that this part of the building stock will not exceed 15% of the market.

A++++	A+++	A++	A+	A	B	C	D	E	F	G
<0.00	50.00	75.00	105.00	160.00	190.00	250.00	290.00	335.00	380.00	>380.00

Table 2: Primary Energy Demand per m^2 per energy label.[7]

Period	New build houses
2000	74,774
2001	77,181
2002	71,143
2003	64,102
2004	69,832
2005	71,541
2006	77,103
2007	85,201
2008	84,174
2009	87,835
2010	60,556
2011	62,199
2012	48,668
2013	49,311
2014	45,170
2015	48,381
2016	54,849
2017	62,982
2018	66,585
2019	71,548
2020	69,985
2021	68,633
2022	77,000
2023	80,000
2024	80,000
2025	80,000
2026	80,000

Table 3: All residential buildings built between 2000 and 2025

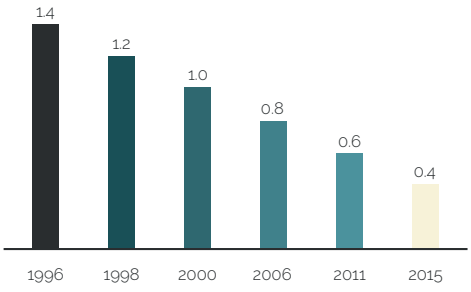

Figure 2: EPC score per year (according to building code)

[7] https://wetten.overheid.nl/BWBR0020921/2021-07-01

[8] To develop a methodologic approach that is applicable and sufficient for the following years, CFP has included the estimated building stock growth in the upcoming years, based on national governmental data.

Considering the expected building stock growth, a building year criterion as of 2006 can be used. The table below shows the development of the year of construction when choosing 2006 as cut-off building year. In 2024, it is expected that in 2006, the cut-off year 2006 is no longer valid to stay within the top 15%.
The table below shows the development of the year of construction when choosing 2011 as cut-off building year. The selection of 2011 as a cut-off year will be more prudent in comparison with cut-off year 2006.

Conclusion of the top 15% expressed as Primary Energy Demand

Eligible existing residential buildings must have an EPC rating of A and an operational PED that belongs to the top 15% green residential buildings. To define the top 15% most energy-efficient buildings in the Netherlands, a cut-off year of construction can be selected as criterion. By selecting a cut-off of equal or higher than 2006, it is possible to align with the stricter requirements that were imposed by the Building Code of those years.

Residential buildings built since 2006 comply with an EPC score of 0.8 or lower, which in most cases, corresponds to an EPC certificate A+. This translates into a selection of buildings with a PED of <105 kWh/m²/year. Currently, buildings built as per 2006 account for 13% of the total buildings stock, which is within the top 15%. However, the top 15% is evolving due to new buildings being built and thus being added to the building stock. Therefore, it is expected that in 2024 the 15% will be exceeded.

Assessment year[9]	Cut-off building year of construction	Residential building stock	Buildings in scope	% of building stock
2021	2006	8,005,000	1,043,180	13.0%
2022	2006	8,082,000	1,120,180	13.9%
2023	2006	8,162,000	1,200,180	14.7%
2024	2006	8,242,000	1,280,180	15.5%

Table 4: Evolution of the top 15% green residential buildings in the Netherlands (2021-2024)

Assessment year[9]	Cut-off building year of construction	Residential building stock	Buildings in scope	% of building stock
2021	2011	8,005,000	648,311	8.1%
2022	2011	8,082,000	725,311	9.0%
2023	2011	8,162,000	805,311	9.9%
2024	2011	8,242,000	885,311	10.7%

Table 4: Evolution of the top 15% green residential buildings in the Netherlands (2021-2024)

[9] Calculations are performed using real or estimated year end data.

From a prudential and sustainability point of view a.s.r. has chosen 2011 as the cut-off year to determine the top 15%. Buildings built since 2011 currently belong to the top 8% green residential buildings expressed in PED. Residential buildings built since 2011 comply with an EPC score of 0.6 or lower, which in most cases, corresponds to an EPC certificate A++. This translates into a selection of buildings with a PED of <75 kWh/m²/year.

New buildings

The EU Taxonomy formulates the Technical Screening Criteria for the construction of new buildings as follows:

The Primary Energy Demand (PED), defining the energy performance of the building resulting from the construction, is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and of the Council. The energy performance is certified using an as built Energy Performance Certificate (EPC).

