



POWERPOOR

Empowering Energy Poor Citizens through Joint Energy Initiatives

POWERPOOR - Croatia'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

In the POWERPOOR project, partners are actively assessing causes of energy poverty and suggest short-term and collective energy action solutions to mitigate this problem. A highly diverse network of Energy Supporters and Mentors has been trained and is being engaged to further support energy poor households to implement solutions. The project also sets up Local Energy Poverty Mitigation Offices in engaged municipalities. POWERPOOR strives to trigger high-impact change, not only on the local and regional level, but also on the national and European level. Such a multi-level governance approach will result in long-lasting impact and coordination between local needs and national (e.g., National Energy and Climate Plans) and supra-national enabling frameworks.

The aim of the national roadmaps is then to build on current project activities and to enable the application of the POWERPOOR approach to promote integrated energy poverty mitigation policies across all regions and cities within the pilot countries. This roadmap is a synthesis exercise based on several outputs of the Work Packages and is to be used by project partners and Energy Supporters & Mentors during the last year of the project and beyond its lifetime (also possibly to be incorporated into future Horizon projects).

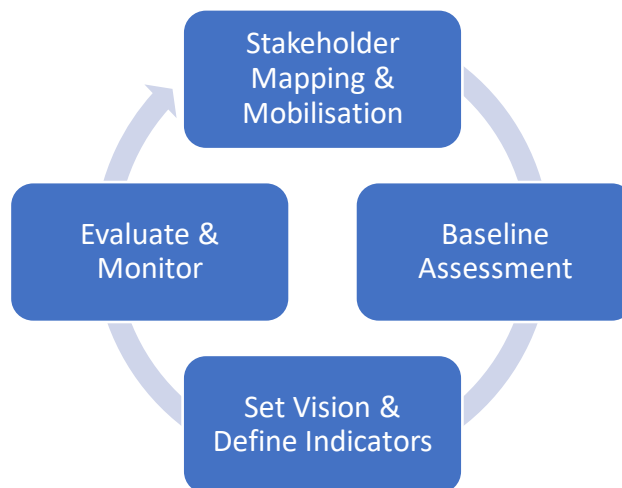
Next to the project national partners, stakeholders out of the network of Energy Supporters and Mentors, especially those at the National Liaison Groups, were invited, to take ownership of the national roadmaps and take the process forward. This work resulted in lessons-learned, which, in turn, generate policy recommendations on how the national regulatory / incentive framework should be adapted to mitigate energy poverty in the first place.

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

The following three steps correspond largely to the activities carried out within the POWERPOOR project and rely strongly on the findings of Deliverable 4.2 “Baseline Assessment Report”. They form the basis for the national roadmaps and for the subsequent steps of Phase 2.

Step 1: Stakeholder Mapping, Commitment & Mobilization

As part of D4.1, project partners have carried out an initial assessment of stakeholders who are part of the National Liaison Groups, have created an overview of the expectations the different stakeholders have towards the project as well as their influence and level of expertise. As part of the roadmapping process, it becomes important to identify the relative importance of particular stakeholder groups vis-a-vis energy poverty mitigation and to identify how flexible stakeholders are to adapt their everyday (business) practices and what kind of networks exist between them. The stakeholder universe methodology, as presented in Module 4 lends itself well for this.

This exercise should have been done together during the stakeholder consultations and is aimed at understanding stakeholder relations, to identify possible disconnection, flows of knowledge/resources and power. “Tackling energy poverty” is the main star, stakeholders with the highest interest (to mitigate energy poverty), are closer to it. Flexible stakeholders are placed above the x-axis, non-flexible stakeholders beneath.

Stakeholders placed closer to each other have a closer working relationship. Once this is mapped out, connect stakeholder to depict fluxes of resources, money or others. Spot potential clusters of interest and identity as well as critical stakeholders, which link clusters and act as “gatekeepers” or knowledge brokers. Then the network was analysed.

In D4.1 and D4.2 an analysis of stakeholders and their involvement in POWERPOOR and Liaison Group was made.

In Croatia, 78 stakeholders are identified by the partner DOOR. 9 organisations were invited and accepted to join POWERPOOR Liaison Group - first meeting. And 9 organisations were invited to second meeting POWERPOOR Liaison Group.

Figure 1 Stakeholders in Croatia per target group



Table 1 Liaison Group members in Croatia per target group – first meeting

Liaison groups representatives per target groups	Number of representatives
Regional Authorities	1
Local Authorities	2
Civil Society	3

SMEs	2
Academia	1

Table 2 Liaison Group members in Croatia per target group – second meeting for National roadmap

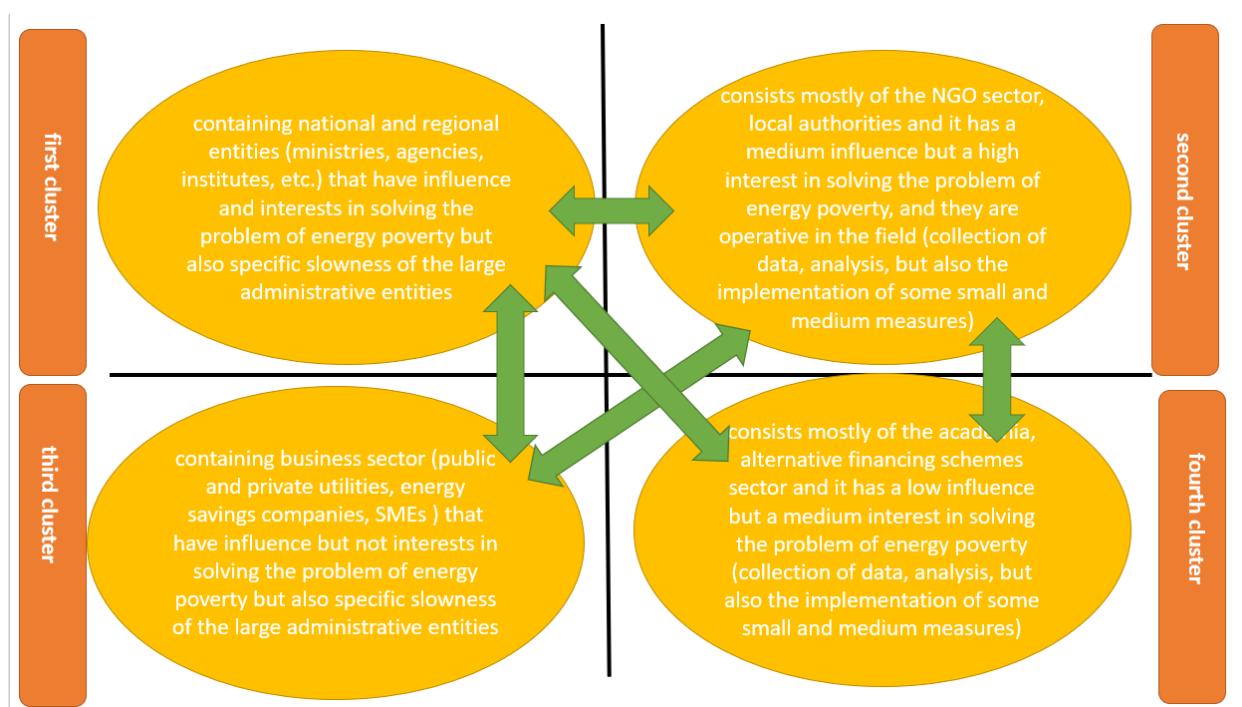
Liaison groups representatives per target groups	Number of representatives
Local Authorities	2
Civil Society	4
Energy services company	1
Academia	2

