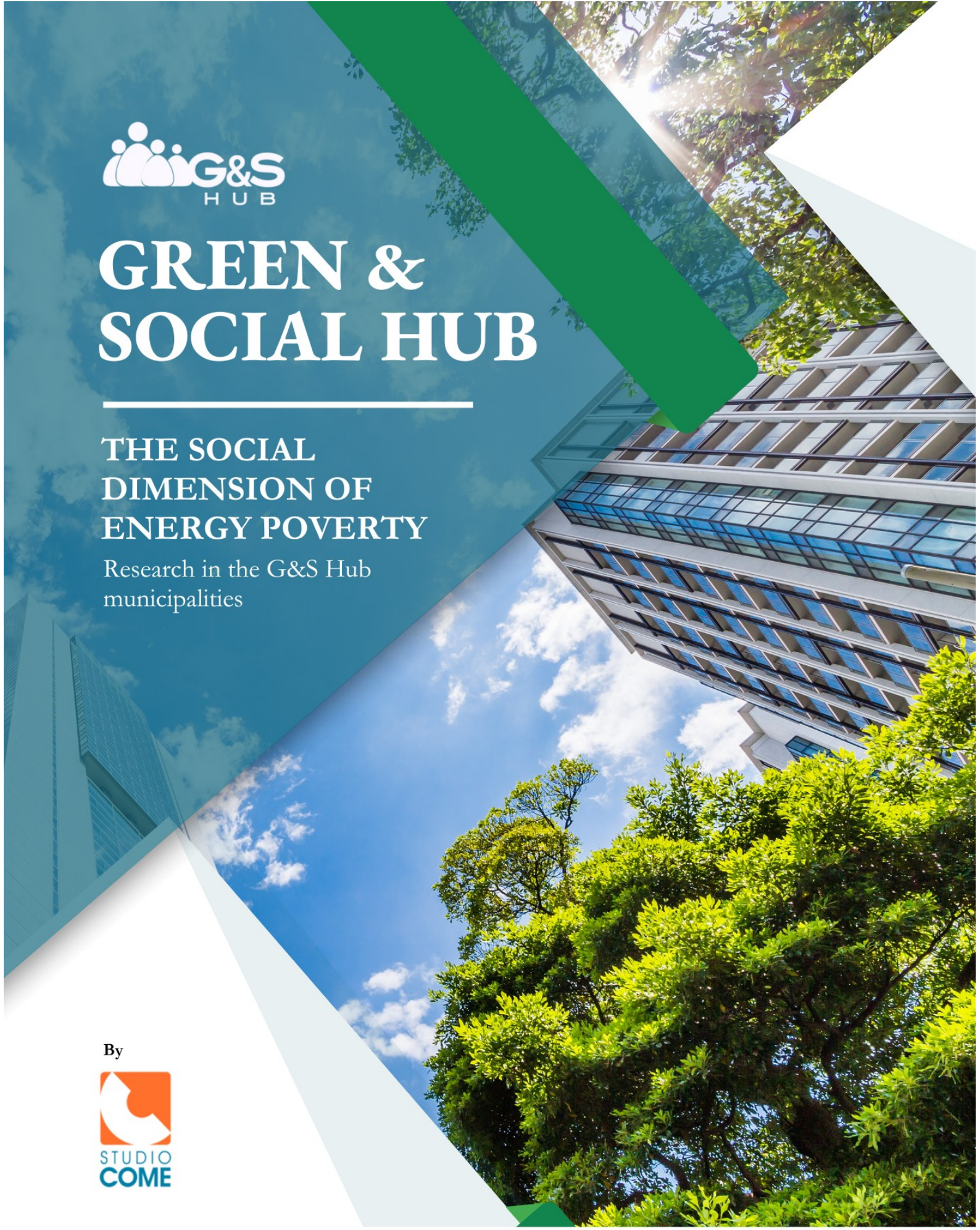

GREEN & SOCIAL HUB

THE SOCIAL DIMENSION OF ENERGY POVERTY

Research in the G&S Hub municipalities

By

STUDIO COME

Co-funded by the European Union

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SUMMARY

Executive summary

Energy poverty is a recent, complex and multifactorial phenomenon, defined as the inability to meet the energy needs of a household. The consequences of energy poverty are evident both at the level of individual health and well-being, and at the social and community level. Climate policies that do not take energy poverty into account risk being counterproductive, promoting an unjust green transition.

The Green & Social Hub project aimed to contribute to the understanding of this phenomenon and to the identification of appropriate measures to counteract social inequalities during the green transition. This was pursued through integrated local policies designed to address the various dimensions of poverty—energy, economic, social, and educational—by actively involving vulnerable population groups and experimenting with integrated intervention models.

This report explores the social dimension of energy poverty, with reference to the Italian context in which Green & Social Hub was implemented. It also analyses the measures adopted to combat energy poverty at both national and regional levels.

The report is divided into four parts:

The first part addresses the concept of energy poverty through a literature review and by presenting data on its prevalence in Europe and Italy. It also describes some methodologies for identifying energy poverty at the local level.

The second part presents the empirical research on energy poverty carried out in the three Italian municipalities—located in different regions and of different sizes—that partnered in the Green & Social Hub project. The research investigated the main characteristics of the target population affected by energy poverty and the measures implemented to address it. The findings confirm that, in these areas, energy poverty affects individuals and households only partially overlapping with those experiencing economic poverty. Moreover, although all the municipalities implemented some initial measures to tackle energy poverty, these interventions were not preceded by a specific needs analysis and were implemented in a disjointed and fragmented way, with little collaboration between different sectors of the administration, particularly the environmental and social sectors.

The third part offers guidance to local authorities on the systematic collection of integrated data from both the environmental and social sectors. This data is essential for identifying and monitoring energy poverty and for determining the most appropriate countermeasures.

The fourth and final part presents the study's conclusions, also looking ahead to the new plans recently submitted by the Member States to the European Commission for the use of the Social Climate Fund, established in 2023.

PART 1 – Theoretical and statistical framework

What is energy poverty?

According to the definition provided by the European Commission Energy Poverty Advisory Hub (EPAH)[1], energy poverty is a condition in which individuals are unable to access the necessary levels of energy consumption for their household. It is a multidimensional and complex phenomenon, with multiple contributing factors.

To facilitate the identification of energy poverty—which occurs at the domestic level—EPAH suggests considering it as the result of a combination of contextual and personal factors. At the contextual level, this includes:

- Geographic location and climate (e.g., very cold areas requiring high energy for heating, or very hot areas where cooling is essential);
- Type and condition of the dwelling (such as the size and energy efficiency of buildings);
- Availability and efficiency of heating/cooling equipment;
- The broader geopolitical context, which influences the energy market and the resulting costs borne by households.

At the personal level, factors contributing to energy poverty include age, health, and household composition, as well as other socioeconomic factors such as income and access to support measures.

The literature reports that energy poverty has negative effects both at the individual and environmental level. It puts individuals' health at risk[2], with direct impacts on respiratory, cardiac, and cardiovascular conditions, as well as on mental health[3].It also negatively affects individual development and learning processes[4], reducing performance at work and at school. Furthermore, Zhao and colleagues (2021)[5] found that energy poverty also accelerates CO_2 emissions, generating broader negative effects on the environment.

Given the complexity and multidimensional nature of the concept, the Energy Poverty Advisory Hub (EPAH)[1] suggests an operational definition based on three key elements:

- Low household income

  The link between economic poverty—caused by low wages or pensions, job insecurity, or complete lack of employment—and energy poverty is widely documented in the literature[6]. A household's income level is directly related to its ability to pay for the energy required for the home. Vulnerable groups in this dimension include unemployed individuals, older people and people with disabilities, single-parent families, and the so-called "working poor"[7].

- Low energy efficiency of the dwelling

[1] https://energy-poverty.ec.europa.eu/observatory/publications/introduction-energy-poverty-advisory-hub-epah-handbooks-guide

[2] Polimeni, J.M.; Simionescu, M.; Iorgulescu, R.I. Energy Poverty and Personal Health in the EU.*Int. J. Environ. Res. Public Health* 2022, 19(18), 11459

[3] Thomson, H.; Snell, C.; Bouzarovski, S. Health, Well-being and Energy Poverty in Europe: A Comparative Study of 32 European Countries. *Int. J. Environ. Res. Public Health* 2017, *14*, 584.
Peate, I. Keeping Warm: Health Risks and Vulnerable People. *Nurs. Resid. Care* 2008, 10, 606–610.

