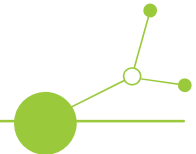


D 1.1.3 Analysis of current renovation strategies and legislative/strategic multi-level planning frameworks



Version 1
10 2023





Content

A. Report summary	2
B. Country overview of renovation strategies.....	2
Italy.....	2
Germany.....	4
Poland.....	5
Croatia	6
Slovenia.....	7
Austria	14
C. Comparison	15
What is similar?.....	15
What is different?	16
Link to MESTRI.....	16
D. Conclusion	17



A. Report summary

This report seeks to provide a deep assessment of the current legislative and policy framework in Central Europe as it relates to the energy transition and sustainability in the building sector, alongside its correlation with European frameworks. To achieve this, regional partners from the MESTRI project in Austria, Croatia, Germany, Italy, and Poland provided information on their respective energy legislation and policies in the buildings sector from which comparisons and analysis have been drawn so as to inform compatibility with the MESTRI System.

In particular, this report seeks to ascertain the legislative and policy framework of participating partners. Thus, some of the core questions that this report seeks to determine are: whether long-term rehabilitation strategies have been developed in all participating countries; whether renovation strategies are happening at the national or regional level; what the primary focus of national renovation strategies are and how they determine whether the goals are met; and the link between renovation strategies and other financial incentives.

This report uses the data from these questions to draw comparisons between the participating Central European countries, but also to elaborate on their differences. This information is then considered in the context of the MESTRI project and is used to inform the compatibility of these renovation strategies with MESTRI.

B. Country overview of renovation strategies

Italy

National level:

STREPIN - Strategy for Energy Retrofitting of National Building Stock. The strategy prepared in accordance with Article 2a of Directive 2010/31/EU on the energy performance of buildings, as amended by Directive 2018/844/EU, sets out an overview of the national building stock and, subsequently, identifies the current and target rates for energy retrofitting of buildings, also highlighting the opportunity to carry out energy retrofitting through an integrated approach that improves cost-effectiveness. The final version was published in March 2021. It will need to be updated to take account of the new targets set by the Fit for 55 package. STREPIN 2021 sets targets for the refurbishment of the building stock for 2030, 2040 and 2050, identifies the support measures that are needed to ensure that the targets are met and provides an indicative assessment of the financial resources needed to support the implementation of the strategy. Public Administration Energy Requalification Programme (PREPAC). The programme aims to retrofit at least 3 percent of the air-conditioned floor space of the state's building stock each year by providing capital funding of 100 per cent of eligible costs. The measure will be active until 2030. It was launched in 2014 and until 2020, the Programme has approved 230 energy retrofitting projects in central government buildings, worth EUR 315.8 million. In view of the importance of the measure, which has been extended to 2030, improvements are planned to speed up the implementation stage, which so far has been progressing very slowly.

The National Energy and Climate Plan (NECP), as updated in 2023, aims to launch a major plan to improve the efficiency of the public building stock and reduce their energy consumption, which will provide for the sharing of targets with local and regional authorities. The policy scenario provides for achieving the EED III targets for renovating public buildings (3 % per year) and reducing public administration consumption (1.9 % per year). In the civil sector, action will need to be taken, in particular, to reduce the energy needs of buildings by means of deep renovation measures and by increasing the uptake of highly performing technical



systems such as heat pumps and BACS systems. The needs will then have to be met mainly by renewable sources, so it will be important to promote the integration of thermal and electric renewables into buildings. In order to “further” accelerate the reduction of emissions in the civil sector, policies and measures to promote energy efficiency in the residential sector will need to be strengthened in order to achieve the target by identifying new instruments for the involvement of the private and public sector in the upgrading of the existing national building stock. Targets for the overall annual retrofitting rate have to be updated according to the adoption of the Fit for 55 package: actually they are set at 2% in 2030 and 2.6 % in 2050, the latter around three times the current retrofit rate. The overall retrofitting rate would involve measures being carried out on two-thirds of Italy’s national building stock.

Local Level

- Autonomous Province of Bolzano-Bozen KLIMAPLAN (PIANO CLIMA) SÜDTIROL ALTO ADIGE 2040.¹ With regards to the private building sector, the plan aims to set specific minimum efficiency standards for deep renovations combined with incentives that will allow all social categories to implement the planned measures. Oil and gas consumption for heating will be reduced by 60% by 2030 and by 85% by 2037. This will be achieved by reducing the heating needs of buildings (at least -20%) and replacing gas and oil with climate-neutral energy sources. More than 300 public buildings owned by the province will undergo an energy audit by 2024 and the 27 most energy intensive will be energy-refurbished by 2025. By 2040 all public buildings shall be in line with the new energy performance standards.

The main objectives of the strategies are the reduction of energy consumption and CO₂ emissions of the existing building stock, reaching the objectives stated by the last EPBD. The addressed target groups are both public and private buildings.

Regarding the implementation of the strategies according to STREPIN, thanks to all their measures previously described the 2020 targets in the civil sector can be deemed to have been met; as regards the residential sector, monitoring indicates that they have already been well exceeded, with savings of 5.67 Mtoe/year in 2019: the target set by the 2017 Annual Energy Efficiency Report was 3.67 Mtoe/year. The residential sector will have to contribute to a further reduction in consumption to match the 2030 baseline scenario, with projected savings of 3.3 Mtoe/year over the next decade. The monitoring shows that, as of 2018, the tertiary sector has achieved savings of 0.31 Mtoe/year, compared to a savings target of 1.23 Mtoe/year, this means that the tertiary sector is still lagging behind the 2020 target at present.

Until now, the development of such renovation strategies is voluntary for both private and public buildings.

