Save the Homes

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1 Executive Summary

The overall aim of **Sav€ the Homes** is to contribute to an increase of an annual renovation rate of > 5% by offering attractive OSS services to homeowners, managed and implemented by municipalities as being trustworthy entities for citizens. This is achieved by the implementation of OSS Citizen Hub concept, offering renovation offices, both as physical hubs and web-based virtual hubs at local level based on the concept of medium-sized cities and to maximize replicability, at national and EU level.

Sav€ the Homes will:

1. Offer a full customer journey in 5 stops:
   - Stop 0 Onboarding
   - Stop 1 Design: Social design by co-creation with the homeowners
   - Stop 2 Elaboration: Organizing the financing, purchasing of renovation kits and the preparations for the construction of the renovation works
   - Stop 3 Construction: Realization of proven quality in interaction with homeowners and a peer-to-peer Renovation Community, as part of the Citizen Hub
   - Stop 4 In-use: Monitoring of total performances in practice for ensuring sustainable quality of building and user experience
2. Create strong networks and trustworthy partnerships with local actors in the whole chain
3. Create locally developed and organized financing and investment pipelines

The integrated home renovation services will be established within already established OSS networks at the city (City of Rotterdam) and regional (Comunitat Valenciana) level in two EU countries, building upon existing energy targets and networks so far well established at the city levels where it brings a new method and mechanism on how to improve the existing interactions between the relevant organizations and stakeholders. It holistically connects renovation advisory, products and services, finance opportunities and legal advice with a building owner at a single point. By involving relevant EU umbrella organizations, the concept will be further promoted in other member states to come to a harmonized method applicable at EU level.

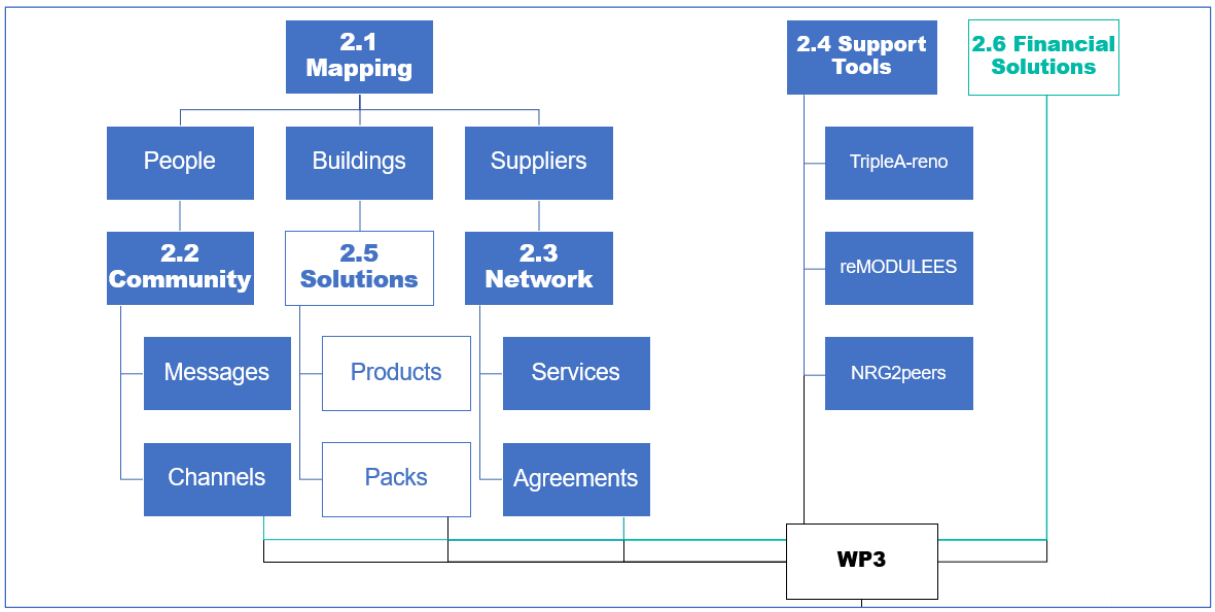


Figure 1.- WP2 activities workflow

The **WP2** objective is mapping of the demand and supply side as a foundation to build successful Citizen Hubs. The demand side aggregation helps understanding who the customers are, their pain

points and motivational drivers for the renovation. For the identified personas, the customers journeys will be mapped according to each location context.

Supply side aggregation is fundamental to provide optimal offer, improve trust and awareness of homeowners, reduce renovation costs and time, and mainstream innovative technical solutions adapted to the local context, allowing for regional replicability and business risks reduction. As part of the Citizen Hub services, energy retrofitting products and services will be clustered to reduce fragmentation of the renovation process. To increase trust and ensure sufficient quality, these solutions will be verified to assess their applicability which can ease the decision making as also allows for a fair and reliable comparison between the solutions. The supply side means everyone who can be a single-point of contact in a one-stop-shop solution like manufacturers, service providers, contractors, architects, engineers, energy consultants, government etc.

In this context, to create campaign strategies that will **resonate with people** and increase their awareness on importance and benefits of renovations is key for renovation process onboarding stages and is Task 2.2 objective.

2 Introduction

This deliverable deals with the design of campaign strategies that will resonate with people and increase their awareness on importance and benefits of renovations (leading to onboarding). T2.1 is used as a starting point. Together with the local government in the two pilot cities and relevant local players (T3.2 and T3.3), the long-term awareness and engagement campaigns will be designed for the identified target groups and neighbourhoods.

This includes a three-step approach:

1) Identified needs of the demand side: The outcomes of T2.1 is the basis where further studies are done to understand how homeowners decide, plan and think, and more in particular how this could affect their choice to either invest in NZEB-renovation or not. Local organizations having expertise in social sciences and engagement campaigns are contacted to help defining the right approach techniques (T3.2).
2) Tailored campaign strategy: The campaigns themselves are designed on the basis of the inquiry's outcomes to form efficient tailored campaigns that work on a local level including the most effective measures depending on the pilot context (T4.1). The idea is to not be seen as a stand-alone measure, but a part of a long-term local strategy. This work is done in parallel with the (T3.5) staff Training Program, so local OSS deliver campaigns-aligned messages.
3) Local community building: Community leaders, public figures as well as local "grass roots" organizations that are motivated to support energy efficiency for its public benefits, including economic well-being of community members, and community carbon mitigation goals are included to promote the renovation initiatives. The strategy for the two pilots is to be discussed with relevant players in order to define the roles of the involved stakeholders (T3.2 and T4.1). This is harmonized with the (T6.4) marketing materials, for the local community to use.

Therefore, this report presents a first section with the pilot cities ecosystem of demand and the definition of a set of personas with their needs and expectations. Then, the opportunities, messages and channels to be fit with them, and finally, the roles of the different stakeholders are defined according to different communication strategies, and in line with the project marketing and training materials, so the OSS delivers an integral service.

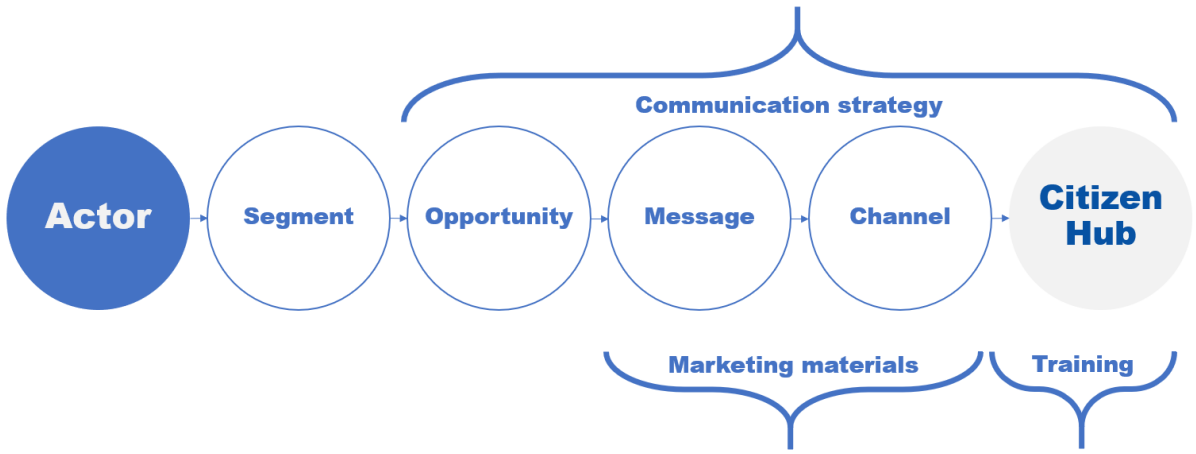


Figure 2.- Task 2.2 strategy: the demand itineraries

A guideline for defining a long-term citizen engagement can be found on the Annex 1, to be used by the follower cities, or any other interested city or region.

3 A background's recap

Conclusions from collected previous energy retrofitting demand analysis

When carrying out an energy renovation, previous experience has shown that the specific needs of citizens can differ substantially from what might be expected. Therefore, one of the first actions undertaken in other similar projects has been to establish an accurate diagnosis of the motivations and barriers of homeowners and occupants.

In the framework of the INNOVATE project (several energy retrofitting projects/activities with the OSS approach being considered in StH were described in deliverable *D2.1 StH demand & supply side mapping: Methodology & results from the 2 pilots*), participating partners stated that most of the local and regional authorities in the EU do not know well the local market and/or still observe that the demand of homeowners for deep renovation works is very low. In their step-by-step guide on how to set up an OSS for integrated home energy renovation, the following obvious and non-obvious **barriers of homeowners when facing renovation** were extracted from market gap analyses in 11 European case studies:

- **Lack of awareness**:
  - Homeowners are not aware of the benefits of energy renovation, so they mostly refurbish their homes to repair functional damages (Mantova, Italy).
- **Lack of trust:**
  - Lack of trust between all parties is a major barrier.
  - There is a need for a network of reliable suppliers (Litoměřice, Czech Republic).
  - The average household is not ready to invest in energy efficiency without a support from experts (Riga Energy Agency, Latvia).
  - Unclear political focus. KAW Architecten detected that people in the Netherlands prefer to wait for a clearer political strategy (local authorities have shifted from individual houses to collective refurbishments and from a *"one-step zero-energy renovation"* to a *"roadmap towards CO2-neutral"*). People are now afraid to invest in products that would not comply with the future local government's guidelines whereas in the past their main reason was unwillingness to invest at all.
- **No match between demand and supply:**
  - There is no offer of integrated home energy renovation services (Mantova, Italy).
  - On the supply side, the market is fragmented and dominated by a craftsman-based approach offering individual solutions (Linnaeus University – Kronoberg County, Sweden).
- **Communication problems:**
  - Installers do not usually have sufficient competences in terms of communication with the customers (Heerlen, the Netherlands).
- **Management barriers:**
  - There is a need for a single contact point providing credible and impartial information, advice and guidance while coordinating the whole energy efficiency value chain (Aradippou municipality, Cyprus).
  - Condominiums are a target group hard to get in contact with and experience many difficulties with their management in general. There was a very low renovation rate in condominiums in Brussels, for example, despite having two public services and nine associations for supporting citizens in the home renovation process.
  - Standardised tools for energy efficiency retrofitting for building managers are missing (Mantova, Italy).
- **Financial barriers:**

- Long payback period. For example, in Frederikshavn, Denmark, homeowners expecting a quick payback refrained from implementing the works. This barrier is even worse in the case of relatively mild climates, such as the Valencia region, where the payback period is still much longer.
- Lack of attractive, tailor-made financial products for home renovation (Aradippou municipality, Cyprus; Riga Energy Agency, Latvia; Extremadura Region Energy Agency – AGENEX, Spain).
- The average household is not ready to increase its monthly payments by more than 10% (Riga Energy Agency, Latvia).
- Many households have mortgages which are often higher than the actual value of the house. It is impossible for their owners to get a new loan for home renovation (Heerlen, the Netherlands).
- Homeowners are not aware of the subsidies available (Mantova, Italy).

In some cases, the same study also reveals possible **solutions** to the aforementioned main barriers:

- Facing the barrier of lack of awareness, it is pointed out that the key message to homeowners should be that they invest in an integrated retrofitting to improve comfort (Frederikshavn, Denmark).
- Facing the barrier of lack of trust:
  - Independent advisors may give homeowners a feeling of security and a wider degree or freedom to act (Frederikshavn, Denmark).
  - The municipality itself is often seen as an independent and impartial advisor for energy retrofitting (Litoměřice, Czech Republic).
- Facing the communication and management barriers, in almost all case studies there is a clear preference of homeowners for an all-inclusive model. It is often stated that it should be a public service (Litoměřice, Czech Republic).

Other similar projects confirming the mentioned barriers in residential building retrofitting are:

- The AGREE project (Aggregation and improved Governance for untapping Residential Energy Efficiency in the Basque Country), in which one of the main challenges at the neighbourhood level has proved to be the lack of demand. Although this is a conclusion drawn from workshops carried out within this project last year in Bilbao, it is a fact that energy efficiency is not yet the main need on the demand side and that it will not stimulate retrofitting. The major barrier to building retrofit is usually the perception (justified, in most cases) that the direct economic benefit to the homeowner from the resulting energy saving is small.
- The Sharing Cities project for the deep retrofit of condominiums in Milan, where there was also insufficient demand for building renovation projects despite really favourable financial conditions. In this case, it has been shown that financing is not the only one playing a key role in energy retrofitting: effective communication tailored to the homeowners has proven to be essential. For this tailor-made communication, demand analysis is crucial.

