

Renovating neighbourhoods for a decarbonised future

BARRIO - Fostering deep Building Renovation by Aggregating demand, developing business models and Rolling out IndustRialized prefabricated sOlutions for a decarbonized building stock

Report on activation and mobilisation of BARRIO DEMAND Laboratories

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EXECUTIVE SUMMARY

This report outlines the approach, methodology, and progress achieved in the activation and mobilisation of the BARRIO Demand Laboratories (D-Labs) — a central mechanism for engaging demand-side stakeholders in support of large-scale building renovations across four pilot markets: Ravne na Koroškem (Slovenia), Valencian Community (Spain), Emilia-Romagna (Italy), and Gabrovo (Bulgaria).

D-Labs bring together key local actors — such as municipalities, housing companies, property managers, homeowner associations, NGOs, and energy agencies — who represent or coordinate aggregated renovation demand. These stakeholders play a vital role in the co-development, testing, and deployment of the BARRIO Defragmentation Multidisciplinary Toolkit (DMT), as well as bundled renovation strategies.

The report includes:

- the **methodology** for identifying and categorising stakeholders;
- a **stakeholder overview** by pilot markets, including descriptions and motivations for participation, highlighting local dynamics and strategic engagement approaches;
- a comparative analysis of stakeholder groups;
- a demand characterisation model: a systematic framework designed to integrate D-Lab into broader project tasks and work packages with the timeline of key engagement activities, including communication, co-design, training, and validation phases.

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ABBREVIATIONS

ABBREVIATION	TERM/NOTION/CONCEPT
АРР	Aggregated Prefabricated renovation Plan
D-LAB	DEMAND Laboratories (small action groups of strategic local demand side stakeholders)
DMT	Defragmentation Multidisciplinary Toolkit
S-CLUSTER	SUPPLY cross-sectoral Clusters (small action groups of local supply side stakeholders)
ws	Workshops





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1. Introduction

1.1 Project Overview

Achieving a 60% reduction in greenhouse gas (GHG) emissions from the building sector by 2030 compared to 2015 levels, and realising a fully decarbonised, zero-emission building stock by 2050, are key objectives for reaching climate neutrality in the European Union. The revised Energy Performance of Buildings Directive (EPBD) contributes significantly to achieving these goals. This directive mandates that EU Member States promote **district and neighbourhood approaches** and integrated renovation programmes rather than focusing solely on isolated, single-building interventions. Such an approach is critical to creating a systemic, large-scale transformation of the built environment that aligns with the EU's decarbonisation targets.

A cornerstone of this transformation is the **aggregation of renovation demand**. Traditional one-by-one building interventions often result in fragmented efforts that fail to achieve the necessary scale and efficiency improvements. In contrast, aggregating demand **at the neighborhood level** creates a critical mass that unlocks economies of scale, streamlines financing, reduces overall costs, and maximises energy efficiency gains. This aggregated approach supports the development of energy communities that facilitate collective energy generation and consumption. Additionally, integrated funding schemes — including grants, public-private partnerships and modular, industrialised construction solutions are pivotal in supporting large-scale interventions and ensuring that deep renovation efforts meet the stringent environmental and economic requirements of the modern urban landscape.

The **BARRIO Project** has been designed to address these challenges head-on by overcoming the inherent fragmentation in current renovation practices. Its strategy is threefold:

- **Aggregating Demand:** by consolidating and aggregating the renovation needs of building stock, the project creates a unified demand that is more attractive to investors and capable of supporting innovative, large-scale solutions.
- **Developing Innovative Business Models:** BARRIO coordinates supply-side stakeholders to facilitate the efficient delivery of deep renovation projects, leveraging economies of scale and shared resources.

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• **Deploying Industrialised, Prefabricated Solutions:** the use of Plug&Play, prefabricated systems accelerates renovation timelines and enhances cost-effectiveness, thereby enabling a more rapid transition to a decarbonised building stock.

Central to the BARRIO approach is the **Defragmentation Multidisciplinary Toolkit** (DMT), a comprehensive digital framework that streamlines large-scale renovation efforts. The DMT incorporates the Aggregated Prefabricated Plan (APP) Generation Tool — a platform that matches clusters of buildings requiring renovation with an aggregated supply of services and solutions. This tool effectively transforms isolated interventions into coordinated, staged renovation roadmaps, optimising both efficiency and cost while ensuring that renovation outcomes are aligned with decarbonisation targets.

The core innovations of BARRIO will undergo rigorous validation within four distinct pilot ecosystems across Europe. These ecosystems are not merely "test sites," but rather living laboratories where the BARRIO methodology will be implemented, refined, and proven in real-world conditions. This real-world testing, across varied climatic, regulatory, and market contexts, is crucial for ensuring the effectiveness, adaptability, and replicability of the BARRIO approach. The pilot ecosystems are:

- Emilia-Romagna, Italy
- Valencian Community, Spain
- Ravne na Koroškem, Slovenia
- Gabrovo District, Bulgaria

These four pilot ecosystems are strategically selected to represent a range of socioeconomic contexts, varying levels of renovation market maturity, different building typologies, and diverse climatic conditions across Europe. This diversity allows BARRIO to test its solutions under a wide spectrum of conditions and demonstrate its applicability to a broad range of building stocks and market environments. The deliberate selection of these specific regions also builds upon the successes and lessons learned from previous European projects, capitalising on existing knowledge, networks, and established relationships. The specific functionalities inherited and expanded upon from these previous projects, as well as the countries involved, are detailed in Table 1 and Figure 2.





EU Projects	Functionalities	ES	ІТ	SI	BG
TABULA	Profiling building stock focused on single buildings.				
re-MODULEES	One-Click Diagnosis module for energy renovation on building, taking into account the TABULA building typologies, but national EPC schemes results can be uploaded.				
HAPPEN	Financing module for energy renovation.				
OneClick RENO	Staged Renovation Passport for single buildings based on the re-MODULEES One-Click Diagnosis. OCR will include energy, environmental, and economic indicators.				
BUPS	Prefabricated solutions for single buildings or portfolios.				
BARRIO	 Geoclustering module to cluster building stock Users meeting rooms to aggregate local stakeholders Renovation measures defragmenter searcher Matchmaking APPs simulation 				

Table 1: Synergies between BARRIO and previous EU Projects: functionality evolution and geographic scope



Figure 2. The figure shows the synergies between BARRIO and previous EU Projects, outlining the features to be evolved and the countries involved in each.

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This emphasis on digital tools and automation is complemented by a strong commitment to local stakeholder engagement. BARRIO recognises that successful renovation requires the active participation of all involved parties in the co-development, testing, and deployment of the tool. The project fosters this participation through two interconnected local structures: **Demand-Side Laboratories (D-LABs)**, which bring together demand side actors such as building owners, managers, and homeowners' associations to articulate their needs and co-create solutions; and **Supply-Side Clusters (S-Clusters)**, which unite different stakeholders, such as professionals, suppliers, service providers, and financial institutions, to collaborate on developing and delivering integrated renovation solutions. This collaborative, participatory approach ensures that the BARRIO methodology is not imposed from above but rather is co-created and adapted to the specific needs of each local context.

1.2 Purpose and structure of this deliverable

This report presents a comprehensive overview of the activation and mobilisation of BARRIO DEMAND LABORATORIES (D-LABs), highlighting the methodological and innovative approach adopted by the BARRIO project to engage demand-side stakeholders. Guided by People-Centred Development principles, the initiative focuses on four pilot ecosystems: Emilia-Romagna (Italy), the Valencian Community (Spain), Ravne na Koroškem (Slovenia), and the Gabrovo District (Bulgaria). The document outlines the following key components:

- stakeholder Identification and Categorisation: a detailed methodology for identifying and classifying relevant stakeholders,
- stakeholder Overview: profiles for each pilot region, including stakeholder motivations and local engagement dynamics,
- comparative Stakeholder Analysis: an examination of stakeholder groups across the pilot regions,
- integration with Project Work Packages: alignment of D-LABs mobilisation activities with broader project tasks and timelines, including communication, co-design, training, and validation phases.

Additionally, the report introduces the DEMAND Characterisation Model—a structured, systematic framework designed to guide the identification, analysis, engagement, and monitoring of stakeholders. Grounded in best practices for stakeholder engagement and co-creation, this model

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supports BARRIO partners in effectively establishing and managing collaborative platforms across the pilot areas.

The model encompasses the following key stages:

- stakeholder identification and research: establishing a comprehensive methodology for identifying potential D-LAB participants;
- stakeholder analysis and prioritisation: defining tools and criteria to categorise and prioritise stakeholders for targeted engagement;
- engagement strategy: developing principles and approaches for stakeholder communication and participation, aligned with People-Centred Development;
- D-LAB operation and collaboration: facilitating co-creation and structured feedback within the D-LABs;
- workshop calendar and engagement plan: outlining the timeline and objectives of stakeholder interaction workshops;
- Monitoring, Evaluation, and Learning (MEL): establishing metrics and processes to assess progress and impact;
- reporting framework and recommendations: providing procedures for reporting and preliminary implementation guidance.

Through the implementation of this model, the BARRIO project seeks to ensure that D-LABs are effectively constituted, actively engaged, and contribute meaningfully to the overarching goal of addressing renovation fragmentation and accelerating the transition to a decarbonised building stock, in alignment with European directives such as the EPBD.

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2. D-labs – definition and methodology

2.1 The Role of DEMAND Laboratories (D-LABs)

Integral to the BARRIO approach is the establishment of DEMAND Laboratories (D-LABs) within each pilot market (Bulgaria, Italy, Slovenia, Spain). D-LABs are conceived as collaborative platforms bringing together key local demand-side stakeholders. These stakeholders encompass entities capable of acting as aggregators of renovation demand, such as government institutions, housing associations, homeowner groups, energy agencies, and other relevant actors within the renovation value chain. The formation of such collaborative clusters is increasingly recognised as vital for driving urban transitions.

The primary functions of the D-LABs are to:

- Identify and articulate the specific challenges, needs, and priorities related to building renovation within their local context, moving beyond purely technical considerations to include social and financial aspects.
- Explore and validate potentials for aggregating these needs to enable more efficient, neighbourhood-level interventions, a key strategy for market transformation
- Provide crucial, user-centric feedback for the development and refinement of the BARRIO DMT, particularly the APP Generation tool and associated business models, ensuring relevance and applicability in diverse real-world contexts.
- Bridge existing gaps between demand-side requirements and supply-side offerings in the pilot markets, addressing barriers like information flow deficits.

