MESTRI-CE

D.1.6.2

Implementation and Market Rollout of the MESTRI-CE Smart Data Hub

Version 1

07/2025

Content

1. Introduction

The MESTRI-CE project aims to accelerate the energy transition in Central Europe by equipping public authorities with innovative tools and methodologies to plan, finance, and monitor energy efficiency measures. One of the project's key innovations is the development of the **MESTRI-CE Smart Data Hub**—a digital platform designed to support data-driven decision-making, facilitate energy monitoring, and strengthen cross-sector collaboration.
This report provides an overview of the **implementation of the MESTRI-CE Data Hub in selected pilot regions**, followed by an assessment of the experiences gained during these initial rollouts. The document captures practical insights from local and regional stakeholders involved in the deployment, operation, and everyday use of the platform.

The report serves three main purposes:

1. **To document the implementation process** in each pilot region, including technical, organizational, and operational aspects.
2. **To evaluate user experiences**, highlight successes, and identify challenges encountered during initial use.
3. **To provide concrete recommendations** for improving the platform and ensuring a successful broader rollout in additional regions and markets.

The findings are based on implementation reports from pilot regions, feedback collected from end users, and joint reflection sessions held within the project consortium. The outcomes presented here will inform future developments of the Smart Data Hub and contribute to shaping a replicable and scalable approach for energy data management across Central Europe.

The structure of the report reflects these goals: it begins with an overview of the Smart Data Hub's purpose and core features, followed by detailed insights from pilot implementations. It concludes with a set of lessons learned and strategic recommendations for further development and wider deployment.

1.1. Overview of the MESTRI-CE Smart Data Hub

The MESTRI-CE Smart Data Hub is a digital platform designed to support energy-related decision-making in the public building sector by enabling structured data collection, analysis, and visualization of energy consumption, building characteristics, and renovation potential. Developed in collaboration with Scandens—a Swiss-based leader in software for building energy renovations—the tool translates EU guidelines into actionable measures that streamline the energy renovation planning process. This partnership aims to boost renovation rates and reduce the carbon footprint across Central Europe by equipping municipalities, energy agencies, and other stakeholders with a practical solution for tracking and managing building performance. Through its centralized interface, the Hub integrates multiple data sources and offers key functionalities such as benchmarking, scenario development, and tailored reporting, helping local and regional administrations prioritize actions, monitor progress, and plan future investments more effectively.

1.2. Summary of Pilots building portfolio

Pilot regions selected diverse building portfolios to test the functionality and adaptability of the MESTRI Smart Data Hub. The included buildings range from schools and kindergartens to administrative offices and cultural institutions, varying in size, age, and energy performance. The selected portfolios reflect typical public building stock challenges in Central Europe, such as outdated heating systems, poor insulation, and limited renovation history. This diversity ensures a representative testing ground for the platform and provides valuable input for understanding its scalability. Per country, the building portfolio and some of the most important details about it will be described, to get a better understanding about the tested objects.

1.3. Assessment of the Implementation

Implementation across the pilot regions revealed both strengths and challenges in deploying the MESTRI Smart Data Hub. Teams faced obstacles related to data availability, format inconsistencies, and limited technical resources, particularly during initial data uploads and system configuration. However, successful integration was achieved where clear coordination structures, strong local engagement, and prior digital experience existed. The level of implementation maturity varied between pilots, offering valuable insights into the conditions required for effective deployment. As each country has a specific version of the software, different challenges arise. This chapter is used to describe the process in each country with the experiences and the view of the project partners.

1.4. User Experience and Feedback

Users from municipalities, energy agencies, and regional authorities provided practical feedback on the Smart Data Hub’s usability and relevance. Many appreciated the intuitive design, potential for cross-building comparisons, and visual dashboards. At the same time, users highlighted areas for improvement, such as clearer guidance for data input, more flexible data categories, and the need for ongoing technical support. The country specific experiences of the users are explained in this section.

