

# Consultation on the Renovation Wave initiative for public and private buildings

Fields marked with \* are mandatory.

## Introduction

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#### **Introduction**

The EU building sector is the largest single energy consumer in Europe. The operation of buildings is responsible for 36% of the EU's carbon dioxide (CO<sub>2</sub>) emissions a key greenhouse gas (GHG) that is causing planetary warming and climate change. The greenhouse gas emissions from material extraction, manufacturing of construction products, and the construction and renovation of buildings are estimated at between 5-12% of total national GHG emissions<sup>[1]</sup>.

Three quarters (75%) of the existing building stock is energy inefficient and was constructed before legislation on building performance was in place. Four-fifths (80%) of today's buildings will still be in use in 2050. With only 1% (on average) of buildings undergoing energy renovations each year, it would take over 100 years to deliver on the EU's 2050 climate neutrality objective. Just over one third (35%) of the buildings in the EU are over 50 years old, and therefore an integrated conservation approach with respect to heritage values is required.

Stimulating a faster and deeper renovation of the existing building stock is vital for reaching the EU's climate and energy efficiency objectives. An integrated approach to building renovation means boosting energy performance of buildings by applying the 'energy efficiency first' principle, deploying renewables, preparing for climate impacts, deploying urban green and blue infrastructure and incorporating circular economy, waste treatment and pollution prevention principles. The expected benefits are broad and include lowering energy bills, alleviating energy poverty, increasing resilience to climate change, contributing to human health, safety and improved indoor air quality and providing habitats for biodiversity, as well as boosting the construction sector and, in doing so, supporting SMEs and local jobs.

To this end, and as part of the commitments in the European Green Deal<sup>[2]</sup>, the European Commission is preparing a 'Renovation Wave' for public and private buildings to address the twin challenge of energy efficiency and affordability. This initiative will set a vision for the short, medium and long term to kick-start and deliver different levels of renovation of the existing building stock, with accompanying financial instruments and mechanisms. The Renovation Wave is part of the European Green Deal and will be a key component of the EU's recovery after the Covid-19 pandemic.

This initiative builds upon the broader EU energy efficiency policy framework, in particular the Energy Efficiency Directive (2012/27/EU), as amended by Directive 2018/2002/EU (EED), the Energy Performance of Buildings Directive (2010/31/EU), as amended by Directive 2018/844/EU (EPBD) and Energy Labelling Regulation ((EU) 2017/1369) and Ecodesign Directive (2009/125/EC). It is moreover consistent with other recent relevant EU initiatives on climate, circular economy, industrial strategy and the environment.

The European Commission seeks to gather views and input on this initiative on the renovation of public and private buildings from a broad range of stakeholders, ranging from national, regional and local authorities to businesses, unions, civil society organisations, education organisations, consumer groups, research and innovation organisations, as well as individual citizens. This questionnaire is complementary to ongoing consultation and engagement with local, regional and national authorities, and with other stakeholders.

You may also be interested in providing your input to the ongoing public consultation for the 2030 Climate Target plan, which is open until 23 June 2020<sup>[3]</sup>.

## **Guidance on the questionnaire**

Thank you for taking part in this consultation. We want to hear your views on how to make the Renovation Wave as effective, overarching and ambitious as possible. Following some introductory questions about yourself, the questionnaire continues with questions covering the following topics:

- What is building renovation and barriers to building renovation;
- Assessing the existing mechanisms for mobilising building renovation;
- Further policies and measures to boost building renovation rates and depth, including accessible and attractive financing; expected impact of the Covid-19 pandemic on building renovation;
- Key enabling factors for supportive policymaking and implementation to deliver building renovation;
- How best to target the worst performing buildings;
- Fostering the role of central, regional and local authorities and new actors;
- Scaling up the role of the private sector, industries, and decentralised solutions;
- Most promising approaches and best practices for targeting the residential sector, including affordable housing aspects, energy poverty and social housing;
- Most promising approaches and best practices for targeting SMEs at large;
- Best practices for targeting schools and other educational institutions, hospitals and other public buildings;
- Wider benefits of renovating the EU building stock;
- Smart technologies for transforming today's buildings into the buildings of the future.

We estimate that the completion of the entire survey would require approximately one hour. Please, note that while you are not obliged to respond to all questions in the survey, in order to submit your contribution you need to provide us with your valuable input at least concerning the elements of and barriers to building renovation (Sections 1 and 2), your assessment of the importance of existing mechanisms for mobilising building renovation (section 3), as well as your views on additional policies and measures to boost renovation rates and depth (Section 4 ), on reaching out the worst performing buildings (Section 7) and on

the wider benefits of renovating the EU building stock (Section 14). Sections 2 and 3 offer you a choice among a simplified obligatory shortlist of responses and an option to rate replies that are more detailed by sector.

**NB:** There is a session timeout for the submission of your contribution after 60 minutes; this is an automatic security feature. In order to avoid any loss of data, do not forget to use the “Save as Draft” option on the top right side of your screen before the 60 minutes expire. You can subsequently resume work on your contribution, and submit once completed.

[1] COM (2020) 98 final

[2] COM(2019) 640 final

[3] The link to the public consultation: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12265-2030-Climate-Target-Plan/public-consultation>

## About you

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### \* Language of my contribution

- Bulgarian
- Croatian
- Czech
- Danish
- Dutch
- English
- Estonian
- Finnish
- French
- Gaelic
- German
- Greek
- Hungarian
- Italian
- Latvian
- Lithuanian
- Maltese
- Polish
- Portuguese
- Romanian
- Slovak
- Slovenian

- Spanish
- Swedish

\* I am giving my contribution as

- Academic/research institution
- Business association
- Company/business organisation
- Consumer organisation
- EU citizen
- Environmental organisation
- Non-EU citizen
- Non-governmental organisation (NGO)
- Public authority
- Trade union
- Other

Other. Please specify:

*200 character(s) maximum*

\* First name

\* Surname

\* Email (this won't be published)

\* Organisation name

*255 character(s) maximum*

\* Organisation size

- Micro (1 to 9 employees)

- Small (10 to 49 employees)
- Medium (50 to 249 employees)
- Large (250 or more)

## Transparency register number

*255 character(s) maximum*

Check if your organisation is on the [transparency register](#). It's a voluntary database for organisations seeking to influence EU decision-making.

