

TRUST TO TRANSITION

TOOLKIT LINKING LIVED EXPERIENCE TO LOCAL DECARBONIZATION ACTION



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Toolkit linking lived experience to local decarbonization action



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Summary of the LIGHT project

This toolkit is produced as part of the Local Initiatives for Green Housing Transitions (LIGHT), funded by the European Climate Foundation. The project aimed to empower trusted local actors to co-create structural solutions for affordable, low-carbon housing through shared learning and practices in Hungary. Specific objectives included:

- 1) Deepen the collaboration with trusted local actors representing or working closely with groups vulnerable to energy poverty and the energy transition, especially Roma, single parents, and migrants, to better understand their needs regarding housing and heating decarbonization.
- 2) Support the trusted local actors to co-develop with vulnerable groups low-cost, low-carbon solutions and practices to deal with housing and energy vulnerability.
- 3) Collect the co-created local community knowledge of dealing with pressing energy and housing vulnerability challenges to facilitate Energy Efficiency Directive (EED) and Energy Performance of Buildings Directive (EPBD) implementation, to be reflected in relevant EU or national debates on housing or decarbonization.

Executive summary

This toolkit targets decision-makers and a broader group of stakeholders working on the transition to a low-carbon society to inform them about the challenges disadvantaged groups in Hungary face regarding decarbonization, and the intermediation needed to make the transition more inclusive. The toolkit is developed based on action research, using qualitative methods. The 2022 energy crisis, which has led to skyrocketing energy prices for all sectors, has especially affected Hungary due to the abrupt change of the previous government's^[1] flagship utility cost reduction program in the midst of the crisis, with implications for the energy bills of households. We worked with local actors, such as NGOs that are close to disadvantaged groups, to be able to access these groups and gain their trust. After getting in touch with participants who belong to disadvantaged groups, the fieldwork we conducted helped us understand their needs as part of a complex policy ecosystem.

The Lightbringers Foundation is named as a good practice example working on mitigating energy poverty among the Roma community in a segregated and highly materially deprived context in Hungary. We worked with migrants, single mothers, and members of the Roma minority as distinct disadvantaged groups, whose access to safe and affordable energy and housing is usually only one of the key challenges they are facing, as they are intertwined with other forms of vulnerability underpinned by broader systemic barriers these groups have been facing in Hungary. After understanding the needs of the disadvantaged groups, we were able to offer some concrete help for small-scale home improvements.

The selection of measures was determined by the needs of the disadvantaged groups, but also the availability of services offered by the cooperative that made the improvements, and the availability of the products, further limited by logistics and finances. Our toolkit showcases the painting work and key items from the thermal comfort package, such as window and door seals, reflective foil, water-saving aerators, and thermal curtains.

The needs of vulnerable groups should be the central point around which policies to foster the low-carbon transition are created, while intermediaries can play a crucial role in creating an environment of trust. The pilots we undertook were also a demonstration of how their lived experiences, needs, and opinions were included, which can serve as a model to further upscale building renovation and solar installation programs by creating a supportive and solidarity-based community that can help remove some initial barriers faced by disadvantaged groups in their path toward full decarbonization, and offer interim support to improve their thermal comfort. We emphasize that systematic and holistic solutions are needed to address the energy vulnerability of disadvantaged groups and support their participation in the low-carbon transition.

⁽¹⁾ In this toolkit, "the previous government" refers to the Fidesz–KDNP government, which ruled for 16 years and profoundly shaped the systems, norms, and laws that formed the conditions discussed here. Although it was voted out in the April 2026 parliamentary election, the fieldwork for this toolkit was conducted during its rule.

1. Purpose of the Toolkit

This toolkit targets local, national, and European decision-makers and a broader group of stakeholders working on the transition to a low-carbon society. The aim is to inform them about the challenges disadvantaged groups in Hungary face regarding decarbonization, and the intermediation needed to make the transition more inclusive. Experiences of energy poverty, transport poverty, and material deprivation are more frequent and more severe among disadvantaged groups (Martiskainen et al., 2021; Middlemiss, 2022), preventing them from accessing affordable housing, clean and safe energy, and having sufficient funds to cover all basic needs and essential services. In this toolkit, we focus on single mothers, Roma, and migrants as disadvantaged groups who have been facing multiple challenges. Single mothers represent single-income households with additional costs for child-rearing and education, ethnic minorities like Roma face deep poverty, segregation, and discrimination, and migrants' access to affordable housing and the labor market is undermined by legal uncertainties.

The Hungarian context represents fertile ground for growing multiple inequalities and vulnerabilities for these groups, such as policies that support traditional families, weak social support, and stricter migration legislation. Above all, policies that support decarbonization, such as the Napenergia Plusz program, a grant for installing a photovoltaic system in households, are mainly intended for homeowners who can combine the grant with their own financial contribution (National Energy Agency of Hungary, n.d.). Already facing structural disadvantages, these groups face barriers in energy transition, such as a lack of resources for insulation of their dwellings or installing photovoltaics.

The toolkit showcases the lived experience of these disadvantaged groups in Hungary in access to affordable energy and housing, as well as the challenges they are facing in attempts to improve the quality of their home and use renewable energy. By working closely with these groups, which we were able to access through local actors, such as NGOs that represent their interests, we aim to connect the dots between global top-down efforts for decarbonization and the needs, experiences, and barriers of disadvantaged groups to participate in the low-carbon transition.

Our approach is bottom-up, driven by the needs of disadvantaged groups, facilitated by the partnership with local actors in the capacity of intermediaries, involving real onsite implementation of small-scale measures. This aims to feed into what is missing in the overall approaches to enable a socially just and inclusive energy transition. The structure of the toolkit is set up to guide the reader through our process of engagement.

After the introduction of concepts, methodology, and the context, we discuss the importance of working with local actors who are able to provide us with access to disadvantaged groups. Here, we also highlight the work of the Lightbringers Foundation as a good practice in tackling energy vulnerability from a grassroots perspective. In the following section, we focus on the needs of disadvantaged groups in regard to energy and housing services. Next is the selection of the low-cost, low-carbon measures to suit the identified needs of the groups, followed by lessons learned from their implementation. The toolkit ends with future steps needed and targeted policy recommendations. We are aware that decarbonization is a costly process that needs serious and well-targeted funding, such as from the Social Climate Fund, and implementation of selected low-cost measures does not solve energy poverty or remove systemic barriers. However, we treat it as an experiment of the very first steps needed on the path to decarbonization, such as understanding the needs of those 'left behind in the transition', and learning about ways in which we can engage with them, and include them more effectively in the low-carbon transition.



2. Methodology

The toolkit is developed based on action research, using the following qualitative methods: semi-structured interviews, focus group discussions, and participant observations, while maintaining high ethical research standards. We employed action research that represents a collaborative inquiry process aimed at solving practical problems and improving systems for the following reasons:

- The LIGHT project aimed to critically reflect on the context and underlying power dynamics that co-shape knowledge, and reduce inequalities in whose perspectives are heard, as knowledge is produced within specific social and historical settings, where decisions about who can speak, define problems, and set priorities are closely tied to power relations.
- In our project, an important goal is to strengthen the voices of vulnerable groups and service users, communicate their needs to institutions and academia, and support local initiatives, because knowledge production is value-driven, involving value-based choices.
- We based these key findings on lived experience as a form of knowledge, meaning that people directly affected by a problem hold essential everyday knowledge as “lived experience experts,” which should be systematically integrated with other perspectives to contribute to real change.