1.5. Recommendations for Improvement and Modification

Enhancements to the MESTRI Smart Data Hub should focus on simplifying data input processes, improving user interface navigation, and ensuring greater compatibility with existing municipal data systems. Additional training materials, user guides, and dedicated support channels can help build user confidence and reduce the entry barrier. In terms of functionality, integrating more automation, alert systems, and customizable reporting features would significantly increase the platform’s utility for decision-makers and technical staff alike. As the fields of improvement and modification highly rely on the partners’ needs, each country specifies their fields of adaptation in the country-specific chapters.

1.6. Roadmap for further Market Rollout

A phased rollout strategy is proposed to expand the reach of the MESTRI Smart Data Hub, starting with regions already engaged in energy planning or digitalization efforts. Key success factors include building strategic partnerships, aligning with national digital agendas, and securing sustainable funding for technical support and maintenance. The roadmap also recommends leveraging EU initiatives and networks to promote the platform, while adapting its features to meet the specific needs of new user groups and regulatory frameworks across Central Europe. Each pilot region has its own strategy on how to best roll out the Smart Data Hub and also the varied target group. That’s why also the roll out strategy depends on country specific factors and will be described in detail per country/region.

2. Austria

Austria is a landlocked country in Central Europe. It is divided into nine federal states, each with its own government and administrative structures.

Styria, located in the southeastern part of Austria, is the country's second-largest federal state by area and population. The federal state is often referred to as the "Green Heart of Austria".

In Styria, administrative divisions are structured into "Gemeinden" (municipalities), which represent the smallest unit of local governance. These municipalities are categorized into cities, market towns and rural municipalities, each governed by a municipal council and mayor. Styria currently has over 280 municipalities, playing a vital role in providing local services, maintaining infrastructure and fostering community development.

2.1. Overview of the MESTRI-CE Smart Data Hub

Austria presents a mixed data landscape for 3D building modeling. In Vienna, we can leverage automated building geometry creation with Level of Detail 2 (LoD 2), providing detailed building representations including roof structures. For the rest of Austria, automated geometry creation is available at Level of Detail 1 (LoD 1), offering simplified building blocks with basic volumetric information. Both levels support the integration of thermophysical properties for energy simulations and renovation planning, though Vienna's higher detail level enables more precise solar analyses and measure dimensioning.

2.2. Summary of Pilots building portfolio

The city of Bruck an der Mur, which is selected for the piloting, owns around 34 public buildings, of which seven were identified as having the highest need for thermal renovation. These buildings—nicknamed "the 7 sins of Bruck an der Mur"—include the city hall, a gymnasium, a townhall, the building yard, the music school, the elementary school, and the kindergarten. Each of these underwent on-site assessments to evaluate their current condition and energy performance. The collected data forms the basis for populating the MESTRI Smart Data Hub. A city-wide introduction of the tool is planned, during which key parameters will be selected and tested using the data from the seven buildings. The platform will enable structured renovation planning, scheduling of measures, and exploration of financing options to support energy efficiency improvements in the city's public building stock.

2.3. Assessment of the Implementation

During the testing of the Austrian building portfolio, the geometry of the buildings proved to be a particular challenge. If the geometry is not defined comprehensively and correctly from the outset, it becomes difficult to accurately represent individual building components. The building size is defined by setting corner points, which cannot be entered using exact values for length, height, or depth at the moment, but only adjusted manually by dragging these points. As a result, it is difficult to achieve precise dimensions for each building element.

Interacting with specific building components also becomes more difficult in cases where the building geometry is more complex. Protruding elements are partially captured but are not always represented with full accuracy. Differences in height—such as multiple floors, basements, or attics—are also difficult to model within the given geometry structure.

In contrast, capturing details related to building services (e.g., heating systems, ventilation) works very smoothly and in a highly detailed manner. However, it might be beneficial to add an option for comments, especially in cases where renovation measures were implemented in several phases.

Emission factors can be adjusted easily and quickly to reflect national specifications, which is a significant advantage. Assigning building usage types presented some challenges due to limited data availability for publicly owned buildings. Nevertheless, the input options for usage are clearly structured and well thought out.