13073098010-57

## \*Country of origin

Please add your country of origin, or that of your organisation.

- |   |  |  |  |
|---|--|--|--|
| <input type="radio"/> Afghanistan         | <input type="radio"/> Djibouti           | <input type="radio"/> Libya            | <input type="radio"/> Saint Martin                     |
| <input type="radio"/> Åland Islands       | <input type="radio"/> Dominica           | <input type="radio"/> Liechtenstein    | <input type="radio"/> Saint Pierre and Miquelon        |
| <input type="radio"/> Albania             | <input type="radio"/> Dominican Republic | <input type="radio"/> Lithuania        | <input type="radio"/> Saint Vincent and the Grenadines |
| <input type="radio"/> Algeria             | <input type="radio"/> Ecuador            | <input type="radio"/> Luxembourg       | <input type="radio"/> Samoa                            |
| <input type="radio"/> American Samoa      | <input type="radio"/> Egypt              | <input type="radio"/> Macau            | <input type="radio"/> San Marino                       |
| <input type="radio"/> Andorra             | <input type="radio"/> El Salvador        | <input type="radio"/> Madagascar       | <input type="radio"/> São Tomé and Príncipe            |
| <input type="radio"/> Angola              | <input type="radio"/> Equatorial Guinea  | <input type="radio"/> Malawi           | <input type="radio"/> Saudi Arabia                     |
| <input type="radio"/> Anguilla            | <input type="radio"/> Eritrea            | <input type="radio"/> Malaysia         | <input type="radio"/> Senegal                          |
| <input type="radio"/> Antarctica          | <input type="radio"/> Estonia            | <input type="radio"/> Maldives         | <input type="radio"/> Serbia                           |
| <input type="radio"/> Antigua and Barbuda | <input type="radio"/> Eswatini           | <input type="radio"/> Mali             | <input type="radio"/> Seychelles                       |
| <input type="radio"/> Argentina           | <input type="radio"/> Ethiopia           | <input type="radio"/> Malta            | <input type="radio"/> Sierra Leone                     |
| <input type="radio"/> Armenia             | <input type="radio"/> Falkland Islands   | <input type="radio"/> Marshall Islands | <input type="radio"/> Singapore                        |
| <input type="radio"/> Aruba               | <input type="radio"/> Faroe Islands      | <input type="radio"/> Martinique       | <input type="radio"/> Sint Maarten                     |
| <input type="radio"/> Australia           | <input type="radio"/> Fiji               | <input type="radio"/> Mauritania       | <input type="radio"/> Slovakia                         |
| <input type="radio"/> Austria             | <input type="radio"/> Finland            | <input type="radio"/> Mauritius        | <input type="radio"/> Slovenia                         |
| <input type="radio"/> Azerbaijan          | <input type="radio"/> France             | <input type="radio"/> Mayotte          | <input type="radio"/> Solomon Islands                  |

- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bermuda
- Bhutan
- Bolivia
- Bonaire Saint Eustatius and Saba
- Bosnia and Herzegovina
- Botswana
- Bouvet Island
- Brazil
- British Indian Ocean Territory
- British Virgin Islands
- Brunei
- Bulgaria
- Burkina Faso
- Burundi
- French Guiana
- French Polynesia
- French Southern and Antarctic Lands
- Gabon
- Georgia
- Germany
- Ghana
- Gibraltar
- Greece
- Greenland
- Grenada
- Guadeloupe
- Guam
- Guatemala
- Guernsey
- Guinea
- Guinea-Bissau
- Guyana
- Haiti
- Heard Island and McDonald Islands
- Honduras
- Hong Kong
- Mexico
- Micronesia
- Moldova
- Monaco
- Mongolia
- Montenegro
- Montserrat
- Morocco
- Mozambique
- Myanmar /Burma
- Namibia
- Nauru
- Nepal
- Netherlands
- New Caledonia
- New Zealand
- Nicaragua
- Niger
- Nigeria
- Niue
- Norfolk Island
- Northern Mariana Islands
- Somalia
- South Africa
- South Georgia and the South Sandwich Islands
- South Korea
- South Sudan
- Spain
- Sri Lanka
- Sudan
- Suriname
- Svalbard and Jan Mayen
- Sweden
- Switzerland
- Syria
- Taiwan
- Tajikistan
- Tanzania
- Thailand
- The Gambia
- Timor-Leste
- Togo
- Tokelau
- Tonga

- Cambodia
- Cameroon
- Canada
- Cape Verde
- Cayman Islands
- Central African Republic
- Chad
- Chile
- China
- Christmas Island
- Clipperton
- Cocos (Keeling) Islands
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- Côte d'Ivoire
- Croatia
- Cuba
- Curaçao
- Cyprus
- Hungary
- Iceland
- India
- Indonesia
- Iran
- Iraq
- Ireland
- Isle of Man
- Israel
- Italy
- Jamaica
- Japan
- Jersey
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kosovo
- Kuwait
- Kyrgyzstan
- Laos
- Latvia
- North Korea
- North Macedonia
- Norway
- Oman
- Pakistan
- Palau
- Palestine
- Panama
- Papua New Guinea
- Paraguay
- Peru
- Philippines
- Pitcairn Islands
- Poland
- Portugal
- Puerto Rico
- Qatar
- Réunion
- Romania
- Russia
- Rwanda
- Saint Barthélemy
- Trinidad and Tobago
- Tunisia
- Turkey
- Turkmenistan
- Turks and Caicos Islands
- Tuvalu
- Uganda
- Ukraine
- United Arab Emirates
- United Kingdom
- United States
- United States Minor Outlying Islands
- Uruguay
- US Virgin Islands
- Uzbekistan
- Vanuatu
- Vatican City
- Venezuela
- Vietnam
- Wallis and Futuna
- Western Sahara
- Yemen

- Czechia
- Lebanon
- Saint Helena  
Ascension and  
Tristan da  
Cunha
- Zambia
- Democratic  
Republic of the  
Congo
- Lesotho
- Saint Kitts and  
Nevis
- Zimbabwe
- Denmark
- Liberia
- Saint Lucia

\* Publication privacy settings

The Commission will publish the responses to this public consultation. You can choose whether you would like your details to be made public or to remain anonymous.

