**Article 2a**

**Long-term Renovation Strategies**

[1. INTRODUCTION 3](#_Toc524340581)

[2. SCOPE 4](#_Toc524340582)

[3. OBLIGATION TO ESTABLISH A COMPREHENSIVE STRATEGY TO ACHIEVE A HIGHLY DECARBONISED BUILDING STOCK BY 2050 5](#_Toc524340583)

[3.1. Mandatory elements of the LTRS 5](#_Toc524340584)

[3.1.1. Overview of the national building stock (Article 2a(1)(a)) 5](#_Toc524340585)

[3.1.2. Cost effective approaches to renovation (Article 2a(1)(b)) 5](#_Toc524340586)

[3.1.3. Policies and actions towards deep renovation (Article 2a(1)(c)) 6](#_Toc524340587)

[3.1.4. Policies and actions towards worst-performing buildings and energy poverty (Article 2a(1)(d)) 7](#_Toc524340588)

[3.1.5. Policies and actions towards public buildings (Article 2a(1)(e)) 9](#_Toc524340589)

[3.1.6. Incentives towards smart technologies and skills – (Article 2a(1)(f)) 9](#_Toc524340590)

[3.1.7. Estimation of energy savings and wider benefits (Article 2a(1)(g)) 10](#_Toc524340591)

[3.2. Set out a roadmap (Article 2a(2)) 11](#_Toc524340592)

[3.3. Carry out a public consultation and monitor implementation 12](#_Toc524340593)

[3.4. Consideration of safety issues 13](#_Toc524340594)

[4. OBLIGATION TO FACILITATE ACCESS TO MECHANISMS TO SUPPORT THE MOBILISATION OF INVESTMENTS (ARTICLE 2A(3)) 14](#_Toc524340596)

[5. ISSUES RELATED TO GOVERNANCE / DEADLINES FOR REPORTING 16](#_Toc524340597)

[6. GUIDANCE ON GOOD PRACTICES FOR IMPLEMENTING THE OBLIGATIONS OF ARTICLE 2A 18](#_Toc524340598)

[6.1. Overview of the national building stock (Article 2a(1)(a)) 18](#_Toc524340599)

[6.2. Cost effective approaches to renovation (Article 2a(1)(b)) 18](#_Toc524340600)

[6.3. Policies and actions towards deep renovation (Article 2a(1)(c)) 19](#_Toc524340601)

[6.4. Policies and actions towards worst-performing buildings and energy poverty (Article 2a(1)(d) 19](#_Toc524340602)

[6.4.1. Worst performing segments of the national building stock 19](#_Toc524340603)

[6.4.2. Split incentive dilemmas 19](#_Toc524340604)

[6.4.3. Market failures 19](#_Toc524340605)

[6.4.4. Alleviation of energy poverty 19](#_Toc524340606)

[6.5. Policies and actions towards public buildings (Article 2a(1)(e)) 21](#_Toc524340607)

[6.6. Incentives towards smart technologies and skills (Article 2a(1)(f)) 21](#_Toc524340608)

[6.6.1. Skills development schemes 21](#_Toc524340609)

[6.6.2. Training/certification for experts 22](#_Toc524340610)

[6.7. Estimate of energy savings and wider benefits (Article 2a(1)(g)) 22](#_Toc524340611)

[6.8. Mechanisms to support the mobilisation of investments (Article 2a(3)) 22](#_Toc524340612)

[6.8.1. aggregation of projects 23](#_Toc524340613)

[6.8.2. reduction of the perceived risk of energy efficiency operations 23](#_Toc524340614)

[6.8.3. public funding to leverage private-sector investment or address market failures 23](#_Toc524340615)

[6.8.4. guiding investments into an energy efficient public building stock; 24](#_Toc524340616)

[6.8.5. accessible and transparent advisory tools 24](#_Toc524340617)

[6.9. Public consultation 25](#_Toc524340618)

**Article 2a**

**Long-term Renovation Strategies**

# INTRODUCTION

Article 1 of **Directive (EU) 2018/844 amending Directive 2010/31/EU on the energy performance** **of buildings**[[1]](#footnote-1) introduces a new provision, Article 2a, related to long-term renovation strategies (hereafter referred to as "LTRS") into Directive 2010/31/EU**[[2]](#footnote-2)** (hereafter also "the revised EPBD" or "the revised Directive"), replacing Article 4 of Directive 2012/27/EU on energy efficiency[[3]](#footnote-3) (hereafter referred to as "the EED").

The revised Directive includes a stronger reference to energy poverty, inclusion of references to health, safety and air quality, initiatives to promote smart technologies, skills and education, policies targeting the worst performing segments of national building stocks, to split-incentive dilemmas, market failures and public buildings.

Strong LTRS are expected to accelerate the cost-effective renovation of existing buildings which currently display a low renovation rate. The strategy is not an end in itself, but a starting point for reinforced action.

The aim of this guidance document is to clarify the provisions of the new Article 2a on LTRS and to support correct implementation in the national/regional regulatory framework. The note states the views of the Commission services, does not alter the legal effects of the Directive and is without prejudice to the binding interpretation of Article 2a as provided by the Court of Justice.

# SCOPE

Article 4 of the EED already provided that Member States must establish a long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private.

Under the revised EPBD, Member States’ strategies must still cover the national stock of residential and non-residential buildings, both public and private, as under Article 4 of the EED. However, the revised EPBD introduces new and broader obligations and defines wholly new areas of policy and action which should be included in LTRS,

Under the new Article 2a of the revised EPBD, Member States are required to:

1. Establish a comprehensive strategy aimed at achieving a highly efficient and decarbonised building stock by 2050 and cost-effective transformation of existing buildings into nearly zero-energy buildings;
2. Set out a roadmap with measures, measurable progress indicators and indicative milestones for 2030, 2040 and 2050;
3. Carry out a public consultation on their strategy prior to submission to the Commission and define modalities for further and inclusive consultation during implementation;
4. Facilitate access to mechanisms through smart financing to support the mobilisation of investments;
5. Submit their strategy as part of their final integrated national energy and climate plan and and provide information about implementation in their integrated national energy and climate progress reports.

# OBLIGATION TO ESTABLISH A COMPREHENSIVE STRATEGY TO ACHIEVE A HIGHLY DECARBONISED BUILDING STOCK BY 2050

## Mandatory elements of the LTRS

Member States' LTRS will cover “existing” elements (which were set out under Article 4 of the EED) and new elements (as defined in the revised EPBD, Article 2a). Each LTRS must now encompass the elements below.

### Overview of the national building stock (Article 2a(1)(a))

Article 4(a) of the EED already provided that the starting point of LTRS was an overview of the national building stock.