The obvious conclusion that emerges from all the projects is the need for a **prior understanding of the demand side**. In this sense, and as a preliminary step, a **persona-based approach** has been considered key for understanding the specific drivers for homeowners to renovate their homes and then try to meet their needs and match their aspirations[1] through direct contact, which is one of the bases in OSS mechanisms.

[1] Victoria Haines & Val Mitchell [2014] *A persona-based approach to domestic energy retrofit, Building Research & Information*, 42:4, 462-476, DOI: 10.1080/09613218.2014.893161.

Beyond the adopted approach, there are numerous studies capturing the reasons of homeowners when renovating their homes[2], which demonstrate the complexity of this topic. Some of the **main motivations identified for undertaking home retrofitting** activities usually are:

- **Financial motivations:**
  - Increasing the market value of the property or its potential rental yield.
  - Increasing the marketability of the property.
  - Meeting homeowners' needs more economically than by selling up and buying an alternative property.
  - Reducing energy consumption, due to recent increases in fuel prices and incentives from government to reduce carbon emissions.
- **Social motivations:**
  - Enabling homeowners to enjoy enhanced social standing.
  - Contextual factors: higher incomes households, etc.
- **Personal motivations:**
  - Lifestyle pursuits:
    - Improving comfort (indoor temperatures, etc.).
    - Personal preferences: more fashionable spaces/dwellings; making a closer connection with the home.
    - Meeting psychological goals via the process of achieving the improvement.
  - Functional needs:
    - Maintenance.
    - New personal needs according to lifecycle stages.
    - Preservation of heritage features.
- **Environmental motivations:**
  - Reducing carbon emissions.

Personal barriers such as lack of time, property features or attitudes to older houses (keeping original single-glazed windows, etc.), the stage of life of the homeowners or the inconvenience derived from the works (the perceived disruption that the works will cause to the household and daily life), among others[3], seem to be less relevant than personal motivations and were therefore not included among the main barriers before. However, this number of personal, interrelated and sometimes quite intangible barriers, amplify and elucidate other main barriers (lack of awareness and trust, costs) and can cause inertia or even stall retrofitting projects for many years.

Another aspect to be considered, beyond the multiple factors that may affect homeowners for energy efficiency retrofitting, is the interrelationship of these factors, which not only influence their motivation but also how they act. In the proposed model of owner-occupier motivation for energy efficiency refurbishment, it is depicted how **both internal and external factors might affect the motivation for, and performance of, energy efficiency refurbishment**:

[2] Earl, P. E., & Peng, T. (2011). *Home improvements*. In S. Cameron (Ed.), Handbook on the economics of leisure. (pp. 197–220). Cheltenham: Edward Elgar Publishing Limited | Gram-Hanssen, K. (2014). *Existing buildings – Users, renovations and energy policy*. Renewable Energy, 61, 136–140. doi.org/10.1016/j.renene.2013.05.004 | Baum, S., & Hassan, R. (1999). *Home owners, home renovation and residential mobility*. Journal of Sociology, 35(1), 23–41. doi:10.1177/144078339903500102 | Munro, M., & Leather, P. (2000). *Nest-building or investing in the future? Owner-occupiers' home improvement behaviour*. Policy & Politics, 28(4), 511–526.

[3] Mallaband, R. A., Haines, V. J. A.&Mitchell, V. A. (2012). *Barriers to domestic retrofit – learning from past home improvement experiences*. Retrofit 2012. University of Salford, 24-26 January 2012.

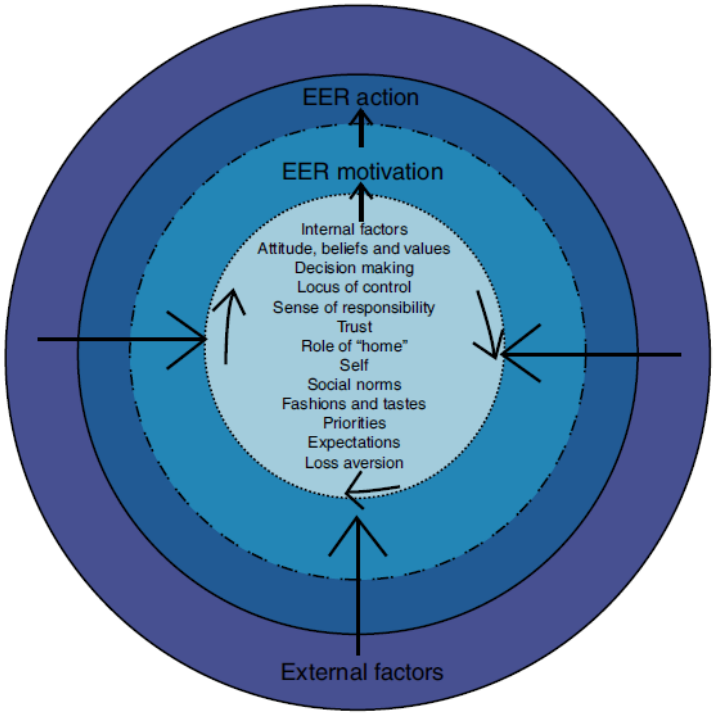


Figure 3.- Factors in the motivation for energy efficiency refurbishment (EER) [4]

Internal factors are shown in the centre of the model. External factors, such as current incentives, penalties, housing market, property condition, etc. are in the outer layer. Internal factors are specific to individuals and interrelate and change over time, as reflected by the arrows circling them. They influence the motivation to act and the form of action undertaken (indicated by the arrows flowing from the inner layer to the outer layers). According to this model, internal factors, energy efficiency motivation and energy efficiency refurbishment action (i.e., behaviour) will be affected by external factors. Moreover, internal factors are also affected by other internal factors and are also shaped by external factors. On the other side, external factors change more quickly than internal factors, and affect internal factors, motivation, and action (reflected by large arrows from the external factors layer inwardly through the other layers). Both external and internal factors change over time but also between locations, social groups and individuals.

When viewing this wide, multifaceted and complex range of motivations and barriers faced by homeowners, it becomes clear that there are **different groups to be targeted in different ways**, and the need to segment them accordingly. This is why the persona approach, based on robust qualitative research, is often used today.

[4] Organ, S., Proverbs, D. and Squires, G. (2013). *Motivations for energy efficiency refurbishment in owner-occupied housing.* Structural Survey, 31, 101-120, http://dx.doi.org/10.1108/02630801311317527.

4 The pilot cities ecosystems

According to Objective 1 (to make home renovation easier, faster and more affordable for homeowners by designing an economically sustainable citizen-oriented OSS model, 'Citizen Hub', to be deployed by municipalities), the 'Citizen Hub' is an OSS model endorsed by a municipality, a trustworthy entity ensuring that the process is independent, transparent and of high quality for their citizens, and it is specifically focused on enhancing the homeowners' experience throughout the home renovation journey.

Sav€ the Homes creates innovative 'integrated home renovation services' at the City of Rotterdam, the Netherlands, and Municipality of Valencia, Spain, and builds upon the existing climate targets set by the two cities (according to the initiative of Covenant of Mayors (CoM) for Climate & Energy, 15% of the mitigation actions and 9% of the adaptation actions proposed by cities in their Sustainable Energy and Climate Action Plans address residential buildings[5], and therefore, their occupants, managers, owners or 'regulators').

But the project piloting experience is not addressing the whole city scope, and a methodological framework for targeting the different stakeholders was designed in T2.1, in order to focus efforts and efficiently design the communication strategies so to involve targeted citizens, maximize impacts achieved by intervening in the most needed buildings, and offer the best services and solutions for its realization. This deliverable deals with the demand side (targeted population and their homes), while D2.3 deals with the supply side providers, and D2.5 deals with the solutions.

4.1 Comunitat Valenciana – ES

The geographical scope for this pilot experience will be local at first instance, and then regional, as a replication phase). Therefore, cities involved are the City of Valencia (815,440 inhabitants) as front-runner and partner of the project, and the follower cities in the region: City of Elche (230,000 inhabitants), City of Gandía (74,000), Municipality of Onda (12,000 inhabitants) and City of Alcoi (59,000 inhabitants), supported by the Regional Government (all of them signed project Letters of Support)

4.1.1 Needs, motivations & barriers

The outcomes of T2.1 is the basis where further studies are done to understand how homeowners decide, plan and think, and more in particular how this could affect their choice to either invest in NZEB-renovation or not.

In this section, we go from the targeted buildings to the demand needs, and from the targeted population to the demand wishes and possibilities. This is done through aggregation and generalization mechanisms by defining a set of building typologies and personas to get a first idea on our target demand needs, motivations and opportunities to renovation.

A. Targeted Buildings

The objective of defining building typologies is to get the greatest effectiveness in the definition of targeted buildings intervention categories

[5] Covenant of Mayors figures: https://www.covenantofmayors.eu/about/covenant-initiative/covenant-in-figures.html

From D2.1 mapping of building stock in Valencia pilot, focus is on residential building morphology (number of dwelling and relative position to neighbour buildings), combined with age, energy efficiency, quality or conservation status.

On the energy side of the analysis, targeting **old (>50 years) or inefficient (>E)** buildings has the objective of achieving the biggest savings possible. On the realization side, **grouping similar buildings (MFH and AB - typology)** also facilitates the renovation process by clustering common needs, and therefore, offering sets of solutions types adapted to them, allowing e.g. for collective purchases (lowering prices) or administrative authorizations delivery, and easing the decision-making process.

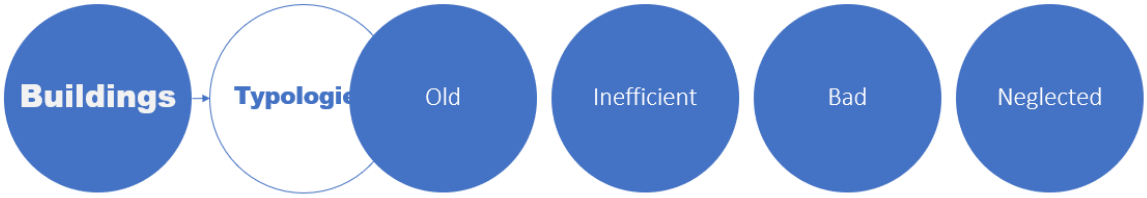


Figure 4.- building stock typologies for Valencia pilot

This segmentation was enriched by the result of massive studies on residential building stock status and perception carried out by the Regional government[6] and the StH dedicated questionnaires to final users, distributed by VCE and VRCP, whose results related to building typologies and suitable solutions are shown below:

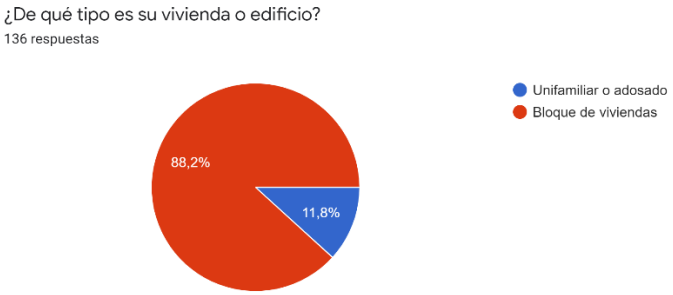


Figure 5.- Typology of your building

From interested users we get the same typology distribution than from the massive characterization, so the focus of the pilot continues on the multifamily building, not forgetting that share of single-family buildings still existing in the pilot context and in the interested users' context.

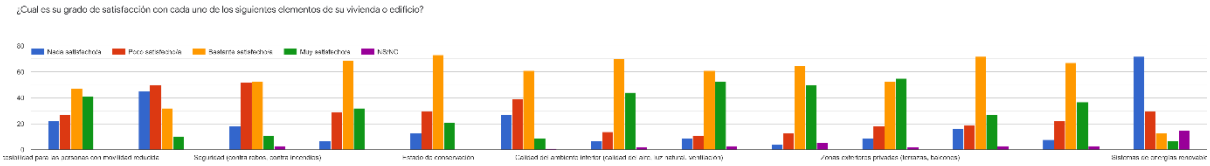


Figure 6.- Satisfaction degree with different elements at home

[6] http://habitatge.gva.es/es/web/vivienda-y-calidad-en-la-edificacion/llibre-blanc-de-l-habitatge-c.v.

Important level of dissatisfaction with noise insulation and thermal comfort, which points out to **building envelope** (for other reasons different to energy efficiency, but still working as a driver for our purposes). Also the actual context of empowering solar self-consumption and energy communities rises concerns about the level of availability of **renewable energy resources** from the building.

