



Save the Homes

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1 Executive Summary

The Task 4.6 concerns the realization and reporting of the Sav€ the Homes customers journey, however from the qualitative point of view where quantitative impact (energy, IEQ reporting) is part of D4.7. This D4.8 reports presents the evaluation of the customer journeys for the homeowners in Valencia and Rotterdam Citizen Hubs who went through the whole renovation process and renovated their homes. After summary of the whole cities journeys is given where after the focus is given to the In-Use stop experiences. Based on the In-Use experience, the recommendations and potential improvements are identified for the two cities Citizen Hub models.





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2 Introduction

The T4.6, reported in this D4.8, involved the realization and evaluation of customer satisfaction for Save the Homes after completion of the work in the In-Use phase. Steps 1 and 2 focused on ensuring comprehensive renovation services for building owners, covering technical, financing, and regulatory aspects. This is already reported in [D4.1](#) (Stop 1) and [D4.4, 4.5 and 4.6](#) (Stop 2). The effectiveness of various channels used was evaluated, along with the validation of the Citizen Hub offers and its success as reported in D6.5. Interaction with homeowners during renovation was assessed, with potential improvements identified for the Citizen Hub model. Monitored results (in D4.7) were compared before and after renovation to validate and fine-tune the process, ensuring completeness, consistency, and absence of contradictions in the information provided. Ultimately, a protocol for evaluating the transferability of the Citizen Hub to other cities and regions was defined (as reported in [D4.9](#)), considering ethical guidelines and the transparency and independence of the services offered.

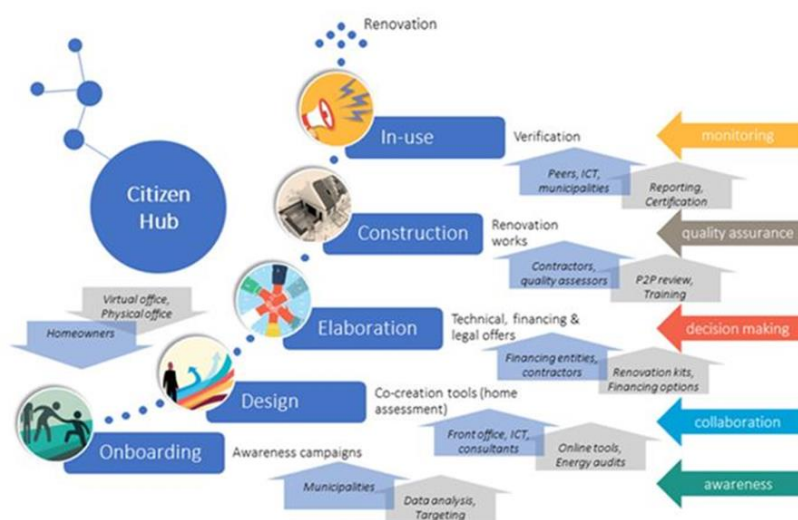
This D4.8 reports upon the two total pilot's customer journeys where it is reported what lessons learnt were identified from evaluation of the tested customer journeys.. Based on this, some final recommendations for future were given.





3 Save the Homes Customer Journey

The customer journey outlines the experiences and decisions made by a customer when engaging with a brand or service, from initial contact to becoming an advocate. If one is not familiar with the Save the Homes customer journey elaboration, it is recommended that before reading the D4.8, the [D3.1 – Save the Homes Customer Journey](#) is read. The customer journey typically includes steps such as awareness, seeking advice, selecting options, execution, and post-purchase experience. For Save the Homes, this journey is tailored to renovation projects, encompassing onboarding, design, elaboration, construction, and in-use phases. Each step involves touchpoints, or points of interaction, which directly influence the customer's experience. Drivers and barriers within each step affect the customer's decision to continue or halt the process. The goal of each phase is to streamline the renovation process, making it user-friendly and appealing, with specific monitoring objectives at each stage. The implementation of a monitoring protocol involves designing the plan, implementing it, and analyzing the results, with each pilot adapting the plan to its resources.



Customer journey model	Save the Homes model
1. Awareness and orientation	1. Onboarding
2. Seeking advice	2. Design
3. Selecting option	3. Elaboration
4. Execution	4. Construction
5. Experience (and inspire)	5. In-use

Table 1.- Customer journey steps. Visual elaboration by A. Sanchis - IVE





4 Valencia Citizen Hub customer journey

4.1 Summary of the Valencia journey

Despite the case that the Valencian OSS model was more focused on improving the touchpoints at the first steps of the customer journey (Onboarding, Design), still some homeowners during the project duration followed the whole journey and renovated their homes according to the IHRS offered through our Citizen Hubs. Valencian customer journey In-Use phase campaigns focused on 23 dwellings, examining two scenarios: those with and without renovation measures. Dwellings without renovations were assessed in alignment with the Design Phase of the customer journey, providing initial assessments, renovation options, and financial guidance. The aim was to enhance customer understanding of renovation needs and instil confidence in the process. Dwellings with energy improvements were studied to compare energy performance before and after renovation, corresponding to the In-Use Phase of the customer journey. These experiences were after shared with other homeowners showing interest in the Onboarding phase, to showcase real-life cases and encourage participation in the renovation process.

Reports were prepared for each monitored dwelling, analysing data and offering personalized recommendations. The reports maintain a consistent structure for both scenarios but provide tailored analysis and recommendations based on the specific situation of each dwelling. Results are available on D4.7.

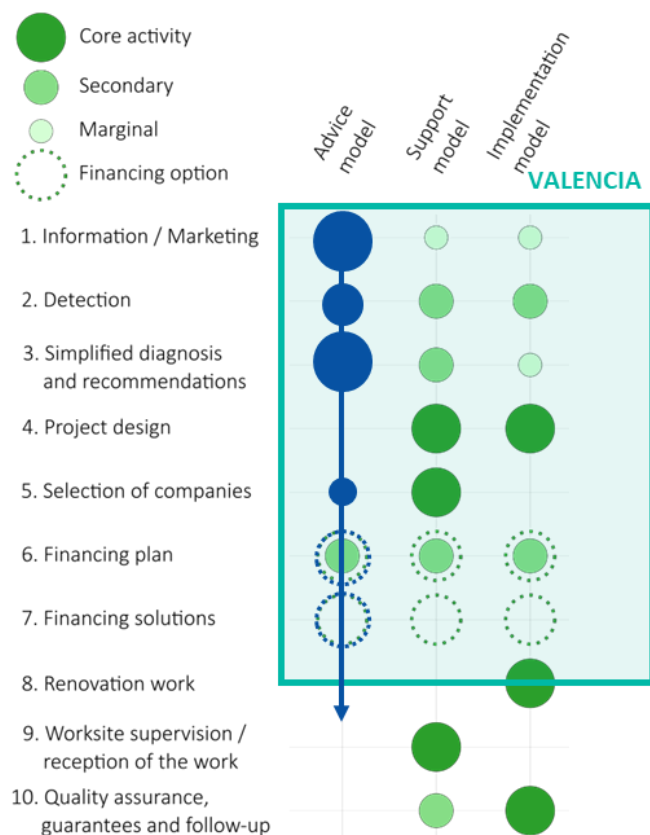
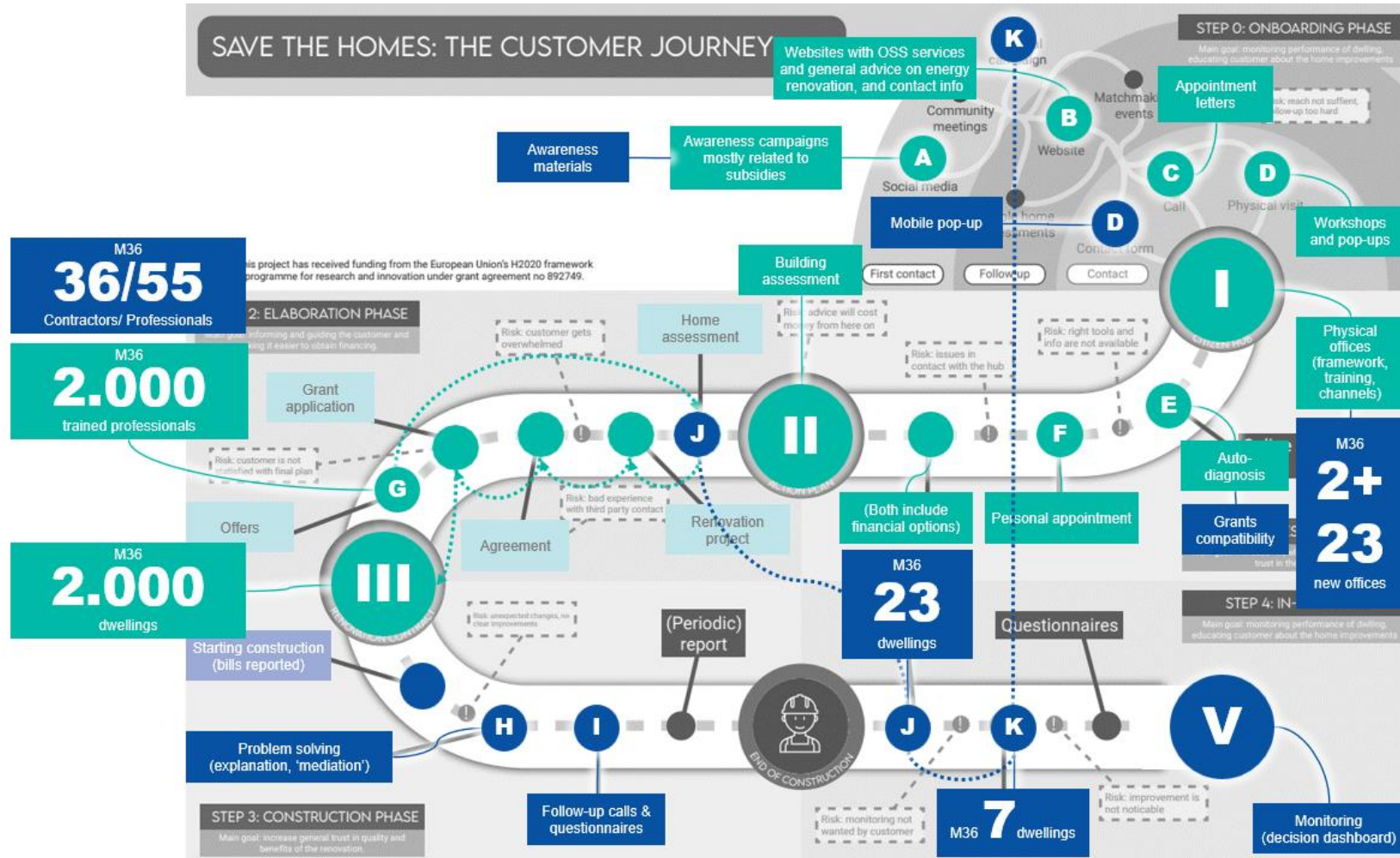