The recording of the building envelope shows both advantages and disadvantages from an Austrian perspective and based on the tested portfolio. One strength is the ability to define construction years for individual building parts, which allows for solid planning based on this information. On the other hand, it can be challenging to determine the exact construction years. Limiting the input to a single year does not always fully reflect the condition or material quality of the existing building stock.

2.4. User Experience and Feedback

During the client presentation, one building was selected for a detailed walkthrough. The City Hall was discussed in depth, with all its characteristics explored and all available features in Scandens demonstrated. Using this example, the team from Bruck an der Mur was able to gain a comprehensive understanding of the tool's functionality.

The feedback was very positive. Thanks to the visualisation of energy efficiency and the selection of renovation measures, the tool provides a quick and clear overview of both necessary and potential renovation options. Interest in the tool was high, and enthusiasm was clearly expressed. In addition to the buildings identified as the "7 sins," there are now considerations to include further buildings in the tool in order to obtain a more complete overview of the entire building portfolio.

2.5. Recommendations for Improvement and Modification

From an Austrian perspective, it is recommended to introduce additional options for adjusting the building geometry. For instance, a list of individual building components could support better interaction and selection, and the ability to define elements based on precise measurements (e.g., length, height, depth) would allow for more accurate and efficient modelling. This would significantly improve the level of detail and speed of geometric adjustments.

Furthermore, enabling comments for the construction and renovation years of each building component would enhance traceability. This feature would allow users to document context-specific information—such as staged renovations or uncertainties in construction dates—which is essential for long-term use of the tool and for ensuring that updates remain complete and transparent over time.

2.6. Roadmap for further Market Rollout

As the next step, additional buildings from the municipality of Bruck an der Mur will be entered into Scandens. This will allow further testing of the tool's functionalities across a broader range of building types. The results will then be presented in a dedicated webinar for all municipalities in Styria, showcasing the practical benefits of the tool for developing renovation roadmaps based on real-world examples.

In addition, the Smart Data Hub offering will be promoted through the Municipal Services Platform. A newsletter will introduce the tool and its functionalities, while continuous updates and comprehensive information—including contact details for municipalities interested in using the Smart Data Hub—will be made available on the official website.

3. Croatia

Croatia is a European country located between central, southern and southeastern Europe. The territory of the Republic of Croatia is administratively divided into 128 cities and 428 municipalities. Municipalities and cities in Croatia are the second level of self-government. Counties are higher units called regional self-government, which are made up of municipalities and cities. Croatia is divided into 20 counties, and the City of Zagreb, which as the capital of Croatia, has the status of a city, and the status of a city gives it the special status of a city and a county. The City of Zagreb is the political, cultural, scientific and economic center of the country. Other major urban centers are Split, Rijeka and Osijek.

3.1. Overview of the MESTRI-CE Smart Data Hub

Croatia supports automated building geometry creation at Level of Detail 1 (LoD 1). This provides simplified building volume representations that capture the basic geometric characteristics needed for energy modeling. Each building is modeled as a 3D block geometry with integrated thermophysical properties including U-values and heat capacities. While less detailed than LoD 2 models, this level of geometric representation enables reliable energy simulations, solar potential assessments, and fundamental renovation measure dimensioning across the country.

3.2 Summary of Pilots building portfolio

Karlovac County, Krapina-Zagorje County, Zagreb County, and the City of Zagreb, four counties that own more than 2000 buildings, were selected for piloting. In their portfolio, they have different types of buildings: kindergartens, schools, student dormitories, homes for the elderly and infirm, pharmacies, hospitals, health care centres, administrative buildings for sport and culture and other types of public buildings.

Twenty (20) public buildings are chosen for piloting, five from each county. These budlings have the greatest potential for savings, with energy renovation needs and are investment priorities for their owners. The pilot portfolio consists of buildings of the following types: kindergartens, schools, and buildings for health services. For all twenty buildings, on-site building checks was performed and the most important information about the building was collected such as: general building information (name, building category, area,…), building envelope (façade, windows, door, roof…), building technical systems (heating, cooling, ventilation system, lightning…). On-site building checks served as the basis for collecting the data that was entered into the Smart Data Hub.