**Anonymous**

Only your type of respondent, country of origin and contribution will be published. All other personal details (name, organisation name and size, transparency register number) will not be published.

**Public**

Your personal details (name, organisation name and size, transparency register number, country of origin) will be published with your contribution.

I agree with the [personal data protection provisions](#)

\* Do you or does your organisation or institution primarily deal with building renovation?

- yes
- no

\* What is your primary source of information about building renovation?

- Building related press
- Building professionals (architects, including landscape architects, engineers, etc.)
- Construction companies/technicians
- Energy auditors
- Public authorities
- Building related events (exhibitions, fairs, etc.)
- Consumer organisations
- Manufacturers/suppliers of construction material and products

- Energy supply companies, utilities
  - Financial institution
  - Heritage professionals/practitioners
  - Other, please specify [up to 500 characters]
- 

**\* 1. In your view, what elements describe best a building renovation?**

***Please note that question 15 at the end of this survey offers you the opportunity to rate a detailed list of concrete technical solutions towards climate neutral and sustainable residential and non-residential buildings according to their importance.***

*at least 1 choice(s)*

- Improving the energy performance of buildings by improving the energy efficiency of one or more building elements (including the building envelope – roof, windows, façade- , heating and air-conditioning systems, domestic hot water system, lighting, appliances, etc.), by optimal operation and maintenance, and by deploying renewables;
- Improving the preparedness for climate impacts, including climate-related events such as flooding, hail, windstorms, sea-level rise (e.g. carrying out structural reinforcement of buildings) or climate adaptation (e.g. improving response to higher summer temperatures);
- Improving the preparedness for events such as earthquakes and fires by carrying out structural reinforcement of buildings;
- Improving the sanitary conditions of dwellings by removing harmful substances, such as asbestos;
- Improving the usability of the building (including accessibility for persons with disabilities and elderly people), its market value and adapting to new uses;
- Applying circular economy principles, such as reuse or high-quality recycling of construction materials, phasing out hazardous substances, ensuring building performance last longer to avoid numerous renovations, incorporate waste treatment and pollution prevention principles;
- All of the above;
- Other [up to 500 characters]

**2. Barriers to building renovation that slow down the transformation of the existing building stock**

2.1. For all buildings (residential and non-residential), please rate the barriers to renovation to improve building performance according to their importance.

	Very important	Important	Slightly important	Not important at all	No opinion
* Lack of or limited understanding of building renovation technology	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Lack of or limited trust in building renovation products and the benefits of renovation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Lack of or limited resource to finance building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Lack of interest because energy renovation does not pay off in an immediately evident way or it takes too long	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Different interests between house owner and house occupant	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Disagreement between several owners (e.g. multi-apartment buildings)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Physical inconvenience during renovation works	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Difficulties in planning building renovation works, including obtaining permits required, obtaining financing, insurances, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Complexity related to managing separate contracts with architects, installers, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Lack of capacity of construction contractors to deliver technically and/or in time and/or to the expected level of quality (lack of skills, lack of staff, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

Looking only at single building's leads instead of taking a district approach and energy energy system perspective would lead to less energy efficient energy use in cities and inability of making use of waste heat from industries and other premises.

\* 2.2. Would you like to rate a more detailed list of barriers to buildings renovation according to their importance?

- Yes, I would like to rate the barriers to renovate residential buildings in more detail [please move to 2.3 and 2.5].
- Yes, I would like to rate the barriers to renovate non-residential buildings in more detail [please move to 2.4 and 2.5].
- Yes, I would like to rate the barriers to renovate both residential and non-residential buildings in more detail [please move to 2.3., 2.4 and 2.5].
- No, I proceed to the next section of the questionnaire [please move to section 3].

2.3. For residential buildings, please rate the following barriers to renovation to improve building performance according to their importance.

	Very important	Important	Slightly important	Not important at all	No opinion
Insufficient understanding of energy use and savings related to different energy efficiency measures	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of understanding/trust in the technologies and solutions on the market	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of trust or guarantee that renovation will deliver the energy and money savings or other benefits, lack of quality assurance	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of interest – renovation to decrease energy consumption is not attractive for me, need for additional advantages	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy renovation does not pay off in an acceptable timeframe	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The performance does not (sufficiently) impact the value of the building	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low energy prices	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of information/low awareness of available public and/or private financing products for building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Lack of simple, attractive and accessible private financing products for renovation (e.g. loans)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of simple, attractive and easily accessible public incentive measures for renovation (e.g. grants or tax incentives)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cumbersome procedures and/or financial constraints for accessing private financing (e.g. high collateral requirements)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cumbersome procedures and/or financial constraints for accessing public financial support	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of losing the renovation investment to natural or man-made disasters (e.g. climate-related events such flooding, hail, windstorms, sea-level rise, earthquakes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Different interests between house owner and house occupant	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disagreement between several owners (e.g. multi-apartment buildings)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Construction of new buildings regarded as a lower risk/more attractive than renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risks and uncertainties of renovation, e.g. cost increases due to discovery of hazardous materials	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disturbance related to renovation works (physical inconvenience during works)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulatory and administrative barriers and complexity in planning, including permits required, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contracting difficulties of managing separate contracts with architects, installers and bridging potentially different interests	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perceived lack of government support, unambitious policies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local/regional buildings codes hinder cost-effective renovation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Lack of trust in the quality of building renovation products, technological and nature-based solutions	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of capacity of construction contractors to deliver technically and/or in time and/or to the expected level of quality (lack of skills, lack of staff, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

2.4. For non-residential buildings such as offices, shops, hospitals, schools, please rate the following barriers to renovation to improve building performance according to their importance.