Article 2a(1)(a) of the revised EPBD provides that LTRS must encompass:

"an overview of the national building stock, based, as appropriate, on statistical sampling ***and expected share of renovated buildings in 2020****;*"

In addition to requirements which already existed under Article 4(a) EED, Member States will now have to include the expected share of renovated buildings in 2020 in their overview of the national building stock (see above in bold italics).

The expected share of renovated buildings may be expressed in different ways such as:

* percentage (%)
* absolute number
* m2 of renovated space per type of building.

Renovation depth could also be used to better describe the nature of renovated buildings, such as "light," "medium" and "deep". Transformation into nearly zero-energy buildings (NZEB) could be another indicator.[[4]](#footnote-4)

"Expected share" is not intended as a binding target but rather as a figure that realistically represents the likely rate of completed building renovation in 2020. Member States can also mention the expected share of completed renovation for 2030, 2040 and 2050, in line with the requirement to provide indicative milestones for these years.

### Cost effective approaches to renovation (Article 2a(1)(b))

Article 4(b) of the EED already provided that LTRS must identify cost-effective approaches to renovation relevant to building type and climatic zone.

Article 2a(1)(b) of the revised EPBD provides that LTRS must encompass:

the identification of cost-effective approaches to renovation relevant to the building type and climatic zone, ***considering potential relevant trigger points, where applicable, in the life-cycle of the building;***

Therefore, in addition to requirements which already existed under Article 4(b) EED, Member States will now have to consider potential trigger points in the life cycle of the building (see above in bold italics).

Recital 12 of Directive (EU) 2018/844 clarifies the concept of "**trigger point**" as "*an opportune moment in the life cycle of a building, for example from a cost-effectiveness or disruption perspective, for carrying out energy efficiency renovations*".

A trigger point could be a:

* Transaction (e.g. the moment of sale, rental[[5]](#footnote-5) or lease of a building);
* Renovation (e.g. an already-planned wider non-energy related renovation);
* Disaster/Incident (e.g. fire, earthquake, flood).[[6]](#footnote-6)

Certain buildings may not be subject to trigger points and this is why the provision includes the qualification “where applicable.”

Linking energy-efficiency renovation with trigger points would ensure that energy-related measures are not neglected or omitted at a later stage in the life-cycle of the building. By focusing on energy efficiency when trigger points are reached, the risk of losing the opportunity to renovate in the future can be avoided and possible synergies with other actions best exploited.

Trigger points may in particular lead to cost-effective renovation due to economies of scale which can be achieved in carrying out energy-related renovation measures simultaneously with other necessary works or already-planned renovations.

###

### Policies and actions towards deep renovation (Article 2a(1)(c))

Article 4(c) of the EED already provided that LTRS must encompass policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation.

Article 2a(1)(c) of the revised EPBD provides that LTRS must encompass:

policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation, ***and to support targeted cost-effective measures and renovation for example by introducing an optional scheme for building renovation passports;***

**Deep renovations** are those which lead to a refurbishment that reduces both the delivered and final energy consumption of a building by a significant percentage compared with the pre-renovation levels leading to a very high energy performance.[[7]](#footnote-7) According to the Commission Staff Working Document accompanying the 2013 Commission report on financial support for energy efficiency in buildings[[8]](#footnote-8), "deep renovation" can be considered to mean a renovation which leads to at least 60% primary energy improvements.

The concept of "**building renovation passport**" is introduced in the revised EPBD as an example of a measure Member States can use to support targeted cost-effective renovation and staged deep renovation. "Building renovation passport" is not defined in the EPBD. A certain number of common elements have been identified as constituting a building renovation passport (BRP)[[9]](#footnote-9): a document - in electronic or paper format – outlining a long-term (up to 15 or 20 years) step-by-step renovation roadmap for a specific building resulting from an on-site energy audit fulfilling specific quality criteria and outlining relevant measures and renovations that could improve the energy performance of a building.[[10]](#footnote-10)

### Policies and actions towards worst-performing buildings and energy poverty (Article 2a(1)(d))

Article 2a(1)(d) of the revised EPBD provides that LTRS must encompass:

***an overview of policies and actions to target the worst performing segments of the national building stock, split-incentive dilemmas, and market failures, and an outline of relevant national actions that contribute to the alleviation of energy poverty*;**

This is a new element which did not exist under Article 4 EED. Member States' LTRS will now have to give an overview of policies and actions that target:

* worst performing segments of the national building stock;
* split incentive dilemmas;
* market failures;
* alleviation of energy poverty.

The overview should encompass at least a short description of each policy and action, its scope and duration, the allocated budget and the expected impact.

Member States are to determine the **worst performing segments** of their national building stock. This could be done for example by setting a specific threshold, such as an Energy Performance Category (i.e. below "D"), a primary energy consumption figure (expessed in kwh/m2 per year), or even buildings built before a specific date (i.e. before 1980).

**'Split incentive'** refers to the situation where the building owner pays for energy retrofits or efficiency upgrades but cannot recover savings from reduced energy use that accrue to the tenant or vice versa.[[11]](#footnote-11) Member States are encouraged to consult the report "Overcoming the split incentive barrier in the building sector" developed by JRC in 2014.[[12]](#footnote-12)

Mention of “**market failures**” in the revised EPBD is not new. Article 10 of the EPBD already identified **market barriers and failures** towards energy renovation as an area of focus and Recital 20 of the EPBD also referred to measures that aim to reduce existing legal and market barriers.

Mention of “**energy poverty**” in the revised EPBD is also not new as the EED included references to both “energy poverty (Article 7 and Recital 53) and “fuel poverty” (Recital 49).

Energy poverty is a result of a combination of low income, high energy expenditure and poor energy performance of dwellings, which is why effective action to alleviate energy poverty must include energy efficiency measures alongside social policy measures. While several Member States already have addressed energy poverty within their LTRS, the revised EPBD now requires that national actions that contribute to the alleviation of energy poverty should be outlined in LTRS.

The revised provision, together with the Recital 11 of Directive (EU) 2018/844, provides sufficient flexibility for Member States to implement the legislation according to their national context without interfering with Member States competencies on social policy.[[13]](#footnote-13)

### Policies and actions towards public buildings (Article 2a(1)(e))

Article 2a(1)(e) of the revised EPBD provides that LTRS must encompass:

***policies and actions to target all public buildings;***

Public buildings were already included in the scope of Article 4 of the EED, but new Article 2a also requires specific policies and actions targeting all public buildings.

