

National plan for increasing the number of nearly zero- energy buildings in Malta



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1 Starting point

Please give a short overview of your national building stock. Describe the most important characteristics and emerging needs. Additionally, illustrate the chronological development of national requirements on the energy performance of buildings (for an example, see guidance document)

Malta has a long history, and buildings may be found from various periods. However significant population growth occurred only from the 17th century onwards. Houses from the Knights Hospitalier period (1530-1798) are not uncommon, in most cases built in an introverted fashion around a central courtyard.

According to the National Statistics Office houses built during the British colonial period (1800-1964) are more common, constituting 39% of current stock. Sanitary laws of 1887 introduced a system of terraced housing, similar to the British system. This system was eventually adopted by planning regulations throughout the 20th century. It is now prevalent in low-rise and medium-rise housing.

Tourism growth in the 1960's together with rapid economic growth led the construction industry to sustained construction development. The 70s and 80s saw construction of innumerable separate housing units (62% of those built), primarily due to affordable sale of development plots to families by government as a social measure. These housing units are mostly terraced houses with typical floor areas of 150-250 square metres. Although these buildings typically have a high thermal mass and have cavity external walls, they are typically uninsulated.

By the 1990s construction had shifted to more sustainable multi-dwelling buildings (65% of total built) due to limited developable land. The trend towards flatted dwellings increased further with 3,677 out of 3,955 residential units granted permit in 2011 being flats or maisonettes (flatted dwellings with an own private entrance)

In the early 2000s the country was going through a construction boom. This was due to housing being viewed as a secure investment, and a holiday and retirement foreign market. According to the Malta Environment and Planning Authority this boom subsided from 11,400 units in 2007 to 3,955 by 2011. This occurred with the realisation that house prices may not rise fast anymore and may stabilize or even decline, and therefore they were not a good investment anymore.

Maltese housing has a chronic problem of high vacancy. According to the National Statistics Office this reached 27%. The country is in the process of trying to address this issue presently. The unusually high vacancy rate may be due to stable property prices and investment in a home-owning culture together with strict tenant protection. The situation in this respect is similar to Spain.

The first regulations treating energy efficiency exclusively were introduced in 2007. An elemental approach was introduced with these regulations.

2 Application of the definition of nearly zero-energy buildings

Please indicate how a nearly zero-energy building is defined within national context and explain underlying assumptions and factors that provide the rationale for the chosen definition.

The proposed definition for nearly zero-energy buildings is as follows:

A 'nearly zero-energy building' is a building with a very high energy performance. The nearly zero 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. The 'energy performance of a building' is the calculated 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. The energy performance of a building is defined by a numeric indicator of primary energy use, based on primary energy factors per energy carrier, based on national annual weighted averages and specific values for on-site production. A 'nearly zero-energy building' is a building with an energy performance not exceeding 40 kWh/m²yr for dwellings and 60 kWh/m²yr for all other buildings. These figures are subject to the building having the possibility to incorporate renewable energy sources. As a result of recent building trends, a significant number of buildings have limited access to renewable energy sources, and so these figures are unlikely to be met and would therefore need to be revised.

This Definition is currently undergoing a consultation process at a national level.

3 Intermediate targets for improving the energy performance of new buildings in order to ensure that by 31 December 2020 all new buildings are nearly zero-energy buildings

Please report the 2015 targets ensuring that by 31 December 2020 all new buildings are nearly zero-energy buildings. Also explain how they relate to and help to ensure that all new buildings are nearly zero-energy buildings by 31 December 2020.

In view of the requirements for new buildings for 2020, the country is in the process of adopting targets for new buildings built from 2015 onwards. Cost-optimality studies have shown that buildings which are cost-optimal over their life cycle are buildings that consume very little energy, and are close to the range of the proposed definition for nearly zero energy buildings. The tightening of requirements in view of the cost-optimality studies, commissioned by Malta under Article 5 of Directive 31 of 2010 is therefore expected to act in the capacity of qualitative intermediate targets. These Intermediate targets are expected to be very close to the requirements for nearly zero energy buildings. However, in view of the fact that the cost optimal studies have underlying assumptions with regards to the access of buildings to renewable energy, the number of buildings unable to meet the near zero level as per proposed definition may be significant.

