



Policy Brief #4

Furthering energy citizenship in coal regions

The importance of sensitive, place-based transition processes

The concept of Energy Citizenship concerns rights and responsibilities for each citizen and is considered an important step towards energy transitions in a wider European energy policy context. As the fourth in a series of policy briefs for the EC² project, this brief attempts to provide an overview of shortcomings at the regional level, exploring in further detail the kinds of actionable recommendations that can be made at this level to facilitate and accelerate a just and sustainable energy transition within coal regions.

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The insights contained herein are based on the transdisciplinary research results of the citizen engagement conducted as part of the EC² project.

Our approach incorporates economic, legal and psychological elements and perspectives. These scientific insights capture and synthesise the knowledge co-created with citizens, energy communities, and municipalities in Spain, Poland, Italy and the Netherlands¹.



* This policy brief uses Poland as a coal regions case study *²



1. The regeneration of coal regions requires the acknowledgement of each individual region's specific local context, in terms of factors such as heritage, infrastructure and culture.

KEY CONCLUSIONS

2. Co-creation practices respecting regional identity can support more sustainable and durable change processes, creating a sense of shared ownership in the process.

3. Women are particularly endangered by energy poverty and job losses in the transformation of coal regions. Gender inclusion must be at the heart of all regeneration plans.



¹ D3.3 Catalogue of potential legal and economic barriers or facilitators of energy citizenship. Available <u>here</u>.

² Primarily focusing on the hard coal region of Silesia, but also the lignite areas of Bełchatów and Turów.

Introduction

Coal is a major contributor to greenhouse gas emissions, particularly carbon dioxide - the primary driver of climate change at the global scale. At the local scale, the mining and use of coal can also create numerous environmental and health problems, negatively affect ecosystems, and endanger access to water. Yet for many years it was also responsible for building the economy³ and culture of coal regions⁴.

The world is witnessing a shift towards cleaner renewable energy sources. Coal regions need to adapt to this changing energy landscape to become sustainable, thriving and healthy places to live. Coal regions have a strong identity and valuable cultural and industrial heritage. History and heritage evoke sentiment among the inhabitants. Changes of the energy transformation ought to respect the heritage of these regions.



Existing renewable energy technology has made great advancements in recent years. This creates an opportunity to change the energy systems of these regions. Yet the energy transition is complex, requiring social and economic changes in addition to technical ones. Cooperation between the European Union, governments, local communities, NGOs and other stakeholders is crucial to the success of transforming coal regions towards a sustainable and renewable energy future. Including citizens, particularly a proper representation of women, minorities and those endangered by energy poverty, is essential. Transforming to a post-carbon economy requires shifting from coal towards sustainable energy sources involving citizens and acknowledging local contexts. This requires investment not only in renewable energy sources, enabling energy efficiency and creating and developing alternative economic sectors. Cultural and social aspects are also relevant, given the longstanding coal dependency. The culture built on the coal mining history of each region must be repurposed and redirected to new sectors and new values. Cocreation mechanisms can empower effective communication and dialogue with local communities in order to gain their support and involvement in the energy transformation. The transition from coal to renewables requires social support, acceptance and co-creation of the transformation plan. In coal regions, there is often a strong emotional bond with the coal industry and these changes can be met with social resistance.

Cooperative movements have a long history in coal regions. The development of cooperatives first took place in Silesia and other coal mining regions in the nineteenth century, when industry was developing and a new working class was emerging. Currently, cooperatives have various fields of activity, such as trade, services, production and housing. Although the shortcomings of the cooperative movement and their significance to the energy transformation are widely discussed among scholars, the cooperatives are nonetheless a proven formula for engaging and bringing together citizens. The long history and scope of operation of the movement is a good sign for the further development of civic energy in the form of cooperatives. They benefit from an existing organisational structure, professional management, and large scale of operation. To further a sustainable energy transition, social, economic and environmental factors have to be treated as a multilayer co-dependent matrix. This shift towards sustainable energy should thus be based on new paradigms - namely, inclusivity, equality, polycentricity and co-creation.