Figure 4.1: Towards large-scale roll out of "integrated home renovation services" in Europe by Christophe Milin, Belgium and Adrien Bullier, European Climate, infrastructure and Environment Executive Agency, European Commission, 2021 (https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2021/7-policies-for-a-green-recovery-in-the-buildings-sector/towards-large-scale-roll-out-of-integrated-home-renovation-services-in-europe/)



4.2 Valuable KPIs related to the whole StH renovation customer journey

The following figure shows what kind of impacts were achieved at the various stops of the customer journey.



4.2.1 A focus on satisfaction

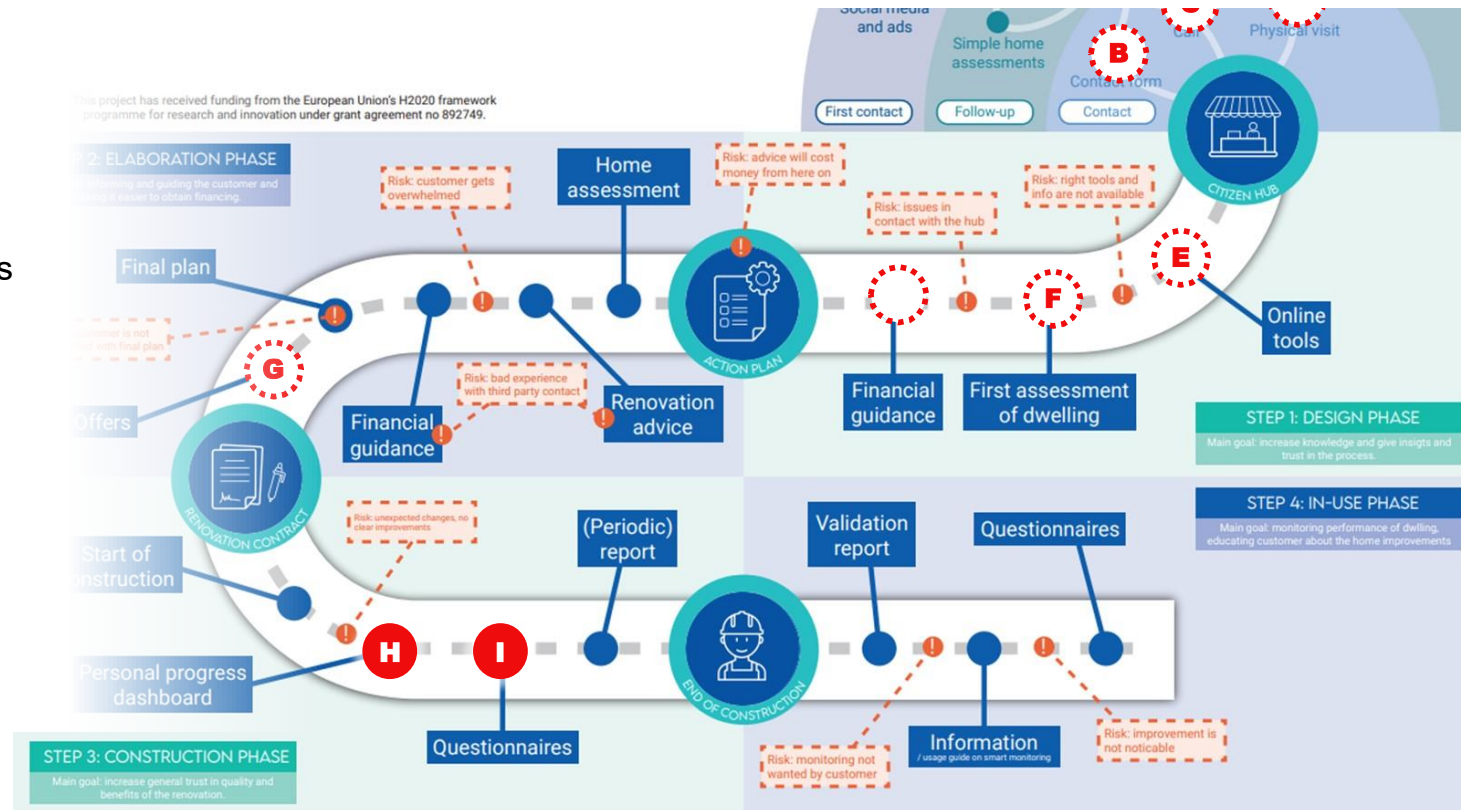
Step 3 – construction phase

The construction phase already included the problem-solving sessions and follow up questionnaires.

Step 3

H. Problem solving sessions

I. Follow-up & questionnaires



H. Problem solving sessions (citizens' school):

The Citizens' School for Energy Renovation was created as an open, free and flexible group of people interested in conducting energy renovation of their houses and buildings. The group allows these people to share their doubts, experiences and advice in relation to the rehabilitation of their homes and buildings, in a way that encourages peer learning and a feeling of community and mutual support.

Some of the main functions of the Citizen School of Energy Renovation are:

- Allow individuals to share their doubts, experiences and advice regarding the rehabilitation of their homes and buildings.
- Allow these people to share references of companies, products, grants, financing, etc. between equals.
- Allow València Clima i Energia and the Energy Office to provide advice and resolve the doubts of these people, collectively.
- Invite experts (public administration, building managers, installers, contractors, banks, etc.) to jointly resolve the doubts of the participants, in addition to presenting services and information that may be of interest for them.
- Inspire people to renovate their homes thanks to the testimonies and success stories shared by other homeowners.

Specifically, 4 sessions have been organised with the Citizens' School:

- May 2023: to present the initiative and let participants share their renovation cases, positioning themselves in the 5 steps of the renovation journey and sharing the doubts that they have and also recommendations for other homeowners.



A. Tabla resumen de resultados

REHABILITOMETRO	1 INFORMACIÓ	2 DISSENY	3 CONTRACTACIÓ DE PROFESSIONALS	4 SUPERVISIÓ DE LA CONSTRUCCIÓ	5 GAUDIR L'HABITATGE REHABILITAT
	PASOS 1-5: es un proceso en bucle, se va de un paso a otro continuamente.				
PROCESO	PASOS 1-2: habría que hacer un estudio previo al diseño, sobre todo en el caso de los edificios.	PASOS 2-3: antes de la contratación, hay que acceder a un buen asesoramiento de empresas y materiales con los que trabajar.			
DUDAS	Sobre subvenciones.	¿Qué materiales usar?	¿Cómo escoger buenos/as profesionales?	¿Cómo supervisar la construcción sin los conocimientos técnicos?	
RECOMENDACIONES	Para el proceso completo: poner todo por escrito.				
	Contempla desde un inicio todas las posibilidades de rehabilitación energética de tu vivienda o edificio para saber por dónde empezar. Consulta previamente las licencias y permisos en vigor de tu edificio o vivienda.		Solicita referencias a tus compañeros/as de la Escuela Ciudadana de Rehabilitación Energética. Escoge fabricantes oficiales.	Puede facilitar la construcción que el propio fabricante sea quien haga la instalación.	