3.1.1 Qualitative 2015 targets: Interim energy related requirements for new residential and non-residential buildings

After amending of minimum requirements¹ to cost-optimal levels, new dwellings are expected to be required to produce a portion of energy through on-site renewable sources. The lesser of these typically produce 15-25% of the energy demand.

Tightening of minimum requirements to cost-optimal levels are expected to reduce useful energy demand for new residences having sufficient access to renewable energy sources in the range 40-60%, depending on which buildings are taken into consideration. Different figures would have to be applied for buildings with little or no access to renewables.

3.1.2 Quantitative 2015 targets: Share of nZEB according to official nZEB definition on all newly constructed buildings (define reference parameter e.g. number of buildings, floor area, volume etc.):

The strategy to achieve nearly-zero energy buildings in Malta includes on-site renewable sources where possible (such as, but not limited to, solar water heaters and photovoltaics), after demand has been reduced by an improved building envelope (roof insulation, wall insulation) and meeting demand with more efficient systems (such as efficient heat pumps). Financial incentives have been in place for the adoption of the above strategies, such that the above strategies are adopted freely by the private sector.

Miscellaneous:

No statistical information on actual buildings is available as to how close the country is to achieving the targets. However a number of buildings, often with significant access to renewable sources, are achieving nearly-zero energy levels according to the proposed definition.

¹ F Technical Guidance, conservation of fuel, energy and natural resources (minimum requirements on the energy performance of building regulations, 2006) – Services Division, BRO, Malta

4 Intermediate targets for improving the energy performance of new buildings in order to ensure that by 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings

Please report here the 2015 targets ensuring that by 31 December 2018 all new public buildings are nearly zero-energy buildings. Also explain how they relate to and help to achieve that by 31 December 2018, all new public buildings are nearly zero-energy buildings

4.1.1 Qualitative 2015 targets: Interim energy related requirements for new public buildings

Requirements on fraction of renewable energies: There is no minimum fraction at this point. However, it is envisaged to be around the 25% mark.

Requirements on useful energy demand: At this point in time, there are no set requirements on useful energy demand, however these will be set in conjunction with the minimum requirements of Document F, once these are tightened in accordance with the results of cost optimal results.

Proposed Requirements on primary energy demand: 60 kWh/m²/year subject to the limitations outlined in the proposed definition.

4.1.2 Quantitative 2015 targets: Share of public nZEB according to official nZEB definition on all newly constructed public buildings (define reference parameter e.g. number of buildings, floor area, volume etc.):

A minimum of 5% of the new buildings occupied and owned by the public authorities will be built according to nZEB.

Miscellaneous:

The targets outlined above are still at the proposal stage.

From your point of view, how close is your country at the moment in achieving this target? In case there is no target defined yet, please indicate when it is expected to have such a target.

Since the promulgation of regulations concerning new buildings occupied and owned by public authorities can be carried out in a relatively short time span, the major milestone is still the acceptance of the proposed nZEB level.

5 Policies and measures for the promotion of all new buildings being nearly zero-energy buildings after 31 December 2020

5.1 Residential buildings

5.1.1 Relevant regulations

Legal Notice 376 of 2012 – Energy Performance of Buildings Regulation 2012

5.1.2 Relevant economic incentives and financing instruments

A scheme regarding CFL's (Compact Fluorescent Lamps) was launched in 2009 together with an extensive publicity campaign. This consisted of distribution of 3-10 free CFL's to all households.

Roof Thermal Insulation scheme was issued in 2008 and is still available. This consists of a capital grant of 15% up to a maximum of €233 for the installation of roof insulation

Double glazing scheme was issued in 2008 and is still available. This consists of a capital grant of 15% up to a maximum of €233 for the installation of roof insulation

Capital Grants of Solar water heaters have been in place since 2008 and are still available to any owner wishing to apply. In 2012 more than 16,000 units have been installed (National Statistics Office, 2013)

- Solar Water Heaters 2008 (€460 capital grant)
- Solar Water Heaters 2009 (€460 capital grant)
- Solar Water Heaters 2010 (€460 capital grant)
- Solar Water Heaters, Solar Collectors ERDF 2011- present (€400 capital grant; €560 means tested)