³ Hard coal in million tonnes (Poland - 53, Czech Republic - 2) and lignite (Germany - 131, Poland 55, Bulgaria 36, Czech Republic 33,

⁴ There are several regions in Europe known for significant coal mining (hard coal: Upper Silesia in Poland, Moravia-Silesia in Czech; lignite: Lusatian, Central German and Rhineland in Germany, Greater Poland and Lower Silesia in Poland, Ustecki and Karlovarsky in Czech).

Romania 18, Greece 14, Hungary 5, Slovenia 2, Slovakia 1). See EURACOAL *Coal in Europe 2022*. Read more <u>here</u>.

Background / Status quo

Energy poverty

Energy poverty is a situation in which either low earnings do not allow you to pay high energy bills, or the condition of flats or houses nonetheless does not allow for basic comfort and warmth. Energy poverty affects around 11% of the EU population, or 54 million Europeans. Energy poverty disproportionately affects women and female-headed households as a result of wage and pension gaps and longer life expectancy.5 Female-headed households in Poland are, for instance, nearly twice as likely to be affected by energy poverty.⁶ Yet, not all regions are equally affected by energy poverty. Hard coal regions such as Silesia, usually well developed and urbanised, are less exposed to energy poverty for women due to higher average earnings. Rural and peripheral areas where lignite is mined are more at risk of energy poverty.



Energy poverty particularly affects single women, but it can affect families too. The transformation process should focus on women who can lose jobs⁷ in the coal and coal-related sectors due to the transformation processes. The layoffs can affect men on a great scale too, leaving the household with one income or none. Protective measures, education, training, reorientation and vocational counselling should be a response to the threat of structural unemployment.

Particular needs of coal regions

The largest resource of coal regions is not coal, but people: local communities, social organisations, activists, religious groups, local governments, trade unions and entrepreneurs. A socially just transition should aim, above all, at creating a platform for these people to share their visions and have a say in the transformation of their region. Otherwise, there is the risk of communities losing their sense of responsibility for their common fate - the strong social capital of these regions will be lost.



A broad versus narrow conception of energy communities

The EU defines energy communities narrowly, in a way that would exclude broader forms of civic energy, such as energy co-operatives and energy clusters. Nevertheless, this brief does not advocate for one particular legal form of energy community - seeing a broad and expansive understanding of the concept as supporting energy citizenship most effectively.⁸ It therefore considers energy clusters and energy cooperatives as interesting potential forms within the diversity of entities in the civic energy movement ecosystem.

⁵ A Polish study in the spring of 2022 found that an increasing share of energy bills were being paid by women, rather than men, and that single women (particularly single mothers) were more likely than other groups to have difficulties paying their energy bills. See Janikowska, O., & Kulczycka, J. (2021). Just transition as a tool for preventing energy poverty among women in mining areas—A case study of the Silesia region, Poland. *Energies, 14*(12), 3372. Available <u>here</u>.

⁶ In 2021, this was 12% as compared to 7% for male-headed households. See previous footnote.

⁷ In mining areas, historically women played more traditional roles and were less educated. There were also fewer jobs available to women.
 ⁸ See Hinsch, A. *Enabling energy communities A toolkit for just transition regions*. Available <u>here</u>. Pages 4-5 & 8 provide further discussion on this topic.



FURTHER CHALLENGES FOR A JUST ENERGY TRANSITION

(POLAND AS A CASE STUDY)



Here, Poland is chosen as a case study, owing to the authors' experience of this context, as well as its status as home to some of the major coal regions in Europe.



Legislative barriers slowing shift from coal-dependency to renewables

Legislative barriers can hold back the energy transformation. Switching to wind energy could be an attractive option for enhancing renewable energy production. However in Poland, development of the wind farm industry is hampered by the 700 m rule of the **Distance Act**, which in practice effectively prevents the development of almost all new wind farm investments. Without changing the 700m rule,⁹ new investments in the onshore industry in Poland will not be made.