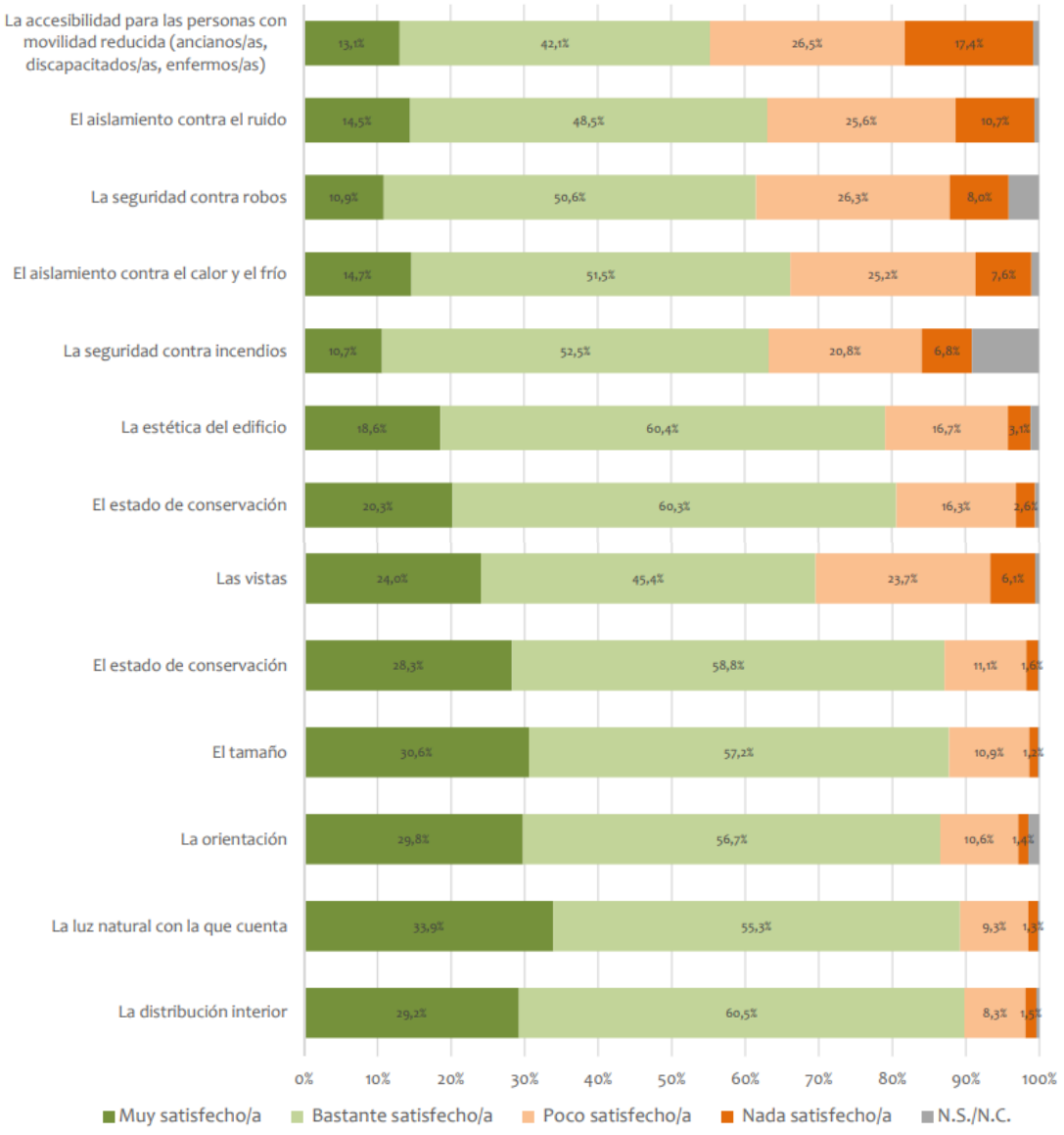


Figure 7.- Regional government survey on residential building occupants' satisfaction

Other previous surveys at regional level confirm dissatisfaction with noise levels or thermal comfort, and also draw attention to **accessibility** and **aesthetic** aspects such as the views from the dwelling.

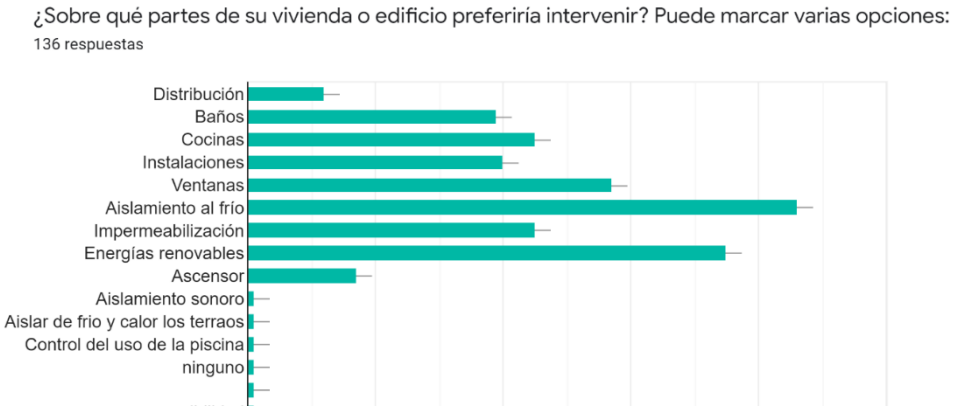


Figure 8.- where would you rather renovate?

Again, here a focus on **insulation** and **renewable energy sources**, but also a notable amount of interest on **kitchens** and **bathrooms** (which might be used as a driver for DHW technology update), or elevators and **accessibility** (which might be used as a driver for sustainable neighbourhoods)

A. Typologies' Triggers

From all above, solutions are classified. Classifications are often used by and useful for the technicians and experienced professionals but are generally not easy to understand by all end users and people at large. For this reason, TripleA-reno H2020 project considered a **components' approach** with two different forms of minimum classification as necessary and effective that we can replicate here: categories and classes.

- **Category** may be defined as the group of measures applicable to the different areas of intervention in the building; in other words, the category indicated which component of the building is going to be modified or replaced (e.g. façade).
- **Classes** are intended as entities that refer to the behaviour of a measure (e.g. external insulation). Starting from a class, a **measure** is created, representing an instance of the associated class having specifically determined characteristics (e.g. external insulation with 90mm layer of wood fibre board by Diffutherm).

Also according to TripleA-reno development, measures should include, in addition to the descriptive attributes, some measurable parameters, so we can choose a **renovation strategy**:

- The purpose of each strategy is to **sort** the measures or to eliminate some measures according to a well-defined criterion fitting a purpose (e.g. economical strategy sorts by parameter cost), thus, based on this order, the measure at the top of the list is the measure that best fits the chosen strategy.
- These strategies can be also used to plan the renovation in a **step-by-step approach** leading to the achievement od the chosen goals according to a med-term schedule which enables a more convenient programming of the renovation works (and costs).

This will be the base for the definition of tips, recommendations and solution packs (to be developed in T2.5) and for targeting the supply side (T2.3).

B. Targeted population

The objective of defining personas is to get the greatest effectiveness in the definition of targeted population wishes and possibilities

From D2.1 demand side mapping in Valencia pilot, focus is on household composition (number of members and presence of children), combined with age, income or tenancy scheme.

On the composition of the household scope, targeting couples or mature singles, or families with children have the objective of increasing renovation rates at own homes, while targeting landlords or local heroes has the objective of replication in multiple houses, owned by themselves or by influencing their neighbours.

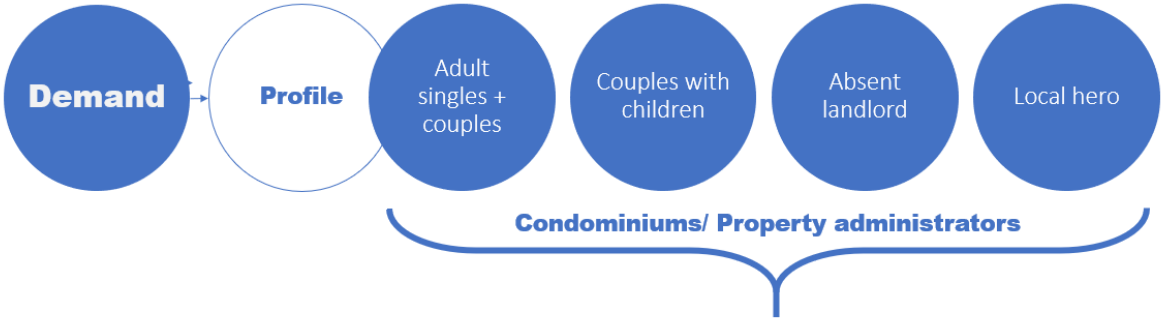


Figure 9.- demand side profiles for Valencia pilot

In this context, we have used the personas approach in order to define needs, expectations, drivers and opportunities to get to these profiles, together with the ethnography approach used in previous project TripleA-reno, whose results are capitalized here, and whose techniques have been partially replicated (specially on the questionnaires).

Personas are fictional characters which are created to represent the different user types that might use a certain product or service or, in our case, could represent typical occupants/residents of certain building or house. The term is often used in development of IT solutions as part of the people-centred design, when several personas are usually made, and one is usually selected and remains in the focus of design and development processes (Lidwell, Holden & Butler 2010)[7]. Therefore, we are searching for artificial personas – average (and not real) representatives of households.

As a summary, the persona-based approach to domestic energy retrofit[8] highlights the different motivations and opportunities to retrofit as:

- The Idealist Restorer: **The property is a project** → Interested in 'clever'energy saving technologies but only if the character of the home can be maintained
- The Affluent Service Seeker: **The property is a pleasure** → Open to incentive schemes and polices that generate income for the homeowner or add value to the property; Will choose to use specialist professionals to ensure a quality job
- The Property Ladder Climber: **The property is a step-up** → Open to the use of finance schemes if these are cost-effective within the context of 'improving to sell'; Unlikely to consider technologies with long payback times unless the cost of installation is passed on
- The Pragmatist: Subtype – Functional: **The property is a place to live** → When things wear out or go wrong; At the time of purchasing the property; When re-purposing a space or extending the home; When finance becomes available

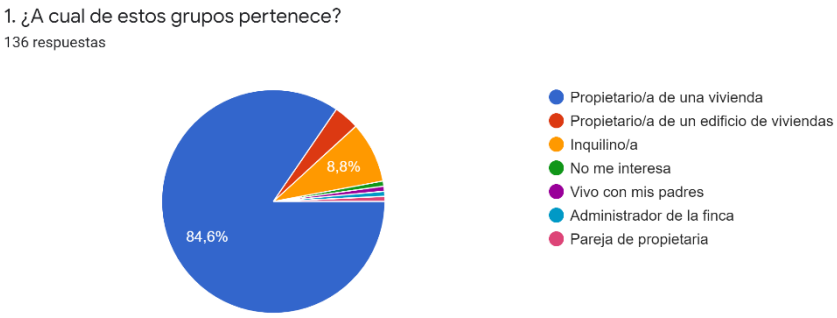
[7] Lidwell, William, Kritina Holden and Jill Butler. 2010. Universal Principles of Design. Rockport Publishers.
[8] Victoria Haines & Val Mitchell (2014) A persona-based approach to domestic energy retrofit, Building Research & Information, 42:4, 462-476, DOI:10.1080/09613218.2014.893161

- The Pragmatist: Subtype – Aesthetic: **The property is a home** → When they first purchase the property or within the regular cycle of decorating and refurbishment; The order of retrofit will be driven by aesthetic priorities, e.g. the desire for new kitchen may lead to a new boiler
- The Stalled: Subtype - Lack of Finance: **The property is a shelter** → Limited to when grants are available; Will undertake consequential improvements if dictated by grant scheme
- The Stalled: Subtype - Pressures of Life: **The property is a necessity** → Almost none at present

On the other hand, TripleA-reno extensive Ethnographic work on Valencia Region demand side (1 workshop, 500 questionnaires, 3 observation, 5 interview, 1 focus groups) distinguished the user profiles described below, which we have matched with personas motivations:

- single occupant households: (**household size = 1 person AND (age<35 OR age>65) → The property is a necessity**)
- Couples: (**household size = 2 person AND (age>35 AND age<65) AND family type = without children → The property is a place to live and pleasure**)
- Families with children: (**household size >= 2 person AND family type = with children → The property is a place to live and a home**)
- Multiple occupants': (**household size >= 3 person AND family type = without children AND age < 35 → The property is a necessity**)
- Absent landlord: (**tenancy = rental scheme → The property is a step-up**)
- "local heroes": (**The property is a project**)
- The "antagonists": (**The property is a shelter**)
- Finally, consider that within the same building we are likely to encounter individuals with divergent interests, perspectives of time, affordability, aesthetics, values etc. As a result, they are just as likely to have very different motivations and interests regarding building renovation → **the property is a job (the property administrator**)

This matching was enriched by the result of massive studies on residential building stock status and perception carried out by the Regional government[9] and the StH dedicated questionnaires to final users, distributed by VCE and VRCP, whose results regarding users' motivations are shown below:



[9] http://habitatge.gva.es/es/web/vivienda-y-calidad-en-la-edificacion/llibre-blanc-de-l-habitatge-c.v.

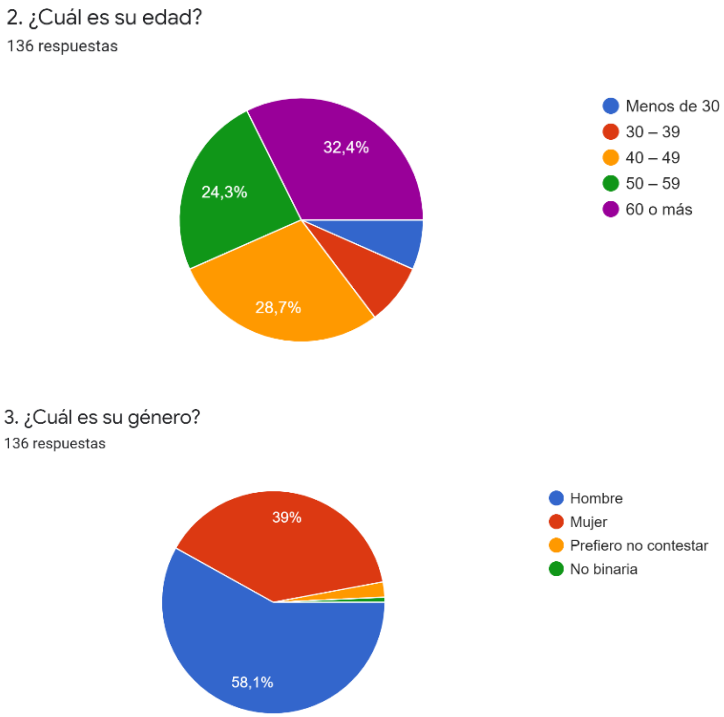


Figure 10.- Interested users' profile (persons answering StH questionnaire)

Users' data used for matching with previously defined profiles show **adult (mature)**, slightly men over women, **owners** of the dwelling they are living in, which partially reinforces our preliminary profiles and could be used to help us focus or prioritize specific ones.