Stakeholder mapping done for D4.1 was used as a basis to co-create the stakeholder universe. The methodology was slightly adapted to work best for the Croatian context. Out of 78 stakeholders that are identified we can differentiate four potential clusters of interest:

- the first cluster containing national and regional entities (ministries, agencies, institutes, etc.) that have influence and interests in solving the problem of energy poverty but also specific slowness of the large administrative entities;
- the second cluster, consists mostly of the NGO sector, local authorities and it has a medium influence but a high interest in solving the problem of energy poverty, and they are operative in the field (collection of data, analysis, but also the implementation of some small and medium measures)
- the third cluster containing business sector (public and private utilities, energy savings companies, SMEs) that have influence but not interests in solving the problem of energy poverty but also specific slowness of the large administrative entities
- the fourth cluster containing mostly of the academia, alternative financing schemes sector and it has a low influence but a medium interest in solving the problem of energy poverty (collection of data, analysis, but also the implementation of some small and medium measures)

The stakeholders were mapped according to their interest and influence - and four clusters were created - during the online stakeholder consultation of the roadmap, taking into account the clusters and the proposed measures, a connection was made between the clusters for the final version of stakeholder universe.

Figure 2 Croatia Stakeholder Universe



First cluster containing national and regional entities (ministries, agencies, institutes, etc.) whose role is to pass a law and measures to help vulnerable households and also energy-poor households by developing support schemes for energy transition and distributing national and EU funds. They have highest impact but their interest varies on political and economic situations in the country and most often includes short-term solutions, which is a problem in solving of energy poverty. This is why they are placed on the grid in a part of high impact but of less interest than the second cluster - and are considered one of the least flexible body.

Second cluster consists of highest interest stakeholder in tackling energy poverty - civil society organizations – they are mostly financed from EU funds for implemented activities related to energy poverty. Local authorities mostly cooperate with civil society on the issue of energy poverty due to ability of civil society to adapt to the local needs and the variety of solutions they can provide. Civil society and especially local authorities have a significant potential to help vulnerable households. With joint effort even the low-

income families can have access to EE and RES or other source which can help them to break out of energy poverty.

First cluster is connected to second cluster mostly in the exchange of experience and knowledge and capacity building. Civil society often have new data and interesting discoveries from the field that the ministries from the first cluster can use for co-designing future policies - for example, this National roadmap is a document that can be interesting for the first cluster and was created by the second cluster of stakeholders.

Third cluster of stakeholders are located below the axis X and the stakeholders who belong to this group have the least interest in solving energy poverty but their impact can be great. By creating the right measure for third cluster of stakeholders (public and private utilities, energy savings companies, SMEs) like establishing the OSS which is one of the proposed measures in this roadmap the stakeholders of this cluster could be more involved in solving the problem of energy poverty.

Third cluster is connected to first and second cluster. The inflexibility of the first cluster is transferred to the third cluster and can be considered the cause of the inflexibility of the third cluster - like energy providers (third cluster), as one of the most significant players are tied to national regulations bodies (first cluster) - making them one also one of the least flexible body. But by connecting the third cluster with the first cluster through the measure of establishing OSS interest can be increased, thus the impact they already have can be focused on energy poverty - and the inflexibility of the first and third clusters can be overcome.

Fourth cluster of stakeholders are also located below the axis X and the stakeholders who belong to this group have the medium - high interest in solving energy poverty but their impact can be medium to low. It is mostly academia and technical universities that through the energy poverty project with civil society organizations implement activities to alleviate energy poverty

The fourth cluster is connected to the second cluster through POWEROOR. But through other obligations fourth cluster has a strong connection with the first and third clusters and that is why they are a good partner for civil society.

The key takeaways from the stakeholder modelling are the following:

- When designing measures and policies, the first cluster should include all other clusters in the working group.
- Civil organizations work closely on the issue; therefore they have the right expertise and flexibility in providing help. They have a significant impact on micro level.

- Local authorities and civil society have a significant potential to help vulnerable households - that's why it's recommended that Local energy poverty mitigation offices (like POWERPOOR offices) are opened in cooperation with local authorities

Step 2: Baseline Assessment

Since the analysis of D4.2 Baseline assessment report was made in April 2021 energy crisis has already taken root in the 2021 pandemic year when the price of four energy sources went up. However, the increase in prices in 2021, possibly caused by the Covid-19 pandemic was not felt by Croatian citizens because the government was able to cope with these prices through various mechanisms. The Russian invasion of Ukraine in February 2022 put additional pressure on the increase of energy prices, and energy prices could no longer be contained by the government and both increase in prices from 2021 and 2022 started to affect the citizens. Four factors affect the energy crisis in Croatia: inflation, war in Ukraine, Croatian entry into the Eurozone and COVID-19 pandemic. The Croatian government's response to the energy crisis in 2022 went in two directions: limiting the prices of energy and changing existing policies.

Many changes in policies have occurred in 2022 in comparison to the 2021 analysis in D4.2 of the Baseline Assessment Report among them the important change for POWERPOOR is **introduction of the concept of energy poverty in policies** (but not yet the national definition of energy poverty) and **passing policies** that promote **community-ownership of energy** and **collective finance / crowdfunding**.