Stringent minimum legal requirements for the energy performance of residential buildings have been adopted in order to encourage increased energy efficiency. There are also many tools supporting energy efficiency in the residential sector, with specific minimum access requirements that are often even stricter than the legal minimum. Over the years, and most recently with the publication of the Italian NECP, numerous measures have been put in place to provide for, among other things, the consolidation of tax deductions (the Superbonus), the improvement of the Conto Termico, the enhancing of the White Certificates scheme, the launch of the National Energy Efficiency Fund and of incentives to carry out interventions on government buildings.

The main existing incentives for energy efficiency in private housing, which are well known, are tax deductions for energy efficiency measures (the Ecobonus, now joined by the Superbonus) and renovation of

¹ <https://www.klimaland.bz/klimaplan-suedtirol-2040/>



existing building stock (Bonus Casa) and the Conto Termico. **Tax deductions for energy retrofitting and building renovation:** in order to facilitate the modernisation of residential buildings, several incentive measures are currently in place using the mechanism of tax deductions (Superbonus, Ecobonus, Bonus facciate, Bonus casa, Sismabonus). All of the aforementioned instruments, as far as foreseen to date, will end in 2024, except for the Superbonus, which will end in 2025. In addition to the above-mentioned deductions, there are also supporting financial instruments, namely the assignment of accrued tax credits to credit institutions and invoice discounting. A general reform of deductions is envisaged to address the renovation of existing residential buildings with an integrated and more efficient approach and to overcome the fragmentation of the various deductions currently in force. The reform will optimise the timing and cost of refurbishment and encourage deep renovation with a view to improve sustainability.

Conto Termico: the instrument is available to private individuals and public administrations to encourage the implementation of small-scale energy efficiency measures and the production of thermal energy from renewable sources. In the future, the instrument will be extended to cover non-residential buildings in the private sector. Access to the mechanism will be facilitated through the use of EPC-type contracts, and eligible interventions will be extended to include connection to efficient district heating and cooling systems. In the case of major building renovations, the installation of technologies to increase the consumption of locally produced renewable energy will be encouraged. Public housing is eligible for the Ecobonus following the 2017 Budget Law, but can also access other national measures incentivising energy retrofitting work, such as the new Superbonus, the Conto Termico and the National Energy Efficiency Fund. The credit transfer scheme can certainly be helpful for bodies such as social housing associations, which may not have sufficient liquidity for urgent building works, including those of a different nature to energy performance or earthquake protection works. Several regional initiatives have been implemented through calls for tender to improve the energy efficiency of public housing, financed by the 2007-2013 and 2014-2020 cohesion policy programming cycles and to be funded in the future by the new 2021-2027 cycle.

The main existing incentives for energy efficiency in the **private tertiary sector** are similar to those already mentioned for the private residential sector: tax deductions for energy efficiency measures and renovation of existing building stock and the Conto Termico. There are several regional calls for tender for promoting energy efficiency in SMEs pursuant to Article 8 of Legislative Decree 102/2014.

The following measures are closely associated with public buildings: The Energy Renovation Programme for the Central Public Administration; The National Energy Efficiency Fund; White certificates; Conto Termico; Minimum environmental criteria; The Kyoto Fund and its reprogramming for public school buildings; Cohesion Policy, programming cycles 2007-2013, 2014-2020 and 2021-2027; Central government investment fund, contributions to municipalities towards investment in the field of energy efficiency and sustainable local development, a fund for investment by municipalities and funds for improving roads and schools in provinces and metropolitan cities; Integrated energy and electricity service - Consip.

Germany

Concerning heating systems, there is a new national law that will be finalized in the later course of 2023.² This law generally aims to prevent the installation of new fossil heating systems and supports the investment in sustainable systems financially. As the government and parliament are still discussing the draft, it is not yet sure how the final law will look and if it will be an efficient long-term strategy. There is already a national funding of all measures leading to higher energy efficiency in Germany. This funding can be granted for all types of buildings and owners.

² Gesetz zur Einsparung von Energie und zur Nutzung erneuerbarer Energien zur Wärme- und Kälteerzeugung in Gebäuden (Gebäudeenergiegesetz - GEG)



Generally, the funding is based on the strategy to reduce the costs of renovation measures by a certain percentage. Thereby the criteria are changed regularly to adapt to the technical possibilities and newest standards. For example, heat pumps and biomass heating systems need to include at least 65% sustainable sources since 1.1.2023 whereas in 2022, 55% were sufficient.

The overall objective is to reduce the energy demand of buildings to a minimum while exchanging the heating systems with sustainable sources. On long term, the aim of the national government is to reach a climate neutral building sector in 2045.

The demand for funding is very high and increases every year. This shows that this strategy succeeds to motivate building owners to invest in sustainable building/renovation. On the other hand, it is always in discussion if the benchmarks are set high enough to reach climate neutrality.

The application for funding is voluntary, but some benchmarks are already mandatory. For the new law about heating systems, the government is currently discussing which measures can be mandatory.

Currently there is no policy in Germany supporting or regulating long-term renovation strategies.

Poland

In Poland one crucial renovation strategy is established, which is set at the national level. It's called Long-term strategy for the renovation of buildings (DSRB) with was issued in 2022.

The long-term strategy for the renovation of buildings defines the necessary actions to achieve high energy efficiency and low-emission buildings in Poland by 2050. The strategy (DSRB) is intended to "cost-effectively transform the national building stock into nearly zero-energy buildings". The DSRB targets the private and public buildings owners.

