



POWERPOOR

Empowering Energy Poor Citizens through Joint Energy Initiatives

POWERPOOR – Hungary’s policy roadmap to alleviate energy poverty (Part of D5.9)

Working on the ground with energy-poor households and policymakers on mitigating energy poverty levels.

July 2023

www.powerpoor.eu

Introduction

The POWERPOOR project aims to help households living in energy poverty. Since the definition of energy poverty may vary at the national or regional level, it requires targeted actions. This roadmap summarizes existing national measures, stakeholder relations and provides policy recommendations for Hungary.

As part of the roadmap development, a Liaison Group workshop took place. The role of national stakeholders was analyzed and a vision was set for 2050, using appropriate modelling tools.

The stakeholder universe model illustrates the relative flexibility of stakeholders and their role in addressing energy poverty. The roadmap contains the Hungarian baseline assessment revision and recent changes in Hungarian energy policy are included. Currently existing measures tackling energy poverty are summarized and taken into consideration during formulating our recommendations.

The vision by 2050 is to fully eliminate energy poverty. The changes and policies required to achieve the goal are illustrated on future radar model. Based on the model results, targeted policy recommendations and measurable goals are formulated.

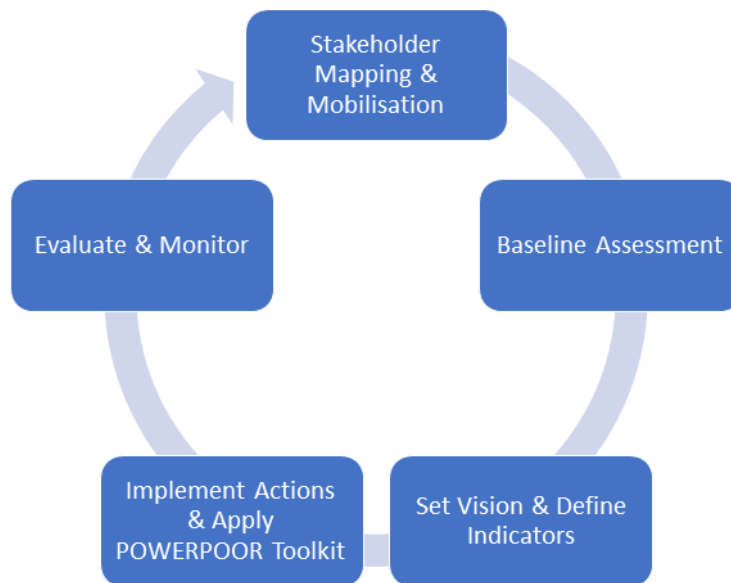
The first draft version was discussed with members of the Hungarian Liaison Group and the policy recommendations were adjusted according to their comments.

What is the methodology for the national roadmaps?

The development and adoption of the national roadmap is subdivided into two phases, which each encompasses specific steps on an integrated management cycle (adapted from ICLEI Green Climate Cities Programme). The cycle has been chosen as a basis for the roadmap since it promotes a holistic approach to policy making.

Phase 1 takes place until the end of the POWERPOOR project and includes steps which shall be carried out by partners and Energy Supporters and Mentors until then. Phase 2 takes place within one year after the project, or on any other timeline decided by the partners and stakeholders. Once the cycle has been completed a first time, the process can be repeated (and could potentially serve as a basis for future projects).

Figure 1 Roadmap Methodology



Adapted from [ICLEI Green Climate Cities Handbook 2016](#)