BENG – 10% requirements for new buildings

On 1st January 2021 the NTA8800 was introduced in the Netherlands and included the BENG regulations. These regulations replace the EPC regulations for new buildings and the energy index for existing building. This means that every newly built house has to meet the BENG criteria instead of the EPC regulations.

BENG stands for 'nearly energy-neutral buildings' ("Bijna Energieneutrale Gebouwen" in Dutch). All new buildings must meet these regulations. They are derived from and are in line with the European Energy Performance of Buildings Directive. The BENG regulations for new buildings make a distinction in three different criteria: BENG 1, BENG 2 and BENG 3.

BENG 1: Maximum energy demand in kWh per square meter per year. This indicator focuses particularly on the demand for heating and cooling. The design of the building, the amount of insulation and orientation of the building are key in calculating the energy demand.

BENG 2: Maximum primary fossil energy usage in kWh per square meter per year. This indicator is the sum of all energy related aspects of a building. This includes heating, cooling, heating systems for water and mechanical or natural air ventilation. When energy is generated locally with, for instance, solar panels, the amount of generated energy can be deducted from this indicator.

BENG 3: Percentage renewable energy that is generated specifically at the building area.

The method for the calculations is the most important difference between the EPC and the NTA8800. Both methods contain strict regulations in order to improve the sustainability of buildings. Insulation is still important and electrical heating with heat pumps is in both cases considered better than heating with gas.

The generation of renewable energy on-site, such as solar energy, still has a positive impact on the energy performance rating.

The NTA8800 also changes the regulations for energy certificates for existing buildings. The new calculation for existing buildings is most comparable with the BENG 2 calculation for new buildings. Instead of using an index as outcome of the calculation, the NTA8800 uses the primary fossil energy usage measured in kWh/m², for both new and existing building certificates.

The EU Taxonomy introduces a criterion that qualifies buildings that outperform the NZEB requirements by at least 10% in primary energy. In the case of the Netherlands, this is best presented in terms of BENG 2 and the 10% improvement displayed in the table below. The EPCs from before 2021 are still comparable to the BENG regulations that are applicable since 2021.[11] The outcome of the BENG calculation still leads to an EPC and the label also provides an overview of housing characteristics, such as the housing type, insulation, glazing and heating.

Selection of assets according to the criteria

All energy labels that have been registered since 2021 indicate the primary fossil energy usage per kWh/m²/year (EP2 score). This value can be compared to the NZEB requirements in order to select the buildings that are 10% more energy efficient. All energy labels in the Netherlands can be found in the EP-online database.[12] Dutch assets are registered in Kadaster, which provides information on the building years.

Type of residential building	Maximum primary fossil energy usage[10]	10% improvement
Ground bases houses	30 kWh / m² / per year	27 kWh / m² / per year
Flats and apartments	50 kWh / m² / per year	45 kWh / m² / per year

Table 4: BENG 2 requirements for new buildings and 10% improvement

[10] In accordance with the EU Taxonomy, new buildings built as of 1 January 2021 are Taxonomy-aligned if the net primary energy demand of the new construction is at least 10% lower than the primary energy demand resulting from the national implemented NZEB requirements. When referring to primary fossil energy consumption, the system losses (such as pipe losses during heating), auxiliary energy (such as pumps) and the efficiency of the generators (such as the central heating boiler) are included. This is not the case with energy demand.

[11] https://wetten.overheid.nl/BWBR0020921/2021-07-01

[12] Source for EPC labels: https://www.ep-online.nl

Commercial buildings

Annex I (Climate Change Mitigation) of the EU Taxonomy Delegated Regulation from June 2021, chapter 7.7, formulates the Technical Screening Criteria for sustainable buildings for "Substantial contribution to climate change mitigation" as follows:

- For buildings built before 31st December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31st December 2021 and at least distinguishes between residential and non-residential buildings.
- Where the building is a large non-residential building (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air-conditioning and ventilation of over 290 kW) it is efficiently operated through energy performance monitoring and assessment

PED refers to the quantity of energy required to obtain the total amount of energy that a dwelling demands from fossil fuels such as gas and electricity. To achieve the required PED of a commercial building, sustainability and retrofitting strategies are essential to reduce primary energy consumption and improve the energy rating.

