

## Reporting template of the European Union on the Member States application of national definitions of Nearly Zero Energy Buildings

Items and assessment categories which are mandatory due to the EPBD or RED are explained or referenced by an example in the column "EPBD / RED requirement". The source is given in the column to its left. Additional typical definition categories that are not mandatory EPBD requirements are included to give the possibility to explain what is defined beside and beyond the EPBD and RED. These categories are differentiated by colour (dark grey letters). For each aspect a number of possible choices is given in a combo box. Explanatory texts and figures are shown by a click in the according cells. Comments and explanations should be entered in the cells on the right.

1. General information				
Country			Denmark	
Name of regulation, directive, certification scheme			2010 Building Regulation (BR10)	
Editor of regulation, directive, certification scheme			NA	
Year of introduction of current version			2010	
Energy benchmark of current version			nearly zero energy buildings	
Integration and consideration in national directive			is current directive	
2. Field of application	EPBD / RED requirement	EPBD / RED reference	Content in Member States national definition	Explanation, comment, source
<b>2.1 building category</b> <ul style="list-style-type: none"> <li>single-family houses</li> <li>apartment blocks</li> <li>offices</li> <li>educational buildings</li> <li>hospitals</li> <li>hotels and restaurants</li> <li>sports facilities</li> <li>wholesale and retail trade service buildings</li> <li>other types of energy-consuming buildings</li> </ul>	<i>Member States shall ensure that all new buildings are nearly zero- energy buildings by 31 December 2020 respectively after 31 December 2018 (occupied and owned by public authorities).</i> <i>For the purpose of the calculation buildings should be adequately classified into the [...] categories.</i>	EPBD article 9.1a/b  EPBD annex I	residential/non-residential included in directive included in directive included in directive included in directive included in directive not defined not defined select	Building Regulations operate with two building categories: Residential buildings and other buildings. Residential buildings are defined as homes, residential colleges and hotels etc. Other buildings are defined as schools, institutions etc., that are not covered by homes, residential colleges and hotels etc. BR10 differentiates energy consumption per m <sup>2</sup> annually, for a number of types of building.
<b>2.2 new/retrofit buildings</b>	<i>New, and existing buildings that are subject to major renovation, should meet minimum energy performance requirements adapted to the local climate.</i> <i>Member States shall furthermore [...] stimulate the transformation of buildings that are refurbished into nearly zero-energy buildings.</i>	EPBD preamble recital 15  EPBD article 9.2	new and retrofit	The Energy Agreement from 2012 obliges the government to prepare an overall strategy for the energy renovation of the existing building stock. The strategy is to be discussed between the signatories to the agreement before the end of 2013.

<b>2.3 private/public buildings</b>	<i>Member States shall ensure that by 31 December 2020, all new buildings are nearly zero- energy buildings and after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.</i>	EPBD article 9.1a/b	private/public	The guidelines for BR10 state that Building Class 2020 is expected to become a compulsory requirement for the construction of new public buildings by the end of 2018 and of other new buildings by the end of 2020 "
2.4 In case that a additional or separate definiton(s) exists (e.g. for different building types), please add a new sheet by using the button on the right (to use this option Excel macros need to be activated).			click to add new sheet	
<b>3. Energy Balance / Calculation</b>				
<b>3.1 balance type</b>	<i>[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources Energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand [...]</i>	EPBD article 2.2  EPBD article 2.4	energy demand vs. energy generation	BR10 section 7.2.5.2. and section 7.2.5.3. subsection 1 defines "the total energy solar gain requirement for heating, ventilation, cooling and hot water pr m <sup>2</sup> heated floor area does not exceed ... (defined limits, annually.)"
<b>3.2 physical boundary</b>	<i>This directive lays down requirements as regards the common general framework for [...] buildings and building units. [...] building' means a roofed construction having walls, for which energy is used to condition the indoor climate.</i>	EPBD article 1.2a  EPBD article 2.1	building unit	BR10 section 7.2.5.2. and section 7.2.5.3. subsection 1 defines "A building can be classified as Building Class 2020 ... (when the mentioned criterias are met)"
<b>3.3 system boundary demand / energy uses included</b>				
▪ <b>space heating, domestic hot water</b>	<i>[...] energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting.</i>	EPBD article 2.4	considered	BR10 section 7.2.5.2. and 7.2.5.3 sub-section 1 included both for residential and non-residential buildings
▪ <b>ventilation, cooling, air conditioning</b>			considered	BR10 section 7.2.5.2. and 7.2.5.3 sub-section 1 included both for residential and non-residential buildings
▪ <b>auxiliary energy</b>			not defined	
▪ <b>lighting</b>			considered	BR10 section 7.2.5.3 sub-section 1 included only for non-residential buildings

