



POWERPOOR

Empowering Energy Poor Citizens through Joint Energy Initiatives

Exploitation of POWERPOOR Results via selected ICLEI Europe projects and work streams

Working on the ground with energy-poor households and policymakers to mitigate energy poverty.

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Work Package 5: Impact analysis, exploitation, replication and recommendations

Leader Organisation:	ICLEI Europe
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Report author(s):	Arthur Hinsch, Andreas Jäger Alis-Daniela Torres, Jurijs Grizans, Veljko Vorkapic Magdalena Sikorowska Alina Mures

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The POWERPOOR project developed local support programmes for energy poor citizens, trained “energy supporters and mentors” and assessed required regulatory frameworks in eight Member States. With POWERPOOR ending on 31 August, ICLEI Europe is assessing how the main outcomes of the project can be exploited by other relevant ICLEI projects and integrated into still ongoing work streams. This document presents the narrative for such synergies and is clustered in four overarching themes which are:


1. One-stop-shop solutions to mitigate energy poverty through building renovation
2. The potential to mitigate energy poverty within a smart city context
3. Mitigating energy poverty through the lens of just transition efforts
4. Comparative assessment of energy poverty mitigation in Europe and Africa

1. One-stop-shop solutions to mitigate energy poverty through building renovation

One-Stop-Shops (OSS) function as citizen advice and support hubs that can be seen as a keystone of local government efforts to catalyse energy renovation rates in privately owned building stock. Indeed, both the 2018 recast Energy Performance of Buildings Directive (EPBD) as well as the long awaited 2023 update to the legislative act recognise the importance of OSS, with the 2018 version requiring Member to “facilitate access to appropriate mechanisms for accessible and transparent advisory tools, such as one-stop-shops for consumers and energy advisory services, on relevant energy efficiency renovations and financing instruments.”

OSS address key barriers associated with fragmented renovation markets at subnational level: both on the demand- and supply-side. Focusing on building owners and tenants, OSS can play an important role in raising awareness on energy efficiency measures and energy saving, providing tailored advice on renovation measures as well as available subsidies and grants or even connecting “customers” to suitable energy advisors, architects, suppliers, contractors or other actors in the renovation market value chain. Drawing from POWERPOOR learnings as well as from EU-funded projects such as Save the Homes, the following reflections outline exploitation pathways for enhanced energy poverty mitigation via OSS.

Linking energy poverty alleviation services to both public and private OSS: Renovation hubs can be set up and run as private for-profit enterprises (typically funded via commissions for renovation package coordination), via public-private partnerships as well as public services. Whilst the offering of energy poverty consultation and support appears most suited for fully public services, the integration into other legal structures should be explored. In the case of all variants, ICLEI will leverage POWERPOOR findings, to encourage OSS staff training on energy poverty and introduce potential funding pathways to ensure that vulnerable groups can be supported, against the backdrop of a



focus on “customer conversion rates” that favours low hanging fruit (financially solvent households and single-family homes).

Exploiting synergies between neighbourhood-level regeneration schemes, OSS and efforts to identify and support vulnerable groups: The POWERPOOR project identified the need for an integrated approach to tackling energy poverty. Providing technical assistance and consultation services to ICLEI’s 178 European members and beyond, the Secretariat shall integrate this observation in its advice to cities, to strengthen cross-departmental collaboration and stakeholder ecosystem engagement at local government level (e.g. via enhanced social, housing and health services cooperation, community co-creation activities, etc.). Specifically, the city network will continue to advocate for a neighbourhood-level approach to enact sustainability transformations that breaks up administrative silos and harnesses data to better identify and support households at risk or experiencing energy poverty.

Promoting hybrid OSS with a physical and online presence: Noting that POWERPOOR partners observed that energy poverty services are often availed of via online means, whilst anecdotal evidence suggests that OSS are most impactful when having a physical presence, support provided to local governments in setting up hubs (e.g. via the ELENA programme or national schemes) will recommend the establishment of both on- and offline services.

Leveraging OSS for energy community onboarding: The formation of energy communities has gained considerable traction across Europe, with POWERPOOR identifying such collectives being very suited to address energy poverty issues. Working both on OSS as well as energy communities, the city network will explore the possibility of strengthening linkages in ongoing and future projects, to strengthen OSS capacities to function as an onboarding ramp for energy community membership.