2.2 Stakeholder Identification and Research

2.2.1. Potential Demand-Side Stakeholder Groups

The demand side in the context of building renovation encompasses a variety of actors who own, manage, or represent properties targeted for upgrades. For the BARRIO project, the key demand-side stakeholders to be engaged in the D-LABs, reflecting the diverse actors identified in EU renovation contexts, include:

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- Building and Housing Owners: individual owners of residential or non-residential properties
- Homeowners Associations: representative bodies for condominiums or multi-unit residential buildings, crucial for collective decision-making, especially in overcoming fragmented ownership barriers
- Social and Public Rental Operators: organisations managing social or public housing stock, often with large portfolios and established renovation plans
- Private Housing Companies: commercial entities owning and managing residential rental properties
- Public Building Owners/Managers: entities responsible for municipal, regional, or national public buildings (e.g., schools, offices, hospitals), often targeted in renovation strategies
- Private Operators: companies managing buildings on behalf of owners (e.g., facility management companies)
- Public Authorities: municipal, regional, or national bodies with roles in urban planning, housing policy, energy regulation, or funding allocation, influencing the framework for renovation and potentially acting as facilitators or aggregators

Identifying representatives from these diverse groups within each pilot market is essential for capturing the full spectrum of demand-side needs and aggregation potentials

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DEMAND SIDE
BUILDING AND HOUSING OWNERS Owners of residential properties (private and public)
HOMEOWNERS' ASSOCIATIONS Groups representing residential property owners
SOCIAL AND PUBLIC RENTAL HOUSING OPERATORS Public or non-profit organizations managing affordable housing
PRIVATE HOUSING COMPANIES Real estate developers and residential property managers
PUBLIC BUILDING OWNERS/MANAGERS Public authorities managing public buildings
PRIVATE OPERATORS Owners and managers of commercial real estate
PUBLIC AUTHORITIES Local, regional, and national governmental bodies

Figure 3. Demand Side stakeholders

2.2.2 Methodology for Identification

A systematic approach is crucial to identify all relevant demand-side stakeholders who could benefit from or engage in aggregated renovation processes within each pilot market. Moving beyond ad-hoc identification, this process aims to create a comprehensive map of the local ecosystem, a necessary step for effective urban transition initiatives. The methodology involves a multi-pronged approach based on desk research, analysis of renovation value chain, and mainly on partner network leveraging and snowball sampling.

Desk research plays a role in identifying formal organisations and institutions within the local context. This involves a thorough review of publicly accessible information sources, including official municipal websites, databases maintained by regional development agencies, housing statistics, reports from energy agencies, local news archives, and documentation from existing projects, such as previous EU-funded initiatives like re-MODULEES and OneClick Reno within the relevant regions.

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An analysis of the renovation value chain is also undertaken. This involves systematically mapping the typical actors involved in local renovation projects, spanning the entire process from the initial planning and financing stages through to the actual execution of the works. The primary objective of this analysis is to pinpoint potential demand aggregators or key influencers operating on the demand side of the market, acknowledging the often intricate and multi-layered nature of the renovation value chain¹.

To further broaden the scope and uncover potentially influential actors who may not be immediately visible through formal channels, the methodology incorporates snowball sampling. This technique involves engaging with the key stakeholders identified in the initial stages and requesting them to recommend other relevant individuals or organisations actively involved in the local renovation landscape.

A particular emphasis is put on partner network leveraging, utilising the existing networks and local knowledge of BARRIO partners operating in the pilot regions (Italy, Spain, Slovenia, Bulgaria). This includes their relationships with local authorities, industry associations, and community groups. Housing Europe's network of affordable housing providers is also a key resource.

The goal is to generate an initial list of D-LAB participants for each pilot market as shown in the following sections (2.2.2.1-2.2.2.4), for each ecosystem.

¹ BPIE. (2019, 30 August). Benchmarking of promising experiences of integrated renovation services in Europe - Turnkey Retrofit. https://www.turnkey-retrofit.eu/wp-content/uploads/TR D1.1 BPIE 30 08 2019 FV.pdf

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2.2.2.1 Pilot market Ravne na Koroškem

Country	Slovenia
Organisation	Municipality Ravne na Koroškem
Target Group	Public Authority
Description of the stakeholders	The municipality of Ravne na Koroškem is responsible for urban and spatial planning. The Slovenian pilot site, Javornik, is located in Ravne in the municipality Ravne na Koroškem. Municipality's perspective on neighbourhood renovation is essential for developing the DMT, based on the characteristics of Javornik. The municipal spatial planner was engaged. Her input on spatial planning, mobility, and the local energy concept is crucial for the project's successful implementation.
Motivation to participate	In Ravne, where the physical-geographical characteristics (e.g., hilly terrain) restrict the development of new housing areas, supporting renovation is essential. A tool to explore various renovation scenarios — integrating business models and spatial planning considerations — would greatly assist urban planning efforts.

Table 2. Stakeholders of the Slovenian pilot market (continued on the next pages up to Section2.2.2.2.)

Country	Slovenia
Organisation	Municipality Šoštanj
Target Group	Public Authority
Description of the stakeholders	The Municipality of Šoštanj is a small municipality undergoing major energy restructuring. The thermoelectric plant, which provides about one-third of Slovenia's electricity, is in the process of being closed. A solar PV plant of up to 140 MW, combined with the development of a hydrogen valley, is planned to be located on the lake in Šoštanj.
Motivation to participate	Until recently, the housing stock in Šoštanj had access to low-cost heating energy supplied by the thermal power plant. However, this is now

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changing, which has motivated both residents and the municipality to renovate the housing stock. Participation in BARRIO offers an opportunity to engage with the latest developments in this field.

Country	Slovenia
Organisation	Eco fund
Target Group	Public Authority
Description of the stakeholders	Eco Fund, officially known as the Slovenian Environmental Public Fund, is a public financial institution established in 1993 with the primary goal of promoting environmental protection in Slovenia. It serves as the country's specialised agency for providing financial support for environmental projects, offering various incentives to encourage sustainable development. Most of the green loans and subsidies are directed toward building renovation for citizens, companies and municipalities.
Motivation to participate	Eco-fund provides financial assistance for implementing energy-efficient measures for buildings, such as installing solar heating systems, biomass boilers, heat pumps, energy-efficient windows, and facade insulations. Grants are also available for constructing nearly zero-energy buildings and purchasing electric vehicles. As financial support is expected to be provided at the neighbourhood level, the Eco Fund is interested in an integrated approach to neighbourhood renovation.

Country	Slovenia
Organisation	GZS Association of Real Estate Managers
Target Group	Other
Description of the stakeholders	The Association of Property Managers (ZUN) is a professional interest association operating within the Chamber of Real Estate Business (ZPN) at the Chamber of Commerce and Industry of Slovenia (GZS).

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Motivation to participate	By engaging with BARRIO, ZUN and its members can gain early access to new renovation models and tools, giving them a first-mover advantage in scaling bundled renovation projects across their portfolios and offering advanced services that go beyond basic property management (e.g., energy coordination, financing advisory). They can develop new business
	models that include bundled renovations, long-term building performance planning, or acting as intermediaries between owners, contractors, financiers and open up new revenue streams from renovation management and advisory roles.

Country	Slovenia
Organisation	Municipality of Ljubljana public housing fund
Target Group	Public Building Owners/ Managers
Description of the stakeholders	The Public Housing Fund of the Municipality of Ljubljana (JSS MOL) is the central institution for implementing the national housing program at the local level. They carry out various projects aimed at addressing the housing issues of citizens, with special attention also given to the elderly.
Motivation to participate	JSS MOL can benefit from the DMT (Decision-Making Tool) for identifying priority buildings and coordinating upgrades, access to new financial models to support bundled or phased renovations and also an opportunity to co-develop models for safe, comfortable, and affordable living for seniors.

Country	Slovenia
Organisation	Ravne housing company
Target Group	Other

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Description of the stakeholders	Ravne Housing Company, which manages multi-unit residential buildings across Slovenia — including in Javornik and the neighbouring Ob Suhi neighbourhood — is behind the first known Slovenian example of using an industrialised prefabricated solution in residential renovation. With extensive experience in the renovation process, the company plays a key role in developing the DMT, building on the Javornik market pilot and their hands-on experience.
Motivation to participate	As managers of multi-apartment buildings, it is in their interest to simplify the renovation process and support it with various tools, business models, and industrialised solutions, enabling them to expand their scope of operations and gain a competitive advantage.

Country	Slovenia
Organisation	Institute of spatial policies
Target Group	Other
Description of the stakeholders	The Institute for Spatial Policies (IPoP) is an independent, non-profit research and consultancy organisation focused on sustainable urban development. It integrates interdisciplinary knowledge to address spatial challenges, with expertise in city centre revitalisation, community practices, placemaking, and participatory planning. Its experience in engaging residents in neighbourhood regeneration is key to understanding stakeholder perspectives in the development of the DMT tool.
Motivation to participate	IPoP can co-develop and test new planning tools like the DMT (Decision-Making Tool), enhancing its portfolio of participatory and tactical urbanism methods. It is interested in exploring different ways to engage residents in the renovation process, as well as involving other stakeholders in co-designing renovation tools. IPoP will also contribute to

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the exploitation of project results and support the transfer of the DMT tool into urban planning practice.

2.2.2.2 Valencian Community Pilot market

Country	Spain
Organisation	Association of Property Administrators Valencia- Castellón
Target Group	Other
Description of the stakeholders	The Association of Property Administrators Valencia- Castellón is the entity that represents and brings together property management professionals in these provinces. It provides training, advisory services, and specialised support to facilitate real estate asset management. Currently, it has nearly 1.000 registered members who manage over 80% of the residential properties in its area of influence, playing a key role in decision-making regarding building renovation.
Motivation to participate	Their role is crucial in renovation decision-making, as they advise homeowners' associations of multi-family buildings. Through BARRIO, they can access tools that facilitate renovation planning and financing in compliance with regulations, providing impartial information and fostering trust among homeowners, as well as enhancing their training in renovation.

Table 3. Stakeholders of the Spanish pilot market (continued on the next pages up to Section 2.2.2.3.)

Country	Spain
Organisation	Valencian Housing and Land Entity (EVHA)
Target Group	Social/Public Rental Housing Operators
Description of the stakeholders	EVHA (Valencian Housing and Land Entity) is the public body of the Generalitat Valenciana responsible for managing public housing and developing land and housing policies in the Valencian Community.

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Motivation to participate	Opportunity to explore energy renovation strategies to improve the public housing stock while also access to various financing options and rehabilitation strategies
participate	rehabilitation strategies.

Country	Spain
Organisation	Promotions and Municipal Initiatives of Elche S.A.
Target Group	Other Private Operators
Description of the stakeholders	Private-law entity that is part of the institutional public sector, dependent on the City Council of Elche. It manages urban development projects, promotes and commercialises real estate for economic activities (urbanised land, commercial spaces, offices), and builds protected housing for sale and rent.
Motivation to participate	Improving rehabilitation processes by exploring renovation strategies, facilitating planning, and accessing financing mechanisms.

Country	Spain
Organisation	Spanish Association of Public Housing and Land Managers (AVS)
Target Group	Social/Public Rental Housing Operators
Description of the stakeholders	Technical and professional association that brings together various public managers of housing, land, infrastructure, and public services. It consists of more than 150 entities and manages a housing stock of approximately 300.000 households.
Motivation to participate	Opportunity to analyse and enhance large-scale rehabilitation planning, optimising management through specialised tools and facilitating access to financing.

Country	Spain
Organisation	Energy Office

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Target Group	Building/Housing Owners
Description of the stakeholders	Public one-stop-shop for energy transition in the city of Valencia, addressed to citizens, offering personalised advice, training, workshops, and energy-related activities.
Motivation to participate	Tools to guide citizens through the renovation process, offering roadmaps and access to financing, and acting as aggregator for citizen-driven rehabilitation projects. The DMT acts as a facilitator for project aggregation, aiming to reduce costs and accelerate the implementation of renovation solutions.

