CONCERTED ACTION
ENERGY PERFORMANCE OF BUILDINGS

Implementation of the EPBD Cyprus

Status in 2020

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1. Introduction

As the building sector is responsible for more than 30% of the final energy consumption in Cyprus and the existing building stock is lacking in energy efficiency, the energy performance of buildings plays a vital role in implementing an energy policy that will be beneficial to almost all stakeholders. Therefore, Cyprus aims to reduce the building sector's energy demand to a very low level, for both new and existing buildings, by implementing all financially and technically feasible energy efficiency measures.

The first initiative to promote energy efficiency in buildings was initiated in 2004 with the 'Grant Scheme for Promoting Renewable Energy Sources and the Conservation of Energy' funded by the RES and Energy Conservation Fund. The scheme included subsidies for thermal insulation, double-glazing, efficient lighting and RES. However, the decisive step was done by implementing the EPBD mainly through minimum energy performance requirements, introduced in 2007, and the launch of the national scheme to certify the energy performance of new and existing buildings two years later[1].

Cyprus transposed the EPBD into national legislation by issuing the law that regulates the Energy Performance of Buildings in 2006, which has since been amended three times in order to transpose Directive 2010/31/EU and better adjust the EPBD to national circumstances. Based on this legal framework, several secondary pieces of legislation have been issued defining minimum energy performance requirements, technical requirements for NZEB, requirements for technical building systems, inspection processes and other issues related to energy performance of buildings. Public consultation regarding new legislation that will transpose Directive 2018/844/EU into national legislation and new minimum energy performance requirements has been concluded In 2019. The new legislation and new minimum energy performance requirements are expected to be set in force during the first semester of 2020.

The overall responsibility of implementing the EPBD in Cyprus lies with the Ministry of Energy, Commerce and Industry (MECI). This report is an overview of the current status of the EPBD implementation in Cyprus.

2. Current Status of Implementation of the EPBD

2.I. Energy performance requirements: NEW BUILDINGS

The first minimum energy performance requirements for new buildings have been adopted on 21 December 2007, whereby maximum permissible U-values for new buildings were determined for the first time, in essence making thermal insulation of the building envelope and the installation of double-glazed windows mandatory[2]. In 2010, energy class B for the EPC was added to the minimum requirements[3]. The results of calculating the cost-optimal levels of minimum energy performance requirements, which took place for the first time in 2013, have been the catalyst for further tightening these requirements in 2013 and 2017[4,5]. The current minimum energy performance requirements were implemented on 1 January 2017 and are considered to be the final step for leading Cyprus into a smooth transition towards NZEB. In 2019, public consultation regarding new minimum energy performance requirements has been concluded. The new minimum requirements that will be set in force in 2020 practically will require NZEB level in new buildings.

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

The results of the first calculation for setting the minimum energy performance requirements at cost-optimal levels have indicated that, while energy class B was at the optimal level, requirements regarding insulation and RES were much less ambitious than the optimal levels. At the same time, the economic benefit of shading for all buildings and improving lighting in office buildings has been made apparent by the results of the calculation.

In order to set minimum requirements at cost-optimal levels by 2017, the maximum U-values were reduced by approximately 15% in December 2013, and a maximum shading factor for windows was introduced[4]. This factor is the product of the solar radiation reduction factor of fixed shading, external removable shading, and transmission of solar radiation through glazing. Also, according to the requirements for non-residential buildings, at least 3% of the total energy consumption should come from RES.

From 1 January 2017, the U-values of the building envelope were reduced even further, closely approaching the requirements for NZEB. Additionally, the minimum proportion of total energy consumption that should come from RES, both for residential and non-residential buildings, has significantly increased.

The new minimum energy efficiency requirements will take effect in 2020. These will require all new buildings to be energy class A and cover at least 25% of their primary energy consumption from RES except for hotels, for which the requirement is 9%. Maximum primary energy consumption is set, while additionally for residential buildings a maximum heating demand must be obtained. The new requirements are the result of the second calculation of the cost-optimal levels carried out in 2018, as well as the public consultation with all stakeholders.