We used qualitative methods to explore barriers to decarbonization for disadvantaged groups in depth before designing solutions. They help uncover the reasons behind behaviors and decisions, capture lived experiences, and reveal motivations, perceptions, and unspoken needs. We were able to identify unmet or unarticulated needs, surface contextual constraints (e.g., organizational culture, informal rules), and reveal power dynamics and conflicting perspectives, which were the basis for designing solutions that address real experiences rather than assumptions.

The starting point of understanding the particular experiences and opinions of the disadvantaged groups was the semi-structured interviews. They are well-suited for exploring personal experiences, individual perspectives, and sensitive topics where trust and depth are essential. These use a flexible guide with open-ended questions, allowing participants to follow unexpected but relevant topics while ensuring that key themes are covered across participants. We conducted a total of 16 interviews with single mothers, members of the Roma minority, and migrant women affected by energy poverty and other forms of vulnerabilities, and additionally, 1 walking interview and site visit with the Lightbringers Foundation, 1 interview with a single mother during the painting demonstration, and a written reflection from the single mothers who received the thermal comfort package.

Next, we conducted focus group discussions to cover topics collectively and focus on attainable solutions - the low-cost, low-carbon small-scale measures these groups need and can be achieved within the project's scope and funding. In a small group of participants (typically 6-10), we were able to generate insights not only through individual responses but also through interaction, debate, and shared reflection - useful for identifying shared norms, disagreements, and socially shaped meanings that may not emerge in one-on-one interviews. In our project, we conducted 2 focus group discussions identifying the common needs and ideas of single mothers and members of the Roma minority living in an underprivileged settlement in Hungary.

As part of the project, as an accompanying method to the focus group discussions and interviews, we engaged in participant observation that included real site visits and the process of selecting and distributing the thermal comfort package. This referred to the visit of the community supported by Lightbringers, where we visited Roma families that talked to us about their struggles with energy vulnerability and material deprivation, but also how they benefit from the photovoltaics installed by the Foundation. In the second visit, which was the painting of the walls of one of the single mothers, we observed the process, talked to her about the expected impacts, and also future needs. The single mothers who received the thermal package provided initial reflections on its usefulness.

The project has received ethical approval. For each focus group discussion and interview, participants signed an ethical consent form that explained how we adhere to data protection and the ethical standards of research. All participants' names were anonymized. We also anonymized all names of the local actors we engaged with, except for the Lightbringers Foundation, which agreed to be fully named after revising how their work is presented in the toolkit. When interacting with disadvantaged groups, we were mindful of using neutral expressions; for example, instead of the widely used term "energy poverty", we stuck to a subtler "dealing with energy issues", and, in other instances as well, we were trying to describe the situations without labeling them or causing discomfort to our interviewees. Moreover, throughout the whole discussion, participants showed compassion and understanding toward each other.

3. Key Concepts

As our target audience has diverse expertise, we introduce the key concepts used in the toolkit. To begin with, our toolkit is placed in the context of the *low-carbon transition* in the EU by 2050. This process is envisaged to be guided by the principle of “leaving no one behind” while society is being transformed into an economy with net-zero greenhouse gas emissions. These goals are enabled by the European Green Deal and the European Climate Law - key instruments setting up binding targets for emissions reduction, with a 2050 neutrality goal. Among the key financial instruments is the Social Climate Fund, targeting vulnerable households with energy efficiency, clean heating, and transport. To receive funding, each Member State must submit a Social Climate Plan to the European Commission, laying out the measures planned for 2026-2032 to support those most affected by the green transition. Most Member States have not finalized their Social Climate Plans, as for many, connecting the ambitious decarbonization goals with the social and techno-economic needs of vulnerable populations is a novel effort.

We place the decarbonization in a social context, considering those citizens who are facing various financial hardships and systemic barriers to benefit from these processes. In the context of the permanent crisis, which started with the COVID-19 pandemic and is expected to last with a prolonged energy crisis due to the ongoing war in Iran, many Europeans, especially those already identified as disadvantaged groups, are suffering from energy vulnerability. *Energy vulnerability* refers to the risk of falling into energy poverty, the latter defined as the inability to attain domestic energy services (Bouzarovski & Petrova, 2015). Lack of access to affordable, clean, and modern energy is one aspect of the challenges disadvantaged groups are facing. Inability to afford transport and food is also part of the overall experience of energy and material deprivation (Eurostat, n.d.; Fry et al., 2023).

Another key aspect in the toolkit is considering the *gender* perspective to refer to the socially produced system of norms, roles, identities, power relations, and institutional practices that organize societies along distinctions between men and women. Gender is not simply a personal trait – it is a structural and systemic force. Distinct from biological sex, gender encompasses the socially produced norms, roles, power relations, and institutional practices that organize how people live, work, and access resources. It operates at every level – from individual identity to laws and policies – and intersects with class, race, and other axes of inequality to shape life opportunities and outcomes (Wharton, 2005).

Gender also affects access to energy and exposure to energy poverty. Women are often more affected due to structural economic disadvantages, such as the gender pay gap, and demographic factors such as longer life expectancy, which increases the number of older women living alone with higher poverty risks (Clancy et al., 2017). Sociocultural dynamics also matter: women continue to carry a disproportionate share of unpaid care work, increasing their domestic energy needs (Clancy et al., 2017). Gender differences also appear in mobility practices; households with a female reference person show much lower shares of expenditure for personal transport compared to households with male reference persons (Koukoufikis & Uihlein, 2022). Despite their strong engagement in environmentally friendly behavior and climate activism, women remain underrepresented in energy and transport employment and decision-making (EIGE, 2023).

Interacting with disadvantaged groups required an understanding of how they cope with material deprivation, how they build trust, their resilience, as well as their fragility. Coping with energy vulnerability is relational, where often the immediate family circle is a source of support and *trust*, while institutions are more often seen as distant and untrustworthy. Relying on one's own community for coping can increase one's *resilience* (Stojilovska et al., 2021). However, being exposed to deprivation means also living in a state of *fragility*, facing financial insecurities. Therefore, it is essential to nurture the circle of community support.

Finally, in the toolkit we developed, the content was built on the needs, strengths, and experiences of the disadvantaged groups we worked with to create solutions that truly fit their lives. In this context, we referred to *community psychology*, which is an action-driven and value-oriented discipline that focuses on supporting and empowering people and communities, especially those facing challenges. A key idea is that people who live with these challenges understand them best, so their voices and experiences should guide the solutions (Riemer et al., 2020). Finally, we embed *solidarity* in our work, referring to intermediation and support, performed through organizations to help negotiate the challenges of energy markets and retrofit supply chains (Bouzarovski, 2025).

4. Context

To interpret the findings in the toolkit, we introduce the Hungarian context in terms of the long-existing utility cost reduction program and its adjustment during the 2022 energy crisis, and the main factors that determine the energy vulnerability and material deprivation of the disadvantaged groups in focus: migrants, members of the Roma minority, and single parents in Hungary.

The 2022 energy crisis, which started with the war in Ukraine, has resulted in skyrocketing energy bills for all sectors and has affected the entire continent of Europe; however, Hungary has been especially affected. In the background of the poor energy efficiency of the Hungarian housing stock, Hungary abruptly changed its flagship utility cost reduction program in the midst of the crisis, with implications for households. The utility cost reduction program was launched in 2013, with the reduction of household prices of natural gas, electricity, and district heating (Pokornyi & Sághy, 2021). However, the 2022 energy crisis made public budget-related expenditures related to the utility cost reduction program, such as compensations for utility companies financially unsustainable, therefore the program was revised: household gas and electricity prices above a certain consumption threshold were multiplied, resulting in skyrocketing energy bills for households above the consumption threshold, which included many households living in housing with poor energy efficiency. After this change in August 2022, 68.8% of households reported higher utility costs, and 18.6% of households experienced this as a major financial burden, disproportionately affecting low-income and rural households in older detached homes (Kőszeghy, 2025). This shows that the burden of this policy change was borne by all households for whom prices increased, but for vulnerable households, it created real problems.