Country	Spain
Organisation	Gandia City Council
Target Group	Public Authority
Description of the stakeholders	Local government of the municipality of Gandía, located in the province of Valencia.
Motivation to participate	Assess the condition of buildings, coordinate renovation strategies in the municipality based on specific clustering criteria, facilitate access to financing mechanisms, and improve public policy design processes.

Country	Spain
Organisation	Castellar Oliveral energy community
Target Group	Associations of Homeowners
Description of the stakeholders	Non-profit energy community established in Valencia.
Motivation to participate	A consolidated homeowners' association in Valencia that may be interested in carrying out deeper renovations among a group of users with an already aggregated demand.

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2.2.2.3 Emilia-Romagna pilot market

Country	Italy
Organisation	Emilia-Romagna region
Target Group	Public Authority
Description of the stakeholders	The Emilia-Romagna Regional authority is an autonomous entity with defined powers in regional affairs as granted by state legislation to which it is subordinate. The regional authority establishes regional legislation concurrent with the national one as regards to energy efficiency. Regional legislation prevails over national legislation if the regional one is more restrictive, thus determining the "rules of the game" at the regulatory level, unless special national measures are enforced (e.g. Ecobonus, Sismabouns).
Motivation to participate	The Regional Authority is interested in capitalising results from European projects and testing new technologies to drive innovation and promote a greener Region. It possesses a wealth of best practices that can be shared at the methodological level, fostering a systemic approach open to collaboration on multiple fronts. The Regional Authority can further contribute by providing massive official data allowing platform global functionalities while getting important feedback to design new strategies and improve datasets, thus ensuring the reliability of its own and delivered results.

Table 4. Stakeholders of the Italian pilot market (continued on the next pages up to Section 2.2.2.4.)

Country	Italy
Organisation	Confcooperative Emilia-Romagna (E-R)
Target Group	Associations of Homeowners
Description of the stakeholders	Confcooperative E-R represents ~1,700 cooperatives in Emilia-Romagna, spanning various sectors from agriculture to construction, including housing, design, and construction cooperatives. The association's role is

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	not technical in nature, focusing instead on fostering a favorable regulatory environment for cooperatives. It participates in working groups with institutions, engages in dialogue with supply chain actors, and influences decision-making processes to ensure the interests of its members are represented and valued. While Confcooperative does not possess in-depth technical expertise, it serves a political role, working to shape policies that benefit cooperatives.
Motivation to participate	 Gaining access to: Innovative solutions and business models for deep building renovation, which their member cooperatives in the construction and housing sectors could adopt. A digital tool to streamline the renovation process, potentially creating new opportunities for their members in demand aggregation and service provision. Networking opportunities with other European partners in the renovation field, fostering knowledge exchange and potential collaborations. Insights and best practices from pilot projects, informing their advocacy and support for sustainable building practices in the Emilia-Romagna region. Alignment with EU decarbonisation goals, strengthening their members' competitiveness in a market increasingly focused on energy efficiency and sustainability.

Country	Italy
Organisation	ACER Bologna
Target Group	Social/Public Rental Housing Operators
Description of the stakeholders	ACER Bologna is a public body, responsible for managing public housing in Bologna. They manage a large number of condominiums rented out to vulnerable users. They are wholly responsible for the decision-making process and do not need users' agreement to carry out the retrofitting interventions. They need to reduce management costs and plan adequate ordinary and extraordinary maintenance in order to keep the building stock efficient. They have great potential for standardisation

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	(similar buildings to be upgraded). They may have difficulty in dealing with apartment occupants who are not interested in energy upgrading.
Motivation to participate	BARRIO offers ACER Bologna a unique opportunity to streamline and optimise the renovation of its extensive public housing portfolio. The project's digital toolkit (DMT) and pre-calculated renovation plans (APPs) will significantly reduce planning costs and improve the efficiency of both ordinary and extraordinary maintenance. By leveraging BARRIO's focus on aggregated, neighborhood-scale interventions, and prefabricated solutions, ACER can achieve economies of scale, minimise disruption to tenants, and ensure long-term cost savings, while addressing the needs of vulnerable users. The project simplifies upgrading similar buildings.

Country	Italy
Organisation	ATES Parma
Target Group	Public Authority
Description of the stakeholders	ATES Parma (Territorial Agency for Energy and Sustainability of Parma) is a non-profit association founded in 2016 with the aim of promoting the rational use of energy, the use of renewable sources, and raising awareness on energy-related issues. The legal headquarters is located in Parma, Italy. ATES Parma manages the "Energy Desk," which provides consultancy and information on energy and sustainability topics, helping citizens and businesses reduce consumption and take advantage of incentives and tax deductions.
Motivation to participate	BARRIO offers ATES Parma a powerful platform to enhance its energy consultancy and information services. By participating, ATES can leverage BARRIO's digital toolkit (DMT) to provide citizens and businesses with data-driven, customised renovation plans, streamlining the process of accessing incentives and tax deductions. The project's focus on neighborhood-scale interventions aligns with ATES's mission, and participation provides access to best practices, innovative solutions (like prefabrication), and a network of European partners.

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Country	Italy
Organisation	Fondazione Housing Sociale
Target Group	Affordable housing operator
Description of the stakeholders	Fondazione Housing Sociale is a private, non-profit entity that works for the purposes of public and social interest. The Foundation's mission is to experiment innovative solutions for structuring, financing, construction and management of social housing initiatives economically sustainable, not based on the logic of free grants. FHS is now a reference point for the promotion of the sector, the facilitation of projects and the monitoring of their quality. FHS has acquired diversified skill sets, enabling an integrated approach to the development of private social housing initiatives.
Motivation to participate	Pilot innovative large-scale deep renovation strategies: BARRIO's focus on district-level, multi-phase deep renovation using aggregated demand and industrialised solutions aligns with FHS's mission to experiment with innovative and sustainable social housing models. Participation offers a chance to test these approaches. FHS can leverage the DMT to improve their processes for structuring, financing, and managing energy-efficient social housing initiatives, potentially leading to more efficient and scalable projects. Their expertise can also contribute to the tool's development. By participating in D-Labs, FHS can directly influence the development of business models tailored for aggregated residential building renovations, ensuring they are relevant and applicable to affordable housing operators. Collaboration within S-Clusters provides opportunities to connect with professionals, suppliers, and financial institutions involved in industrialised renovation solutions, potentially leading to valuable partnerships and cost-effective solutions for their projects. As the pilot site in their region, FHS has a direct stake in the success of the project and can gain first-hand experience and data on the effectiveness of the BARRIO approach, influencing its broader applicability.





Participation offers opportunities for their staff to gain knowledge and skills
through the project's training programs, enhancing their capacity to
manage large-scale deep renovation projects.
By contributing to BARRIO's goals, FHS can directly contribute to the
broader objective of decarbonising the building sector in Italy,
particularly within the affordable housing segment they operate in.

Country	Italy
Organisation	Legacoop Abitanti
Target Group	Trade Association of Housing Cooperatives
Description of the stakeholders	Established in 1961, it is the National Association that organises and represents the Housing Cooperatives belonging to Legacoop and promotes their development.
Motivation to participate	Participation ensures that the specific needs and challenges of housing cooperatives are considered in the development of the DMT and the aggregated renovation plans. Legacoop Abitanti can provide its member cooperatives with access to innovative tools and pre-calculated renovation roadmaps, simplifying and potentially reducing the cost of deep energy retrofits for their housing stock. BARRIO's focus on industrialised and plug-and-play renovation solutions can help Legacoop Abitanti offer more efficient and less disruptive renovation options to their members, improving the appeal and feasibility of deep retrofits. Collaboration within S-Clusters can create opportunities for member cooperatives to connect with suppliers and financial institutions specialising in large-scale renovations. Legacoop Abitanti can ensure that the business models developed within BARRIO are adaptable and beneficial for the specific context of housing cooperatives. The project's training programs can equip housing cooperative staff with the necessary skills to manage and implement deep energy renovation projects effectively.

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By participating, Legacoop Abitanti can highlight the role of cooperative housing in achieving climate neutrality and ensure their specific needs are considered in policy and funding mechanisms.

2.2.2.4 Gabrovo (Trendafil 1) pilot market

Country	Bulgaria
Organisation	Gabrovo Municipality
Target Group	Public Authority
Description of the stakeholders	Local government of the municipality of Gabrovo, where pilot market (Trendafil 1 neighbourhood) is located. Gabrovo is renowned for its commitment to sustainable development and energy efficiency, often positioning itself as a leader in environmental innovation within the country.
Motivation to participate	Gabrovo sees BARRIO as a way to pilot integrated renovation approaches in real urban settings (Trendafil 1), address long-standing challenges in multi-apartment building upgrades and bundle demand and coordinate stakeholders more effectively. This aligns with Gabrovo's efforts to reduce energy consumption and improve urban living conditions. They are interested in capitalising past European projects and testing new technologies to drive innovation and promote greener practices.

Table 5. Stakeholders of the Bulgarian pilot market continued on the next pages up to the 2.2.2.4Section end

Country	Bulgaria
Organisation	Technical University of Gabrovo
Target Group	Public Authority

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Description of the stakeholders	The Technical University of Gabrovo (TU-Gabrovo), established in 1964, is a public higher education institution located in Gabrovo, Bulgaria. The university offers a range of programs through its faculties: Faculty of Electrical Engineering and Electronics, Faculty of Mechanical Engineering and Technologies, Faculty of Economics.
Motivation to participate	TU-Gabrovo is motivated to apply academic knowledge in real-life urban renovation projects, co-develop and explore digital tools, methodologies, and technologies for deep renovation and advance research in areas such as energy systems, smart building technologies, and industrialised renovation processes as well as advance sustainable practices.

Country	Bulgaria
Organisation	Associations of homeowners (of buildings to be renovated)
Target Group	Associations of homeowners
Description of the stakeholders	Association of homeowners of buildings in Trendafil 1, neighbourhood developed during the latter half of the 20th century. It features approximately 19 large multi-family residential buildings and several single-family houses, housing a diverse community and supported by essential facilities such as schools, kindergartens, nurseries, and small commercial sites.
Motivation to participate	Their motivation for participating in BARRIO comes from the pressing need to renovate aging buildings, improve the quality of life in the neighborhood, and gain access to the technical and financial support needed to make renovation possible. They are looking for experts in the field of building renovation and energy efficiency to train them and assist them in the process of renovating their buildings.

2.2.3. Comparative Analysis of Demand-Side Stakeholders

This section aims to analyse and compare the key stakeholders on the demand side of building renovation efforts—those who require, request, or benefit from renovation service, by target groups. The analysis identifies the common roles of each target group in driving renovation projects, their motivations for participating (e.g., climate goals, cost savings, improved comfort), their unique

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contributions to project success (e.g., policy leverage, citizen engagement, innovation support), and highlights the diversity among them. By comparing these actors across countries and contexts, the analysis reveals shared patterns, existing gaps, and the potential for scaling up the Defragmentation multidisciplinary tool (DMT), innovative business models, and industrialised renovation solutions.