▪ <u>plud loads, appliances, IT</u>			not defined	
▪ <u>central services</u>			not defined	
▪ <u>electric vehicles</u>			not defined	
▪ <u>embodied energy</u>			not defined	
<b>3.4 system boundary generation / renewable energy sources included</b>				
▪ <u>generation on-site</u>	<i>[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. [...] energy from renewable sources means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.</i>	EPBD article 2.2  EPBD article 2.6	considered	BR10 section 7.2.5.1 Common provisions for buildings covered by Building Class 2020, Provision subsection 10 states "Shared RE plants installed in connection with a new development, where the contractor contributes financially to the installation of the RE system, can be included in the energy framework for the new development. The RE plant must be either in the development or in close proximity to it."
▪ <u>generation near by</u>	<i>[...] minimum levels of energy from renewable</i>	EPBD article 13.4	considered	BR10 section 7.2.5.1 Guideline subsection 10 states "The provision
▪ <u>generation external</u>	<i>sources [...] to be fulfilled, inter alia, through district</i>		considered	
▪ <u>crediting</u>	<i>heating and cooling [...].</i>		not defined	
<b>3.5 balance period / calculation step</b>	<i>[...] The methodology for calculating energy performance should be based not only on the season in which heating is required, but should cover the annual energy performance of a building [...] [...] requirements should be set with a view to [...] the cost-optimal balance between the investments involved and the energy costs saved throughout the lifecycle of the building [...]</i>	EPBD preamble recital 9  EPBD preamble recital 10	yearly	BR10 section 7.2.5.2. and section 7.2.5.3. subsection 1 defines "A building can be classified as Building Class 2020 ... (when the mentioned criterias are met), annually"
<b>3.6 monthly accounting limitation</b>			nothing defined	
<b>4. Accounting System</b>				
<b>4.1 normalization</b>	<i>[...] including a numerical indicator of primary energy use expressed in kWh/m<sup>2</sup> per year</i>	EPBD article 9.3a	conditioned area	BR10 section 7.2.5.2. and section 7.2.5.3. subsection 1 defines "A building

<b>4.2 primary metric</b>	<p><i>The energy performance of a building shall be expressed in a transparent manner and shall include an energy performance indicator and a numeric indicator of primary energy use, based on primary energy factors per energy carrier, which may be based on national or regional annual weighted averages or a specific value for on- site production.</i></p> <p><i>[...] including a numerical indicator of primary energy use expressed in kWh/m<sup>2</sup> per year.</i></p> <p><i>[...] primary energy' means energy from renewable and non- renewable sources which has not undergone any conversion or transformation process</i></p>	<p>EPBD Annex 1</p> <p>EPBD 9.3a</p> <p>EPBD article 2.5</p>	delivered / site energy	BR10 section 7.2.5.2. and section 7.2.5.3. subsection 1 defines "A building can be classified as Building Class 2020 when the total energy solar gain requirement for ... (services) does not exceed ... (defined limits), annually."
<b>4.3 secondary metric</b>			select and describe right	
<b>4.4 symmetric or asymmetric weighting</b>			select and describe right	
<b>4.5 time dependent weighting</b>	<p><i>Primary energy factors [...] may be based on national or regional yearly average values and may take into account [...] European standards</i></p>	EPBD 9.3a	select and describe right	
<b>5. Further requirements</b>				
<b>5.1 fraction of renewables</b>	<p><i>Member States shall introduce [...] appropriate measures [...] to increase the share of all kinds of energy from renewable sources in the building sector [...]. By 31 December 2014, Member States shall [...] require the use of minimum levels of energy from renewable sources in new buildings and in existing buildings [...]</i></p> <p><i>[...] The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources [...]</i></p>	<p>RED article 13.4</p> <p>EPBD article 2.2</p>	select and describe right	
<b>5.2 temporal performance</b>				

▪ <b>load match</b>			select and describe right	
▪ <b>grid interaction</b>			select and describe right	
<b>5.3 energy performance or rating requirements</b>	<i>nearly zero-energy building means a building that has a very high energy performance [...]. The nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources [...]</i>	EPBD article 2.2	defined	A maximum demand is defined for total heating, ventilation, cooling and hot water (and lighting for non-residential
▪ <b>energy performance indicator</b>	<i>The energy performance [...] shall [...] include an</i>	EPBD Annex 1	residential:max 20kWh/m2.a. non-residential:max	A maximum demand is defined for total heating, ventilation, cooling and hot water (and lighting for non-residential
▪ <b>numeric indicator of primary energy use</b>	<i>energy performance indicator and a numeric indicator of primary energy use [...]</i>			
<b>5.4 general framework / prescriptive requirements</b>	<i>The methodology shall [...] take into consideration: thermal characteristics (thermal capacity, insulation, passive heating, cooling elements, and thermal bridges), heating installation and hot water supply, air-conditioning installations, natural and mechanical ventilation, built-in lighting, the design, positioning and orientation of the building, outdoor climate, passive solar systems and solar protection, [...], internal loads</i>	EPBD Annex 1	defined	BR10 section 7.2.5.1 Common provisions for buildings covered by Building Class 2020, Provision and guidelines defines: allowable limits of heat loss, min solar gains in warming-up season, thermal transmittance of outer doors, entrances, limits of allowable air flow through envelope, light transmittance of glass, heat recovery of ventilation systems. Further refers to DS 138729, DS 447

<b>5.5 definition of comfort level &amp; IAQ requirements (for winter and summer season, beside other national directives)</b>	<i>This Directive [...] takes into account [...] indoor climate requirements [...]</i> <i>The methodology shall [...] take into consideration: [...] indoor climatic conditions [...]</i> <i>That includes [...] indoor air-quality, adequate natural light [...].</i>	EPBD article 1.1  EPBD Annex 1  EPBD preamble recital 9	defined	BR10 section 7.2.1 subsection 13 provides 'The specification of the thermal indoor climate is determined on the basis of DS 474 Specifikation af termisk indeklima [ DS 474 (Danish Standard 474) Specification of indoor climate]. Documentation of the thermal indoor climate may be determined by simulating conditions in the critical rooms on the basis of the Design Reference Year (DRY). For homes, documentation may be on the basis of a simplified calculation. For buildings other than houses, the number of hours with temperatures over 26°C is determined by the contractor in relation to the DRY..'
<b>5.6 monitoring procedure</b>	<i>[...] energy performance of a building means the calculated or measured amount of energy needed [...]</i> <i>Member States shall encourage the introduction of intelligent metering systems [...] and the installation of automation, control and monitoring systems [...]</i>	EPBD article 2.4  EPBD article 8.2	not defined	