Table 3 Croatia Baseline Assessment Revision

National Energy and Climate Plans (NECPs)	Passing Program for mitigation of energy poverty, which includes the use of renewable energy sources in residential buildings in areas of special state until 2025¹
The building sector - renovation efforts	Long-term strategy for the renovation of the national building stock until 2050 – Decision (Official Gazette, No. 140/2020)² National recovery and resilience plan (NPOO)³ - consists of five components and one initiative- Economy, Public administration, judiciary and state

¹ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_12_143_2446.html

² https://narodne-novine.nn.hr/clanci/sluzbeni/2020_12_140_2704.html

³ <https://planoporavka.gov.hr/UserDocsImages/dokumenti/Plan%20oporavka%20i%20otpornosti%20srpanj%202021..pdf?vel=13435491>

	<p>property, Education, science and research, Labour market and Social protection and health and the Building renovation initiative. Most of the grant in the building sector part will be directed toward the renovation of buildings damaged in the earthquake including energy renovation.</p> <p>Program for mitigation of energy poverty, which includes the use of renewable energy sources in residential buildings in areas of special state until 2025 (Decision (Official Gazette, No. 143/2021)⁴ - introduces the concept of energy poverty, but not the national definition of energy poverty. HRK 150 million (19.957.418 €) from National recovery and resilience plan (NPOO) and HRK 205 million (27.275.139 €) from the state budget are planned for the entire implementation of the Program in the implementation period. The program covers the renovation of 387 residential buildings (but 413 buildings are listed in the table) and 100% of the renovation costs are planned to be financed. The program opened a public call and implementation started for 7 out of 32 buildings in Lički Osik and another 80 in other local communities are planned for 2022/2023.</p> <p>Program for energy renovation of family houses for the period 2014 - 2020 - "Decision on the extension of financing in 2021 for the implementation of the Program for energy renovation of family houses for the period from 2014 to 2020 with a detailed plan for the period until the end of 2020 (Official Gazette, No. 183/2021"⁵ - as part of this program, 3 public calls for family houses and 2 special calls have been announced since 2014– 1 for energy poor households and 1 for households affected by the</p>
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⁴ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_12_143_2446.html

⁵ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_07_83_1528.html

	<p>earthquake⁶). “Public call for energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty”⁷ was opened in 2020, included only citizens already targeted by welfare system and excluded other categories of a vulnerable group of citizens and citizens at risk of energy poverty or energy poor citizens.</p> <p>The funds are provided by the Financial Plan (ETS system) of The Environmental Protection and Energy Efficiency Fund.</p> <p>Program for energy renovation of multi-apartment buildings for the period up to 2030 - Decision (Official Gazette, No. 143/2021)⁸ - introduction the concept of energy poverty, but not the national definition of energy poverty. The first Public call⁹ from this program was opened in April 2022. In previous program that lasted from 2014-2020 there was only one Public call in 2015.</p>
Social care	<p>The Guaranteed Minimal Support programme (Social Welfare Act (Official Gazette, No. 157/13, 152/14, 99/15, 52/16, 16/17, 130/17, 98/19, 64/20, 138/20)¹⁰ - The guaranteed minimum financial assistance is used for housing costs which include rent, utility bills, electricity, gas, heating, water, drainage, etc. The right to a guaranteed minimum financial assistance is granted to a single person or a household that does not have enough funds to meet basic life needs.</p> <p>Decision on the basis for calculating the amount of the minimum¹¹ fee (Official Gazette, No. 157/2013) - shows the decision that the basis</p>

⁶ <https://www.fzoeu.hr/hr/natjecaj/7539?nid=196>

⁷ https://www.fzoeu.hr/docs/javni_poziv_z_a_financiranje_energetske_obnove_obiteljskih_kuca_z_a_ranjive_skupine_gradana_u_opasnosti_od_energetskog_siromastva_v1.pdf

⁸ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_12_143_2444.html

⁹ <https://mpgi.gov.hr/vijesti-8/objavljen-poziv-za-energetsku-obnovu-visestambenih-zgrada-neostecenih-u-potresu-prvi-poziv-u-okviru-npoo-a/14463>

¹⁰ <https://www.zakon.hr/z/222/Zakon-o-socijalnoj-skrbi>

¹¹ https://narodne-novine.nn.hr/clanci/sluzbeni/2014_09_114_2172.html

	<p>for calculation the amount of the guaranteed minimum compensation is HRK 800 (€106.5).</p> <p>Regulation on the criteria for acquiring the status of vulnerable energy customers from network systems (Official Gazette, No. 120/12, 14/14, 95/15, 102/15, 68/18, 31/22)¹² - in which the criteria for acquiring the status of a vulnerable customer of energy from network systems are established. Furthermore, solidarity compensation is described as a means of reducing the energy poverty of vulnerable customers. The tasks of the supplier and the competent centre for social welfare are described.</p> <p>Conclusion regarding compensation for reducing the impact of rise in energy prices on nursing homes (Official Gazette, No. 100/2020)¹³ - The compensation was HRK 400(53,09€), but increased again October 1, 2022, it amounts to HRK 500(66,36 €).</p> <p>“Zagreb strategy for the fight against poverty and social exclusion for the period from 2021 to 2025”¹⁴ - Measure for energy poverty is: ensuring energy packages (box) for beneficiaries of the right to compensation for housing costs.</p>
Policy to promote community-ownership of energy	<p>“Electricity Market Act (Official Gazette, No. 111/2021)”¹⁵ – definition of Citizen Energy Community (CEC) - for practical establishment and operation of CEC there is need to adopt by-laws that will define the details related to their establishment and operations.</p>

¹² https://narodne-novine.nn.hr/clanci/sluzbeni/2022_03_31_374.html

¹³ https://narodne-novine.nn.hr/clanci/sluzbeni/2022_09_104_1528.html

¹⁴ [http://web.zagreb.hr/Sjednice/2017/sjednice_skupstine_2017.nsf/0/C12581370033D600C1258680004E6002/\\$FILE/04%20Strategija.pdf](http://web.zagreb.hr/Sjednice/2017/sjednice_skupstine_2017.nsf/0/C12581370033D600C1258680004E6002/$FILE/04%20Strategija.pdf)