In the years 2020-2030, thermal modernization of 236,000 m² are planned. In the subsequent years 2030-2040 - 271 thousand buildings, in the years 2040-2050 - 244 thousand buildings, and overall, in 2021-2050 - 7.5 million thermal modernizations have been planned. According to the strategy, by 2050 it is estimated that approximately 7.5 million thermomodernization investments will be carried out, including 4.7 million deep thermal modernization projects, including phased thermal modernization projects spread over time. The strategy assumes an average annual rate of thermal modernization at the level of approx. 3.8% assuming that by 2050, 65% of buildings will achieve an EP index no higher than 50 kWh/m²·year.

At the moment the scope of the DSRB is included/realised in some financial mechanisms at the central and regional level, by implementing and encouraging the implementation of thermal modernization projects in public and private buildings. However, local building renovation strategies are not required to be adopted at the regional level and included in other strategic documents of municipalities. The method of monitoring the modernizations carried out is also unknown - at the moment it is only measurable based on the number of thermal modernization projects co-financed by national or EU funds. It is assumed that the implementation of activities under the strategy is carried out through the implementation of projects with co-financing from national sources or the ERDF, but there are no clear guidelines as to the number of buildings per region/voivodeship.



The development of a long-term renovation strategies is not mandatory, but there is a felt need to implement these solutions to noticeably increase the importance of energy efficiency and thermal modernization in the process of building a zero-emission economy. Therefore, activities in this area will be intensified in the coming years, and therefore the implementation and development of the DSRB will be mandatory.

In the DSRB are listed the policies which provides the guidelines, how to develop the works within the strategy, but at the moment as the most crucial support policies can be assumed the policies and financial mechanisms which has the consistent or partially consistent scope of things to develop and/or achieve. Those policies are:

- National action plan aimed at increasing number of low-energy buildings
- National Plan for Energy and Climate 2021-2030
- Poland's energy policy until 2040 (PEP40)
- National Recovery and Resilience Plan
- Anti-smog Resolutions

Croatia

There is a national Long Term Renovation Strategy prepared by the Ministry of Physical Planning, Construction and State Assets and adopted by the Government of the Republic of Croatia. Local self-government units (cities, municipalities, counties) draw up action plans related to energy and energy efficiency, that include activities and goals related to the renovation of the building stock.

Long-Term Renovation Strategy includes the following areas:

- an overview of the national building stock,
- definition of cost-effective approaches to renovation relevant to a building type and climate zone, taking account of, where applicable, relevant trigger points in life-cycle of the building,
- policies and actions aimed at stimulating cost-effective deep renovation of buildings, including staged deep renovation, and supporting targeted cost-effective measures and renovation,
- an overview of policies and actions aimed at targeting the worst performing segments of the national building stock, split-incentive dilemmas and market failures, and an outline of relevant national actions that contribute to the alleviation of energy poverty,
- policies and actions aimed at targeting all public sector buildings,
- an overview of national initiatives to promote smart technologies and well-connected buildings and communities as well as skills and education in the construction and energy efficiency sector,
- an evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality,
- an estimate of expected energy savings and wider benefits of systematic investment in the integral energy renovation of the national building stock (creation of new jobs, reduction of energy poverty, increase in property value, etc.).

Main objectives of Long-Term Renovation Strategy are:



- raising the long-term goal of renovating the national building stock to a higher level - minimum 80 % reduction in greenhouse gas emissions by 2050,
- providing an overview of the national building stock, comprising all buildings in Croatia,
- proposing clear and applicable financial models for national building stock renovation by 2050,
- estimating the impact of proposed policies and measures on the national economic development,
- estimating expected energy savings by the national building stock for the purpose of better planning and monitoring of the results achieved during the Long-Term Strategy implementation,
- proposing new long-term funding mechanisms as well as plans and perspectives for ensuring a stable investment climate for all market participants.

By definition, this document serves as the foundation and guide for the implementation process, and other documents that elaborate the process and resolve details - programs and plans are created based on it. The primary challenge of the strategy is the possibility of actually achieving set objectives and targets, that is, the financial and operational capacity to implement the defined measures and activities.

The development of a renovation strategy is mandatory.

Support policy papers that facilitate the development of long-term renovation strategy are (among others):

- Programme of energy renovation of multi-apartment buildings for the period by 2030.
- Programme of energy renovation of public sector buildings up to 2030.
- Programme of energy renovation of buildings with the status of cultural property for the period by 2030.
- Programme to combat energy poverty, including the use of renewable energy sources in residential buildings in assisted areas and in areas of special state concern for the period by 2025.
- Urban Green Infrastructure Development Programme for the period 2021-2030.
- Circular management of space and buildings development programme for the period 2021-2030.

Slovenia

National level (1/2): National Energy and Climate Plan (NECP)

Slovenia's integrated National Energy and Climate Plan (NECP) is based on middle-term strategic and action documents, laying down the 2020 and 2030 objectives and measures that have already been adopted, and some indicative proposals for measures to achieve the 2030 targets that still have to be assessed and approved by Slovenia.

The NECP is a strategic document laying down the objectives, policies and measures for Slovenia on the five dimensions of the Energy Union for the period up to 2030 (with a view to 2040): decarbonisation (greenhouse gas emissions (GHG) and renewable energy sources (RES)), energy efficiency, energy security, the internal energy market and research, and innovation and competitiveness.

The key objectives for the 2030 identified in the NEPN are:

- reducing the total greenhouse gas emissions by 36%,
- at least a 35% improvement in energy efficiency, which is higher than the target adopted at EU level (32.5%),



- at least a 27% share of renewable energy sources; due to the relevant domestic circumstances, Slovenia had to agree to a lower target than that of the EU (32%), but will strive to increase this ambition in the next NEPN update (2023/24),
- and last but not least, 3% of GDP to be spent on R&D, of which 1% of GDP will be public funds.