EPC labels in the Netherlands

EPC labels are important instruments that should contribute to enhancing the energy performance of buildings. The certificate can potentially influence builders and real estate owners to increase energy efficiency and implement energy-saving measures in renovation projects.

EPCs have become a requirement for EU Member States to implement as a consequence of the 2002 European Energy Performance of Buildings Directive (EPBD) (2002/91/EC). EPCs play a central role in the context of Article 20 (2) EPBD. The EPBD asks Member States to provide information on the energy performance of buildings to the owner(s) or tenant(s). To illustrate and confirm the energy performance of buildings, an EPC must be published alongside an inspection report on which the EPC is based. The importance of EPCs has increased throughout the years, notably due to the recast of the EBPD (Directive 2010/31/EU) in 2010.

An EPC label therefore aims to indicate how energy-efficient a home is and which energy-saving measures can be implemented. The assigned letter of a NTA8800 energy label is determined based on fossil energy consumption, expressed in kilowatt-hours per square meter per year (kWh/m^2/year). The label classes for homes run from A to G. Buildings with the label A are the most energy-efficient (maximum PED of 180 kWh/m^2/year)[13], and buildings labelled G are the least energy efficient. A building with an energy label A++++ can be identified as a nearly zero-energy building (NZEB). The label also provides an overview of building characteristics,

[13] https://wetten.overheid.nl/BWBR0020921/2021-07-01

such as the building type, insulation, glazing, and heating. The current situation of EPC ratings in the Netherlands is described in the table below.

Table 1 shows that registered EPC A labels account for 9.1% of the Dutch commercial buildings stock. This does not exceed the top 15% of the national or regional building stock expressed as operational PED.

Registered certificates

By the end of Q2 2022, 176,000 commercial buildings in the Netherlands have a registered EPC. Of these buildings, 96,000 are registered with an EPC rating A. The energy efficiency of existing commercial buildings can be determined by using an extensive calculation at location (which considers around 150 building characteristics), resulting in the EPC or PED score. To calculate the percentage of EPC A rated buildings as a percentage of the total commercial building stock, there are some limitations. The impact, however, of both limitations on the definition of the top 15% green commercial buildings in the Netherlands is negligible.

- The quantity of registered certificates is based on the EP-Online database. This database is owned and maintained by the Netherlands Enterprise Agency (RVO) and includes all EPCs. The database includes certificates of multi-purpose buildings (e.g., office combined with housing) and houses with a recreational purpose. The Kadaster[16] (national Land Registry Office) includes these buildings in the commercial building stock.
- The total commercial building stock also includes national and regional monumental buildings. Monumental buildings might have an EPC label, however it is not mandatory. There are 31,637 national monuments and 55,801 regional monuments, according to CBS[17].

EPC rating	EPC Score (NEN 7120)	PED in kWh/m²/year (NTA 8800)[14]	Registered certificates	% of total certificates	% of total building stock
A	<1.05	0 < PED < 180	96,902	55.0%	9.1%
B	1.05-1.15	180 < PED < 200	17,904	10.2%	1.7%
C	1.16-1.30	200 < PED < 225	22,679	12.9%	2.1%
C	1.16-1.30	200 < PED < 225	22,679	12.9%	2.1%
D	1.31-1.45	225 < PED < 250	11,155	6.3%	1.1%
E	1.46-1.60	250 < PED < 275	8,110	4.6%	0.8%
F	1.61-1.75	275 < PED < 300	5,214	3.0%	0.5%
G	>1.75	> 300	14,185	8.1%	1.3%
Total			176,149	100.0%	16.6%

Table 2: EPCs in The Netherlands[15]

[14] PED-scores for office buildings

[15] Source for EPC labels: https://www.ep-online.nl/

[16] https://www.kadaster.nl/

Since 1st January 2021, the NEN7120 has been replaced by the NTA8800. The NTA8800 also calculates the EPC score, but uses the Primary Energy Demand. Table 2 shows the limits of the energy label classes according to the NTA8800 for office buildings. These limits are expressed in PED. The limits of label classes for other types of assets can be found in the appendix.

Although both methodologies of the NEN7120 and NTA8800 are not entirely comparable, the expected PED of an EPC A+ would be below 160 kWh/m^2.