The structure of target groups presented here is not fully aligned with the categorisation used in other work packages. Specifically, "homeowners" are grouped together with" associations of homeowners" and "energy communities"; instead of the category "private housing companies", we used "property managers / real estate associations"; the category "Others" is represented as "Technical Bodies / NGOs / Knowledge Partners".

The following sections - 2.2.3.1-2.2.3.5 and relevant Tables 6 - Table 10 - compare the key stakeholders of the pilot ecosystem.

Country	Organisation	Role	Motivation to Participate	Unique Contribution
ES	Gandia City Council	Local authority	Coordinate building assessments and renovation strategies via clustering and access to funding	Strategic urban planning, financing facilitation
IT	Emilia- Romagna Region	Regional policymaker	Share best practices, apply systemic approaches, support digital tool with datasets	Regulatory power at regional level
IT	ATES Parma	Territorial energy agency	Use DMT to advise citizens and businesses, align with sustainability policies	Experience with citizen-focused consultancy
BG	Gabrovo Municipality	Pilot city governance	Implement and test integrated renovation models in Trendafil 1	Pilot case management and stakeholder coordination

2.2.3.1 Public Authorities (Local & Regional)

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SI	Municipality of Ravne na Koroškem	Urban planning authority	Use DMT to explore renovation scenarios where new development is spatially limited	Location of pilot site Javornik, interest in innovative business models and comparison between classical and DMT assisted planning renovation
SI	Municipality of Šoštanj	Transitioning municipality	Engage in coal phase out, seek innovative renovation solutions	Energy transition driver, interest in solar/hydrogen

Table 6. Analysis	of the Public	Authorities in	all the ecosystems

A range of local and regional public authorities are involved in the project, bringing their governance capacities and local knowledge to support building renovation efforts. Their motivation lies in strategic urban planning, enabling the energy transition, and exploring innovative solutions through digital tools. Their unique contributions include managing all four pilot cases, engaging citizens, providing regulatory frameworks, and facilitating access to funding.

2.2.3.2 Public/Social Housing Operators

Country	Organisation	Role	Motivation to Participate	Unique Contribution
ES	EVHA (Valencia), PIMESA (Elche), AVS (national)	Large-scale housing managers	Improve stock quality, access financing and tools, scale and improve rehabilitation planning.	Broad housing reach, key role and proven experience
IT	ACER Bologna	Public rental housing manager	Streamline planning, reduce maintenance costs, upgrade similar buildings with minimal tenant disruption.	Authority to act without tenant consent
SI	Ljubljana Housing Fund	Local social housing operator	Use DMT to plan phased or bundled renovations, focus on comfort and elderly needs.	Key role in citywide housing strategy

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IT	Fondazione Housing Sociale (FHS)	Affordable housing operator	Pilot innovative, large-scale deep renovation strategies using BARRIO's tools and frameworks, contributing to and learning from real-world pilots in Emilia-Romagna.	Expertise as an affordable housing operator with a focus on sustainable and financially viable social housing models
IT	Legacoop Abitanti	Trade Association of Housing Cooperativ es	Driven to represent the interests of their member housing cooperatives, facilitating their access to innovative renovation tools, industrialised solutions, and potential partnerships, to promote the cooperative housing model within the European decarbonisation agenda, enhance	Direct channel to engage a large segment of the residential building stock

 Table 7. Analysis of the Public/Social Housing Operators in all the ecosystems

Public and social housing operators play a central role in scaling up building renovation, particularly for vulnerable populations. Their motivation lies in improving housing quality, reducing maintenance costs, and accessing financing and planning tools such as the DMT. With large portfolios (in Bologna, Ljubljana, Spain) and operational authority, these actors can implement phased or bundled renovations efficiently and contribute significantly to citywide renovation strategies.





2.2.3.3 Property Managers / Real Estate Associations

Country	Organisation	Role	Motivation to Participate	Unique Contribution
ES	Association of Property Administrato rs Valencia- Castellón	Association of property managers	Access tools for renovation planning, training, financing guidance	Represent managers of >80% residential stock in the region, key point of contact for multifamily housing owners
SI	Association of Real Estate Managers (GZS)	Professional chamber group	Gain early access to bundled renovation models, expand services into energy-financing advisory	Ready to evolve into a renovation aggregator/intermediary
SI	Ravne Housing Company	Local building manager	Use DMT and industrial solutions to support simplification and scaling of renovations	First in Slovenia to use industrialised renovation approach

 Table 8. Analysis of the Property Managers / Real Estate Associations in each ecosystem

This target group includes property managers and real estate associations who play a crucial role in coordinating and supporting building renovation processes. They act as intermediaries between homeowners, contractors, and service providers, and are increasingly looking to expand their roles by adopting new tools, business models, and energy-related services. Their involvement is essential for aggregating demand, simplifying renovation procedures, and ensuring efficient implementation at the building or portfolio level.

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Country	Organisation	Role	Motivation to Participate	Unique Contribution
ES	Castellar Oliveral Energy Community	Homeowner -led energy association	Bundle demand for deeper renovation	Aggregated user base ready for collective action
BG	Associations in Trendafil 1	Organised homeowner groups	Renovate aging stock, improve comfort, and access financing	19 multi-family buildings; key pilot for co-owned housing renovation
IT	Confcooper ative Emilia-Roma gna	Cooperative federation	Adopt innovative business models, gain DMT access, expand advocacy	Represents 1,700 co-ops; potential to integrate services

2.2.3.4 Associations / Energy Communities / Homeowners

Table 9. Analysis of the Associations / Energy Communities / Homeowners

This target group includes organised homeowner-led initiatives such as energy communities, cooperative federations, and neighborhood associations. Their main motivation is to improve housing conditions, access financing, and coordinate renovation efforts collectively.

Country	Organisation	Role	Motivation to Participate	Unique Contribution
ES	Energy office (Valencia)	One-stop-sh op for citizens	Guide individuals through renovation	Aggregator of projects, direct contact with homeowners
BG	Technical University of Gabrovo	Academic institution	Co-develop digital tools, test methods and technologies	R&D partner for smart renovation and industrialised approaches
SI	IPoP – Institute for Spatial Policies	NGO with participatory planning expertise	Test DMT, co-design methods, engage citizens in renovation	Experts in tactical urbanism and community activation

2.2.3.5 Technical Bodies / NGOs / Knowledge Partners

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SI	Eco Fund	National	Support large-scale	Key actor for
		financial	neighborhood retrofits,	grants/subsidies on a
		agency	streamline financing	national level
			access	

Table 10. Analysis of the Technical Bodies / NGOs / Knowledge Partners

This target group includes technical bodies, NGOs, academic institutions, and financing agencies that provide crucial expertise and support for renovation efforts. They contribute to the development and testing of digital tools, citizen engagement strategies, and financing mechanisms. Their involvement ensures that BARRIO solutions are grounded in research, aligned with policy goals, and accessible to both individuals and communities.

2.2.4. Researching Specific Demands and Challenges

Once potential stakeholders are identified, targeted research is necessary to understand their specific context, motivations, needs, and challenges related to building renovation. This requires delving deeper than surface-level identification, recognising the complex interplay of technical, financial, and social factors². This involves gathering qualitative data through:

- Informal Preliminary Discussions: conducting brief introductory calls or meetings with representatives from key stakeholder groups to gather initial insights into their perspectives on renovation, aggregation potential, and interest in initiatives like BARRIO³. Ethnographic methods like these are crucial for understanding user perspectives⁴.
- Analysis of Local Market Conditions: understanding the specific building typologies prevalent in the pilot neighbourhood, common renovation needs (e.g., insulation in cold climates, cooling

³AGREE Project (2019-2023). <u>https://agree-basquecountry.eu/en/proyecto-agree/</u>

²Nicolas Buxens, O., Urra-Uriarte, S., Sopelana, A., Gonzalez Ochoantesana, I., & Landa Oregi, I. (2024). Step-by-step method for district renovation through community engagement and urban planning to foster local economic development and improve the quality of life. In *Sustainable Development and Planning XII* (pp. 185-196). WIT Press. https://www.witpress.com/Secure/elibrary/papers/SDP24/SDP24019FU1.pdf

⁴Cerinsek, G., Bancic, D., Podjed, D., D'Oca, S., Vetrsek, J., Dolinsek, S., & op't Veld, P. (2019). Boosting affordability, acceptability and attractiveness of deep energy renovations of residential buildings – a people-centred ethnographic approach. *E3S Web of Conferences*, *111*, 03026. <u>https://www.e3s-conferences.org/articles/e3sconf/pdf/2019/37/e3sconf_clima2019_03026.pdf</u>

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in warm climates), existing support schemes, regulatory frameworks⁵, and socio-economic profiles of residents, including potential energy poverty issues⁶.

• Review of Strategic Documents: analysing publicly available reports, policy documents, or websites of identified organisations to understand their stated priorities, ongoing initiatives, and perceived barriers⁷.

This research phase provides the foundational knowledge required for effective categorisation, prioritisation, and the design of tailored engagement strategies in subsequent steps. It ensures that the D-LABs are grounded in the specific realities of each pilot market.

⁵ Biere-Arenas, R., Spairani-Berrio, S., Spairani-Berrio, Y., & Marmolejo-Duarte, C. (2021). One-Stop-Shops for Energy Renovation of Dwellings in Europe—Approach to the Factors That Determine Success and Future Lines of Action. *Sustainability*, 13(22), 12729. https://doi.org/10.3390/su132212729

⁶ Di Ruocco, G. (2024). Renovation Wave in Europe: Low-Carbon Design for the Refurbishment of Social Housing in Southern Italy. *Buildings*, 14(6), 1535. https://doi.org/10.3390/buildings14061535

⁷ Biere-Arenas, R., Spairani-Berrio, S., Spairani-Berrio, Y., & Marmolejo-Duarte, C. (2021). One-Stop-Shops for Energy Renovation of Dwellings in Europe—Approach to the Factors That Determine Success and Future Lines of Action. Sustainability, 13(22), 12729. https://doi.org/10.3390/su132212729

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3. Stakeholder Analysis and Prioritisation

3.1. Categorisation Framework: Influencers and Followers

Demand-side stakeholders identified for the D-LABs can be primarily classified into two categories: Influencer and Followers, based on their potential interaction with the BARRIO Defragmentation Multidisciplinary Toolkit (DMT) and their role in initiating or joining renovation efforts (Figure 4). This categorisation is crucial for managing the complex stakeholder landscape inherent in urban regeneration and transition projects⁸. Furthermore, this classification aids in tailoring engagement strategies (<u>Section 4</u>) by recognising the different starting points and primary contributions expected from various stakeholder types within the BARRIO framework. Both Influencers and Followers are vital for the success of the D-LABs and for the development of effective, aggregated renovation plans⁹.

A similar categorisation is also applied to the supply side (i.e., renovation service providers), where two categories were identified: Doers and Catalysts. However, these will be explained in deliverable D3.1 - *Report on the setting up of the S-Clusters*.

Influencers

Influencers are demand-side stakeholders who typically initiate the renovation process. They identify and group buildings based on specific criteria (e.g., energy performance, location, typology) and often launch calls for participation or define the scope of renovation initiatives. An example is a municipality targeting a specific neighbourhood for renovation and inviting project proposals or homeowner participation.