2. The potential to mitigate energy poverty through data-driven approaches and smart city strategies

Mitigating energy poverty on a large scale requires the availability of large amounts of data e.g. related to energy costs, energy behavioral patterns, income levels, but also building refurbishment and efficiency levels. The POWERPOOR project has carried out an [updated baseline assessment of the status quo regarding energy poverty](#) as part of its eight national roadmaps. In doing so it relied on commonly available data (e.g. via the EU Energy Poverty Advisory Hub). In addition to this, one of the key outcomes from POWERPOOR are the different tools ([POWER TARGET](#), [POWER ACT](#) and [POWER FUND](#)) which have been built based on different sources of data like: socioeconomic indicators, energy data, interview results, household visits inputs, etc. These data-driven approaches can be taken as an interesting model for the development of different data driven energy poverty actions and strategies, for example:

- New data-driven applications could help local governments to create better energy poverty alleviation policies. By using data analytics, predictive modeling, and evidence-based decision-making, stakeholders (cities, CSOs, NGOs, energy agencies, etc) can develop more precise, efficient, and targeted interventions that lead to significant improvements in energy access and affordability for disadvantaged communities.
- The data-driven approach of POWERPOOR tools and the data streams used and generated in the project, combined with other urban data sources—such as demographics, health, and education—can provide a more comprehensive understanding of energy poverty's broader effects and facilitate integrated solutions.
- Through data tracking and analysis, the impact of energy poverty reduction initiatives can be quantified. This can help stakeholders understand the progress being made and make informed decisions about future strategies.

Within this context, the data-driven experiences of POWERPOOR can input policy development processes on the relevance of data to address energy poverty based on evidence-based information. Considerations on data privacy on energy data and household energy consumption patterns but also on citizens' energy poverty conditions, should also be considered in this discussion. POWERPOOR partners should continue working in this direction sharing the experience of the work in the field and also from the development of the POWERPOOR Toolkit.

European cities are facing green and digital transition processes and aim to become smart cities in the medium and long term. The learnings from POWERPOOR can inform smart city developments, with emphasis on addressing energy transition in their territories but also can create an opportunity to address energy poverty in a comprehensive and technologically advanced manner.

Smart cities rely on data to optimize resource usage and enhance citizen experiences. As mentioned, the POWERPOOR project has demonstrated the importance of data to understand energy consumption patterns, distribution efficiency, and the impact of energy poverty. By integrating this data with smart city platforms for example, decision-makers can gain insights into how energy poverty affects different neighborhoods and demographic groups.

The integration of energy poverty and smart city strategies can play a significant role in supporting energy poverty alleviation initiatives on a local and national level. The experience of POWERPOOR can be brought to smart city strategies development to support energy poverty alleviation initiatives, such as:

- Implementing smart energy infrastructure, such as advanced metering systems and smart grids, can enable real-time monitoring of energy consumption. This can help detect energy leaks, optimize energy distribution, and identify areas with high consumption. By reducing energy wastage, cities can make energy more affordable for residents and citizens facing energy poverty episodes.
- Smart cities can facilitate the integration of renewable energy sources (i.e solar energy) into their infrastructure, reducing the reliance on expensive and polluting fossil fuels, lowering energy costs for all city residents but also to energy poor households.
- Developing digital platforms and mobile apps that provide residents with real-time energy consumption data, tips for energy savings, and alerts about energy-efficient practices can empower individuals to take control of their energy usage and reduce their bills. These tools, like the ones generated in POWERPOOR, can be used also by citizens facing energy poverty episodes.
- Smart cities can foster community engagement and collaboration in energy poverty alleviation efforts. Engaging local communities in decision-making processes, educating them about energy-saving practices, and involving them in the implementation of energy projects can lead to more effective and sustainable solutions.
- Smart city related solutions and platforms can provide citizens with access to information about available energy assistance programs, subsidies, and financial incentives. By ensuring that vulnerable populations are aware of and can easily access these resources, cities can help alleviate energy poverty. One key example for this can be having information from the One-stop shops that can be easily accessed by cities.
- When designing and implementing smart city initiatives, it's important to ensure that the needs of marginalized and low-income communities are considered. Inclusive planning can help avoid exacerbating inequalities and ensure that energy poverty alleviation measures benefit everyone.