The platform will enable renovation potential, comparison between the current state of the building and future possible renovation scenarios, as well as financing options to encourage energy efficiency improvements in each county public building stock.

3.3. Assessment of the Implementation

The General Information tab provides a straightforward and intuitive interface for data entry. However, incorporating a note-taking functionality would be beneficial, particularly for the year of construction, in cases where a building comprises multiple sections constructed at different times.

The Building Geometry tab presents certain challenges. Accurately representing specific parts of the building and defining precise dimensions can be difficult. Additional complexity arises when attempting to define vertical height differences within the structure. Furthermore, the option to input multiple U-values for specific components (e.g., where different window types are present) would significantly enhance the level of detail and accuracy of the analysis.

The Building Envelope tab offers the advantage of specifying both the year of construction and year of renovation for individual building parts. Nonetheless, the ability to add notes or to input multiple renovation years—where multiple interventions have occurred—would be a valuable improvement.

A key strength of the **Energy Systems tab** lies in its user-friendly design, which facilitates efficient data entry while yielding comprehensive information on system configurations. As with other sections, the addition of a note field would be advantageous.

The Usage tab is also intuitive and efficient to complete, providing detailed insights into building occupancy and use patterns.

3.4. User Experience and Feedback

Smart Data Hub is very helpful for planning sustainable building management and renovations. The platform allows to enter various building datas like the type of building, year of built, energy systems which helps to create a clearer picture of the current situation.

One of the greatest advantages of the tool represents how the tool visually shows renovation potential through simple charts that highlight which buildings need the most urgent renovation. This made it much easier to decide on priorities and plan investments. The option to compare the building's condition before and after renovation also helped to understand how effective the changes would be.

The Smart Data Hub also helped to keep track of how the buildings align with climate goals and plan measures that really contribute to reducing energy use and CO_2 emissions. This made it easier to make decisions based on real data.

Overall, the tool can be very practical and useful throughout the entire planning process.

3.5. Recommendations for Improvement and Modification

From a Croatian perspective, it would be advisable to introduce additional functionalities such as comment fields or the ability to input multiple values related to the year of construction/ building extension and year of replacement of building components within **the General Information and Building Envelope tabs**. This would enable a more detailed overview of building history and facilitate more effective tracking of changes over time.

Moreover, enabling a more detailed description of the building construction elements within **the Building Geometry tab** would support more accurate analyses, provide a more realistic representation of the building, and simplify the implementation of model modifications.

Additionally, allowing the input of multiple thermal transmittance values (U-values) for specific components for example, in cases where different types of windows are present, would contribute to a more detailed and technically accurate analysis of the building's energy performance.

3.6. Roadmap for further Market Rollout

As the next step, buildings undergoing preparation for energy renovation from the four counties selected by the owners will be entered into Smart Data Hub. This will enable additional testing of the tool's features on a wider variety of building types. The results will be presented to external institutions through several bilateral meetings, dealing with comprehensive building renovation projects and the application of different financing models.

Results will also be presented to the cities and municipalities within the area of these four counties. The REGEA website will be used to promote the results and opportunities of using the Smart Data Hub. E-mail information will be used to contact the stakeholders and to reach more potentially interested people. The final conference will also be used to spread Smart Data Hub to all stakeholders in the MESTRI project over the duration of the project.

4. Germany

Germany, located in Central Europe, comprises 16 federal states (Bundesländer), each with constitutional autonomy under the federal system. These states hold significant legislative authority in areas such as education, law enforcement, and cultural affairs, operating under Germany's federal system that balances national unity with regional autonomy.

Bavaria (Bayern), located in southeastern Germany, is the largest federal state (Bundesland) by area and one of the most economically significant. As of 2025, Germany's total population exceeds 84 million, with Bavaria accounting for approximately 13.3 million residents. Munich, Bavaria's capital, is a major cultural and economic hub.

4.1. Overview of the MESTRI-CE Smart Data Hub

In Germany, we achieve fully automated building geometry creation with Level of Detail 2 (LoD 2). This high-resolution approach allows us to model each building as a detailed 3D representation including roof structures and building outlines. The comprehensive geometry serves as the foundation for precise energy simulations, solar potential analyses, and accurate dimensioning of renovation measures. The thermophysical properties (U-values, heat capacities, etc.) are integrated into these detailed 3D models to enable sophisticated building performance calculations.