- July 2023: Guided visit to two private residential condominiums being renovated with an external insulation in the façade. The visit was done by the architect leading the renovation project and had the participation of neighbours of the buildings that could share their story with the Citizens' Schools participants.





- November 2023: Session dedicated to discuss about the decision-making processes in condominiums, therefore involving multi-family renovations. The session was co-organised by VRCP and gathered several condominium managers, besides homeowners to discuss about best practices and challenges of reaching consensus when renovating condominiums.



- January 2024: Guided visit to a house being renovated according to Passivhaus criteria. It was done by the architect leading the project, and let homeowners know more about passive measures to improve their comfort and energy savings. It was particularly interesting since it is an individual house being renovated inside of a multi-family condominium.



Lastly, during the whole period of activity of the Citizens' School, VCE provided an online forum to facilitate doubts-solving and sharing among users and homeowners: <https://climaienergia.com/oficina/forum/>. The forum works as an online exchange point where users can register and ask any question related to the renovation of their house or building and other people can comment and share their experiences. Besides, the staff of the Energy Offices provide also information and answers when appropriate.



Oficina de l'Energia Afegir un tema

RSS

Estat:	Autor	Temes	Fòrum	Respostes:	Visites	Última publicació
		Ventanas para la rehabilitación Per Lucía238, oct. 03 ventanas		2	182	 Per Valica fa 2 setmanes
		Gestores de ayudas Per BegoMS, gen. 11 Ajudes , gestor		3	79	 Per BegoMS fa 1 month
		¿Calentador de gas o termo eléctrico? Per Paco, oct. 26 Aerotermia , Calderas , Climatización		1	193	 Per Oficina Energi... fa 4 months
		Termini de cobrament subvencionis Per Josep, oct. 26 Financiación		1	141	 Per Oficina Energi... fa 4 months
		Certificado Energético Per mrg0239, oct. 06 certificados		1	169	 Per Oficina Energi... fa 5 months
		Resumen de subvenciones y ayudas disponibles Per Oficina Energia, oct. 13 ayudas , subvenciones		1	159	 Per Oficina Energi... fa 5 months
		¿Cómo rehabilitar tu casa o edificio? Recomendaciones y herramientas. Per Oficina Energia, oct. 10 Dudas generales		0	190	 Per Oficina Energi... fa 5 months

I. Follow-up questionnaires:

By the end of 2023, the Energy Offices of Valencia conducted an impact survey to users who have attended different services provided by the project, in order to evaluate the impact of the services provided and to keep tailoring them to the needs of homeowners. The response rate was 21% out of a total of 95 surveys launched (20 valid responses).

From the analysis of the results, the following conclusions can be drawn:

- A significant percentage of those surveyed (70%) have introduced energy improvements in their homes or buildings (changing carpentry, improving insulation, changing air conditioning equipment, etc.) after their visit to the Energy Offices. In addition, a relevant part requested budgets to carry out these actions (40%), which highlights the potential impact on the local economic activity in this area.





- Likewise, it is worth noting the multiplier effect of the advice provided, given that visits to the offices often translate into improvement proposals to their neighbours to fully renovate the building or the installation of insulating systems attached to the exterior of the building (50% of users proposed some renovations at building level to their neighbours).

- Finally, an open field was added to allow users to enter any aspect that was considered of interest. Some of the comments provided are extracted below:

“Thank you very much for the information, support and energy you transmit. Thank you”

“It is a very good service with great professionals”

“I find it very bad that they inform you about the aid but do not help you present it, and even more so knowing how complicated most of it is.”

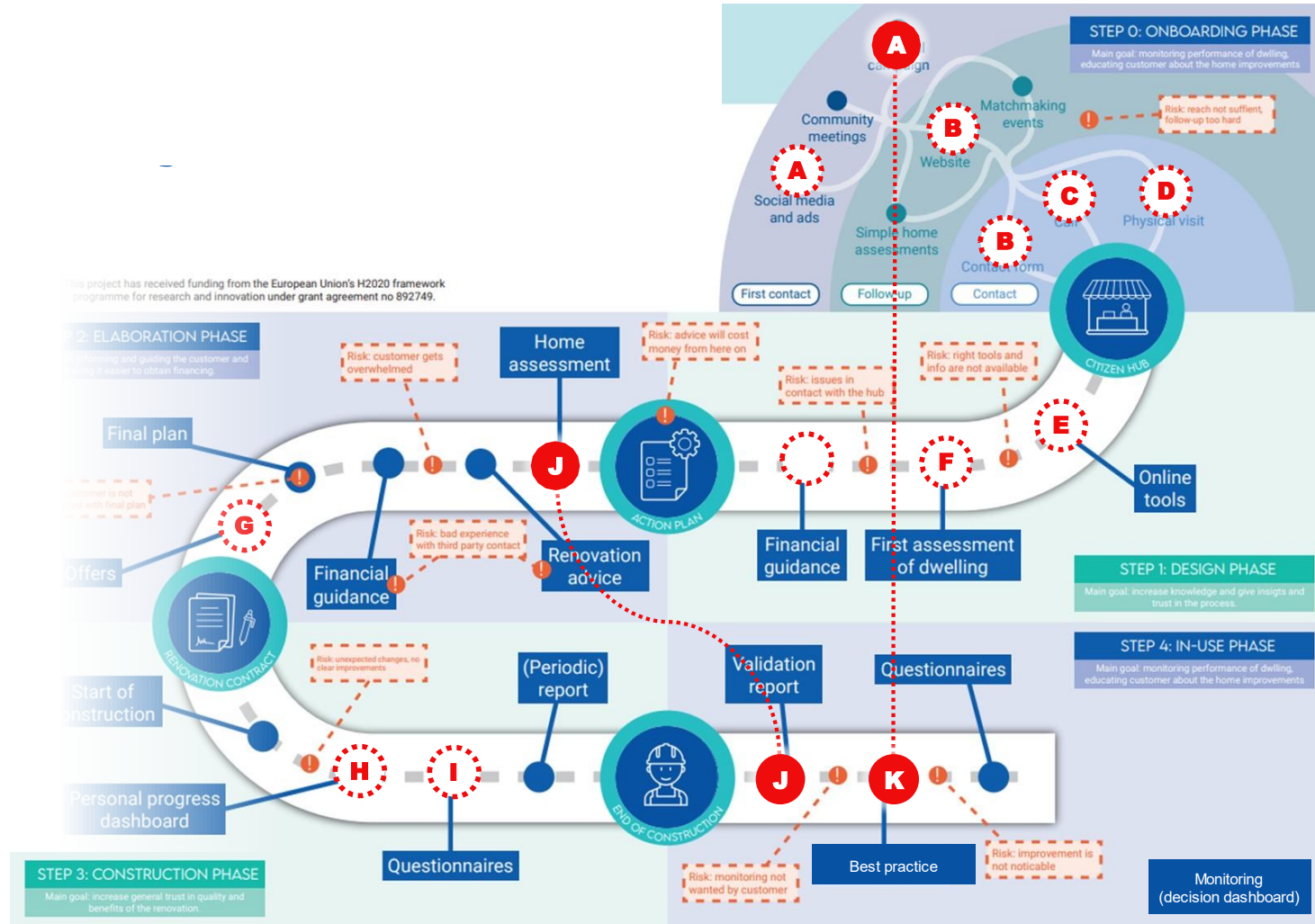


A focus on Step 4 – in-use phase

The In-Use phase included after renovation diagnosis including satisfaction surveys with the home-owners who went through the whole journey as well as monitoring of the total performance of the new state (D4.7) & best practice mapping.

Step 4

- J. After-renovation diagnosis
- K. Monitoring & best practice





K. Monitoring & Best practices: description + numbers...

The objective of the monitoring campaigns was three-fold, on the one hand, allowing the comparison before/after renovation, on the other hand, validating the renovation predicted benefits, and finally, evaluating satisfaction with the renovation and/or the assessment provided by the Citizen hub services. Therefore, the monitoring campaign was designed to integrate both scenarios (before and after renovation), in similar buildings, under similar weather and climatic conditions. Detailed description is provided in D4.7, but, as a summary, some information and figures can be found below:

- The campaign was disseminated to more than 35.000 citizens and was finally performed on 23 dwellings.
- It was performed during 3 consecutive weeks, distributing the sets of monitors for 1 week per dwelling.
- Energy consumption (network electricity, fossil fuels and photovoltaics) and indoor and outdoor temperature and relative humidity were registered.
- CO2 and microscopical particles (dust) was monitored for homeowner awareness.
- Indoor and outdoor thermographic images were taken.
- An energy renovation assessment was provided in three steps (no-cost, low-cost and cost-effective scenarios).
- Images and interviews were performed, regarding wellbeing and satisfaction.