[4] Xiao, Y.; Wu, H.; Wang, G.; Wang, S. The Relationship Between Energy Poverty and Individual Development: Exploring the Serial Mediating Effects of Learning Behavior and Health Condition. *Int. J. Environ. Res. Public Health* 2021, 18, 8888

[5] Zhao, J.; Jiang, Q.; Dong, X.; Dong, K. Assessing Energy Poverty and Its Effects on CO_2emissions: The Case of China. *Energy Economics*, 2021, 97, 105191.

[6] Tundys, B.; Bretyn, A.; Urbaniak, M. Energy Poverty and Sustainable Economic Development: An Exploration of Correlations and Interdependencies in European Countries. *Energies* 2021, 14(22), 7640.

[7] Middlemiss, L. Who is vulnerable to energy poverty in the Global North, and what is their experience?*WIRE's Energy and Environment, 2022*, https://doi.org/10.1002/wene.455

Those living in less energy-efficient homes need to spend more to maintain a comfortable indoor temperature, whether for heating or cooling. Such homes are often older and more economically accessible, and—precisely for this reason—are typically inhabited by people with limited ability to improve their energy performance[1], due to both financial and cultural constraints.

- High energy costs

  Energy prices are fundamentally linked to geopolitical and economic factors. For instance, Halkos and Gkampoura (2021)[8] found that the economic crisis that swept across Europe starting in 2008, largely driven by rising electricity costs, worsened conditions of energy poverty. Moreover, with the liberalisation of energy markets, energy has become a commodity subject to market dynamics, thereby exposing the most vulnerable to market volatility[9]. More recently, the war in Ukraine has had a major impact on energy prices, which—combined with the significant effects of the Covid-19 pandemic—has compelled governments to urgently seek solutions to the issue of "energy security"[10], also in an effort to limit the increase in energy-poor households. These geopolitical events have led experts to question whether energy security should take priority over the development of renewable energy sources. Nevertheless, Żuk and Żuk (2022)[11] argue that "although in the short term it is possible to preserve and extend the operation of certain traditional energy solutions, in long-term plans, it is unrealistic to withdraw from the goals of energy transition and the complete transition to renewable energy sources" (p.711).

The condition of energy poverty is influenced by various forms of vulnerability, which are often interrelated, making it difficult to identify the households and individuals at risk. The Energy Poverty Advisory Hub (EPAH) has identified five broad categories of vulnerability[1]:

- Sociodemographic factors: certain groups are generally at greater risk of energy poverty, such as recipients of economic aid and social support, residents in public or social housing, tenants, people with low levels of education, and individuals of foreign origin.
- Household composition: some household types are more commonly associated with energy poverty, such as single-parent families, retirees, students living in rented accommodations, people with disabilities and their caregivers, and large families.
- Health conditions: individuals with illnesses that require particular attention to the climate conditions of their living environment (e.g., respiratory or cardiovascular diseases), immunocompromised persons, or those who depend on energy-intensive medical devices, are at greater risk.
- Energy literacy: individuals who are less able to access information and opportunities to improve their energy situation—whether due to regulatory, technological, informational, or financial barriers—face a higher risk of energy poverty.
- Culture: this vulnerability factor includes individuals who are resistant to changes aimed at improving energy efficiency, because they are "used to the cold" (or the heat), or accustomed to using inefficient appliances.

[8] Halkos, G.E.; Gkampoura, e.C. Evaluating the effect of economic crisis on energy poverty in Europe. *Renewable and Sustainable Energy Reviews*, 2021, 144, 110981.
[9] Helm, D., *The New Energy Paradigm*, 2005, Oxford University Press
[10] Hussain, S.A.; Razi, F.; Hewage, K.; Sadiq, R. The perspective of energy poverty and 1st energy crisis of green transition. *Energy*, 2023, 275, 127487.
[11] Żuk, P.; Żuk, P. National energy security or acceleration of transition? Energy policy after the war in Ukraine. *Joule*, 2022, 6(4), 709-712.

The impact of macro-social and economic factors on energy poverty is clearly demonstrated by the effects of the Covid-19 pandemic. During the pandemic lockdown, the home became a space that hosted a range of activities previously carried out elsewhere. This led to increased use of heating (to stay warm throughout the day), hot water (for frequent handwashing), cooking (as meals were prepared at home instead of eating out), and lighting. There was also a shift in energy demand, such as the need for electricity to support remote work, online schooling, and home-based recreational activities (e.g., increased use of streaming platforms).Many households faced rising energy costs while the pandemic sharply cut their incomes. Many families had to bear higher energy costs with lower earnings, which amplified the effects of energy poverty[12].This situation overlapped two vulnerabilities: low-income households often live in less energy-efficient homes and must use more energy to achieve the same level of comfort and service as households in more efficient dwellings[13]. Furthermore, low-income individuals are more likely to work in sectors severely affected by the pandemic and thus experienced partial or total income loss[14].Across Europe and globally, the pandemic led to an increase in household energy poverty, with varying prospects for recovery among European countries depending on their industrial structure and the energy policies adopted by national governments[11].

Energy poverty is also influenced by climate change, particularly global warming and the increasing frequency of extreme weather events, which are becoming more common even in Europe. In countries with warmer climates, global warming is associated with greater cooling needs, leaving behind households that lack the necessary equipment or cannot afford its use, thus contributing to a rise in energy poverty[15]. In contrast, in colder countries, global warming may have a modest mitigating effect on energy poverty by slightly reducing the need for heating energy consumption[16]. However, extreme weather events, which have increased over recent decades, amplify the risk of energy poverty due to infrastructure damage and energy price shocks. Low-income households are especially vulnerable to price fluctuations caused by climate change or catastrophic events[17].The need for climate change mitigation measures to address global warming and extreme events may clash with the issue of energy poverty, as households affected by energy poverty are often less able to access renewable energy sources and sustainable lifestyles, thereby falling behind in the green transition unless adequately supported[18].Climate policies that fail to account for energy poverty risk being counterproductive, promoting an unjust green transition[19]. Instead, it is essential to adopt a holistic approach that integrates climate policies aimed at the green transition with efforts to alleviate energy poverty[17], by incorporating specific objectives and measures into mitigation strategies[20].One example of such an approach is the

[12] Carfora, A.; Scandurra, G.; Thomas, A. Forecasting the COVID-19 effects on energy poverty across EU member states. *Energy Policy*, 2022, 161, 112597.

[13] Bahmanyar, A.; Estebsari, A. Ernst, D. The impact of different COVID-19 containment measures on electricity consumption in Europe
Energy Res. Soc. Sci., 2020, 68, 101683.

[14] Sovacool, B.K.; Del Rio, F.D.; Griffiths, S. Contextualizing the Covid-19 pandemic for a carbon-constrained world: insights for sustainability transitions, energy justice, and research methodology, *Energy Res. Soc. Sci.*, 2020, 68, https://doi.org/10.1016/j.erss.2020.101701

[15]Feeny, S.; Trinh, T.A.; Zhu, A. Temperature shocks and energy poverty: Findings from Vietnam. *Energy Economics*, 2021, 99, 105310.

[16]Churchill, S.A..; Smyth, R.; Trinh, T.A. Energy poverty, temperature and climate change. *Energy Economics*, 2022, 114, 106306.

[17] Lei, X.; Xu, X. Climate crisis on energy bills: Who bears the greater burden of extreme weather events? *Economics Letters*, 2025, 247, 112103.

[18]Halkos, G.E.; Aslanidis, P.S. Addressing Multidimensional Energy Poverty Implications on Achieving Sustainable Development. *Energies*, 2023, 16(9), 3805

[19]Belaïd, F. Implications of poorly designed climate policy on energy poverty: Global reflections on the current surge in energy prices. *Energy Research & Social Science*, 2022, 92, 102790.