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

The methodology for calculating U-values is documented in the 'Guide of Thermal Insulation of Buildings' issued by the MECI, which is necessary to show compliance regarding building envelope minimum requirements and/or to use them as an input for assessing the overall energy performance of a building. The guide also provides the methodology for calculating effective thermal mass as well as general information about different insulating methods. The 'Methodology for Calculating the Energy Performance

of Buildings' issued by the MECI documents all the algorithms and assumptions used to calculate energy performance and to issue an EPC. It includes the calculation of heating, cooling, ventilation, domestic hot water and lighting energy use, expressed in terms of primary energy, based on which the energy class is assigned to the building. The methodology was revised in 2015, mainly to address issues in certifying existing buildings. Both documents are based on CEN standards, and they are both mandatory, to be used to calculate the energy performance for all types of buildings, existing and new.

The MECI has decided to proceed with the revision of the methodology for calculating the energy performance of buildings. The project started in December 2018 and is scheduled to be completed in 2021 with the release of software that will simulate energy performance of buildings based on the new methodology. The revised methodology will be developed on the basis of the new CEN standards under mandate M 480 of the European Commission and Directive 2018/844/EU. The aim is to address misfits of the existing methodology and to include new technologies in view of implementing NZEB and enhancing building renovation.

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

The national action plan for increasing the number of NZEB, which was issued in 2012 and revised in 2016, identifies a number of actions to be taken up to 2020. The first step towards NZEB is considered to be the issuance of the 'Requirements and Technical Characteristics of the NZEB Ministerial Order of 2014 (Κ.Δ.Π. 366/2014)'. The order provides, in a legally binding document, the requirements that will be set for new buildings by 2020, as well as a high energy efficiency standard that can voluntarily be implemented in new and renovated buildings before 2020. The requirements for NZEB specify low U-values, maximum heating demand for residential buildings, maximum lighting power installation for office buildings, maximum primary energy consumption and a minimum contribution of RES. The requirements differ only between residential and non-residential buildings, but the same requirements apply for new and existing buildings.

In order to assist building designers in the design of NZEB, the MECI issued 'The Technical Guide for NZEB' in 2015, which documents how architectural design, building envelope, technical building systems and RES can be optimally combined.

A revision of Κ.Δ.Π. 366/2014 is scheduled to be set in force in 2020. The aim of the revision is to reflect stakeholders' views during public consultation of new minimum energy performance requirements, mentioned above, as well as technical progress in buildings.

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

Since the implementation of the EPBD in Cyprus, emphasis was given on improving the building envelope of new buildings. Thus, maximum U-values were established for roofs, walls, windows and floors in contact with the external environment. These U-values have, gradually but drastically, been tightened over the last twelve (12) years, in an attempt to reduce energy demand for heating and cooling in new buildings. Furthermore, the introduction in 2013, of a maximum shading factor for windows was the first minimum requirement purely set to address cooling energy demand. The implementation of NZEB requirements in 2020 does not have any significant impact on the U-values. However, new maximum primary energy consumption and maximum heating demand for residential buildings are expected to push building designers to examine even lower U-values.

2.I.v. Enforcement systems new buildings

The MECI checks implementation of minimum energy performance requirements through random on-site visits of the construction sites by appointed inspectors. In the case where appointed inspectors find a lack of compliance with minimum requirements, the building owner is notified of the infringement and a deadline is given to comply. If the building owner does not comply within the deadline, then legal action is taken. From 2015 to 2019 1,330 buildings have been inspected.

2.II. Energy performance requirements: EXISTING BUILDINGS

Minimum energy performance requirements for existing buildings have followed the same trajectory as new building requirements since 2007. However, requirements for existing buildings have progressively evolved to include all buildings that are renovated, as well as parts of the building envelope that are replaced or retrofitted. The requirements defined in NZEB regulation are also identical for both new builds and for that part of the existing building stock which undergoes major renovation.

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

The minimum energy performance requirements include requirements for existing buildings. The first minimum energy performance requirements issued in 2007 mandated that buildings over 1,000 m² that undergo major renovation shall be insulated at the same level as a new building[2]. From January 2010, the minimum category B on the EPC was added to requirements for buildings over 1,000 m² that undergo major renovation[3]. In December 2013, maximum U-values have been reduced by 15% and have also been implemented for building elements that are replaced or retrofitted[4]. In order to reach cost-optimal levels, as of 1 January 2017 all buildings that undergo major renovation should reach at least energy class B as far as it is technically and financially feasible[5]. Additionally, all building elements that are replaced or retrofitted have to reach the same U-value requirements as new buildings.

The new minimum energy efficiency requirements that will take effect in 2020, will require all residential buildings undergoing major renovation to reach energy class A, and all other buildings at least energy class B+.