Both the EED and the EPBD include many provisions which oblige public authorities to lead by example by becoming early adopters of energy efficiency improvements and by showing that environmental and energy considerations are being taken into account. The policies and actions under point (1)(e) of new Article 2a should encompass ongoing initiatives undertaken by Member States to fulfil their obligations under Articles 5 and 6 of the EED.[[14]](#footnote-14) However, point (1)(e) of Article 2a is broader in scope than Articles 5 and 6, which only apply to central government, given that it concerns all public buildings (this includes, for example, buildings rented by local or regional authorities).

Financial mechanisms and incentives should promote investments for public authorities in an energy efficient building stock, for example by way of public-private partnerships or optional energy performance contracts[[15]](#footnote-15) in line with Eurostat guidance.[[16]](#footnote-16)

### Incentives towards smart technologies and skills – (Article 2a(1)(f))

One of the objectives of the revised EPBD is to modernise the Directive in light of technological developments such as smart building technologies and to facilitate the uptake of electric vehicles and other technologies both through specific installation requirements and by ensuring that building professionals can deliver the appropriate skills and know-how to deploy new technologies.

Article 2a(1)(f) of the revised EPBD provides that LTRS must encompass:

***an overview of national initiatives to promote smart technologies and well-connected buildings and communities, as well as skills and education in the construction and energy efficiency sectors*;**

This is a new element of LTRS which did not exist under Article 4 EED. Member States' LTRS will now need to give an overview of national initiatives that promote

* smart technologies and well-connected buildings and communities;
* skills and education in the construction and energy efficiency sectors.

The overview should encompass at least a short description of each initiative, its scope and duration, the allocated budget and the expected impact.

**Smartness in buildings** is an essential element in a decarbonised, renewable-intensive and more dynamic energy system in Europe with the aim of reaching the 2030 EU targets on energy efficiency and renewable energy, and of achieving a decarbonised EU building stock by 2050. LTRS must describe the national initiatives on the smartness of technical building systems and appliances that aim to:

* Achieve high energy efficiency by optimal operation of the building and facilitate the maintenance of technical building systems;
* Strengthen the role of demand side flexibility for increasing the share of renewables in the energy system and making sure that the benefits are cascaded down to the consumers;
* Ensure that the building user’s needs are covered and they can effectively interact with the building.
* Contribute to the establishment of well-connected buildings and smart communities.

The training of energy experts is essential in ensuring the transfer of knowledge on issues related to EPBD implementation. Within the framework of Article 17, Member States must already ensure that energy performance certification of buildings and inspection of heating and air-conditioning systems are carried out in an independent manner by qualified and/or accredited experts. LTRS should therefore present an overview of national intiatives promoting the necessary skills of building professionals in the application of new techniques and technologies in the field of NZEB and energy renovation.

### Estimation of energy savings and wider benefits (Article 2a(1)(g))

Article 4(e) of the EED already provided that LTRS must provide an evidence-based estimate of expected energy savings and wider benefits.

Article 2a(1)(g) of the revised EPBD provides that LTRS must encompass:

an evidence-based estimate of expected energy savings and wider benefit**s*, such as those related to health, safety and air quality;***

The new provision provides a non-exhaustive clarification on the type of wider benefits that Member States' LTRS should evaluate. Measures to address energy performance can also contribute to achieving a healthy indoor environment. Measures should aim to prevent illegal removal of harmful substances and facilite compliance with legislation relating to working conditions, health and safety, and emissions,[[17]](#footnote-17) as well as facilitate higher comfort levels and well-being for occupants notably by ensuring complete and homogenous insulation which is crucial for indoor air quality, as provided in 2009 World Health Organisation guidelines.[[18]](#footnote-18)

## Set out a roadmap (Article 2a(2))

Article 2a(2) of the revised EPBD provides that LTRS must include a roadmap which is comprised of measurable progress indicators and milestones:

***In its long-term renovation strategy, each Member State shall set out a roadmap with measures and domestically established measurable progress indicators, with a view to the long-term 2050 goal of reducing greenhouse gas emissions in the Union by 80-95 % compared to 1990, in order to ensure a highly energy efficient and decarbonised national building stock and in order to facilitate the cost-effective transformation of existing buildings into nearly-zero-energy buildings. The roadmap shall include indicative milestones for 2030, 2040 and 2050, and specify how they contribute to achieving the Union's energy efficiency targets in accordance with Directive 2012/27/EU.***

Underpinning the LTRS is the objective of achieving a fully decarbonised building stock –essential to delivering on the EU goal of reducing greenhouse gas emissions. A decarbonised building stock is not defined in EU legislation but can be considerd as a building stock whose carbon emissions have been reduced to zero or below, both through reducing energy needs and by ensuring that remaining energy needs are met to the extent possible from zero-carbon sources. This approach allows various routes to decarbonisation, taking into account the national energy mix, preferences, potential and characteristics of each Member State.

As the strategies aim at having a "long-term" vision, Member States should go beyond a simple inventory of the existing measures, providing, a vision/roadmap on the evolution of future policies and measures and specific measures / policies: for instance, on refurbishment obligations, or incentives to demolition-reconstruction. The roadmap framework in the new Article 2a seeks to achieve this.

Roadmaps must be comprised of **indicative milestones** and **measurable indicators**. Member States can tailor their milestones and indicators to the specificities of their Member State. **Indicative milestones** could relate to:

*[to be completed]*

Under the revised EPBD, Member States must specify how milestones for 2030, 2040 and 2050 will contribute to achieving the Union's energy efficiency targets of the EED. The intention of this provision is not to introduce a sectoral target for the building sector. It is for Member States to define the goals, and it is only Member States who can decide to make such goal binding for the building sector (thus going beyond obligations in the revised Directive).

However, it is is necessary to estimate the contribution of renovation to achieving the EED headline target,of Article 3, since buildings are one of the most crucial pillars of the energy efficiency policy. This information would help policy makers to shape the future energy efficiency policies and design the appropriate measures.

In order to assess progress in implementation of the LTRS, Member States must define **measurable indicators**. The availability over the period of the LTRS of reliable data is a major factor in determining such indicators. They could include for example:

*[to be completed]*

## Carry out a public consultation and monitor implementation

According to Article 2a(5):

***To support the development of its long-term renovation strategy, each Member State shall carry out a public consultation on its long-term renovation strategy prior to submitting it to the Commission. Each Member State shall annex a summary of the results of its public consultation to its long-term renovation strategy.***

***Each Member State shall establish the modalities for consultation in an inclusive way during the implementation of its long-term renovation strategy.***

Member States may already have in place consultation procedures for the development of major policy or legislative initiatives which could be applied in the case of the elaboration of an LTRS.