Migrants can be vulnerable to energy poverty due to limited rights in the host country, language barriers, being ignored in respective policies, and anti-migrant sentiments. Research on energy and transport vulnerability of migrants argues that their perspective is often ignored in respective policies (Martiskainen et al., 2023). Furthermore, the overall energy literacy can be overshadowed by access to relevant and understandable information, which can affect their access to housing and information about their energy-related rights. According to a study, the host language proficiency can decrease the probability of being affected by energy poverty (Budría et al., 2026). As Hungarian is a difficult language for non-natives, while learning Hungarian is usually obtainable through private language courses, with almost no state programs, the energy vulnerability of migrants is filtered through their access to this educational opportunity. Lastly, Hungary has been experiencing tightening migration laws, while the previous government relied on disseminating anti-migrant views, and social integration of migrants is lacking. These conditions have been creating a challenging environment for integration and, through that, access to energy rights and adequate services.

Single-parent families, especially single mothers^[2], are among the family types most exposed to poverty risk, as one income must cover the full cost of maintaining a household while caregiving responsibilities also fall on a single adult. This is a highly diverse group, including parents who choose to have children alone as well as families that become single-parent households due to separation, divorce, or the death of a partner. In 2020, in the EU, approximately 4% of all households consisted of single parents (Eurostat, 2021). The majority of single parents in Europe are women: in 2020, around 81% were lone mothers (Lanza-León & Cantarero-Prieto, 2025). As a result, single mothers are affected by multiple dimensions of gender inequality, including the motherhood penalty - a form of labor market discrimination linked to child-related care responsibilities (Wang & Ackerman, 2020). In Hungary, previous governmental discourse has portrayed single-parent families as less deserving than traditional families (Herke, 2021).

Roma communities face some of the highest levels of poverty and social exclusion in Europe due to the combined effects of low income, labor market marginalization, and discrimination. In 2024, across the EU, around 70% of Roma lived in poverty, alongside significantly high levels of material deprivation and labor market exclusion (EU Agency for Fundamental Rights, 2025). Many Roma families live in segregated or disadvantaged areas where housing conditions are poor and access to education, healthcare, and social support is restricted, which is reflected in high levels of overcrowding and limited access to basic services. Educational inequality is a key driver of exclusion: only 32% of Roma people finish upper secondary education compared to 84% of pupils generally (EU Agency for Fundamental Rights, 2025). In addition, Roma people frequently face unequal treatment and discrimination in institutions such as schools, public administrations, and welfare systems, as well as in the labor and housing markets, reinforcing long-term vulnerability, intergenerational disadvantage, and restricted opportunities for social mobility. In Hungary, Roma households are systematically more reliant on solid fuels, particularly fuelwood, and are disadvantaged because fuelwood was not included in the utility cost reduction program (Schwab, 2024).

^[2] The single mothers we worked with are usually not sharing the childrearing efforts with a former partner.

5. Trusted local actors as intermediaries to reach out to disadvantaged groups

Often, vulnerable groups are referred to as 'hard to reach', meaning individuals who are physically difficult to reach, underserved, or challenging to engage in demand-side energy programs (Mundaca et al, 2023). However, the issue is rather in the manner in which they are (not) approached, as generic means of support, such as green credits attainable in the bank or schemes that need huge upfront costs, are not forms of support suited to groups experiencing deprivation. In this regard, one way of reaching out to disadvantaged groups is through local actors that are 'close' to them, understand and represent their needs, such as NGOs, foundations, cooperatives, local governments, and similar stakeholders, which can be crucial in establishing contact with disadvantaged groups on the basis of transparency and trust-building. In working with these local actors, we understood that we first have to gain the trust of local actors as well before we are allowed to engage with the disadvantaged groups they have access to.

Some NGOs reflected that it is most important to be honest with the potential recipients of the measures about the type and scope of interventions, and the time and effort needed on the side of the disadvantaged groups. These local actors also served as a point of dissemination of our activities to the vulnerable groups they represent or work with, ensuring their data privacy while offering a fair chance for participation in our activities. The local actors also acted as intermediaries not only in trust building, but also as an additional source of expertise about the various challenges faced by the groups they work with. We managed to engage with many of these local actors so that we could give them space in the project to further disseminate their expertise to the broader interested public.

We engaged with Roma, single mothers, and migrants in Hungary thanks to collaboration with local actors. The local actors were usually the first point of contact that gave us access to the disadvantaged groups, and these actors were the trusted source of information. As the LIGHT project has been based on implementing small-scale measures that need the full collaboration of participants, such as opening their homes for the interventions and talking about often unpleasant experiences of deprivation and vulnerability, our approach in earning their trust was gradual and based on transparency.

We conducted individual interviews and focus group discussions with the disadvantaged groups we worked with, which helped us adapt the content of the LIGHT project and the measures to meet the needs of the potential recipients. This fieldwork enabled us to understand in more detail the complex day-to-day realities of the interviewees and their opinions on various policies that affect them. From their perspective, we understood the soft skills needed in working with vulnerable populations - how to center solutions around their lived experiences while upholding ethical research principles, and forming a sense of community that can support them in the low-carbon transition.

6. Lightbringers Foundation

A grassroots good practice for a just green transition

While we worked with several local actors, we showcase in more detail the Lightbringers Foundation (Fényhozók Alapítvány) as a good practice example working on mitigating energy poverty among the Roma community in a segregated and highly materially deprived context in Hungary.

The Fényhozók Foundation is a local grassroots initiative in Hungary, operating in a small settlement in Csongrád County. Its work connects sustainability and decarbonization with social justice and inclusion. The foundation's main focus is tackling energy poverty - more precisely, electricity poverty - by supporting disadvantaged families with small-scale solar power systems. These systems provide basic lighting in the home and make it possible to use a few essential electronic devices. The foundation's name reflects its vision: "Fényhozók" means "light-bringers" in Hungarian, referring to their work of bringing light into people's homes. A key element of the organization's approach is community participation: decisions are made locally, together with community members. Energy poverty is understood not as an isolated issue, but as part of broader structural challenges such as unemployment, housing poverty, educational segregation, and transport disadvantages.

The program is implemented in a segregated part of the settlement, where most residents are Roma families living in deep poverty. Unemployment is high, and the Roma community faces various forms of discrimination in institutions and workplaces. Educational institutions are also segregated. Significant spatial inequalities can be observed both within the settlement and across the wider region, with disadvantaged areas affected by poor infrastructure, long distances to services and institutions, and inadequate public transport. Housing conditions are often poor, with many families living in adobe houses without insulation and with outdated, unsafe electrical wiring.