4.2. Summary of Pilots building portfolio

WBG Nürnberg GmbH is the city-owned housing company of Nuremberg, managing over 18,500 group-owned rental units (around 10% of the local housing market) plus approximately 6,400 other residential and commercial spaces. Founded in 1918, it undertakes both modernization and new construction programs. Its building stock is notable for serial energy-efficient retrofits—many residential complexes were upgraded with insulation and converted to district heating, achieving around 70% CO_2 reduction since 1990.

The portfolio spans subsidized and free-market housing, municipal facilities, and commercial units—emphasizing sustainability, affordable rents, and social infrastructure.

For testing the smart data hub, older residential buildings from different decades with a need for renovation were chosen.

4.3. Assessment of the Implementation

Being the first step in the test phase, the creation of new buildings is crucial for the overall impression of the tool. Luckily, LOD2 data is available for Bavaria which makes it very easy to add a new building. There was though one address in the test portfolio that was not found by the system. When reported to Scandens, the problem was recognised and promised to be fixed.

The overall impression of the analysis tools and input options was very good. There were a few details missing, but some of them, like the lack of the end energy use, was due to the very early stage at which the testing for Germany was done.

Some of the details reported to scandens were the following:

Even if the building was not residential, some input data still applied to a residential use. The color code for the energy standards G and H were very similar making it impossible to read the pie charts.

As it was freshly implemented, the tool for on-site visits was tested thoroughly. In the first version, some basic missing features, like the takeover of data from a previous on-site visit, were detected. As the tool was ready in more detail, it was discussed with the experts of WBG. Their findings are stated in the next section.

4.4. User Experience and Feedback

The feedback we got from our pilot partner was positive overall. The smart data hub fulfils a lot of he needs that are crucial for the portfolio management and renovation planning.

As the tool for on-site visits was the newest addition to the tool, an intense feedback session with one "project manager of condition survey" and one technical assistant was held. Their feedback was very professional and comes with a lot of practical experience but is of course very dependent on the organizational structure of their company.

One big conceptional criticism was that the tool combines technical and management information. For example information about the number of inhabitants is not gained on the technical visits.

Some of the smaller remarks that were pointed out to us are:

- There is no sense in asking for the room temperature as it is not appropriate of the landlord to measure it and it varies per apartment and room.
- In order to allow an efficient analysis, there should be a minimum of open text fields. But additionally to the fixed answers, there should always be the option for comments.
- Most of the parameters can vary within the building (f.ex. insulation or roof on different parts). So there should always be the option to apply percentages.
- The condition should always be asked with 4 options. This prevents the technician from always taking the middle option and allows more differentiation.
- Some data like the airtight layer are hard to get without damaging the building.
- The roof rafters (their distance etc.) and the thickness of ceilings are not interesting to the building technician.
- For the ceilings, there should be a differentiation in energetic and structural condition.
- There should be the option for several types of doors (usually the front door is different from the back door).
- There should be the option to choose several damages.
- Heat bridges are hard to quantify.
- They missed information about accessibility.
- They missed the analysis of service connections as well as chimneys and gutters.

The overall impression of the smart data hub remained positive after this feedback session.

4.5. Recommendations for Improvement and Modification

Some of the mentioned suggestions about the on-site visit tool seem to be overall important for most users. But a lot of them strongly depend on the needs and exact use of the company owning the building portfolio.

We discussed this with the pilot partner and came to the conclusion that for a large client, it should be possible to adapt the tool individually. This would mean that in their accounts, only the aspects that are relevant to their work are shown. This way, all the different colleagues would fill out the same fields and wouldn't have to decide individually what is important for them.

4.6. Roadmap for further Market Rollout

The energy agency of northern Bavaria will present the smart data hub to various possible users in Bavaria and Germany. For the start, we plan to address communalities and housing companies in Bavaria while simultaneously discussing the tool with other energy agencies within Germany. Then, depending on the feedback we get, we will enlarge the focus group to other companies and regions.