Within the D-LABs and the broader BARRIO context, Influencers are expected to develop strategic approaches for neighbourhood renovation. They provide crucial input datasets (e.g., building stock data, policy priorities) that support the creation and implementation of new renovation initiatives,

⁸Nicolas Buxens, Os, Urra-Uriarte, S., Sopelana, A., Gonzalez Ochoantesana, I., & Landa Oregi, I. (2024). Step-by-step method for district renovation through community engagement and urban planning to foster local economic development and improve the quality of life. In *Sustainable Development and Planning XII* (pp. 185-196). WIT Press. https://www.witpress.com/Secure/elibrary/papers/SDP24/SDP24019FU1.pdf

⁹chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.witpress.com/Secure/elibrary/papers/SDP24/SDP24019FU 1.pdf

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potentially using the DMT to structure these efforts. Their engagement is key for defining the initial parameters of Aggregated Prefabricated Industrialised Plans (APPs).

Followers

Followers are demand-aggregating stakeholders who join existing renovation initiatives, often prompted by Influencers or broader opportunities. They contribute valuable insights based on their specific needs, priorities, and the characteristics of the properties they own or represent. An example is a homeowners' association deciding to participate in a municipally-led renovation project.

Within the BARRIO framework followers play a *critical role* in highlighting local challenges, specific building needs, and resident priorities. Within the D-LABs, they contribute to the prioritisation of interventions within an aggregated renovation process (APP) and provide essential feedback on the feasibility and desirability of proposed solutions. Their participation ensures that aggregated plans are well-aligned with the actual requirements of the end-users.

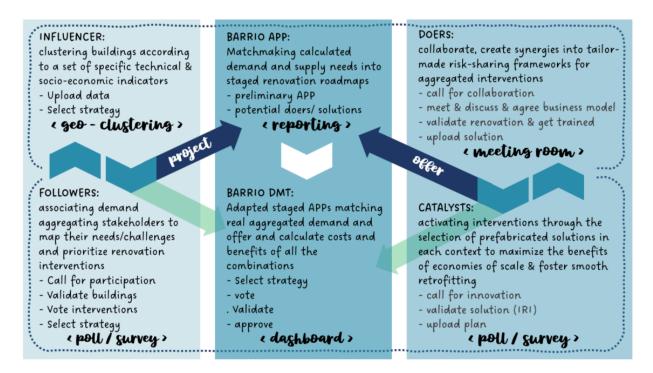


Figure 4. BARRIO Stakeholder Category Identification





3.2. Prioritisation Criteria

Given that resources for engagement are finite, prioritising stakeholders is essential for focusing efforts on those most critical to achieving D-LAB objectives. Prioritisation should be based on a combination of factors relevant to the BARRIO project's goals, considering the Influencer/Follower roles and drawing on established criteria for stakeholder analysis in renovation contexts:

Influence: The stakeholder's ability to impact renovation decisions, policies, or the mobilisation of resources (relevant for both Influencers initiating action and Followers whose participation is critical for scale). This includes formal authority (e.g., local government) and informal influence (e.g., respected community leaders or large housing providers). High-influence stakeholders are crucial for driving change¹⁰.

Representation of market demand: The extent to which the stakeholder represents a significant volume of potential renovation demand or a key segment of the target building stock (critical for both Influencers defining scope and Followers providing volume). Prioritising these ensures the D-LAB addresses substantial market segments.

Potential impact on aggregation: The stakeholder's capacity and willingness to actively participate in and contribute to demand aggregation initiatives. For Influencers, this relates to their ability to initiate and structure aggregation; for Followers, it relates to their willingness to join and contribute critical mass. Stakeholders' key to testing BARRIO's aggregation models should be prioritised.

Interest/willingness to engage: The stakeholder's expressed or perceived level of interest in participating in the BARRIO project and D-LAB activities. Engaging willing partners first can build momentum.

These criteria should be assessed based on the research conducted in the previous step and considered alongside the Influencer/Follower categorisation.

3.3. Tool: Stakeholder Prioritisation Matrix

A Stakeholder Prioritisation Matrix (Table 11) remains a practical tool to visually map and prioritise stakeholders based on key criteria like Influence and Interest/Impact, now informed by the

¹⁰de Groote, M., Lefever, M., & Reinaud, J. (2016, October). Scaling up deep energy renovations: Unleashing the potential through innovation & industrialisation. Industrial Innovation for Competitiveness (i24c) & Buildings Performance Institute Europe (BPIE). https://www.bpie.eu/wp-content/uploads/2016/11/BPIE i24c_deepretrofits.pdf

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Influencer/Follower roles. Similar matrix approaches are used in stakeholder analysis to manage complex interactions.

	High Influence	Low Influence
High Interest / High potential impact on aggregation	Manage Closely: Key players, critical for D-LAB success. Require significant engagement effort (e.g. Influencer: Municipal Housing Department launching initiative; Follower: Large Social Housing Provider joining)	Keep Informed / Potential Allies:May become more influential orimpactful;maintaincommunication (e.g. Influencer:ProactiveEnergyAgencyexploring options;Follower:ActiveHomeownerAssociationinterested in joining)
Low interest / Low potential impact on aggregation	Keep Satisfied : Important due to influence, but require less intensive engagement unless their interest/impact increases (e.g. Influencer: Planning Department with limited focus on renovation)	Monitor : Minimal effort required; monitor for changes in influence or interest (e.g. Follower: Small, inactive community group)

 Table. 11 Stakeholder Prioritisation Matrix Framework

This systematic prioritisation ensures that engagement efforts are strategically focused on the stakeholders most likely to contribute effectively to the D-LABs and the broader goals of BARRIO, such as identifying needs, exploring aggregation potential, and providing feedback on the DMT/APP.

Table 12 illustrates, with reference to the Slovenian pilot, an example of the stakeholder matrix implementation and how the latter can support the execution of actions targeted at various stakeholders.





	High Influence	Low Influence
High Interest / High potential impact on aggregation	Manage Closely: - Municipality of Ravne na Koroškem: They are responsible for urban and spatial planning in the pilot site and their input is crucial for the project's success. - Eco Fund: As the primary financial institution for energy-efficient measures, they have high influence through funding and are interested in integrated approaches to neighborhood renovation. - Public Housing Fund of the Municipality of Ljubljana (JSS MOL): They are central to implementing the national housing program and can benefit significantly from the project's tools and models. - Ravne Housing Company: They have extensive experience in renovation and are playing a key role in developing the decision-making tool.	 Keep Informed / Potential Allies: Association of Real Estate Managers (GZS): They can gain early access to new models and tools, suggesting a high interest, and can become more influential as they scale bundled renovation projects. Institute of Spatial Policies (IPoP): They are focused on sustainable urban development and participatory planning, indicating high interest, and can influence the project through their expertise and resident engagement.
Low interest / Low potential impact on aggregation	Keep Satisfied: - Municipality of Šoštanj: They are undergoing major energy restructuring, so renovation is of interest, but their level of influence might be primarily related to regional policy rather than direct project involvement.	/

Table. 12 An example of Stakeholder Prioritisation Matrix carried out the Slovenian pilot

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4. Engagement Strategy

4.1. Communication Channels and Networks

Establishing clear, reliable, and appropriate communication channels is fundamental for building trust and facilitating ongoing dialogue with D-LAB stakeholders, a critical success factor identified in renovation initiatives. A multi-channel approach is implemented as follows:

- Formal communication: Official project emails, scheduled D-LAB meetings (physical and virtual), formal invitations, meeting minutes, and progress reports. This ensures transparency and documentation, standard practice in EU projects.
- Informal communication: Direct phone calls, brief check-in emails, potentially a dedicated online platform or group (e.g., LinkedIn group, shared workspace) for quick updates and discussions between meetings. This fosters rapport and allows for more agile interaction.
- Targeted communication materials: Development of clear, concise materials explaining the BARRIO project, the purpose and function of D-LABs, the benefits of participation (differentiating potential benefits for Influencers vs. Followers), and how stakeholder input will be used. Materials should be adapted for different stakeholder types (e.g., less technical language for homeowner groups), addressing potential knowledge barriers.

Building upon existing networks (e.g., municipal working groups, housing provider forums) can also be an effective way to disseminate information and recruit participants. Regularity and responsiveness in communication are key to maintaining engagement.

4.2. Adopting People-Centred Development (PCD) Principles

The engagement strategy must be guided by People-Centred Development (PCD) principles. This approach, increasingly recognised in energy and urban transition projects, emphasizes placing the needs, priorities, and agency of the stakeholders at the core of the process. Key PCD principles relevant to D-LABs include:

• Participation: Ensuring stakeholders (both Influencers and Followers) are not just consulted but actively involved in defining problems, exploring solutions, and shaping the D-LAB's direction. This means moving beyond information dissemination to genuine co-creation.

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- Empowerment: Providing stakeholders with the information, resources (capacity building), and opportunities needed to participate effectively and influence outcomes. This might involve ensuring accessible meeting formats.
- Local ownership: Fostering a sense of ownership among D-LAB members over the process and its outcomes. This increases commitment and the likelihood of sustainable results beyond the project's lifespan.
- Responsiveness: Demonstrating that stakeholder input is valued and acted upon. Closing the feedback loop by showing how contributions have influenced project decisions (e.g., DMT/APP design) is crucial.
- Inclusivity: Actively seeking to include diverse perspectives, including those from potentially marginalised or vulnerable groups relevant to the housing context (e.g., addressing energy poverty, ensuring their specific needs and challenges are considered.

Applying PCD principles, often facilitated through ethnographic methods¹¹, ensures that the D-LABs are not merely extractive data-gathering exercises but genuinely collaborative platforms that respect and leverage the local knowledge and experience of participants.

4.3. Tailored Engagement Strategies

Recognising the diversity of stakeholders <u>(Section 2.2)</u> and their roles (Influencers/Followers, <u>Section</u> <u>3.1</u>), a one-size-fits-all engagement approach is unlikely to be effective. Strategies must be tailored based on stakeholder type, priorities (identified in <u>Section 3</u>), and local context, reflecting the need for targeted approaches in complex systems¹².

4.3.1. Target Group Analysis for Tailoring

To effectively tailor engagement, a specific analysis of the primary target groups (Influencers and Followers) was conducted as part of the project's Communication Strategy Coordination. This involved

¹¹Cerinsek, G., Bancic, D., Podjed, D., D'Oca, S., Vetrsek, J., Dolinsek, S., & op't Veld, P. (2019). Boosting affordability, acceptability and attractiveness of deep energy renovations of residential buildings – a people-centred ethnographic approach. *E3S Web of Conferences*, *111*, 03026.

https://www.e3s-conferences.org/articles/e3sconf/pdf/2019/37/e3sconf_clima2019_03026.pdf

¹² Biere-Arenas, R., Spairani-Berrio, S., Spairani-Berrio, Y., & Marmolejo-Duarte, C. (2021). One-Stop-Shops for Energy Renovation of Dwellings in Europe—Approach to the Factors That Determine Success and Future Lines of Action. *Sustainability*, 13(22), 12729. https://doi.org/10.3390/su132212729

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addressing key questions for each group, a method aligned with understanding user needs and motivations to overcome identified social and market barriers¹³:

- Pains/Problems: What are the main challenges, frustrations, or obstacles faced by this target group concerning building renovation and demand aggregation? (e.g., complexity, cost, lack of information)
- Expectations: What benefits, solutions, or outcomes does this target group expect or hope to gain by participating in the BARRIO project and D-LABs? (e.g., energy savings, improved comfort, streamlined process)
- Current Solutions: How are the identified pains/problems currently being addressed by this target group? What alternative solutions or workarounds are they using? (e.g., fragmented contractor engagement, existing subsidy schemes)
- BARRIO Value Proposition: How can the BARRIO project, its tools (DMT/APP), and its methodologies specifically support this target group, address their pains, meet their expectations, and offer a superior alternative to current solutions? (e.g., integrated service, cost optimisation, access to industrialised solutions)

Understanding these dimensions for both Influencers and Followers allows for the development of highly relevant messaging and engagement activities. It ensures that communication highlights the specific value BARRIO offers to each group, addressing their unique motivations and concerns.