Under the Governance Regulation, Member States are also required to have a public consultation procedure in place for the purpose of preparing the draft and final Integrated National Energy and Climate plans (INECP) well before their adoption, without prejudice to any other Union law requirements.

Article 2a(5) of the revised EPBD leaves the door open as regards the consultation format (e.g. open or targeted) and method (e.g. face-to-face meetings/events, written submissions or internet-based questionnaire).

Member States may also consider setting up a Stakeholder Platform. The identification and consultation of stakeholders can contribute substantially towards the successful implementation of a long-term strategy for the energy renovation of buildings. The direct or indirect contribution of relevant stakeholders associated with the energy upgrade of buildings, is also essential for dissemination of the LTRS and collection of data and can create a sense of mutual consensus and acceptance of LTRS.

Member States may take the above mentioned elements into account for the purpose of establishing their public consultations in an inclusive way and should ensure sufficient time to consult on the LTRS before submitting their strategy to the Commission.

A summary of the consultation must be annexed to the LTRS and this summary could highlight for example the duration, period, type (open or targeted), method (face-to-face meetings/events, written comments or internet-based), number of participants, type of participant – associations, citizens, architects, etc. – basic comments, conclusions.

Public consultation can help achieve better policy results and the revised EPBD introduces a requirement to carry out public consultations while leaving the definition of the methodology and process up to each Member State.

## Consideration of safety issues

## *[to be completed with input from DG GROW]*

The renovation of buildings is an opportunity to take into consideration fire- or seismic-related safety issues, while keeping in mind relevant national regulations.[[19]](#footnote-19)

Article 2a(7) provides that Member States may use LTRS in order to address fire safety and risks related to intense seismic activity affecting energy efficiency renovations and the lifetime of buildings. This provision should be read in combination with Article 6 of the revised EPBD, which also encourages the consideration of fire safety and risks related to intense seismic activity in buildings undergoing major renovation.

# OBLIGATION TO FACILITATE ACCESS TO MECHANISMS TO SUPPORT THE MOBILISATION OF INVESTMENTS (ARTICLE 2A(3))

Paragraph 3 of Article 2a obliges Member States to facilitate access to financial mechanisms to support the mobilisation of investments into the renovation needed to achieve the goals in paragraph 1, namely a highly energy efficient and decarbonised building stock by 2050 and the cost-effective transformation of existing buildings into nearly-zero-energy buildings. Article 2a(3) sets out possible mechanisms for mobilising investments and builds on Article 20 of the EED, which provides that Member States must facilitate the establishment of financing facilities, or the use of existing ones, for energy efficiency improvement measures.

Article 2a(3) provides that:

***To support the mobilisation of investments into the renovation needed to achieve the goals referred to in paragraph 1, Member States shall facilitate access to appropriate mechanisms for:***

***(a) the aggregation of projects, including by investment platforms or groups, and by consortia of small and medium-sized enterprises, to enable investor access as well as packaged solutions for potential clients;***

***(b) the reduction of the perceived risk of energy efficiency operations for investors and the private sector;***

***(c) the use of public funding to leverage additional private-sector investment or address specific market failures;***

***(d) guiding investments into an energy efficient public building stock, in line with Eurostat guidance; and***

***(e) accessible and transparent advisory tools, such as one-stop-shops for consumers and energy advisory services, on relevant energy efficiency renovations and financing instruments.***

These provisions are in line with the Smart Finance for Smart Buildings (SFSB) initiative. The three pillars of the SFSB initiative are:

(a) More effective use of public funds, through:

* capacity building actions to further deploy financial instruments (ex. the Sustainable Energy Investments Forums);
* development of flexible energy efficiency and renewable financing platforms;
* clarification on the accounting treatment of energy performance contracts.

This will enable more effective channelling and combination of public funds and it will support a faster deployment of financial instruments.

Flexible financing platforms will make available more attractive financing options to final beneficiaries through the sharing of risk and the optimised used of public funds, including European Structural and Investment Funds and financing through the European Fund for Strategic Investments.

(b) Aggregation and project development assistance, by:

* reinforcing the Project Development Assistance available at EU level;
* encouraging the development of local/regional one-stop-shops for energy efficiency services.

This will help project developers bring good project ideas to maturity, will facilitate the access of buildings owners, households and companies to information and to energy efficiency services, enabling the development of large-scale investment programmes. The dedicated one-stop-shops at the local or regional level will facilitate the aggregation of different projects, making them more attractive for the financial market.

(c) De-risking, mainly through two products developed together with the Energy Efficiency Financial Institutions Group (EEFIG):

* an open source database providing evidence on the real technical and financial performance of energy efficiency investments – the De-risking Energy Efficiency Platform (DEEP);[[20]](#footnote-20)
* a consensual framework for underwriting energy efficiency investments (the EEFIG underwriting tool[[21]](#footnote-21)), aimed to provide guidance on how to assess the risks and benefits associated to energy efficiency investments.

This will help the market correctly assess the risks, but also the benefits associated to energy efficiency investments, making these investments more trusted and more attractive for project promoters, investors and financial institutions.

To drive their LTRS, Member States will need to create access to a range of financial mechanisms to support the mobilisation of investments. There are a multitude of examples which can serve as inspiration. One relevant source of examples of successful schemes is Chapter 7 of the Good practice document on energy efficiency which was published together with the Clean Energy Package in November 2016 (SWD(2016) 404 final.[[22]](#footnote-22)

# ISSUES RELATED TO GOVERNANCE / DEADLINES FOR REPORTING

*[To be completed/updated once the final text is approved.]*

In June 2018, co-legislators found a provisional agreement on the Energy Union Governance Regulation[[23]](#footnote-23). According to this agreement, the long-term renovation strategies must be submitted to the Commission as part of the final integrated national energy and climate plan. In particular, Member States must:

* prepare and submit to the Commission a draft of their integrated national energy and climate plans by 31 December 2018, and subsequently by 1 January 2028 and every ten years thereafter, and
* notify to the Commission their integrated national energy and climate plans by 31 December 2019, and subsequently by 1 January 2029 and every ten years thereafter.

However, the above mentioned deadlines were not aligned with the revised EPBD, in particular ensuring adequate time for Member States (by the transposition deadline, 10 March 2020) to prepare and submit their long-term renovation strategies.

For that reason, the provisional political agreement on the Energy Union Governance Regulation explicitly states that:

* the long-term renovation strategies shall be part only of the the final (and not the draft) integrated national energy and climate plans; and
* the first long-term renovation strategy, as revised with the Directive 2018/844/EU, shall be submitted to the Commission by 10 March 2020, namely the transposition deadline for Directive (EU) 2018/844.