The analysis of the results is summarized below:

- The average potential energy savings predicted to non-renovated dwellings was 60%, which was coherent with the average overconsumption of 70% in cold months detected by monitoring data. Nevertheless, when compared to the real energy savings got by the energy renovated dwellings including measures proposed to non-renovated dwellings, **estimation turned out to be oversized**, since they only got an average of 40% energy savings.
- Renovation benefits previewed included better thermal comfort and wellbeing, but renovated dwellings still reported humidity and draft as indoor environmental stressors and uncomplete thermal comfort. On the other hand, **stressors such as noise or dust have disappeared** in renovated dwellings, as much as symptoms like headaches.
- Half of the monitored dwellings involved an already done renovation, for which homeowners were satisfied. **Half of them were enough satisfied with their renovation as to share their results** in terms of data, images and testimonies within the success stories map (7 success stories)





4.3 Meaningful takeaways from the KPI evaluation

An analysis of previous metrics and KPIs, mainly the ones focused on distilling customer satisfaction within the different touchpoints, throws the following takeaways:

H. **Problem solving sessions (citizens' school):**

- Peer-to-peer exchanges and guided visits to buildings and houses being renovated are highly appreciated by homeowners, as it has been seen both in the number of attendees to the visits as when directly asking them about their interests.
- The online forum is used by participants to read but not so much to actually register and write their comments or questions. Therefore, it needs to be redefined to properly offer a useful tool for users.
- Some of the sessions of the Citizens' School attracted more technical professionals, having quite a high participation of self-employed contractors and SMEs. This needs to be taken into account since the capacity of the sessions is limited (because of space and logistics) and in some cases, private contractors may leave citizens and homeowners without space to participate.
- The participation of homeowners that have already renovated their house is still challenging as they don't feel the School can provide them any added value. For that reason, it has proved to be more successful to work with professionals in charge of the renovation projects and involve the homeowners afterwards with a lower responsibility and giving them something practical in exchange, such as support in measuring and understanding the impacts of the renovation.

I. **Follow-up questionnaires:**

- The survey confirms the impact of the services offered in the Energy Offices, as a big part of the homeowners did some improvements in their houses after receiving the support.
- It is true that the survey, as it was voluntary for homeowners, might have been answered mostly by the most motivated users or the owns that were somehow proud of having advanced in their renovation journey and, therefore, it might be biased and to optimistic.

K. **Monitoring & Best practices:** in this context, conclusions have been reported in D4.7, which can be summarized as follows:

- Onboarding actions target and reach many citizens, in the form of events and publications, which, even if they consume some time, worth the effort when compared to the average time dedicated to each potential user. For this reason, actions are focused on that stage. Even when its conversion rate is quite low, it is enough, since OSS have limited resources!
- Management of consultations is quite simple because of the use of some automated processes (tools), making the assessment easier and the time spent efficient.
- It is to be noted that the low conversion rate into stage 2 (users assisted in the design of their potential renovation, i.e., dwellings monitored in a pre-renovation stage, and therefore advised) is due to the limited resources of the OSS to perform visits, exhaustive auditories or monitoring (human resources, sensors and monitors)
- Post-renovation assessment is quite less successful than pre-renovation, which is evident because of the reduced incentives (they already renovated).
- Even so, more than a half of them found the experience interesting enough to consent to share their experiences with other users, in order to let them know the benefits of their renovation.
- The negative side of these data is the monitoring actions themselves, in terms of time spent. This has two readings: on one hand, some actions (e.g., visits) consume too much time, so



they do not worth it; but on the other hand, they throw high conversion rates and help to validate or improve the customer journey and explain the benefits of the renovation and drawn attention to its bottlenecks or problems.

Therefore, main takeaways from KPIs are:

- When comparing time spent per user, automatization is something to address, since it has proven to be highly efficient.
- When comparing users reached, publications are the most effective.
- When comparing conversion rates, visits are the most successful.

4.4 Lessons learnt

According to previous conclusions, and in line with other actions throughout the whole customer journey, some lessons learnt are described below.

4.4.1 The virtual Citizen Hub

Automatization is something to address in each step of the customer journey, it helps delivering a harmonized service all along the territorial deployment of a Citizen Hub network and saves time while delivers results reliable for users.

The virtual citizen hub is or could be composed of open and/or internal tools, that act as a support the physical citizen hub, but also an extension of it, since new users can be drawn into the energy renovation thanks to its use.

In this context we can analyse the data comparing renovation projects which were assessed through the pre-diagnosis tool renovEU, and those which were not.

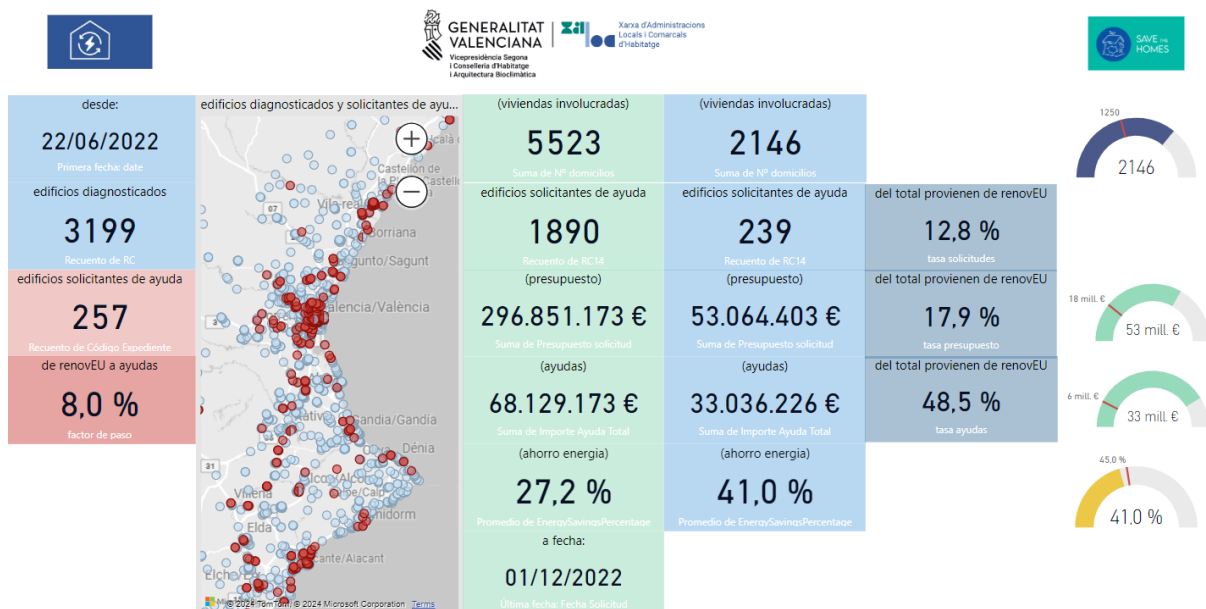


Figure 1.- analysis of renovEU data and renovation subsidies applications.

From Figure 1 we learn that:

- 8% of the users of renovEU applied for a renovation grant, meaning that they designed and formalized a renovation project. This by itself can be not quite meaningful, until you compare results of those renovation projects which were initially assessed with the renovEU tool, with the ones that did not use it.
- renovEU projects represent the 12,8% of the energy renovation subsidies application submitted.



- They are more efficient, saving 41% nrPE, compared with the 27% saved by the rest of the projects.
- Therefore, they concentrate the subsidies allocation (48% subsidies go to renovEU projects).
- And also mobilise higher investments and dynamize the renovation market (18% of investments come from renovEU projects).

4.4.2 The physical Citizen Hub

A delicate balance between effective (low resources-consuming) actions and successful (high resources consuming) actions has to be implemented, taking into account that the financial model is completely based on public funds and free of charge services.

In this regard, we have seen in previous sections how publications are the most effective actions in terms users reached, consuming very few resources compared to the average time dedicated to each potential user, have proven user satisfaction with its content since, e.g., form the small 3,5% of people who viewing the dissemination content have clicked on the extended information, the quite significant 45,7% of them registered to participate in a certain activity.

On the other hand, visits are the most successful actions in terms of conversion rates, but in exchange they consume not only a big mount of time, but also devices and rewards. They also proof user satisfaction, since e.g., 54,5% of the monitored dwellings accepted to be included on the success stories map and share their experience and results.

Therefore, the combination of focus in the first stages of the customer journey by means of making available massive reliable information, performing eventual personalized evaluations, and making available a close accessible interlocutor has proven the Citizen Hubs' services a success in terms of dynamizing the renovation market around their physical deployments.

This assertion is also based on the analysis of the data comparing renovation projects located in municipalities with a citizen hub deployment, and those which are not.