[20]Streimikiene, G.; Lekavičius, V.; Baležentis, T.; Kyriakopoulos, G.L.; Abrhám, J. Climate Change Mitigation Policies Targeting Households and Addressing Energy Poverty in European Union, *Energies*, 2020, 13(3), 3389.

establishment of the Social Climate Fund by the European Commission[21], which aims to alleviate the social and economic impact of the green transition. Member States are currently submitting their respective implementation plans for this fund.

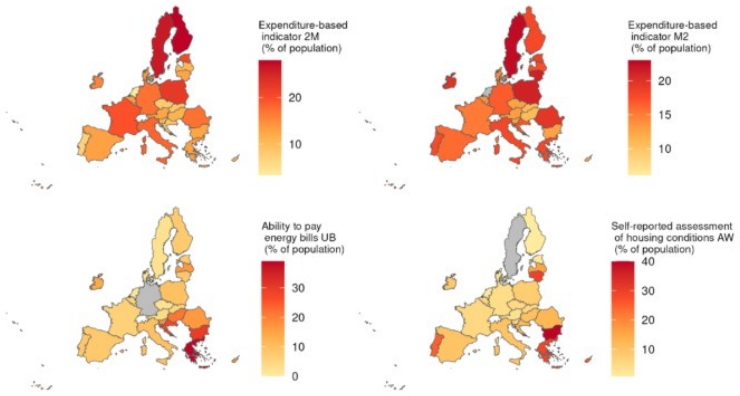
The shift to a net-zero economy cannot disregard the principle of "leaving no one behind", ensuring that the transition supports and includes even the most vulnerable segments of the population. A just green transition requires the implementation of integrated policies that — in line with the objectives of the 2030 Agenda — promote sustainable development across its three dimensions: environmental, social, and economic[22].The table below lists the main policies involved in building a just transition, highlighting those most relevant to tackling energy poverty.

Dimension	Policies for a just transition	Policies tackling energy poverty in the framework of the just transition
ENVIRONMENTAL	Quality of the public space Urban green: re-forestation, biodiversity Public transport: sustainable mobility Climate adaptation plans Energy: consumption reduction, energy efficiency and promotion of renewable sources Air quality Water: drought mitigation Sustainable food policies Waste management and circular economy	Energy: consumption reduction, energy efficiency and promotion of reneawable sources Public transport: sustainable mobility Climate adaptation plans
SOCIAL	Housing (public and social housing, housing first, cohousing, rent support) Integration of communities of migrant origin Gender equality and LGBTQ+ rights Participation Community spaces New educational models Income support and tackling poverty (energy, education, food) Proximity and territorial health, psychological support Cultural and sport welfare	Housing (public and social housing, housing first, cohousing, rent support) Participation Community spaces Income support and tackling poverty (energy, education, food) Proximity and territorial health, psychological support
ECONOMIC	Investments in knowledge economy Income right and support Responsible innovation Mutualism and cooperation Urban regeneration Quality jobs creation Green jobs, tackling unemployment Vocational education and training Circular economy Urban factories Proximity commerce Innovation and social entrepreneurship Data governance and technological innovation Logistics (impact management and sustainability)	Urban regeneration Income right and support Green jobs, tackling unemployment

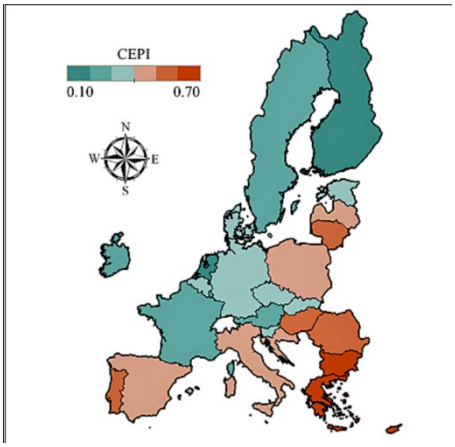
[21] https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/social-climate-fund_en#about-the-social-climate-fund
[22] https://sdgs.un.org/2030agenda

Energy poverty in Europe

The issue of the spread of energy poverty is closely linked to that of its measurement. Due to the complexity and multi-causality of the phenomenon, scholars have long debated the choice of the most appropriate indicators. Despite the relevance of the issue—especially in the context of the energy crisis following the pandemic and the war in Ukraine—and the growing body of literature, there is still no scientific consensus on which indicators should be used[23].To describe the phenomenon in its full complexity, starting from the Recommendation (EU) 2020/1563[24], the Energy Poverty Advisory Hub (EPAH) has developed a broad set of indicators, updated and revised in 2023, with the aim of allowing Member States to select those most appropriate to their national context[25]. EPAH indicators refer to four thematic macro-areas: climate, housing conditions, mobility, and socioeconomic aspects[26]. On the EPAH website, a dashboard is available showing the values of these indicators for all EU countries[27]—where available—since 2021.



Share of energy poor population by country expressed in % of the total population.
© EU, 2024



A 2024 study by the Joint Research Centre attempted to estimate the spread of energy poverty across EU countries[23]. The research aimed to explore the interrelation and overlap between the main indicators used to measure energy poverty and subsequently used them to estimate its prevalence in the 27 Member States. The researchers used four key indicators: two expenditure-based (objective indicators, calculated in monetary terms), and two consensus-based (subjective indicators, based on households' self-assessments)[28].The overlap among the four indicators was found to be minimal: if energy poverty were defined by the presence of at least one of the four indicators, the share of energy poor Europeans would exceed 40%, whereas using all four indicators as a requirement

[23] Maier, S.; Dreoni, I. Who is "energy poor" in the EU? *JRC Working Papers on Taxation and Structural Reforms* No 5/2024 https://publications.jrc.ec.europa.eu/repository/handle/JRC138418

[24] https://eur-lex.europa.eu/eli/reco/2020/1563/oj/eng

[25] The Recommendation specifies a set of 13 national-level indicators to identify energy poverty. The EPAH, in collaboration with the Covenant of Mayors, has also defined a set of 56 local-level indicators. Local authorities can choose from these indicators the most suitable to represent the phenomenon of energy poverty in their specific context.

[26] EPAH. *Energy Poverty National Indicators. Uncovering new Possibilities for Expanded Knowledge*, 2023https://energy-poverty.ec.europa.eu/document/download/b00326ad-da4b-43cd-a99e-574eb587fce7_en?filename=EPAH2023_2nd%20Indicators%20Report_Final_0.pdf

[27] https://energy-poverty.ec.europa.eu/epah-indicators

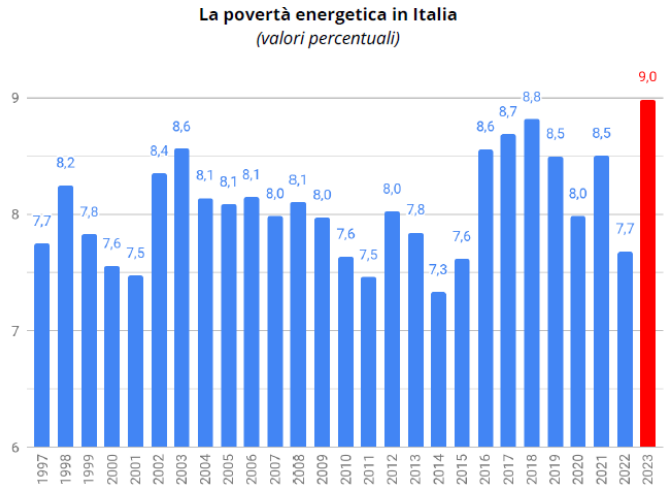
[28] The objective indicators are the 2M indicator, calculated as the proportion of households whose energy expenditure is more than twice the national median, and the M2 indicator, calculated as the proportion of households whose energy expenditure is below the national median consumption. The subjective indicators are the percentage of people who are able to keep their home adequately warm and the percentage of people who are in arrears on their utility bills.

would result in a rate of just 0.3%. This demonstrates that each indicator captures different aspects of energy poverty. In terms of the phenomenon's prevalence, the results show that, depending on the indicators used, the percentage of EU citizens experiencing energy poverty ranges from 8% (using consensus-based indicators) to 16% (using expenditure-based indicators). The data also reveal that around 30% of energy-poor households fall below the poverty threshold. However, middle-income households also show a relatively high incidence of energy poverty, clearly indicating that the condition does not affect only those in absolute poverty. Significant differences between countries were observed. For instance, in Greece and Bulgaria, nearly 30% of the population experiences energy poverty according to at least two indicators, while the figure drops below 5% in Western and Nordic EU countries. The disparities are even greater when considering subjective indicators: the rate of energy poverty based on the inability to adequately heat the home ranges from zero in Sweden and Luxembourg to over 40% in Bulgaria.