The final text of the Energy Union Governance Regulation is not yet finalised and approved, but some points can already be mentioned. In particular:

* Each Member State must set out in its integrated national energy and climate plan the indicative milestones of the long-term strategy for the renovation of the national stock of residential and non-residential buildings, both public and private, the roadmap with domestically established measurable progress indicators, an evidence-based estimate of expected energy savings and wider benefits, and the contributions to the Union's energy efficiency targets pursuant to Directive 2012/27/EU in accordance with Article 2a of the revised EPBD.
* Member States must include in the integrated national energy and climate progress reports the information the indicative milestones of the long-term strategy for the renovation of the national stock of residential and non-residential buildings, both public and private, and the contributions to the Union's energy efficiency targets pursuant to Directive 2012/27/EU in accordance with Article 2a of the revised EPBD.

In addition, the Energy Union Governance Regulation includes an Annex providing the general framework for the integrated national energy and climate plans:

* Under the section describing the national objectives and targets for the energy efficiency dimension, Member States must, among others, include the indicative milestones for 2030, 2040 and 2050, the domestically established measurable progress indicators and their contributions to the Union's energy efficiency targets as included in the roadmaps set out in the long-term renovation strategies for the national stock of residential and non-residential buildings, both public and private, in accordance with Article 2a of the revised EPBD.
* Under the section describing the policies and measures for the energy efficiency dimension, Member States must, among others, include the long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private, including policies, measures and actions to stimulate cost-effective deep renovation and policies and actions to target the worst performing segments of the national building stock, in accordance with Article 2a of the revised EPBD.

# GUIDANCE ON GOOD PRACTICES FOR IMPLEMENTING THE OBLIGATIONS OF ARTICLE 2A

The following section sets out guidance on good practices for implementing the obligations set out in Article 2a. It follows the structure of the previous section.

The building renovation strategies submitted by Member States in 2014 and 2017 under Article 4 of the EED will be the building blocks for future LTRS.

Guidance for National Energy Efficiency Action Plans (hereafter referred to as "the NEEAP Guidance") already included detailed indications on certain elements to be elaborated in building renovation strategies – relevant sections will be mentioned below.

## Overview of the national building stock (Article 2a(1)(a))

Detailed indications on items to be listed in the overview of national building stock were set out in Annex B, Section 1, (Guidance 57) of the NEEAP Guidance.

The 2017 LTRS from Wallonia (Belgium), France and Malta are good practice examples of how to present an overview of the national building stock.[[24]](#footnote-24)

## Cost effective approaches to renovation (Article 2a(1)(b))

*[To be completed – Provide tips and good practices]*

The NEEAP Guidance provided, in Annex B, Section 2, detailed indications on how to identify cost-effective approaches.

The 2014 LTRS from the Brussels Capital Region and the 2017 LTRS from Wallonia (Belgium) and Bulgaria were highlighted as good practice examples of cost-effective approaches to renovation.[[25]](#footnote-25)

*Rental and energy performance*

In England and Wales, if a property is rated with an EPC category below "E", landlords may not rent out a domestic private property after 1 April 2018 (such leases may not continue beyond 1 April 2020) or rent out a non-domestic private property after 1 April 2018 (such leases may not continue beyond 1 April 2023).

Scotland introduced a new measure that mandates renovation of low performing social housing.

In Greece, a similar approach applies according to which buildings to be leased or bought by the public sector are required to be set at EPC rating "C". The obligation must be applied to all existing lease contracts by 2020.

## Policies and actions towards deep renovation (Article 2a(1)(c))

*[To be completed – Provide tips and good practices]*

In Annex B, Section 3, the NEEAP Guidance provided indications on information that should be provided with regard to policies and measures to stimulate cost-effective deep renovations.

The 2017 LTRS from the Brussels Capital Region and France are good practice examples of measures to stimulate deep renovation.[[26]](#footnote-26)

There are an increasing number of building renovation passports/roadmap schemes in the EU and the most well-known are:

* Individueller Sanierungsfahrplan (Individual renovation roadmap) – Germany;
* Woningpas (Dwelling ID) – Region of Flanders, Belgium;
* Passeport efficacité énergétique (Energy efficiency passport) – France.

## Policies and actions towards worst-performing buildings and energy poverty (Article 2a(1)(d)

### Worst performing segments of the national building stock

*[To be completed – Provide tips and good practices]*

### Split incentive dilemmas

*[To be completed – Provide tips and good practices]*

### Market failures

The NEEAP Guidance, Annex B, Section 3(b) included an analysis of barriers as one of the elements of information that should be provided and according to Section 3(d) of Annex B, new policy measures should address those barriers.

The Impact Assessment that accompanied the proposal to revise the EPBD[[27]](#footnote-27) also addresses barriers that hamper further uptake of energy efficiency investments in buildings.

### Alleviation of energy poverty

The JRC’s assessment of the 2017 LTRS gives an overview of the direct (specific policies and measures) and indirect references (general strategies or initiatives) that Member States have made to on-going or planned efforts related to energy poverty. Many of the measures concern financial incentives targeting segments of the population considered under energy poverty line, low-income households or social housing units. Some countries introduced specific actions targeting energy poverty under their energy efficiency obligation schemes, while other set up dedicated awareness raising and advisory services.

The EU Energy Poverty Observatory is a valuable source of data and statistics. It has developed energy poverty indicators, gathered an extensive catalogue of policy measures and a comprehensive repository of research. The Observatory aims to help stakeholders (policy-makers, NGOs, public authorities of different levels, researchers and practitioners) involved in energy poverty policy designing or its implementation to define the phenomenon, and advise on measuring it. It also facilitates exchange of good practice and provides training materials. The Observatory can be of assistance to Member States directly in providing advice and expertise – both ad hoc and via its extensive Advisory Board, comprising experienced experts in all the different aspects of energy poverty.

In France, fuel poverty is addressed through actions of the National housing agency and its ‘Habiter mieux’ (Living better) programme. France has also created a new obligation under its energy savings certificates scheme specifically aimed at combating fuel poverty. Actions funded by this scheme will be implemented among low-income households. A "Fuel poverty observatory" was also set up in France with the aim to better measure fuel poverty situations and monitor public and private financial aid granted to disadvantaged households together with actions under local or national initiatives.