National Roadmap Development

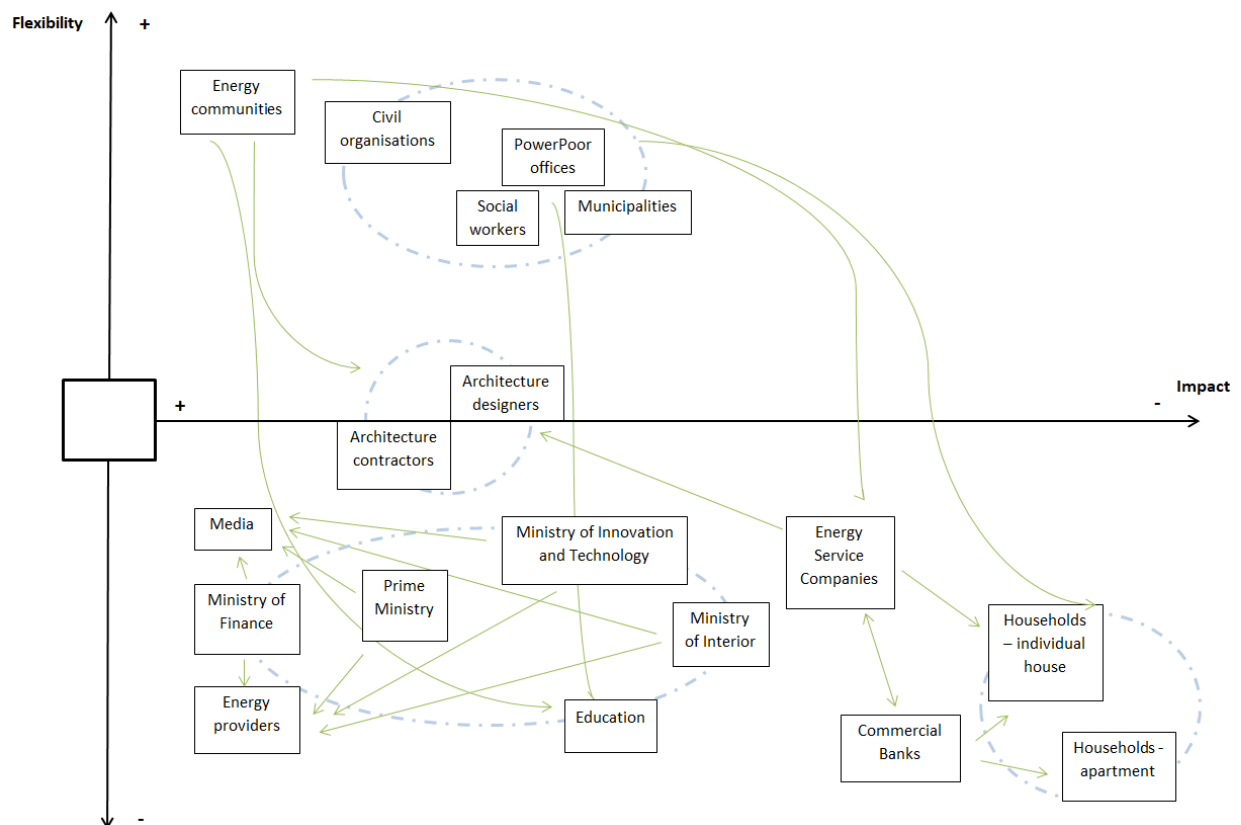
Phase 1

As part of the national roadmap development, a stakeholder modelling workshop was held on 7th of September, 2022. The participants were members of the Hungarian Liaison Group, like professor of University of Technology and Economics and representatives of civil organizations. The mix of participants' expertise consisted of building engineering, energy efficiency, green policy and social sphere. This resulted in a fruitful discussion, where various points of view were captured and visualized on the Stakeholder universe and Future radar models.

Step 1: Stakeholder Mapping

On the stakeholder universe model, group of stakeholders were analyzed in relation to 2 indicators – how much are they adaptable in terms of tackling energy poverty and how much impact they have in potential decision making. Adaptability is represented on axis Y, where on top is the most adaptable and on the bottom is the least adaptable. On axis X, the scale of impact was set descending - the closer the stakeholder is to the axis Y, the bigger potential it has in problem solution. This way, the relative importance of particular stakeholders groups in energy poverty mitigation was identified.

Figure 2 Hungary Stakeholder Universe



The most flexible and highest impact stakeholder in tackling energy poverty seem to be energy communities. This is due to their ability to adapt to the local needs and the variety of solutions they can provide. They have a significant potential to help vulnerable households. With joint effort even the low-income families can have access to renewable energy or other source which can help them to break out of energy poverty. However, we need to be aware of educational and other social obstacles of establishing an energy community in deprived settlements.

Civil society organizations are the ones working most closely with this issue. They are similarly flexible in their attitude and have a relatively big impact when it comes to arriving at solutions.

Close to the civil society organizations on the chart are the social workers and family helpers, PowerPoor offices and local municipalities. We can consider them as a group of stakeholders with similar interests and they work closely together.

On the middle of axis X there are the architecture designers and contractors. Their impact lies in their ability to renovate houses by applying insulation and instalment of various equipment that increases energy performance of a building. They are moderately flexible and their interest is mainly economically driven.

Below the axis X there is a quite wide group of ministries. Ministry of Interior and Ministry of Technology and Innovation have a role in developing support schemes for energy transition and in the distribution of EU funds. Ministry of Finance could help eradicating energy poverty, for example, by redefining Hungarian taxation system. The Prime Ministry ensures the personnel, material and technical conditions necessary for the work of decision makers. Their impact varies from significant to moderate. The highest impact was assigned to Ministry of Finance, while the Ministry of Interior has only a moderate impact.

An important element on this chart is Media. It is less flexible due to the political control characteristic to Hungary, but its potential to address the problem is wide. According to Hungarian National Statistics Office, there are over 3.7 million television service subscribers. Along with other media channels, it is a powerful source for energy education, like sharing domestic energy saving hints.¹

Education of vulnerable households is on the mid-bottom part of the chart with relatively big potential to positively impact energy poverty. Unfortunately, reforming education materials in public schools tends to be a long and burdensome process.

Energy providers, as one of the most significant players are tied to national regulations, making them one of the least flexible body. Obviously their impact is wide, given that they need to be involved even during establishing an energy community. They are placed on the bottom left corner of the chart, having the same high impact potential as energy communities. Their negative feature is inflexibility.

The last but not least important stakeholders on the chart are households living in energy poverty themselves. They have the least impact to tackle energy poverty due to lack of financial or informational resources. From flexibility standpoint it was important to differentiate between an individually standing house in energy poverty and an apartment in a condo. A family living in a house has little flexibility advantage due to being able to make individual decisions. Having the resources, they can perform renovations of various scale. In the meantime, any kind of large scale renovation of a condominium needs the agreement and contribution of all households living in there. This often means an obstacle in installing a house insulation and it is more difficult to achieve overall energy consumption reductions, since it requires behavioral changes of more families. Establishing energy community as a condo is a challenge for similar reasons.

A clear connection is stated on the chart between households living in energy poverty and civil society organizations. This shows how closely the civil society organizations

¹ https://www.ksh.hu/docs/hun/xstadat/xstadat_evkozi/e_oni006.html

work with this problem and how significant they are on providing solutions on micro level.

On the chart, Ministries, the Media and Energy Providers are mutually connected, but there is no arrow connecting them to the households. This indicates the indirect impact of these bodies to energy poverty, but it might also show the lack of dedication to this problem.