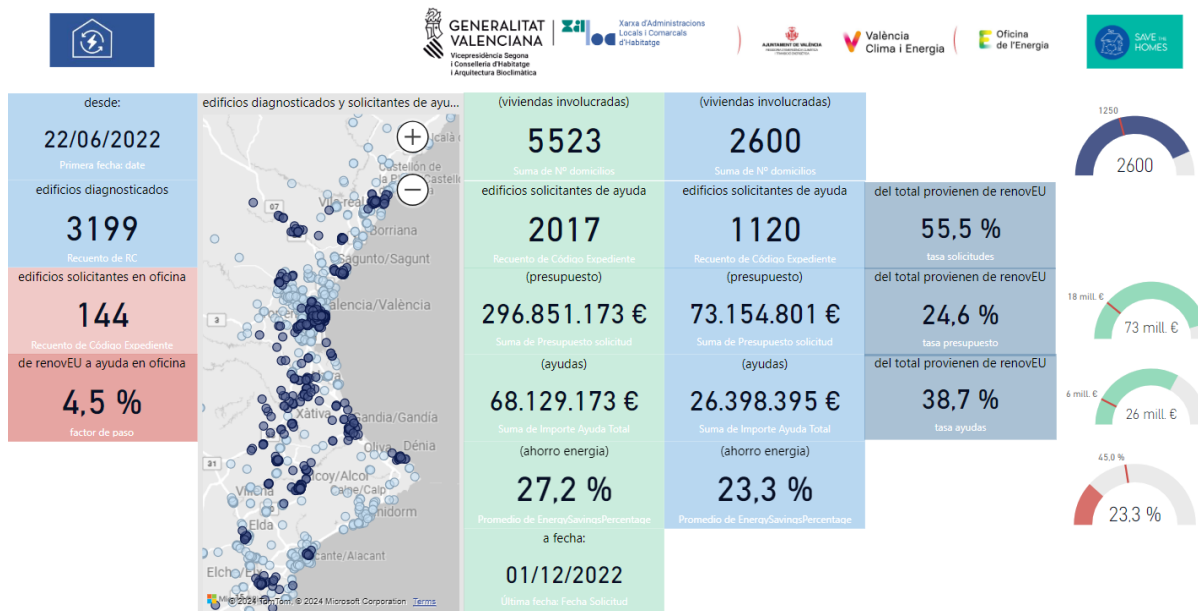


Figure 2.- analysis of renovation subsidies applications data and Citizen Hubs location.

From Figure 2 we learn that:

- Citizen Hubs rely less on the renovEU tool since its use rate (4.5%) in their municipalities is lower than the global rate (8%). This can be explained precisely by the existence of a close accessible interlocutor in these municipalities.



- 55% applications, come from municipalities having a Citizen Hub, although they hold the 44% of the whole region dwellings. This shows a renovations excess related to the average of the region of 0,44 renovations per 1000 dwellings.
- Energy savings stay average with global data (even a bit lower), showing a conservative behaviour in physical recommendations compared to optimal virtual ones. Maybe also means that recommendations are more adjusted to citizen profile.
- Therefore, they concentrate the 38% of subsidies, showing a subsidies achievement excess related the average of the region of a 14%.
- These less ambitious projects, still efficient in terms of concentrating subsidies, trigger smaller projects, representing just the 25% of the total investments triggered.

4.5 Recommendations for future

According to previous sections, this chapters deals with potential improvements and considerations for future actions and citizen Hubs services' re-design:

On the targeting & participation:

- Rethink the online open forum of the Citizens' School to motivate users to not only read what is there but also register and write comments and questions themselves.
- Give priority to homeowners in the registration and participation of certain activities of the Citizens' School that may be attractive also to private contractors, so the School maintains its focus on citizens' support and peer-to-peer exchange.

On the message & drivers:

- Estimates must be offered with great caution, since the potential objective savings of a renovation also depend on the use of the home by its occupants, which is usually more relaxed, due to the savings they are perceiving. This goes in parallel with the behavioural workshops and dissemination activities carried out by the citizen Hub, which will bring closer estimations and real results, closing the detected performance gap.
- Benefits of energy retrofitting have to go beyond energy bill savings, environmental care or thermal comfort, and relay also in interesting collateral effects, such as elimination of other stressors such as noise or dust, which are also related with symptoms like headaches or respiratory problems.

On the means & channels:

- Follow-up automatization would help improving previous points, by better segmenting users for properly addressing their concerns, thus delivering the specific message with the best adapted service (e.g., citizens school topics and speakers design, renovations' estimations or behavioural change advice...).
- Well documented success stories, experiences, benefits and so on should be continuously disseminated, since they have proven to be a channel getting to a great audience and consciousness changing. Introducing some gamification elements such as access for first ones or small rewards for those who finish some tasks also helps going from awareness into action.
- Visits for personalized assessment or collective best practice exhibition should continue. They are the most consuming, but also the most valued. Automatization on those processes might free resources for implementing those activities or campaigns at least twice a year (summer & winter seasons).





5 Rotterdam Citizen Hub customer journey

5.1 Summary of the Rotterdam journey

Rotterdam stands as a beacon for the Save the Homes initiative, with a collaboration between the municipality and Alex Energie pioneering home renovations. The journey for residents toward renewably powered homes with zero energy consumption began with a simple query from a concerned citizen to Alex Energie, sparking a community-driven effort towards sustainability. Mobilizing residents involved personal outreach, with door-to-door communication and informative sessions led by volunteers and energy architects. As the project progressed, residents were empowered with knowledge through detailed presentations and financial tools to aid decision-making. Despite initial setbacks in contractor responses, the formation of a construction collective proved instrumental, significantly reducing costs and streamlining the implementation process. Throughout the construction phase, efforts were made to minimize disruption to residents' lives, with careful coordination among the "jobs team."

The In-Use phase included monitoring and satisfaction evaluation in the 15 homes that have done a deep renovation, achieving an energy reduction over 55%. This approach is getting follow up in two more projects. Furthermore, in the collective purchase there have been 33 homes that participated, with 80 measures. Upscaling is slow, because the lack of workforce, therefore there is currently no active acquiring of new homes. But tackling this bottleneck is crucial as you need a steady supply to satisfy the demand side.

Despite challenges, the commitment to quality remained paramount, with ongoing evaluation and resident feedback shaping the project's evolution. Residents praised the structured approach and gradual realization of the project's goals, highlighting the importance of community engagement and thoroughness. In addition to personal interactions, informational materials and interviews with sustainability advocates enriched the journey, fostering a deeper understanding and commitment to a greener future.

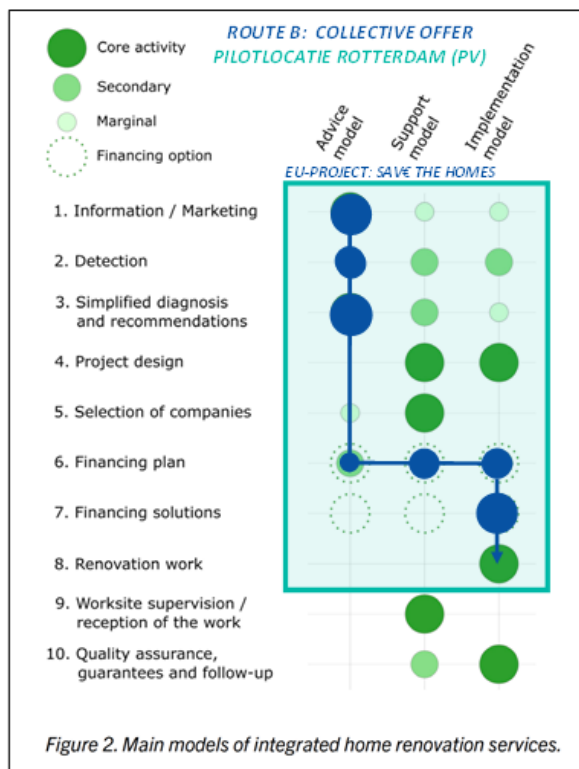


Figure 5.1: Towards large-scale roll out of "integrated home renovation services" in Europe by Christophe Milin, Belgium and Adrien Bullier, European Climate, Infrastructure and Environment Executive Agency, European Commission, 2021 (https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2021/7-policies-for-a-green-recovery-in-the-buildings-sector/towards-large-scale-roll-out-of-integrated-home-renovation-services-in-europe)



5.2 Valuable KPIs related to the whole StH renovation customer journey

The Figure 5.2 below depicts the impacts achieved at various touchpoints of the customer journey. In Rotterdam, during the final phase of the Save the Homes project, two streams emerged. The objective was to orchestrate multiple streams of deep renovations, each encompassing 15-20 households. These pilot projects aimed to showcase the efficacy of this approach, demonstrating its cost-effectiveness and expediency in enhancing residential properties. Specifically, this stream targeted deep renovations with energy reductions exceeding 50%. However, its success heavily relies on the availability of skilled labor across various disciplines. Delays in labor availability can impede project progress, as evidenced by the postponement of targeting the Bazelbuurt area, with over 350 homes, due to labor availability constraints.