In order to present the smart data hub in a professional manner and to get new users while they are still interested by our pitch, the marked rollout can only start once the tool is available on the MESTRI-CE domain with the correct conditions.

5. Italy

From an administrative point of view, the Italian territory is divided into 21 regions, of which 15 have ordinary status and 5 have special status. One of these is Trentino-Alto Adige, which is divided into two provinces, Bolzano and Trento. The province of Bolzano is the most northern of the Italian provinces, with a population of about 36,933 inhabitants divided into 116 municipalities. Due to its autonomous status, the Province of Bolzano has legislative powers in those areas which are normally the responsibility of the State or the Region, in particular health, education, employment, transport and viability, town planning and regulatory plans, environmental protection.

5.1. Overview of the MESTRI-CE Smart Data Hub

Italy requires a semi-automated approach for 3D building model creation. Building footprints are automatically detected from available data sources, but users need to provide building height information to enable automated geometry creation through extrusion processes, resulting in Level of Detail 1 (LoD 1) models. While the software can attempt height estimation using satellite imagery, these results require careful validation. The resulting simplified 3D geometries are then enhanced with thermophysical properties for energy simulations and basic renovation measure planning.

5.2. Summary of Pilots building portfolio

In Italy, the pilot partner is the Autonomous Province of Bolzano (APB). The APB is responsible for the energy management of more than 350 buildings in South Tyrol. Since 2019, the CasaClima Agency has supported the APB in carrying out a status quo mapping of the energy performance of these buildings. The aim was to identify those with the highest energy consumption and the worst envelope and system conditions.

7 buildings of different sizes, ages and refurbishment needs have been selected for the Smart Data Hub testing. They include both school buildings and buildings housing provincial offices. Information and data collected during on-site inspections have been used to feed into the Smart Data Hub.

Thanks to the Smart Data Hub, it will be possible to easily identify those buildings where the cost-benefit ratio associated with the refurbishment intervention will be most favourable, both in terms of energy efficiency and environmental sustainability, as well as economic feasibility.

5.3. Assessment of the Implementation

According to Italian experience, the main challenge related to using the Smart Data Hub is inserting the correct geometry for buildings. It is worth noting that the local cadastral layer used to represent the urban environment in South Tyrol is of poor quality. Even if a technician were to manually insert the shape of a building to overcome this issue, it would be a significant undertaking. Although the software company has already resolved some problems, the ability to easily modify the anchor point that defines the base polygon and the other polygons that define the dispersing envelope is still lacking. This makes it difficult to control the dimensions of each building element.

In addition, it is not possible to represent the part of a building's envelope that is heated but located underground. This limitation could cause significant problems, particularly in schools, where the canteen or gym is often partially underground.

It would also be useful to be able to verify in more detail the dimensions that the Smart Data Hub uses for calculations. Data such as volume is not directly readable.

Currently, it is not possible to compare the data calculated by the Italian version of the Smart Data Hub with the building's actual consumption, meaning the model cannot be validated.

5.4. User Experience and Feedback

Until now, the Italian version of the Smart Data Hub has been presented during the first two training courses related to activity D.2.5.3. The audience consisted of freelance engineers and architects. While they appreciated the opportunity to easily evaluate the energy efficiency of a large portfolio of buildings and to compare different renovation scenarios, they also recognised that applications such as the Smart Data Hub could be of greater interest to other stakeholders, such as public administrations.
Meetings with further stakeholders will be organised once the function that allows model calibration has been implemented and tested.

5.5. Recommendations for Improvement and Modification

In order to simplify the work of those entering data and speed up the evaluation of buildings, there is a need for more options for adjusting and entering the geometry of buildings. This is particularly important when the quality of the available urban planning layer is not as good as expected, as is often the case in Italy.