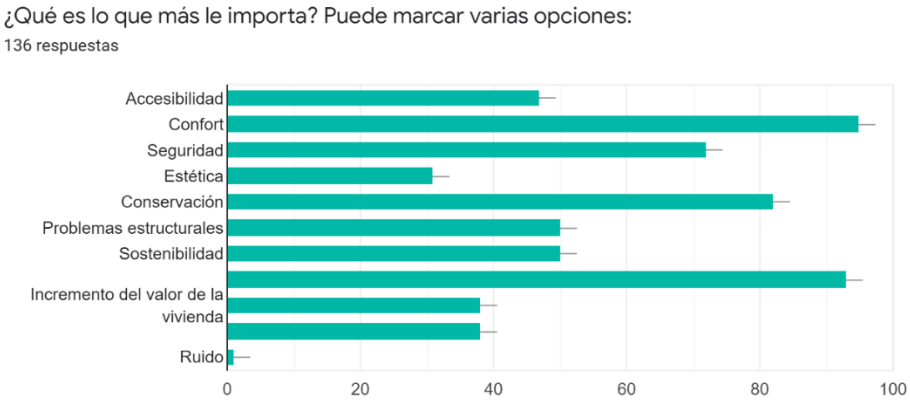


Figure 11.- Interested users' objectives when renovating

People answering our survey shown again an interest on **comfort**, but also on **economic savings**.

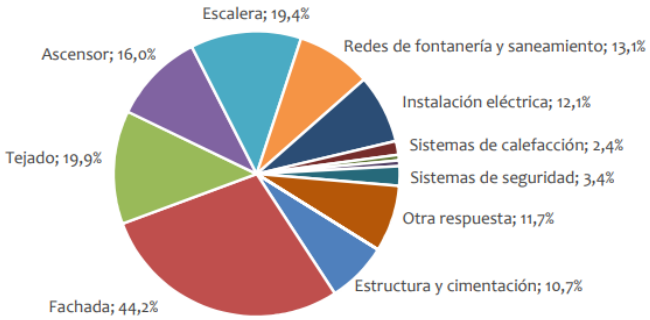


Figure 12.- Type of intervention planned for the building

Regional surveys asking for most common renovation in the whole building scope went for envelope components, which fits very well with the pilot assumptions for limiting energy demand (**roofs and external walls**).

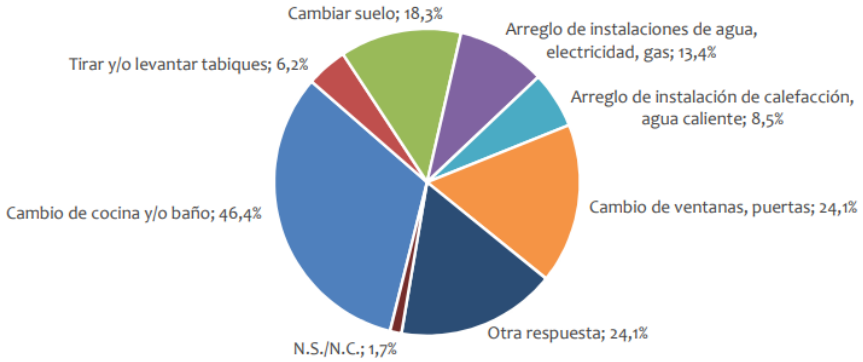


Figure 13.- Type of intervention planned for the dwelling

When asked for dwelling level renovation, **aesthetics** arises, and most of the interventions are performed on visible elements with no need for neighbour's **approval** or major **administrative procedures** (also some of them are under **grant schemes** – kitchens and bathroom).

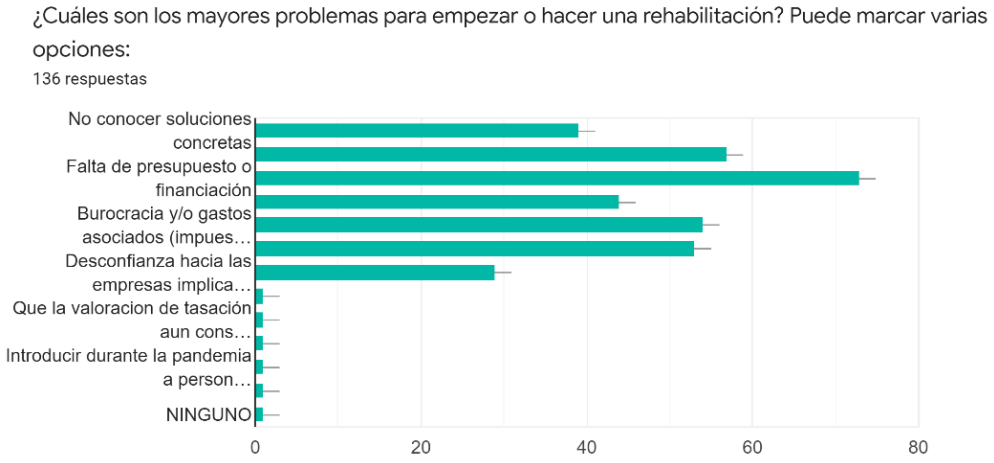


Figure 14.- Barriers for renovation

And for the barriers, financial issues are prominent, and data retrieved are coincident with previous regional surveys.

Figure 15.- Intervention cost per owner for building renovation

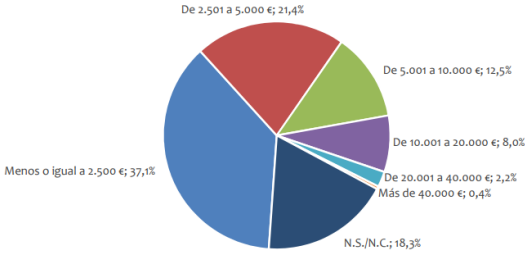


Figure 16.- Intervention cost per owner for dwelling renovation

Expenditure per dwelling remains mainly under **5.000€,** although a share of recently asked citizens were willing to pay up to **20.000€.**

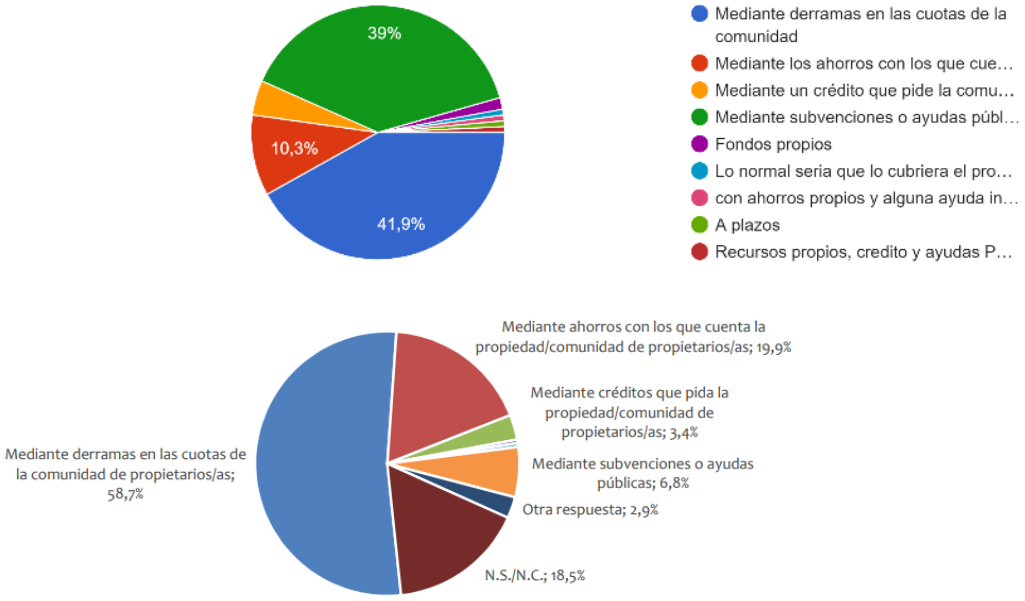


Figure 17.- Financing options

For the funding options, credits and financial schemes interest is still very low, and concerns are placed on a bigger amount for grants and subsidies or an official **combination between grants and financial** schemes. In fact many of the respondent were not aware of the existence of such grant schemes.

Figure 18.- Grants awareness and potential improvements on the renovation process

B. Profiles' Opportunities

In summary, perceptions, motivations, barriers are summarized within the different profiles so to assign wishes and opportunities for renovation to exploit for communication campaigns:

Profile	Characterization	Motivation	Opportunities	Probability of success	Objective	Drivers (Messages)
single occupant	household size = 1 person AND (age<35 OR age>65)	necessity	Almost none	Low		
Couples (+ single occupant?)	household size = 2 person AND (age>35 AND age<65) AND family type = without children (OR household size = 1 person AND age BETWEEN 35 AND 65)	live and pleasure	When things wear out or go wrong; At the time of purchasing; When re-purposing a space or extending the home / Open to incentive schemes and polices that generate income for the homeowner or add value to the property; Will choose to use specialist professionals to ensure a quality job / The order of retrofit will be driven by aesthetic priorities, e.g. the desire for new kitchen may lead to a new boiler	**High**	**renovation**	Power (choose, complaint, rate)
Families with children	household size >= 2 person AND family type = with children	live and a home	When things wear out or go wrong; At the time of purchasing; When re-purposing a space or extending the home / Within the regular cycle of decorating and refurbishment; The order of retrofit will be driven by health and comfort priorities	**High**	**renovation**	Access (to information, services, tools)
Multiple occupants	household size >= 3 person AND family type = without children AND age < 35	necessity	Almost none	Very low		
Absent landlord	tenancy = rental scheme	step-up	Open to the use of finance schemes if these are cost-effective within the context of 'improving to sell'; Unlikely to consider technologies with long payback times unless the cost of installation is passed on	**Medium**	**replication**	Stuff (revenue)
"local heroes"	(detect and promote from other users' profiles)	project	Interested in 'clever' energy saving technologies (caring about the character of the home being maintained)	**Very high**	**influence**	Status (recognition)
"antagonists"	(when limited to financial issues – look into vulnerable profiles)	shelter	Limited to when grants are available; Will undertake consequential improvements if dictated by grant scheme	Low		
Condominiums (several types)	(mix of previous profiles sharing property and making collective decisions)	various			Various (including **RES**)	

Figure 19.- Demand side mapping and involvement

Couples and mature singles ((household size = 2 person AND age BETWEEN 35 AND 65 AND family type = without children) OR household size = 1 person AND age > 35) AND medium to high income) are seeing their property as a place to live and pleasure, and driven by the power to choose, complaint or rate the works performed. They are pen to incentive schemes and polices that generate income or add value to the property, and choose to use specialist professionals to ensure a quality job. On the other hand, **families with children** (household size >= 2 person AND family type = with children) are looking at their property as a place to live and home, they will be driven by the access to relevant information, services and tools, and the order of retrofit will be based on health and comfort priorities. The **absent landlord** (tenancy = rental scheme) looks its properties as a step-up, therefore is driven by stuff (i.e., revenue), and will be open to the use of finance schemes if these are cost-effective but will

unlikely consider technologies with long payback times unless the cost of installation is passed on. Finally, **local heroes** (to be detected by the Offices and promoted from other users' profiles) see their properties as a project, and are driven by status or recognition, they are energy and environmentally conscious and aware, and interested in 'clever' energy saving techniques and technologies, caring about the character of the home being maintained.

But common to all the profiles, the opportunity to introduce the renovation path is the moment when **things wear out or go wrong**. Also, there are other opportunities repeating on the selected profiles (not all of them, but at least 2 of them), such as the time of **purchasing or re-purposing** space or extending home (couples and matures singles and families with children), or when **grants or advantageous financial schemes** are available (couples and matures singles and landlords).

Condominiums, joint households in a residential multifamily building are a mix of all these profiles, and therefore motivations, drivers and opportunities are mixed and have to be sorted based on collective decisions. The role of the property administrator is capital for the success of the renovation in this context.

4.1.2 Campaign strategy design

The campaigns are designed on the basis of the previous inquiry's outcomes to form efficient tailored campaigns that work on a local level including the most effective measures depending on the pilot context. The idea is to not be seen as a stand-alone measure, but a part of a long-term local strategy.

As presented in the introduction, the communication strategies design work is to be done in parallel with and T6.4 for marketing materials and T3.5 for the staff Training Program, so local OSS deliver campaigns-aligned messages.

According to the itineraries' strategy adopted for this step, we need to define the communication strategy structure related to each category. Then, detected stakeholders and potential allies would be contacted in order to fine-tune campaigns and implement specific actions.

A. Targeted Buildings

The objective of defining a building typology itinerary is to get the greatest impact from the communication strategy messages and channels.

According to the itineraries' strategy adopted for this step, we start defining the communication strategy structure related to each building stock categories.