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

Requirements for building elements had originally been implemented for maximum U-values and only for buildings of more than 1,000 m^2 that undergo major renovation[2]. Requirements for building elements regardless of renovation were set in 2013[4]. These requirements set maximum U-values for roofs, walls and windows that were replaced or retrofitted or were part of an extension to an existing building. In 2016, these requirements were revised, and as of 1 January 2017 new, more stringent U-values are required for envelope building elements installed in existing buildings[5]. The new requirements that will be set in force in 2020 will require lower U-values only for windows.

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

Ninety-one per cent (91%) of the building stock in Cyprus was built before the implementation of minimum energy performance requirements. Hence, accelerating the renovation rate is at the epicentre of efforts to achieve the energy and climate goals of 2030 and 2050. Building renovation is supported from a series of policy measures that include regulations and financial incentives. The realistic scenario is that an annual rate of 1% could be renovated by 2030. For this period, 550 M € are expected to be channelled into home

renovation and 335 M € for renovating the tertiary sector. However, in order to decarbonise the building stock by 2050, the renovation rate has to be tripled. For that to happen, policy measures have to be revised or strengthened.

For public buildings, in April 2016, by decision of the Cabinet of Ministers, the Commission for the Energy Performance of Buildings of the Central Government Authorities was established. It consists of the relevant departments of the Ministry of Transport, Communications and Public Works, which are responsible for public buildings and the MECI. The committee, as part of its mission, seeks to upgrade the energy efficiency of buildings owned and used by the central government, in order to implement the obligations of Article 5 of Directive 2012/27/EU, as well as to propose measures for promoting NZEB for public buildings in the best economic and technical way. For the renovation of public buildings, 20 M € has been secured from the EU structural funds of the 2014 – 2020 period. The committee is currently working on a renovation plan up to 2030.

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

Using both quantitative and qualitative indicators, the Long-Term Renovation Strategy, under development by the MECI, will highlight the problems that arise from the poor energy performance of the existing building stock, but also the opportunities offered by accelerating the renovation rate. Based on data, a roadmap with measurable progress indicators stretching to 2050 will be presented. The Long-Term Renovation Strategy is an elaboration of the Long-Term Strategy to Mobilise Investments in Building Renovation issued in 2014 and revised in 2017. As in previous cases, the Long-Term Building Renovation Strategy will be done with the active participation of stakeholders.

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

Securing the upfront cost for a deep renovation appears to be the biggest obstacle. In order to alleviate the problem, a range of financial incentives are being formed.

The RES and Energy Conservation Fund was established in 2003 to finance investments in energy efficiency improvement measures and RES. The revenues of the fund come from the imposition of an energy charge per kilowatt hour for electricity consumption to all end-users. Currently the fund subsidises the partial cost for roof insulation, the PV system in existing homes and an energy audit in a small- and medium-sized enterprises (SMEs).

The scheme 'I save – I upgrade' finances renovations of homes and buildings owned or used by SMEs and for which an application for an urban or building permit has been submitted before 21 December 2007. It is co-financed by the European Cohesion Fund for housing and the European Regional Development Fund for SMEs. The scheme provides grants for renovating homes and business buildings if they reach specific energy-related criteria. Eligible costs include insulation, windows, high-energy performance technical building systems, lighting, and RES for heating, cooling and domestic hot water. A higher subsidy is provided to buildings that will reach NZEB level.

Another incentive is the establishment of the 5% extra building space allowance for buildings that reach energy class A, with at least 25% of their primary energy consumption coming from RES, established in 2014. Most of the interest for this incentive comes from developers of large buildings. This incentive can also be used in the construction of new buildings. The MECI, in collaboration with the Department of Special Planning and Housing, has suggested to the Minister of Interior a revision of the incentive in light of the forthcoming revision of minimum energy requirements by 2020.

For increasing renewable electricity in buildings, the net-metering scheme was commenced in 2013, followed by the net-billing scheme. These schemes are the main drivers for installing PV systems in existing buildings. As by the end of 2019, around 15,000 PV systems have been installed.

As of 2015, a reduced VAT is applied in home renovation and includes thermal insulation, windows and PV systems. Reduced VAT can be used along with other subsidies available.

2.II.vi. Information campaigns/ complementary policies

The MECI is informing the public through leaflets and advertising flyers about EPCs, NZEB, and the inspection of central heating and AC systems. Additionally, the annual exhibition 'SAVENERGY' is likely the most important public event in the energy efficiency of buildings. The exhibition started in 2004 and is co-organised by the MECI and the Cyprus Employers and Industrialists Federation. It gives the public an opportunity to come in direct contact with the companies that sell and install energy saving and RES systems, mainly in the building sector.