In this sense, bringing the results of POWERPOOR to the green, digital and smart cities arena and initiatives discussion could be one of the key exploitation activities of the project. The POWERPOOR toolkit and the consolidated network of supporters and mentors of POWERPOOR can be linked and can find synergies with different EU initiatives on green, digital, data-driven and smart cities initiatives such as the EU Smart Cities Market Place. It can also unlock potential new sources of financing for data-driven energy poverty alleviation projects in cities via for example the Horizon Europe Calls from EU Mission on Carbon Neutral and Smart Cities. ICLEI, which is part of both

initiatives, will work to mainstream the relevance of new technologies and data-driven approaches to address energy poverty more effectively.

3. Mitigating energy poverty through the lens of just transition efforts


Energy poverty is a reality in the EU, where many households struggle to heat or cool their homes or to pay their energy bills on time. Recently, high energy prices are increasingly affecting European households and businesses due to the increase in global energy demand following the Covid-19 pandemic, Russia's invasion of Ukraine, etc. This had a major impact on industry and SMEs, energy-intensive industries, but also energy poor and low and lower-middle-income households. This worsened the situation for the most vulnerable groups that are experiencing problems due to low energy efficiency of their homes and household appliances, increasing energy prices and low incomes with serious implications on their health and quality of life.

This effect can be especially felt in JTF regions that face additional problems, such as economic decline, depopulation, lack of skilled workers, etc. Poor households in these regions cannot afford to invest in energy efficiency measures and renewable energy. However, these regions are undergoing a process of economic transformation that provides an opportunity, not only to move away from fossil fuels and diversify their economy, but also to address systematic inequality.

The current situation and the existing policy framework offer the initiative to switch to renewable energy with a more stable price and higher energy efficiency in buildings. Also, consumer empowerment, through information campaigns, energy advisors, has a significant role in educating citizens and informing them about their rights. Part of the solution can also be energy communities that implement local renewable energy projects, inform and advise their members and citizens, but also involve energy-poor households through their solidarity initiatives. For example, the City of Eeklo in Belgium has decided to fight energy poverty in the region by providing 750 people with one pre-financed share of the citizen energy cooperative (Ecopower), based on its 25% ownership of a wind turbine, or the Brixton Energy Co-op that targets vulnerable households via their projects, e.g. social housing where energy poverty is a real issue.

The POWERPOOR approach can be used to advise municipalities in diagnosing energy poverty, support programs for energy poor citizens and encourage the use of joint energy initiatives leveraging alternative or innovative financing schemes, e.g. establishing energy communities and using crowdfunding. The approach uses three tools developed by the POWERPOOR project:

Energy poverty is a multidimensional phenomenon. Along with socioeconomic and technical dimensions, energy poverty has a knowledge dimension. Lack of knowledge about the interlinkages between the energy consumption, energy supply, and access to affordable energy is one of the major factors behind the energy vulnerability and



inequalities. Insufficient local authority and other relevant stakeholders' awareness of the tools and approaches for working on the ground with energy vulnerable households and policymakers to mitigate energy poverty creates potential barriers to the sustainable energy development and just energy transition in Europe. Therefore, local authority and other relevant stakeholders' capacity building and knowledge development remains one of the significant preconditions for the further transition towards a climate-neutral economy in a fair way, leaving no one behind.

The POWERPOOR “Energy Poverty Mitigation Toolkit” and the “Energy Guidebook for Energy Planning” clearly characterizes the contribution of the POWERPOOR project to the energy poverty knowledge base development for the better understanding of managing this phenomenon. The intelligence outcomes of the POWERPOOR project involves continuous learning and capacity development in planning and implementing integrated and customized solutions to mitigate energy poverty at the local level.

Strong content knowledge, well-planned information architecture, and user-friendly design of the POWERPOOR “Energy Poverty Mitigation Toolkit” and the “Energy Guidebook for Energy Planning” supports project's experience and knowledge capitalization with related projects and initiatives on topics related with the energy poverty mitigation at the local level. For example, integration of the POWERPOOR outcomes into the European Union's research and innovation funding programme Horizon 2020 project “Eurosolar for all: energy communities for a fair energy transition in Europe” (Sun4All) development process as part of the Sun4All Capacity Building and Knowledge Sharing Programme, as following:

- Sun4All & POWERPOOR Interactive training “Making energy poverty mitigation an effective part of your climate & energy planning. What does it mean and how can it be done?” (3 July 2023).
- Sun4All deliverable D5.3 “Sun4All Capacity and Training Package” (In development).
- Activity “Integration of Sun4All into cities Sustainable Energy and Climate Action Plan” (In development).
- Sun4All deliverable D5.4 “Guidebook to integrate Sun4All in Cities SECAPs” (In development).