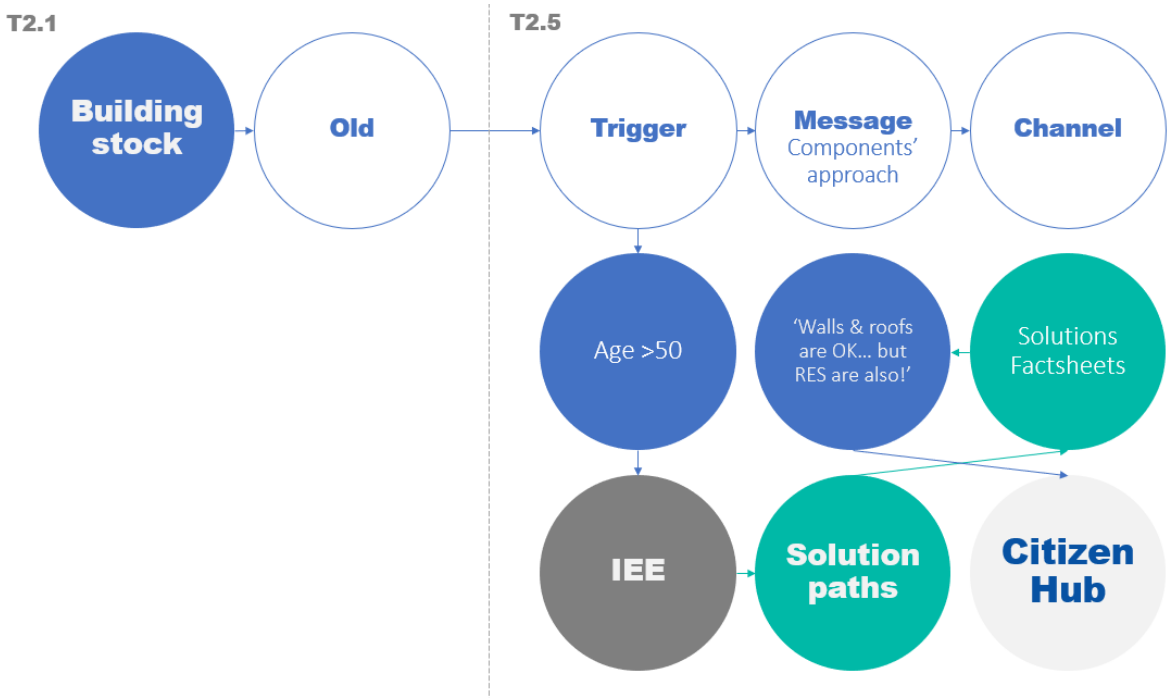


Figure 20.- Communication strategy itinerary according to building typology 'old'

Old buildings (corresponding to MFH build before 1980) itinerary starts with the circumstance of the mandatory Building Evaluation Report (IEE) issue, which manifests and prioritizes the urgent interventions in the building. The massive study and clusterization of those interventions will allow for 'standard' solution paths, on one or more steps, based on the component to be intervened and the related energy efficient solution to be applied. These will be delivered in thew form of **Solution Factsheets** starring images, descriptions, costs and benefits on a friendly jargon-free language; driving the reader to the citizen hub (physical or on-line versions), where assistance will be provided to get to realize those proposed solutions. Factsheet can also be available directly on the citizen hubs clearly assigned to the characteristics that define the suitability of the solution (e.g., exposed under a big photo representing the building type).

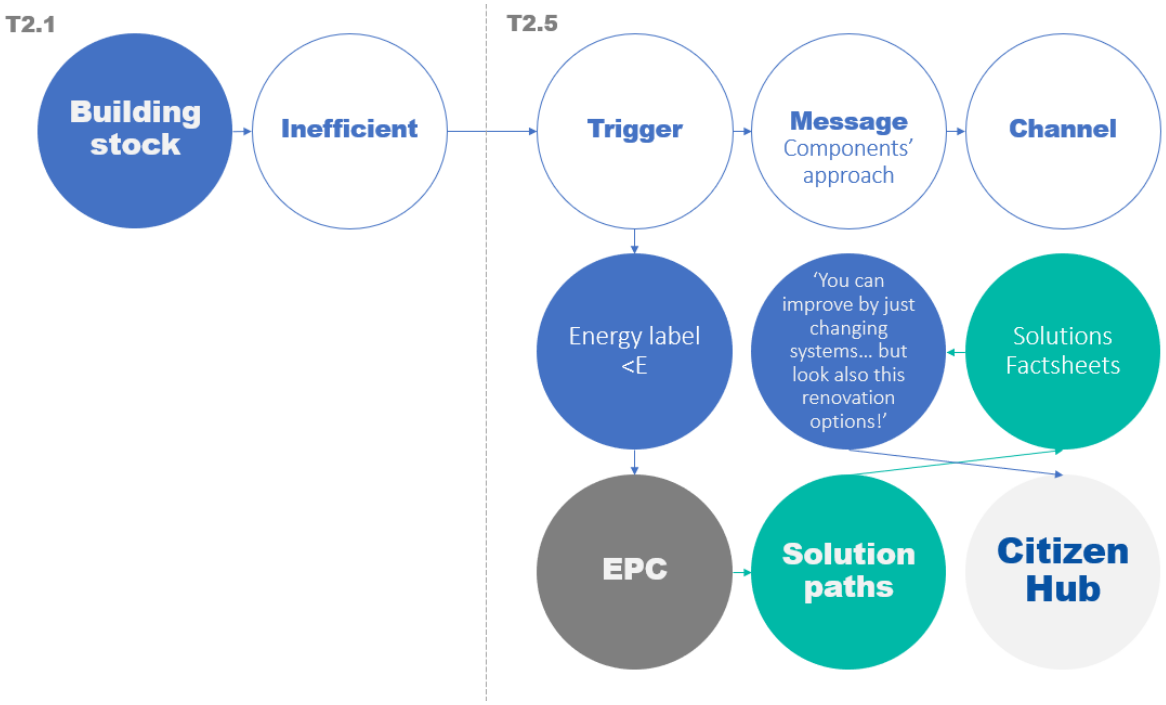


Figure 21.- Communication strategy itinerary according to building typology 'inefficient'

Inefficient buildings (corresponding to those typologies most repeated on EP certificates with label lower than E) itinerary starts from the circumstance of mandatory EPC issue for any residential unit legal business formalization (i.e., mostly sale or rent). EPCs on existing buildings include the proposal of a set of measures or interventions for energy improvement. Therefore, again, the massive study and clusterization of those interventions will allow for 'standard' solution paths, on one or more steps, based on the component to be intervened and the related energy efficient solution to be applied, which will be collected within the **Solution Factsheets** sets available on the Citizen Hubs s (physical or on-line versions), in same conditions as the ones coming from the IEE analysis.

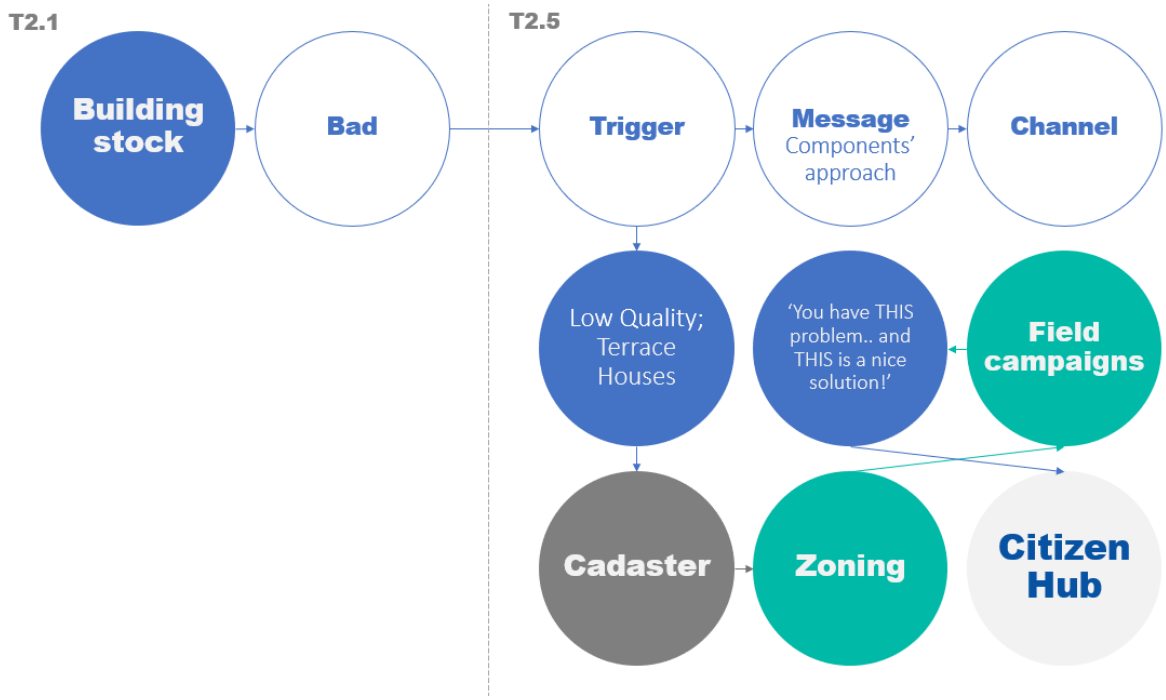


Figure 22.- Communication strategy itinerary according to building typology 'bad'

Bad buildings (corresponding to TH build before 1960) itinerary starts with the circumstance of the strong locational dependence manifested through the cadastral data spatial analysis and the typical morphology shaped as a long rectangle sharing the long sides and having small façades, making the low-quality material of their roof the biggest share of building envelope, and the target of the potential solution proposal. This message can then be delivered through very specific **field campaigns** (markets or pop-up offices) where the solution is distributed in the corresponding factsheet leading to the Citizen Hub, but also explained directly from a real person which can further develop the solution according to the citizen circumstances or building particularities, and guide to a more complete intervention.

A. Engagement content

The itineraries from each trigger, message and channel to the citizen Hub under the **components' approach** returns a set of materials and activities to be performed in WP3 design Tasks and WP4 demonstration activities:

1) **Solution factsheets** under a solution path according to most impacting possibilities on both the energy saving potential of the measure and the applicability/replicability of the measure in the geographical area to be implemented. This will be extracted from both IEE and EPC improvements measures reported on a typology and geographical basis.
2) **Solution zoning** for selected and focused field campaigns prioritizing interventions in typologically high concentrated areas, for the most impacting possibilities on the applicability/replicability of the measure.

B. Targeted Population

The objective of defining a demand profile itinerary is to get the greatest effectiveness in the definition of the communication strategy messages and channels.

According to the itineraries' strategy adopted for this step, we start defining the communication strategy structure related to the demand side profiles.

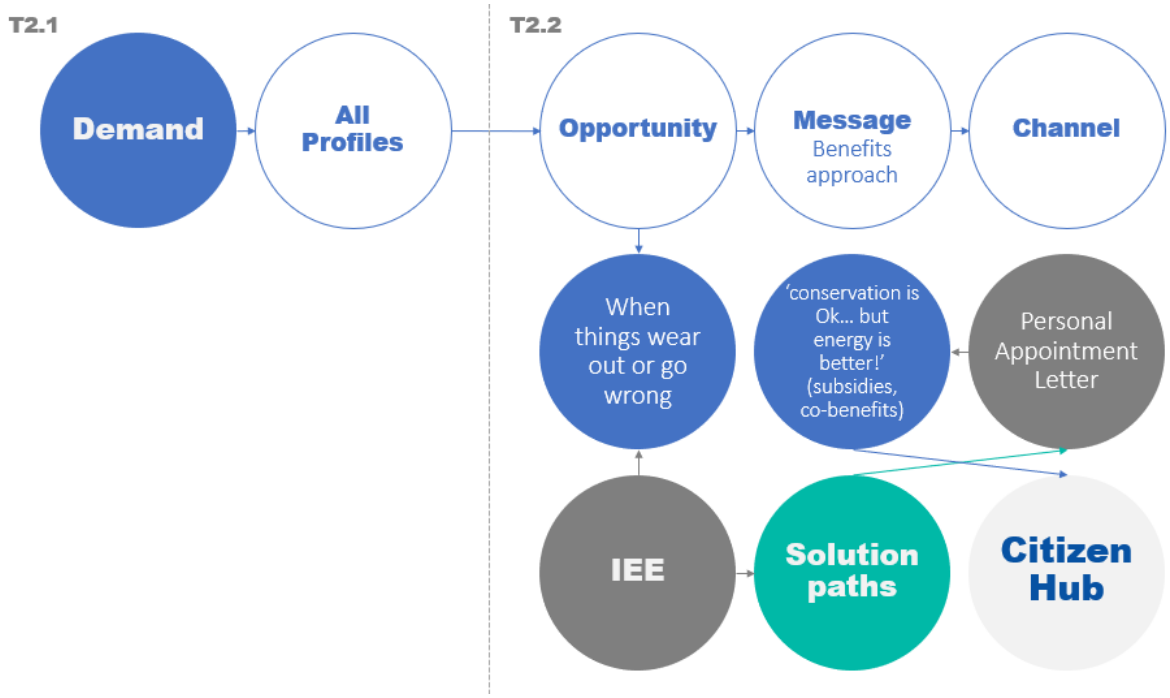


Figure 23.- Itinerary for things wore out or gone wrong

Users 'forced' to an intervention can be driven into the energy renovation path with a pre-designed solution path based on the most repeated pathologies detected by the IEEs. The challenge here is to address to those owners and show them their options. At a first instance the opportunity is to involve the **Regional Administration in charge of the IEE** Register and appoint those owners to the citizen hub together with the factsheets regarding the applicable solution paths. The long-term vision is to include these solution paths into the IEE reports.