The MECI organises and/or participates in seminars and presentations especially directed at professionals in the building industry, such as engineers, construction companies, real estate agents, and the financial sector.

In 2019, the MECI has made an energy-efficiency information campaign which focuses on homes and business establishments. The campaign mainly included billboards in public areas, a dedicated website and advertisement on TV, radio and social media.

Also, an online energy saving tool was created to help citizens easily identify the costs and benefits of implementing various energy saving measures and RES[6]. The tool offers to users a range of functions to estimate energy consumption and suggests ways to save energy. Among other features, it includes options for providing advice on building renovations, electrical appliances and RES integration in buildings.

2.III. Energy Performance Certificate requirements

The Energy Performance Certificate (EPC) is a reliable way to visualise the energy status of a building and to record suggestions for its upgrade. For new and renovated buildings, the EPC is part of showing compliance with minimum requirements. The EPC scheme in Cyprus was launched in 2010 and underwent revisions in 2013. The changes were based on the four-year experiences of implementing it.

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

EPCs for buildings that are for sale or rent have been mandatory since 2010. In late 2015, it became mandatory for the central government to buy and rent only high energy-efficient buildings, meaning only energy class B or better. Currently, EPCs that have been issued for existing buildings represent 10.6% of the total number of EPCs issued. The National Energy and Climate Plan acknowledges strengthening the role of EPC in the real estate market as one of the measures needed to achieve 2030 goals. This will require the revision of sale and rental legislation and the further connection of the EPC with financial incentives.

2.III.ii. Quality Assurance of EPCs

The MECI is checking compliance with national law through inspectors appointed by the Minister. The appointed experts are doing on-site sample checks to verify if EPC input data comply with actual building data. The sample comes from the building permits frequently provided by building permit authorities. Targeted on-site checks are also performed. This usually has to do with EPCs issued as a prerequisite of a

financial incentive. Desk checks are performed when an assessor submits their first EPC and when an EPC has to be further investigated after an on-site inspection. If input parameters of the EPC are different from the real building data or have been miscalculated by the Qualified Expert, the EPC is cancelled. In that case, the Qualified Expert has to issue a new, corrected EPC by a specific deadline. If the EPC is not issued, then the building permit authority is notified in order to take measures within its jurisdiction.

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

The public sector is housed in 1,087 buildings, while public schools are approximately an additional 900 buildings. It is required that public buildings over 250m^2 and frequently visited by the public issue and display an EPC. The Department of Electrical and Mechanical Services has the overall responsibility for issuing EPCs for the buildings owned by the central government, while the issuing of an EPC for buildings that the government rents is the sole responsibility of the owner. For the rest of the public sector the responsibility lies on each public authority. In order to check compliance with the display of EPCs, 19 inspections have been carried out in buildings used by the central government, the local authorities and other public bodies. In 10 cases the EPC was not displayed and the relevant public authorities were notified.

Since 2012, all buildings over 500m^2 and frequently visited by the public have to display an EPC, if it has been issued.

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

The MECI has launched sample checks on the implementation of this requirement in 2014. Checks have initially focused on building development companies and real estate agents. The result of these actions is that the energy class now appears in advertisement boards, newspaper advertisement and other commercials in media related to renting or selling buildings. The MECI plans to intensify these checks in 2020.

2.IV. Smart buildings and building systems

Promoting smart technologies and well-connected buildings and communities is a key pillar for digitising the energy sector. The main and most important feature of 'smart' systems is that they can communicate and exchange information in a digital environment to optimise building performance and energy use.

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

Several workshops on this topic were held in Cyprus, while exchanges of ideas and information on best practices with other Member States took place. During the workshops it was pointed out that the implementation of the new obligation arising from the EPBD and other Directives presupposes the development of new tools and the introduction of new interactive technologies and new concepts that will inform and motivate the final consumer to actively participate in the energy community.

At the level of local government, the Municipalities of Nicosia, Paphos and Aradippou have developed initiatives for their transformation into smart cities. Many of the actions they plan are not purely in the energy sector but provide for the development of applications and infrastructure through a package of advanced digital services that can be used in the future by energy communities as well.