The study by Kashour and Jaber (2024)[29] also compared EU countries in terms of energy poverty rates, using a composite indicator (the CEPI – Composite Energy Poverty Index)[30]. According to this study, the countries with the highest levels of energy poverty are Cyprus, Bulgaria, and Greece, while those with the lowest rates are Luxembourg, the Netherlands, and Finland.

These findings confirm that energy poverty is more prevalent in Southern and Eastern European countries compared to Central (Western and Nordic) ones.

The social dimension of energy poverty in Italy: available data and measures to tackle it



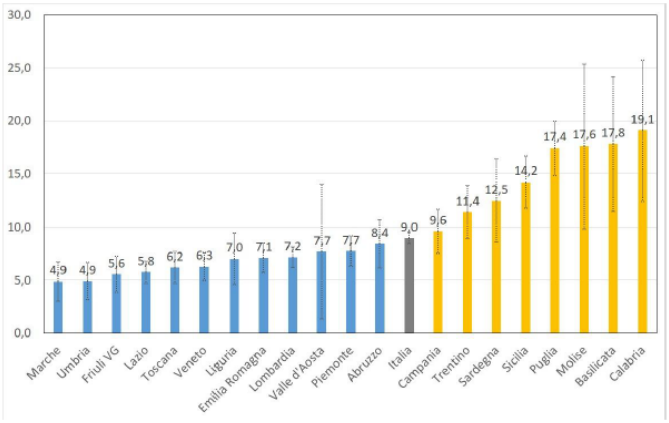
According to the Italian Energy Poverty Observatory (OIPE), this condition is defined at the national level by the 2017 National Energy Strategy[31] and the 2019 Integrated National Energy and Climate Plan[32] as the "difficulty in purchasing a minimum basket of energy goods and services or, alternatively, access to energy services that entails a diversion of resources, in terms of expenditure or income, above a 'normal' level"[33].The official measure of energy poverty, proposed by Faiella and Lavecchia (2015)[34], is an objective-relative indicator that revises the UK low income–high costs (LIHC) approach with two main differences: it uses actual expenditure data from the Italian Household Budget Survey (ISTAT)[35], and it includes households experiencing deprivation and with zero heating expenditure.

[29] Kashour, M.; Jaber, MM. Revisiting energy poverty measurement for the European Union. *Energy Research & Social Science*, 2024, 109, 103420.
[30]The CEPI indicators are both subjective (inability to keep the home adequately warm, arrears on utility bills, homes with leaks or dampness) and objective (energy efficiency of the dwelling, household energy prices, average annual income).
[31]https://www.mise.gov.it/images/stories/documenti/Testo-integrale-SEN-2017.pdf
[32]https://www.mise.gov.it/images/stories/documenti/PNIEC_finale_17012020.pdf#page=98
[33]https://oipeosservatorio.it/poverta_energetica/
[34] Faiella, I.; Lavecchia, L. La povertà energetica in Italia, 2015, *Politica economica*, 1/2015, 27-76.
[35]https://www.istat.it/it/files//2024/05/Rapporto-Annuale-2024.pdf#page=130 par. 3.6 La povertà energetica

Based on this measure, OIPE (2024)[36] reported that at the end of 2023, 2.36 million Italian households were in a condition of energy poverty (9% of the total), marking a sharp increase from the previous year and reaching the highest value in OIPE's historical time series (see chart). Energy poverty is more prevalent in small towns and suburban areas, while it has been gradually declining in the central areas of metropolitan cities.

Regional differences are significant: the region with the highest rate of energy poverty in Italy is Calabria, where nearly one in five households is affected. In contrast, Marche and Umbria have the lowest percentage of energy-poor households (4.9%). Overall, Southern regions are the most impacted. According to Polimeni *et al.* (2022)[2], in the Italian context, energy poverty is strongly linked to material poverty—which is more prevalent in southern Italy—and to higher levels of inequality. Bardazzi *et al.* (2021)[37] also found a significant correlation between energy poverty and income inequality when the analysis is conducted at the regional level.

La povertà energetica per regione nel 2023
(valori percentuali)



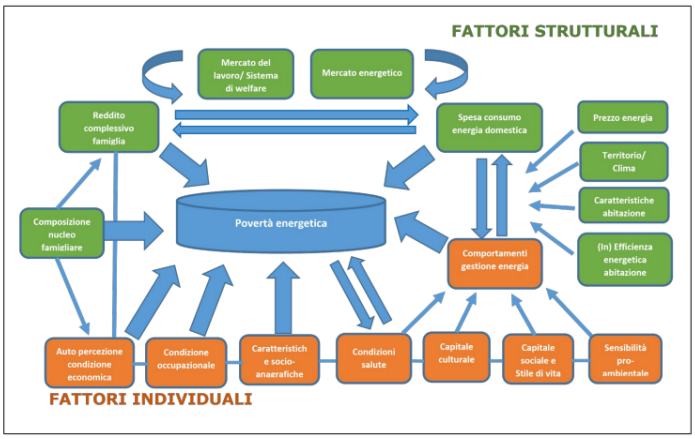
However, when considering the sociodemographic characteristics of households experiencing energy poverty, OIPE (2024)[33]reports a steady increase in middle-income families among those affected, who often do not benefit from support measures. Despite the expansion of eligibility criteria, the social bonus—widely used in Italy as the sole measure to support energy-poor households (see review below)—only partially reaches these families: in 2023, only 18% of households in energy poverty received this type of support. The presence of at least one child and the non-Italian nationality of the household's reference person are associated with a higher incidence of energy poverty. Children living in large families[38] and/or families of foreign origin[33] are particularly at risk of energy poverty.

Residential building stock: year of construction	Absolute values	Percentage values
Before 1919	3342298	9,5
1919-1945	2965710	8,4
1946-1960	5108277	14,5
1961-1980	12657858	35,9
1981-2000	7192095	20,4
2001-2010	2993959	8,5
2011-2016	690529	2
After 2016	321103	0,9
Total	35271829	100

The condition of the residential building stock is another factor that contributes to increasing the risk of energy poverty: older buildings are generally less energy efficient, with an average "energy penalty" of approximately 7 kWh/m² per year of heating for every 10 years of building age[39]. In Italy, according to data from the 2021 permanent census by ISTAT[40], the residential building stock is relatively old, as shown in the table below, with only 11.4% of buildings constructed

[36] OIPE (2024), *La povertà energetica in Italia nel 2023*, Osservatorio italiano sulla povertàenergetica, Centro Levi-Cases, Università di Padova.
[37] Bardazzi, R.; Bortolotti, L.; Pazienza, M.G. To Eat and Not to Heat? Energy Poverty and Income Inequality in Italian Regions. *Energy Res. Soc. Sci.* 2021, 73, 101946.
[38]https://www.welforum.it/la-poverta-energetica-e-le-misure-di-contrasto/#easy-footnote-bottom-4-45457
[39] Vurro, G.; Santamaria, V.; Chiarantoni, C.; Fiorito, F. Climate Change Impact on Energy Poverty and Energy Efficiency in the Public Housing Building Stock of Bari, Italy, *Climate*, 2022, 10, https://doi.org/10.3390/cli10040055
[40]https://www.istat.it/wp-content/uploads/2024/08/Today-Abitazioni_01_08-2024.pdf

after 2000 and less than 1% after 2016. The largest proportion of residential buildings in Italy (almost 36%) was built between 1961 and 1980. Since the literature indicates that the age of a building significantly affects the likelihood of being in a condition of energy poverty—with older homes more exposed to risk[41]—these data suggest that the phenomenon may be particularly widespread in Italy. Overall, therefore, energy poverty depends on both individual/household-level factors and structural ones, as summarized in the image below, taken from a document by the Interregional Legislative Observatory of the Tuscany Region[42].