Photovoltaic Panels: currently a 50% grant on capital cost up to a maximum of €2500 applies. This is coupled by a feed in tariff of €0.22/kWh for a period of 6 years

- Solar Photovoltaic Systems 2008
- Solar Photovoltaic Systems 2009
- Photovoltaic Systems 2010 Call1 (50% capital grant up to a max of €3000, FIT €0.25/kWh for eight years)
- Photovoltaic Systems 2010 Call2 (50% capital grant up to a max of €3000, FIT €0.25/kWh for eight years)
- Photovoltaic panels 2011 (50% capital grant up to a max of €3000, FIT €0.25/kWh for eight years)
- Photovoltaic Scheme 2013 (50% capital grant up to a max of €2500, FIT €0.22/kWh for six years)

'Investi f' darek' (Invest in your home), a scheme that reimburses owners for up to 20% of renovation costs and enables reduction of taxes for older homes and homes within historical centres.

Soft loans are available from all leading local banks. These consist of unsecured loans with low interest rated.

5.1.3 Energy performance certificates' use and layout in relation to nZEB standard

For EPC in dwellings certificates do not show explicitly if residence is nZEB. However a rating below which the certificate is considered as nZEB is under consideration.

5.1.4 Supervision (energy advice and audits)

Professional advice regarding energy performance is available through the Building Regulation Office. This advice is available specific to the household in question.

<p>5.1.5 Information (tools)</p> <p>Information campaigns are ongoing on a national level. These include of radio and television broadcasts, street advertisements, information brochure sent door to door. The display of certificates in property adverts is expected to assist in the achievement of this target by generating competition in the property market.</p>
<p>5.1.6 Demonstration</p> <p>A number of energy efficient public buildings have already been designed and built. These range from institutional buildings to housing units.</p>
<p>5.1.7 Education and training</p> <p>At the higher end of the education spectrum, courses have been introduced that relate specifically to energy efficiency.</p>
<p>5.2 Non-residential buildings</p>
<p>5.2.1 Relevant regulations</p> <p>Legal Notice 376 of 2012 – Energy Performance of Buildings Regulation 2012</p>
<p>5.2.2 Relevant economic incentives and financing instruments</p> <p>Feed-in tariffs for installation of renewable sources with a feed in tariff which varies according to PV capacity and site (rooftop or ground mounted) and is guaranteed for 20 years.</p> <p>Soft loans are available from all leading local banks. These consist of unsecured loans with low interest rated.</p>
<p>5.2.3 Energy performance certificates' use and layout in relation to nZEB standard</p> <p>Proposals for the definition of nearly zero energy buildings have placed the energy use of zero energy buildings in the range of 60kWh/m²K. This rating is very close to the highest rating of the national system for Energy certification of non-residential buildings (isBEMmt).</p>
<p>5.2.4 Supervision (energy advice and audits)</p> <p>A programme of comprehensive energy audits has been carried out recently, involving a large number of non-residential buildings. This programme was initiated and funded by the central government and acted in the twofold purposes of providing advice for the improvement of energy efficiency in buildings, and providing the government with information about the energy efficiency of existing buildings.</p> <p>The Building Regulations Office has acted as an informal source for advice regarding energy efficiency. A number of private entities intending to construct buildings have contacted the building regulation office to obtain advice about energy efficiency and compliance to energy legislation. This has resulted in buildings achieving energy efficiency levels which act as best practice examples to achieve nearly zero energy levels by 2020.</p>
<p>5.2.5 Information (tools)</p> <ul style="list-style-type: none"> • Conferences, workshops, seminars for general public and specific stakeholders • Articles in general press (newspapers), mailing of leaflets to householders, radio and TV talk