The draft legislation which was concluded to harmonise Directive 2018/844/EU and is now national legislation, will allow the Minister of Energy, Trade and Industry to issue a decree to determine issues concerning the Smart Readiness Indicator not covered by delegated and implemented acts, to be adopted by the European Commission.

2.IV.ii. Regulation of system performance

In order to further improve the energy efficiency of the heating and AC systems in existing buildings, the frequent adjustment and control of these systems was legislated in 2013 and 2015, respectively[7,8]. Two guides issued for each system describe the tasks and tests that must be performed by technical system installers. The aim is to ensure that appropriate maintenance measures are taken for heating and AC systems so that they operate efficiently.

In addition, for the new systems that are installed in existing buildings and for the existing systems that are being upgraded, energy efficiency requirements have been set[9]. The requirements are described in two technical guides, one for residential buildings and another for non-residential buildings, and cover requirements for not just the whole system, but also for the individual parts. The requirements are also supplemented by recommendations of best practices. In addition to AC and heating systems, they also cover hot water production systems and large ventilation systems. The application of the requirements is mandatory to the extent that this is technically, functionally and economically feasible.

In order to improve the quality of installation, a registry of technical building systems installers has been established in 2018. The registry has three categories of installers: for heating systems, for AC and ventilation systems, and for hot water systems. Individual persons and companies can register if they or their personnel have qualifications defined in relevant regulations.

A study is currently being conducted that will assist the MECI to revise the above-mentioned technical guides and the relevant legal framework in order to better implement the new article 8 of the EPBD.

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

In 2019, the draft legislation was concluded to harmonise and implement Directive 2018/844/EU in national legislation. This foresees that where technically and economically feasible, non-residential buildings with an effective rated output for heating systems or systems for combined space heating and ventilation of over 290 kW are equipped with building automation and control systems (BACs) by 2025. Similar legal requirements will be established for cooling systems or systems for combined space cooling and ventilation of over 290 kW.

The economic feasibility of BACs mentioned above is defined by their depreciation, which has to be less than three (3) years, and on the condition that BACs are a more financially viable solution than the frequent inspection of the heating or AC system.

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

The Distribution System Operator plans to install 400,000 smart electricity meters by January 2027. The meters will provide real-time information on electricity consumption and generation in buildings, helping end-consumers optimise energy use. In addition, this information can be particularly useful to building owners and investors, in order to implement optimal energy saving and RES measures.

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

Cyprus has chosen option A and has established regular inspections of heating systems with boilers.

Since 2010, the inspection of heating systems is being performed according to 'The Guide for the Inspection of Heating Systems with Boilers' issued by the MECI. The document specifies the method for measuring combustion efficiency, heat losses from the chimney and how to check the boiler for oversizing. It also provides guidance for possible recommendations regarding the improvement of all parts of the heating system. The frequency of the inspections varies according to the size of the boiler and the type of the fuel used (Table 1).

Boiler rated output of the heating system	Frequency of inspection
More than 20 kW and less than100 kW	Every five (5) years
More than 100 kW (gas)	Every four (4) years
More than 100 kW (liquid or solid fuel)	Every two (2) years

Table 1. Frequency of the inspections according to the size of the boiler and the type of the fuel used.

According to the legislative framework that was made to harmonise Directive 2018/844/EU, it was stated that by 2020, regular inspections of the accessible parts of heating systems or of systems for combined space heating and ventilation, with an effective rated output of over 70 kW, such as the heat generator, control system and circulation pump(s) used for heating buildings, would be established.

Inspections of heating systems with boilers with an effective rated output below 70 kW but over 20 kW are planned to be retained as optional for building owners.

A study is currently being conducted by the MECI to revise “The Guide for the Inspection of Heating Systems with Boilers” to conform with the requirements of Directive 2018/844/EU.

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

The inspection of AC systems is mandatory, to be performed for systems with an effective rated output above 12 kW or when the sum of all AC systems installed exceeds 50 kW of the total output in the same building or building unit. The inspection is mandatory every five (5) years for systems of more than 12 kW and less than 250 kW, and for systems in which the total installed capacity in a building is more than 50 kW. For systems of more than 250 kW, inspections have to take place every three (3) years. Inspections have to be performed according to 'The Guide for the Inspection of Air Conditioning System' issued by the MECI, which describes the steps that have to be followed by the inspector as well as a checklist that has to be completed during the inspection.

According to the legislative framework that was made to harmonise Directive 2018/844/EU, it was stated that by 2020 regular inspections of the accessible parts of AC systems or of systems for combined AC and ventilation, with an effective rated output of over 70 kW, would be established.