	Very important	Important	Slightly important	Not important at all	No opinion
Insufficient information on energy use and savings related to different energy efficiency measures, never completed an energy audit	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of interest - Sustainability not a priority and thus public/private entities lacking or not allocating sufficient financial resources (equity, debt) for building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy renovation does not pay off in an acceptable timeframe	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The performance does not impact the value of the building	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low energy prices	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Different interests (owner-tenant) and ownership relationship (e.g. different budgets for investment and operations)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Investors perceive construction of new buildings as a lower risk/more attractive than renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical complexity of comprehensive renovation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Disturbances related to renovation works (disturbance to business operations, etc.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Regulatory and administrative barriers, planning and contracting difficulties, including permits required, separate contracts with installers, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perceived lack of government support, unambitious policies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of capacity of construction contractors to deliver technically and/or in time and/or to the expected level of quality (lack of skills, lack of staff, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of trust in the quality of building renovation products, technological and nature-based solutions	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Lack of information/knowledge/advice on financing building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of attractive and easily accessible financial incentives (loans, grants, tax incentives etc.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of financing products for building renovation tied to the property rather than the user and reflecting the benefits of increased energy performance of the building	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of mainstream financing products (such as energy efficiency mortgages) that offer also covering the building renovation costs in a single package	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low awareness of available public and private financial solutions for building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insufficient access from public /private entities to Energy Performance Contracts	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For publicly owned buildings: lack of funding	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restrictive rules on procurement, annual budgeting and accounting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most cost-efficient measures (low-hanging fruits) already implemented => more complex and costly packages needed	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lack of staff in public/private entities with skills to deal with the renovation process (i.e. bundling or pooling a larger number of units, identifying legal, technical and contractual solutions, etc.).	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.5. In case you have had any direct experience with the use of EU funds for building renovation, you are invited to share your experience.

- I have direct experience with the use of EU funds for building renovation and would like to share specific issues encountered [up to 1000 characters].
- I have direct experience with the use of EU funds for building renovation, but I prefer not to share any specific issues encountered [please move to section 3].
- No direct experience with the use of EU funds for building renovation [please move to section 3].

### 3. Facilitating mechanisms for mobilising building renovation

\* 3.1. What are the key policies necessary to mobilise building renovation?

*at least 1 choice(s)*

- Information and advice about all aspects of building renovation
- Implementation support for building renovation (e.g. one-stop shop)
- Simplification of administrative procedures
- Increase in the availability of appropriate public incentives (grants or fiscal measures) for building renovation
- Increase in the availability of attractive and easily accessible public financing
- Increase in the availability of attractive and easily accessible private financing
- Changes in energy taxation or carbon pricing to internalise the cost of greenhouse gas emissions
- Regulatory requirements for building renovation
- None of the above
- Other [up to 500 characters]

\* 3.2. Would you like to further rate a more detailed list of policies and measures to accelerate renovation to improve building performance according to their importance?

- Yes [please move to sub-sections 3.3, 3.4 and 3.5.]
- No, I proceed to the next section of the questionnaire [please move to section 4]

3.3. Please select those existing regulatory and administrative policies and measures which you think would be the most relevant to strengthen in order to accelerate renovation investments to lower energy consumption, or to achieve

other performance improvements, in all building types (residential and non-residential) and rate them accordingly.

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
Mandatory minimum energy performance requirements (whole building)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandatory minimum energy performance requirements (building elements, technical building systems)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandatory minimum equipment requirements (e.g. building automation and control systems, renewable energy, charging stations, smart systems for self-consumption)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandatory inspection and audit schemes	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandatory follow up of inspections or energy audits, including as part of voluntary agreements	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Renovation targets, including as part of voluntary agreements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Climate change adaptation targets	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clean air objectives or air quality plans	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Materials reuse or recycling or recovery targets	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improving accessibility for persons with disabilities and elderly people	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3.4. Please select those existing financing tools which you think would be the most relevant to strengthen in order to accelerate renovation investments to lower energy consumption in all building types (residential and non-residential) and rate them accordingly:

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
Non-repayable rewards, such as national or regional public grants and subsidies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Non-repayable rewards, such as EU grants and subsidies	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Debt and equity financing: loans/soft loans, revolving funds, green leasing, energy service agreements, Energy Performance Contracting, etc.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy efficiency loans and/or mortgages offered by commercial banks	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A combination of public grants and finance mechanisms (loans, guarantees, etc.)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tax reductions and deductions for building renovation: income tax credit/deductions, property taxation (including local property taxation), lower VAT rates, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Innovative financing models for repaying the upfront investment, such as repayment of investments to the utility bill (on-bill financing), municipal bonds to finance renovation (on-tax financing), energy efficiency as a service model	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Innovative methods for raising funds, such as crowdfunding for energy efficiency, insurance for energy savings, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of revenues from the Emission Trading System (ETS) for building renovation programmes	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indirect financial incentives e.g. lower insurance premiums for renovated resilient buildings	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3.5. Please select those existing tools to enhance information, communication, technical assistance, as well as skills and knowledge which you think would be the most relevant to strengthen in order to accelerate renovation investments to lower energy consumption in all building types (residential and non-residential) and rate them accordingly:

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
Advice and assistance in legal, planning, technical, administrative and financing matters, implementation support to building owners and operators	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Specific “brokerage” of financing for building renovations	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Development of energy audits, information via energy performance certificates, energy labelling, informative metering and billing, etc.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Enhanced knowledge on renovation benefits, including wider benefits such as health (indoor and ambient air quality), comfort, higher disposable income, preparedness to climate impact	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Up- and re-skilling of workers/staff through training or education, cooperation with education & training institutions to improve building performance	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information on overall environmental performance of building materials and technical systems, including water efficiency, energy efficiency, presence/emission of hazardous chemicals, repairability/reusability/recyclability	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 4. Further policies and measures to boost building renovation rates and depth: how to increase demand and foster innovation

4.1. For residential buildings, please select policies and measures in terms of their effectiveness to achieve residential building transformation. Please rate them accordingly:

### 4.1.1. Regulatory and administrative tools

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Mandatory renovation targets at the level of Member States, regions or cities and municipalities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Targets for average performance of the residential stock	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Mandatory minimum energy performance requirements at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovations, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Requirements to implement cost-efficient renovation measures at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovations, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Housing laws to ensure that homeowners associations have easy and efficient decision-making procedures	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to ensure building performance impacts the value of the building	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to create incentives for building renovation instead of demolition and new-building	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures relevant to heritage conservation that include improvement to buildings' energy performance whilst respecting their heritage values	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to bridge different interests on the rental markets between owners and tenants (occupants) of buildings and share the benefits of building renovation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Ban on sale or use of fossil fuel heating systems by a certain date	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

* Planned replacement of fossil heating systems with renewables at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Binding air quality standards	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

Regulatory measures should build upon already existing EU legislation in the Energy Performance of Buildings Directive (EPBD). For Member States a basis should be the energy renovation strategies reported earlier in 2020 according to the EPBD Directive.