Despite this, residents in the neighborhood expressed a desire for improvements, prompting Alex Energie to organize a collective procurement round for insulation and photovoltaic (PV) installations. Although differing in approach, resource requirements, and outcomes, these initiatives, denoted as Route B and Route C respectively, can coexist symbiotically, as previously demonstrated in pilot programs.

The 'energy savings route' (depicted in the 5.3 Figure) illustrates the efforts and outcomes of outreach endeavors. Three informational sessions were conducted, with one offering general information and subsequent sessions delving into more detailed explanations. Various informational resources, both physical and digital, were disseminated during these gatherings. Concurrently, five individuals from the community were trained to utilize thermal imaging cameras, empowering them to identify areas lacking insulation. This knowledge was shared among the 55 attendees, resulting in 33 homeowners committing to energy-saving measures, ranging from floor insulation to PV installation, totalling 83 individual interventions. While several companies were capable of undertaking these tasks, a single contractor was chosen for each measure, resulting in the engagement of three distinct companies. The 'energy savings route' primarily corresponds to the initial stages of the customer journey and can be likened to a front-office function.

Conversely, the 'deep renovation route' (illustrated in the 5.4 Figure) primarily addresses the logistical complexities of organizing multifaceted work involving diverse disciplines. This track was executed twice, resulting in two pilot projects encompassing nine and six homes, respectively. Due to the intricate nature of these endeavors, extensive coordination was necessary, leading to 14 meetings for information gathering, decision-making, calculations,



and ultimately, project design. Despite soliciting quotations from seven contractors, none submitted viable offers. Consequently, a building collective was established to undertake the work, followed by rigorous quality assurance inspections post-completion.

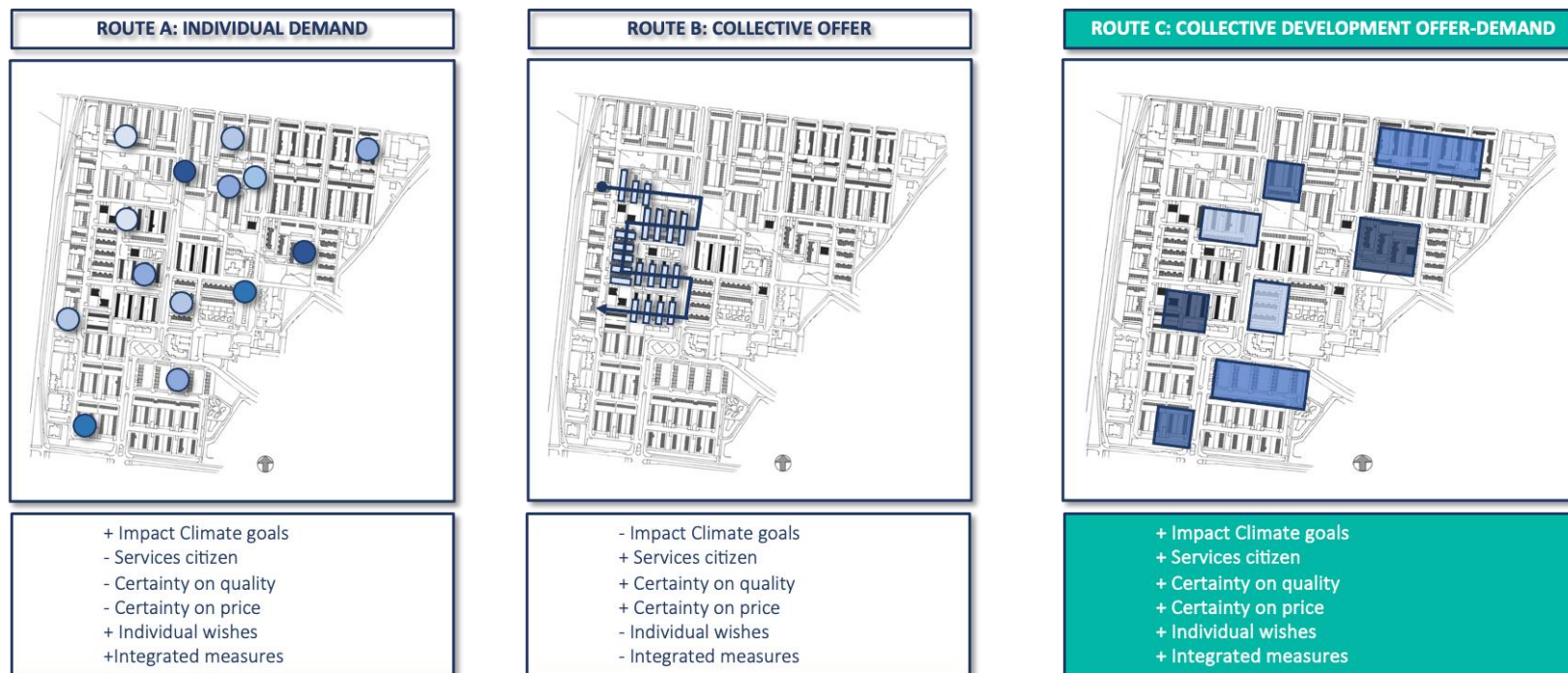


Figure 5.2: Three different approaches in a StH targeted area of Rotterdam

Rotterdam ecosystem

Energy saving measures (reduction <30%)

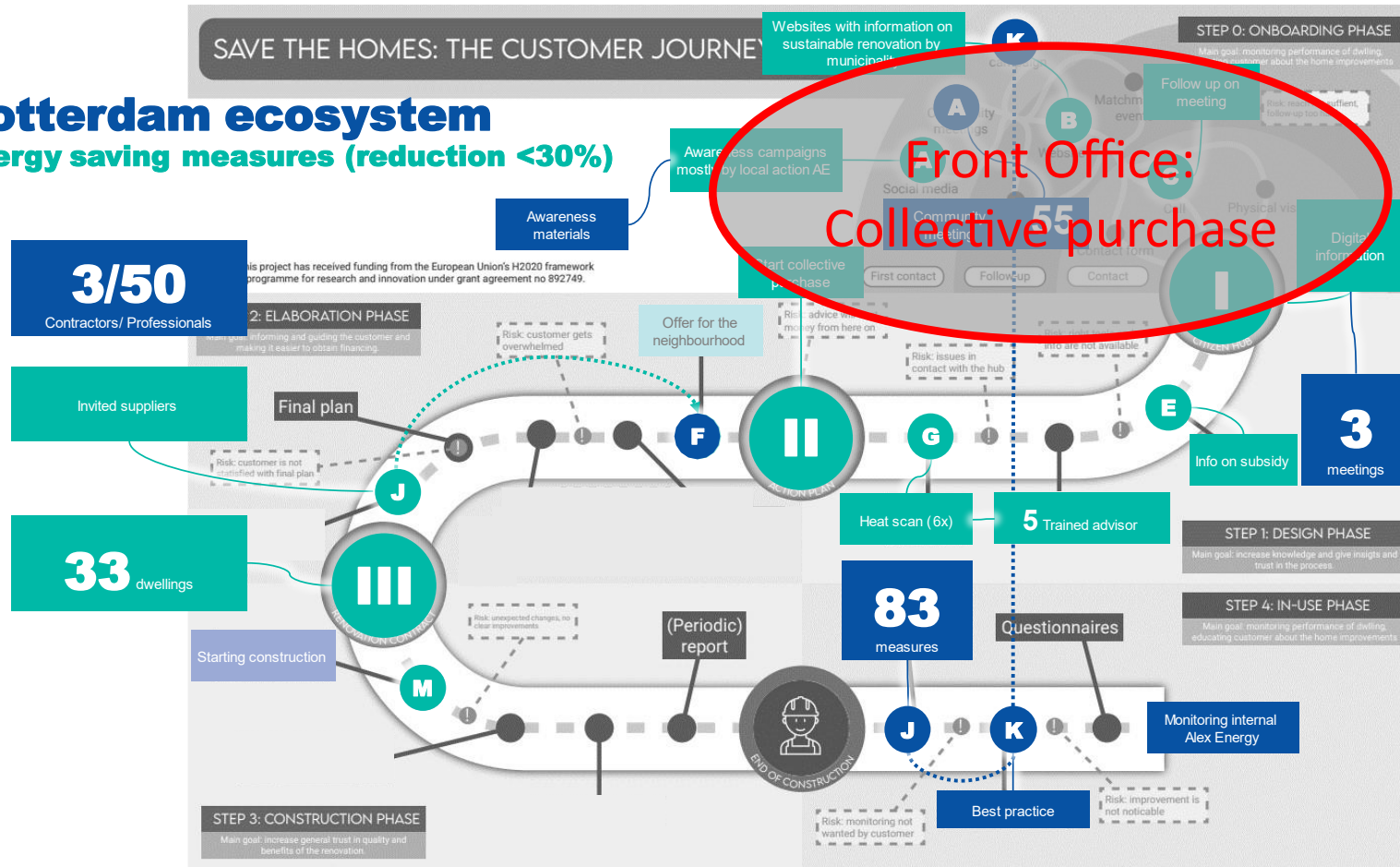


Figure 5.3: Results of the energy savings route



Rotterdam ecosystem

Deep renovation (reduction >50%)