¹⁵ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_10_111_1940.html

	<p>“Renewable Energy Sources and High-Efficiency Cogeneration Act No. 138/2021)”¹⁶ - definition of Renewable Energy Community (REC).</p> <p>“Act on Cooperatives (Official Gazette, No. 34/11, 125/13, 76/14, 114/18, 98/19)”¹⁷ - there is no need for definition of an energy cooperative, it can be established according to the principle of already existing act.</p>
Policy to promote (collective) finance / crowdfunding	“Act on the implementation of Regulation (EU) 2020/1503 on European crowdfunding service providers (Official Gazette, No. 144/2021)”¹⁸
The energy market (e.g. social tariffs / tax incentives)	<p>“Regulation on the monthly amount of compensation for vulnerable energy buyers, the method of participating in the settlement of the costs of energy users of the compensation and the actions of the Croatian Institute for Social Work (Official Gazette, No. 104/2022)”¹⁹ - “energy vouchers”. -The compensation for the vulnerable customer was HRK 200 (26.63 €), but due to the increase in prices, from April 1, 2022, it amounts to HRK 400 (53.25 €). That decision is valid until March 31, 2023. The compensation for the vulnerable customer was HRK 400 (53.09€), but increased again on October 1 2022, it amounts to HRK 500 (66.36 €).</p> <p>“Agreement on cooperation on measures to combat energy poverty from 2015”²⁰ - the signatories of these contracts are the 3 largest suppliers in CRO - HEP, RWE and GEN-I and it is connected to so-called Solidarity Fee of HRK 0.03/kWh of electricity consumed that is added to a household's energy bill, but in the end it is not</p>

¹⁶ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_12_138_2272.html

¹⁷ <https://www.zakon.hr/z/64/Zakon-o-udrugama>

¹⁸ https://narodne-novine.nn.hr/clanci/sluzbeni/2021_12_144_2458.html

¹⁹ https://narodne-novine.nn.hr/clanci/sluzbeni/2022_09_104_1521.html

²⁰ <https://vlada.gov.hr/UserDocsImages/Vijesti/2015/rujan/14%20rujan/Sporazum%20o%20suradnji%20na%20mjerama%20suzbijanja%20energetskog%20stanovni%C5%A1tva.pdf>

	<p>paid by the costumers, but by the electricity suppliers who signed the decision that they will pay that amount on behalf of the customer and that this amount will be used as an achieved indicator under Article 7 of the Energy Efficiency Directive (now Article 8). The amount is paid into the state budget, and money from the state budget is directed to the Croatian Ministry of Demography, Family, Youth and Social Policy for "energy vouchers". The amount paid to the Ministry from the state budget depends on the number of beneficiaries of the Guaranteed Minimal Support programme.</p> <p>“Decision on the payment of a one-time cash payment to pension beneficiaries in order to mitigate the consequences of price increases (Official Gazette, No. 104/200)”²¹ - A one-time decision on the energy compensation for 690,000 pensioners with a pension of up to HRK 4,360 (€578.67). Value of the measure is HRK 450 million (€59.7 million).</p> <p>„Decision on the payment of a one-time cash payment to children's allowance beneficiaries in order to mitigate the consequences of the increase in energy prices (Official Gazette, No. 104/2020)”²² - A one-time decision on the energy compensation for to the beneficiaries of the child support. The amount depends on the number of children.</p> <p>“Decision on the amount of tariff items for guaranteed electricity supply (Official Gazette, No. 100/200)”²³ -new category (before there were only 2 categories, households and business, and</p>
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²¹ https://narodne-novine.nn.hr/clanci/sluzbeni/2022_09_104_1524.html

²² https://narodne-novine.nn.hr/clanci/sluzbeni/2022_09_104_1523.html

²³ https://narodne-novine.nn.hr/clanci/sluzbeni/2022_08_100_1474.html

²³https://www.hep.hr/elektra/UserDocsImages/dokumenti/tarife/kucanstvo/Uredba_VladeRH_01102022/Tarife_stavke_zajamcena_od_01-07-2022_do_01-10-2022.pdf

	<p>now there are 3 categories, households, business and public). Refers to: kindergartens, schools, faculties, institutes, libraries, museums, hospitals, health institutions, homes for the elderly and infirm, etc., associations, religious communities, parish offices, etc., municipalities, cities, counties, utility companies - water supply and drainage.</p> <p>“Decision on the amount of the fee for the use of space used by production plants for the production of electricity (Official Gazette, No. 84/2013, 101/2013, 72/2015)”²⁴ - The owners of production facilities for the production of electricity are obliged to pay compensation to local government which should be used for social welfare programs.</p> <p>“Regulation on the obligation system of energy efficiency (Official Gazette, No. 41/2019)”²⁵</p> <p>“Value Added Tax Act” (Official Gazette, No. 73/13, 99/13, 148/13, 153/13, 143/14, 115/16, 106/18, 121/19, 138/20, 39/22, 113/22)”²⁶ - amendments to lower the VAT rate to 5% for the delivery of heating from thermal stations, and the delivery of firewood, pellets, briquettes and wood chips. That decision is in effect until March 31, 2023. A VAT rate of zero percent is being introduced for the delivery and installation of solar panels on private residential buildings, residential premises, and public and other buildings. No limited time on 0% VAT for solar systems.</p>
Consumer protection	<p>“Regulation on the criteria for acquiring the status of a protected customer in conditions of crisis situations in gas supply (Official Gazette, no. 65/2015)”²⁷ -A law establishing criteria for protected consumers and related measures to</p>

²⁴ https://narodne-novine.nn.hr/clanci/sluzbeni/2013_07_84_1869.html

²⁵ https://narodne-novine.nn.hr/clanci/sluzbeni/2019_04_41_847.html

²⁶ <https://www.zakon.hr/z/1455/Zakon-o-porezu-na-dodanu-vrijednost->

²⁷ https://narodne-novine.nn.hr/clanci/sluzbeni/2015_06_65_1239.html

	<p>ensure reliable supply to these customers. Protected consumers have the right to be supplied with gas in case of crisis conditions for security reasons, possible threat to life, work status and other social reasons.</p> <p>Regulation on the criteria for acquiring the status of vulnerable energy customers from networked systems (Official Gazette, number: 120/12, 14/14, 95/15, 102/15, 68/18, 31/22)”²⁸ –the definition of the status of "vulnerable customer" was expanded at the time of the energy crisis.</p> <p>“Decision on write-off of debts to natural persons up to a maximum amount of HRK 5,000.00 for the principal of the debt and expenses, increased by the associated interest”²⁹ - A one-time policy to write-off unpaid debts, interest and other related costs, including energy debts to unblock a person's energy account, up to a total of HRK5000 by Hrvatska elektroprivreda (HEP). For the general public, there was one public call in 2018, and now it is valid only for the part of Croatia affected by the earthquake in 2020 - Sisak - Moslovina County.</p>
SECAPs	<p>“Action Plan for Energy and Climate Sustainable Development (SECAP)- Osijek”³⁰ - Energy poverty measures are also included in the SECP: Measure 1: Co-financing of energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty. Measure 2: Small EE measures for vulnerable groups of citizens at risk of energy poverty.</p> <p>“Action Plan for Energy and Climate Sustainable Development (SECAP)- Zadar”³¹ -</p>