Another significant impediment to the development of new wind farms is the limited connection possibilities of the national power system for community energy projects. At present, the trend is instead towards centralisation and implementation of projects by big energy corporations, including those owned by the Polish state. They have priority access to land held by public resources and to connection capacities issued by entities related to the state. As the grid remains underdeveloped and other energy industries like the photovoltaic industry thrive, a significant percentage of applications for connection to the national energy grid are being rejected by operators, further undermining the growth of renewable energy.



Lack of access to finance the sustainable energy transformation

Investments in renewable energy sources and the development of energy communities can require significant financial resources. Coal regions may encounter difficulties in obtaining funding for transformation initiatives. It is important that the European Union, governments, regional entities, financial institutions and international organisations support coal regions and its citizens through grants, preferential loans or other financial instruments for renewable energy systems.



Considerations specifically for lignite mining regions

Lignite is mined near the surface in rural areas, and significantly contributes to the devastation of the surrounding environment, even more than regular 'deep' coal mining. Lignite mines are socially and environmentally inherently unsustainable, being destructive to both the natural environment and cultural heritage. The area of historical Lusatia, inhabited by the Lusatian minority, is located in both Germany and Poland, is particularly affected by intensive lignite mining. Both the Sorbian language and the historic half-timbered houses are at risk. According to representatives of the Lusatian Citizens' Parliament in Germany, 130 historical villages in Lusatia have been demolished as a result of the operation of coal mines and power plants. What is needed is the necessary transformation of the existing energy infrastructure for renewable energy production.

⁹ The minimum distance between farms and buildings in the case of residential buildings must be 700 meters. Read more here.

Yet in many instances these needs continue to go ignored. For instance, plans to expand a lignite open pit threatens the existence of the town of Opolno-Zdrói (Poland) and its historic architecture. In such cases, the mining industry and public authorities fail to adequately engage with local communities to obtain consent for increased mining, citing the public interest such as financial benefits.

What is more, even if a shift to renewables in lignite areas were to increase, huge areas of agricultural and forest land in lignite mining areas have been turned into open pits and heaps. As a result, the local population cannot return to work in agriculture. Novel employment opportunities will need to be found.¹⁰



Too few energy co-operatives in coal regions (including Poland)

Energy communities should be viewed as an effective means of addressing social and economic deprivation in coal-intensive regions.¹¹ The European Commission's own research indicates that in the majority of EU coal regions, the clean energy transition can create more jobs than currently exist in the coal sector.¹² To the extent that renewables are being developed in transitioning coal regions, to date only a fraction of this capacity is owned and/or controlled by residents.¹³

The creation of energy cooperatives may meet resistance or lack of social acceptance, especially if (significant parts of) local communities associate themselves strongly with the culture and material heritage of the coal sector. Open and transparent communication with residents, education about the benefits and opportunities related to renewable energy sources, and involvement of local communities in the decision-making process will be required to enhance public support for the transformation.

As in other countries, setting up energy cooperatives in Poland requires knowledge project management, renewable energy in technologies, financial management and legal issues of establishing and running the cooperative. As elsewhere, citizens from coal regions may face difficulties in gaining this knowledge and experience. In particular, knowledge and methods in the field of change management may be helpful to initiate these transformations.



Gender issues in energy cooperatives

The energy sector is predominantly maledominated in terms of energy decision-making and representation in managerial position; therefore it often excludes a diversity of perspectives of women, minorities and vulnerable and disadvantaged persons¹⁴. For example, the majority of women in energy cooperatives have volunteer roles limited to administration, with little or no influence on decision-making¹⁵. The energy democracy movement aims at opposing mechanisms of oppression, including racism and sexism,¹⁶ and promotes inclusive practices from within¹⁷.



¹⁰ Although there have been some positive developments in this regard in Silesia. See University of Economics in Katowice (2023). Support for the EU's Just Transition Platform. Available here; See discussion of Silesian energy co-operatives (in Polish), in BoMiasto (2023). Energy cooperatives in Poland. Available here (in Polish).