Based on the above we can identify 4 main stakeholder categories from the chart: civil society organizations and their activities, public bodies such as ministries and education, households, and a small group of building renovation contractors. Other significant actors as media and energy providers can be classified to these categories to some extent.

The key takeaways from the stakeholder modeling are the following:

- Energy communities could play important role in tackling energy poverty in appropriate legal, political and educational circumstances. Pilot projects and modeling are ongoing, but a nationwide spread is still facing many obstacles.
- Civil society organizations work most closely on the issue, therefore they have the right expertise and flexibility in providing help. They have a significant impact on micro level.
- The media, ministries and energy providers have a large impact, but they operate in large scale, which impedes their flexibility.
- Households living in energy poverty have especially limited impact and flexibility in providing a solution.

Step 2 Baseline Assessment Revision

The state of play / baseline for what concerns energy poverty in the overall country has already been analyzed at the beginning of the project and captured in D4.2. Part of designing a national roadmap is revisiting the original assessment in the light of recent (geo)political and economic changes.

In period from 2015 – 2020, Hungary had the lowest energy prices amongst Powerpoor pilot countries. The housing costs in disposable income was 13.5% in 2019, decreased to 13.3% in 2020, the 5th lowest in the EU.

Housing cost overburden in 2020 was affecting 10.1% of population living in cities, slightly above EU average. In rural areas it is 2.2% of population, which is below the EU average.²

Based on Eurostat data from 2021, 5.4% of population in Hungary is unable to keep their home adequately warm and 9.7% of households have arrears on utility bills.

Figure 3 Eurostat Statistics on Energy Poverty in Hungary

	Inability to keep home adequately warm (households %)	Arrears on utility bills (households %)
EU27	6.9	6.4
HU	5.4	9.7

Source: Eurostat: [Statistics | Eurostat \(europa.eu\)](#) European Union Statistics on Income and Living Conditions (EU-SILC) 2021

It is a reasonable assumption that all the above indicators will change in a negative way. Current geopolitical conflicts resulted in a revision of utility bill caps in force since 2013 in Hungary. As of August 1st, 2022, reduced energy pricing is applicable for only electricity consumption up to 2523 kWh/year and natural gas consumption up to 1729 m³/year. Although discount for large families remains in place, residents will pay the retail market price for consumption exceeding the limits.³

The regulation does not apply for around 8.4% of households using district heating. Majority of households are heated with natural gas (57.6%) and biofuel, mainly firewood (31.1%). Considering the increase in natural gas and firewood prices together with poor energy efficiency of Hungarian houses, we expect an increased number of families to fall into energy poverty.

The key national action plans mitigating energy poverty are National Energy Strategy (NES) 2030 and National Energy and Climate Plan (NECP) of Hungary.

NES supports afforestation of land and the cultivation of energy crops, which would enable the production of local energy sources. It plans to introduce smart meters which would help the vulnerable consumers in avoiding debt. The Social Welfare Considerations subchapter includes number of social measures.

Energy poverty already has its subchapter in NECP. It highlights the role of Mátra Power Plant as source of salary, as well as electricity, for the people in the region. It aims to help the vulnerable social groups by maintaining suitable overhead costs, expansion of prepayment meters and increasing awareness.

As part of a social care policy, socially deprived and disabled customers can claim protected consumer status. Municipalities with a population of less than 5,000 can apply

² <https://ec.europa.eu/eurostat/cache/digpub/housing/bloc-2b.html?lang=en>

³ <https://www.portfolio.hu/gazdasag/20220811/rezsiemeles-2022-mutatjuk-mit-kell-tudni-es-hogyan-kuzdhetsz-a-horrorisztikus-rezsiszamlak-ellen-560661> (11.8.2022)

for the social fuel support program, and from the amount thus obtained, they purchase solid fuel, which is distributed to households in need according to locally determined conditions.⁴

The table below contains key policy areas and lists plans and strategies which aim to mitigate energy poverty.

Table 1 Hungary Baseline Assessment Revision

Sector	Respective policies to mitigate energy poverty
<p>The building sector - renovation efforts</p>	<p>National Building Sector Strategy It identifies the main goals and routes for the modernization of the domestic real estate stock and a significant reduction in energy demand until 2020, and contains forecasts until 2030. It defines a conceptual framework for building energy action plans and plans specific programs and actions for later implementation.</p> <p>Environmental and Energy Efficiency Operational Program Plus (KEHOP Plus) KEHOP Plus is expected to fund the deep renovation of residential and commercial buildings for energy efficiency (co-financed by Cohesion Fund), but a similar plan has been retracted in the previous programming period resulting in a significant backlog in this field by now.</p> <p>Home Warm Program (Otthon Melege Program) Funding from the national budget is available to families for the (energy efficiency) renovation of residential buildings. The amount of the non-repayable grant is between 10 and 50 percent of the eligible costs, up to a maximum of HUF 350 000 per dwelling and up to HUF 75 million per application.⁵ A missed opportunity is that subsidies are not linked to any condition on energy efficiency improvements, in</p>