The implementation of the NECP leads to the reduction of the dependency on fossil fuels and supports, among other things, sustainable solutions in transport, in buildings and in industry. The NEPN also sets targets for reducing and phasing out coal by 30% by 2030. By the end of 2021, a strategy on the phasing out of coal in Slovenia will be adopted, and the closing date of Unit 6 of the Šoštanj Thermal Power Plant will be set. The NEPN sets out the aim to consider the use of new nuclear energy options and to adopt a decision on the second unit at the Krško Nuclear Power Plant (NPP) not later than by 2027. In addition, the NEPN also provides for the phasing out of energy subsidies for fossil fuels and their final elimination.

With the adoption of the NEPN and its submission to the European Commission, the Republic of Slovenia has fulfilled its obligations under the EU Regulation on the Governance of the Energy Union and Climate Action, as well as the condition for the absorption of cohesion funds under the 2021-2027 multiannual financial framework.

The NEPN is one of Slovenia's key steps towards a climate-neutral Slovenia and EU by 2050 and will be followed by the adoption of the 2050 Long-term Climate Strategy. In the aftermath, an integrated and successful implementation of the adopted policies and measures and the harmonisation of the NEPN in 2023 and 2024 with the commitments and targets to be adopted by the EU under the European Green Deal will be of utmost importance.

On the basis of a complete set of middle and long-term objectives and finalised analytical basis, a strong final plan can be developed, if it is underpinned with consistent policies and measures, exploiting more fully the indicated opportunities of increased research and innovation considerations, as well as the contribution of energy efficiency for the modernisation of the economy and job creation.

The 2030 greenhouse gas emission target for sectors outside the EU Emission Trading System (non-ETS) of -15% compared to 2005 set by the Effort Sharing Regulation (ESR)¹ is underpinned by indicative sectoral targets varying between -70% for buildings and an expected increase by 18% for the transport sector. However, additional policies and measures to achieve the target and the no-debit commitment (i.e. emissions do not exceed removals) under the Land Use, Land Use Change and Forestry (LULUCF)² Regulation are not yet included in the draft plan, nor are considerations if a domestic overachievement under the ESR could be cost efficient for possible transfers to other Member States and thereby contribute to growth and jobs.

The NECP proposes a contribution expressed by the share of energy from renewable sources in gross final consumption of energy in 2030 of 27% (from 25% in 2020), which is significantly below the 37% renewable share in 2030 that results from the formula in Annex II of the Governance Regulation, a situation which would also require an indicative trajectory in the final plan that reaches all reference points³ in accordance with the national contribution set out in the final plan. In developing the final plan and addressing possible barriers for the development of renewable energy projects, further guidance can be gathered from the Commission's guidelines on renewable energy (wind and hydro), energy transmission and Natura 2000⁴. The final plan would benefit from elaborating further on the policies and measures allowing the achievement of the contribution and on other relevant sectorial measures.

Slovenia's contribution to the EU energy efficiency target of 32.5% in 2030 is expressed only in primary energy consumption which should not exceed 7.1 Mtoe in 2030. The ambition of the proposed level of the contribution is low compared to what is expected at the EU level to collectively reach the Union's 2030 energy efficient targets. The final plan would benefit from a target for final energy consumption as well as more on details on the policies and measures to achieve these targets. As regards energy security, an



assessment of whether the existing policies will ensure reducing the use of fossil fuels in the power sector would improve the quality of the final plan. As regards the operation of nuclear reactors,

National level (2/2): Long term building energy renovation strategy 2050 (DSEPS)

One of the supporting documents of the NECP is the Long-Term Strategy for Supporting the Renovation of Buildings by 2050, where a more detailed timeline with measures and progress indicators at the national level will be defined, namely to ensure a long-term reduction in GHG emissions to provide a high energy efficient and decarbonised national building stock and to contribute to the cost-effective transformation of existing buildings into almost zero-energy buildings. The timeline will contain framework milestones for 2030, 2040 and 2050 and explain how these milestones contribute to the achievement of the Union's energy efficiency targets in accordance with the Directive 2012/27/EU. The document is expected to be adopted in the second half of 2020. In addition to the above-mentioned statutory measures and programme documents supporting EEU and RES, the following measures are also important for buildings in general. At least partially, these measures are already being implemented:

- considering energy efficiency and exploitation of RES in the integrated planning of buildings, residential quarters and settlements within the scope of spatial planning;
- mandatory preparation of feasibility study regarding alternative energy supply systems (decentralised systems on the basis of RES, high-efficiency cogeneration, district or collective heating and cooling, heat pumps) when constructing a new building and a larger renovation of existing building or its individual part;
- implementation of pilot projects for comprehensive energy renovation of different building types in the public and residential sector according to the criteria of nearly zero-energy renovation under the OP ECP (buildings of central government, cultural heritage buildings, multi-apartment buildings). In the field of buildings, 2 pilot projects were completed by the end of 2018 within the OP ECP, namely the pilot project of energy renovation of a public building with characteristics of almost zero-energy building (Energy retrofit of the Bohinj Centre for School and Outdoor Education) and the pilot project involving a larger number of buildings or a complex of buildings (Energy retrofit of a complex of three court facilities in Celje, Slovenj Gradec and Murska Sobota). In the period 2019-2020, 2 pilot projects are being carried out, namely the pilot project of integrated energy retrofits with several operators following the principle of public-private partnerships (JZP) (Šmarje pri Jelšah) and the pilot project of energy retrofits of five buildings of the cultural heritage of the Ministry of Culture.;
- a support scheme for the renovation of cultural heritage buildings and other specific building groups, including the preparation of criteria for the renovation and implementation of pilot projects;
- promotion of energy contracting for the implementation of comprehensive energy-saving renovation projects for public as well as multi-apartment buildings (details under the measure (M-15));

Local Level (1/2): Local Energy Concepts

The local community adopts the Local Energy Concept (referred to as LEC in the following text) as an energy management program in the local community, subject to prior approval by the Minister responsible for energy and publishes it on their website.