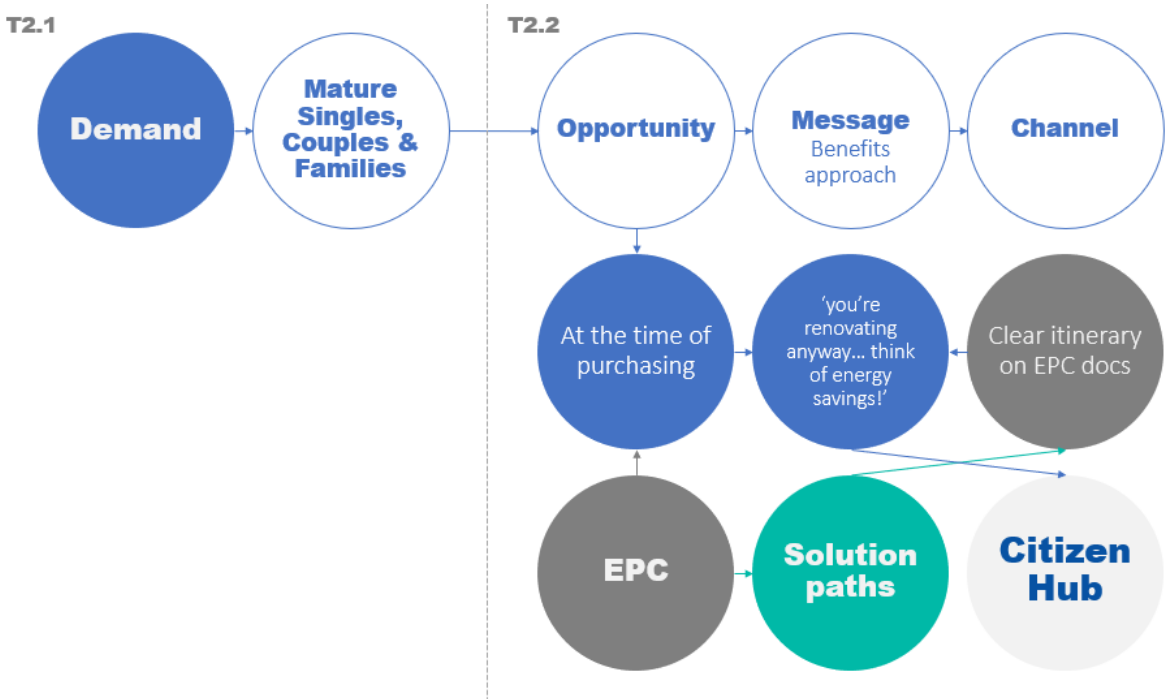


Figure 24.- Itinerary for the time of purchasing

At the time of purchasing an 'second hand' dwelling, which you probably intend to adapt to your circumstances and personal style, you receive the EP certificate (and, if applicable, the IEE). EPCs on existing buildings include energy related improvement measures, which properly analysed can result in pre-designed solution paths to be offered to the buyer. The challenge here is to address to those owners and show them their options. At a first instance the opportunity could be to involve the Notaries and Registrars to have at hand these solution paths factsheets. The long-term vision is to involve the **Regional Administration in charge of the EP Certificates** to include these solution paths into the EPC reports.

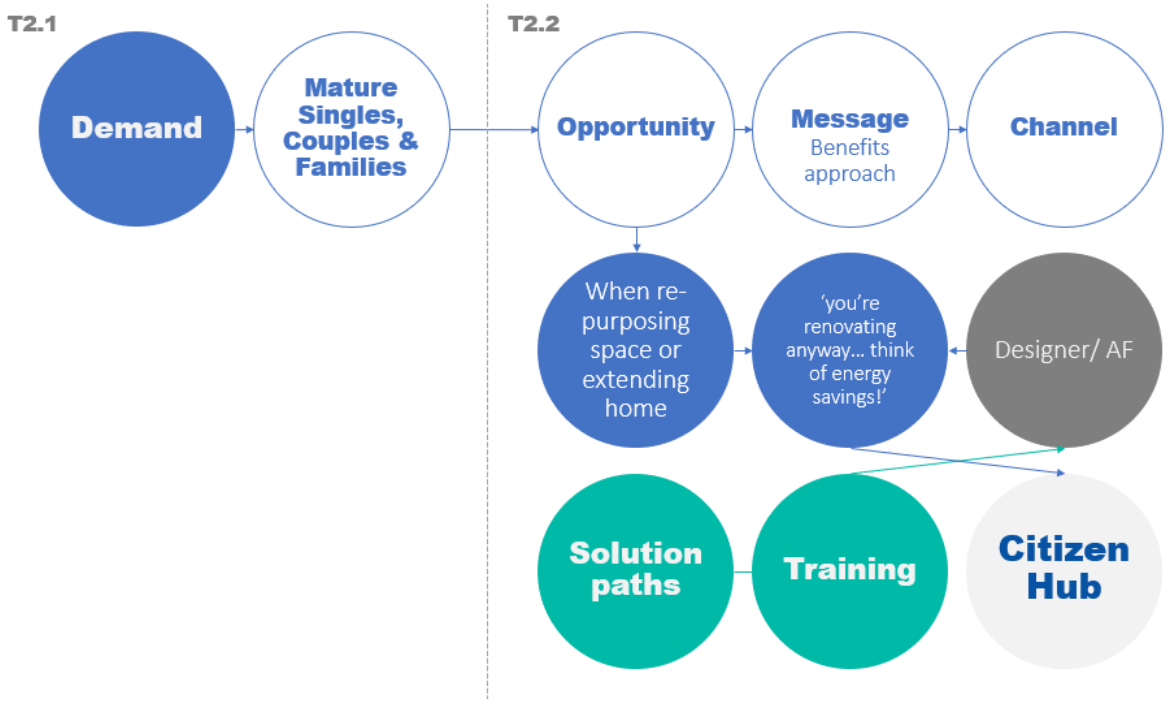


Figure 25.- Itinerary for the time to re-purposing

When for any reason an owner (or joint of owners – condominium) decides to refurbish their dwelling, chances are that they contact a professional (designer or property administrator). Offering specific training on the OSS solution paths to these professionals (through the local or on-line office or through the **professionals' associations** training programs) is another itinerary we would follow in order to make them introduce the energy related solutions into the general refurbishment.

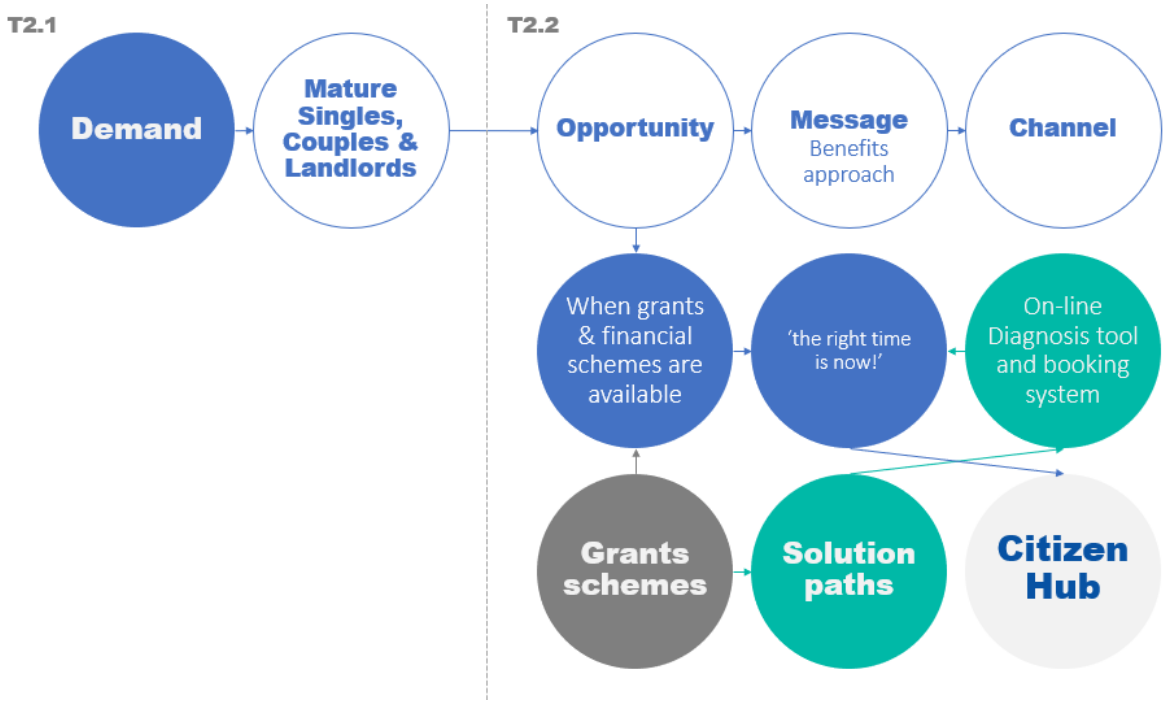


Figure 26.- Itinerary for advantageous financial schemes

When grants are available dissemination activities are performed by those **administrations or financial entities** in charge of them. Some profiles are more aware of these campaigns. The challenge here is to involve those administrations and financial entities to link to (or be linked from) the OSS channels and include related solution paths into their dissemination materials or make available the on-line diagnosis tools and booking systems leading the owners to the citizen Hub services in order to design the project and appliance that could benefit from the advantageous funding.

B. Engagement strategy

The itineraries from each opportunity, message and channel to the Citizen Hub under the **co-benefits' approach** returns a set of materials and activities to be performed in WP3 design Tasks and WP4 demonstration activities, developed on top of the solutions factsheets:

1) Personal **appointment letters** for users 'forced' to an intervention (according to IEE results) to drive them into the energy renovation path with a pre-designed solution showcasing clearly the benefits and addressing them to their Citizen Hub for more information.
2) Professionals' **training programmes** addressed to designers, to involve them into the selected solutions application at design stage by enhancing the co-benefits of the proposed solutions; and to auditors, to involve them into the proposal of clear improvements on their buildings' evaluation and energy certification.
3) **On-line self-operated tools** enabling a pre-diagnosis on the building status and the benefits under the different renovation options, with Citizen Hub contact, FAQ and booking system.

4.1.3 Community Building

As presented in the introduction, community building is the last step of this Task and it builds on the rooting of the communication strategies (including T6.4 marketing materials and T3.5 staff Training Program) in the local context, through the activities to be implemented in T4.1 engagement campaigns.

According to the itineraries' strategy adopted for this step, we need to get to the previously detected stakeholders and potential allies, that would be contacted in order to fine-tune campaigns and implement specific actions.

C. Targeted stakeholders

The objective of building a Demand side –Advisory Board is to get the greatest closeness to the local context from the personas/ profiles' descriptions (fine-tunning) and implement better communication campaigns.

First part of this section is to involve local organizations in touch with targeted population, which have expertise in dealing and communicating with them, to understand how they decide, plan and think, so to learn how this could affect their choices related to NZEB-renovation, to help defining the right approach techniques.

Therefore, the Sav€ the Homes **Advisory Boards** (StHAB) have a pivotal role in establishing sustainable networks to support the local eco-systems. For this task, the Demand side Advisory Boards defined in D2.1 are activated, and a set of activities are to be planned (in virtual environments if needed, due to COVID-19), in the context of the definition of the customer journey (T3.2) and business model (T3.3), and the planning of onboarding activities to be implemented (T4.1).

Demand side – Private AB: Building owners and organizations (association of final users and consumers)			
Consumers associations	Unió de Consumidors de la Comunitat Valenciana	NB. Assoc.	2 associacions, through VCE contacts
	Asociación Valenciana de Consumidores y Usuarios (AVACU)		2 associacions, through IVE contacts
condos	2 condominiums, through VRCP members	SS	Municipal service asigned to vulnerable population in the neighbourhood

Table 1.- Spanish Private Sector Demand side AB

In this context, community leaders, public figures as well as local "grass roots" organizations that are motivated to support energy efficiency for its public benefits, including economic well-being of community members, and community carbon mitigation goals are included to promote the renovation initiatives. The strategy for the two pilots is discussed with relevant players in order to define the roles of the involved stakeholders. This is harmonized with the T6.4 marketing materials, for the local community to use.

Demand side – Public AB: City councils, local governments, and regional/ national organizations such as Public Housing Providers or Associations of public condominium members			
Local government	Federació Valenciana de Municipis i Províncies (FVMP)	Regional gov.	Conselleria d'Habitatge i Arquitectura Bioclimàtica
	Promociones e Iniciativas Municipales de Elche (PIMESA)		Basque Government - Environment, Territorial Planning and Housing
	Ajuntament d'Alcoi		
	Ajuntament de Gandia		
	Ajuntament d'Onda		
	Diputació de València		

Table 2.- Spanish Public Sector Demand side AB

Finally, the Financial Advisory Board is defined and implemented in the context of T2.6 activities.

C. Engagement planning

The involvement of the StHABs is capital to adapt research and desk work to operational field, so the preliminary **approaches are validated and improved** through iterative process to be applied during the WP3 design tasks and learning loops implemented on the WP4 demonstration activities, such as:

1) **Contact** candidates, from the ones who signed the Letters of support to others arisen from our mapping research
2) **Project presentation** on joint or separated meeting (according to each member spirit)
3) **Information retrieval** related to their interest or involvement on the designed itineraries
4) **Participation** on project piloting experiences
5) **Dissemination** of project initiatives and results
6) **Commitment** with the long-term Citizen hub operation

4.1.4. Summary

As a conclusion, all the actors, messages, channels, allies and activities are put **together** so to understand the next actions needed to perform, the resources to be committed, and contacts to be made, in the pilot field activities.