#### 4.1.2. Economic instruments and financing

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Attractive and easily accessible financing packages for building renovation combining different types of funds (EU and national, regional and local public funds, and private funds), including in the context of the recovery plan after Covid-19	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Facilitating the access to financial products (grants, loans/soft loans, guarantees, mortgages, etc.) and to new business and financing models (energy communities, housing associations, etc.), including in the context of the recovery plan after Covid-19	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Deployment of attractive and easily accessible renovation lending products (unsecured loans) and/or enabling the mass-scale property financing products (energy efficiency mortgages) to cover also the renovation costs at the same conditions by commercial banks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Tax regimes and fiscal instruments to promote building renovation (e.g. tax incentives or targeted redistribution of local tax revenue)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Energy taxation and/or carbon pricing reflecting the external costs of energy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*					

Standardisation of contracts and clauses in financing to reduce performance risk (loan standards for finance products, standard guarantee clauses, standardisation of contracts for local authorities, large property owners, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Lower insurance premiums for renovated resilient buildings	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

Market based instruments should be used as much as possible focussing on internalising carbon price in the building sector. Focus should be on promoting cost-efficient energy efficiency measures in building renovation with information, guidance and more easy access of funding of energy renovations.

#### 4.1.3. Technical assistance, aggregation and information and communication

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* One-stop shops for citizens as independent, transparent and accessible advisory tools to inform and assist efforts for building renovation and ease access to financing	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Mainstreaming the deployment of dedicated energy efficiency or renovation lending products (unsecured loans, mortgages) by commercial banks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Bundling renovations by larger numbers of buildings: aggregation of projects and packaged solutions for joint planning, permitting, financing and contracting	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Facilitate public-private-community sector partnerships (e.g. energy communities)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Information campaigns (e.g. enhanced role of energy agencies, schools, local authorities, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Energy Performance Certificate/energy label databases to identify more clearly and prioritise potential for energy saving and pollution reduction and estimate costs	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Integrate environmental, social and governance performance criteria into					

investment decisions and procurement processes	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

#### 4.1.4. Skills and knowledge

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Building skills, education and training: upskilling of architects and installers, engineers, heritage professionals and construction workforce and/or reskilling to energy, resource and water efficiency (including avoiding hazardous materials), pollutant emission reduction, building integrated and related renewable energy, resilience to climate change impacts, urban green and blue infrastructure, digitalisation and innovation, including in the context of the recovery plan after Covid-19	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Capacity building for public authorities at all levels (national, regional and local) and their mandated bodies to engage strongly with citizens for faster take up of home renovation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Capacity building for commercial banks to increase the availability of dedicated energy efficiency or renovation lending products (unsecured loans, mortgages)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Qualification and certification schemes for the construction workforce	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

4.2. For non-residential buildings, please select policies and measures in terms of their effectiveness to achieve non-residential building transformation. Please rate them accordingly.

#### --4.2.1. Regulatory and administrative tools

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Mandatory renovation targets at the level of Member States	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
*					

Ensure that adequate resources are allocated to the renovation of public buildings, e.g. in line with renovation targets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Targets for average performance of the non-residential stock	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Minimum energy performance requirements at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovations, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Requirements for implementing cost-efficient energy measures at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovations, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Measures to ensure building performance impacts the value of the building	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to bridge different interests on the rental markets between owners and tenants (occupants) of buildings and share the benefits of building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to promote green walls and roofs and other measures supporting biodiversity	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Measures to promote rain harvesting and water re-use	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Ban on sale or use of fossil fuel heating systems by a certain date	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Inclusion of planned replacement of fossil heating systems with renewables at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Measures to create incentives for building renovation instead of demolition and new-building	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Binding air quality standards	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Please specify:**

*500 character(s) maximum*

Market based instruments should be used as much as possible focussing on internalising carbon price in the building sector. Focus should be on promoting cost-efficient energy efficiency measures in building

renovation with information, guidance and more easy access of funding of energy renovations. Energy renovation should also be supported to made stepwise rather than at specific transaction points, which could have counterproductive lock-in effects which risks slowing down renovation rates.

#### 4.2.2. Economic instruments and financing

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Attractive and easily accessible financial packages for building renovation combining different types of funds (EU and national, regional and local public funds, and private funds), including in the context of the recovery plan after Covid-19	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Facilitating the access to financial instruments (loans/soft loans, guarantees, mortgages, etc.) for energy performance contracting and to new business and financing models (energy communities, housing associations, etc.), including in the context of the recovery plan after Covid-19	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Tax regimes and fiscal instruments to promote building renovation (e.g. tax incentives)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Lower insurance premiums for renovated resilient buildings	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Energy taxation and/or carbon pricing reflecting the external costs of energy	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Standardisation of contracts and clauses in financing to reduce performance risk (loan standards for finance products, standard guarantee clauses, standardisation of contracts for local authorities, large property owners, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

Market based instruments should be used as much as possible focussing on internalising carbon price in the building sector. Focus should be on promoting cost-efficient energy efficiency measures in building renovation with information, guidance and more easy access of funding of energy renovations.