LEC is the most important tool in planning the local energy policy strategy. It encompasses ways to implement solutions tailored to the local community for efficient, cost-effective, and environmentally friendly energy services in residential areas, businesses, and public institutions. The document also outlines specific effects that the local community can achieve by implementing activities from the LEC. Based on the LEC, spatial and economic development of the local community, the development of local energy economic public services, efficient energy use and conservation, the use of renewable energy sources, and the improvement of air quality in the local community area are planned.



The LEC enables:

- Monitoring, determining, and documenting energy consumption and changes in the energy and environmental conditions.
- Creating short-term and long-term energy policies.
- Selecting and setting goals for energy planning and energy policy in the local community.
- Developing and comparing different alternatives and scenarios for possible energy and associated economic development.
- Reviewing measures for effectively improving the energy situation and, therefore, the environmental situation.

The self-governing local community prepares the LEC on its own or in collaboration with one or more other self-governing local communities. The self-governing local community can achieve the set goals independently or in cooperation with other self-governing local communities.

Based on the guidelines from the LEC, the local community, taking into account environmental criteria and technical characteristics of buildings, can prescribe by ordinance the priority use of energy sources for heating.

Local community authorities and energy activity implementers within the area covered by the LEC are obligated to align their development documents and operations with the goals and measures outlined in the LEC.

The LEC serves as a mandatory professional basis for the preparation of spatial plans for local communities. The local community is obliged to harmonize its spatial plans with the LEC applicable in their area. In the case of inconsistencies between the LEC and the spatial plan, the local community considers these inconsistencies in the preparation or amendments to the spatial plan. If the local community does not initiate the process of preparing or amending the spatial plan at the time of adopting the LEC, this process begins based on identified inconsistencies in the LEC.

In Slovenia, each local municipality is obliged to have a LEC.

Local Level (2/2): Sustainable Energy and Climate Action Plan

The Sustainable Energy Climate Action Plan (SECAP) is a key document in which signatories of the Covenant of Mayors for Climate and Energy describe how they intend to fulfil their commitments and achieve the set goals for mitigating climate change and adapting to it. SECAP, along with a monitoring template, enables signatories to systematically collect and analyse data, providing a basis for effective climate and energy management and monitoring the implementation of measures. SECAP is an enhancement of the previous Covenant of Mayors' document, which only covered the energy sector.

Local municipalities play a crucial role in planning energy use and addressing climate change, as well as adaptation to it. The Covenant of Mayors for Climate and Energy is a European movement in which local and regional authorities voluntarily commit to implementing EU objectives in the areas of climate and energy. The movement operates on a bottom-up principle and began in 2008 with the support of the European Commission. It now has over 10,000 signatories and covers approximately one-third of the EU population. Participation in the Covenant of Mayors offers support, recognition, resources, and opportunities for collaboration, all of which contribute to achieving the set goals.

Signatories support a common vision for 2050: accelerating decarbonization, strengthening climate change adaptation capacity, and ensuring a reliable, sustainable, and accessible energy supply.

Political support, in the form of a municipal council resolution, is required to join the Covenant of Mayors. Based on the expressed political support, the mayor signs the accession form. By joining, the signatory commits to reducing CO₂ emissions by at least 40% by 2030, enhancing resilience and adaptation to climate



change, and addressing energy poverty as key measures for ensuring a just energy transition. Within two years of joining, they prepare the SECAP action plan, which can be shared among multiple municipalities and can also be a common approach to the Covenant.

SECAP must meet minimum criteria for approval by the Joint Research Centre (JRC) of the European Commission. The criteria include:

- Clear commitments for mitigation (i.e., at least a 40% reduction in CO₂ emissions by 2030) and adaptation to climate change.
- Based on the results of a comprehensive Baseline Emission Inventory (BEI) and risk and vulnerability assessments (RVA).
- Mitigation measures must cover key sectors (public, tertiary, residential, and transport).
- The Baseline Emission Inventory must cover at least three out of the four key sectors.
- Mitigation measures must cover at least two out of the four key sectors.

The action plan must be approved by the municipal council or an equivalent body.

Municipalities, especially smaller ones, can choose to have a joint action plan. There are two possible approaches:

- Individual commitments to reduce CO₂ emissions; each signatory separately commits to emission reduction and fills out their SECAP form. SECAP is a shared document that can include both individual and common measures. It is approved by the municipal councils of all municipalities in the group.

A joint commitment to reduce CO₂ emissions; signatories collectively commit to emission reduction, and only one SECAP form needs to be completed. SECAP is a shared document that can include both individual and common measures, with at least one common measure included. It is approved by the municipal councils of all municipalities in the group.

Within these strategies both public and private building owners are addressed. Their main objective is to reduce the energy consumption and CO₂ emissions of the existing building stock reaching the objectives stated by the last EPBD.

The implementation of energy efficiency measures and the utilization of renewable energy sources in the public sector are important for setting an example for the public sector and for the impact of these measures on public finances. By 2020, a cumulative reduction of final energy consumption by 228 GWh and a reduction of CO₂ emissions by 56 kt (Figure 5) were achieved. Both indicators fell short of their annual targets by 26% and 12%, respectively.

The cumulative objectives for reducing final energy consumption and CO₂ emissions in the public sector for 2020 were not met, largely due to insufficient investment intensity during the 2015-2017 period.