⁴ Nemzeti Energia- és Klímaterv

⁵ <https://palyazatok.org/otthon-melege-program/>

	<p>many cases the funding has only been used for aesthetic interventions. The adequacy of the technical solutions implemented was not ensured.</p> <p>RenoHUB</p> <p>The overall aim is to boost the energy modernization of Hungarian homes by developing an integrated business model. RenoHUB offices are covering a full spectrum of services related to renovation.</p> <p>Long Term Building Renovation Strategy</p> <p>Aims for achieving a sustainable, energy and cost-efficient domestic building stock by 2050 through energy efficiency, value, comfort and health improvements measures, renewable energy and smart technology usage. Specific programs will be designed and implemented for vulnerable households.</p> <ul style="list-style-type: none"> - 20% energy savings in the domestic residential building stock by 2030 - 60% reduction in carbon dioxide emissions from the energy use of buildings by 2040 compared to 2018-2020 average levels - By 2050, the percentage of buildings meeting near-zero energy demand levels should reach 90% - Achieve a building renewal rate of 3% per year by 2030⁶
Social care	<p>Maltese Charity Program for Developing Municipalities</p> <p>A comprehensive program to help 300 of Hungary's most disadvantaged municipalities to upgrade. An initiative that helps people to break out of intergenerational poverty.</p>

⁶ https://energy.ec.europa.eu/system/files/2021-07/hu_2020_ltrs_0.pdf, p.5-9

<p>Policy to promote community-ownership of energy</p>	<p>Energy communities are almost non-existent in Hungary - some (financially strongly supported) bottom-up communities can be found as pilots but no technical support, favourable regulatory environment and predictable financial incentives are available to spread their existence. Ad-hoc awareness-raising and education is only carried out by a few NGOs, reaching only a small proportion of the population. Although community energy has been defined and added to the Electricity Act, and the first community energy pilot project had been tendered by the state, the circumstances in which the pilot projects can be carried out runs counter to the principles and tools needed to create energy communities. The framework for electricity/energy communities has only been set up in 2020, and it is still immature: it only covers renewable electricity production and detailed regulation is missing.</p> <p>Currently available Recovery and Resilience Plan of Hungary includes respective investment among the most deprived settlements, but significant social problems in these territories makes the success of this program doubtful. Component C of the Plan is dedicated to Improving Municipalities. 77.47 billion HUF is aiming to support complex and integrated development of the 300 most disadvantaged municipalities identified on the basis of objective criteria. Two investments were defined: building and renovation of existing social buildings, improving housing conditions and community renewable energy generation and use. The investment will install small-scale solar power plants, the benefit of which will be used for social housing. It plans to increase renewable community energy production capacity to 25000 KWp by 2025 and related legislative change by 2023.⁷</p>
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⁷ Magyarország Helyreállítási és Ellenállóképességi Terve (Resilience and Recovery Plan of Hungary), p.101-122

	<p>KEHOP Plusz</p> <p>Supports the establishment of local energy communities, encouraging community heating and cooling from renewable energy resources. It emphasizes the importance of decentralized, renewable individual heating and community heating. Accountable within this program, among others, are renewable electricity generation on individual and collective basis and related cost-effective groundwork; Investment in a biomass and geothermal-based community heating plant.⁸</p>
<p>Policy to promote (collective) finance / crowdfunding</p>	<p>Hungarian websites allowing crowdfunding are www.adjukossze.hu; www.brancskozosseg.hu, and https://tokeportal.hu/ (this latest for start-ups mainly). First energy community in Hungary had a successful campaign at Adjukossze.hu. There is no specific national regulation for crowdfunding in Hungary, legal guideline for crowdfunding is the European Regulation on Crowdfunding Service Providers.</p>
<p>The energy market (e.g. social tariffs / tax incentives)</p>	<p>Households' utility cost reduction program allows energy prices to be independent from market prices and have fixed them at a low level (since 2013). It covers natural gas, electricity, district heating, piped water services. Reduced energy costs (caps) are eliminated for above-average consumption since 08.2022, that will likely seriously affect those living in energy poverty, who usually live in buildings with poor energy performance.</p> <p>There is no carbon or energy tax on residential households. Taxes on heating and electricity consumption are currently only included in the energy pricing of consumers belonging to the non-residential category (those with a consumption exceeding 1320 kWh). In addition, the government has also maximized</p>

⁸ Környezeti És Energiahatékonysági Operatív Program Plusz, p.84-85

	fuel prices from November 15, 2021 due to rising world market prices.
Consumer protection	<p>Consumer Protection Office at Budapest Capital Government Office (Fogyasztóvédelmi Rezsipont BP Főváros Kormányhivatala)⁹</p> <p>Limited opening hours every day in 5th district of Budapest. Its main task is to inform consumers in electricity-related areas about the relevant legal requirements, the official procedures that consumers can initiate and the options of redress available to them.</p>
SECAPs	<p>Energy poverty is mandatory element of SECAPs since 2020, indicators to be mandatorily applied only from 2025. Quality of SECAPs is variable and implementation of recommended measures is questionable (mostly due to lack of financial resources and human capacities).</p> <p>SECAP for Jozsefvaros Municipality (joint municipality of PowerPoor project)</p> <p>Supporting low-cost policies (education, workshops) and interest-free loan options for large household appliances modernization. Aiming to modernize 20% of municipality's family houses and 35% of apartment buildings. In 90% of households, the old refrigerator should be replaced by a new one by 2030.</p> <p>Jozsefvaros Municipality's SECAP includes a section dedicated to energy poverty. It recommends to collect data from home visits as per the powerpoor methodology, which allows to develop more targeted measures. Implementation of this measure is ongoing.</p>

Step 3: Setting vision, envision actions and define indicators

Reflecting to the Stakeholder universe graph, we created a model called Future radar. In the top cone, we have formulated a vision that energy poverty will be completely

