

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			Luxembourg	
Name of regulation, directive, certification scheme			RGD 2007 /RGD 2010 : Règlement grand-ducal modifié du 30	
Editor of regulation, directive, certification scheme			Ministry of Economy	
Year of introduction of current version			2008	
Energy benchmark of current version			other	
Integration and consideration in national directive			considered	The definition of nZEB-buildings has been introduced in the RGD 2007 and RGD 2010
2. Field of application	EPBD / RED requirement	EPBD / RED reference	Content in Member States national definition	Explanation, comment, source
2.1 building category <ul style="list-style-type: none"> single-family houses apartment blocks offices educational buildings hospitals hotels and restaurants sports facilities wholesale and retail trade service buildings other types of energy-consuming buildings 	<p>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).</p> <p>For the purpose of the calculation buildings should be adequately classified into the [...] categories.</p>	<p>EPBD article 9.1a/b</p> <p>EPBD annex I</p>	<p>residential/non-residential</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p> <p>included in directive</p>	
2.2 new/retrofit buildings	<p>New, and existing buildings that are subject to major renovation, should meet minimum energy performance requirements adapted to the local climate.</p> <p>Member States shall furthermore [...] stimulate the transformation of buildings that are refurbished into nearly zero-energy buildings.</p>	<p>EPBD preamble recital 15</p> <p>EPBD article 9.2</p>	<p>new and retrofit</p>	<p>The RGD 2007 and RGD 2010 mentioned above foresee that refurbished building elements have to meet minimum energy performance requirements (U-values).</p>

2.3 private/public buildings	<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 RGD 2007 and RGD 2010 foresee that from 1st January 2019 all new buildings have to meet the nZEB standard, without distinction of residential/non-residential and private/public buildings
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	
3. Energy Balance / Calculation				
3.1 balance type	<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	see chapter 2.3.2 of the national nZEB plan.
3.2 physical boundary	<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	single building	see chapter 2.3.1 of the national nZEB plan.
3.3 system boundary demand / energy uses included				
▪ space heating, domestic hot water	<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	
▪ ventilation, cooling, air conditioning			considered	Cooling and air conditioning only for non-residential buildings.
▪ auxiliary energy			considered	
▪ lighting			considered	Only for non-residential buildings.
▪ plud loads, appliances, IT			not considered	
▪ central services			not considered	
▪ electric vehicles			not considered	
▪ embodied energy			not considered	

3.4 system boundary generation / renewable energy sources included				
▪ generation on-site	<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.</i>	EPBD article 2.2	considered	Renewable heating system of the building is considered independently to the fact where heat is produced (on-site, near by or external) but a physical connection to the consuming building must be in place. Electricity generation on-site and near by is considered if a physical connection to the consuming building exists.
	<i>[...] 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 2.6		
▪ generation near by	<i>[...] minimum levels of energy from renewable</i>	EPBD article 13.4	considered	
▪ generation external	<i>sources [...] to be fulfilled, inter alia, through district heating and cooling [...].</i>		considered	
▪ crediting			not defined	
3.5 balance period / calculation step	<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 [...]</i> <i>[...] 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	The balance period covers a year divided into 12 independant months. see chapter 2.3.2 of the national nZEB plan.
3.6 monthly accounting limitation			select and describe right	
4. Accounting System				
4.1 normalization	<i>[...] including a numerical indicator of primary energy use expressed in kWh/m² per year</i>	EPBD article 9.3a	conditioned area	

4.2 primary metric	<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/m² 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>	energy need	<p>The energy performance of a building is expressed in kWh/m² per year expressed in heating energy need and primary energy need except for existing non-residential buildings. For these buildings the energy indicator is expressed as a percentage in comparison to a standard existing building of the same type. Primary energy factors are based on GEMIS calculations.</p>
4.3 secondary metric			select and describe right	
4.4 symmetric or asymmetric weighting			select and describe right	
4.5 time dependent weighting	<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	static conversion factors	<p>The energy balance is monthly based, seasonal carry over is not allowed.</p>
5. Further requirements				

5.1 fraction of renewables	<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> <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>	RED article 13.4 EPBD article 2.2	defined	In new residential buildings the primary energy requirements are stronger than the heat demand requirements so that the use of renewables is promoted. Moreover, renewable technologies are promoted via financial incentives for the residential sector. Financial incentives in respect to renewable technologies are also in place for non-residential buildings. Another incentive for non-residential buildings is the fact that the reference buildings of the C-C standard (which will be the minimum standard from 1st July 2015 on) contains already thermal solar panels, promoting thus the use of renewable technologies in new non-residential buildings.
5.2 temporal performance				
▪ load match			select and describe right	
▪ grid interaction			select and describe right	
5.3 energy performance or rating requirements	<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> <i>The energy performance [...] shall [...] include an energy performance indicator and a numeric indicator of primary energy use [...]</i>	EPBD article 2.2 EPBD Annex 1	defined	see chapters 2.3.2 and 2.3.4 of the national NZEB plan.
▪ energy performance indicator				see chapters 2.3.2 and 2.3.4 of the national NZEB plan.
▪ numeric indicator of primary energy use				see chapters 2.3.2 and 2.3.4 of the national NZEB plan.

5.4 general framework / prescriptive requirements	<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	see chapter 2.3.2 of the national NZEB plan.
5.5 definition of comfort level & IAQ requirements (for winter and summer season, beside other national directives)	<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	New residential and new non-residential buildings have to meet minimum requirements which guarantee amongst others indoor climatic conditions and air quality. For non-residential buildings indoor lighting levels are defined in a regulation of the "Inspection du Travail et des Mines".
5.6 monitoring procedure	<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	defined	The energy performance certificate has to be completed by measured values after 4 years. In addition it is mandatory for new non-residential buildings to foresee adapted measurement equipment, and in some cases for existing non-residential buildings. From 1st July 2015 on new buildings have to