Under the Government’s Strategy to Combat Energy Poverty and the Healthy Ireland Framework, the Irish authorities have set up the Warmth and Wellbeing scheme, a pilot initiative with the objective to validate, in an Irish context, the international evidence that suggests making homes warmer and more energy efficient can have a positive effect on the health and wellbeing of people in energy poverty who are also living with a chronic respiratory condition such as COPD & Asthma. Ireland has also the Social Housing Investment Programme, local authorities are allocated capital funding each year in respect of a range of measures to improve the standard and overall quality of their social housing stock including retrofit measures aimed at improving energy efficiency.

In Austria, a bonus factor is included in the energy efficiency obligation scheme whereby savings achieved in low-income households are weighted with a factor of 1.5. In addition, energy suppliers must make an information and advice centre available, including the provision of energy advice related to energy poverty. Other examples of dedicated regional/local programmes in Austria include the energy advice scheme in Vienna, and electricity-saving project for low-income households in the districts of Braunau, Freistadt & Linz-Land.

The Netherlands has put in place the Energy Saving Agreement for the Social Rental Sector, setting the objective for the housing association sector to achieve an energy label B (equivalent to energy index 1.25) on average by 2020.

Other examples include the PLAGE SISP programme in the Brussels Capital Region, Subsidies for implementation of individual energy efficiency measures in vulnerable households in Croatia, JESSICA programmes in Lithuania and Czech Republic, personalised advisory services for EE for households with low income in Luxembourg, etc. Italy and France have in place social bonus or discounts on energy bills for low income families.

## Policies and actions towards public buildings (Article 2a(1)(e))

*[To be completed – Provide tips and good practices]*

## Incentives towards smart technologies and skills (Article 2a(1)(f))

*[To be completed – Provide tips and good practices]*

BUILD UP Skills[[28]](#footnote-28) is an initiative which aims to unite forces and to increase the number of qualified workers in the building workforce in Europe. The project focuses on the continuing education and training of craftsmen and women and other on-site workers in the field of energy efficiency and renewable energy in buildings and has three main components.

* Establishment of national qualification platforms and qualification roadmaps to 2020 (Pillar I: 2011-2013);
* Development and upgrade of qualification and training schemes (Pillar II: from 2013);
* Europe-wide coordinated support activities (EU exchanges).

### Skills development schemes

*[hyperlinks to be added]*

BUILD UP Skills Construye2020 (Spain): The project developed an app for mobile devices which can be used as a training tool on good practices for the renovation of buildings related to different activities covering notably aluminium carpentry, insulation, renewable energy systems, energy efficiency and efficient installations. The project is working with the national qualification institute to develop a new qualification for the installer of ground source heat pumps.

BUILD UP Skills Netherlands@Work (Netherlands): Eight profiles of blue collar professional competences have been created constituting competence profiles for an occupation including the skills required when building energy-neutral buildings. The project developed an app for mobile devices which enables blue collar workers to choose the adequate course based on their previous knowledge.

BUILD UP Skills BEEP (Finland): the BEEP partners have developed an innovative training concept (both for trainers & workers) based on best-practice of energy-efficient construction, based on a comprehensive toolbox including: sets of slides and didactic videos in 5 languages, material dedicated to workers self-learning, a pilot training for 'change agents' (experienced workers/mentors who can help to set an example and explain how to improve the quality of the work) and an on-site training ambassador who plays a critical role in attracting workers' to the pilot trainings.

BUILD UP Skills Qualishell (Romania): The project supported the implementation of national qualification schemes for installers of thermal insulating systems and high efficiency windows systems to ensure high performance building envelopes and support the move towards the implementation of NZEBs.

### Training/certification for experts

Germany: the national list of energy efficiency experts for the support programmes of the Federal Government in the field of energy efficiency aims to improve the quality of local energy consulting services by means of uniform qualification criteria, proof of regular advanced training and random checks of the results.

Slovenia: a common training/certification article in its legislation for all three Directives EED, EPBD and RES and is achieving synergies by implementing a co‐ordinated modular training approach.

Croatia: training programmes on energy efficiency for professionals (architecture, construction and building services) have been implemented since 2009. The objective is to enhance knowledge of engineers that, with their competencies, are able to consider construction works and buildings as a whole in terms of energy.

## Estimate of energy savings and wider benefits (Article 2a(1)(g))

*[To be completed – Provide tips and good practices]*

Section 5 of Annex B of the NEEAP Guidance provided elements that should be evaluated in providing an evidence-based estimate of expected energy savings and wider benefits.

The 2017 LTRS from Cyprus, Czech Republic, Finland, Lithuania, Romania and Sweden are good practice examples of strategies that have sought to quantify the wider benefits of building renovation.[[29]](#footnote-29)

*See also : WHO guidelines on healthy housing [to be completed]*

*See also : JRC Report on healthy buildings [to be completed]*

## Mechanisms to support the mobilisation of investments (Article 2a(3))

The following guidance relates to the different types of financial mechanism which Member States should facilitate access to.

### aggregation of projects

* PadovaFIT![[30]](#footnote-30) aims to retrofit multifamily buildings through energy performance contracting. The project aggregates all the subscribing buildings to generate a critical mass, achieve favourable economic conditions, and guarantee on the quality of the works to be done by the bidders. Since 2014, the consortium has been engaging condominiums throughout the City of Padova (Italy) in order to build significant demand for energy retrofits. In the meantime, the municipality has procured a private ESCO, which will enter into a contract with each condominium, and then finance the energy retrofit, which will be paid through the energy savings.

### reduction of the perceived risk of energy efficiency operations

* Standardisation of energy efficiency to increases investors' confidence (support the deployment of protocols to reduce performance risks – e.g. the Investor Confidence Project (ICP) Europe;
* The Energy Efficient Mortgage Initiative that aims to create a standardised “energy efficient mortgage” product at European level (the idea is to give preferential mortgages to building owners willing to improve the energy efficiency of their buildings by taking into consideration the positive impact of energy efficiency on the value of buildings and on payment defaults; the pilot phase started in June 2018, with more than 35 banks committed to participate in the pilot scheme);
* Making energy efficiency attractive for institutional investors and supporting the refinancing of energy efficiency related assets (e.g. the Latvian Baltic Energy Efficiency Fund (LABEEF) – providing long term financing to ESCOs by forfaiting EPC contracts[[31]](#footnote-31); green bonds for energy efficiency).

### public funding to leverage private-sector investment or address market failures

* Loan schemes co-financed by public funds (e.g. Multi-Apartment Building modernization funds (Lithuania);[[32]](#footnote-32) combination of loans, technical assistance and grants for renovation of multi-apartment buildings (Estonia);[[33]](#footnote-33) KfW grants and loans for energy renovation[[34]](#footnote-34) (Germany); SlovSEFF (Slovakia);[[35]](#footnote-35)
* Risk-sharing instruments including loans, guarantees, and technical assistance (e.g. Private Finance for Energy Efficiency (PF4EE);[[36]](#footnote-36) the Smart Finance for Smart Buildings guarantee facility (under development);
* On-line EU mapping tool, to understand how public funds can be used to support energy efficiency in Europe (under development).