#### 4.2.3 Technical assistance, aggregation and information and communication

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	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* One-stop shops for public authorities and businesses as independent, transparent and accessible advisory tools to inform and assist efforts for building renovation and ease access to financing	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Mainstreaming the deployment of dedicated energy efficiency or renovation lending products (unsecured loans, mortgages) by commercial banks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Bundling renovations by larger numbers of buildings: aggregation of projects and packaged solutions for joint planning, procuring, permitting, financing and contracting	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Facilitate public-private-community sector partnerships (e.g. energy communities)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Information campaigns (e.g. enhanced role of energy agencies, local authorities, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Energy Performance Certificate/energy label databases to identify more clearly and prioritise potential for energy savings and pollution reduction and estimate costs	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Integrate environmental, social and governance performance criteria into investment decisions and procurement processes	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

#### 4.2.4. Skills and knowledge

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Building skills, education and training: upskilling of architects and installers, engineers and construction workforce and /or reskilling to energy, resource and water efficiency (including avoiding hazardous materials), pollutant emission reduction, building integrated and related renewable energy, resilience to climate change impacts, urban green and blue infrastructure, digitalisation and innovation,	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

including in the context of the recovery plan after Covid-19					
* Capacity building for public authorities at all levels (national, regional, local) and their mandated bodies to structure large scale renovation programmes	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Capacity building for commercial banks to increase the availability of dedicated energy efficiency or renovation lending products (unsecured loans, mortgages)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

## 5. Building renovation in the context of post-Covid19 economic recovery

How do you see building renovation in the context of post-Covid19 economic recovery?

*at most 2 choice(s)*

- Building renovation is fundamental for economic recovery. It should be central to any recovery plans (EU, national, regional, local)
- Building renovation has a positive impact in the context of economic recovery. It should be part of recovery plans, but should not be prioritised over other economic activities
- Building renovation has a neutral impact in the context of economic recovery. Building renovation should not be part of recovery packages, but existing schemes should be kept
- Other [up to 500 characters]

Please specify:

*500 character(s) maximum*

An energy system perspective and district approach is important to achieve energy savings from an energy system point of view, rather than only focussing on a single building. To make use of the waste energy through district heating systems should be taken into account when making energy renovations. Furthermore an Life-cycle assesment should be made for identifying the most cost-efficient energy saving measures when renovating.

## 6. Key enabling factors for supportive policymaking and delivering on building renovation

Please select the key enabling factors that can increase building renovation rate and depth. Please rate them accordingly.

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	Very important	Important	Slightly important	Not important at all	No opinion
Newly introduced obligation to set targets for mandatory renovation at the level of Member States, sectors, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Requirements to set roadmaps for building renovation (per building type, class, construction year, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Mandatory energy audits for all buildings, or specific segments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandatory follow up of improvements identified as part of inspections or energy audits or of recommendations included in energy performance certificates at transaction points, such as sale, rental, lease, refinancing, change in use, non-energy related renovations of buildings, etc.	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Simplification of administrative procedures related to building renovation at local and national levels	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strengthen the requirement on public sector to lead by example (e.g. compulsory targets and adequate resources allocated to the renovation of public buildings)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Support capacity building of public authorities and their mandated bodies to structure renovation programmes and foster uptake of successful examples	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active engagement and interest of the private sector (Energy Service Companies, energy communities, housing associations, financing institutions and communities, etc.)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Active involvement of public and private lenders and investors in development and roll out of attractive, accessible, mass-market financing products that include renovation costs without additional burden or additional collateral requirements	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Emphasis on building renovation in the context of the recovery plan after Covid-19	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emphasis on building renovation in the context of efforts to adapt to climate impacts	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Link financial support to energy performance increase levels in terms of efficiency improvements and/or savings achieved, renewable energy increase	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of the EU taxonomy to identify sustainable energy efficiency investments and direct finance to such investments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilitate easy combinations of public and private financing for renovation	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensure reliable, consistent and comparable building data: Energy Performance Certificates (EPC) and their extended use, possibly in combination with Building Renovation Passports; availability of EPC ratings and potential use of the certificates as reliable evidence for financial institutions	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensure reliable, consistent and comparable environmental sustainability information for building materials and technical systems	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of data and digitalisation for energy, resource and water efficiency and flexible renewable energy use in buildings, data-based energy management; enabling the consumers to be rewarded for efficient behaviour	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
General awareness raising and media campaigns	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Targeted support to facilitate upskilling and/or reskilling of workers	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Targeted support to project development units and advisory services on building renovation and financing, investment platforms, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Capacity building, education and training for stakeholders not directly involved on-site (e.g. administration, managers, financial sector)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guarantees in terms of energy savings and/or money savings and/or reduced pollutant emissions and/or other benefits	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 7. Tackling worst performing buildings and energy poverty

Please select from the following measures those which you find the most relevant to tackle the worst performing buildings. Please rate them accordingly.

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
* Minimum energy performance requirements for the building stock as a whole	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Minimum energy performance requirements for the most relevant segments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Minimum performance requirements for climate change adaptation and health issues (indoor air quality and pollutant emissions to ambient air)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Packages of policy solutions for renovation in low-income or vulnerable households with information, installation, financing (including in the context of the recovery plan after Covid-19), etc.	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Direct installation of free or subsidised retrofit measures e.g. to income eligible households, including in the context of the recovery plan after Covid-19	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Guidance and exchange of best practices on tackling energy poverty via building renovation, at both national and local level	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* The use of renewable self-consumption, renewable energy communities and citizen energy communities rights	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

## 8. Fostering the role of the central, regional and local authorities (procurement)

Please select from the following policies and measures those you find the most relevant to enhance the engagement of key interlocutors notably mayors, municipalities and local authorities, as well as central and regional authorities. Please rate them accordingly.

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
Mandatory targets (e.g. renovation of X% of building area, minimum energy performance requirements)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Mandatory targets with regard to resource efficiency, climate change adaptation and health (indoor air quality and pollutant emissions to ambient air)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Voluntary targets/commitments/agreements (e.g. renovation of X% of building area, minimum energy performance requirements)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Voluntary targets/commitments/agreements with regard to resource efficiency, climate change adaptation and health (indoor air quality and pollutant emissions to ambient air)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Revise local building codes to facilitate renovation and improve urban planning for renovation and promote green infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Integrated planning for supply side and demand side measures in the building sector (e.g. district approaches, access to low-emission transport infrastructure, alignment of local renovation strategies with the national energy and climate plans, building renovation chapter in the Covenant of Mayors)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coordination of regulatory requirements to ensure consistency across the different administrative levels	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart permitting approaches and/or simplified building renovation procedures	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public procurement rules to take into account energy efficiency (e.g. by emphasizing lower operating costs over time), water and resource efficiency and overall environmental performance, renewable energy, climate adaptation, air quality, urban green and blue infrastructure and circular economy considerations	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Procurement by (groups of) municipalities of energy service contracts	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fiscal decentralisation giving local authorities adequate and stable multiannual financing sources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Enhanced deployment of energy performance contracting, e.g. via off-balance sheet financing	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Earmarking of funds for renovation (EU, national, regional or local), dedicated funds, including novel approaches for redistribution of local property taxes stimulating renovation investments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
One-stop shops, public-private partnerships to inform and assist efforts of public authorities for building renovation and ease access to financing	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creation of dedicated building renovation project development units within public authorities at all levels, retention of skilled and experienced staff	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilitate and potentiate the exchange of best practices	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9. Scaling up the role of the private sector, new actors and industries (utilities, large property owners/managers), decentralised solutions for improved operational energy performance**