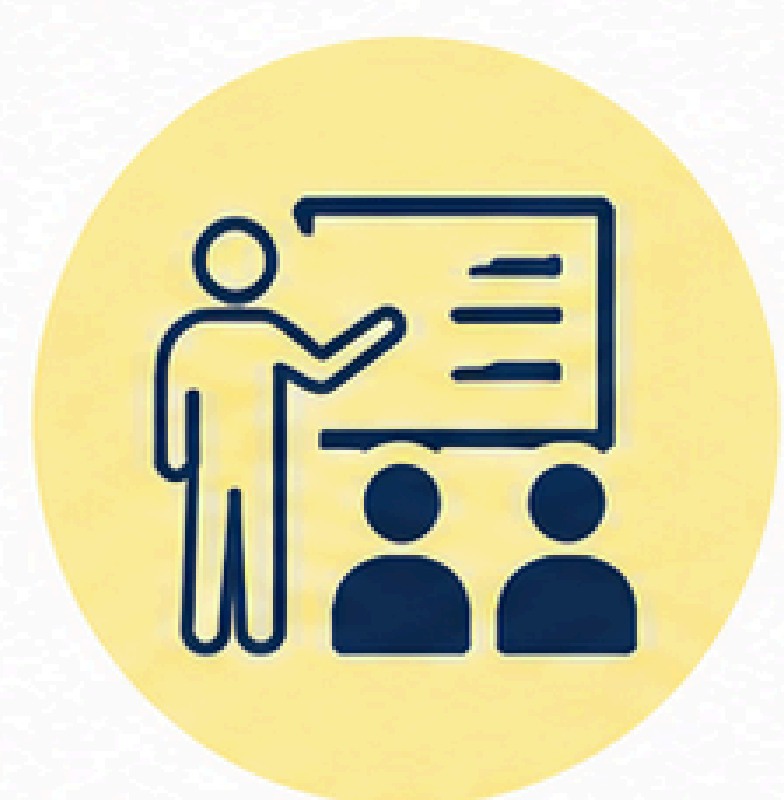
Heating is often based on fuelwood, while electricity is expensive. In extreme cases, some households are disconnected from electricity. The organization was founded on the initiative of local residents. It operates as a foundation and finances its activities mainly through grants, donations, and partnerships. A major limitation is long-term sustainability: stable funding is needed for maintenance costs and staff salaries, as the program cannot rely indefinitely on volunteer work and irregular project-based resources.



Picture 1: House in a small settlement in Csongrád County that received a solar panel from Lightbringers Foundation

Installing one solar panel (as shown in Picture 1) can provide lighting in a household. With an inverter, it can generate 220 V of electricity, enough to charge a phone and power one or two small electronic devices. The battery stores energy during the day, making lighting available in the evening as well. The system operates off-grid, meaning it does not connect to the public electricity network and can still be used during power outages and in the case of utility disconnections. The cost of one system is approximately 250-375 EUR⁽³⁾. A key maintenance challenge is that the battery must be replaced every 1,5-2 years. The solar panel itself is long-lasting (around 25 years) and, due to its small capacity, can be installed without complex permitting procedures.

Installation is quick - around 3 hours - and local residents can be trained to carry it out. This makes the program suitable for community-based implementation with volunteers. The foundation's technical expert provides training to residents, who later take part as volunteers in future installations. Because installation is fast and the system becomes functional immediately, it provides highly effective support for families living in deep poverty, offering a practical and visible improvement in everyday life from one day to the next.



1 Training:

The foundation's technical staff provides training for local volunteers (residents at the settlement who want to become part of the program) on solar installation.



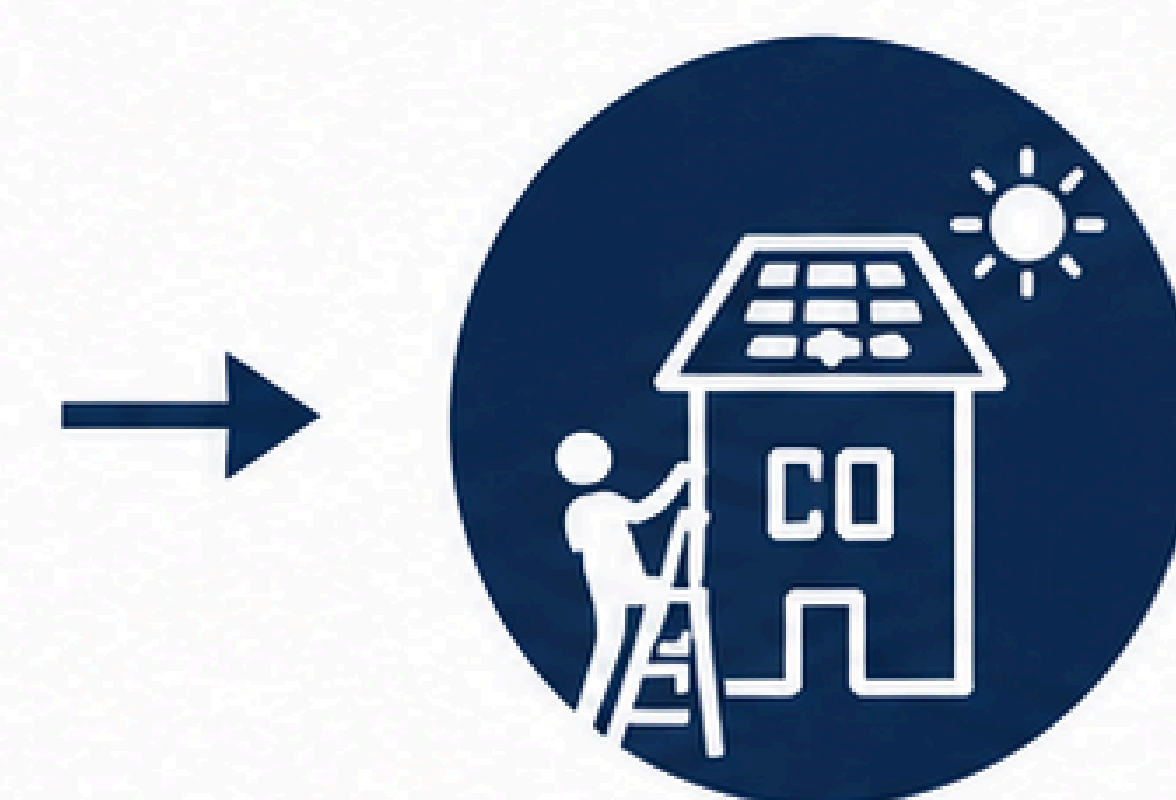
2 Community-based decision-making:

A community group made up of foundation members and volunteers meets and decides who is most in need of the next system.



3 Assessment:

Staff visit the household to assess conditions and identify a safe location for installation.



4 Installation:

Foundation staff and local volunteers install the system together. If the financial support comes from an external organization, their representatives are invited to the installation to see the program in practice and help spread awareness of the model.



5 Follow-up:

Staff regularly visit households where installations have taken place and collect feedback.

(3) In all instances, we used an exchange rate of 400 HUF = 1 EUR.

Key considerations for installation and distribution:

- Placement: Due to poor building quality, roofs are often unsafe. Solar panels may therefore be installed on smaller side buildings (e.g., sheds) or other stable structures where sunlight is available.
- Distribution: Allocation is based on community decisions and local justice and moral principles. Residents jointly decide who receives the next system and whose need is most urgent.
- Maintenance and sustainability: The main barrier to long-term operation is the cost of maintenance, especially battery replacement. This requires stable funding, which is difficult to ensure within a project-based grant system.

After installation, household electricity costs decrease. Families can save approximately 7,5 EUR per month, which is highly significant in low-income households. The system provides access to safe and stable electricity, reducing the fear of disconnection. Reliable lighting in the home supports basic human dignity and leads to broader quality-of-life and social inclusion benefits.