###  guiding investments into an energy efficient public building stock;

* Assistance to facilitate the use of Energy Performance Contracts (e.g. EPC market facilitators; framework contract to simplify EPC procurement (UK), development of practical guides on EPCs, projects such as TRUST-EPC-South, GuarantEE (UK).
* Initiatives to use Energy Performance Contracts and Energy Service Companies (ESCOs) for the renovation of public buildings (e.g. ESCOLimburg2020 (BE),[[37]](#footnote-37) RE:FIT (UK),[[38]](#footnote-38) EoL (SI),[[39]](#footnote-39) 2020TOGETHER (IT),[[40]](#footnote-40) RenoWatt (BE).[[41]](#footnote-41)

###  accessible and transparent advisory tools

* “One-stop-shop” approach or integrated service for the energy renovation of buildings (e.g. Energie Posit'If for the refurbishment of condominiums (France);[[42]](#footnote-42) Picardie Pass Rénovation (France) for the deep renovation of detached houses (France);[[43]](#footnote-43)
* General advisory services (e.g. FI-Compass, the European Investment Advisory Hub), technical guidance on financing the energy renovation of buildings with Cohesion policy funding.

***Smart Finance for Smart Buildings*** *includes several initiatives at EU level which can support Member States in their efforts to set up and facilitate access to appropriate mechanisms to support the mobilisation of investments into building renovation:*

*Sustainable Energy Investments Forums initiative*

<https://ec.europa.eu/energy/en/financing-energy-efficiency/sustainable-energy-investment-forums>

*ManagEnergy initiative*

<https://www.managenergy.net/>

*European Local ENergy Assistance (ELENA)*

<http://www.eib.org/en/products/advising/elena/index.htm>

*Horizon 2020: financing energy efficiency calls*

*The updated work programme for 2018-2020 can be found here:* <http://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-energy_en.pdf>

*General advisory services (e.g. FI-Compass[[44]](#footnote-44), the European Investment Advisory Hub[[45]](#footnote-45)) can provide technical guidance on financing the energy renovation of buildings.*

## Public consultation

The European Commission, in developing policy and legislation, relies on a transparent process, which involves citizens and stakeholders (for example, businesses, public administrations and researchers) throughout. Guidelines for the consultation of stakeholders have been developed and these may be useful for Member States in formulating their own process.[[46]](#footnote-46)

The following broad principles, adapted from the UK Government’s guidance on consultation principles,[[47]](#footnote-47) could serve as useful guidelines for Member States in defining public consultation methodology for the development of their LTRS.

1. *Consultations should be clear and concise*

Be clear what questions you are asking and limit the number of questions to those that are necessary. Make them easy to understand and easy to answer. Avoid lengthy documents.

1. *Consultations should have a purpose*

Take consultation responses into account when taking policy forward. Consult about policies or implementation plans when the development of the policies or plans is at a formative stage. Do not ask questions about issues on which you already have a final view.

1. *Consultations should be informative*

Give enough information to ensure that those consulted understand the issues and can give informed responses. Include validated impact assessments of the costs and benefits of the options being considered when possible.

1. *Consultations are only part of a process*

Consider whether informal iterative consultation is appropriate, using new digital tools and open, collaborative approaches. Consultation is not just about formal documents and responses. It is an on-going process.

1. *Consultations should last for a proportionate amount of time*

Judge the length of the consultation on the basis of the nature and impact of the proposal. Consulting for too long will delay policy development. Consulting too quickly will not give enough time and will reduce the quality of responses.

1. *Consultations should be targeted*

Consider the full range of stakeholders affected by the policy, and whether representative groups exist. Consider targeting specific groups if appropriate. Ensure they are aware of the consultation and can access it.

1. *Consultations should take account of the groups being consulted*

Certain stakeholders may need more time to respond. When the consultation spans all or part of a holiday period, consider how this may affect consultation and take appropriate mitigating action, such as prior discussion with key interested parties or extension of the deadline.

1. *Consultations should be agreed before publication*

Seek collective agreement before publishing a written consultation, particularly when consulting on new policy proposals.

1. *Consultation should facilitate scrutiny*

Publish any response on the same page online as the original consultation. Explain the responses that have been received and how these have informed the policy. State how many responses have been received.

1. *Responses to consultations should be published in a timely fashion*

Publish responses within 12 weeks of the consultation or provide an explanation why this is not possible. Allow appropriate time between closing the consultation and implementing policy or legislation.

Few Member States have detailed the consultation process for their 2014 and 2017 LTRS. However, Finland provides good practice[[48]](#footnote-48) of early involvement of relevant actors also to increase acceptance of jointly developed measures.

As the Finnish National Building Codes are developed, professionals and major organisations in the field are consulted and take an active part in the work, through preliminary studies and consultation forums. The proposals for national definitions and guidelines for NZEBs are being developed with active involvement of professional organisations from the construction industry, the building design and planning fields.

The involvement of professionals is also visible in the implementation of EPCs. Organisations in the building ownership as well as the building maintenance sectors are involved in both developing the national transposition and disseminating EPCs. Cooperation with the building and construction sectors and active involvement of field professionals has ensured that there is a high degree of compliance with the legislation – laws, decrees and building codes.