¹² Joint Research Centre (2023). Energy transition can provide alternative for jobs at risk in coal regions. Available here.

¹¹ CINTRAN (2022). Inventory of coping strategies: Energy communities. Available here.

¹³ See Hinsch, A. footnote 8, above.

¹⁴ R. Pearl-Martinez and J. C. Stephens (2016). 'Toward a Gender Diverse Workforce in the Renewable Energy Transition' Sustainability: Science, Practice and Policy 12(1). Available here.

¹⁵ Łapniewska, Z. (2019). 'Energy, equality and sustainability? European electricity cooperatives from a gender perspective.' *Energy* Research & Social Science, 57, 101247. Available here. Although there are exceptions to this, including Zklaster - see footnote 35, below. ¹⁶ Stephens, J. C. (2019). 'Energy democracy: Redistributing power to the people through renewable transformation.' Environment: Science and Policy for Sustainable Development, 61(2), 4-13. Available here. ¹⁷ Ibid.



SPECIFIC RECOMMENDATIONS FOR COAL REGIONS:

Recommendations for regenerating coal regions (Poland as a case study)

The region's cultural heritage and identity must be safeguarded. Existing mine infrastructure should be preserved and reused. Old coal mines can be used as tourist attractions¹⁸ or for renewable energy installations (solar power plants, wind parks), pumped storage power plants, or pressure towers for energy storage. In the Silesian Voivodeship there are several dozen inactive coal shafts that can also be used for energy storage. Depending on the depth of the shaft, it is possible to store between 50-100MWh, while the cost of storage is 10 times lower than battery storage. Pilot projects in this area are being implemented in the Czech Republic, Great Britain, Australia and Poland.

Since hard coal mining areas are located in densely populated urban areas, community energy could be based on housing cooperatives. Housing cooperatives or housing associations are a widely socially accepted way for residents to work together. Although they are created to meet the housing needs of their members, our research indicates their capacity for implementing renewable energy projects and meeting the collective demand for energy.

Energy Communities RES installations on the reclaimed post-coal industry areas.

In the Silesian Voivodeship coal region approximately 5,000 ha of land are degraded and devastated,¹⁹ mostly by heavy industry related to the hard coal industry. This land requires restoration. One solution could be to build photovoltaic farms using a system²⁰. Such a system should be co-implemented by energy communities. This should include households at risk of energy poverty and residents of those buildings where it is not possible to install a PV installation on the roof. Installations of this capacity enable the production of 3.3 GWh of electricity per year²¹. This amount of energy would be sufficient²² for the needs of 1.1 million citizens (25% of the region).



- ¹⁸ For example, the Stara Kopalnia museum in Silesia. Available here.
- ¹⁹ Statistical Yearbook of Śląskie Voivodeship, Katowice (2022), p.12. Available here.
- ²⁰ A virtual prosumer is a person/entity generating electricity exclusively from renewable energy sources for his own needs in a renewable energy source installation connected to the electricity distribution network in a place other than the place where electricity is supplied to this prosumer.
- ²¹ The average annual production of electricity from 1 kWp of a photovoltaic installation in Poland is 950 kWh. See <u>here</u>.
- ²² Using a heat pump with an average COP of 2.





Recommendations - co-creation strategies in coal regions (including three examples from Poland)

Regional transition strategies are an essential element of a just transition. They can guide choices and actions in the transition process and provide planning security to workers, industries, investors and communities. Dialogue and participation should be key elements in the process of strategy development. The transition of coal regions is a multi-level and multi-actor governance process. Silesia's Territorial Just Transition Plan²³ is one such example.

Examples of co-creation in Coal Region Cities.

The design of the new centre of Dąbrowa Górnicza (Factory Full of Life)²⁴ was created on the site of the former machine tool factory and the surrounding areas. This centre can serve as a meeting hall for public consultations. The entire development process involved public co-creation. Attention was drawn to the fact that there are many residents who will never come to a meeting - especially one that is too far from their place of residence. Therefore, it was decided that consultation opportunities should be brought to the people. Thanks to this approach, discussion panels and workshops were held not only on the premises of the former factory, but in all districts of Dabrowa Górnicza. Consulting tools included: mobile consultation points, research walks and backyard debates.