<p>shows.</p> <ul style="list-style-type: none"> • Bill-boards and adverts in local press.
<p>5.2.6 Demonstration</p> <p>A number of nZEB buildings, private and public, will be selected to be utilized as actual examples of implementation of technologies leading to nZEB levels.</p>
<p>5.2.7 Education and training</p> <ul style="list-style-type: none"> • Courses for EPC assessors/inspectors of heating and air-condition systems will continue. • Initiatives aimed at upgrading know-how regarding nZEB by professionals such as architects and engineers • Implementation along the lines of Build-Up Skills Roadmap as regards upgrading of skills for buildings' trades person in nZEB technologies • Specific initiatives aimed at developers
<p>5.3 From your point of view, how would you evaluate the current measures that are in force? Please also try to describe the existing gap between what is in force and what should be in force in order to ensure that after 31 December 2020, all new buildings are nearly zero-energy buildings. Are there precise measures planned for the future?</p> <p>Most of these actions are ongoing, although not specifically intended for nZEB, but towards energy efficiency in general.</p> <p>The general public is quite aware of the need for energy efficiency, but there is still room for better and more up to date particularly regarding economic benefits.</p>

6 Policies and measures for the promotion of all new buildings occupied and owned by public authorities being nearly zero-energy buildings after 31 December 2018

6.1 All new buildings occupied and owned by public authorities
<p>6.1.1 Relevant regulations</p> <p>Proposed directive to regulate all new buildings owned and occupied by public authorities. This will be issued through authorities of the civil service and will be equivalent to minimum requirements.</p>
<p>6.1.2 Relevant economic incentives and financing instruments</p> <p>Most buildings are owned by central governments, and hence are catered for by the annual government budget.</p>
<p>6.1.3 Energy performance certificates' use and layout in relation to nZEB standard</p> <p>The energy performance certificate layout indicates an A+ rating plus an indicator for any positive energy building. However, when the nZEB energy level is confirmed, the format of the certificate shall be adjusted to highlight this fact.</p>
<p>6.1.4 Supervision (energy advice and audits)</p> <p>Energy audits have been carried out by external consultants for most government buildings. This has generated an amount of advice for future reference.</p> <p>'Green leaders' have been appointed to every building; the main task being to provide day to day advice supervision in energy efficiency use.</p>
<p>6.1.5 Information (tools)</p> <ul style="list-style-type: none"> • Seminars/workshops for key government officials in charge of public buildings for information regarding nZEB. • Handholding service provided to those government entities which lack technical competence.
<p>6.1.6 Demonstration</p> <p>A number of public nZEB building will be selected to be utilized as actual examples of implementation of technologies leading to nZEB levels.</p>
<p>6.1.7 Education and training</p> <p>A series of workshops to upgrade the skills of professionals involved in designing public buildings to nZEB.</p>
<p>6.2 From your point of view, how would you evaluate the current measures that are in force? Please also describe the existing gap between what is in force and what should be in force in order to ensure that after 31 December 2018, all new public buildings are nearly zero-energy buildings. Are there precise measures planned for the future?</p>
<p>The process described above are ongoing. More focus is needed on nZEB specific issues.</p>

7 Policies and measures for the promotion of existing buildings undergoing major renovation being transformed to nearly zero-energy buildings

7.1 Residential buildings	
7.1.1	<p>Relevant regulations</p> <p>Legal Notice 376 of 2012 – Energy Performance of Buildings Regulation 2012</p>
7.1.2	<p>Relevant economic incentives and financing instruments</p> <p>Financial incentives mentioned in 5.1.2 enable building undergoing major renovation to achieve low energy use. However, these are not awarded in an integrated package and depend only on individual performance of each specific measure.</p>
7.1.3	<p>Energy performance certificates' use and layout in relation to nZEB standard</p> <p>Although the numeric indicator caters for positive energy buildings, a nearly zero energy building is not differentiated on the certificate.</p>
7.1.4	<p>Supervision (energy advice and audits)</p> <p>Energy audits have been carried out by external consultants for most government buildings. This has generated an amount of advice for future reference.</p> <p>'Green leaders' have been appointed to every building; the main task being to provide day to day advice supervision in energy efficiency use.</p>
7.1.5	<p>Information (tools)</p> <ul style="list-style-type: none"> • Seminars/workshops for key government officials in charge of public buildings for information regarding nZEB. • Handholding service provided to those government entities which lack technical competence.
7.1.6	<p>Demonstration</p> <p>A number of public nZEB building will be selected to be utilized as actual examples of implementation of technologies leading to nZEB levels.</p>
7.1.7	<p>Education and training</p> <p>Major educational institutions are currently updating the contents of their portfolio of courses in line with the BUILD UP Skills Malta - National Roadmap for Energy Training of workers in the Building Industry'.</p>
7.2 Non-residential buildings	
7.2.1	<p>Relevant regulations</p> <p>Legal Notice 376 of 2012 – Energy Performance of Buildings Regulation 2012</p>
7.2.2	<p>Relevant economic incentives and financing instruments</p> <p>Financial incentives mentioned in 5.1.2 enable building undergoing major renovation to achieve low energy use. However, these are not awarded in an integrated package and depend only on individual performance of each specific measure.</p>
7.2.3	<p>Energy performance certificates' use and layout in relation to nZEB standard</p> <p>The energy performance certificate layout indicates an A+ rating plus an indicator for any positive</p>