Please select the following policies and measures, those you consider most necessary to engage industries, third party services such as Energy Service Companies, and new ‘aggregators’ (e.g. national promotional banks, commercial banks, mortgage lenders, utilities, renewable energy communities, citizen energy communities, industry consortia, consumer associations, energy agencies, etc.) to deliver faster and deeper building renovation. Please rate them accordingly.

	Very relevant	Relevant	Slightly relevant	Not relevant at all	No opinion
Industrialisation and standardisation: building renovation in short time with limited inconvenience for occupants (e.g. with prefabricated modules and integrated technologies)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Industrialisation and standardisation of building renovation on large scale (e.g. districts, large property owners)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardisation of financial products for renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardisation of contracts	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Development and deployment of mass-scale, simple, attractive and accessible financing products, such as energy efficiency mortgages, where the additional costs of renovation are covered by a single loan under the attractive conditions.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Risk sharing instruments to facilitate financing	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of the EU taxonomy to identify sustainable investment opportunities and direct finance to such investments	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public private partnerships, industry consortia, SME platforms, etc.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower insurance premiums for renovated resilient buildings	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financing formula and contractual models for energy communities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Procurement by groups of municipalities	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement by energy communities, cooperatives and citizens' purchasing groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Voluntary agreements with targets to renovate, achieve minimum energy requirements, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Reinforcement of advisory services, one-stop shops to inform, motivate, facilitate and finance building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical assistance envelope dedicated to commercial banks, and to utilities, for rolling out building renovation	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical assistance for municipalities (e.g. project management and financing)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical assistance for energy communities (e.g. project management and financing)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical assistance for SMEs in the renovation and construction sector, and as building owners/occupants	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrated modelling and energy planning for municipalities, energy communities and other citizens groupings for aggregated refurbishment projects	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data mapping: big data for improving the performance of the building stock (collecting, collating and usage of data)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 10. Most promising approaches for targeting the residential sector at large

Please indicate the most effective future policies and measures that are necessary to achieve building renovation in the residential sector,

### 10.1. at European level:

*500 character(s) maximum*

EU-wide climate targets on CO<sub>2</sub> and a EU-wide price signal on CO<sub>2</sub>. An inclusion of building sector in ETS should be one measure. To conclude on a revised Energy taxation Directive in line with new climate and energy goals. Implementation of Clean energy package needs to be fulfilled. Current rules on individual heat metering at apartment level should be removed next EED revision since it creates split-incentives between housing owner and the occupant of the apartment and have negative EE impact.

## 10.2. at national level:

*500 character(s) maximum*

Measures should build upon energy renovation strategies according to EPBD Directive. Full implementation of revised EPBD and EED Directives. No sectoral energy efficiency targets should be introduced - to avoid cost-inefficiency for the society as a whole overarching goals should remain. In implementation the capacity issue in implementation of energy efficiency measures is important taking into account the costs of providing energy the cold winter days are more expensive than in summer time.

## 10.3 at regional and local level:

*500 character(s) maximum*

Local communities should play a role in planning and facilitating energy renovations taking into account a local energy system approach.

## 11. Most promising approaches for building renovation of affordable housing, social housing and tackling energy poverty

Please indicate what you consider to be the most effective future policies and measures for renovating affordable housing and social housing to improve its energy performance. Please consider energy poverty in your reply.

### 11.1 at **European** level:

#### Building renovation of affordable housing

*500 character(s) maximum*

#### Building renovation of social housing

*500 character(s) maximum*

#### Alleviating energy poverty through building renovation

*500 character(s) maximum*

### 11.2. at **national** level:

#### Building renovation of affordable housing

*500 character(s) maximum*

#### Building renovation of social housing

500 character(s) maximum

### Alleviating energy poverty through building renovation

500 character(s) maximum

11.3. at **local** level:

### Building renovation of affordable housing

500 character(s) maximum

### Building renovation of social housing

500 character(s) maximum

### Alleviating energy poverty through building renovation

500 character(s) maximum

## **12. Most promising approaches for targeting small and medium enterprises (SMEs) (either for the renovation of their buildings, or to stimulate demand for their renovation services)**

Please indicate the most effective future policies and measures that are necessary to achieve building renovation in relation to small and medium enterprises (SMEs),

12.1. at **European** level:

### Renovation of buildings owned and/or occupied by SMEs

500 character(s) maximum

### SMEs in the construction sector

500 character(s) maximum

12.2. at **national** level:

## Renovation of buildings owned and/or occupied by SMEs

*500 character(s) maximum*

## SMEs in the construction sector

*500 character(s) maximum*

12.3. at **local** level:

## Renovation of buildings owned and/or occupied by SMEs

*500 character(s) maximum*

## SMEs in the construction sector

*500 character(s) maximum*

## 13. Targeting schools and other educational institutions, hospitals and other public buildings

Please indicate the most effective future policies and measures, and best practices that are necessary to deploy building renovation in schools, hospitals, and other public buildings,

13.1. at **European** level:

### Educational institutions

*500 character(s) maximum*

### Hospitals

*500 character(s) maximum*

### Other public buildings

*500 character(s) maximum*

13.2. at **national** level:

## Educational institutions

500 character(s) maximum

## Hospitals

500 character(s) maximum

## Other public buildings

500 character(s) maximum

### 13.3. at **local** level:

## Educational institutions

500 character(s) maximum

## Hospitals

500 character(s) maximum

## Other public buildings

500 character(s) maximum

## 14. Wider benefits of renovating the EU building stock

Please indicate the most important wider benefits of renovating the EU building stock and rate these accordingly.