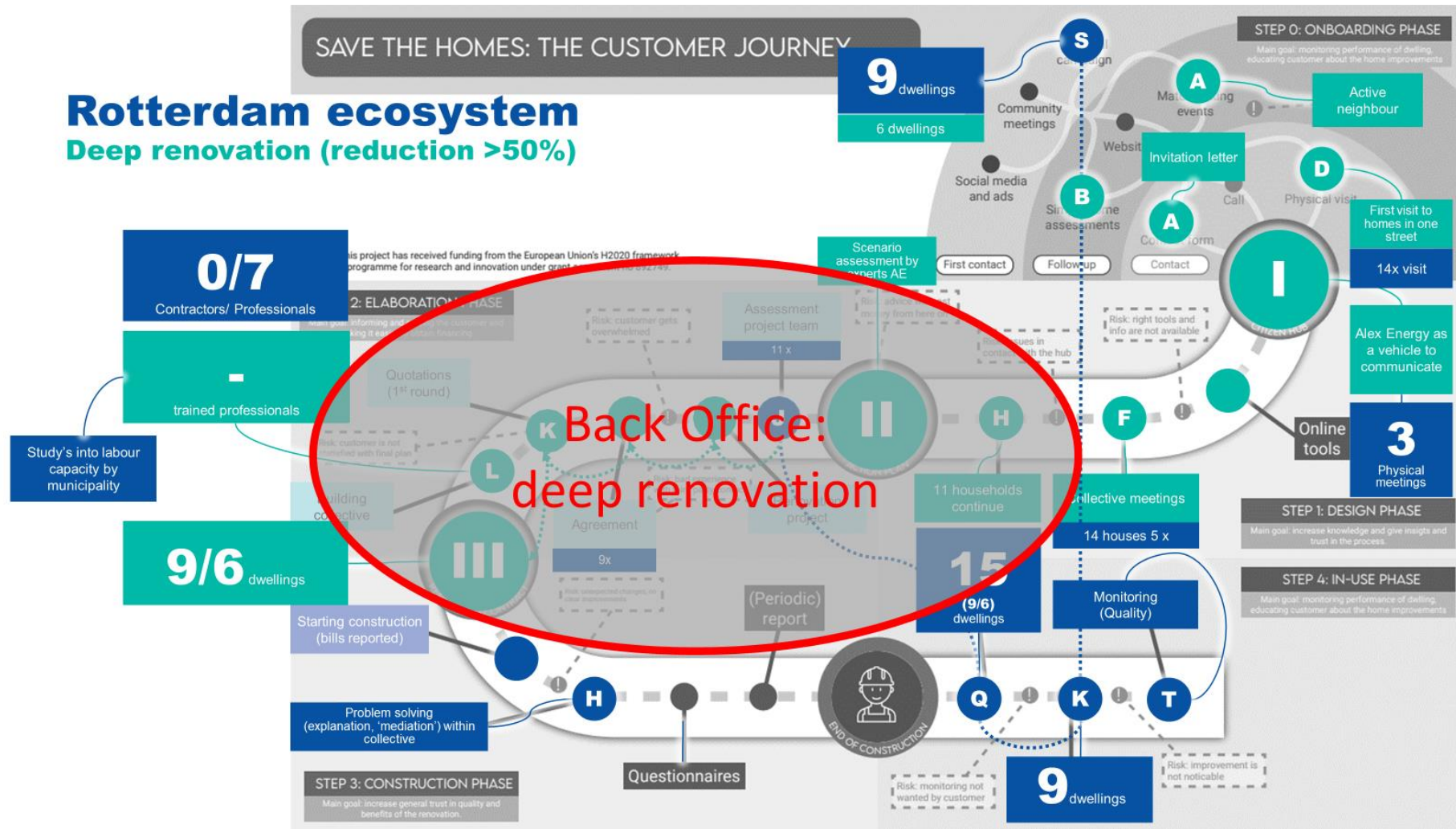


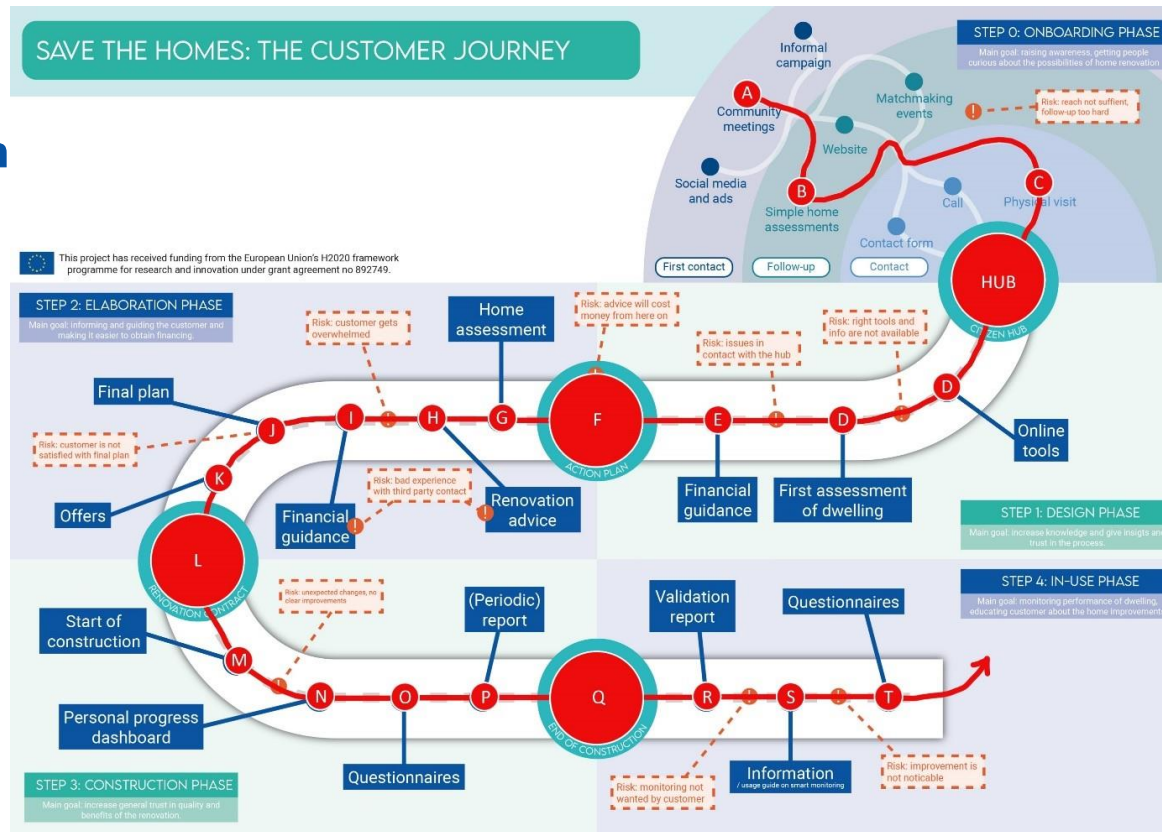
Figure 5.4: Results of the deep renovation



During the In-Use phase, activities such as monitoring (documented in D4.7) and providing feedback to users were integral. In the initial pilot, ensuring the quality of workmanship was paramount, a concern also highlighted in D4.6. This was particularly crucial as the work involved multiple independent parties, necessitating comprehensive quality assurance measures. Hence, a validation process (step R) was implemented to inspect the overall work and offer recommendations for improvement. Notably, this quality check was intentionally scheduled for colder weather conditions, allowing occupants some time to experience the renovated building and providing more accurate feedback.

The residents of the first pilot were highly engaged, and the project leaders from Alex Energie were proactive in disseminating information to all stakeholders. Although there were no formal activities planned by Save the Homes or the Hub, they remained attentive to the outcomes as part of their commitment to the project.

Renovation Rotterdam



Step In Use

- Monitoring (R)
- Information and communication (S)
- App IkWoon (digital tool) (new results) (S)
- Awareness heat scan, Sensi, Readout solar energy (R)
- Making the loop (A)





5.3 Meaningful takeaways from the KPI evaluation

To provide an overview of the timeline required for a renovation, let's outline the steps of the customer journey in chronological order. As illustrated, the total duration extends beyond 20 months, primarily due to the intricacies of the initial pilot project. It's important to acknowledge that decision-making involving significant financial investments naturally requires careful consideration, contributing to the timeline.