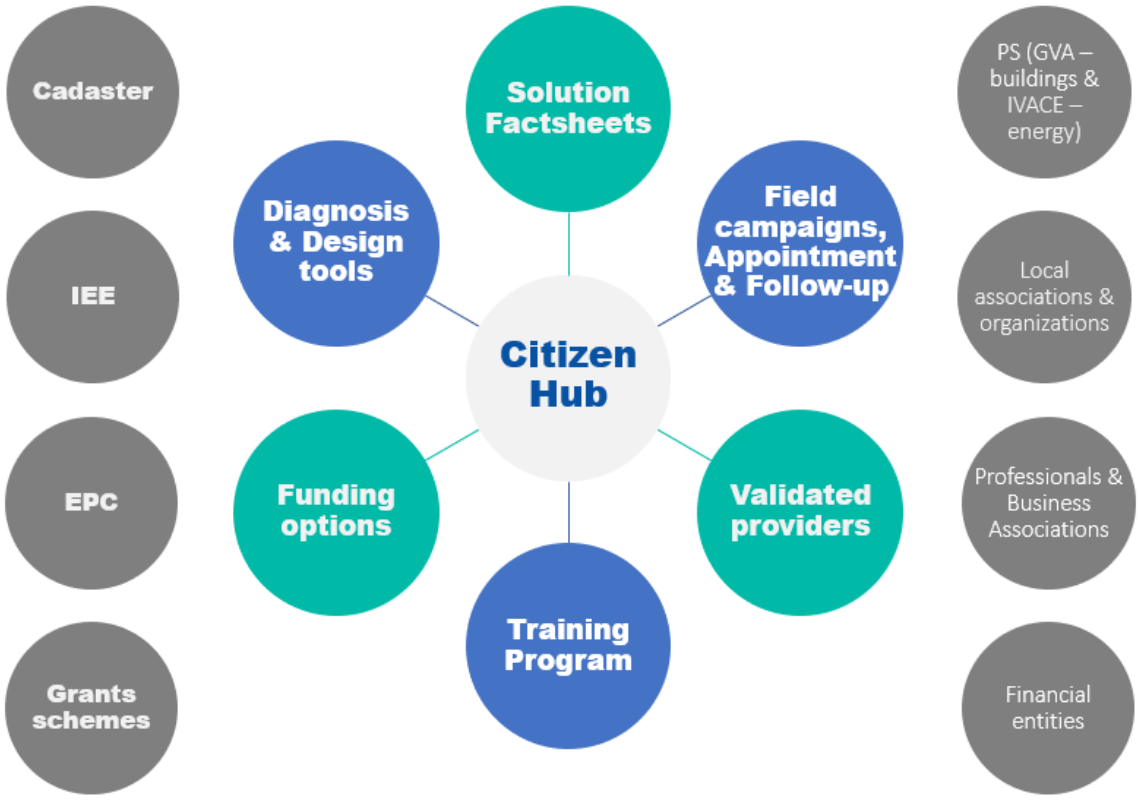


Figure 27.- Valencia citizen engagement ecosystem

4.2 Rotterdam - NL

4.2.1 Needs, motivations & barriers

A. Methodology

In order to understand the needs of homeowners and opportunities for engagement campaigns and several personas, representing the different customer segments, have been created for the pilot cities. The personas for pilot city Rotterdam have been created based on sociodemographic data combined with the methodology that will be explained in the following sections.

Empathy maps

The empathy map is a tool that is used to get a deeper understanding of customers in the target group. The thoughts and feelings of the user related to a certain topic are being mapped when filling in the empathy map, which helps developing a user-centred mindset. The main question relevant for Save the Homes is 'what are the thoughts and feelings of this persona on the topic of home renovation?'.

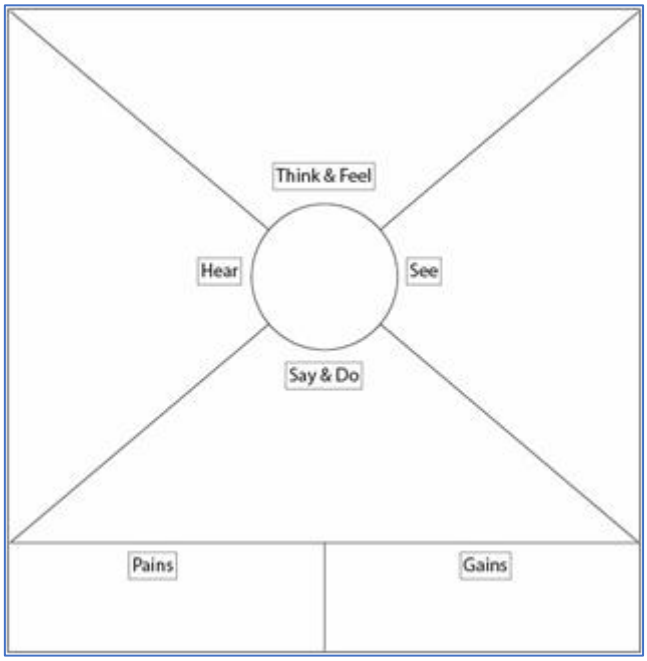


Figure 28.- Empathy map template

The layout of the empathy map (Figure 28) is rather simple and self-explanatory. It has two columns; pains and gains, and four quadrants; think & feel, see, say & do, and hear:

- In the quadrant 'think & feel', the main thoughts about aspects related to home renovation are written down.
- The quadrant 'see' relates to what the persona notices in daily life such as neighbours who are renovating or ads related to sustainability.
- The quadrant 'hear' contains the aspects from where the persona gets their information, for example friends or colleagues but also newspapers or television. This quadrant is closely related to the channels that can be used for reaching the persona.
- The fourth quadrant is 'say & do' and contains the action of the persona, related to home renovation or sustainability. This does not mean that the quadrant is empty when a person has not done a home renovation yet, it also contains aspects such as maintaining their dwelling, which

could be an opportunity for home renovation, or asking relatives and friends for advice on home renovation.

- The 'pains' column contains the main barriers for this persona and the 'gains' column contains the drivers and opportunities. The information in both of these columns is directly related to the information put into the four quadrants. The two columns can be seen as some sort of conclusion of the empathy map.[10]

Maslow's 4 stages of learning

Maslow created a framework that describes the learning process of a person. He defined four stages that are related to each other by forming a circle rather than a linear process. The stages can be linked to different 'learning needs'. It is useful to categorise personas into the different learning stages as this makes it easier to define what kind of information or attention they need to get them to join the renovation project Save the Homes and to know how they should be guided though the process.

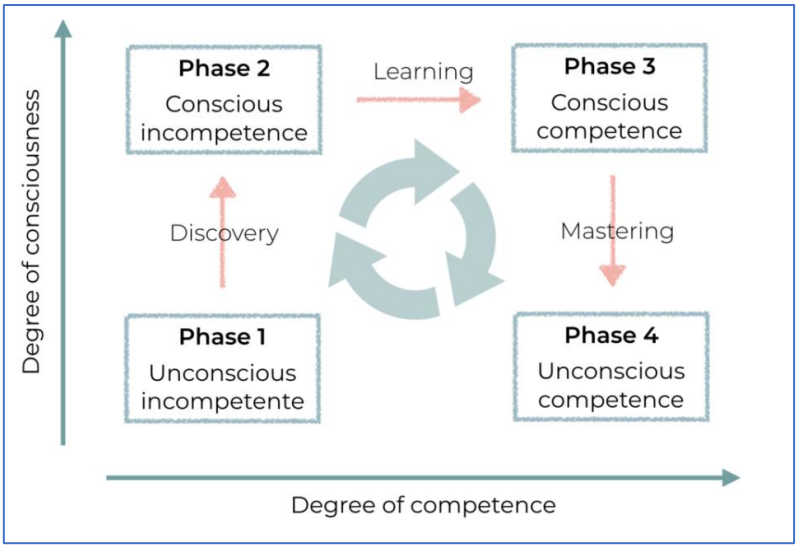


Figure 29.- Learning stages of Maslow[11]

- The first stage is **Unconscious Incompetence**. A person is unaware of the things they do not know or their lack of skill. In this stage the most important aspect is giving this person insight in what they do not know and making them aware, which will make them move from stage 1 into stage 2. They first have to realise and understand why home renovation is important before going further into the topic.
- The second stage is **Conscious Incompetence**. The person is aware of their lack of skill or knowledge and is willing to educate themselves. They need help navigating all the different information available. Information should be presented in a non-overwhelming way. By orienting themselves and gaining knowledge they will move onto the third stage.
- The third stage is **Conscious Competence**. In this stage the person is still learning the new skill and gaining knowledge, but at the same time notices that their efforts are paying off. In this stage they need help using all the knowledge they gained to make a plan.
- The fourth and last stage is **Unconscious Competence**. The person mastered the skill or knowledge in such a way that they are applying it automatically. This is the stage where the person is

[10] K. Tadema, 'Jouw gids voor het maken van een empathy map in 2020', *We Think Next*, 2019, https://wethinknext.com/empathy-map/, (accessed 08-12-2020).
[11] I. de Groot, 'With trial and error, insight in your learning process', (picture).

confident enough to take action and implement the plan they created earlier. This stage is also very much about the experience of the person as they are now at the position of sharing their story with others that are still in the first or second phase.[12]

These learning stages have been linked to the Save the Homes personas of Rotterdam to gain more insight in their individual needs and to be able to select an appropriate approach strategy.

A. Engagement research

Six personas have been created for Rotterdam by using the methodology explained above. These personas have been linked to lifestyles and sustainability styles from relevant research to be able to understand the drivers and barriers of the personas even better:

- Vier Kleuren Land is a Brand Strategy Research (BSR) model of the company MarketResponse. The model divides the population into four different lifestyles: red (freedom, flexibility), yellow (harmony, engagement), blue (ambition, control), and green (safety, security). It is based on explaining the influence that a certain lifestyle has on the behaviour of people. The model is used to define people's needs and drivers and helps finding the right channel and message to reach them.[13]
- Vijf Tinten Groen and the follow-up research Vijf Tinten Groener are market researches of the agency Motivaction. The researches separate the population into five 'sustainability groups'. The groups differ in social status and in values (from traditional to modern to postmodern thinking). Each group has a different take on sustainability. The research gives insight into the differences in level of knowledge and the behaviour of the different groups and it describes what communication approach is suitable for which group.[14]

4.2.2 Campaign strategy design

B. Target population

In total, six personas have been created for Rotterdam:

1) Busy, family, career: This persona represents the young families which have settled down in the neighbourhood. These people see sustainability as something that the government should initiate. They might be somewhat interested in sustainability and the climate, however they prioritise convenient choices over sustainable choices. To get these people interested in home renovation, they have to be approached in a personal way. The prospect of a well organised and easy process will make them more interested, as well as the increase in comfort that can be realised by renovating their dwelling.
2) Actively involved, aware: This persona represents people who are already aware of the necessity of living more sustainable. It is not unlikely that these people already improved (parts of) their dwelling before coming in contact with StH/ the OSS. Often, these people are enthusiastic to tell others about the improvements that they did, this makes them perfect as 'local hero' or local ambassador. Important for this persona is factual and clear information and a high quality of work.

[12] Mercer County Community College, 'The four stages of competence', *MCCC*, https://www.mccc.edu/~lyncha/documents/stagesofcompetence.pdf, (accessed on 11-12-2020).
[13] MarketResponse, 'Vier Kleuren Land', https://marketresponse.nl/wp-content/uploads/MR-BSR-Vier-kleuren-land.pdf.
[14] Motivaction, 'Vijf Tinten Groener: Nederlanders op weg naar een duurzamere samenleving', https://www.retailinsiders.nl/docs/5fa05d18-e7e1-4097-b8c0-a76583993d5d.pdf, 2018.

They are willing to invest as long as they get a quality of advice and work that is up to their standards.

3) On budget, socially involved: This persona is very active in the neighbourhood. Sustainability is seen as a vague concept and something that is not their direct responsibility. Local heroes could help making them more aware of what benefits home improvement could bring them. Lack of affordable financing is a big barrier for them.
4) Young, keen to take action: This persona represent starters who just bought their first dwelling. They are somewhat aware of the importance of sustainability, however their knowledge specific on sustainability of dwellings is limited as is their budget.
5) Uninvolved, less informed: This persona represent elderly people. The complexity of sustainability and quick innovations on the topic make that it is often a difficult concept for them to grasp. Therefore, they are not really aware of the importance and possibilities. Main barriers for these people regarding home renovation is that it will be a hassle or that it will cost them too much to be feasible on the short term.
6) Outsider, little interest: This persona represents immigrants who have been living in the target area for a while and feel a connection with the neighbourhood and the social network. Cultural differences and language barriers make it difficult to reach these people and make them aware of the benefits (and necessity) of home improvement.

B. Engagement Approach

In summary, perceptions, motivations, barriers are summarized within the different profiles so to assign approaches and channels for renovation to exploit for communication campaigns:

P	Characteristics	BSR model	How to approach		Sustainability responsibility	Maslow learning stage
			Engage	Channels		
1	Individualistic, freedom, convenience	Yellow: engaged, balanced, fun, friendship	Personally	Social media: twitter, Facebook, Instagram	Government	UI
2	Ambitious, involved, responsible, proactive, facts	Blue: ambition, control, efficiency, prestige	Factual	Newspaper, local newsletter / news email, neighbourhood commission	Individual	CI / CC / UC
3	Safety, norms and values, sparing, dependent, social	Yellow (towards green): safety, solidarity, good company	Personally	Word of mouth, neighbourhood activities	Government	CI / CC
4	Enthusiastic, environmental aware, living in the moment?	Red: Freedom, flexibility, developing	Personally / factual	Social media: twitter, Instagram; word of mouth (family, friends)	Individual	CI / CC
5	Limited possibilities, step by step, dependent	Green: safety, at peace, lenient	Personally	(Local) newspaper, community centre, hobby club	Government	UI / CI
6	autonomous, reserved	Blue/green: reserved, in between ambitious and security	Factual	Social media: twitter, Instagram, Facebook		UI

Table 3.- Communication and community building approaches for Rotterdam pilot

4.2.3 Community Building

As presented in the introduction, community building is the last step of this Task and it builds on the rooting of the communication strategies (including T6.4 marketing materials and T3.5 staff Training Program) in the local context, through the activities to be implemented in T4.1 engagement campaigns.