⁹ <http://real.mtak.hu/110555/1/3619-ArticleText-16664-1-10-20200616.pdf>, p.15

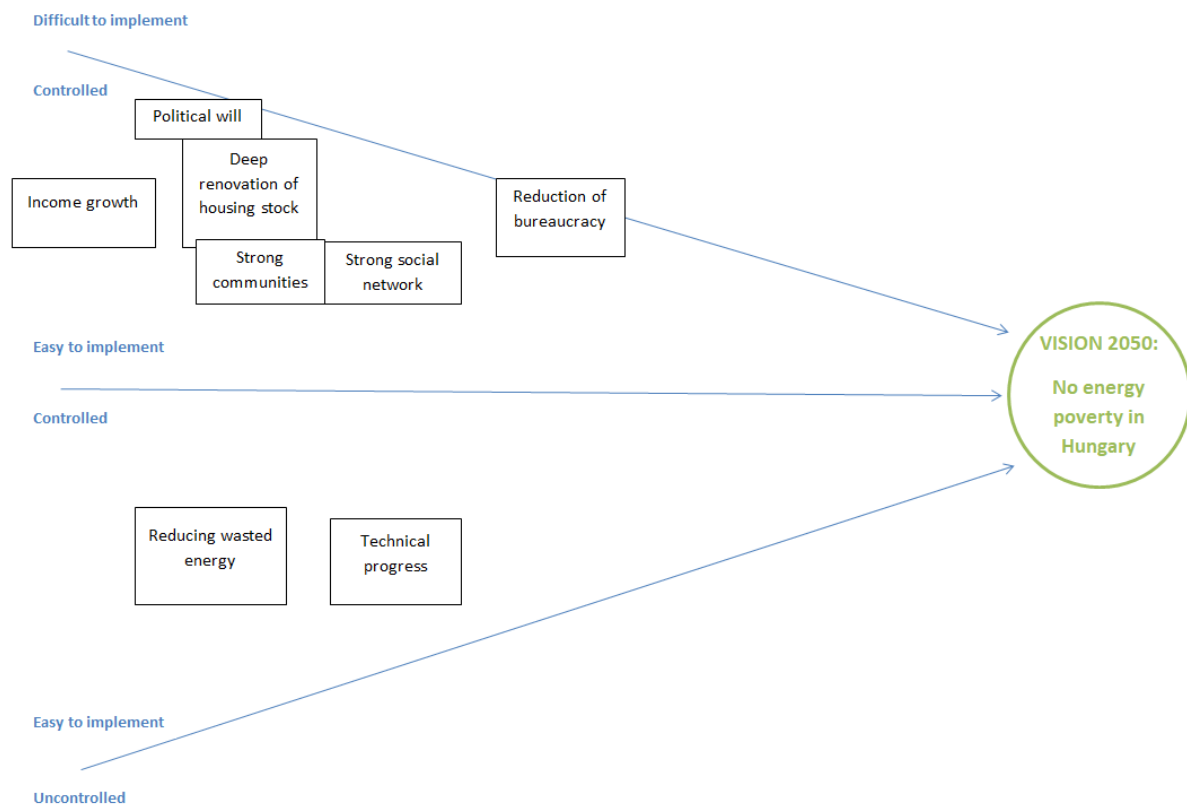
eradicated by 2050. The changes required for this achievement are ranked on the graph according to 2 variables: 1) how easy/difficult they are to realize? 2) do we have control over them, or do they happen randomly?

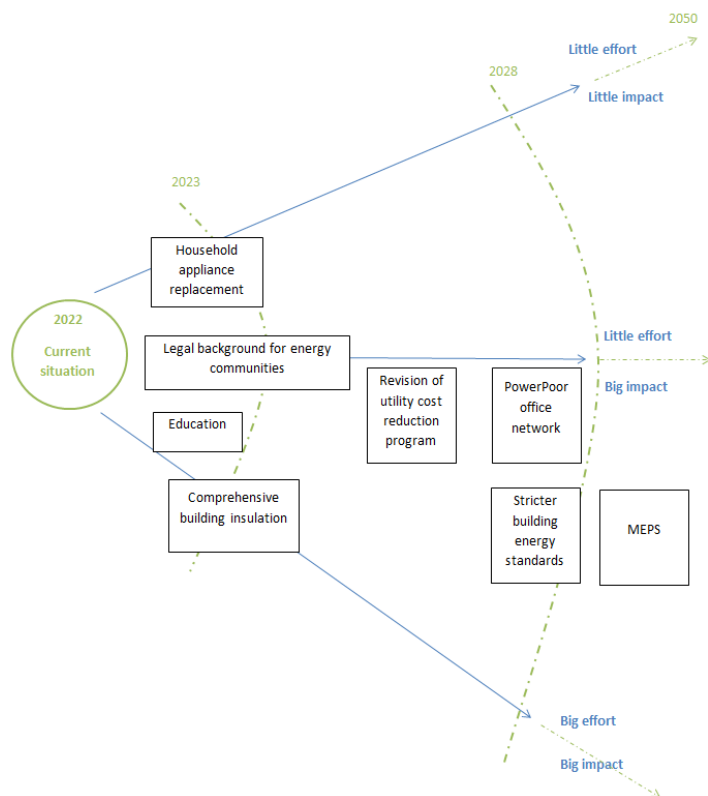
Top axis: controlled changes, but difficult to implement

Central axis: controlled changes and easy to implement (ideal)

Bottom axis: uncontrolled, but easily happening changes

Figure 4 Hungary Future Radar





The vision of the workshop attendees was to fully eliminate energy poverty by 2050.