Program Rybnik 360.²⁵ Rybnik is a city situated in the heart of Silesia, the largest coal-producing region in the European Union. The project is involving residents in planning a new city strategy and designing changes in a systematic way. Examples include initiatives to empower local entrepreneurs, finding new ways to attract new types of investors (other industries, renewable energy sources, business process outsourcing, medical or IT sectors), or developing new strategies to enhance public health - i.e. fighting smog.

²³ See Silesia's Territorial Just Transition Plan <u>here</u> (in Polish).

- ²⁴ Visit the Factory Full of Life website <u>here</u>.
- ²⁵ EIT Climate KIC (2023). Just transition within reach for Polish coal city Rybnik. Available here.

²⁶ See European Commission (2019). Information platform for post-industrial and degraded areas in Silesia (OPI-TPP). Available here.

²⁷ Cooptech Hub (2023). Cooperative transformation: Operationalising of a just transition for coal regions in Poland. Available here (in Polish).
 ²⁸ See Polish Ministry of Development and Technology (2023). Call for applications regarding renewable energy installations implemented by energy communities - investment B2.2.2 investment support. Available here (in Polish). These will be eligible for up to 91% funding (up to a maximum of PLN 50 million) to implement infrastructure projects in the field of renewable energy sources. See Gramwzielone (2023). Financing for energy clusters and cooperatives. Available here (in Polish).

Information platform for post-industrial and degraded areas in Silesia, Poland (OPI-TPP) The Marshal's Office of Silesia Voivodeship has worked in partnership with the Polish Central Mining Institute (Główny Instytut Górnictwa-GIG) to collect data on abandoned industrial sites - the Information Platform for post-industrial and degraded areas in Silesia (OPI-TPP). The aim of this initiative is to help new companies to find a good location to settle in, by providing information on available sites.²⁶

The recent publication of CoopTech Hub's manual for founders of energy cooperatives in Poland. This proposes a model of cooperative transformation based on employment guarantees, development cooperatives, participation, green and digital innovations.²⁷ The Polish Minister of Development and Technology recently approved the regulations for the selection of investment support for ten existing energy clusters, energy cooperatives, or civic energy communities under this model.²⁸





The following recommendations apply to energy poverty in general. Yet as has been discussed above, rural and peripheral coal regions are particularly affected by (and at risk of) energy poverty.

Funds obtained by national budgets from the sale of CO2 emission rights should be used to support investment in RES technologies for citizens endangered by energy poverty²⁹.

Greece is an example of an EU member state that has included active measures for tackling energy poverty in its transposition of the Clean Energy Package³⁰. These include:

- Listing energy poverty reduction as a specific objective of Energy Communities;³¹ and
- Allowing the possibility for an energy community to provide electricity for free to energy poor individuals in virtual net metering projects, even if these individuals are not members of the energy community³².

Community energy projects have the potential to be an effective antidote to energy poverty supporting the development of energy projects at the local level, such as the installation of photovoltaic panels on residential buildings, local wind farms or shared energy systems. Involving local communities in the co-creation, management and use of these projects can bring economic and social benefits, as well as aid energy poverty risk. Attention should be paid to the risk of energy poverty, in particular for women. Plans for a just transition need to include a clear idea for the future place of women in the new emerging energy job market generally and in coal regions in particular. In Poland, single unemployed women are currently the most vulnerable to energy poverty. Thus, a hub for women should be created ensuring education, training, psychological support, and a collaboration platform. This could include promotion of a sustainable development approach, assistance and programs to educators, industry, and for local government to create a supportive environment for women.

The participation of women in decision-making in energy projects is significantly lower than that of men. Therefore it is crucial to ensure that women have a full right to participate in the structures and decision-making process of energy communities, to guarantee that their perspective and needs are taken into account.