Inspections of AC systems with an effective rated output below 70 kW but over 12 kW or 50 kW of total output in the same building or building unit are planned to be retained as optional for building owners.

A study is currently being conducted by the MECI to revise 'The Guide for the Inspection of Air Conditioning System' and to revise the frequency of inspections.

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

Enforcement and penalties

A fine of up to 30,000 € can be implemented in the case of a central heating system not being inspected. However, no fine has been implemented so far. At this stage efforts are focused on informing the public about the benefits of inspections.

Quality control of inspection reports

At the end of each year, the MECI requires all inspectors to submit the reports they conducted during the year. The reports are then checked to see if they have been completed appropriately and include recommendations. Between 2016 and 2019, 5% of the annual AC and heating systems inspection reports were quality checked without significant observations.

Impact assessment, costs and benefits

It is estimated that a heating system inspection in a house requires three (3) working hours, and the inspection of a heating or AC system in a medium-sized commercial building a whole working day. Benefits for the owner occur when they apply the recommendations suggested by the inspector in the inspection report, which can either be of no cost, e.g., correctly setting a thermostat, or of a larger cost, e.g., replacing the boiler. The owner has the right to decide whether or not to apply the recommendations and when to do so if they choose to. It is estimated that the application of inspections may result in a total energy savings potential in buildings of around 10%.

3. A success story in EPBD implementation

A new grant scheme was put in place in 2014 in order to encourage households and small- and medium-sized enterprises (SMEs) to adopt energy efficiency and renewable energy measures. The scheme, titled 'I save – I upgrade', is the follow-up of the completed 'Grant Scheme for Promoting the Renewable Energy Sources and the Conservation of Energy' that ran for buildings in the 2004-2013 period and is based on the same financial model: the provision of grants for direct investments, partly covering the purchase and installation costs of listed energy efficiency measures and technologies. The scheme, for which the application period in now over, is expected to totally finance the renovation of 2,100 homes with 20.4 M € and 164 SME buildings with 8.7 M €. The scheme is co-financed by EU structural funds, and the responsibility of its implementation lies with the MECI.

The scheme provides financial support for a package of measures that will upgrade the building to a minimum level of increased energy efficiency. Eligible costs include thermal insulation, windows, high efficiency technical building systems, lighting and RES for heating, cooling and domestic hot water. Higher subsidies are given to buildings that are being renovated to NZEB and to the homes of vulnerable consumers. The maximum grant is 25,000 € for households and 200,000 € for SMEs. In all cases, an EPC has to be issued before and after the implementation of energy efficiency measures, in order for the savings to be verified. For buildings above 1,000 m², an energy audit has to be performed before renovations in order to better assess the available technical and financial options. To date, 1,849 homes and 128 SME buildings have been approved to participate in the scheme.

The scheme has been successful in linking financial support and EPCs. The minimum class to be achieved on the EPC scale, or the energy savings verified through the EPC – together with mandatory pre- and post-upgrade submissions of EPC documentation – will provide a boost to the EPC market. This will in turn raise

awareness among the public about its benefits and harness its market potential as a driver for energy efficiency upgrades.

However, delays in disbursing money due to bureaucracy issues are considered to be major drawbacks. In order to optimise incentives for existing buildings, which can be achieved by simplifying existing processes and further leveraging private funds, consultations between the MECI, the banking sector, and other stakeholders are ongoing. The aim is to revise the 'I save – I upgrade' scheme in order to address existing hurdles, but also to design specialised financial products that could operate together or independently of the scheme.

4. Conclusions, future plans

Upgrading existing buildings still remains the biggest challenge for Cyprus in order to fulfil its goals for 2030. The recent financial scheme 'I save – I upgrade' has shown that there is great interest among households, but also for other groups, to implement energy efficiency measures, and the industry is keen on seizing this opportunity. Thus, it is recognised that more public and private financing has to be streamlined within the sector. The MECI's efforts are focused on developing new financial products and the ESCO market as well as proposals to secure financing from the European Structural Funds of 2021- 2027 and the Resilience and Recovery Fund.

A comprehensive description of all existing and planned policies in building renovation is provided in the National Climate and Energy Plan which, among other things, provides measurable progress indicators to be set according to the energy efficiency targets established by Directive 2012/27/EU, aiming for the long-term 2050 goal of reducing greenhouse gas emissions. The Long-term Renovation Strategy, set to be issued in April 2020, will elaborate further on the issue.