The Liaison Group found the biggest challenge in changing the political will. Although it is a phenomenon fully controlled, we often face a lack of political interest in tackling energy poverty. This can be seen in the arrears in energy community support compared to other EU member states. No technical support, favorable regulatory environment and predictable financial incentives are available to spread their existence. The pace of increasing the energy efficiency of buildings by deep renovation is insignificant.

The urgently required change of the deep renovation of the housing stock is placed right next to the political intention in the future vision map. This is precisely one of the key problems of energy poverty, which can only be changed at the cost of greater investments. There are subsidies available for housing renovation, but they are not specifically linked to improving the energy efficiency of the buildings.

Closely related and equally difficult to achieve is the reduction of the bureaucracy. This requires political determination, which inevitably precedes, in chronological order, the ease of doing business.

Stepping a bit back on the chart timeline, high urgency was put on managed income growth. This would be an important step forward for energy-poor households, especially in settling energy bills. In the long term, however, it is also necessary to ensure proper

education and energy conservation so that they can manage their increased income properly.

The changes that are fairly easy to implement are seen as strengthening communities and social networks. We continue to emphasize the positive impact of energy communities. The Hungarian Association of Nature Conservationists defined 4 recommendations based on currently existing obstacles:

- Ensuring compliant legal definition,
- Developing of an integrated and targeted support policy,
- Creation of a non-profit energy agency,
- Promotion of energy sharing¹⁰.

The reduction of wasted energy was placed halfway between managed and random changes. This can be uncontrolled and caused by force majeure, like high energy prices, as well as effectively managed through awareness raising, proper insulation of buildings and retrofitting of high energy consumers.

Technical progress also took its place among the moderately controllable changes.

The bottom cone shows the specific measures and their chronological order. The starting year on the graph is 2022-2023, the final year is 2045.

Stakeholders felt it was important to implement all measures as soon as possible, but a lot of post-its in one place would have made the graph difficult to read. Therefore, each small object in the graph refers to one post-it from the top axis line.

Top axis: measures that can be implemented with little effort but have negligible impact

Middle axis: low effort and effective measures (ideal)

Bottom axis: effort-intensive but effective measures

All policy recommendations seemed to be urgent and to be implemented by 2028.

Household appliance replacement would have a moderate impact, but it would also require relatively small effort to realize. This was placed along with a comprehensive building insulation program. As already emphasized in the previous parts, the deep renovation of housing stock would require the highest effort, but it would have the most significant positive impact to households living in energy poverty.

Creating a legal standard background for energy-communities seems to be the most effective policy implementation requiring minimal effort. This special recommendation

¹⁰ https://mtvsz.hu/uploads/files/Megujuloenergia-kozossegek_Ertekelo_tanulmany_MTVSZ-SZGK-EMLA_final.pdf

forces a one-time activity of creating a legal definition and support mechanisms. However, promotion of energy communities requires thorough planning. It is a fair assumption that establishing an energy community on the most deprived locations of Hungary would be difficult and not sustainable. These regions burdened with deep poverty, lacking education and capital, require comprehensive social support mechanisms to tackle energy poverty.

Mainly households living in condominium apartments could benefit from establishing an energy community, although they are facing several obstacles. Experience shows difficulty in reaching common understanding even among socially better situated households. Currently even self-sustaining energy communities would need to pay grid usage fee and VAT (outstandingly high in Hungary – 27%). Both of these extra costs would need to be eliminated.

Education is definitely within the effective range of tools and it requires moderate effort. This is an ongoing activity and is performed mainly by civil society organizations through various projects.

The stakeholders found important to reform the utility cost reduction program by 2025. This policy aims to protect energy consumers by capping the energy prices, but on the long term it leads to waste and procrastination of building renovations. Only vulnerable households would need such support.

By 2028, stricter building energy standards should be implemented and the PowerPoor office network should be spread through the country. These would have high impact and relatively small effort provisions.

Although on the model it seems like all the interventions should take place in the next 5 years, take into consideration that some policies or projects might take several years to complete. The deep renovation of the buildings nationwide might take 20-30 years, but it certainly needs to start now. The stakeholders emphasized the importance of legal enhancements for energy-communities, which on the contrary to the building renovation, would take much less time and significantly less effort.

Key takeaways from the future radar models are:

- Deep housing stock renovation and household appliance replacement efforts need to continue on a higher pace nationwide
- Decision makers should encourage the establishment of energy communities by providing the accurate legal and technical support
- Bureaucracy needs to ease on the long term
- Positive changes in political attitude would enhance the fight against energy

poverty

The following table lists the actions defined on the Future radar model with their implementation target date. Similarly to the stakeholder universe, a high emphasis was put on the legal support of energy communities. Along with that, the comprehensive building energy renovation is considered extremely important to start as soon as possible.

Energy poverty is a complex issue appearing in different forms and intensity. We need to distinguish whom are we targeting with the proposed actions, e.g. if we focused on the most deprived regions, education would be the foremost priority. We think actions listed below would benefit the households who are on the edge of energy poverty and it mainly depends on vis major events whether they are falling in.