Key improvements include:



Lightbringers provide not only a technological solution, but they also engage in community organizing, training activities, and local donation campaigns (e.g., supporting schools and families). The program is based on the understanding that energy poverty is closely linked to other social challenges, particularly unemployment. In the long term, the foundation aims to develop training opportunities and create local jobs linked to renewable energy, which could provide more sustainable, self-supporting solutions. The organization actively builds partnerships not only with local actors but also with regional and national partners, civil society organizations, research institutes, universities, and other institutions. It also involves political stakeholders and decision-makers by inviting them to the settlement to experience local living conditions first-hand, to influence policy debates, and support more just policy solutions. Overall, the work of the Fényhozók Foundation represents a strong grassroots model with high community legitimacy, successfully combining sustainability goals with social justice principles and linking green transition efforts with social inclusion. More information about the Foundation's work can be found on their website (Fényhozók Alapítvány, n.d.) and on a YouTube video featuring the solar panel installation process (Gabor Daroczi, 2017).

7. Understanding the needs of disadvantaged groups

7.1. Migrants in Hungary: energy affordability challenges wrapped into larger existential challenges

The access to affordable energy for migrants in Hungary is inextricably linked to their access to housing, especially the private rented sector, where they are overrepresented. This is further determined by other more fundamental rights, such as their legal status in the country, related to their residence permit, which does not always give them the right to work (for instance, the family reunification permit). Their access to the labor market is further influenced by their education, skills, and whether they possess Hungarian language competence. Combined with a stricter migration law since 2025 (Hungarian Helsinki Committee, 2024), rising rents, and tenancy insecurity due to loose legal regulations, many migrants are faced with insecurity, stress, and suboptimal housing arrangements.

Improving the energy efficiency of the dwellings where a migrant household lives depends on whether it is their own property, which gives them agency to implement measures. However, living in the private rented sector, these decisions are dependent on the landlord. This is described as the split-incentive, which comes from differences between those who pay and those who enjoy the benefits of the adoption of energy-efficient technology, for instance, landlords have no incentive to make such an investment because only the renters will benefit (Nie et al., 2020). The newly launched House Start Program in Hungary, a measure to access private property, with a fixed 3% loan, which is anchored in promoting homeownership as a factor of housing security, is criticized on the grounds that housing inequalities cannot be meaningfully reduced in a system dominated by homeownership (Ámon et al., 2025). This means that the rented sector in which migrant households are overrepresented should be subject to comprehensive refurbishment programs in a way that improves the quality of life of the renters without subjecting them to significant rent increases.

From our interviews with migrants in Hungary, we learned about the multiple challenges they are facing, from finding a job to having a smooth transition of their legal stay from a student to an employee. In this context, the energy bills were not the biggest problem. However, the responsibility for providing affordable energy and good building quality is seen as a responsibility of relevant institutions. One interviewee explained: *"I don't think we can do anything about this energy cost individually. I think we need some, I don't know, institutionalized help. I think, I don't know, some kind of adjustment to reduce the energy cost."* (MEV 16). In this respect, the energy bills are not always easy to understand, especially how they are calculated and billed. In many cases, migrants pay the utilities without having a direct insight into the bill itself, as this could be handled by the landlord.

Box 1: Needs of migrants regarding decarbonization

- Securing their livelihood (right to residence, access to the labor market)
- Integration support (to learn Hungarian)
- Informed access to the rented housing market (quality standards of dwelling, energy bill transparency)
- Addressing any split-incentive challenges (willingness of the landlord to allow investments and who would finance them)

7.2 Single mothers in Hungary: single breadwinners facing multiple vulnerabilities and care burdens

Single-mother households experience disproportionately high energy vulnerability, driven by lower average incomes, higher risk of in-work poverty, limited savings, constrained time and housing options, which together reduce their ability to cope with rising energy costs, implement energy-efficient solutions, and maintain adequate access to energy.

Many single mothers either live in rented apartments with little to no control over energy-efficient solutions and renovations, or in poorly insulated properties. One of the interviewees' houses burned down due to the poor insulation in the house, so when she rebuilt it, she decided not to use any insulation at all out of fear that the situation might repeat itself, which, in turn, leads to higher bills and lower energy efficiency. In another case, the modern flat provided to her by the municipality has no gas access, locking her into heating with electricity only, which results in high costs and pressure to postpone fulfilling other primary needs. It was not always clear how these bills are calculated, causing a state of unpredictability and anxiety filled with continuous planning and cost-optimization. As one of our interviewees explained: *"Our electricity bill is between 65 and 135 EUR. As I said, this is a new building, and I don't quite know how to explain, it's one of those systems with circles, meaning that both heating and cooling run on the same system in summer and winter. They said it's ground-energy based, but I doubt that, if our electric bill is that high."* (MEV 8).

All the single mothers we talked to experienced difficulties that go beyond the energy deprivation. Even though for most of them, the monthly utility costs posed a significant burden, they also put an emphasis on the high and ever-rising grocery prices, the expenses connected to their children's (special) needs, and healthcare expenses. For most of them, anything that goes beyond covering the basic needs is considered to be a rare, well-calculated luxury. Even period poverty was mentioned, as period products in Hungary are subject to the highest Value Added Tax (VAT) in the EU (European Parliament, 2025), posing an additional burden on menstruating women.

Single mothers also criticize the lack of tailored support to single parents, as available support is predominantly income-based, disregarding other disadvantaging circumstances they face, and excluding them from a very needed support system. Key suggestions were the increase of the child allowance (the sum of which has not been raised since 2009, and is currently barely 35 EUR for single mothers raising one child; or 37 EUR per child for two children; with a maximum of 42,5 EUR per child for those single parents who are raising three or more children) (Hungarian State Treasury, 2026). The multiple monthly expenses of single parents are not considered in available support, which can be quite high, especially if they are living in a rented property, raising a child with special needs, or have medical conditions that require them to take expensive medications or make them unable to work full-time. They also expressed needs connected to getting contacts of reliable and affordable repair services.

Box 2: Needs of single mothers regarding decarbonization

- Policy support tailored to the needs of single parents (taking into consideration all expenses and circumstances, rather than the income as a single criterion)
- Consideration of the nexus of energy poverty, transport poverty, and material deprivation of single parents (special discounts and tickets for essentials)
- Safety of fuels used in their home
- Access to reliable handymen and information about repairs and home improvements

7.3 Roma minority in Hungary: living in deep poverty in segregation while facing discrimination

For Roma people living in deep poverty, access to safe and adequate energy is not always readily available; obtaining it can be a matter of everyday survival. This state of energy insecurity undermines the basic functionality of a household and affects housing conditions, health, education, mobility, and even how they are perceived by others. Across our interviews and focus group discussions, a consistent picture emerges: when energy is unstable or unaffordable, poverty becomes more visible, more stressful, and more difficult to escape from.

Many families live in houses that are poorly insulated, and therefore expensive to heat. People often rely on a combination of fuelwood, gas, or electricity, depending on what is temporarily available or affordable. Comfort, safety, and cost are always in tension. Some households rely on prepaid systems, which adds another layer of uncertainty, as energy must be constantly monitored and topped up in small amounts while the charging points are not located nearby within the settlement. This means that people living in households with prepaid meters must travel to larger towns simply to recharge their electricity credit, with the cost of travel (fuel or bus tickets) potentially exceeding the amount of money being loaded into the meter, creating the tension between energy and transport vulnerability.