¹³Lassandro, P., Devitofrancesco, A., Bellazzi, A., Cascardi, A., De Aloysio, G., Laghi, L., & Malvezzi, R. (2024). Facing the Constraints to the Deep Energy Renovation Process of Residential Built Stock in European Markets. *Sustainability*, 16(1), 294. https://doi.org/10.3390/su16010294

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5. D-LAB Operation and Collaboration

5.1. Facilitating Collaboration: Ethnography-Inspired Activities

To move beyond surface-level discussions and gain deep insights into stakeholder needs, challenges, and collaborative potential, D-LAB activities should incorporate ethnography-inspired methods. These qualitative approaches prioritise understanding context, perspectives, and lived experiences, proving effective in built environment projects:

- Workshops: Structured sessions designed for collaborative problem-solving, brainstorming, and co-design. Examples include:
 - Needs mapping workshops: participants (Influencers and Followers) collectively identify and prioritise renovation challenges and needs within their specific expertise and context.
 - DMT and APP definition workshops (Influencers focus): defining criteria, scope, and data requirements for potential aggregated plans.
 - Solution feedback workshops (Followers focus): gathering detailed feedback on proposed renovation solutions or APP components. Defining criteria, scope, and data requirements for potential aggregated plans.
 - Scenario planning: exploring potential futures for neighbourhood renovation and identifying pathways and barriers.
- Semi-structured interviews: one-on-one conversations with key individuals (Influencers and Followers) to delve deeper into their specific perspectives, organisational priorities, and perceived barriers or opportunities related to demand aggregation.
- **Observational methods** (Contextual Inquiry): where feasible, observing stakeholders in their natural settings (e.g., attending a homeowner association meeting) can provide valuable contextual understanding.

These methods foster trust, encourage open dialogue, and generate rich qualitative data that complements quantitative surveys or analyses. They are crucial for understanding the "why" behind stakeholder positions and identifying nuanced local factors influencing renovation demand.

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5.2. Integrating Feedback into BARRIO Tools and Strategies

A core function of the D-LABs is to provide user-centric feedback for the development and refinement of BARRIO's key outputs, particularly the Defragmentation Multidisciplinary Toolkit (DMT) and the Aggregated Prefabricated Industrialised Plan (APP) Generation Tool. This iterative co-creation process is standard in EU innovation projects like re-MODULEES. A clear process for capturing, analysing, and integrating this feedback is essential:

- Systematic Capture: using structured templates during workshops and interviews, detailed meeting minutes, and potentially dedicated feedback forms to consistently record stakeholder input, suggestions, and concerns (noting whether feedback comes primarily from an Influencer or Follower perspective where relevant).
- Analysis and Synthesis: regularly reviewing collected feedback to identify recurring themes, points of consensus or disagreement, specific usability issues (for tools), and actionable suggestions.
- Feedback Loop to Development Teams: establishing clear communication channels between D-LAB facilitators and the technical partners responsible for developing the DMT/APP and business models. Feedback should be presented in a synthesised and actionable format.
- Demonstrating Responsiveness: communicating back to D-LAB members how their input has been considered and, where applicable, incorporated into revised tool designs, business model iterations, or project strategies. This reinforces the value of their participation and maintains engagement (linking back to PCD principles in <u>Section 4.2</u>).

This iterative feedback loop ensures that the solutions developed within BARRIO are not purely theoretical but are grounded in the practical needs and realities of the target users (both Influencers and Followers) and markets, increasing their eventual adoption and effectiveness.

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6. D-LAB Workshop Calendar and

Engagement Plan

This section presents the comprehensive calendar for local stakeholder interaction, detailing structured engagements and workshops aimed at fostering collaboration and co-design throughout the Barrio Project. Devised according to the SAP Principles, Barrio's two-tiered planning framework—where the Standard Action Plan (SAP) provides a unifying roadmap and Local Deployment Plans (LDPs) ensure adaptation to local contexts—underpins the structure and objectives of this calendar. The pilot ecosystem leaders—Certimac for Italy, IVE for Spain, EnEffect and Econoler for Bulgaria, and IRI-UL for Slovenia—play a pivotal role in organising all these activities, ensuring meaningful interaction and active participation. This structured engagement plan mirrors approaches seen in successful EU projects focusing on activating deep renovation markets and implementing tools/approaches towards decarbonisation

Barrio's success hinges on sustained engagement with local stakeholders across the project lifecycle. These interactions are meticulously aligned with key project phases, beginning with the establishment of D-LABs and S-Clusters (WS1) and culminating in dissemination and replication activities (WS7, WS8). Designed to encourage inputs and collaboration, they aim to tailor the project's tools (DMT co-design in WS2, WS3; testing in WS4) and strategies (Business model validation in WS6) to meet the unique needs of each pilot ecosystem.

Each engagement has clear objectives, defined outcomes, target participants, and mechanisms for integrating stakeholder feedback into the project's implementation and adaptation process. The capacity-building approach (WS5, WS7), enriched by the pilot leaders' expertise, ensures that these interactions are impactful and aligned with the project's goals, creating a lasting foundation for success and scalability, crucial for achieving wider replication.

WS1. D-LABs & S-Clusters Launch and Needs Assessment

Timing: M6-M8 (March - May 2025)

Purpose: To officially launch the Barrio Demonstration Laboratories (D-LABs) and Stakeholder Clusters (S-Clusters) within the pilot ecosystems. This inaugural event aims to present the Barrio project vision,

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the DMT concept, and preliminary local findings, while concurrently capturing essential initial feedback from demand and supply-side stakeholders regarding renovation needs, barriers (technical, financial, social), financial challenges, and existing capabilities to inform subsequent project planning and adaptation.

Objectives:

- Formally launch D-LABs and S-Clusters
- Present the Barrio project, the DMT concept, and preliminary findings on local renovation needs
- Gather initial stakeholder input on perceived barriers, financing challenges, and existing capabilities.

Key deliverables:

- Established D-LAB and S-Cluster networks with defined membership
- Documented stakeholder feedback on renovation priorities and challenges (incorporated into the project's ongoing risk assessment and adaptation process).

Organisers:

Pilot ecosystem leaders

Participants:

Demand-side: property owners, housing associations, tenants, municipal representatives

Supply-side: material suppliers, manufacturers, contractors

WS2. Barrio DMT User Experience Co-Creation Workshop #1

Timing: M9-M13 (June 2025 - October 2025)

Purpose: The workshop is designed to collaboratively simulate and evaluate the future user experience of engaging with the Barrio Digital Multidisciplinary Toolkit (DMT), employing co-creation methodologies. It aims to support the activities focusing on the tool's design and development through a participatory process involving pilot ecosystem leaders and local stakeholders. This session builds on the workflows centered on two key areas: utilising building cluster data and selecting

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adapted renovation solutions and packages. By fostering collaboration, this workshop ensures the Barrio-DMT is tailored to effectively meet stakeholder needs and project objectives in each ecosystem.

Objectives:

- Validate user journeys: simulate and assess the clarity, logic, and efficiency of user pathways within the DMT for tasks involving cluster analysis and renovation solution selection/planning.
- Evaluate usability & usefulness: gather direct user feedback on the intuitiveness of the DMT interface, the relevance of presented information (clusters, solutions, benefits), and the overall utility of the tool for supporting renovation decisions.
- Identify improvement areas: pinpoint user pain points, potential misunderstandings, missing information, or desired functionalities within the simulated workflows.
- Co-refine key interfaces: collaboratively discuss and potentially sketch improvements for critical DMT screens or features related to displaying cluster data and renovation package information.

Key deliverables:

- Validated/refined user journey maps: Visual documentation of user interactions for key scenarios, updated based on workshop feedback.
- Consolidated user feedback report: A structured summary of participant insights, usability issues, feature requests, and positive feedback regarding the simulated DMT experience.
- Prioritised list of actionable recommendations: Concrete suggestions for the DMT development team to enhance design, functionality, and information presentation, based on user input.

Organisers:

Pilot ecosystem leaders

9 Participants:

D-LAB members, S-Cluster members and Pilot ecosystem leaders

WS3. Barrio DMT Co-Design Workshop #2: Mock-up Validation and Functionality Refinement

Timing: M13-M18 (October 2025 - March 2026)

Purpose: To present, validate, and collaboratively refine the first Barrio DMT mock-up with key stakeholders, applying co-design principles. This workshop builds upon previously gathered cross-country requirements and aims to finalise the definition of DMT functionalities, providing direct

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input for the design of the DMT and relevant functionalities and the subsequent creation of functionality factsheets.

Objectives:

- Present & validate mock-up: introduce the DMT mock-up to participants and verify that it accurately reflects the compiled user needs and proposed core functionalities across different countries.
- Gather detailed feedback: elicit specific, actionable feedback on the mock-up's design, workflow logic, clarity of information, terminology, and overall user interface.
- Co-define & refine functionalities: collaboratively review, adjust, and detail the specific DMT functionalities as represented in the mock-up, ensuring alignment with diverse user requirements and identifying any critical gaps.
- Confirm cross-country Suitability: ensure the proposed design and features within the mock-up adequately address the varying needs and contexts of the different Barrio pilot ecosystems.
- Achieve consensus on the DMT Mock-up: gain stakeholder agreement on the validated and refined mock-up as the foundation for the final definition of DMT functionalities.

Key deliverables:

- Annotated & validated DMT Mock-up: The presented mock-up incorporating agreed-upon revisions, comments, and validation notes directly from the session.
- Consolidated feedback & refinement report: a structured document summarising participant feedback, discussions, decisions made, and detailed refinements for specific DMT functionalities.
- Refined functionality definitions: clear descriptions of the agreed-upon DMT features and how they should operate

Organisers:

Pilot ecosystem leaders

Participants:

D-LAB members, S-Cluster members and Pilot ecosystem leaders

WS4. DMT Prototype Testing and Feedback Workshops (multiple workshops)

Timing: M22-M32 (June 2026 - May 2027)





Purpose: To evaluate the Barrio DMT prototype through hands-on testing by intended end-users from D-Labs and S-Clusters in realistic scenarios. The primary aim is to validate core functionality, assess usability and overall user experience, and gather critical feedback for final refinements before the official DMT release, a crucial step in developing user-accepted tools.

Objectives:

- Conduct comprehensive testing of the DMT prototype with real users in real-case scenarios
- Gather detailed feedback on usability, functionality, and overall user experience
- Identify and prioritise areas for improvement prior to the final DMT release.