²⁸ https://narodne-novine.nn.hr/clanci/sluzbeni/2022_03_31_374.html

²⁹ <https://www.hep.hr/elektra/obavijest/poziv-za-podnosenje-zahtjeva-za-otpis-duga/1593>

³⁰ <https://door.hr/usvojen-secap-akcijski-plan-energetski-i-klimatski-odrzivog-razvitka-grada-osijeka/>

³¹ <https://door.hr/usvojen-je-akcijski-plan-energetski-i-klimatski-odrzivog-razvitka-grada-zadra/>

	<p>Energy poverty measures are also included in SECP: Measure 1: Co-financing of energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty.</p> <p>“Action Plan for Energy and Climate Sustainable Development (SECAP)- Rijeka”³² - Energy poverty measures are also included in the SECP: Measure 1: Co-financing of energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty. Measure 2. Establishment of a centre for energy consulting and assistance to the energy poor households.</p>
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Step 3: Set Vision, envision Actions and define Indicators

Now that the stakeholders have been gathered, committed and the national regulatory context reassessed, it was time to foster a common understanding on what alleviating energy poverty actually means for the different stakeholder groups. During the stakeholder consultation, a concrete vision for energy poverty mitigation was created. The future radar methodology lends itself well for this purpose. Discussions on the possible actions took place based on a common reference scenario (the vision).

By applying this tool, it was possible to plan policy actions equipped with a global overview of the milestones to achieve, coupled with their feasibility and the influence you can put on them to happen. The second “cone” presented a detailed plan of actions to implement to achieve the changes envisaged in the first “cone”. In the table below, the co-created actions from the second “cone” are indicated.

Reflecting to the Stakeholder universe graph, Liaison group created a model called Future radar. In the top cone, Liaison group have formulated a vision that arrears on utility bills will be reduced by 9% until 2030. In 2021 arrears on utility bills in Croatia is 15.2% while EU27 is 6.2% - our goal by 2030 is to reach the EU level from 2021.

³²<https://www.rijeka.hr/wp-content/uploads/2020/10/Informacija-o-provedbi-savjetovanja-s-javno%C5%A1%C4%87u-o-Nacrtu-prijedloga-akcijskog-plana-odr%C5%BEivog-energetskog-razvoja-i-prilagodbe-klimatskim-promjenama-Grada-Rijeke-SECAP.pdf>

The left photograph shows a hand-drawn timeline on graph paper, spanning from 2012 to 2024. The timeline is marked with vertical red lines and horizontal blue lines. Yellow sticky notes are placed along the timeline, containing handwritten text in Chinese. Red arrows indicate the flow of the timeline. The timeline is labeled with years: 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, and 2024. The right photograph shows a similar hand-drawn timeline on graph paper, spanning from 2024 to 2030. The timeline is marked with vertical red lines and horizontal blue lines. Yellow sticky notes are placed along the timeline, containing handwritten text in Chinese. Red arrows indicate the flow of the timeline. The timeline is labeled with years: 2024, 2025, 2026, 2027, 2028, 2029, and 2030.

The Liaison Group emphasized problems before proposing measures that would affect the proposed indicator like:

- the problems are lack of definition of energy poverty on national level and lack of criteria on energy poverty on national level.
- “Public call for energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty” opened in 2020 included only citizens already targeted by welfare system and excluded other categories of vulnerable group of citizens and citizens at risk of energy poverty or energy poor citizens
- there is interest in the Program and Public calls, but most citizens are concerned about too complicated administrative paperwork and application
- lack of funds due to the number of interested applicants – citizens are not sure if they want to invest money and time again to apply for a next call but they are not sure if they would go into reconstruction with their own 100% funds without the help of the state
- an unregulated market and unresolved property-legal relations contribute to the problem of lack of national data and the market operating in the shadow zone.
- biggest inconvenience for citizens is to collect more than 50% of co-owners'

signatures to be able to apply and go for subsidized renovation, because most of the apartments are rented and landlords are not interested in investing in the apartments they rent.

- existing legal framework does not enable the establishment of energy communities, which can be one of the measures to solve energy poverty

Table 14 provides a detailed overview of 11 measures proposed by Liaison Group that should contribute to the specified targeted indicator.

Although on the model it seems like all the interventions should take place in the next 4 to 5 years, take into consideration that some policies/measures might take several years to complete. For an example of the methodology we used in the validation of the measure – eg. deep renovation of the buildings nationwide might take 20-30 years, but it certainly needs to start now. In comparison with the baseline data on the indicator arrears on utility bills that is 15.2% and by 2030 we want to be on 6.2% we must decrease indicator by 9% and with a measure of deep renovation to achieve 0.5% renovation every year until 2030 - if we start from 2023, it would contribute 3.5% to decrease of the indicator by 2030. And it is only 1 of the 11 proposed measures.

Key takeaways from the future radar models are:

- Positive changes in political attitude would enhance the fight against energy poverty
- Deep housing stock renovation need to continue on a higher pace nationwide
- Administrative paperwork and application must not be complicated
- More actions and regulation on resolving unregulated market and unresolved property-legal relations
- Focus on establishing legal frameworks for establishment energy-communities

Table 4 Croatia Actions

Policy Sector	Actions to be implemented	By when?	By whom?
National Energy and Climate Plans (NECPs)	Revision of the NECP as an opportunity for inclusive energy poverty policy at the national level	Mid 2023	Ministry of Economy and Sustainable Development

Buildings	Financing renovation measures with 100% grant support	2027 and some ESF until 2032	Ministry of Economy and Sustainable Development Ministry of Spatial Planning, Construction and state property The Environmental Protection and Energy Efficiency Fund
Buildings	Establishment of one-stop shops to support energy renovation for energy poor households	2030	NGOs Energy agencies Local authorities
Buildings	Private rented sector – spreading awareness about renovation and encourage energy renovation to landlords	2030	Ministry of Economy and Sustainable Development Ministry of Spatial Planning, Construction and state property The Environmental Protection and Energy Efficiency Fund NGO
Buildings	Establishment of pre-grants to resolve property-legal relations before obtaining a grant for renovation	2030	Ministry of Spatial Planning, Construction and state property Ministry of Justice
Social care	Build more skills within the entities who are in contact with people in energy poverty - activities to create education materials	2030	NGO