Measures to Address Energy Poverty at the National and Regional Level

The significant reduction in energy poverty recorded in 2022 was due to government subsidies and temporary interventions on taxes and tariff components of energy products. However, according to OIPE (2023)[43], what is needed is a strategy based on rigorous analysis and targeted tools to balance public finance constraints with the effectiveness of interventions, which must be aimed at vulnerable households. The data presented by OIPE indicate that the actions introduced in recent years—both by the central government and by local social services at the territorial level—have produced some results. However, continued attention is required to consolidate the progress made, even though energy supply prices have decreased in the following years.

This section provides a mapping of the main measures implemented at the national and regional level to combat energy poverty, starting from 2022.

At the national level, most of the measures implemented have focused on financial support aimed at tackling material poverty, with only some measures explicitly addressing energy poverty (e.g., utility bill bonuses).The main eligibility criterion for accessing these tools is the ISEE (Equivalent Economic Situation Indicator), which assesses a household's economic situation by considering not only income, but also assets (such as properties, bank accounts, investments) and the size of the household.The lower the ISEE, the more economically vulnerable the household is considered. It is therefore a measure of material poverty, which is also used at the national level to identify energy poverty[44].

The main forms of support provided at the national level to economically vulnerable individuals include:

Bill Discounts for Electricity and Gas

Households with a low ISEE value are entitled to discounts on electricity and gas bills. This is the only measure directly linked to energy poverty. The ISEE threshold for accessing these benefits is

[41] Chen, K.; Fenh, C. Linking Housing Conditions and Energy Poverty: From a Perspective of Household Energy Self-Restriction, Int. J. Environ. Res. Public Health 2022, 19(14), 8254; https://doi.org/10.3390/ijerph19148254

[42] https://oli.consiglio.regione.toscana.it/wp-content/uploads/antonellameucci/3f449468cabe5e92c6cee0abb453fa05.pdf

[43] Faiella, I.; Miniaci, R.; Lavecchia, L.; Valbonesi, P. *La Povertà Energetica in Italia nel 2022* - Rapporto OIPE, 2023.

[44] Facchini, A. La povertà energetica si abbatte su chi è già in difficoltà, *L'Essenziale*, 2023, 31 luglio https://www.internazionale.it/essenziale/notizie/alice-facchini/2023/07/31/poverta-energetica-bollette-famiglie

determined annually and has changed in recent years, as shown in the following table, which reports the ISEE limits for accessing the bonus since 2020:

Period	Maximum ISEE value	Maximus ISEE value for families with 4+ children	Notes
2020-2021	8,265.00 €	20,000.00 €	Automatic recognition system active since 2021[45]
2022	12,000.00 €	20,000.00 €	
2023	15,000.00 €	30,000.00 €	
2024	9,530.00 €	20,000.00 €	Bonus reduced to 80% for ISEE between €9,530 and €15,000 (carryover from 2023)
2025	9,530.00 €	20,000.00 €	Extra one-off bonus of €200 for ISEE up to €25,000, starting March 2025

According to data published by the national energy regulator ARERA[46], in 2020 about 800,000 households received the electricity bonus and over 540,000 received the gas bonus.

In 2021, after the introduction of the automatic recognition system—which granted the benefit directly through utility bills to eligible households without the need for an application—the number of electricity bonus recipients rose to almost 2.5 million, while over 1.5 million households received the gas bonus.

In 2022, the ISEE threshold was raised to €12,000, further increasing the number of beneficiaries to over 7 million for the electricity bonus and more than 2 million for the gas bonus.

To address the rising energy costs during the energy crisis, in 2023 the ISEE limit was further raised to €15,000 (and €30,000 for large families), resulting in a 22% increase in beneficiaries compared to the previous year. That year, a total of 7.6 million bonuses were issued (more than 4.5 million for electricity and 3 million for gas), with an estimated total value exceeding €2.4 billion[47].

In 2024, the ISEE threshold returned to the standard limit. The number of households eligible for the bonus dropped to approximately 4.1 million, a 40.5% decrease from the previous year[48]. Specifically, 2.8 million families received the electricity bonus, and 1.7 million received the gas bonus.

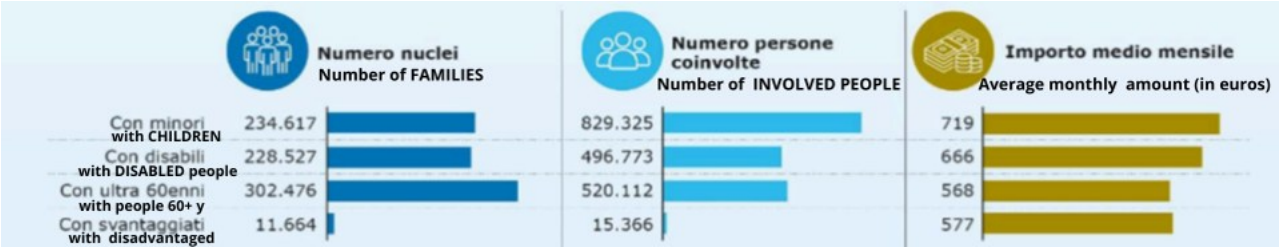
Ordinary Purchase Card

This is an anti-poverty measure introduced in 2008[49] and progressively updated about the ISEE thresholds for eligibility. In 2024, to obtain the Ordinary Purchase Card, the ISEE must not exceed €8,052.75, with the limit increasing to €10,737 for individuals aged 75 or older. The card is intended for people over 65 years old or under 3 years old (in the latter case, it is issued to a legal guardian). The card provides a monthly amount of €40 and can be used for grocery shopping as well as for paying gas and electricity bills. Due to the introduction of other income support measures, updated data on beneficiaries of the Ordinary Purchase Card are not available on the INPS website—the agency responsible for administering this benefit. However, the 2017 annual report by INPS reported approximately 570,000 beneficiaries[50].

[45] DL 124/2019 e regolamenti attuativi ARERA
[46] https://www.arera.it/dati-e-statistiche/dettaglio/clienti-beneficiari-di-bonus-elettrico-e-gas
[47] https://www.arera.it/comunicati-stampa/dettaglio/energia-nel-2023-oltre-75-milioni-di-bonus-sociali-24
[48] https://www.arera.it/comunicati-stampa/dettaglio/arera-numeri-servizi-pubblici-25
[49] https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legge:2008-06-25;112
[50] https://www.inps.it/it/it/dati-e-bilanci/rapporti-annuali/xvii-rapporto-annuale.html

Inclusion Allowance

Since December 2023, the Inclusion Allowance, one of the measures that replaces the Citizenship Income (Reddito di Cittadinanza) is available. The Inclusion Allowance (Assegno di Inclusione, ADI) is a national measure aimed at combating poverty, vulnerability, and social exclusion among disadvantaged groups through social inclusion pathways, as well as training, employment, and active labour policies. The allowance is granted to families with at least one member meeting one of the following conditions: having a disability; being a minor; being at least 60 years old; being in a condition of disadvantage and enrolled in a care and assistance program provided by local social and health services, certified by the public administration. The ISEE threshold for accessing this benefit is €9,360.The most recent data released by the INPS Statistical Observatory[51] report that in 2024 nearly 760,000 families have been approved for the allowance, covering a total of 1.82 million people. The average monthly amount received is €620, with a predominant concentration in Southern Italy. The following infographic (in Italian, with English translation), taken from the January 2025 ADI Report[52], describes the main characteristics of beneficiary family units.



"Dedicata a te" Card (literally "dedicated to you" card)

This is a Social Card available since 2024, designed to support families in purchasing essential food items, fuel, or alternatively, subscriptions to local public transport services. The eligibility requirements include: all household members must reside in the same municipality; the household's ISEE must not exceed €15,000. Beneficiaries are not required to submit an application. Instead, they are automatically selected—within the limit of cards allocated to each municipality—among those who meet the requirements. The selection is based on specific priority criteria: households with at least three members, households with underage children (giving priority to younger children), and those with the lowest ISEE values. In September 2024, INPS notified municipalities of the lists of selected beneficiaries[53].

Other National and Regional Measures to Tackle Energy Poverty and Promote Renewable Energy

The table below outlines the main measures adopted between 2022 and 2024 at both the national and regional levels to address energy poverty and promote the use of renewable energy sources.