Table 2 Hungary Actions

Policy Sector	Actions to be implemented	By when?	By whom?
Social policy	Creation of a legal background and supporting tools for energy communities	2023	Ministry of Interior Energy community promoters
Buildings	Comprehensive building energy renovation program including the replacement of large energy consumer appliances	start in 2023 and continue through 2040	Ministry of Energy
Education	Informative and education program related to energy efficiency	2023	Civil society organizations, NGO's, Ministry of Interior
Consumer protection	Reforming utility cost reduction program	2025	Ministry of Interior
Education	Nationwide spread of PowerPoor advice offices	2028	Civil society organizations
Legal	Tightening of building energy standards	2028	Ministry of Energy

For each of the co-identified action, an indicator is defined in this table. This enables progress monitoring at regular intervals specifically for the co-created actions

Table 3 Hungary Action-Specific Indicators

Indicator	Baseline (2022)	Target (date dependent on the action)	
Creation of a legal background and supporting tools for energy communities	not available	existing statutory definition of energy communities, including their financial framework and support possibilities defined by law – by 2023	
Increasing renewable community energy production capacity	currently not available or insignificant	26500 KWp ¹¹	
Thermal insulation of buildings ¹²	Family houses	33%	70% by 2040
	Block of flats	44%	97% by 2040
	Large apartment houses	26%	55% by 2040
	Small apartment houses	16%	33% by 2040
Awareness-raising campaigns targeting vulnerable households	~10 / year	16 / year as of 2023 and constantly increasing	
Number of PowerPoor offices	2	15 by 2028	

Phase 2

The policy recommendations formed in previous chapters were discussed with the members of the Hungarian Liaison Group. For each action a design plan has been

¹¹ Magyarország helyreállítási és ellenállóképességi terve 2020, p.116

¹² MultiContact Consulting Kft., 2020

created under the below section Action plans. The evaluation table tool will allow monitoring of the action plans and provide a basis for further collaboration with the Hungarian LG.

Step 4: Implement Actions and apply POWERPOOR Toolkit

Table 4 Hungary Action Elements

Creation of a legal background and supporting tools for energy communities	
The responsible entity and leading person	Ministry of Interior, energy community promoters and/or civil society organizations
The target group for the action	Households on the edge of energy poverty, vulnerable to the increase of energy prices, economic instability of the country, and vis major events
Action design	Creating statutory definition of energy communities and assign financial support resources. Energy community experts could be trained in the municipalities. A transparent and user friendly website/app could be designed where families willing to contribute to and energy community could register. The website would provide the legal frame, available expertise and could serve as a platform to connect the volunteers.
Scheduling	Legal frame and definition by 2023, In the following 2-3 years intensive promotion in the municipalities, capacity and expertise building, Website/app designed and available for users by 2025
Budget	The legislation frame is the responsibility of state administration and this goal is included in Hungary's Recovery and Resiliency Plan

	Promotion, capacity building and website could be project-based and delivered by energy community promoters and civil society organizations, estimated costs of such project is 170 000 - 350 000€
Drivers	energy supply diversification, increased resiliency towards energy price increases, community building
Barriers	no legal definition as a starting point, financial grants not assigned, lack of expertise and motivation of participants, especially in deprived areas

Increasing renewable energy capacity from energy communities	
The responsible entity and leading person	Municipalities, energy community promoters and/or civil society organizations
The target group for the action	Panel flats, settlements with sufficient conditions for solar energy production, municipalities
Action design	Building renewable energy community on the basis of volunteering and/or crowdfunding. Initiator should be the local municipality, PV specialist and electricians contributing with their expertise, residents contributing with volunteer work and/or own financial resources. Crowdfunding could be a form of financing
Scheduling	Hungary's Recovery and Resiliency Plan includes installation of 26 500 KWp renewable community energy production capacity by 2026 Q2 ¹³

¹³ Magyarország Helyreállítási és Ellenállóképességi Terve 2020, p. 116

Budget	over 280 million € ¹⁴
Drivers	energy supply diversification, increased resiliency towards energy price increases, community building
Barriers	Detailed implementation plan is missing, lack of expertise and motivation of participants, not considering vulnerable households living in energy poverty

Thermal insulation of buildings	
The responsible entity and leading person	Ministry of Innovation and Technology
The target group for the action	Families living in old and poorly insulated houses, keeping a gradual approach and starting with the oldest and least energy effective buildings
Action design	Establishing a building renovation committee per each municipality and developing a net zero carbon legislation applicable for renovations. Mapping the oldest and least energy effective buildings in the municipality - using existing database and in-person visit questionnaire. Some buildings might not be worth of saving, therefore an alternative housing should be provided for those residents. One-stop-shop system for contractors and/or municipalities, who would coordinate the renovation end-to-end. It could also help in investment procurement. Possibility to subsidize 100% (or near) of the investments under certain conditions.

¹⁴ Magyarország Helyreállítási és Ellenállóképességi Terve 2020, p. 118

Scheduling	Start 2023 or as soon as possible, sustain by 2040 or longer
Budget	15 billion €
Drivers	Increased energy efficiency of buildings, therefore decreased energy intensity, decreased carbon emissions, decreased utility costs for households, better air quality and living standards, improved health conditions
Barriers	Subsidies not linked to energy efficiency improvements, lack of regulation that defines zero carbon emission after renovations, lack of prepared professionals and thorough planning

Awareness raising campaigns targeting vulnerable households	
The responsible entity and leading person	Civil society organizations, NGO's, Ministry of Interior
The target group for the action	Municipalities, deprived settlements, elderly
Action design	Distribution of flyers with energy efficiency advices, workshops and quizzes in schools and for elderly groups, video advertisement in TV channels, involving celebrities into awareness raising
Scheduling	2023 - increased number of campaigns compared to 2022
Budget	Depends on type of campaign
Drivers	Education as key tool for eradicating energy poverty, cost effective, no large investments needed
Barriers	Difficulty of changing long existing habits, lack of interest