Policy to promote community-ownership of energy	Passing urgently laws, ordinances and other regulations and encourage activities to promote community-ownership of energy to citizens	2023	Ministry of Economy and Sustainable Development Croatian Energy Regulatory Agency NGO HERA
Policy to promote (collective) finance / crowdfunding	Encourage activities to promote crowdfunding campaign	2023	NGO
The energy market (e.g. social tariffs / tax incentives)	Revision of “social bonuses”,	2025	Ministry of Economy and Sustainable Development Ministry of Labour, Pension System, Family and Social Policy
Consumer protection	Passing urgently new regulation for better control on legally binding ban on disconnections for energy for poor households and vulnerable consumers	2024	Ministry of Economy and Sustainable Development Ministry of Labour, Pension System, Family and Social Policy Social welfare enters
SECAPs	SEACPs to included measures to reduce energy poverty	2023	Local authorities

Table 5 Croatia Action-Specific Indicators

Indicator	Baseline (2022)	Target (date dependent on actions)
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NEW revised NECP	last one from 2019	2023
No. of opened call for renovation with 100% grant support - each year starting with 2023	0	7 rounds of calls – each year 1 (from 2023-2030)
No. of established of one-stop shops	2	5 (2023-2030)
No. of events to raise awareness about renovation and encourage energy renovation for landlords	0	7 - each year 1 (from 2023-2030)
No. of opened call for resolving property-legal relations 100% grant support - each year starting with 2025	0	5 - each year 1 (from 2025-2030)
No. of events and/or no. of materials for capacity buildings for entities who are in contact with people in energy poverty	2	7 - each year 1 (from 2023-2030)
New laws, ordinances and other regulation for energy communities	0	N/A
No. of events to raise awareness of energy communities	2	14 - each year 2 (from 2023-2030)
No. of events to raise awareness about crowdfunding campaign	2	7 - each year 1 (from 2023-2030)
NEW revised “social bonuses”	last from 2022	2025
NEW regulation for better control from being disconnected from the network	last from 2021	2024
No. of new SEACPs to included measures to reduce energy poverty	4	7 - each year 1 (from 2023-2030)

Phase 2

Step 4: Implement Actions and apply POWERPOOR Toolkit

This is where the concrete actions, defined previously, are implemented according to the established timeline. For each action, a plan has been created.

Table 6 Croatia Action Overview

Revision of NECPs as an opportunity for inclusive energy poverty policy at the national level	
The responsible entity and leading person	Ministry of Economy and Sustainable Development The Environmental Protection and Energy Efficiency Fund Agency for legal transactions and real estate brokerage
The target group for the action	Energy poor households and vulnerable citizens
Action design	<p>Opportunity for inclusive energy poverty policy at the national level - clearly defining the national definition of energy poverty, creating clear criteria for recognizing energy poor households, creating measures and monitoring the effect of these measures - Creating Program for alleviating energy poverty.</p> <p>National definition of energy poverty, creating clear criteria for recognizing energy poor households, creating measures and monitoring the effect of these measures.</p> <p>Using existing ICT tool like Energy Management Information System (ISGE) - the system is already established for public buildings and energy poor households and vulnerable citizens who receive a renovation grant should be obligate to enter the consumption of the 3 years before and max 3 years after the renovation.</p>

	Entering of the data will have to be taken over by either social workers or associations such as the Red Cross or Caritas due to weak IT literacy among vulnerable citizens.
Scheduling	2023
Budget	n/a
Drivers	<p>Under the Fit for 55 package could be one of the much-needed steps to tackle energy poverty. Not only is the new Energy Efficiency Directive (EED) proposing the -55 % GHG target, but it requires Member States to almost double their annual energy savings obligations and address energy poverty, as well as to take other measures to deliver up to 13% more energy savings than foreseen under existing EU legislation.</p> <p>Using IT tools data will be up-to-date on housing renovation and long-term monitoring for vulnerable people. And the state will be able to fulfil its obligation on savings reporting and monitoring of the effectiveness of implemented measures for energy-poor citizens.</p>
Barriers	The slowness of the Croatian administrative system and decision-makers

Financing renovation measures with 100% grant support

The responsible entity and leading person	Ministry of Economy and Sustainable Development Ministry of Spatial Planning, Construction and state property The Environmental Protection and Energy Efficiency Fund
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The target group for the action	Energy poor households and vulnerable citizens
Action design	<p>This measure is not something new in Croatia because there was in 2020 “Public call for energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty” - but call was opened only for citizens in welfare system and excluded other categories of vulnerable group of citizens and citizens at risk of energy poverty. Also the call barely used half of the funds because the criteria were too strict.</p> <p>The proposal for this action/measure is to design calls with better criteria and open calls that is not only intended for citizens in general poverty, but also for citizens in energy poverty.</p> <p>Also Public call from 2020 included only renovation for family houses - it is proposed to design public call for multiapartment buildings and social housing. But with clearly proposed criteria of who are energy-poor households in multi-apartment buildings.</p> <p>Criteria should be identified in proposed action 1 under NECP.</p> <p>Simplification of administrative procedure and application itself</p>
Scheduling	2023-2030
Budget	<p>Call for 100 households each year (900 households in period 2023-2030) – HRK 18 million (2.389.010 €)*</p> <p>Program** HRK 150 million (19.957.418 €) from NPOO and HRK 205 million (27.275.139 €) from the state budget</p>

Drivers	The interest of citizens, social institutions and local authorities for this kind of Public calls that finance the renovation of energy-poor households.
Barriers	The Public call could be opened before the adoption of the criteria which could again contribute to the failure of calls like it happened in 2020.

*20 000 € per households; 60 000 households that are social welfare system beneficiaries
- total 1.2 billion €

** Program for mitigation of energy poverty, which includes the use of renewable energy sources in residential buildings in areas of special state until 2025 - HRK 150 million (19.957.418 €) from NPOO and HRK 205 million (27.275.139 €) from the state budget are planned for the entire implementation of the Program in the implementation period. The program covers the renovation of 387 residential buildings (but 413 buildings are listed in the table in Program) and 100% of the renovation costs are planned to be financed.

Establishment of one-stop shops (OSS) to support energy renovation for energy poor households	
The responsible entity and leading person	NGOs Energy agencies Local authorities
The target group for the action	General public and energy poor households and vulnerable citizens
Action design	<p>To establish and organise a comprehensive marketplace and one-stop-shops for homeowners and experts and for these to serve as a central point for all crucial information and guidance on how to implement a successful energy renovation for energy poor households.</p> <p>As part of the POWERPPOR project, an office structure was set up and can be used to open new offices/info stand or OSS.</p>

	The link between POWERPOOR Energy poverty mitigation centre and OSS, the existing structure of the center would be upgraded in form of OSS as physical and online entities and the activity would be expanded to include OSS services.
Scheduling	2023
Budget	900 000 € for 3 OSS*
Drivers	Under “Smart financing for smart buildings” initiative Member States are encouraged “to develop dedicated local or regional OSS for project developers, covering the whole customer journey from information, technical assistance, structuring and provision of financial support, to the monitoring of savings. These facilities should lead to more locally-developed project pipelines and strong and trustworthy partnerships with local actors (e.g. SMEs, financial institutions, and energy agencies), the key being to connect the supply of finance with demand for it.
Barriers	NGOs and energy agencies which will establish OSS through the project like POWERPOOR will face the problem of financing the OSS after the end of the project.