Furthermore, planned regulatory measures in 2020 are expected to boost energy efficiency in new and existing buildings. The new minimum energy performance requirements will increase the penetration of NZEB in the building stock and will increase energy savings ambitions in major renovations. Furthermore, the transposition of Directive 2018/844/EU is expected to increase smartness in buildings and the electromobility infrastructure within the building environment, as well as to optimise savings from technical building systems.

Endnotes

1. The Law that Regulates the Energy Performance of Buildings (N142(I) /2006, N30(I) /2009, N210(I) /2012, N15(I) /2017), is the fundamental legislation by which minimum requirements, the energy performance certification scheme and other provisions of the EPBD have been implemented through regulations and ministerial orders. It was firstly issued in 2006 and revised in 2009, 2012 and 2017.
2. "*Minimum Energy Performance Requirements Ministerial Order of 2007 (Κ.Δ.Π. 568/2007)*".
3. "*Minimum Energy Performance Requirements Ministerial Order of 2009 (Κ.Δ.Π. 446/2009)*".
4. "*Minimum Energy Performance Requirements Ministerial Order of 2013 (Κ.Δ.Π. 432/2013)*".
5. "*Minimum Energy Performance Requirements Ministerial Order of 2016 (Κ.Δ.Π. 119/2016, Κ.Δ.Π. 379/2016)*".
6. http://energysavingstool.cea.org.cy/
7. "*Adjustment and Control of Heating Systems with Boiler Rated Output larger than 20 kW Ministerial Order of 2013 (Κ.Δ.Π. 244/2013)*".
8. "*Adjustment and Control of Air-Conditioning Systems with Rated Output larger than 12 kW Ministerial Order of 2015 (Κ.Δ.Π. 420/2015)*".
9. "*Requirements for TBS Installed in Existing Buildings or Building Units and for TBS that are Replaced or Upgraded Ministerial Order of 2016 (Κ.Δ.Π. 231/2016)*".
10. People who would perform upgrades regardless of subsidies.

Annexes -Key Indicators & Decisions

Key Indicators & Decisions – General Background

no	Key Implementation Decisions – General Background	Description / value / response	Comments
01.01	Definition of public buildings (according to article 9 b)	Buildings that are used by the central government, local authorities and other independent government authorities	This is not a legal definition but rather how the competent authority (MECI) is implementing the EPBD.
01.02	Definition of public buildings used by the public (according to article 13)	Buildings that are used by the central government, local authorities and other independent government authorities	This is not a legal definition but rather how the competent authority (MECI) is implementing the EPBD.
01.03	Number of residential buildings	431,000	Only 300,000 are permanently occupied. More details can be found in the Long-Term Renovation Strategy.
01.04	Number of non-residential buildings	30,000	More details can be found in the Long-Term Renovation Strategy.
01.05	If possible, share of public buildings included in the number given in 01.04	1,000	More details can be found in the Long-Term Renovation Strategy.
01.06	If possible, share of commercial buildings included in the number given in 01.04	29,000	
01.07	Number of buildings constructed per year (estimate)	7,218	The number of building permits issued in 2019
01.08	If possible, share of residential buildings constructed per year (estimate, included in the number given in 01.07)	5,179	The number of building permits issued in 2019
01.09	If possible, share of non-residential buildings constructed per year (estimate, included in the number given in 01.07)	1,121	The number of building permits issued in 2019
01.10	Useful floor area of buildings constructed per year in million square meters (estimate)	2.56	Based on the building permits building permits issued in 2019

Key Indicators & Decisions – New Buildings

no	Key Implementation Decision – New Buildings	Description / value / response	Comments
02.01	Are building codes set as overall value, primary energy, environment (CO_2), reference building or other	Reference building	Energy class is set based on the reference value principle. The new minimum requirements that will be set in force by 2020 will also include a maximum primary energy consumption.
02.02	Requirements for energy performance of residential buildings in current building code	B	
02.03	Requirements for energy performance of non-residential commercial buildings in current building code	B	
02.04	Requirements for energy performance of non-residential public buildings in current building code	B	
02.05	Is the performance level of nearly zero energy (NZEB) for new buildings defined in national legislation?	Yes	
02.06	Nearly zero energy (NZEB) level for residential buildings (level for building code)	A	
02.07	Year / date for nearly zero energy (NZEB) as level for residential buildings (as indicated in 02.04)	2020	
02.08	Nearly zero energy (NZEB) level for all non-residential buildings (level for building code)	A	
02.09	Year / date for nearly zero energy (NZEB) as level for non-residential buildings (as indicated in 02.06)	2020	
02.10	Are nearly zero energy buildings (NZEB) defined using a carbon or environment indicator?	No	
02.11	Is renewable energy a part of the overall or an additional requirement?	It is both	
02.12	If renewable energy is an additional requirement to NZEB, please indicate level	At least 25% of primary energy consumption has to be covered by RES.	
02.13	Specific comfort criteria for new buildings, provide specific parameters for instance for airtightness, minimum ventilation rates	No	The methodology for calculating energy performance of buildings assumes that buildings have certain comfort criteria.