[51] https://www.inps.it/it/it/dati-e-bilanci/osservatori-statistici-e-altre-statistiche/dati-cartacei---adi-e-sfl.html
[52] https://www.inps.it/content/dam/inps-site/pdf/dati-analisi-bilanci/osservatori-statistici/osservatorio-adi-sfl/Report_ADI_SFL_2025_01_d.pdf
[53] https://www.inps.it/it/it/inps-comunica/notizie/dettaglio-news-page.news.2024.09.carta-dedicata-a-te-2024-disponibili-le-liste-per-i-comuni.html

Area	Year	Measure	Description	Link
Italy (national level)	2024	National Energy Income Scheme	It supports the installation of domestic photovoltaic systems serving residential units of households in economic hardship.	https://www.gse.it/servizi-per-te/fotovoltaico/reddito-energetico
Italy (national level)	2024	Ecobonus	Tax Deductions for Energy Efficiency Improvements in Buildings	https://bonusfiscali.enea.it/
Marche Region	2022	Regional Measure to Combat Energy Poverty and Criteria for Fund Allocation – Year 2022	Financial contributions to households to help cope with rising energy bills	https://www.norme.marche.it/atto/detail.html?id=1690678
Marche Region	2023	Family Energy	Contributions to support households for investments in energy saving and renewable energy production, implemented for residential units within the regional territory	https://www.regione.marche.it/Regione-Utile/Energia/Bandi-di-finanziamento/id_8563/7263
Apulia Region	2022	Regional Energy Income Scheme	Contributions for households with an ISEE not exceeding €20,000 for the purchase and installation of renewable energy systems for domestic use	https://istanzere.politicheenergetiche.regione.puglia.it/
Basilicata Region		Gas Bonus	Cancellation of gas bill charges for the main residence of residents in Basilicata, thanks to compensation agreements with energy companies	https://www.regione.basilicata.it/giunta/site/giunta/detail.jsp?fw=1&otype=1053&id=3085712
Sicily Region	2023	Support program for individuals residing in Sicily – extraordinary contribution for the purchase and installation of photovoltaic panels and electricity storage systems	Contributions for the purchase and installation of photovoltaic panels and storage systems (No specific requirements, other than being a natural person residing in Sicily and the owner or co-owner of a residential property)	https://www.regione.sicilia.it/la-regione-informa/programma-sostegno-favore-persone-fisiche-residenti-sicilia-contributo-straordinario-l-acquisto-l-installazione-pannelli-fotovoltaici-nonche-sistemi-accumulo-energia-elettrica

At the national level, we should first mention the so-called Ecobonus, a measure that has undergone significant criticism and revisions in recent years and was a major topic during the last general election campaign three years ago. The scheme, which has been significantly downsized in 2024, provides tax deductions for energy efficiency improvements in buildings, aiming to encourage homeowners to pursue environmental sustainability and energy savings. The deductions focus on upgrading buildings (thermal insulation, replacement of windows and boilers, air conditioning systems, photovoltaic and solar systems for clean energy production, etc.). Beyond the political debate—which largely centred on cases of fraud and the limited sustainability of public finances—the measure succeeded in promoting the renovation of heating, cooling, and insulation systems in older buildings, which are highly prevalent in Italy[54]. These renovations are essential for meeting new demands arising from climate change in a sustainable way (energy savings and renewable energy production).

Another national initiative is the establishment of the National Energy Income Scheme, a program supporting the installation of domestic photovoltaic systems for residential units, including those owned by economically vulnerable families. In some cases, this measure has been specifically aimed at addressing inequalities exacerbated by climate change, by supporting the most fragile and impoverished segments of the population—those most affected by climate-related damage. Supporting poorer

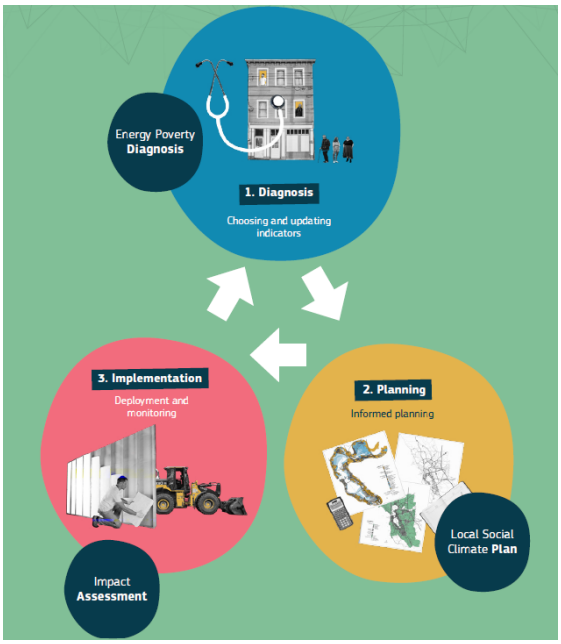
[54]According to ISTAT data, there are more than 24 millions residential buildings in Italy built before 1980, corresponding to 68% of all residential buildings https://www.istat.it/wp-content/uploads/2024/08/Today-Abitazioni_01_08-2024.pdf.

citizens in the production of renewable energy means not just helping them pay high utility bills but also empowering them to face new climate risks and, above all, to seize new opportunities. This includes supporting autonomous or community-based renewable energy production and promoting sustainable consumption habits. Old buildings are inefficient and amplify the risk of energy poverty: improving building envelopes is a crucial tool in reducing energy poverty[55].

From the table above, it emerges once again that in our country the Regions operate based on heterogeneous political logics and very different intervention plans. In some cases, the measures adopted, both at the national and regional levels, have a more emergency character, aimed at supporting families in paying electricity and gas bills through income supplements (e.g., contributions to cope with rising energy costs in Marche Region).Within this type of support, the virtuous example of the Basilicata Region stands out: thanks to compensation agreements with energy companies, in 2023 it provided for the cancellation of gas bill costs for the primary residences of residents in Basilicata.In other cases, regions have directed funding to support the strengthening of sustainable energy infrastructures (e.g., the Regional Energy Income in Apulia[56], contributions for investments in energy savings or photovoltaic systems in Marche and Sicily regions).Moreover, several regions are promoting the creation of Renewable Energy Communities, considered a tool both to enhance the use of green energy and to combat energy poverty[57].

The EPAH Method to recognise and address Energy Poverty

To support national governments and local authorities in combating energy poverty while ensuring that the social dimension of the local energy transition is effectively addressed, EPAH has developed a specific methodology accompanied by operational tools. These provide guidelines for analysing, designing, and implementing targeted actions to support the most vulnerable groups[58].The EPAH methodology consists of three phases:



Diagnosis

The diagnosis phase aims to engage stakeholders and

[55] Fabbri, K.; Marchi, L.; Antonini, E.; Gaspari, J. Exploring the Role of Building Envelope in Reducing Energy Poverty Risk: A Case Study on Italian Social Housing. *Energies* 2023, 16, 8093. https://doi.org/10.3390/en16248093

[56]The Region of Sardinia has also introduced a Regional Energy Income scheme through Regional Law no. 15/2022 and subsequently approved the agreement framework with the GSE, the establishment of a revolving fund, and the implementation guidelines through Resolution no. 38/142 of 2023https://delibere.regione.sardegna.it/protected/67757/0/def/ref/DBR67655/

[57] Regione Lazio: https://www.regione.lazio.it/notizie/Sostenibilita-via-libera-sostegno-comunita-energetiche-rinnovabili ;

Regione Toscana: https://raccoltanormativa.consiglio.regione.toscana.it/articolo?urndoc=urn:nir:regione.toscana:legge:2022-11-28;42 ;

Regione Abruzzo: http://www2.consiglio.regione.abruzzo.it/leggi_tv/testi_vigenti/insieme.asp?numero=8&anno=2022&lr=L.R.%2017%20maggio%202022,%20n.%208&passo=../abruzzo_lr/2022/lr22008.htm&passa=http://leggi.regione.abruzzo.it/leggireg/2022/l008.htm ;

Regione Campania: https://www.regione.campania.it/assets/documents/dgr-n-451-del-01092022.pdf

Regione Calabria: https://www.consiglioregionale.calabria.it/bdf/api/BDF?numero=20&anno=2023

Regione Sicilia: https://www.regione.sicilia.it/sites/default/files/2022-06/Avviso%20comunit%C3%A0%20energetiche%20regione%20siciliana_rev_DRE_6giu2022_sant.pdf

[58]https://energy-poverty.ec.europa.eu/our-work/epah-methodology

analyse the main characteristics of energy poverty at the local level: identifying target groups and their degree of vulnerability, the most affected areas, available measures and tools, etc. In this phase, data collection and indicator development are fundamental. The gathered information should be analysed and discussed with key local stakeholders working to support households facing energy poverty, in order to build a shared "snapshot" of the phenomenon at the municipal level.