4. Comparative assessment of energy poverty mitigation in Europe and Africa

In Africa and Europe, SESA and POWERPOOR are working on the same objective SDG 7. Energy poverty is defined as a set of conditions where: “individuals or households are not able to adequately heat, cool, or provide other required energy services in their homes at affordable cost”.

Despite the definition being relevant for Africa as much as for Europe, the problems start one step earlier with having no access to energy at all. According to the latest data from the IEA, approximately 620 million individuals in Africa - around two-thirds of the

population - lack access to electricity¹. While around 730 million use traditional biomass for cooking. Energy poverty has plagued the African continent, particularly the Sub-Saharan region, which consists of 46 countries out of the 54 countries. This region is one of the most deprived of electricity access globally. Based on reports, about 48% of sub-Saharan Africa (SSA) (600 million people) are without access to electricity. Africa is characterized not only by the non-availability of electricity but also by the lack of access to basic electricity infrastructure. Several barriers to electrification in SSA range from cost barrier to grid connection, socio-economic reasons, corruption amongst electricity providers, high cost of connection, and informal housing challenges. In addition, energy access in Africa is highly fragmented, with great difference between urban and rural as well as across African countries, with a substantial portion of the populations living in rural areas, for example in Malawi (more than 80%), South Africa (more than 30%), and Namibia (more than 45%), where there is no grid-electricity, and its expansion is often financially and logistically infeasible.


In many cases, and especially in rural contexts, even if a grid exists it is not always reliable and the costs for the electricity is too high for many people to afford. Next to the effect on people's wellbeing, this has distinct economic implications. It limits the development of income-generating activities (small businesses and agriculture), and the development of public services, such as water treatment, transport and health systems. In Africa the polarized situation in terms of access to energy leads also to extreme consequences with high numbers of deaths due to air pollution, risky attempts to get energy or fuel. Perhaps the most drastic expression of energy poverty in African countries is the regular occurrences of death by immolation where hundreds of people perish in the attempt to gather fuel from leaking tankers.

In this context, local governments in Africa has reduced opportunity to technically supportfighting energy poverty, as the construction of the energy infrastructure is beyond their competences. At the same time, a great work of energy literacy and awareness raising on best practices to reduce energy needs (and related risks) can be done in local communities, which are low hanging fruits.

SESA aims to co-develop renewable energy technologies in nine African countries (Kenya, Ghana, Malawi, Morocco, South Africa, Namibia, Nigeria, Rwanda and Tanzania) and leverages on the role of local authorities and businesses to engage them in peer-learning and capacity-building activities to address the main barriers impeding the scaling-up of the innovative solutions and associated business models. To secure energy access in remote vulnerable areas, SESA incentivizes community-owned RES that will generate opportunities for the economic development of local communities, fight energy poverty, and enhance local engagement.

Under SESA, barrier analyses and user need assessment are being carried out to identify the main policy, regulatory, financial, socio-cultural barriers and users' acceptance of clean energy solutions. The barrier analysis performed in Malawi, provides an example

¹ International Renewable Energy Agency, IRENA (2019), *Global Energy Transformation: A Roadmap to 2050*. 2019



of case study from the countries of focus. Results from the analysis confirm that limited household resources and limited electrification in rural areas lead households to rely on fuelwood for cooking and heating, illegally harvested charcoal, and traditional solutions for cooking, such as the open fire three-stone stoves. Such solutions are associated not only with health issues, due to exposure to smoke, and time poverty from collecting fuel and inefficient cooking setups, but also with climate and environmental damages, in terms of increasing deforestation rates and GHG emissions. The User Needs Assessment performed through the deployment of questionnaires to end-users confirm the household's availability to adopt clean cooking solutions, however, considering the economic resources of respondents, results highlight that such solutions could be accepted if affordable from an economic point of view.

To facilitate the deployment of clean energy solutions and maximize the benefits of clean cooking for the community under consideration in the project, SESA will focus on supporting the upscaling and replication of sustainable business models, through the identification of financial solutions, the deployment of capacity building trainings, and awareness raising.

The PowerPoor toolkit could be extremely beneficial for suggesting concrete low cost/no regret measures that energy poor citizens can implement also in the context of SESA countries in Africa. The SESA Policy Roundtable will be a great opportunity to introduce Module 4 on integrating energy poverty mitigation actions into local climate and energy planning and to put forward best practices on energy efficiency interventions.