Key deliverables:

- Usability testing reports documenting user interactions and identified issues
- Detailed user feedback reports on the DMT prototype, categorised by stakeholder group
- Prioritised bug reports and improvement recommendations for the DMT development.

Organisers:

Pilot ecosystem leaders

Participants:

DMT users from D-Labs and S-Clusters and Pilot ecosystem leaders

WS5. Building up skills: Barrio Training Workshop(s) and Training of Trainers (ToT)

Timing: M22-M34 (June 2026 - July 2027)

Purpose: To provide the Barrio National Pilot leaders and relevant stakeholders (DMT users) who will train other stakeholders with the official training materials and equip their designated trainers with the comprehensive understanding and skills needed to subsequently deliver effective capacity-building programs (training, exchange, mentoring) to local authorities, key players, actors, and stakeholders within their respective regions. Capacity building is recognised as essential for successful implementation and replication.

Objectives:

• Deliver and explain the content of the Barrio DMT training materials, covering the general DMT, the APPs Generation tool, and the configurator.

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- Deliver and explain the content of the Barrio Training materials focusing on the use of Barrio outcomes and the implementation of prefabricated solutions selected.
- Train the pilot ecosystem leaders and stakeholders on how to effectively use the provided materials to conduct training and capacity building.
- Ensure trainers understand the Barrio concepts, tools (DMT, APPs tool), and selected solutions sufficiently to train others.
- Provide guidance on implementing synergetic and tailor-made training pathways for diverse local actors.

- Pilot leader ecosystems and relevant stakeholders members trained and prepared to deliver local capacity building using the training materials.
- Shared understanding and clarification of the training materials.
- Record of questions and answers regarding the training content and delivery methodology.

Organisers:

Pilot ecosystem leaders

Participants:

DMT users from DLabs and SClusters and Pilot ecosystem leaders

WS 6. Collecting feedback on Business Models and relevant Validation (Gathering feedback from D-LABs and S-Clusters)

Timing: M16-M30 (May 2026 - May 2027)

Purpose: To engage key stakeholders from the established D-LABs and S-Clusters in the effective identification, design and validation process for the Barrio business models. This allows critical assessment of the proposed models' real-world feasibility and attractiveness, identification of potential implementation barriers, and gathering direct, actionable feedback for refinement, ensuring models are demand- and industry-side matched.

Objectives:

• Co-design model elements: Engage participants in co-designing and evaluating core components of potential Barrio business models (e.g., customer segments, value propositions, key activities, revenue streams) tailored to local contexts.

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- Assess feasibility & attractiveness: Present and facilitate a critical evaluation of proposed Barrio business model concepts to assess their perceived real-world feasibility, financial viability, and attractiveness from diverse stakeholder perspectives (demand and supply side).
- Identify implementation barriers: Systematically identify and document potential financial, regulatory, market, or operational barriers that could hinder the successful implementation of the proposed business models.
- Gather refinement recommendations: Collect specific, actionable feedback and concrete suggestions from stakeholders for improving and adapting the business models to enhance their robustness, local acceptance, and chances of success.

- Validated business models for large-scale renovation projects, incorporating stakeholder input
- Detailed stakeholder feedback reports, highlighting key concerns and suggestions
- Refined financial strategies and risk mitigation plans.
- **O**rganisers:

Pilot ecosystem leaders

Participants:

Representatives from D-LABs and S-Clusters

WS 7. Capacity Building Programme for Transnational Replication (multiple workshops)

Timing: M26-M36 (November 2026 - September 2027)

Purpose: To facilitate the implementation of integrated building renovations, utilising the Barrio DMT, in diverse new settings (including other households, districts, building clusters, or groups managed by associations) by equipping potential "Takers" outside the initial pilot areas with the necessary knowledge and resources for effective transnational replication, a key goal for maximising EU project impact.

Objectives:

- Identify and engage potential replicators ("Takers") including other regions, relevant government agencies, building/housing owners, and other key stakeholders interested in the Barrio approach.
- Transfer knowledge regarding the main Barrio project outputs, particularly the functionalities and application of the Barrio DMT for integrated renovation planning and implementation.

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- Share practical insights and lessons learned derived from the empirical experience of the Barrio pilot implementations.
- Build the capacity of "Takers" to understand, adapt, and implement the Barrio methodology and tools within their own contexts.
- Ensure the programme's longevity and continued impact by integrating its contents and activities into the regular workplans and service catalogues of partner organisations with relevant competences.

- Increased awareness and understanding of the Barrio approach among potential "takers"
- Identification of concrete replication opportunities in other regions or sectors
- Stakeholder feedback reports on the effectiveness of the capacity-building program and materials.
- **O**rganisers:

Pilot ecosystem leaders

Participants:

Potential "Takers" (regional authorities, building owners, housing agencies, industry representatives).

WS8. Barrio Awareness-Raising Roadshow - Dissemination Workshops

Timing: M32 -M36 (November 2026 - September 2027)

Purpose: To disseminate the practical lessons learned from the Barrio project's implementation to relevant stakeholders within specific Member States (e.g., Italy, Spain, Slovenia, Bulgaria), focusing on findings and experiences linked to national case studies or contexts, thereby fostering understanding and discussion around the Barrio approach at a national level. Effective dissemination is crucial for project impact and future uptake.

Objectives:

- Present key lessons learned derived from the implementation phase of the Barrio project, highlighting aspects particularly relevant to each context.
- Share insights gained from specific national cases or pilot activities linked to each
- Facilitate discussion among relevant national ecosystem members regarding the applicability and implications of Barrio's findings.

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- Encourage knowledge sharing and networking among key stakeholders within the national renovation sector.
- Gather feedback on the perceived relevance of Barrio's lessons for future initiatives within each context.

- Summary report capturing key presented lessons, discussion points, and feedback from the national stakeholders.
- Dissemination of specific project findings or case study summaries relevant to each context.
- Increased awareness and understanding of Barrio's practical outcomes among targeted national ecosystem members.

Organisers:

Pilot ecosystem leaders

Participants:

Relevant members of the building renovation ecosystem within the specific ecosystem, potentially including representatives from:

D-LABs-S-Clusters, DMT Users

National/Regional/Local Authorities

Other relevant national actors involved in the building renovation value chain.





7. Monitoring, Evaluation, and Learning (MEL) Framework

A robust **Monitoring**, **Evaluation**, **and Learning (MEL)** framework is necessary to track the progress of D-LAB establishment and operation, assess the effectiveness of engagement efforts, and understand the D-LABs' contribution to BARRIO's objectives. Such frameworks are standard components of EU-funded projects to ensure accountability and measure impact.

Purpose: The MEL framework serves multiple purposes:

- Accountability: demonstrating progress and use of resources to the project consortium and funder.
- Adaptive Management: providing data to inform ongoing adjustments to engagement strategies and D-LAB activities.
- Learning: identifying best practices and lessons learned for D-LAB management and stakeholder engagement in renovation projects.
- Impact Assessment (Preliminary): gathering evidence on how D-LABs contribute to identifying aggregation potential and improving industry outcomes.
- Key Performance Indicators (KPIs): a balanced set of indicators should track both process and outcome aspects of D-LAB engagement, potentially differentiating between Influencer and Follower participation where meaningful. KPIs are essential for measuring progress towards project goals.

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Indicator ID	DLAB-P-01	DLAB-P-02	DLAB-O-E-01	DLAB-O-E-02	DLAB-O-A-01	DLAB-O-A-02	DLAB-O-A-03
Indicator Name	# Active D-LAB Members (by Role)	% Attendance Rate	Stakeholder Satisfaction Score	% Members Reporting Increased Understandin g	# Aggregation Initiatives Defined	# Followers Committed to Initiatives	# Documented Instances of D-LAB Feedback Use
Definition / Calculation	Number of unique individuals (categorised as primarily Influencer/Fo llower) attending >=50% of meetings/wo rkshops in reporting period	(Total Attendees / Total Invited) * 100% per meeting/wor kshop	Average score on post-worksho p/periodic survey (e.g., 1-5 scale)	% respondents indicating increased understandin g of aggregation benefits via survey	Number of distinct neighbourho od APPs/initiativ es formally defined or scoped via D-LAB activities (Influencer focus)	Number of distinct Follower stakeholders (or aggregated building units they represent) formally committed to participating in defined APPs	Count of specific instances where D-LAB input led to documented changes in DMT/APP/BM
Baseline (if applicable)	0	N/A	N/A	N/A	0	0	0
Target (e.g. Year 1)	10-15 per pilot (total)	> 70%	> 4.0	> 80%	1-2 per pilot	Target TBD based on initiatives	> 5 per pilot
Data Source	Attendance Logs	Attendance Logs	Surveys	Surveys	Workshop Reports, Meeting Minutes, APP Data	Commitment Forms, Meeting Minutes, APP Data	Meeting Minutes, Dev. Logs, Progress Reports

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Collection Frequency	Per Meeting/Wor kshop	Per Meeting/Wo rkshop	Annually	Annually	Quarterly	Per Initiative	Continuously
Reporting Frequency	Quarterly	Quarterly	Annually	Annually	Quarterly	Quarterly	Quarterly
Responsibl e Partner(s)	Pilot Leaders	Pilot Leaders	WP Leader / Pilots	WP Leader / Pilots	Pilot Leaders	Pilot Leaders	Pilot Leaders / WP Leader

 Table 12: D-LAB MEL Indicators (As Revised Examples)

This structured MEL approach provides the necessary data to demonstrate the value and effectiveness of the D-LABs, ensuring they remain dynamic and contribute tangibly to the project's success, ultimately feeding into the larger project goals related to energy savings, investment mobilisation, and GHG reduction.

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and

8. Reporting Framework Recommendations

8.1. Standardised Reporting on D-LAB Activities and Outcomes

Consistent and timely reporting is essential for internal project management, knowledge sharing across pilots, and fulfilling obligations to the European Commission, a standard requirement for EU-funded projects. A standardised reporting framework for D-LAB activities will be implemented:

Reporting frequency and type: Internal Progress Updates (e.g., Quarterly): Submitted by pilot leaders to the relevant Work Package leader. These concise reports will summarise activities conducted (meetings, workshops from <u>Section 6</u>), key participation metrics (from Table 7.1), emerging insights or challenges, immediate next steps, and any significant feedback received regarding the DMT/APP or business models.

Formal periodic reports (Aligned with EU project reporting periods): Integrated into the main project periodic reports submitted to the funder. These sections will provide a consolidated overview of D-LAB progress across all pilots, presenting analysis against the MEL framework (Section 7), detailing how stakeholder feedback has been integrated (distinguishing Influencer/Follower input where relevant), assessing progress towards identifying aggregation potential (both defining initiatives and securing participation), and documenting lessons learned. These formal reports contribute to the project's official record accessible via platforms

Reporting content: Reports should blend quantitative data (KPIs from the MEL framework) with qualitative analysis. This includes summaries of key discussion points from workshops/interviews, illustrative stakeholder quotes (anonymised where necessary), case examples of challenges or successes (e.g., successful recruitment of Followers to an Influencer-led initiative), and analysis of how D-LAB activities are contributing to overcoming local renovation barriers.