In 2021, there was an increased interest in cohesion funds, partly due to co-financing for project documentation from international technical assistance funds (ELENA project). By the end of 2021, a total of 80 projects were completed under the OP EKP, and 38 projects were submitted in the latest calls by the end of 2021, including 2 in the narrower public sector, 13 in the broader public sector, and the remaining 23 in municipalities. With the objectives from OP EKP9 until 2023, which were reduced for the second time in 2021 by the 6th amendment to OP EKP, the implementation of energy renovation of public buildings is currently on track.



The total area of comprehensively energy-renovated buildings in the public sector at the end of 2020 was 1.84 million square meters, exceeding the annual target by 3%. The goal of the total area of comprehensively energy-renovated buildings in the public sector for 2020 was thus achieved.

In 2020, 127,000 square meters of surfaces were renovated, which is almost a third less than the previous year and significantly less than in individual years in the 2013-2015 period. In conjunction with this indicator, it is also essential to consider findings related to indicators that track the reduction of CO₂ emissions and final energy savings achieved through measures in the public sector, indicating the need to focus future energy building renovations on comprehensive upgrades. These upgrades, due to their complexity, especially in the case of cultural heritage buildings and other special categories, require greater investment. To achieve the goals in the areas of energy efficiency and CO₂ emissions reduction by 2030, as well as the transition to a climate-neutral society by 2050, greater investment intensity will be required for the energy renovation of public buildings in the future. Based on the positive experiences from this and the previous financial perspective (OP EKP and OP ROPI), it is necessary to maintain continuity in promoting these investments with non-repayable funds and to expand the scope of the existing project office with the tasks of a systemic accelerator for energy building renovation projects and to strengthen it accordingly in terms of personnel.

The target for the financial leverage of incentives for energy efficiency and renewable energy utilization investments in the public sector for 2020 was not achieved.

Compared to the previous year, for every euro invested, 2.2 euro cents less in subsidies were allocated, contributed to by the reduction of the financial leverage of the Eko Fund incentives by 4.1 euro cents. According to currently available data, the financial leverage due to the Eko Fund incentives will also decrease in 2021, to 32.8 euro cents of non-repayable funds for every euro of investment, thus falling below the target value for 2020.

The following policies can be considered as key for implementation of long-term energy renovation strategies:

The implementation of existing, renovated, and new instruments for reducing greenhouse gas emissions (TGP) and increasing energy efficiency and the use of renewable energy sources (OVE) in buildings, in accordance with the guidelines and the expected scope of the National Energy and Climate Plan (NEPN) and the National Development Strategy for Environmental Protection and Spatial Planning (DSEPS) 2050, needs to begin as quickly as possible. To achieve this, it is necessary to secure the appropriate human and financial resources (see also Building Recommendation 02/2022). The implementation of these instruments must be appropriately integrated or coordinated with other strategic policies, such as climate change mitigation funding, energy poverty, earthquake resilience, and housing regulation. Additional and higher-level goals also require the redistribution of existing financial resources (e.g., funds from the Recovery and Resilience Plan: NOO) and the urgent provision of additional financial resources, with a commitment to the "energy efficiency first" approach.

In providing financial incentives for the implementation of energy efficiency and renewable energy measures in buildings, the relevant institutions (Eco Fund, SVRK, Ministry of the Environment and Spatial Planning / Climate Change Fund, Ministry of Infrastructure, etc.) must prevent gaps or peaks in incentives. In previous periods, this has been critical, especially during transitions from one financial perspective to another and in Eco Fund calls. In the upcoming new financial perspective until 2027, it is essential to ensure the timely adoption of program documents and the preparation of calls, or in cases where gaps cannot be avoided, to temporarily provide funding from other sources.

To carry out energy renovations of buildings, it is necessary to provide adequate support for energy performance contracting (EPC) service providers. Within this framework, new financial instruments and financing models must be developed, and new types of contracts with embedded elements enabling various



forms of project refinancing (e.g., the purchase of future receivables, allowing EPC service providers to (co)finance new EPC projects) should be prepared.

The framework for implementing energy performance contracting should also be expanded to other target groups and sectors (multi-family buildings, buildings in the private service sector, district heating systems, transportation electrification, etc.) and establish an appropriate implementation environment for this purpose. Based on the analysis of financial gaps, priority areas for EPC implementation should be identified and incorporated into the implementation of measures, following the example of energy renovations of public sector buildings.

Funding must be secured for broader and sustainable renovation projects in both the public sector and the residential sector for multi-family buildings (e.g., earthquake resilience, fire protection, etc.), and policies for building renovations must be implemented cohesively.

For a more consistent and predictable investment dynamics in the energy renovation of the public sector, the new financial perspective following the Energy Efficiency and Climate Plan (OP EKP) should, like EU programs, publish schedules for calls for at least two-year periods, allowing investors to prepare projects in a timely manner.

The successful preparation of technical and economic documentation for energy renovations of public buildings with international technical assistance (ELENA projects such as EOL, PM4PM, EOMO, GovDER) requires funding to be provided for its continuation as soon as possible. The European Investment Bank (EIB) allows for the acquisition of funds for the establishment of a national ELENA. To accelerate energy renovations in this sector, in line with DSEPS 2050, it is necessary to ensure that the first list of priority energy renovations for the broader public sector is actually prepared in 2022 and that appropriate financial resources are available for their implementation.

To achieve the goal of renovating 3% of the total floor area of buildings owned and used by the central government every year, it is necessary to prepare an energy efficiency program for the public sector as soon as possible. The preparation of the program was planned for 2021 in DSEPS 2050, but it has not yet been carried out. After the program is prepared, it is essential to start its implementation as soon as possible and also implement other instruments specifically defined for this target group in DSEPS 2050 (upgrading the project office for energy renovations of public buildings, developing new financial instruments, examining options for a systemic financial source for priority energy renovations, maintaining a list of buildings owned and used by the narrower public sector).