5.6. Roadmap for further Market Rollout

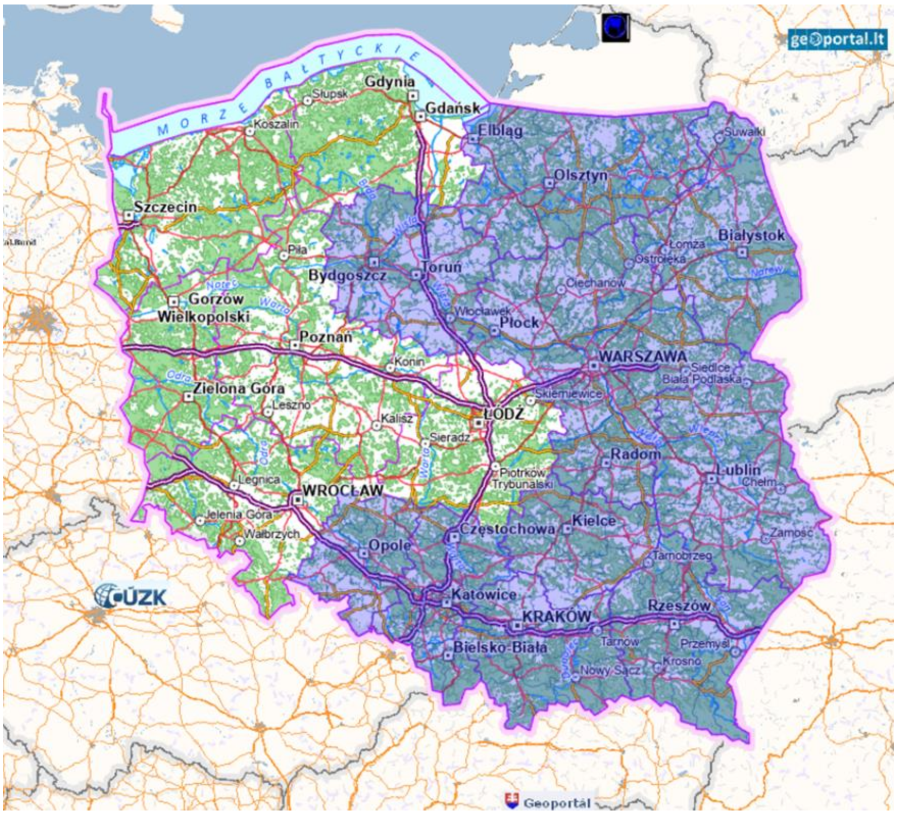
As soon as the calibration section has been inserted, further buildings will be tested and a general presentation of the software will be organized for local municipalities. Municipalities implementing the ComuneClima Programme may be interested in using software such as the Smart Data Hub to support their municipal building renovation plans in line with their energy and climate plans. The tool will be further disseminated through the CasaClima website, as well as through the organization of bilateral meetings with interested stakeholders, such as social housing institutes.

6. Poland

Poland is a country in Central and Eastern Europe with access to the Baltic Sea, which is also the eastern border of the European Union. Poland is administratively divided into 16 voivodeships and 314 counties. Each voivodeship has its capital, i.e. the voivodeship city, which is the seat of the voivodeship assembly and administrative offices. Warsaw is the capital of Poland, but also the capital of the Masovian Voivodeship, the largest voivodeship in Poland. The city of Warsaw is the cultural, scientific, economic and political capital. Poland's other key centers are Tricity, Kraków, Wrocław and Poznań.

6.1. Overview of the MESTRI-CE Smart Data Hub

Poland offers varying levels of 3D building model detail depending on geographic location (see map below). Approximately 65% of the country benefits from automated building geometry creation with Level of Detail 2 (LoD 2), providing detailed building representations including roof structures and architectural features (highlighted area in the map). The remaining areas utilize Level of Detail 1 (LoD 1) with simplified building geometries. Both detail levels support comprehensive thermophysical property integration for energy simulations, with the LoD 2 areas enabling more sophisticated solar analyses and precise renovation measure calculations.