	Very important	Important	Slightly important	Not important at all	No opinion
* Reduce energy poverty, lower energy bills and increase monetary savings	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Increased engagement and commitment to climate, energy, water,	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

air quality and other environmental and biodiversity objectives by citizens and communities					
* Better comfort and sanitary conditions of dwellings to improve health, safety and air quality (including e.g. by replacing outdated heating installations, removing potentially hazardous materials, providing shading & natural cooling in heatwaves, increasing urban green spaces)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Increased property value	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Contribute to the circular economy and thereby save energy, material and water, extend the service life of existing buildings, improve knowledge of materials' carbon contents and design and construct flexible buildings in a material and carbon efficient way	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Improve the resilience of the building stock and its users to climate change impacts (e.g. water retention by green roofs and walls reduces pluvial flooding)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Improve transport and mobility aspects (installing charging points, providing safe bike parking space)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Improve/allow connection to smart grids and energy communities	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Improve building adaptability to occupants' changing needs	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Job creation for economic recovery	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Availability of labour-market relevant skills, green skills for all professionals in the construction and buildings sector	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Improved security of supply	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Better disaster risk reduction preparedness	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Ensure accessibility for persons with disabilities and elderly people	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
* Other [up to 500 characters]	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

## 15. Smart technologies and nature-based solutions for transforming today's buildings into the buildings of the future

15.1. For residential buildings, please indicate what would be your preferred solutions towards climate neutral and sustainable homes and rate these according to their importance.

	Very important	Important	Slightly important	Not important at all	No opinion
Replace the current heating & cooling system by a more efficient and renewable based system (e.g. replace old boiler by a heat pump)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Planned replacement programme for old or inefficient heating equipment using solid or liquid fossil fuels with renewable heating solutions	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve the thermal properties of the building's envelope through better insulation and windows	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Single deep renovation – a combination of measures carried out at the same time.	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Step-by-step deep renovation – a combination of measures carried out over time rather in one single renovation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use nature-based solutions to improve air quality, combat the heat island effect, contribute to energy efficiency and health and provide habitat for biodiversity (e.g. green walls and green roofs and rain water harvesting and re-use)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use smart technologies and digital solutions for optimal operation and maintenance (e.g. building automation and control systems, smart thermostats and room temperature controls, smart meters, etc.) and enable consumer rewards for energy-saving/, or load-shifting behaviour	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Use renewable energy on-site (e.g. solar thermal, PV panels, geothermal, etc.) or off-site through district heating /cooling networks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of sustainable construction materials with lowest carbon footprint	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart Sector Integration: integration of renewables that increase flexibility in buildings and in the wider energy system to which the building is connected, integration of waste heat supply solutions, installation of e-vehicle charging infrastructure, providing safe bike parking, thermal storage, connection to smart grids	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integrated approaches maximizing the synergies between energy efficiency and renewable energy at the district level	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integration of circular economy principles in any of the measures indicated above (such as reuse or high-quality recycling of construction materials, phasing out hazardous substances, ensuring building performance last longer to avoid numerous renovations)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please specify:

*500 character(s) maximum*

From a Swedish perspective where only about 2 % fossil fuels remain in the heating of buildings the focus on energy renovations measures should mainly be on efficient climate shells and reduction of the overall energy needs in buildings. This means conversion of heating systems should have less importance.

15.2. For non-residential buildings such as offices, shops, hospitals, schools, please indicate what you would consider as most relevant solutions towards climate neutral and sustainable buildings for building owners and rate these accordingly.

	Very important	Important	Slightly important	Not important at all	No opinion
Use smart automatic technologies and digital solutions for optimal operation					

and maintenance (e.g. building automation and control systems, smart thermostats and room temperature controls, smart meters, etc.)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use nature-based solutions to improve air quality, combat the heat island effect, contribute to energy efficiency and health and provide habitat for biodiversity (e.g. green walls and green roofs and rain water harvesting and re-use)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Apply energy management systems	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introduce more energy efficient and/or automated lighting systems	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introduce more energy efficient heating & cooling systems	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Improve the thermal properties of the building's envelope through better insulation and windows	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Single deep renovation – a combination of measures carried out at the same time	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Step-by-step deep renovation – a combination of measures carried out over time rather in one single renovation	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recovery of energy that otherwise must be ventilated (waste energy)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use renewable energy on-site (e.g. solar thermal, PV panels, geothermal, etc.) or off-site through district heating /cooling networks	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Smart Sector Integration: integration of renewables that also increases flexibility in buildings and in the wider energy system to which the building is connected (e.g. solar roof panels), integration of waste heat supply solutions, installation of e-vehicle charging infrastructure, safe bike parking, thermal storage, connection to smart grids, enable consumer rewards for energy-saving, or load-shifting behaviour	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Integrated approaches maximizing the synergies between energy efficiency and renewable energy at the district level	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Integration of circular economy and environmental principles in building renovation in any of the measures above (such as reuse or high-quality recycling of construction materials, phasing out hazardous substances, ensuring building performance last longer to avoid numerous renovations)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other [up to 500 characters]	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### Please specify:

*500 character(s) maximum*

From a Swedish perspective where only about 2 % fossil fuels remain in the heating of buildings the focus on energy renovations measures should mainly be on efficient climate shells and reduction of the overall energy needs in buildings. This means further measures for conversion of heating systems is of less importance in meeting climate goals in Sweden where we already have strong price signals through energy and carbon taxation on fossil fuels.

### 16. Further comments

Do you have any further comments on aspects relevant for building renovation and not covered above?

*1000 character(s) maximum*

Energy renovation measures should be focussed on the most cost-efficient measures and facilitating an increased energy renovation rate. The most important measure is to introduce an EU wide price signal for CO2 also for the Buildings sector which should be done with an inclusion of the building sector in the EU ETS. All heating sources should have a common level-playing field in providing low-carbon heating solutions and no discrimination should be set depending if the heating source is provided on-site at building level or from a district level from the surrounding energy system.

### Contact

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