For energy renovation projects in the narrower public sector, it is necessary to ensure a systemic financial source with various funding sources (limitation of budgetary funds of individual ministries within the adopted budget, cohesion funds, and other non-refundable EU funds, the use of funds created by energy savings or lower energy costs). As a basis for the preparation of legislation for the establishment of a systemic financial source for energy renovations of buildings in the narrower public sector and its initiation, a study of the options for financing priority energy renovations from such a source will be prepared within the framework of NOO. It is essential to ensure that the legal framework is prepared and adopted according to the planned schedule by the end of 2023, to enable the establishment of a systemic financial source and the commencement of fund disbursement as soon as possible.

Efforts should be made to implement measures for optimizing the operation of energy systems (Re-Co) in public sector buildings by establishing a scheme for optimizing existing building systems for completed energy renovation projects and new investment projects. This scheme, not originally planned in NEPN and DSEPS 2050, should be appropriately integrated into the energy efficiency program for the public sector and included in the revised NEPN and the planned energy efficiency program in the public sector.



Austria

Concurrently, as part of the EU climate protection package, Austria developed the National Energy and Climate Plan (NEKP) to effectively realize European climate protection objectives. This comprehensive strategic plan received approval from the Austrian federal government in December 2019 and was subsequently submitted to the European Commission.

The NEKP is centred on the goal of reducing Austria's greenhouse gas (GHG) emissions by at least 36% by 2030, measured against the 2005 levels. To achieve this, the plan delineates specific measures and targets in key areas such as energy efficiency, renewable energies, and mobility. For instance, Austria aims to increase the share of renewable energies in its gross final energy consumption to a minimum of 46% by 2030, and also expand storage capacities to ensure a stable and secure supply of renewable energies.

The building sector receives special attention in the NEKP, with the objective of reducing greenhouse gas emissions by 3 million tons of CO₂ equivalent, as compared to the 2016 levels. To achieve this, the plan focuses on promoting building renovation, phasing out fossil fuels for heating and cooling, and expanding district heating networks.

To monitor the implementation progress and ensure the planned targets are met, Austria commits to publishing a progress report every two years. As of May 2023, the Austrian National Energy and Climate Plan is currently undergoing revision to enhance its effectiveness and align it with evolving needs and challenges.

Based on the NEKP significant savings in the building sector can already be recorded today compared to 2005. Nevertheless, it is clear that many projects regarding fossil boiler replacement and thermal renovations still need to be implemented to enable a decarbonized building stock. The following focus areas are considered in the building sector for this purpose: The avoidance of fossil fuels for the provision of space heating and hot water (incl. cooling) and the achievement of a thermal standard of all buildings, especially those constructed after 2020 and not subject to a comprehensive renovation by 2050. The aim is therefore to double the renovation rate. For this purpose, it is necessary to define the term "renovation rate" on a national level. Measures are then planned at various levels:

- Targeted subsidies (investment grants, subsidized financing models, tax measures).
- Subsidies also for partial renovation steps, if an overall renovation concept is available
- Examination of targeted subsidies for accompanying services and smaller investment measures (hydraulic balancing, heating check, renovation roadmaps/overall renovation concepts, improvements to heat distribution and delivery, etc.).
- Regulatory requirements, e.g. socially acceptable renovation requirements and price signals
- Removal of legal barriers in the area of housing law

In Austria the national government presented a government program in 2020 that implies a way how to achieve a climate-neutral building stock by 2040. Based on this government program a strategy called "Österreichische Wärmestrategie" was created. The strategy is being developed by national representatives and experts and from the federal states. The scope is to decarbonize the heat supply of all Austrian buildings by 2040. Therefore, everyone is addressed to implement certain measures.

The main objective is to achieve a decarbonised heat supply in all buildings. The plan was to phase out all fossil-fuel heating systems. The first step was to be taken with oil and coal-fired heating systems. The timetable specified that these should be replaced by climate-friendly alternatives by 2053. Gas heating systems would also no longer be allowed to use fossil fuels by 2040. For this purpose, a "Renewable Heat Act" was developed together with the federal states. This should have ensured the continuous phase-out of fossil-fuelled heating. However, in October 2023, the federal government decided against this comprehensive law and instead decided to increase the existing subsidies.



The strategy is accompanied by extensive federal and state funding. An increase in numbers has been recorded in recent years, particularly in the replacement of fossil-fuel heating systems. Renovations are not yet being carried out extensively enough.

Although there are different subsidies for renovation measures (Raus aus Öl und Gas Bonus, Sanierungsscheck, Wohnbauförderung), fossil boilers are currently being replaced, but the number of households implementing deep renovation is not high enough.

The "heating strategy" has so far focused very strongly on the replacement of fossil-fuel boilers. A concrete strategy for increasing the renovation rate has not yet been considered.

According to Austrian law, it is also obligatory for all federal states to have their own strategies. In Styria there is a strategy on regional level called KES-Climate and Energy Strategies ("Klima- und Energiestrategien"). The focus of the strategies is on the following three points:

- energy-optimized housing structures,
- efficient building technology,
- climate-friendly building envelope.

The main objective is the reduction of energy consumption and greenhouse gas emissions, also the reduction of infrastructure construction and maintenance costs, independence from fossil imports, finding storage options for renewable energy sources, CO₂-reduction and general support of the local building industry.

Regarding the experience with the actual implementation of the renovation strategy, Styria releases regularly a progress report, therefore the planned strategies and measures are mostly implemented (e.g. 91 out of 97 planned actions from 2015 were implemented until 2019).