Key Implementation Decision – Existing Buildings

no	Key Implementation Decision – Existing Buildings	Description / value / response	Comment
03.01	Is the level of nearly zero energy (NZEB) for existing buildings set in national legislation?	Yes	
03.02	Is the level of nearly zero energy (NZEB) for existing buildings similar to the level for new buildings?	Yes	
03.03	Definition of nearly zero energy (NZEB) for existing residential buildings (if different from new buildings)	-	
03.04	Definition of nearly zero energy (NZEB) for existing non-residential buildings (if different from new buildings)	-	
03.05	Overall minimum requirements in case of major-renovation	B	
03.06	Minimum requirements for individual building parts in case of renovation	0.4 W / m^2 K for walls 0.4 W / m^2 K for roofs and floors in contact with the external environment 2.9 W / m^2 K for windows	
03.07	National targets for renovation in connection to Long Term Renovation Strategy (number or percentage of buildings)	1%	
03.08	National targets for renovation in connection to Long Term Renovation Strategy (expected reductions and relevant years)	Around 33,000 residential buildings and 10,000 non-residential buildings are expected to be renovated by 2030.	

Key Implementation Decision – Energy Performance Certificates

no	Key Implementation Decision – Energy Performance Certificates	Description / value / response	Comment
04.01	Number of energy performance certificates per year (for instance average or values for of 3-5 years)	8,020	The average of the last 5 years
04.02	Number of EPCs since start of scheme	63,729	
04.03	Number of EPCs for different building types	57,567 residential buildings 1,833 non-residential buildings	
04.04	Number of assessors	228	The number of assessors by 31 December 2019
04.05	Basic education requirements for assessors	Registered in the national technical chamber as architect, civil engineer, electrical engineer, mechanical engineer, chemical engineer or environmental engineer	Registration in the national technical chamber requires a university degree in the relevant field. Chemical engineers and environmental engineers can register as assessors only for residential buildings.
04.06	Additional training demands for assessors	No additional training demands	Trainings are offered and followed by candidate assessors on a voluntary basis.
04.07	Quality assurance system	Assessors have to pass an examination. There are two exams, one for residential buildings and one for non-residential buildings. Succeeding in the residential buildings exam is a prerequisite for taking a non-residential buildings examination. A minimum of one-year and three-year work experience is required for residential and non-residential buildings, respectively, in fields related to buildings, energy or technical building systems. The first EPC submitted by an assessor is checked by the MECI before issued.	
04.08	National database for EPCs	The EPC database was formed in 2010. In 2017 it was completely digitalised.	
04.09	Link to national information on EPCs / Database	https://epc.mcit.gov.cy/	

Key Indicators & Decisions – Smart Buildings and Building Systems

no	Key Implementation Decision – Smart Buildings and Building Systems	Description / value / response	Comment
05.01	Is there a national definition of smart buildings?	No	
05.02	Are there current support systems for smart buildings?	No	
05.03	Are there currently specific requirements for technical building systems (for instance in building codes)?	Yes	
05.04	Are there current requirements for automatics (for instance in building codes)?	No	
05.05	Chosen option A or B for heating systems (inspection or other measures)	A	
05.06	Number of heating inspections; reports per year (if option A)	30	Approximately on average
05.07	Chosen option A or B for cooling systems (inspection or other measures)	A	Approximately on average
05.08	Number of air-conditioning / cooling system inspections; reports per year (if option A)	60	Approximately on average
05.09	Is there a national database for heating inspections?	Yes	
05.10	Is there a national database for cooling / air-conditioning inspections?	Yes	
05.11	Are inspection databases combined with EPC databases for registration of EPCs and inspection reports?	No	
05.12	Link to national information on Inspection / Database	http://energy.gov.cy/	

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