Energy-efficient operation of buildings

With the revised European Energy Performance of Buildings Directive (EPBD III), the inspection obligations for heating and air-conditioning systems have been revised. The EPBD approval for both heating and air conditioning systems is mandatory from a nominal power of 70 kW. If one of the two systems is linked to a ventilation system, this ventilation system must also be inspected. The directive was implemented in Dutch legislation and regulations on March 10, 2020. These requirements must be met from this date[19]. a.s.r. and it's contractors are bound by compliance with laws and regulation, including monitoring energy efficient operation of all building installations in larger non-residential buildings.

New buildings

The EU Taxonomy formulates the Technical Screening Criteria for the construction of new buildings as follows:

The Primary Energy Demand (PED), defining the energy performance of the building resulting from the construction, is at least 10 % lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and of the Council. The energy performance is certified using an as built Energy Performance Certificate (EPC).

For buildings larger than 5000 m^2, upon completion, the building resulting from the construction undergoes testing for air-tightness and thermal integrity, and any deviation in the levels of performance set at the design stage or defects in the building envelope are disclosed to investors and clients. As an alternative; where robust and traceable quality control processes are in place during the construction process this is acceptable as an alternative to thermal integrity testing.

For buildings larger than 5000 m^2, the life-cycle Global Warming Potential (GWP) of the building resulting from the construction has been calculated for each stage in the life cycle and is disclosed to investors and clients on demand.

A+++++	A++++	A+++	A++	A+	A	B	C	D	E	F	G
<0.00	40.00	80.00	120.00	160.00	180.00	200.00	225.00	250.00	275.00	300.00	>300.00

Table 2: Primary Energy Demand per m^2 per energy label.[18]

[17] CBS: Centraal Bureau voor de Statistiek. Most recent data is used, which dates from May 2021.

[18] https://wetten.overheid.nl/BWBR0020921/2021-07-01

[19] https://www.rvo.nl/onderwerpen/wetten-regels/technische-keuringen-verwarmings-en-aircosystemen

BENG – 10% requirements for new buildings

On 1st January 2021 the NTA8800 was introduced in the Netherlands and included the BENG regulations. These regulations replace the EPC regulations for new buildings and the energy index for existing building. This means that every newly built building has to meet the BENG criteria instead of the EPC regulations.

BENG stands for 'nearly energy-neutral buildings' ("Bijna Energieneutrale Gebouwen" in Dutch). All new buildings must meet these regulations. They are derived from and are in line with the European Energy Performance of Buildings Directive. The BENG regulations for new buildings make a distinction in three different criteria: BENG 1, BENG 2 and BENG 3.

BENG 1: Maximum energy demand in kWh per square meter per year. This indicator focuses particularly on the demand for heating and cooling. The design of the building, the amount of insulation and orientation of the building are key in calculating the energy demand.

BENG 2: Maximum primary fossil energy usage in kWh per square meter per year. This indicator is the sum of all energy related aspects of a building. This includes heating, cooling, heating systems for water and mechanical or natural air ventilation. When energy is generated locally with, for instance, solar panels, the amount of generated energy can be deducted from this indicator.

BENG 3: Percentage renewable energy that is generated specifically at the building area.

The method for the calculations is the most important difference between the EPC and the NTA8800. Both methods contain strict regulations in order to improve the sustainability of buildings. Insulation is still important and electrical heating with heat pumps is in both cases considered better than heating with gas.

The generation of renewable energy on-site, such as solar energy, still has a positive impact on the energy performance rating.

The NTA8800 also changes the regulations for energy certificates for existing buildings. The new calculation for existing buildings is most comparable with the BENG 2 calculation for new buildings. Instead of using an index as outcome of the calculation, the NTA8800 uses the primary fossil energy usage measured in kWh/m^2, for both new and existing building certificates.

The EU Taxonomy introduces a criterion that qualifies buildings that outperform the NZEB requirements by at least 10% in primary energy. In the case of the Netherlands, this is best presented in terms of BENG 2 and the 10% improvement displayed in the table below.

The EPCs from before 2021 are still comparable to the BENG regulations that are applicable since 2021.[20] The outcome of the BENG calculation still leads to an EPC and the label also provides an overview of building characteristics, such as the building type, insulation, glazing and heating.