C. Comparison

What is similar?

As part of the development of the green deals, a renovation wave was announced at the European level. The aim was to have an impact on three main topics:



Figure 1 Renovation Wave Priorities³

Within this strategy, the focus was on a number of key points that should also provide direction for the development of national renovation strategies. For example the principle of "Energy efficiency first" or "Decarbonisation and integration of renewables". These are now, among other things, guiding ideas that

³ https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/renovation-wave_en



should support the participating countries in the planning and implementation of strategies. The common goal is to achieve a decarbonized building stock in Europe by 2050.

Long-term renovation strategies have not been developed in all participating partner countries. In some, the development of such a strategy at national and/or regional levels is not mandatory. However, a strategy on a certain level has been defined and formulated in all countries except Germany.

The primary goal of most of the renovation strategies is to save energy and thus to implement energy efficiency measures and to reduce greenhouse gas emissions. Some strategies already set a renovation rate per year as a target value. Other concrete targets are also being aimed at, including implementing extensive renovations by a certain year. In most cases, the focus is on the most cost-efficient consideration of individual measures, but also on a renovation as a whole. Buildings with both private and public owners are considered.

Goals that are formulated in the renovation strategies are also considered in subsidies and other financial incentives. What is primarily consistent in the partner countries, is the recognition that financial support is necessary to achieve the ambitious goals required to implement sufficiently relevant measures.

What is different?

The development and implementation of a renovation strategy is not mandatory in all countries. For example, in Poland, a renovation strategy has been formulated without any obligation, which provides concrete figures for implemented renovation projects until 2050. In Germany, such a formulation is also not obligatory, which is why no national strategy has yet been developed that describes how the building stock is to be successively decarbonised. To achieve the goal of a climate-neutral building stock by 2045, the Building Energy Act - GEG 2023 was therefore implemented. Further plans for comprehensive and long-term planning are currently not known.

In contrast, in Italy there is a strategy or an action plan not only at national but also at regional level (Province of Bolzano), which is intended to stimulate energy efficiency measures. In Croatia, too, action plans have been developed at the level of cities, municipalities and counties, which deal with goals and activities to increase refurbishment in the building sector.

Another difference can be seen in the level of detail. Some concepts already go into great depth and already deal with specific target values that must be achieved nationally or regionally. Others, on the other hand, provide a rough framework or a target state, but do not specify how these are to be achieved. In this respect, it cannot be directly concluded which of the concepts contribute to a higher implementation with regard to deep renovations.

The way in which goals are to be achieved and at what level (national, regional) differs. For example, Austria and Germany focus on legislation ("Renewable Heat Act" and "Building Energy Act"). In contrast, Italy/South Tyrol in particular focuses on the development of strategic documents and targets to achieve the goals, accompanied by comprehensive financing and funding opportunities.

Link to MESTRI

Italy: It is necessary to provide a concrete tool for the analysis of the existing building stock and the selection of effective interventions and appropriate guidelines, able to establish a link with the European legislation in force.

Croatia: MESTRI-CE can help to achieve the objectives of the renovation of the building stock through the application of the Smart Data Hub, standards and financing models, which will make the whole process more efficient. The Data Hub will provide a clear overview of the state and priorities of the buildings to be renovated, the application of sustainable building standards will ensure quality, better energy performance



and savings, while the financial models will allow investments to be better prepared and implemented more quickly.

Poland: The Long-Term Building Renovation Strategy can be useful in establishing the MESTRI approach and in developing a sustainable building methodology and assessment toolbox suitable for Polish standards. The Long-Term Building Renovation Strategy is based on all key legislation in the field of construction and energy, therefore it indicates the methodology for implementing thermal modernisation in accordance with the applicable legislation. Furthermore, it indicates the terms of concepts such as "deep thermal renovation" and "shallow thermal renovation", which will help to achieve the right results within the MESTRI-CE project. However, the document itself does not provide guidelines on what the requirements for the Primary Energy Index in 2050, which is an indicator of the progress of a building in terms of energy efficiency in Polish legislation, will look like, and therefore there is no possibility of long-term compliance with the guidelines. The only guideline given in the DSRB is the average EP index for different types of buildings, which may indicate the prioritisation of buildings within the solutions developed in the MESTRI-CE project.

Germany: As long-term renovation strategies are not yet included in the German policies, any input from the MESTRI project would have a positive potential.

Slovenia: To provide a concrete tool for analysing the existing building stock and selecting effective interventions and appropriate guidelines, able to establish a link with the European legislation in force.

Austria: In Austria, too, renovation projects are currently mostly considered individually, and the use of tools depends on the company. Although there is some support such as klimaaktiv and similar programmes, no standardised procedures have yet been developed for deep renovations, even of larger building stocks. MESTRI could fill several gaps here and help to bring together suitable building standards, selection tools and financing models.

D. Conclusion

To conclude, this report analysing the current renovation strategies and legislative/strategic multi-level planning frameworks of the countries participating in MESTRI project has shown that despite there being a certain degree of overlap between countries there is still a great deal of variation when it comes to the regional differences in renovation strategies.

We have seen that most of the countries have developed a long term rehabilitation strategy, and that although there may be different approaches for quantifying the success of energy efficiency measures, either by setting a yearly renovation rate target or by requiring extensive renovations by a certain year, the principle of energy efficiency as being core to the purpose of renovation strategies is nearly universal. Equally, another point of commonality is the consistent link between subsidies and other financial instruments. On the other hand, there remain regional differences of expectations with regards to whether development and implementation of strategies are mandatory, moreover their respective level of detail varies from country to country. However, despite this variety we can clearly see that the MESTRI project will be able to add value irrespective of where the legislation is currently at in each country.