Facilitating networking and collaboration opportunities for women in the energy sector and community energy initiatives can enable them to be better represented. A collective support system can boost knowledge sharing and empower women making the sustainable energy transformation more equal.



²⁹ D 3.3 §§ 4.2.8

³⁰ For a general overview of measures, see POWERPOOR (2022). Deliverable 5.9: EU Policy Recommendations & National Roadmaps to Mitigate Energy Poverty pp. 125-130. Available <u>here</u>.

³¹ Law 4513/2018, which defines Energy Communities (ECs) as civil co-operatives exclusively active in the energy sector with the aim of promoting social and solidarity-based economy and innovation in the energy sector, addressing energy poverty, and promoting energy sustainability, production, storage, self-consumption, distribution, and energy supply, enhancing energy self-sufficiency/security in island municipalities as well as improving energy efficiency in end-use at a local and regional level. Read more here.
³² RESCoop (2023). Transposition Tracker: Greece - Enabling frameworks and support schemes. Available here.

Recommendations - Create RES installations by energy communities in the areas of former lignite excavations

As we have seen, it will be difficult for local populations in lignite regions to return to traditional work in agriculture. Hence, it is important to create alternative jobs in rural areas and small towns. The advantage of the lignite regions is that they have access to energy infrastructure (high-voltage networks) that could be re-used for renewable technologies. Therefore funds intended for creating jobs for former employees of the lignite



coal sector³³ should be directed into the creation of wind and photovoltaic installations by citizens and energy communities in post-mining areas. In addition, local Energy Communities should have opportunities to create RES installations³⁴ in the areas of reclaimed lignite excavations. RES installations in these areas should be based on the form of a virtual prosumer. Hence, local energy communities could produce electricity for other energy communities. This would create additional jobs for people from rural regions where agricultural areas were used for lignite mining. A good example is the project of a pumped-storage power plant prepared by the energy cluster Zklaster in a lignite excavation in Lower Silesia in Poland.³⁵

Such energy clusters' status as renewable energy communities is controversial as they do not meet the EU definition.³⁶ Nevertheless, as discussed earlier, this brief argues for a broad and expansive understanding of the concept to support energy citizenship.³⁷

Recommendations - Replace old fossil fuel technology factories with renewable technology factories in coal regions

In order to ensure a just transition in coal regions, it is necessary to create conditions for RES technology factories to be built on the premises of old fossil fuel technology factories, which will operate in accordance with the circular economy model.

For example, by creating alternative jobs in the field of RES technology according to the circular economy model (PV modules, Inverters, wind turbines, hydro technologies), the regenerative economy model in fossil fuel post-industrial, post-hard coal areas. The EU plans to reach 600GWp of solar power by 2030, and 1,400GWp by 2050 in photovoltaic installations (three times more than at the end of 2022). To reach these goals, it is necessary to enhance the EU's production capacity in the field of PV modules. Some of the factories producing PV modules, inverters and other accompanying devices could operate in coal regions, where there is already a high technical culture and abandoned post-industrial areas readily available.



³³ See Terytorialny Plan Sprawiedliwej Transformacji Wielkopolski Wschodniej (Territorial Plan for a Just Transition of Eastern Greater Poland, December 2022). Available <u>here</u> (in Polish).

³⁴ E.g. Agro-hydro PV farms - due to the restoration of biodiversity, and pumped-storage hydroelectricity and hydrogen production.

³⁵ Visit the Zklaster website <u>here</u>.

³⁶ Since they are not a legal entity (they are based on a civil law contract) and large enterprises are able to become a member. See Hinsch, A. footnote 8, above.

³⁷ See Hinsch, A. above for further discussion on this topic.

•	This is the fourth in a series of Policy Briefs aimed at exploring the concept of Energy Citizenship
	and its requirements. The series shares key insights on how the concept can be used as an effective
	tool for accelerating the renewable energy transition, together with citizens. The EC ² project aims
	to support policy and decision makers through a series of actionable recommendations, targeted
	primarily at policy makers - from the European through to the local level.

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