The onboarding phase, spanning four months, is relatively swift in this context. Typically, individuals deliberate on their participation in the customer journey, a process that may occur within weeks or potentially extend over years. This underscores the ongoing nature of the neighborhood approach, which is anticipated to persist for an extended duration.

The design phase can be relatively brief owing to the utilization of pre-existing renovation concepts. These solutions, already developed and visible on platforms like www.lkwoon.io, serve as the foundation for discussions with experts. During this phase, adjustments are made to tailor the solutions to individual dwellings. Collaboration among residents facilitates collective review and refinement of proposed plans.

In the initial pilot, the elaboration phase extended beyond expectations. Although a quotation was obtained, it failed to meet satisfactory criteria, necessitating exploration of alternative avenues to adapt the homes effectively. Eventually, the formation of a building collective enabled the commencement of actual renovation activities.

During the in-use phase, project leaders from Alex Energie spearheaded organizational efforts, with the exception of quality monitoring. This phase emphasizes the active utilization and evaluation of renovated spaces, ensuring that they meet the desired standards of functionality and comfort.

Timeline of first pilot OSS Rotterdam



5.4 Lessons learnt from the In-Use phase satisfaction evaluation

There was no overall questionnaire in Rotterdam. However, there were three rounds of interviews with home owners, to gather their opinion. Below are some quote's derived from these interviews:





'I was enthusiastic from the start, I really wanted to improve my home. But how to keep it affordable?'

'The set-up of the project, with Alex Energie, BouwhulpGroep and the building collective, as three independent parties made sure the responsibilities were at the right place.'

'The whole improvement was quite a job, which took longer than expected. I was glad it was finished, where the results are quite good.'

'We did not plan to do a renovation, but one of our neighbours asked us to come and listen, no strings attached. The step-by-step approach appealed to us. And then we were convinced to join the process.'

'For us, it was important that we were not the only one in our street. It is possible to talk to each other about problems, solutions, measures, but also the process.'

'During the meetings we saw mainly older couples stop with the project, they had a different perspective.'

'The building collective was a fine team of people that really worked together, despite they were just a team for this one project.'

'The potential risk for us were diminished by all the professionals involved. Alex Energie, BouwhulpGroep, the building collective as the collective manager, made sure we had confidence in the project.'

'I was sceptical in the beginning, I had to be convinced. But in the end the bigger issue and the solution became clear to me. I wished I had known that beforehand.'

'The building collective did a really good job. However, in the future more has to be put on writing, to cover all the risks, also for the building collective and manager themselves.'

'The organising role of the manager, the existing solutions and the differences between houses make it a complex work, that I could not have done without the team. Perhaps I would have come to the same approach but ending up with the contractor. Then I would have stopped the plan, because of the price. So, after all it was a good choice to join.'

These interviews are not statistical representatives for the outcome, but based on the remarks it was concluded that people are satisfied with the process and the result.

5.5 Recommendations for future

The process and outcomes of this project have garnered considerable interest among the occupants. The collaborative efforts of the energy cooperative, Alex Energie, the consortium partners such as BouwhulpGroep acting as a knowledge partner, and the building collective under capable management have proven to be robust and effective. Particularly noteworthy was the project's ability to overcome challenges when no contractors were willing to engage with private homeowners. Addressing this issue presents a complex challenge entrenched within the prevailing mindset of the sector.

The concept of a building collective emerges as a potential solution to this dilemma. However, for this model to succeed, contractual arrangements must adapt accordingly. Homeowners seek simplicity with a single contract partner, while self-employed individuals require clarity regarding their specific responsibilities. Hence, there is a pressing need to delineate risks and allocate responsibilities accurately within contractual agreements.

In the context of scaling up, establishing a steady pipeline of housing and renovation projects is crucial. This ensures that the building collective maintains a consistent workload, fostering sustainable operations within the community. Achieving this requires legal adjustments that support the conducive climate for collective efforts in the construction sector





6 Conclusions

The Valencia customer journey was crafted to encompass essential stages, notably focusing on onboarding, evaluation, design, and formalization. These steps were designed to align with the overarching objectives of the citizen Hub's public service ethos:

- **Onboarding:** A pivotal stage aimed at reaching a broad audience to instigate a shift in consciousness. Publicity campaigns were deployed, disseminating general messages promoting energy savings and behavioral change, thereby fostering environmental responsibility among citizens.
- **Evaluation:** Citizens were encouraged to take action through meticulously designed renovation packs tailored to their needs and aligned with existing incentives, such as subsidies. This facilitated the transition from awareness to active participation.
- **Design:** A comprehensive approach ensured presential services were accessible throughout the territory, providing a platform for citizens to voice concerns and receive tailored solutions adapted to their circumstances. This personalized approach fostered trust and engagement.
- **Formalization:** Transparent processes and registries showcased trained, validated professionals and contractors. This not only instilled trust in the market but also empowered citizens to make informed decisions while remaining independent.
- **Validation:** Continuous collection of renovation examples and experiences facilitated learning and improvement of the citizen Hub service. Successes and failures were analyzed to refine strategies and enhance service delivery.

The Rotterdam customer journey, although centered on design and formalization, elucidates the realities of renovation processes. That is not a problem because within the journey several tools and steps are developed that can help people in their own journey towards a sustainable home. It is about getting people on board, showing them solutions that fit their home, and make sure that it can be executed, financially as well as technical. Independent information on solutions alleviated concerns, underscoring the role of the Hub as a trustworthy source of information and a facilitator of connections between citizens and stakeholders.

The pilots in Rotterdam got enthusiastic results, so the process and the approach proven as efficient & effective. People highly rate the independent information on solutions, and the way things were taken out of their worries. This links closely to the definition of a HUB (D4.5) stating: *'A Hub is a trustworthy place where citizens can get information, in a digital or physical way to get acquainted with (sustainable) renovation, the measures, the finance, and the impact it has on living. Besides information, it functions as a gateway towards contractors, suppliers and intermediates, so that individual homeowners can actual make a step towards execution.'* Now during the Save the Homes trajectory, there was an entity in place that fulfilled (part of) this role.

However, challenges persist in finding an entity willing to undertake the role of the Hub, as there is currently no viable business case. Overcoming this hurdle requires upfront investment to ensure continuity and sustained engagement. While citizens may hesitate to invest without guarantees, municipalities often perceive this role as beyond their purview. Therefore, a collaborative effort is essential to establish a sustainable model that fulfils the vital role of the Hub in fostering sustainable renovation initiatives.





Annex 1

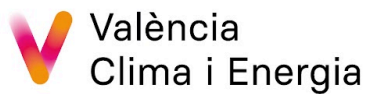
See the follow-up questionnaires used in Valencian pilot in Spanish below.



Encuesta de Impacto del servicio de la Oficina de la Energía_Citas de Rehabilitación Energética

El objetivo de este formulario es evaluar el impacto de su visita a la Oficina de la Energía. Si necesitas algo de nosotr@s, puedes contactarnos en el 961 061 582 o escribirnos un email a oficinaenergia@climaienergia.com.

* Indica que la pregunta es obligatoria



1. **1. ¿Has realizado algún cambio en tu vivienda después de la cita con nuestros asesores energéticos?. Señala cuáles.** *

Selecciona todos los que correspondan.

- No, ninguno
- Cambio de carpinterías (ventanas, puertas exteriores)
- Mejora de los aislamientos (doblado de paredes, colocación de aislantes térmicos)
- Solicitud de presupuestos para hacer alguna de las actuaciones anteriores.

2. **2. En caso de no haber introducido ningún cambio, ¿Podrías señalar los motivos?**

Selecciona todos los que correspondan.

- Falta de tiempo
- Falta de recursos
- Complejidad técnica
- No depende (únicamente de mi)
- No lo he considerado necesario
- Otros motivos

3. **¿Has propuesto a tu comunidad realizar alguna mejora energética en el edificio?** *

Selecciona todos los que correspondan.

- No, ninguno
- He propuesto a mi comunidad pedir subvenciones para instalar un SATE
- He propuesto hacer una rehabilitación integral del edificio
- Instalar equipos de aerotermia y/o instalación fotovoltaica

4. **4. En caso de no haber introducido ningún cambio, ¿Podrías señalar los motivos?**

Selecciona todos los que correspondan.

- Falta de tiempo
- Falta de recursos
- Complejidad técnica
- No depende (únicamente de mi)
- No lo he considerado necesario
- Otro: _____

5. **¿Has experimentado alguna reducción en el consumo (kWh) o importe (€) de tus facturas energéticas desde la asistencia a la cita?** *

Marca solo un óvalo.

- Si
- No
- No lo sé
- Aún es pronto para saberlo

6. **6. En caso afirmativo, ¿Podrías darnos una estimación de ahorros en % en tus últimas facturas?**

7. **7. ¿Quieres añadir algo más para ayudarnos a mejorar?**



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