* according to the budget proposed for the project

Private rented sector – spreading awareness about renovation and encourage energy renovation to landlords	
The responsible entity and leading person	Ministry of Economy and Sustainable Development Ministry of Spatial Planning, Construction and state property The Environmental Protection and Energy Efficiency Fund NGO

The target group for the action	Private rented sector - landlords and tenants
Action design	<p>The private renting sector and private landlords are not specifically targeted in energy-efficient renovation programs. In many countries, this poses a serious problem, and it leads to systemic injustices deepening the gap between the classes based on the socioeconomic statuses.</p> <p>The problem of collecting 51% signatures of co-owners in a multi-apartment building for entering into investments in renovation and other similar investments in RES - activities to create education materials for landlords and managers. POWERPOOR Guidebook can be used as one of the materials for raising awareness among landlords.</p> <p>Education and spreading awareness to overcome split incentives between landlords and tenants and mostly split incentives between apartment owners who live in these apartments and apartment owners who rent out the apartments.</p>
Scheduling	2025
Budget	10 000 €
Drivers	Renovation policies and strategies should go beyond immediate financial impacts and outcomes, acknowledging housing market mechanisms and externalities, and focus on improving the living experience of citizens
Barriers	In some cases, private landlords do not see the benefit of additional investments in energy efficiency renovations – since

	<p>they are not the ones sacrificing their quality of life neither are they the ones paying high energy costs. It could be claimed that they only see the downside in terms of high financial investments and not the upside of providing better living conditions for their tenants. Public policies have yet to find a way to engage private renting sector in the discussion on energy poverty mitigation by providing visible benefits for them.</p> <p>NGOs are mostly implementing different activities through project that are publicly funded, and once particular project ends so does the activities in most cases</p>
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Establishment of pre-grants to resolve property-legal relations before obtaining a grant for renovation

The responsible entity and leading person	Ministry of Spatial Planning, Construction and state property Ministry of Justice
The target group for the action	General public and energy poor households and vulnerable citizens
Project design and documentation	<p>Unregulated market and unresolved property-legal relations contribute to the problem of lack of national data and rather slow renovation pace</p> <p>The proposal is the establishment pre-grants to resolve property-legal relations before obtaining a grant for renovation</p>
Scheduling	2023
Budget	HRK 1.8 million (238.901€)
Drivers	New EU ETS system - from 2027 building sector enters the ETS charging system - if

	there is unresolved property-legal relations, how emissions will be charged if it is not known who is the owner of the property.
Barriers	Even if grants are given, the process can “get stuck” in the courts, and cases can be dragged through the courts for years - a problem of the Croatian judiciary

Build more skills within the entities who are in contact with people in energy poverty - activities to create education materials

The responsible entity and leading person	NGO
The target group for the action	Social workers and other stakeholders who are involved in working with vulnerable groups of citizens
Action design	Capacity buildings, workshops and seminars - certified advisers and mentors who can provide their services when public calls for renewal are opened (postponed under action 2) through OSS (postponed under action 3)
Scheduling	2023
Budget	20 000 €
Drivers	Focus on improving the life of citizens
Barriers	NGOs who can carry out education through project activities will face the problem of financing the activities after the end of the project.

Passing urgently laws, ordinances and other regulations and encourage activities to promote community-ownership of energy to citizens

The responsible entity and leading person	Ministry of Economy and Sustainable Development
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	<p>Croatian Energy Regulatory Agency</p> <p>Local governments</p> <p>NGO</p>
The target group for the action	General public, energy poor households and vulnerable citizens
Action design	<p>Passing urgently by-laws - even though there is a law that defines the energy community, in reality it cannot be established in Croatia yet.</p> <p>Encourage activities to promote community-ownership of energy to citizens - workshops and seminars.</p>
Scheduling	2023
Budget	20 000 €
Drivers	<p>Electricity Market Act (Official Gazette 111/21), transposed from EU legislation directive (EU) 2019/944 on common rules for the internal electricity market (IEMD, 2019/944), and on the law on Renewable Energy Sources and High Efficiency Cogeneration (BO 138/2021), Directive 2018/2001 on the promotion of the use of energy from renewable sources (Renewable Energy Directive, RED II, 2018/2001): It is responsible for establishing common rules for the production, transmission, distribution and storage of energy and the supply of electricity, together with provisions on consumer protection, in order to obtain an integrated, competitive, flexible, fair and transparent electricity market. This law presents a close relationship between renewable energy communities and citizen energy communities. On the other hand, it is important to mention that for the concrete implementation of the Law by the aforementioned energy and renewable energy communities, it is</p>

	necessary to wait for the approval of bylaws that will define the relative details. However, the administration of requesting the implementation of different statutes regarding energy communities is more complex than it seems, nevertheless Croatia is committed to transpose the EU legislation pertaining to the rights & obligations of energy communities.
Barriers	The slowness of the Croatian administrative system and decision-makers

Encourage activities to promote crowdfunding campaigns	
The responsible entity and leading person	NGO
The target group for the action	General public, energy poor households and vulnerable citizens
Action Design	<p>Encourage activities to promote crowdfunding campaign to citizens - workshops and seminars</p> <p>One of good practice of raising awareness of crowdfunding campaign in 2022 was webinar organized by DOOR and ZEZ where the idea of organizing a crowdfunding campaign was presented and POWER FUND platform on which crowdfunding campaign can be promoted.</p> <p>ZEZ also in 2022 organised as part CEES project one crowdfunding campaign to raise money for the purchase of energy boxes for energy-poor citizens.</p>
Scheduling	2023
Budget	20 000 €

Drivers	One of the ways in which citizens can help finance energy renovation measures for energy-poor households
Barriers	NGOs who can carry out education through project activities will face the problem of financing the activities after the end of the project.