energy building. However, when the nZEB energy level is confirmed, the format of the certificate shall be adjusted to highlight this fact.

7.2.4 Supervision (energy advice and audits)

Energy audits have been carried out by external consultants for most government buildings. This has generated an amount of advice for future reference.

‘Green leaders’ have been appointed to every building; the main task being to provide day to day advice supervision in energy efficiency use.

7.2.5 Information (tools)

- Seminars/workshops for key government officials in charge of public buildings for information regarding nZEB.
- Handholding service provided to those government entities which lack technical competence.

7.2.6 Demonstration

A number of public nZEB building will be selected to be utilized as actual examples of implementation of technologies leading to nZEB levels.

7.2.7 Education and training

Major educational institutions are currently updating the contents of their portfolio of courses in line with the BUILD UP Skills Malta - National Roadmap for Energy Training of workers in the Building Industry’.

7.3 From your point of view, how would you evaluate the current measures that are in force? Please also try to describe the existing gap between what is in force and what should be in force in order to stimulate the transformation of buildings that are refurbished into nZEB. Are there precise measures planned for the future?

Since the needs vary widely across the non-residential buildings, the market will be segmented and the initiatives will be more specific for different building topologies.

8 Additional Information

Please fill in any additional information on actions taken to increase the number of nearly zero-energy buildings in your country.

As discussed previously a national definition has only been recently proposed, and in this regard the energy efficiency in buildings has until now, not been compared to the nearly zero energy levels. Reduction in the primary energy demand has been improved by a drive to install renewable sources, efficient systems, energy efficient lighting and energy efficient domestic appliances. These actions have increased energy efficiency in buildings. A combination of these energy efficiency measures have achieved zero-energy levels in some dwellings in Malta.

9 Possible improvements

Where do you see most room for improvement in order to increase the number of nearly zero-energy buildings in your country? Please also try to give examples for appropriate measures.

Given the mild climate of the country, the energy efficiency use of the domestic sector is not particularly pronounced. Energy in this sector is in great part used by lighting, plug-in loads and domestic hot water. Improvement in actual energy use in this sector is expected from the continued installation of renewable energy sources within the buildings, wherever possible. Dwellings where sufficient renewable energy sources have been installed have been shown to be able to achieve nearly-zero energy use levels, when such technologies are coupled with efficient systems such as heat pumps.

The heating season in Malta is more or less equal in length to the cooling season. Therefore the use of technologies such as Micro-CHP and improvement in the efficiency of boilers are not expected to have an appreciable effect on the energy efficiency of residential units.

Considerable improvement is expected in the commercial sector where actual energy use is much more intensive. Commercial buildings in Malta almost invariably use heat pumps for cooling and heating. This in most cases takes the form of air-source heat pumps, with water source heat pumps sometimes used in larger buildings close to the sea. With the introduction of the directives regarding the efficiency of heat pumps the efficiency of the space conditioning systems, efficiency in the commercial sector is expected to increase. This improvement is coupled with improvements in the efficiency of VRV systems.

Improvements in the commercial sector may also be achieved by increase uptake and efficient design of lighting systems and the improvement of the building envelope.