Nationwide spread of PowerPoor offices	
The responsible entity and leading person	Civil society organizations
The target group for the action	Municipalities
Action design	Developing a sustainable and attractive model for Powerpoor offices. The consultancy provided could include comprehensive investment procurement advice. The Powerpoor offices should co-exist with the house renovation one-stop-shops (RenoHUB). Smaller settlements should also have own office to facilitate the access to residents – e.g. saving costs of traveling and better overview of local community. Opening hours on Saturday to reach more customers.
Scheduling	15 offices nationwide by 2028
Budget	240 000 €
Drivers	Providing advice to vulnerable households considering local conditions, awareness raising, cost efficiency
Barriers	Lack of public awareness, lack of municipality interest, sensitive topic, households not willing to admit their vulnerability, potential abuse of financial procurement help

Step 5: Monitor & Evaluate

Table 5 Hungary Action-Specific Indicators

Indicator	Baseline (2022)	Target (date dependent on actions)	Target achieved?	
Creation of a legal background and supporting tools for energy communities	not available	existing statutory definition of energy communities, including their financial framework and support possibilities defined by law – by 2023		
Increasing renewable community energy production capacity	currently not available or insignificant	25000 kWp ¹⁵		
Thermal insulation of buildings ¹⁶	Family houses	33%	70% by 2040	
	Block of flats	44%	97% by 2040	
	Large apartment houses	26%	55% by 2040	
	Small apartment houses	16%	33% by 2040	
Awareness-raising campaigns targeting vulnerable households	~10 / year	16 / year		
Number of PowerPoor offices	2	15		

¹⁵ Magyarország helyreállítási és ellenállóképességi terve 2020, p.116

¹⁶ MultiContact Consulting Kft., 2020

Table 5 tracks the progress of general energy poverty indicators leaning on the categorization provided by EPAH. The target value and the date are based on the vision from the Future radar model, which was the complete eradication of energy poverty in Hungary. Some targets are very ambitious, especially the indicators related to the improvement of housing stock. We believe a robust renovation program in the near future, as described in the action plan, could help achieve these goals. In case of the poverty risk indicator we bear in mind the high complexity of this issue and it's often uncontrollable nature when setting the target value.

Table 6 Hungary General Energy Poverty Indicators

Indicator	Baseline (2022)	Target and Date (Vision)	Target achieved? (further details)
Inability to keep home adequately warm	5,4%	close to 0% by 2050	YES/NO (further details)
High share of energy expenditure in income	9%	close to 0% by 2050	YES/NO (further details)
Arrears on utility bills	9,7%	close to 0% by 2050	YES/NO (further details)
At Risk of Poverty or Social Exclusion	28,2%	8% by 2050	YES/NO (further details)
Population living in dwelling with presence of leak, damp and rot	20,4%	close to 0% by 2050	YES/NO (further details)
Dwellings with energy label A	10,7%	95% by 2050	YES/NO (further details)
Excess winter mortality/deaths	9,5%	close to 0% by 2050	YES/NO (further details)
Population living in dwellings comfortable warm in winter time	79,1%	close to 100% by 2050	YES/NO (further details)
Population living in dwellings comfortable cool in summer time	73,8%	close to 100% by 2050	YES/NO (further details)
Population living in dwellings equipped with heating facilities	99,9%	100% by 2050	YES/NO (further details)

Population living in dwellings equipped with air conditioning	3,8%	50% by 2050	YES/NO (further details)
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Recommendations on how to implement the national roadmap

The above process will have resulted in a national roadmap which has been co-created with a diverse group of stakeholders from the POWERPOOR National Stakeholder Liaison Groups. Following the national policy dialogues and consultations, project partners reflected on the roadmap drafting process and suggested additional recommendations to specific stakeholder groups on HOW the above-listed actions can be implemented. Recommendations should be aimed at the following groups and be included below:

For Sub-National Governments

Map and assess the condition of the buildings in the municipality. Apply gradual approach and prioritize renovation of the least energy effective buildings. Establish a renovation steering committee consisting of electricians, building energy specialists and engineers.

Aim to promote and establish energy communities, taking into account local conditions.

Open local Powerpoor office with trained professionals considering local conditions. Opening hours should be adjusted to be available in after work hours or on Saturday to attract more customers.

Combine the Powerpoor office with RenoHUB one-stop-shop or other renovation consultancy service. Include possibility of comprehensive renovation coordination with investment procurement advice.

Raise awareness of energy efficiency. Spread flyers, hold awareness raising campaigns.

For National Governments

Continue establishing funds for building stock renovation. Create financial support mechanism strictly tied to energy efficiency related renovations.

Introduce net 0 or close carbon emission certificate requirements for building renovation.

Provide clear legislation for energy communities.

Reduce bureaucracy obstacles in public procurement and reduce administration efforts.

For Civil Society

Adjust energy consumption habits.

Participate in awareness raising campaigns.

Participate in establishing an energy community, if local conditions allow.

Seek for advice in Powerpoor and/or RenoHUB offices

For The Private Sector

Participate in awareness raising campaigns.

Install renewable energy production and promote its widespreading among vulnerable households.

Educate employees for energy efficiency.

Organize volunteering events for employees where they can help households living in energy poverty.