6.2. Summary of Pilots building portfolio

In Poland, the pilot implementation is being carried out in the Mazovia Region (Voivodeship). For the purposes of testing the Smart Data Hub, twenty buildings from ELENA programme were selected (project entitled "Mazovia Renovation Wave – Improving Energy Efficiency and Integrating Renewable Energy Sources in Public Utility Buildings in the Mazovia Voivodeship"). These buildings are energy-inefficient, characterized by lack solutions designed to reduce heat loss, such as good thermal insulation. Furthermore, a large percentage of buildings are heated by inefficient, outdated solid fuel boilers, contributing to high emissions and heat loss. Furthermore, many buildings suffer from thermal bridges due to design flaws, which cause heat loss. Polish portfolio is centered around buildings of this type, including schools, municipal offices, administrative offices, and hospitals.

6.3. Assessment of the Implementation

The overall impression of the analysis tools and input options was positive. There were a few details missing, like problem with showing the building below ground level, but we hope that the functionality of the tool will develop. The platform lacked small features, such as the ability to define a wall in contact with the ground in cases where the building included a basement. Additionally, some buildings were heated with coal-fired boilers, which is still relatively common in older buildings in Poland. Unfortunately, the form did not allow users to select this type of heat source, which may have affected the final results — particularly the indicator for non-renewable primary energy demand (EP).

6.4. User Experience and Feedback

The Smart Data Hub is a valuable tool for supporting the planning and implementation of sustainable building management and renovation strategies. The platform enables users to input a wide range of building-related data — such as building type, year of construction, existing energy systems, and other key characteristics — providing a comprehensive overview of the current state of the building stock. This centralized, structured information helps stakeholders to identify priorities, assess energy performance, and make informed decisions about the most effective and sustainable renovation and management measures. By facilitating data-driven analysis, the Smart Data Hub contributes to more efficient resource allocation and better long-term outcomes for buildings and their users. So far, Smart Data Hub has been introduced to local stakeholders. They appreciated the efforts put into developing the tool and confirmed that such initiatives are important for renovation planning.

6.5. Recommendations for Improvement and Modification

From the Polish perspective, it is advisable to enhance the platform by introducing more advanced options for customizing and refining building geometry. For example, providing a detailed, structured list of individual building components — such as walls, roofs, windows, and floors — would enable users to interact with and select specific elements more intuitively and effectively. In addition, incorporating functionality to define these components using precise, user-defined measurements (e.g., length, height, depth) would greatly improve the accuracy and efficiency of the modelling process.

Furthermore, it is recommended to expand the range of available heating systems to include coal-fired boilers, which are still commonly used in older buildings in Poland. Including this option would allow for more realistic modelling and could significantly impact key results, particularly the non-renewable primary energy demand (EP) indicator.

6.6. Roadmap for further Market Rollout

In the longer term, more buildings will be implemented into the tool. MAE website will serve as a key platform for disseminating the outcomes of the project, raising awareness about the potential and benefits of utilizing the Smart Data Hub. It will feature updates on guidance on how stakeholders can engage with and take advantage of the Smart Data Hub to improve energy management and decision-making.

7. Conclusion

The implementation of the MESTRI-CE Smart Data Hub across five Central European countries has demonstrated the platform's potential to support data-driven energy planning, renovation strategy development, and enhanced decision-making in the public building sector. Pilot regions successfully integrated diverse building portfolios into the platform, offering valuable insights into both the technical and practical aspects of real-world deployment.

Overall, the tool was well-received by users, who appreciated its visual clarity, intuitive design, and ability to centralize and analyze complex building data. Key strengths included the support for structured renovation planning, prioritization of investments, and tracking of climate targets. At the same time, each country identified specific challenges—particularly related to geometry input, legacy data integration, and localized building characteristics—that informed tailored recommendations for improvement.

The country-specific roadmaps show clear potential for further rollout, with strategies focused on peer learning, stakeholder engagement, and broader dissemination. The continued adaptation and enhancement of the Smart Data Hub will be essential for scaling its use across the region and ensuring that municipalities, energy agencies, and public authorities can fully leverage its capabilities in support of a climate-neutral building stock.

In conclusion, the initial implementation phase confirms that the MESTRI-CE Smart Data Hub is a robust and scalable tool with wide applicability. With targeted refinements, dedicated support, and alignment with national strategies, it can become a cornerstone for energy-efficient and sustainable public building management across Central Europe.