Annex- Definition of nZEB

1. General Information		
Country	Malta	
Name of regulation ,directive, certification scheme	LN376/2012 transposing Directive 2010/31/EC	
Editor of regulation, directive, certification scheme	Ministry for Transport and Infrastructure	
Year of introduction of current version	2012	
benchmark of current version (Select one)	<input type="radio"/> Energy Autonomous building <input type="radio"/> Efficient buildings <input type="radio"/> Net zero energy buildings <input type="radio"/> Nearly zero energy buildings <input type="radio"/> Plus energy buildings <input type="radio"/> Other <input type="text"/> <input type="radio"/> Zero energy buildings	
Integration and consideration in national directive	Please add explanation/ comment/ source Will replace current directive.	
2. Field of Application		
2.1 Building category Select one and describe right is this typology included in the directive? Are special requirements or exceptions defined for this typology? If more than one definition exists, you can duplicate this appendix for each of them.		
<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). For the purpose of the calculation buildings should be adequately classified into the [...] categories. References: EPBD article 9.1a/b, EPBD Annex I.</i>		
Category <input type="radio"/> Residential <input type="radio"/> Non-residential <input type="radio"/> Residential and Non-residential	Please add explanation/ comment/ source	
single family houses	Included in directive.	Please add explanation/ comment/ source
apartment blocks	Included in directive.	Please add explanation/ comment/ source
Offices	Included in directive.	Please add explanation/ comment/ source
educational buildings	Included in directive.	Please add explanation/ comment/ source
hospitals	Included in directive.	Please add explanation/ comment/ source
hotels and restaurants	Included in directive.	Please add explanation/ comment/ source
sports facilities	Included in directive.	Please add explanation/ comment/ source
wholesale and retail trade service buildings	Included in directive.	Please add explanation/ comment/ source
other types of energy-consuming buildings	Included in directive.	Please add explanation/ comment/ source
2.2 New/retrofit buildings Select one and describe right. If more than one definition exists, you can duplicate this appendix for each of them.		
<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. Reference: EPBD preamble recital 15, EPBD article 9.2.</i>		

<input type="radio"/> New buildings <input type="radio"/> Retrofit <input checked="" type="radio"/> New and retrofit	Please add explanation/ comment/ source	
2.3 Private/public buildings Select one and describe right. If more than one definition exists, you can duplicate this appendix for each of them. <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. Reference: EPBD article 9.1a/b</i>		
<input type="radio"/> Private <input type="radio"/> Public <input checked="" type="radio"/> Public and private	Please add explanation/ comment/ source	
3. Energy Balance and calculation 3.1 Balance Type Describe how renewable energy is calculated / included in the energy balance (e.g. renewable heat from solar thermal collectors reduces energy use for heat and DHW; renewable electricity reduces/compensates delivered electricity). <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</i> <i>Energy performance of a building means the calculated or measured amount of energy needed to meet the energy demand [...]. Reference: EPBD article 2.2, EPBD article 2.4</i>		
<input type="radio"/> energy demand vs energy generation <input type="radio"/> energy import vs energy export <input checked="" type="radio"/> virtual balance between demand and generation <input type="radio"/> not specified <input type="radio"/> other	Please add explanation/ comment/ source	
3.2 Physical boundary Select the widest possible boundary and describe right if/which further subdivisions are possible <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. Reference: EPBD article 1.2, EPBD article 2.1</i>		
<input type="radio"/> single building <input type="radio"/> building unit <input type="radio"/> building unit <input type="radio"/> building site <input type="radio"/> cluster of buildings <input type="radio"/> quarter or city <input checked="" type="radio"/> other	Please add explanation/ comment/ source Malta is investigating to link off-site solar farms to buildings with little solar potential	
3.3 System boundary demand / energy uses included Define if this load sector is included in the energy balance calculation (other requirements like maximum consumption values can be described below under item 5, further requirements). <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. Reference: EPBD article 2.4</i>		
space heating, domestic hot water	Considered.	Please add explanation/ comment/ source