According to the approaches defined, we need to get to the detected stakeholders and potential allies (D2.1), that would be contacted in order to fine-tune campaigns and implement specific actions.

C. Targeted stakeholders

First part of this section is to involve local organizations in touch with targeted population, which have expertise in dealing and communicating with them, to understand how they decide, plan and think, so to learn how this could affect their choices related to NZEB-renovation, to help defining the right approach techniques.

Therefore, the Sav€ the Homes **Advisory Boards** (StHAB) have a pivotal role in establishing sustainable networks to support the local eco-systems. For this task, the Demand side Advisory Boards are under definition, and a set of activities are to be planned (in virtual environments if needed, due to COVID-19), in the context of the definition of the customer journey (T3.2) and business model (T3.3), and the planning of onboarding activities to be implemented (T4.1).

In this context, community leaders, public figures as well as local "grass roots" organizations that are motivated to support energy efficiency for its public benefits, including economic well-being of community members, and community carbon mitigation goals are included to promote the renovation initiatives. The strategy for the two pilots is discussed with relevant players in order to define the roles of the involved stakeholders. This is harmonized with the T6.4 marketing materials, for the local community to use.

At a city level, the city of Rotterdam co-financed the WoonWijzerwinkel as a one-stop-shop for about 24 other munipalities in the region Rijnmond & Haaglanden. Woonwijzerwinkel has been initiated by Innovatie Centrum voor Duurzaam Bouwen IcDuBo, which is a business-to-business organisation. At a district level, the Rotterdam/Prins-Alexander pilot aims at collaborating with local actors. The efforts of the municipality aims at building a trusted collaboration with the following actors to develop altogether the Citizen Hub of Prins-Alexander. In a trusted collaboration, letters of support should not be needed. To date the following actors have been identified to have a leading rol in the pilot.

- Alex Energie: Energy community started in Feb 2020 with members coming from Prins-Alexander.
- HOOM: Energy cooperative aims at supporting energy communities or comparable actor.

C. Engagement planning

The involvement of the StHABs is capital to adapt research and desk work to operational field, so the preliminary **approaches are validated and improved** through iterative process to be applied during the WP3 design tasks and learning loops implemented on the WP4 demonstration activities, such as:

1) **Contact** candidates, from the ones who signed the Letters of support to others arisen from our mapping research
2) **Project presentation** on joint or separated meeting (according to each member spirit)
3) **Information retrieval** related to their interest or involvement on the designed itineraries
4) **Participation** on project piloting experiences
5) **Dissemination** of project initiatives and results
6) **Commitment** with the long-term Citizen Hub operation

5 The follower cities test

According to Objective 4 (To deliver real benefits to citizens and other stakeholders in two cities as a result of the Citizen Hubs operating locally), the objective is not only to provide the integrated renovation services to the specific homeowners groups identified in the two pilot cities (Rotterdam and Valencia) but also to demonstrate the potential of the Citizen Hub concept to all relevant stakeholders in other municipalities, to regain trust and interest in building renovations and to further expand the Citizen Hub business model.

So, in order to roll out the Citizen Hub concept on a wider scale (regional, national and European), the Citizen Hub models developed for Valencia (ES) and Rotterdam (NL) will be one-on-one replicated for the two follower cities, Sant Cugat (ES) and Ljubljana (SI).

For this stage, follower cities will receive the draft methodology for designing the citizen engagement strategies (whose definitive version can be found on Annex 1 – StH Document 2: Citizen engagement) and assess its applicability in their context.

Sant Cugat – ES

(Fittingness in same country context)

The objective is to test the replication in the same country for Spanish pilot in Valencia and follower city Sant Cugat. The aim is to analyse all the benefits of having the structure and services developed in national language and based on national circumstances, legislation, culture and habits.

Sant Cugat Municipality is assessing the methodology and feedback will be reported during WP4 and WP5 activities for pilot experiences and replication and exploitation activities.

Ljubljana – SI

(Fittingness in different country context)

The objective is to test the replication between EU countries where the Citizen Hub mapping methodology and results for the Dutch city of Rotterdam will be replicated for the City of Ljubljana in Slovenia. The aim is to validate the effectiveness of the replication process between the different EU countries.

The city of Ljubljana is assessing the methodology and feedback will be reported during WP4 and WP5 activities for pilot experiences and replication and exploitation activities.

6 Conclusions

Form **D2.1** For demand and supply side mapping and segmentation data collection and analysis, an engagement itinerary or approach for each demand side segment has been matched according to different generalization strategies based on the state of the art research, and a methodology for designing a proper long-term communication strategy and build an involved, durable stakeholders' community adapted to the studied area is produced.

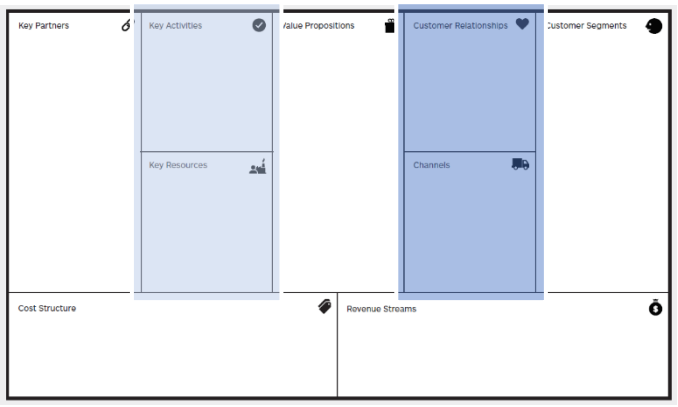
There is plenty of research methodologies to approach the engagement and community building problem for the establishment and survival of a new brand or service, based on the target population or demand segment, but work here is not only interpreting the guidance of those theoretical methods, but to stablish the full ecosystem of the renovation process in terms of demand and walk through those methods according to the local context.

Therefore, the methodology here proposed in Annex 1 derives from both Valencia and Rotterdam experiments and aims at laying the foundations for the definition of a communication strategy based on the **knowledge of the chosen demand segments** motivations, to find the approaching opportunity and to best fit messages and channels. For a durable community building, is capital to **build on available resources** helping the introduction of renovation concepts and **involve stakeholders** experienced in dealing with both targeted demand and offered renovation solutions

This methodology will be complemented with next steps on following deliverables for solutions design (**D2.5**) and supply network establishment (**D2.3**), together with protocols and supporting tools (**D2.4**) and financial mechanisms (**D2.6**), to be tested in **WP3** design tasks and **WP4** demonstrating activities.

Annex 1 – StH Document 2: Citizen engagement

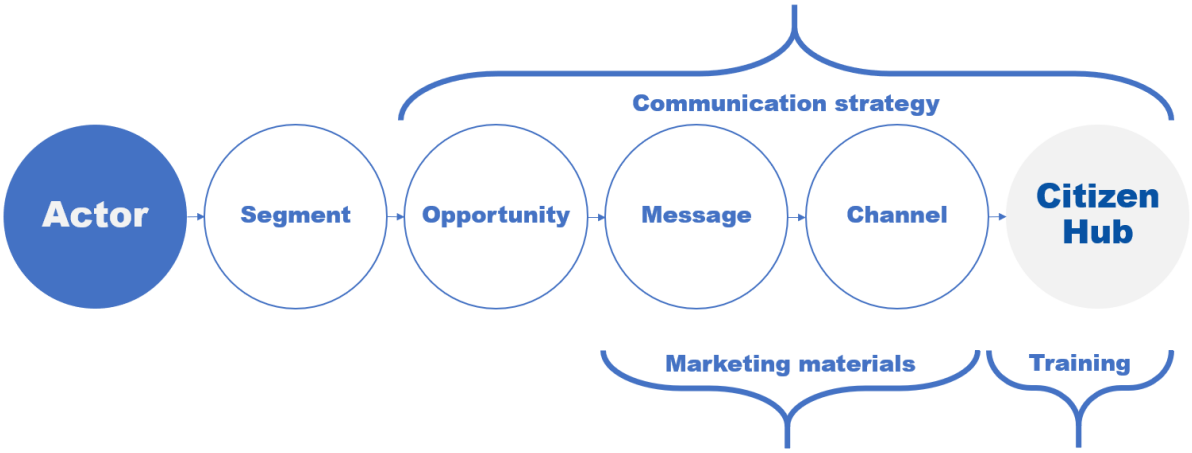
This document will help your Municipality or Region define your local context demand side needs in order to design a proper long-term communication strategy and build an involved, durable stakeholders' community, to continue designing your OSS service and implement your own Citizen Hub. It is structured as a series of tables to be filled, in a step-by-step process that will lead to the definition of your own messages and channels. This document is completed with the corresponding spreadsheet file and both are available on the project web site.



StH - Itinerary methodology – checklist

Introduction

First of all, keep in mind that this methodology aims to draft a set of itineraries for interaction and on-boarding of the previous task selected targets.



The objective is to design a communication strategy for the demand side profiles, by detecting potential opportunities to on-board, appropriate messages and best fitting channels, to get them to the Citizen Hub and their most suitable renovation path. This is to be done without losing sight of the design of adapted marketing materials and training programs.

A. Needs, motivations & barriers

Before starting this journey, have your Mapping tables at hand.

A. 1. Targeted Buildings

> The objective of defining building typologies is to get the greatest effectiveness in the definition of targeted buildings intervention categories

Think of the data sources available at your context level in order to know better your buildings weaknesses and potential solutions (such as mandatory reports or certificates which might be analysed in order to extract information):

_____
_____
_____
_____
_____

Now, for each of your targeted building typologies, note the component (façade, roof, heating system…) on which you could more easily act to improve its energy performance, and the solution type you would propose (change into…, addition of…)

Building typology	Component	Solution type

Not forgetting a potential step by step approach for going from a single measure implementation to a deep retrofitting. Select the most suitable strategies in your context:

- Low maintenance
- Ecology
- Economical
- Passive house
- Lifespan
- Comfort
- Low energy consumption
- Integral
- All-electric
- Other: _____

A. 2. Targeted population

The objective of defining personas is to get the greatest effectiveness in the definition of targeted population wishes and possibilities

Think of the data sources available at your context level in order to know better your citizen motivations and opportunities to on-board on the renovation process (such as administration surveys or scientific studies):

_____
_____
_____
_____
_____

Now, for each of your targeted demand profiles, note the motivations (necessity, pleasure, step-up…), opportunities (existing problems, grants…), objectives (renovation, replication, dissemination…), drivers (status, access, power, stuff) and opportunities of success (very low to very high):

Demand profile	Motivation	Opportunities	Objective	Driver	Success?

B. Campaign strategy design

B. 1. Targeted Buildings

The objective of defining a building typology itinerary is to get the greatest impact from the communication strategy messages and channels.

According to the itineraries' strategy adopted for this step, we start defining the communication strategy structure related to each building stock categories. For each of your building typologies, define the opportunity to renovate (an attribute that clearly leads to a potential intervention), the message or approach and the channel (things or allies delivering the message). Be aware that they can be more than one:

Building typology	Opportunity	Message	Channel

B. 2. Targeted Population

The objective of defining a demand profile itinerary is to get the greatest effectiveness in the definition of the communication strategy messages and channels.

According to the itineraries' strategy adopted for this step, we start defining the communication strategy structure related to the demand side profiles. For each of your demand profiles, define the opportunity to renovate (a moment or action that clearly leads to a potential intervention), the message or approach and the channel (things or allies delivering the message). Be aware that they can be more than one:

Demand profile	Opportunity	Message	Channel

C. Community Building

According to the itineraries' strategy adopted for this step, we need to get to the previously detected stakeholders and potential allies, that would be contacted in order to fine-tune campaigns and implement specific actions.

C. Targeted stakeholders

The objective of building a Demand side –Advisory Board is to get the greatest closeness to the local context from the personas/ profiles' descriptions (fine-tunning) and implement better communication campaigns.

First part of this section is to involve local organizations in touch with targeted population, which have expertise in dealing and communicating with them. On the other hand, community leaders, public figures as well as local "grass roots" organizations that are motivated to support energy efficiency for its public benefits, including economic well-being of community members, and community carbon mitigation goals are included to promote the renovation initiatives. Therefore, the Sav€ the Homes **Advisory Boards** (StHAB) have a pivotal role in establishing sustainable networks to support the local eco-systems.

Think of your natural allies already detected in the Mapping activity and those who have arisen while thinking on potential channels to deliver your messages. Define their adscription (public or private), their team (grouping entities performing the same king of activities, such as condominium, consumers' association…), and objective for contacting them (refine communication strategy, disseminate…):

Entity	Public/ Private	Team	Objective

D. Summary

As a conclusion, all the detected messages and channels, are to be translated into allies, resources, products and services, and put together so to understand the next activities needed to perform, the contacts to be made, and the channels and relations to get, in the pilot field activities:

Messages & channels			
Offered by the Citizen Hub		Citizen hub orbit	
Content	Strategy	External Resources	Allies
To customer journey & business model		To Solutions	To Contacts (AB) and campaigns