Planning

The knowledge developed during the diagnosis phase is crucial for the subsequent planning phase, which aims to identify the strategy and specific measures to combat energy poverty. EPAH suggests preparing a Local Climate Social Plan, defining both short-term goals oriented towards support actions and medium- to long-term objectives aimed at prevention and mitigation measures.

Implementation

The final phase is implementation, aimed at carrying out what has been planned based on the information collected and shared about local energy poverty. Implementation includes financial planning, execution, and monitoring of the planned actions. It should also involve an impact assessment of the measures and interventions foreseen in the Plan, providing data and information useful for re-planning in a virtuous cycle of knowledge, planning, and intervention.

The active involvement of vulnerable groups in addressing energy poverty

Energy poverty primarily affects the most vulnerable groups, making it essential to identify methods and tools to promote their involvement in the diagnosis and planning of effective countermeasures. While the general literature emphasises the importance of involving vulnerable individuals in designing support measures, specific references to the direct involvement of those experiencing energy poverty remain limited[59].However, some studies indicate that actively engaging people facing energy poverty in activities such as sharing experiences, identifying common solutions, and mutual support increases empowerment[60] and trust[61]; improves social inclusion[62]; contributes to reducing energy poverty itself[63].These findings confirm that direct participation through assemblies, home visits, local agents, energy communities, and workshops yields concrete results in terms of:

- Greater effectiveness of interventions: tailored solutions, higher adoption rates, and real energy savings;
- Individual empowerment and social cohesion: increased trust, satisfaction, and social capital;
- Inclusion and social justice: participation of vulnerable groups and reduction of inequalities in access and information.

[59] Power Up project, https://www.socialenergyplayers.eu/wp-content/uploads/2022/09/POWERUP_D3.1_Final.pdf
[60] Ortiz, J.; Jiménez Martínez, M.; Alegría-Sala, A.; Tirado-Herrero, S.; González Pijuan, I.; Guiteras Blaya, M.; Canals Casals, L. Tackling Energy Poverty through Collective Advisory Assemblies and Electricity and Comfort Monitoring Campaigns. Sustainability 2021, 13, 9671. https://doi.org/10.3390/su13179671
[61] Martiskainen, M., Heiskanen, E., & Speciale, G., Community energy initiatives to alleviate fuel poverty: the material politics of Energy Cafés,*Local Environment*, 2017, 23(1), 20–35. https://doi.org/10.1080/13549839.2017.1382459
[62] Boostani, P.; Pellegrini-Masini, G.; Klein, J. The Role of Community Energy Schemes in Reducing Energy Poverty and Promoting Social Inclusion: A Systematic Literature Review. Energies 2024, 17, 3232. https://doi.org/10.3390/en17133232
[63] Ceglia, F.; Marrasso, E.; Samanta, S.; Sasso, M. Addressing Energy Poverty in the Energy Community: Assessment of Energy, Environmental, Economic, and Social Benefits for an Italian Residential Case Study. Sustainability 2022, 14, 15077. https://doi.org/10.3390/su142215077

PART 2: Empirical research in the municipalities involved in the project

Objectives and methodology

Empirical research aimed to deepen the understanding of energy poverty at the local level in the three municipalities involved, outlining its main characteristics: who are the most affected citizens/households? Where and under what conditions do they live? What types of support do they currently receive or can access? The purpose of the research is to improve the capacity to interpret and diagnose energy poverty locally, identifying the most appropriate measures to combat it in municipalities of different sizes. The research was also carried out based on the guidance provided by the EPAH "Handbook 1: A Guide to Energy Poverty Diagnosis"[64].

The analysis phase at the local level is the foundation of any planning activity for interventions and policies, as it allows understanding the specific causes of the phenomenon. The questions that can help local administrators improve their knowledge of energy poverty at the local level are:

a. Where is energy poverty concentrated in the territory?

b. How severe is it?

c. Who are the most affected citizens?

d. What are the main causes?

e. What is the perception of the problem among the people involved?

To answer these questions, the following activities were carried out in each of the three partner municipalities (Avezzano, Bassiano, and Crispiano):

1) **Interviews with key stakeholders**

1a - Interview with the coordinator of local social services

The aim of this interview was to investigate the number and characteristics of families and individuals who receive/have received income support and subsidies (which specific measures? e.g. Citizenship Income, Inclusion Income, school fee allowance, book vouchers, utility bill bonuses, etc.); individuals and households who benefited from discounts on gas, electricity, and water utilities; families who obtained deferred or instalment payment plans or for whom a suspension of energy service disconnection was granted during critical periods. In particular, the coordinator was asked to specify the characteristics of the people and families requesting subsidies and income support measures (based on characteristics such as age, gender, occupation and employment sector, household composition, country of origin, type of housing, etc.).

1b – Interviews with key local stakeholders who engage with people experiencing energy poverty

These included local Caritas organisations, parishes, volunteer associations, public housing management agencies, etc. The objective was to gather information on the scale and characteristics of the phenomenon, with a specific focus on vulnerable individuals and families who are not reached by social services.

2) **Analysis of Local Social Plans and main local planning documents and support measures implemented at the local level**

The Piano Sociale di Zona (Local Social Plan, PdZ) is the main social planning tool at the territorial level. It includes an analysis of the social context and population needs, as well as the services and interventions planned to address those needs. In this research, the Local Social Plans of the three

[64] https://energy-poverty.ec.europa.eu/observatory/publications/epah-energy-poverty-advisory-hub-handbook-1-guide-energy-poverty-0

municipalities were analysed to assess whether the phenomenon that emerged during the Covid-19 pandemic is being detected, whether data and information are collected about people and households in energy poverty, and whether any support measures are foreseen. In addition, support measures and concessions put in place by the municipalities (or higher administrative levels) to relieve the energy cost burden on families were examined—even if outside the standard PdZ planning framework.

3) **Data collection on individuals and households benefiting from specific support measures and/or residing in public housing:[65]:**

– Number of individuals and households assisted;

– Key socio-demographic data (gender, age, household composition, income level).

4) **Data collection on the energy efficiency of the municipality's housing stock**

This information is relevant because the energy efficiency of homes is one of the factors contributing to energy poverty[55]. In Italy, energy certification is the main tool for assessing the energy efficiency level of buildings.

The Municipality of Avezzano collected and submitted data related to the energy certifications of buildings located within its territory, while the Municipality of Crispiano provided access to its SECAP — the Sustainable Energy and Climate Action Plan — a strategic document that municipalities adhering to the Covenant of Mayors develop to plan actions aimed at reducing greenhouse gas emissions and adapting to climate change. The SECAP outlines specific measures for emission reduction, mitigation actions (such as improving the energy efficiency of buildings, promoting the use of renewable energy, and enhancing public transport), climate change adaptation measures, and actions to combat energy poverty — initiatives to ensure access to affordable energy for all citizens.

Box: Energy Certification of Buildings

The energy certification of buildings was introduced in Italy in implementation of the Directive 2002/91/EC on the energy performance of buildings. With Legislative Decree 192/2005, which transposed this Directive, Italy introduced the Energy Certification Certificate (ACE), gradually making certification mandatory for new buildings and major renovations. In 2009, the ACE became mandatory for property sales. With Law Decree 63/2013, which transposed Directive 2010/31/EU, the ACE was replaced by the Energy Performance Certificate (APE). The current energy performance levels provided by the APE range from A4 (the highest) to G.