ventilation, cooling, air conditioning	Considered.	Please add explanation/ comment/ source		
auxiliary energy	Considered.	Please add explanation/ comment/ source		
lighting	Considered.	Please add explanation/ comment/ source		
plug loads, appliances, IT	Not considered.	Please add explanation/ comment/ source		
central services	Not considered.	Please add explanation/ comment/ source		
electric vehicles	Not considered.	Please add explanation/ comment/ source		
embodied energy	Not considered.	Please add explanation/ comment/ source		
3.4 System boundary generation / renewable energy sources included Select and explain right (e.g. only in building's physical footprint, on-site, on-site incl. import of off-site renewables like pellets, wood chips, rape oil etc.). How is CHP (based on non-renewable energy carriers like natural gas or oil) included? <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. [...] minimum levels of energy from renewable sources [...] to be fulfilled, inter alia, through district heating and cooling [...]. Reference: EPBD article 2.2, EPBD article 2.6, EPBD article 13.4</i>				
generation on-site	Considered.	Please add explanation/ comment/ source Off site generation is not defined as yet, but under consideration		
generation near by	Not defined.	Please add explanation/ comment/ source		
generation external	Not defined .	Please add explanation/ comment/ source		
crediting	Not defined .	Please add explanation/ comment/ source		
3.5 Balance period / calculation step What is the defined period of time over which the balance is calculated? Is the calculation period divided into calculation steps (e.g. one hour, one month or one heating and/or cooling season)? <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 [...]. Reference: EPBD preamble recital 9 [...] 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 [...]. Reference: EPBD preamble recital 10.</i>				
<input type="radio"/> Life cycle balance <input checked="" type="radio"/> Yearly <input type="radio"/> Seasonal <input type="radio"/> Other	Please add explanation/ comment/ source			
3.6 Monthly accounting limitation Is a monthly accounting limit defined? Is it based on end energy (e.g. monthly electricity generation compensates monthly electricity loads) or on primary energy (any monthly generation compensates any loads)? Are surpluses transferred to an annual balance?				
<input type="radio"/> monthly source based end energy crediting <input type="radio"/> monthly primary energy crediting <input checked="" type="radio"/> nothing defined <input type="radio"/> other	Please add explanation/ comment/ source			
4. Accounting system				
4.1 Normalization				
<i>[...] including a numerical indicator of primary energy use expressed in kWh/m² per year. Reference: EPBD article 9.3a</i>				
<input checked="" type="radio"/> person	Please add explanation/ comment/ source For Dwellings, the useable floor area is taken into			

<ul style="list-style-type: none"> <input type="radio"/> gross floor area <input type="radio"/> net floor area <input type="radio"/> gross volume <input type="radio"/> net volume <input checked="" type="radio"/> usable floor area <input type="radio"/> treated floor area <input type="radio"/> conditioned area <input type="radio"/> other 	<p>consideration.</p> <p>For commercial buildings, the net floor area is used.</p>
<p>4.2 Primary metric</p> <p>Indicate which metric is used for the energy performance calculation / energy balance and give input on (the source of) the conversion factors on the right. Possible sources are e.g. EN 15603 or national and regional codes.</p>	
<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. Reference: EPBD Annex 1.</i></p> <p><i>[...] including a numerical indicator of primary energy use expressed in kWh/m² per year. Reference: EPBD 9.3a</i></p> <p><i>[...] primary energy' means energy from renewable and non- renewable sources which has not undergone any conversion or transformation process. Reference : EPBD article 2.5</i></p>	
<ul style="list-style-type: none"> <input type="radio"/> energy need <input type="radio"/> energy use <input type="radio"/> delivered/site energy <input checked="" type="radio"/> primary / source energy (renewable part included) <input type="radio"/> primary / source energy (renewable part not included) <input type="radio"/> (equivalent) carbon emissions <input type="radio"/> exergy <input type="radio"/> energy costs <input type="radio"/> environmental credits <input type="radio"/> points (labeling system) <input type="radio"/> other 	<p>Please add explanation/ comment/ source</p> <p>Equivalent carbon emissions are also included in the certificate.</p>
<p>4.3 Secondary metric</p>	
<ul style="list-style-type: none"> <input type="radio"/> energy use <input type="radio"/> energy need <input type="radio"/> delivered/site energy <input type="radio"/> primary / source energy (renewable part included) <input type="radio"/> primary / source energy (renewable part not included) 	<p>Please add explanation/ comment/ source</p>