[20] https://wetten.overheid.nl/BWBR0020921/2021-07-01

Selection of assets according to the criteria

All energy labels that have been registered since 2021 indicate the primary fossil energy usage per kWh/m²/year (EP2 score). This value can be compared to the NZEB requirements in order to select the buildings that are 10% more energy efficient. All energy labels in the Netherlands can be found in the EP-online database.[22] All Dutch assets are registered in Kadaster, which provides information on the building years and square meters of the assets.

Type of commercial building	Maximum primary fossil energy usage[21]	10% improvement
Office	40 kWh/m² /year	36 kWh/m² /year
Congress	60 kWh/m² /year	54 kWh/m² /year
Childcare	70 kWh/m² /year	63 kWh/m² /year
Education	70 kWh/m²/year	63 kWh/m² /year
Healthcare (without beds)	50 kWh/m² /year	45 kWh/m² /year
Healthcare (with beds)	130 kWh/m² /year	117 kWh/m² /year
Retail	60 kWh/m² /year	54 kWh/m² /year
Sport	90 kWh/m² /year	81 kWh/m² /year
Lodging	130 kWh/m² /year	117 kWh/m² /year

Table 4: BENG 2 requirements for new buildings and 10% improvement

[21] In accordance with the EU Taxonomy, new buildings built as of 1 January 2021 are Taxonomy-aligned if the net primary energy demand of the new construction is at least 10% lower than the primary energy demand resulting from the relevant NZEB requirements. When referring to primary fossil energy consumption, the system losses (such as pipe losses during heating), auxiliary energy (such as pumps) and the efficiency of the generators (such as the central heating boiler) are included. This is not the case with energy demand.

[22] Source for EPC labels: https://www.ep-online.nl/

Appendix

Energie-label-klasse NTA8800	kantoor	bijeenkomst zonder kinderopvang	bijeenkomst met kinderopvang	onderwijs	gezondheidszorg anders (niet-klinisch)	gezondheidszorg met bedgebied (klinisch)	winkel	sport	logies	cel
A+++++	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00	< 0.00
A++++	0.01-40.00	0.01-50.00	0.01-55.00	0.01-50.00	0.01-45.00	0.01-90.00	0.01-60.00	0.01-35.00	0.01-50.00	0.01-60.00
A+++	40.01-80.00	50.01-100.00	55.01-110.00	50.01-100.00	45.01-90.00	90.01-180.00	60.01-120.00	35.01-70.00	50.01-100.00	60.01-120.00
A++	80.01-120.00	100.01-150.00	110.01-165.00	100.01-150.00	90.01-135.00	180.01-270.00	120.01-180.00	70.01-105.00	100.01-150.00	120.01-180.00
A+	120.01-160.00	150.01-200.00	165.01-220.00	150.01-200.00	135.01-180.00	270.01-360.00	180.01-240.00	105.01-140.00	150.01-200.00	180.01-240.00
A	160.01-180.00	200.01-230.00	220.01-265.00	200.01-235.00	180.01-210.00	360.01-430.00	240.01-285.00	140.01-155.00	200.01-230.00	240.01-300.00
B	180.01-200.00	230.01-255.00	265.01-290.00	235.01-260.00	210.01-230.00	430.01-470.00	285.01-315.00	155.01-170.00	230.01-255.00	300.01-330.00
C	200.01-225.00	255.01-285.00	290.01-330.00	260.01-295.00	230.01-260.00	470.01-530.00	315.01-355.00	170.01-195.00	255.01-285.00	330.01-370.00
D	225.01-250.00	285.01-320.00	330.01-365.00	295.01-330.00	260.01-295.00	530.01-595.00	355.01-395.00	195.01-215.00	285.01-320.00	370.01-415.00
E	250.01-275.00	320.01-355.00	365.01-405.00	330.01-360.00	295.01-325.00	595.01-655.00	395.01-435.00	215.01-240.00	320.01-355.00	415.01-455.00
F	275.01-300.00	355.01-385.00	405.01-445.00	360.01-395.00	325.01-355.00	655.01-715.00	435.01-475.00	240.01-260.00	355.01-385.00	455.01-500.00
G	> 300.00	> 385.00	> 445.00	> 395.00	> 355.00	> 715.00	> 475.00	> 260.00	> 385.00	> 500.00

EP 2 (primair fossiel energieverbruik in kWh/m²

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