Dissemination considerations: While internal reporting is the primary focus, key findings and lessons learned from the D-LABs (appropriately aggregated and anonymised) should be considered for inclusion in public project deliverables, communication materials, and potential dissemination via

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channels like the project website, Housing Europe communications, maximising the project's impact and supporting replication.

This structured reporting ensures transparency, facilitates cross-pilot learning, enables adaptive management based on evidence, and fulfills the project's accountability requirements.

8.2. Initial Recommendations for D-LAB Implementation

Based on the DEMAND Characterisation Model outlined above, incorporating the refined stakeholder definitions, roles, and workshop plan, the following initial recommendations are provided to BARRIO partners responsible for establishing and managing the D-LABs in the pilot sites:

Allocate dedicated resources: Ensure sufficient personnel time and budget are allocated specifically for D-LAB coordination, facilitation, communication, workshop organisation (<u>Section 6</u>), and MEL activities within each pilot region. Effective engagement requires dedicated effort.

Prioritise trust-building: From the very first interaction (especially WS1), focus on building rapport and trust with stakeholders (both Influencers and Followers). Emphasise transparency, clearly communicate the project's aims and the value of their participation, and follow through on commitments. This is foundational for effective collaboration.

Tailor engagement to roles: Actively use the Influencer/Follower distinction and the insights from the target group analysis (Pains, Expectations, Current Solutions, Value Proposition) to tailor communication and activities within the planned workshops (Section 6).

Embrace flexibility and adaptation: While this model provides a framework and a workshop calendar, be prepared to adapt engagement strategies, communication methods, and activity formats based on the specific cultural and institutional context of each pilot market and the feedback received from participants.

Ensure strong feedback integration: Establish clear and efficient pathways for channeling D-LAB feedback (gathered systematically through the workshops in <u>Section 6</u>) directly into the development cycles of the DMT, APP tool, and innovative business models. Regularly demonstrate to stakeholders how their input is being used.

Foster cross-pilot learning: Implement regular (e.g., quarterly) virtual meetings or a shared online space for D-LAB facilitators from different pilot sites to exchange experiences, share successful approaches (e.g., engaging specific stakeholder types based on the target group analysis), discuss common

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challenges, and learn from each other, particularly regarding workshop facilitation (<u>Section 6</u>). Collaboration and knowledge sharing are vital in EU projects.

Develop clear communication materials: create tailored, accessible, and compelling communication materials (brochures, presentations, web content, invitation letters) based on the target group analysis, explaining BARRIO, the D-LAB concept, the planned workshops (<u>Section 6</u>), and the tangible benefits for different stakeholders (Influencers and Followers) participating in the initiative.

Implementing these recommendations will support the effective launch and operation of the D-LABs, maximising their potential to contribute to the BARRIO project's success.

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9. Conclusion

The DEMAND Characterisation Model presented in this deliverable provides a comprehensive and systematic framework for engaging demand-side stakeholders through the BARRIO project's DEMAND Laboratories (D-LABs). This model, refined to include specific stakeholders types, the functional roles of Influencers and Followers, a methodology for target group analysis, and a detailed workshop calendar, is a cornerstone of the project's strategy to address the critical challenge of fragmentation in the building renovation sector.

By implementing this structured approach - encompassing thorough stakeholders identification and research, strategic analysis and prioritisation based on roles, people-centred engagement informed by target group analysis, collaborative ethnography-inspired activities conducted through a planned series of workshops and robust monitoring and evaluation - the BARIO project stands to gain significant benefits. These include: a deeper, more nuanced understanding of local renovation demands, challenges, and aggregation potential within diverse pilot markets; the effective mobilisation and sustained participation of key stakeholders (both Influences and Followers) in the D-LABs; the generation of valuable, user-centric feedback to enhance the design and applicability of the DMT and APP tools; and ultimately, a stronger foundation for achieving the project's overarching goals of fostering neighbourhood-level deep renovation, developing viable business models, and contributing to the EU's decarbonisation objectives as outlined in the Renovation Wave and EPBD.

The emphasis on tailored strategies reflecting stakeholders roles and needs (identified through the Pains/Expectations/Solutions/Value Proposition analysis), People-Centred Development principles, a clear engagement plan via the workshop calendar, and an iterative feedback loop, underpinned by the MEL framework, ensures that the D-LABs remain dynamic, responsive, and relevant throughout the project lifecycle. This model provides BARRIO partners with the necessary guidance to establish and manage effective D-LABs, transforming them into powerful engines for local collaboration and innovation in the pursuit of a decarbonised European building stock.





Invitation letter 1: Demand-side Local Advisory Board for influencers





BARRIO - D-LAB | Demand-side Local Advisory Board

Advisory Board to Boost Demand for Neighborhood-level Building Renovation

Dear Mr./Ms./Dr., we are writing to you regarding the subject matter. We would be delighted to have you as an Advisor for the [Insert Region/Area] D-LAB.

Certimac, in the framework of the **BARRIO project**¹, is developing new strategies to accelerate large-scale building renovation—an essential step toward achieving climate neutrality by 2050. In line with the **Energy Performance of Buildings Directive (EPBD)** and **[Insert here national transposition of EPBD]**, BARRIO provides **digital and collaborative tools** to support renovation planning, streamline funding access, and implement energy-efficient solutions at the urban level.

To ensure our solutions align with real-world needs, we are establishing **Demand-side Local Advisory Boards (D-LABs)** in key regions, including [Insert Region/Area]. These working groups bring together **municipalities**, housing associations, and property managers to shape effective renovation strategies, overcome market barriers, and facilitate large-scale action.

What are D-LABs?

D-LABs provide a **collaborative space** where key stakeholders from the demand side of the renovation market share insights and co-develop practical tools and strategies. Each D-LAB consists of **10-12 expert members**, ensuring a balanced exchange of perspectives and a hands-on approach to problem-solving.

D-LAB Activities

To create truly effective solutions, we need your hands-on knowledge of what works and what doesn't in building renovation projects. Your everyday experience in tackling renovation challenges will help us develop tools that genuinely support local decision-making processes and drive real impact.

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¹ The BARRIO project is funded by the **LIFE Clean Energy Transition Programme**, an initiative under the EU's LIFE Programme aimed at supporting projects that contribute to the transition towards a clean, low-carbon, and sustainable energy system. This program focuses on accelerating the decarbonization of energy systems, enhancing energy efficiency, and fostering the development and deployment of clean technologies across the EU. It provides funding to innovative projects that can deliver measurable impacts on reducing greenhouse gas emissions, promoting renewable energy, and enhancing energy efficiency in line with the EU's climate goals.

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Why Join a D-LAB?

As a D-LAB Advisor, you will be able to:

- Access cutting-edge digital tools to identify and group buildings for strategic renovation, with analytics on energy performance, costs, and environmental impact to support data-driven decisions
- Receive guidance and support on accessing EU funding for your renovation initiatives
- Connect with peers facing similar challenges and learn from successful European case studies
- Enhance the capacity to develop effective calls for participation
- Strengthen your role in creating sustainable communities.

As a D-LAB Advisor, you will:

- Share your practical knowledge about launching renovation initiatives
- Help identify specific challenges in building selection and project initiation to ensure that BARRIO's solutions are practical and address real-world issues
- Provide essential input for the creation of the project's key tools and give feedback as they
 are being developed, making certain that they address stakeholder requirements
- Contribute to discussions on financing, regulations, and engaging the community in renovation efforts.

D-LAB Involvement

D-LAB members will meet twice a year, either during Steering Committee sessions or through electronic consultations (each lasting 1.5 hours).

Next Steps

We would be delighted to schedule a call or video meeting at your convenience to go over the details and answer any questions you may have. Please feel free to contact us to schedule a suitable date. We look forward to welcoming you to the BARRIO D-LAB community.

Best regards, [Your Name] [Your Title/Organization] [Contact Information]

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Invitation letter 2: Demand-side Local Advisory Board for followers

BARRIO - D-LAB | Demand-side Local Advisory Board

Advisory Board to Boost Demand for Neighborhood-level Building Renovation

Dear Mr./Ms./Dr., we are writing to you regarding the subject matter. We would be delighted to have you as an Advisor for the [Insert Region/Area] D-LAB.

Certimac, in the framework of the **BARRIO project**¹, is developing innovative solutions to achieve climate-neutral buildings by 2050. As the EU's key funding instrument for environmental and climate action, the LIFE Programme supports initiatives like BARRIO that facilitate the shift towards a low-carbon, energy-efficient economy.

We're focused on making deep renovation more accessible through aggregation models, digital tools, and innovative financial approaches that help communities participate effectively in large-scale renovation initiatives while ensuring these projects remain financially viable.

To ensure our solutions align with real-world needs, we are establishing **Demand-side Local Advisory Boards (D-LABs)** in key regions, including [Insert Region/Area]. These working groups bring together **municipalities, housing associations, and property managers** to shape effective renovation strategies, overcome market barriers, and facilitate large-scale action.

What are D-LABs?

D-LABs provide a **collaborative space** where key stakeholders from the demand side of the renovation market share insights and co-develop practical tools and strategies. Each D-LAB consists of **10-12 expert members**, ensuring a balanced exchange of perspectives and a hands-on approach to problem-solving.

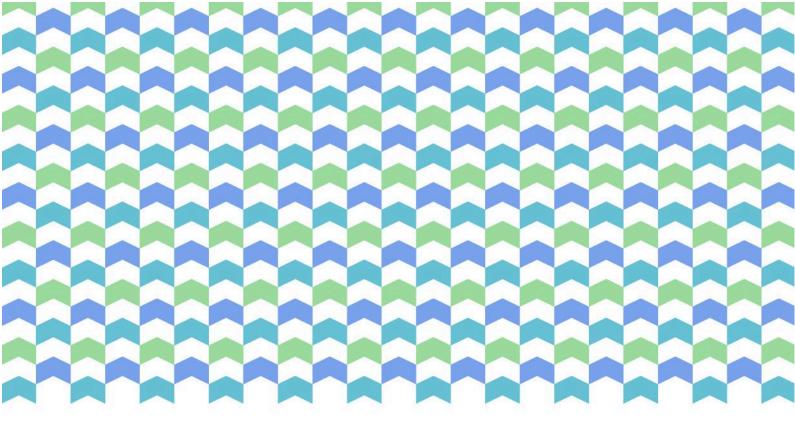
D-LAB Activities

Your experience in property management and building renovation is essential to ensure that the solutions developed within BARRIO are **realistic**, **applicable**, **and beneficial to the sector**. By joining a D-LAB, you can contribute to shaping approaches that address real-world needs while gaining access to valuable knowledge and resources.

The BARRIO project has received funding from the LIFE programme of the European Union under Grant Agreement no. 101167624

¹ The BARRIO project is funded by the **LIFE Clean Energy Transition Programme**, an initiative under the EU's LIFE Programme aimed at supporting projects that contribute to the transition towards a clean, low-carbon, and sustainable energy system. This program focuses on accelerating the decarbonization of energy systems, enhancing energy efficiency, and fostering the development and deployment of clean technologies across the EU. It provides funding to innovative projects that can deliver measurable impacts on reducing greenhouse gas emissions, promoting renewable energy, and enhancing energy efficiency in line with the EU's climate goals.

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