<input type="radio"/> (equivalent) carbon emissions <input type="radio"/> exergy <input type="radio"/> energy costs <input type="radio"/> environmental credits <input type="radio"/> points (labeling system) <input type="radio"/> other	
4.4 Symmetric or asymmetric weighting	
<input type="radio"/> symmetrical weighting <input type="radio"/> asymmetrical weighting	Please add explanation/ comment/ source
4.5 Time dependent weighting Static: no time dependent weighting (annual constant weighting/factors) Quasi-static: seasonal/monthly average weighting factors Dynamic: weighting factors based on shorter time periods /hourly basis (according to energy offer and demand in the grid)	
<i>Primary energy factors [...] may be based on national or regional yearly average values and may take into account [...] European standards. Reference: EPBD 9.3a</i>	
<input type="radio"/> static conversion factors <input type="radio"/> quasi static conversion factors <input type="radio"/> dynamic conversion factors	Please add explanation/ comment/ source
5. Further requirements	
5.1 Fraction of renewables Select and describe right if guidelines are given for any fraction of renewable energy and indicate how/at which level a certain fraction is calculated (e.g. solar thermal heat might be a fraction of energy use, electricity from PV a fraction of delivered energy.)	
<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 [...] Reference: RED article 13.4</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 [...]Reference : EPBD article 2.2</i>	
<input type="radio"/> defined <input type="radio"/> not defined <input type="radio"/> defined in other regulation	Please add explanation/ comment/ source
5.2 Temporal performance Describe if any requirements are given for a temporal match between on-site energy load and on-site energy generation (load match) and which calculation procedures are applied.	
<u>Load match</u> <input type="radio"/> defined <input type="radio"/> not defined	Please add explanation/ comment/ source
<u>Grid interaction</u>	Please add explanation/ comment/ source

<input type="radio"/> defined <input type="radio"/> not defined	
5.3 Energy performance or rating requirements Are limitations given for a standard energy rating, an energy indicator or maximum demands for heating, cooling, embodied energy, demand of appliances, etc.? If yes, type the values and give explanations on the right <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 [...]. Reference : EPBD article 2.2, EPBD Annex 1.</i>	
Performance or rating <input type="radio"/> defined <input type="radio"/> not defined <input type="radio"/> defined in other regulation	Please add explanation/ comment/ source Presently being discussed on a national level.
Energy Performance indicator Is an energy performance indicator defined? If yes, type the values and the according unit.	Give further explanation
Numeric indicator of primary energy use Is a numeric indicator of primary energy use defined? If yes, type the values and the according unit.	Give further explanation
5.4 General framework / prescriptive requirements Describe which guidelines are given for: Thermal characteristics (insulation, thermal bridges, thermal capacity, passive heating, internal loads, solar protection) Efficiency of installations (hot water supply, air-conditioning, lighting fan power) <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. Reference: EPBD Annex 1</i>	
<input type="radio"/> defined <input type="radio"/> not defined <input type="radio"/> defined in other regulation	Please add explanation/ comment/ source
5.5 Definition of comfort level & IAQ requirements (for winter and summer season, beside other national directives) Describe which guidelines are given for indoor climatic conditions, minimum or maximum indoor temperature, minimum lighting levels/ daylight availability, minimum ventilation rates/ natural ventilation, indoor air quality, max. CO2 levels, etc. <i>This Directive [...] takes into account [...] indoor climate requirements [...] Reference: EPBD article 1.1</i> <i>The methodology shall [...] take into consideration: [...] indoor climatic conditions [...]Reference: EPBD Annex 1</i> <i>That includes [...] indoor air-quality, adequate natural light [...].Reference:</i> <i>EPBD preamble recital 9</i>	
	Please add explanation/ comment/ source

<input checked="" type="radio"/> defined <input type="radio"/> not defined <input type="radio"/> defined in other regulation	
<p>5.6 Monitoring procedure</p> <p>Describe if and how a monitoring mandatory is formulated; calculated or measured values are used; an evaluation of the indoor environmental quality is considered; which calculation step is used.</p> <p><i>[...] energy performance of a building means the calculated or measured amount of energy needed [...] Reference: EPBD article 2.4</i></p> <p><i>Member States shall encourage the introduction of intelligent metering systems [...] and the installation of automation, control and monitoring systems [...]. Reference: EPBD article 8.2</i></p>	
<input checked="" type="radio"/> defined <input type="radio"/> not defined	<p>Please add explanation/ comment/ source</p>

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