Revision of “social bonuses”	
The responsible entity and leading person	Ministry of Economy and Sustainable Development Ministry of Labour, Pension System, Family and Social Policy
The target group for the action	Energy poor households and vulnerable citizens
Action design	Measures to support schemes for electricity or gas, and energy efficiency measures - it should be a short-term measure, not a long-term one, and the available financial resources should be directed to long-term measures
Scheduling	2025
Budget	HRK 160 million per year (21.24 million Euros per year)
Drivers	Channelling a large amount of money used for short-term measure to long-term one. The energy voucher has been active as a measure for almost 10 years and is very attractive to politicians because it is easily visible to the public.
Barriers	

Passing urgently new regulation for better control on legally binding ban on disconnections for energy for poor households and vulnerable consumers

The responsible entity and leading person	Ministry of Economy and Sustainable Development Ministry of Labour, Pension System, Family and Social Policy Social welfare centers
The target group for the action	Energy poor households and vulnerable citizens
Action design	<p>Legally binding ban on disconnections for energy-poor households and vulnerable consumers should be included in the legislation on a national level. In Croatia ban on the disconnection are proscribed in the law for vulnerable consumers but implementation of these measures is not being closely monitored.</p> <p>With clearly proposed criteria of who are energy-poor households it would be known who could be disconnected from the network and who not.</p> <p>Criteria should be identified in proposed action 1 under NECP.</p>
Scheduling	2024
Budget	n/a
Drivers	Preventing the disconnection of citizens from the network without clear conditions
Barriers	The slowness of the Croatian administrative system and decision-makers

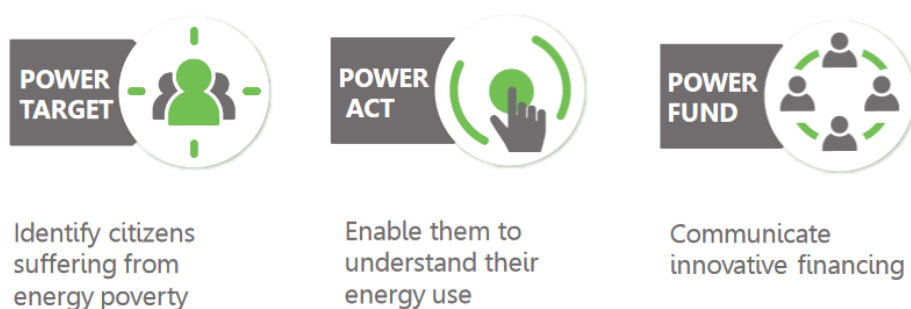
SEACPs to included measures to reduce energy poverty

The responsible entity and leading person	Ministry of Economy and Sustainable Development
The target group for the action	Local authorities and energy poor households and vulnerable citizens

Action design	Replication of measures from the existing SECAPs, which have already included measures to combat energy poverty, such as: Co-financing of energy renovation of family houses for vulnerable groups of citizens at risk of energy poverty or Small EE measures for vulnerable groups of citizens at risk of energy poverty or Establishment of a center for energy consulting and assistance to the energy poor households.
Scheduling	2023
Budget	/
Drivers	Local municipality should use opportunity during creation or revision of SECAPs to include measures to alleviate energy poverty during the creation or revision of SECAPs. Especially if they do not have enough capacity to work on programs for alleviating energy poverty.
Barriers	SECAP is not a mandatory document.

The POWERPOOR toolkit is incremental to the implementation of the individual actions and should be used actively by whichever stakeholder (e.g. municipality or POWERPOOR partner) has been identified, in the previous steps, as being responsible for implementation.

Figure 4 POWERPOOR Toolkit



Step 5: Monitor & Evaluate

One year after completion of the POWERPOOR project (or any other timeframe decided upon during the stakeholder consultations), the first monitoring & evaluation process should take place to see whether the roadmap's actions, and ultimately its vision, are being met.

Table 7 Croatia Action-Specific Indicators

Indicator	Baseline (2022)	Target (date dependent of action)	Target achieved?
NEW revised NECP	last one from 2019	2023	
No. of opened call for renovation with 100% grant support - each year starting with 2023	0	7 rounds of calls – each year 1 (from 2023-2030)	
No. of established of one-stop shops	2	5 (2023-2030)	
No. of events to raise awareness about renovation and encourage energy renovation for landlords	0	7 - each year 1 (from 2023-2030)	
No. of opened call for resolving property-legal relations 100% grant support - each year starting with 2025	0	5 - each year 1 (from 2025-2030)	
No. of events and/or no. of materials for capacity buildings for entities who are	2	7 - each year 1 (from 2023-2030)	

in contact with people in energy poverty			
New by-laws for energy communities	0	N/A	
No. of events to raise awareness of energy communities	2	14 - each year 2 (from 2023-2030)	
No. of events to raise awareness about crowdfunding campaign	2	7 - each year 1 (from 2023-2030)	
NEW revised "social bonuses"	last from 2022	2025	
NEW regulation for better control from being disconnected from the network	last from 2021	2024	
No. of new SEACPs to included measures to reduce energy poverty	4	7 - each year 1 (from 2023-2030)	

This table tracks the progress of general energy poverty indicators leaning on the categorization provided by EPAH.

Table 8 Croatia General Energy Poverty Indicators

Indicator	Baseline (2022)	Target (by 2030)	Target achieved?
Unable to keep home	6,6%	4%	

adequately warm % of population (2021)			
Arrears on utility bills % of population r (2021)	15,2%	6,2%	
Total Housing costs in disposable income (2020)	15,8	10%	
Types of energy used for heating homes (Central/ District heating)	5%	Increase 10%	
Types of energy used for heating homes (Electricity)	21%	10%	
Types of energy used for heating homes (Oil)	4%	3%	
Types of energy used for heating homes (Petroleum products)	3%	2%	
Types of energy used for heating homes (Gas)	19%	10%	
Types of energy used for heating homes (wood)	48%	40%	
Types of energy used for heating homes (Heat pump)	n/a (around 0%)	Increase	

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, the following are additional recommendations to specific stakeholders.

For local and regional Governments

Creating a local energy poverty centres or one-stop-shops to provide information and advice on calls and opportunities energy savings and energy efficiency measures.

Opening of new financial instruments for the renovation of energy-poor households

SECAPs should include measures for energy-poor households

Collecting the data and monitoring the progress of energy poverty mitigation and reporting to national government

Creation of local schemes for affordable living/housing

For National Governments

Creating Program for alleviating energy poverty

Defining the national definition of energy poverty

Creating clear criteria for recognizing energy poor households

Creating measures for alleviating energy poverty

Monitoring the effect of these measures

For Civil Society

Support local and regional governments in establishing one-stop shops

Stable financing for the implementation of awareness-raising activities

Application project on energy poverty covering different regions in Croatia

For The Private Sector

Establishment of one-stop shops

Inclusion of financial institutions in financial mechanisms for the renovation of energy-poor households.