This struggle to stay warm while affording energy can involve harmful coping strategies, including using unsafe or unsustainable heating methods. Our interviewee explains: *"I've tried, I'm not saying I won't, when we're in a situation in life where we simply have to put something on, because otherwise you're in a freezing cold house, and don't think about 18 degrees, it can get down to 5-6 degrees, or even colder. There was a time when I grabbed all my summer clothes and started burning them until they were smelly. Or if there were bad shoes, coats, or even plastic bottles at home, we put them on."* (MEV 2). Furthermore, some homes have broken or unsafe wiring, weak electrical systems, or improvised connections, which increase fire risks. These practices are not chosen because of a lack of knowledge or ignorance, but rather because of the lack of other alternatives.

Lacking access to stable electricity further undermines access to other essential services. For instance, electricity is needed for children's ability to participate in schoolwork, which became especially visible during the COVID period with the shift to digital education. It also reinforces long-term inequalities, as learning opportunities increasingly depend on household energy stability. Women carry a disproportionate share of this burden: in many households, women are responsible for cooking, washing, childcare, and caring for older relatives as well. They are the ones who have to make the household function when the heating fails, the washing machine breaks, or the electricity credit runs low. Washing machines, which were not typical appliances in the Roma households we visited, were described as 'life-changing' as they would reduce the gendered burden of washing clothes manually for a large family.

A particularly important dimension is how energy vulnerability contributes to social stigma and the visibility of deprivation. Everyday energy practices can unintentionally make poverty more visible to others in ways families do not intend. For example, when families heat their homes with fuelwood, laundry can take on the smell of smoke, which remains noticeable when people leave their homes. In another case, prepaid electricity meters emit regular warning beeps when credit is low, making the lack of energy audible not only within the household but also to neighbors and the wider street. These everyday signals can increase feelings of exposure and shame. Their experiences of deprivation are shaped by being Roma and by being overlooked, judged, or treated as if poverty were a personal failure rather than a structural condition.

Box 3: Needs of members of the Roma minority regarding decarbonization

- Energy-efficient and safe housing conditions
- Affordable and stable heating solutions without risky coping strategies
- Reliable electricity for education, communication, and daily functioning
- Access to available energy infrastructure that is unlinked to visible or audible signs of energy vulnerability
- Income and pricing systems that do not constantly force trade-offs between basic needs

8. Selecting the low-cost, low-carbon measures

After understanding more closely the needs of the disadvantaged groups, we were able to offer some concrete help for small-scale home improvements, which would bring some immediate relief and a minor improvement in the quality of life of the recipients. The overall idea is to build on the trust we gained with participants and use it in practice, and also to further consider what else is needed to achieve full decarbonization of their homes, which could ideally be further supported by relevant decision-makers. Because we worked more closely with the single mothers, we selected together the low-cost, low-carbon measures for their needs. Again, limited by logistical and financial resources, we could offer to the Budapest-based single mothers small repairs in their homes, and for those living either in Budapest or elsewhere, personalized boxes with items that help with thermal comfort in their dwellings.

Initially, the idea for arranging these small-scale repairs stemmed from a focus group discussion conducted with single mothers, during which a number of issues were raised regarding home renovations or replacing/repairing some items. The focus group participants highlighted some problems, for example, finding a reliable repair service, and some of them shared anecdotes where they had difficulties while trying to repair some items. One participant emphasized that they are facing difficulties and gender-based prejudice from handymen: *“So as a single woman, if something needs to be repaired, men will cheat you wherever they can”* (FG_single mothers). Another participant also mentioned the financial constraints: *“Absolutely, because this is a tragedy. We now have three technical items in need of repair, and I posted it on Facebook and got five phone numbers, but when I started calling, I exchanged messages with one of them, and then he disappeared the next day. Then I called the other one, and he said that there was no call-out fee, but the inspection fee was 37,5 EUR. So what now?”* (FG_single mothers).

Therefore, this issue prompted us to search for a reliable repair service that would serve as a central contact point for repairs. As this home renovation cooperative is based in Budapest, we were able to support some of the Budapest-based women. The list of needs of the single mothers had to be further adjusted to the services our repair service partner offered. The cooperative had a list of small repair jobs that were based on their team's expertise and could be done within a short timeframe. Then, single mothers had the opportunity to choose from this list and also propose other small-scale home repairs based on their specific situation, and it was further discussed with our partner whether it was feasible or not.

The cooperative's list consisted of the following items:

- putting up shelves, installing cornices, or furniture
- skirting board replacement
- installing mosquito nets
- shower tray replacement
- tap replacement
- light switch and power outlet replacement
- radiator installation
- insulation of the gap at the convector outlet with polyurethane foam
- tile repair
- repair or replace a leaking water connection
- replacing a sink
- repair after water damage, plastering, and painting
- minor woodwork
- furniture assembly
- repairing silicone sealant in bathrooms
- minor masonry and glazing work

While not all of these works can directly improve the energy efficiency of the dwelling, they reflect the cooperative's expertise and the needs of the single mothers. Building on the trust we established, and within financial and logistical constraints, the repair work in participants' dwellings included installing shelves, painting walls to address water damage, and replacing a leaking tap and the main water shut-off valve. An important reflection is that, other than excluding single mothers who live outside of Budapest, those who are living in rented accommodations also cannot make any changes to their flat.

For the women who either chose the box or are living outside of Budapest (as we could only offer the repairs for participants who live in the capital city), we put together a list of items that was partly inspired by the projects Community Energy for Energy Solidarity (CEES), the campaign of the Croatian Green Energy Cooperative (ZEZ) (Smith, 2023), and the discussions we had with our partners as part of the Women in Solidarity for Energy (WISE) project (WISE, 2026). The list includes the following items:

- extension cords with a switch
- LED bulbs
- window and door seals
- reflective foil for radiators
- water-saving aerators for taps
- thermal curtains

The participants were asked to send us their own list of these items based on their preferences and needs, so these boxes could be personalized in this way. What became apparent is that the thermal curtains were really a sought-after item by our participants, being requested by almost all of them. Other popular items were LED bulbs, weatherstripping for windows and doors, and reflective foils for radiators. After compiling this list, our team gathered these items in cooperation with our partner in a hardware store. Moreover, our team also put together a short manual on these items and how to install them.

As mentioned, the selection of the measures was against the background of financial limitations, what our repair partner could do, the feasibility of these small-scale and short-term repairs, as well as the agency of participating single parents, depending on their housing tenure type - owner or renter. Moreover, some problems also appeared as the project developed, such as women who had signed up were no longer able to participate, or they did not have the financial means to reach Budapest to pick up their package, exposing their fragility. This needed some recalibration and recalculation. Another challenge was that the top-sought item, the curtain, became discontinued at the store, so we needed to restart the search for thermal curtains. On the whole, this part of the project needed a lot of organization and adjustment on our part, including a lot of emotional labor as we were positioned as mediators between the women and the cooperative.

9. Implementing and demonstrating the measures

During the fieldwork, we encountered many relevant barriers that the disadvantaged groups we worked with were facing, and also many measures that they proposed. Full refurbishment and the removal of systemic injustices were needed but were beyond the scope of the project. We were able to implement small-scale, low-cost, low-carbon measures that could provide initial support in removing the first barriers toward a potentially supported process of decarbonization in the future. The type of measures we could undertake was limited in scope and funding, and therefore in impact.

Still, our piloting efforts and the broader experience of working with disadvantaged groups and local actors provided valuable input for distinguishing between urgent, small-scale measures that can offer quick, limited mitigation of vulnerability – adapted to the level of deprivation – and those that must be achieved in the long term through systemic changes and coherent policy efforts. We showcase two highlight interventions that are most relevant to improving the quality of housing of the participants: the painting work and some key items from the thermal comfort package, such as the window and door seals, the reflective foil, the water-saving aerators, and the thermal curtain.