1. Directive (EU) 2018/844 of 30 May 2018 amending Directive 2010/31/EU on the energy performance of buildings and Directive 2012/27/EU on energy efficiency. [↑](#footnote-ref-1)
2. Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings. [↑](#footnote-ref-2)
3. Directive 2012/27/EU of the European Parliament and of the Council of of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC. [↑](#footnote-ref-3)
4. The following renovation depths, have been developed in the context of the EU Building Stock Observatory, based on primary energy savings: light renovations (less than 30%); medium renovations (between 30% and 60%); deep renovations (beyond 60%). NZEB renovations are not defined in terms of a specific primary energy saving threshold, but according to official national NZEB renovation definitions. [↑](#footnote-ref-4)
5. Recital 9 of Directive (EU) 2018/844 encourages Member States to consider introducing or continuing to apply requirements for a certain level of energy performance for rental properties, in accordance with Energy Performance Certificates (EPCs). This type of measure, which would go beyond the requirements of the revised EPBD, would introduce a requirement to renovate worst performing buildings before they are rented. [↑](#footnote-ref-5)
6. Member States could explore the possibility of incentivising insurance companies to inform clients of financing instruments available in the Member State (thereby also reducing their costs following a natural disaster/accident). [↑](#footnote-ref-6)
7. Recital 16 of the EED [↑](#footnote-ref-7)
8. Commission Staff Working Document (SWD(2013) 143 final) accompanying the report from the Commission to the European Parliament on "Financial support for energy efficiency in buildings" COM(2013)225 final. [↑](#footnote-ref-8)
9. See 2016 report from Buildings Performance Institute Europe - <http://bpie.eu/wp-content/uploads/2017/01/Building-Passport-Report_2nd-edition.pdf> [↑](#footnote-ref-9)
10. According to Article 19a of the revised EPBD, the Commission shall, before 2020, conclude a feasibility study, clarifying the possibilities and timeline to introduce an **optional** building renovation passport that is complementary to the energy performance certificates, in order to provide a long-term, step-by-step renovation roadmap for a specific building based on quality criteria, following an energy audit, and outlining relevant measures and renovations that could improve the energy performance. This study will provide an in-depth overview of existing building renovation passport schemes already in place. [↑](#footnote-ref-10)
11. Article 19 of the EED already requires Member States to "evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, without prejudice to the basic principles of the property and tenancy law of the Member States. In particular as regards the split of incentives between the owner and the tenant of a building or among owners, with a view to ensuring that these parties are not deterred from making efficiency- improving investments that they would otherwise have made by the fact that they will not individually obtain the full benefits or by the absence of rules for dividing the costs and benefits between them, including national rules and measures regulating decision-making processes in multi-owner properties." [↑](#footnote-ref-11)
12. <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/overcoming-split-incentive-barrier-building-sector> [↑](#footnote-ref-12)
13. Recital 11 of of Directive (EU) 2018/844 explicitly mentions that "the need to alleviate energy poverty should be taken into account, in accordance with criteria defined by the Member States. While outlining national actions that contribute to the alleviation of energy poverty in their renovation strategies, the Member States have the right to establish what they consider to be relevant actions." [↑](#footnote-ref-13)
14. Under Articles 5 and 6 of the EED, Member States already have existing obligations related to buildings owned and occupied by central government and to procurement of buildings by central government. [↑](#footnote-ref-14)
15. Recital 16 of Directive (EU) 2018/844 [↑](#footnote-ref-15)
16. In May 2018, Eurostat and the European Investment Bank launched their new practitioners’ guide on the statistical treatment of Energy Performance Contracts. It will help public authorities and market actors understand under which conditions of an Energy Performance Contract could be considered off balance sheet. It will help public authorities prepare and finance projects by mobilising private capital and expertise. [↑](#footnote-ref-16)
17. Recital 14 of Directive (EU) 2018/844 [↑](#footnote-ref-17)
18. Recital 13 of Directive (EU) 2018/844 [↑](#footnote-ref-18)
19. In line with the subsidiarity principle, safety issues are regulated at Member State level. Issues such as those related to the choice of materials, to horizontal building safety regulations, and to structural performance of the building, are regulated at national level and are out of the scope of the Directive. [↑](#footnote-ref-19)
20. <https://deep.eefig.eu/> [↑](#footnote-ref-20)
21. <http://www.eefig.eu/index.php/underwriting-toolkit> [↑](#footnote-ref-21)
22. <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1535361114906&uri=CELEX:52016SC0404> [↑](#footnote-ref-22)
23. Following this political agreement, the text of the Regulation will have to be formally approved by the European Parliament and the Council. Once formally adopted by both co-legislators in the coming months, the Regulation on the Governance of the Energy Union will be published in the Official Journal of the Union and will enter into force 20 days after publication. <http://europa.eu/rapid/press-release_IP-18-4229_en.htm> [↑](#footnote-ref-23)
24. JRC Science for Policy Report: Assessment of Second Long-term Renovation Strategies under the Energy Efficiency Directive, 2018 [↑](#footnote-ref-24)
25. JRC Science for Policy Reports: Synthesis Report on the assessment of Member States' building renovation strategies (2016) and Assessment of Second Long-term Renovation Strategies under the Energy Efficiency Directive (2018) [↑](#footnote-ref-25)
26. <https://ec.europa.eu/energy/sites/ener/files/documents/2014_article4_en_denmark.pdf> [↑](#footnote-ref-26)
27. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016SC0414&from=EN> [↑](#footnote-ref-27)
28. <http://www.buildup.eu/en/skills> [↑](#footnote-ref-28)
29. JRC Science for Policy Report: Assessment of Second Long-term Renovation Strategies under the Energy Efficiency Directive (2018) [↑](#footnote-ref-29)
30. <http://www.padovafit.it/english/> [↑](#footnote-ref-30)
31. <http://sharex.lv/en/latvian-baltic-energy-efficiency-facility-labeef> [↑](#footnote-ref-31)
32. <http://www.vipa.lt/page/dnmfen> [↑](#footnote-ref-32)
33. <http://www.kredex.ee/en/apartment-association/> [↑](#footnote-ref-33)
34. <https://www.kfw.de/inlandsfoerderung/Privatpersonen/Bestandsimmobilie/> [↑](#footnote-ref-34)
35. <http://www.slovseff.eu/index.php/en/> [↑](#footnote-ref-35)
36. <http://www.eib.org/en/products/blending/pf4ee/index.htm> [↑](#footnote-ref-36)
37. <http://www.escolimburg2020.be/en> [↑](#footnote-ref-37)
38. <https://www.london.gov.uk/what-we-do/environment/energy/energy-buildings/refit/what-refit-london> [↑](#footnote-ref-38)
39. <http://www.eib.org/attachments/documents/elena-completed-eol-en.pdf> [↑](#footnote-ref-39)
40. <https://ec.europa.eu/energy/intelligent/projects/en/projects/2020together> [↑](#footnote-ref-40)
41. <http://www.gre-liege.be/renowatt/25/renowatt.html> [↑](#footnote-ref-41)
42. <http://www.energiespositif.fr/> [↑](#footnote-ref-42)
43. <https://www.pass-renovation.picardie.fr/> [↑](#footnote-ref-43)
44. <https://www.fi-compass.eu/> [↑](#footnote-ref-44)
45. <http://eiah.eib.org/> [↑](#footnote-ref-45)
46. <https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines-stakeholder-consultation.pdf> [↑](#footnote-ref-46)
47. <https://www.gov.uk/government/publications/consultation-principles-guidance> [↑](#footnote-ref-47)
48. <https://ec.europa.eu/energy/sites/ener/files/documents/5_en_autre_document_travail_service_part1_v4.pdf> [↑](#footnote-ref-48)