9.1 Highlight intervention 1: Painting

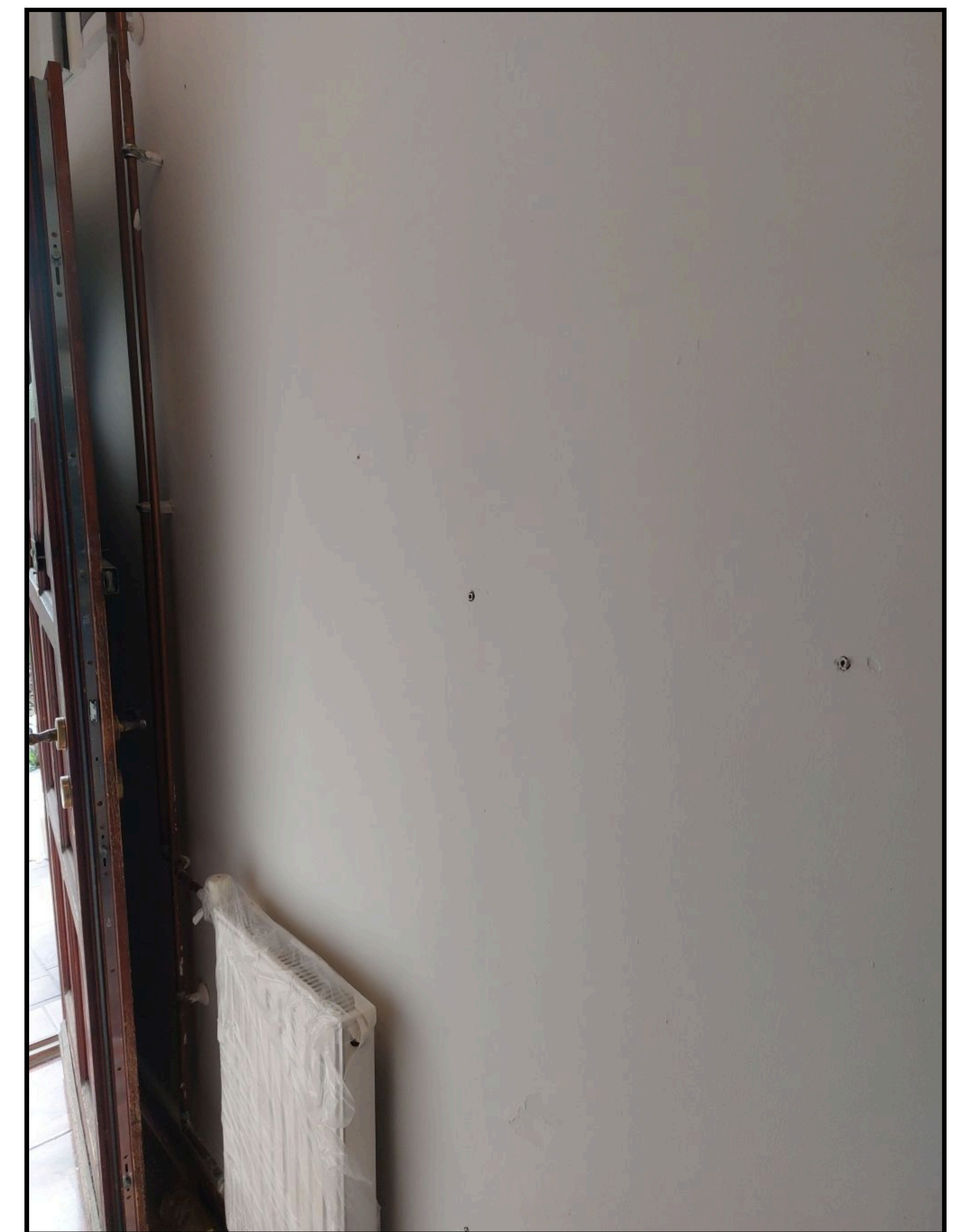
One of the single mothers we supported needed repairs and painting after water damage to the walls and peeling paint on the ceiling, which was due to incorrect paint application previously. The water damage was visible in multiple rooms and included at least four different walls. The patches on these walls appeared after various incidents: some after a pipe burst, and some after water seeped into the ground from a sewer pipe under the house (this pipe was later rerouted). With the water-damaged walls, the residents of the house were also trying to constantly prevent mold growth by proper ventilation and heating; however, it was also mentioned that at the same time, they cannot “overheat” either, as it comes with high utility costs. The actual work in the house included sanding, plastering, and preparing walls before painting, and finally, painting - shown through Pictures 2, 3, and 4. This work was carried out by our partner, the Budapest-based renovation cooperative.



Picture 2: The original water-damaged wall



Picture 3: The water-damaged wall after sanding and plastering



Picture 4: The water-damaged wall after painting

The implementation of this measure also involved non-technical challenges. The removal of the furniture to get to the damaged wall was time-consuming, and after the painting, the residents could not use those rooms until the walls were dry, which was difficult because they had no other place to stay. According to the interviewed resident, with the repair of these walls, their well-being and comfort at home could be significantly improved.

9.2 Highlight intervention 2: Key thermal comfort package items

We focus on several package items that have been recognized for their immediate impact on improving thermal comfort and reducing energy and utility bills.

Window and door seals (Pictures 5 and 6) are self-adhesive insulating foam tapes and a door seal strip that reduce heat loss and drafts by sealing gaps in windows and doors. They are used as part of the weatherstripping process or the action of adding insulating material around doors and windows. It represents a low-cost home improvement task that can be done without a professional (Freitas, 2024).



Picture 5: Window seal



Picture 6: Door seal



Picture 7: Reflective foil for radiators



Picture 8: Water-saving aerator for taps



Picture 9: Thermal curtain

The reflective foil for radiators (Picture 7), when placed behind a radiator, reflects heat back into the room, increasing heating efficiency. It is most effective when fitted to radiators that are on uninsulated walls. It is a low-cost way to keep the home warm and reduce the amount of energy needed to do so, which helps lower the energy bills (Williams, n.d.).

Water-saving aerators (Picture 8) are tap-mounted devices that reduce water consumption. Typically installed on the tap in bathrooms and kitchens, they mix the water stream with air and reduce the flow rate, and thus represent a simple and inexpensive way to reduce water consumption and save energy at the same time (Water Saving, n.d.).

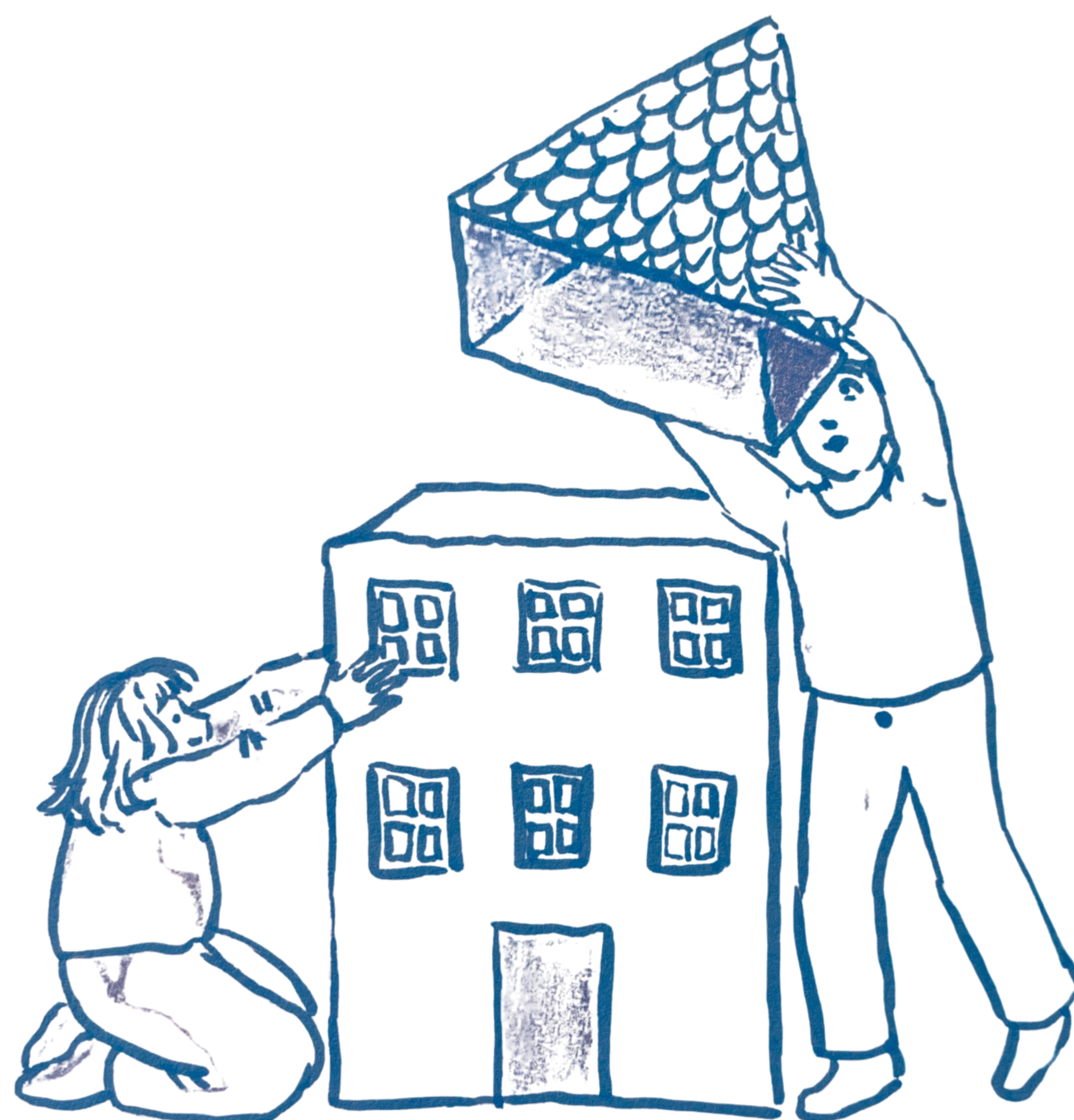
Thermal curtains (Picture 9) are made of thick material that helps retain heat in winter and reduce heat in summer. They can be a simple and cost-effective way to improve comfort, reduce energy use, and even lower monthly bills, and offer flexibility as they can be opened and closed at different levels of openness, offering adjustable heat protection (Dabedan, 2025).

The single mothers who received items from the thermal comfort package shared initial positive feedback. The thermal curtain was considered of good quality and would protect them from the summer heat. The window seal is expected to provide better insulation. In one case, the window seal will be applied along with a new window. The radiator foil will be set up ahead of the next heating season.

10. Further action needed

In the toolkit, we discussed the importance of working with local actors as a bridge to disadvantaged groups, and highlighted the Lightbringers Foundation as a good practice example in tackling energy vulnerability from the bottom up. We studied the needs of disadvantaged groups in regard to energy and housing services - of Roma, single mothers, and migrants. These findings informed the section on low-cost, low-carbon measures to suit the identified needs of the groups, followed by their implementation. This pilot and the reflections around it aim to inform decision-makers about the challenges disadvantaged groups in Hungary face regarding decarbonization, and the intermediation needed to make the transition more inclusive.

The needs of vulnerable groups and their dignity should be the central point around which policies to foster the low-carbon transition are created. That means developing concrete measures that consider the particular barriers and contexts various disadvantaged groups are facing. Intermediaries, such as NGOs that represent the interests of disadvantaged groups and have access to them, can play a crucial role in creating an environment of trust, which serves as a point to learn about the lived experience of disadvantaged groups that can be used to feed into policies. Going forward, different decision-makers who create policies that affect the livelihoods of these groups and their ability to benefit from the energy transition should first and foremost provide support and build trust. Considering the recent change of government, we expect that the new one will be more responsive to the needs of these disadvantaged groups and co-create policies with local actors, and members of disadvantaged groups as well, who know their situation best.



Migrants, single mothers, and members of the Roma minority we interviewed face multiple energy and material deprivation challenges. Their access to safe and affordable energy and housing is usually only one of the key challenges they are facing, as they are intertwined with other forms of vulnerability. In all three cases, there are broader systemic barriers these groups have been facing in Hungary: legal insecurity of migrants, segregation and discrimination of members of the Roma minority, and lack of support for single mothers, which considers the multiple financial and unpaid care burdens they are dealing with. These factors further shape how these groups can access affordable housing and be engaged in the renovation and installation of photovoltaics.

The pilots we undertook aimed to demonstrate that with solidarity-based mediation and collaboration with local actors, we can provide some small-scale, but tangible support to disadvantaged groups. This was also a demonstration of how their lived experiences, needs, and opinions were included, which can serve as a model for scaling up building renovation and solar installation programs. The story we told through this toolkit was to demonstrate that with tailored support and a grassroots approach, we can create a supportive community that can help remove some initial barriers faced by disadvantaged groups in their path toward full decarbonization. Initial feedback from the recipients of the described interventions is very positive in terms of improving their thermal comfort and quality of life.



11. Policy recommendations

- Low-cost small-scale measures can be a small but tangible step to meet the needs of disadvantaged groups, and a starting point for support allocation by municipalities.
- Systemic solutions are needed to address energy vulnerability and facilitate access to energy efficiency interventions and renewable energy for disadvantaged groups. These should be developed through intergovernmental coordination and improved information exchange among ministries and agencies responsible for social, climate, energy, housing, gender, and related policies.
- Relevant policies should be intersectional, considering the multiple vulnerabilities disadvantaged groups are facing. Furthermore, working with disadvantaged groups cannot take a standard top-down approach with the assumption that these groups would necessarily have the agency to take out a loan or pay in advance; therefore, measures targeting disadvantaged groups should include upfront financial support and trust-based partnership.
- Supporting disadvantaged groups in the low-carbon transition is much more than selecting suitable measures, but requires a hands-on approach, and measures tailored to their needs, which can be achieved by involving local actors in creating local and national measures, as these actors can serve as a source of expertise or to access members of these disadvantaged groups.
- Local actors and the agency of disadvantaged communities should be strengthened by involving them in relevant local and national policy-making, especially consultations for relevant policies that affect the livelihood of these groups, such as the Social Climate Plans, which are precisely about how to redistribute the funds for the low-carbon transition to those who are 'left behind' in policies.
- Piloting and demonstrating the implementation of low-cost, low-carbon small-scale measures by municipalities and local actors can be the initial point in creating a supportive community that needs to overcome the emotional barriers of transitioning from precarity (when everything is unstable) to sustainability.
- Success after piloting in building trust and demonstrating local home improvement impacts could be the decisive factor in securing large funding for scaling up purposes. This could be linked to the development and revision of the Social Climate Plans, as well as the implementation of EED and EPBD, in collaboration with relevant decision-makers and local actors in housing improvement and low-carbon measures. These measures would not only contribute to decarbonization but also improve the quality of life for disadvantaged groups.

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