Results' general framework

Despite the involvement of the three municipalities in the project activities, data collection proved extremely difficult, primarily because municipal managers and officials have limited knowledge of the phenomenon. Furthermore, the issue is multidimensional and involves several municipal departments: the local social services for income support measures and social welfare benefits, and the housing and environmental department for property maintenance and energy certification. All these departments face challenges in communicating and addressing the issue in a coordinated manner. During the project, attempts to foster collaboration among the various municipal sectors did not fully succeed, also due to understaffing and the resulting high workloads reported by the municipal staff. As a result, it

[65]Residents of public housing (ERP) are at higher risk of energy poverty due to lower income levels and the outdated, energy-inefficient condition of their dwellings. A study conducted by OIPE in 2021 in Lombardy Region found that 30% of families living in ERP housing experience energy poverty, compared to 11.5% of those renting and less than 3% of those who own their homes https://www.consiglio.regione.lombardia.it/wps/wcm/connect/7e733779-c9c4-4f0d-a80d-ee5f4f5751ff/MV_n32_Povert%C3%A0EnergitaPresentazione_nov2023.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-7e733779-c9c4-4f0d-a80d-ee5f4f5751ff-oNDibZP

was not possible to collect data uniformly across all three municipalities, as would have been necessary for the research. The following table shows the data that could be collected in each of the three municipalities involved.

MUNICIPALITY	INTERVIEWED STAKEHOLDERS	SUPPORT MEASURES	BENEFICIARIES' DATA	HOUSING STOCK DATA
Avezzano	- Head of Social Services - Environmental Services Office	COVID-related contributions for bill payments (3 public notices)	Beneficiaries of COVID support measures (3 public notices)	Energy efficiency (APE) of residential and non-residential buildings in the municipal area
Crispiano	- Head of Social Services - Representative of the cooperative managing poverty alleviation services - Representative of the agency managing public housing (ERP)	COVID-related contributions for bill payments Regional Energy Income scheme	Beneficiaries of regular contributions for bill payments Beneficiaries of COVID-related contributions for bill payments	-
Bassiano	- Councillor for Social Services - Head of the Social and Health District	COVID-related contributions (district-level notice)	-	-

The following section presents the results related to support measures, the characteristics of the beneficiaries, and the information on the municipal building stock that could be collected in the three municipalities. The insights that emerged from stakeholder interviews were incorporated into the text to complement the collected data.

Municipality of Avezzano

Avezzano is an Italian municipality in the province of L'Aquila, in Abruzzo Region. It was granted city status by Presidential Decree on June 21, 1994, and has a population of approximately 41,000 inhabitants. The municipality constitutes Social District Area No. 3 of the Abruzzo Region. The city, of medieval origin, developed in modern times as an agricultural centre and later became an important industrial hub. In recent decades, however, significant deindustrialisation has contributed to rising unemployment and poverty in the area, along with a notable emigration of young people, partially offset by immigration from foreign-born residents.

The Municipal Social Plan (PdZ) of the City of Avezzano does not explicitly analyse or address energy poverty, nor does it specifically mention interventions aimed at combating it. However, it does regularly refer to families and households in poverty. Between 2021 and 2023, the Municipality of Avezzano did implement several measures to tackle energy poverty. The first call for applications (Avviso), published in November 2021 (Protocol No. 70640 of 23/11/2021), aimed to support families affected by the COVID-19 emergency by offering financial assistance to partially cover domestic utility expenses for electricity, gas, and water, as well as contributions for waste collection (TARI) and housing rent payments for the year 2021 (January 1 to September 30).The call was addressed families who, at the time of application, were residents of the municipality and were experiencing financial hardship due to income loss linked to the COVID-19 health emergency, falling under one of the following categories:

a. job loss;

b. reduction in working hours;

c. suspension of self-employed work;

d. closure of professional or business activity;

e. reduction in professional or business activity;

f. unemployment;

g. non-renewal of temporary or atypical employment contracts;

h. corporate or union agreements involving drastic reductions in working hours;

i. serious illness or death of a family member;

j. increase in certified expenses for medicine, social assistance, or health and funeral costs;

k. other situations of need.

Applicants also had to meet the following criteria:

- Do not hold more than €20,000 in accessible bank and/or postal deposits;
- Hold a valid ISEE certificate with a value not exceeding €15,853.63;
- Do not have applied for the food voucher program issued by the Municipality of Avezzano at the same time.

The utility support benefit was calculated based on 80% of the total amount of the bills submitted by the applicant, with a maximum contribution of €300.

Since the funds available under the first call were not fully exhausted due to the low number of eligible applications received, the Municipality issued a second version of the same call in February 2022 (Protocol No. 11131 of 28/02/2022). The new call was nearly identical to the previous one, except that it no longer excluded applicants who had requested food vouchers. In total, through these two calls, the Municipality of Avezzano provided 129 financial contributions in 2022 to families in need, including those affected by energy poverty (see next paragraph). As described in more detail below, the beneficiaries of these contributions were families in a general condition of economic hardship, which also manifested as energy poverty, particularly in difficulty paying utility bills.

Subsequently, however, the Municipality deemed it appropriate to expand the pool of beneficiaries. In late 2022, a new Call for Applications (protocol no. 77378 of 19/12/2022) was published, aimed at countering the emergence of new forms of poverty and supporting citizens in difficulty by providing contributions to partially cover household utility expenses related to electricity, water, and gas for the year 2022, covering the period from January 1st to November 30th.As in the previous calls, applicants must, at the time of application, be residents of the municipality and be experiencing financial hardship due to a reduction in income attributable to one of the following causes:

a. job loss;

b. reduced working hours;

c. suspension of self-employment;

d. cessation of professional or business activity;

e. reduction of professional or business activity;

f. unemployment;

g. non-renewal of fixed-term or atypical employment contracts;

h. corporate or union agreements involving a drastic reduction in working hours;

i. serious illness or death of a member of the household;

j. increased certified expenses incurred by the household for the purchase of medication, for socio-assistance services, or for the payment of health or funeral expenses;

k. other situations of need.

In this call, however, the ISEE threshold was raised to €26,000.00, with priority given to households with an ISEE between €12,000 and €26,000 whose members are not beneficiaries of the Citizenship Income or Citizenship Pension. The target thus shifted to a medium-income population segment, no longer in conditions of extreme poverty. The amount of the contribution was also adjusted based on the household composition, with a maximum amount of €300.00 for households of up to two members, €400.00 for households with 3 or 4 members, and €500.00 for households with 5 or more members.

In collaboration with the social services department of the Municipality of Avezzano, a brief analysis was carried out on the data concerning the beneficiaries of the three calls for applications issued between 2021 and 2022, which provided financial support to alleviate energy poverty among families, in the form of bonuses for the payment of energy bills. It was not possible to obtain gender-disaggregated data, so this important dimension was not taken into account in the analysis.

As described above, the first call was published in November 2021 and offered financial contributions for various types of needs: utility bills, rent payments, and TARI (waste tax) payments. The target group consisted of individuals in economic hardship (with an ISEE not exceeding €15,853.63) who were not beneficiaries of the Covid food voucher being distributed by municipalities at the same time through national funding. Due to the low number of applications received, the municipality published a new version of the call in February 2022, removing the aforementioned restriction and allowing food voucher beneficiaries to apply as well.

The following table presents key data related only to the beneficiaries who requested and received the energy bill bonus, with a specific focus on one of the criteria that define energy poverty — namely, the difficulty in paying for energy consumption.

	First Covid 19 Call				Secondo Covid 19 Call			
	Total	Citiz ITA	Citiz. UE	Citiz. extra UE	Total	Citiz ITA	Citiz. UE	Citiz. extra UE
n. of beneficiaries	27	19	3	5	102	86	3	12
mean age	49	52,3	37,3	44,8	53	52,7	39	46,6
average n. of components	2	2,1	2	2,4	3	2,9	2,3	3,25
% of beneficiari receiving Citizenship Income (or Pension)	11	10	0	1	29	24	0	5

As shown in the table—and as acknowledged by the Municipality of Avezzano—the number of families who received the contribution under the first call was only 27, compared to 102 beneficiaries who responded to the second call after the requirement excluding recipients of the Covid food voucher was removed. The majority of beneficiary households are Italian citizens (70% in the first call and 84% in the second) and are generally small in size (an average of 2 to 3 members).The average age of applicants was 49 for the first call and 53 for the second, higher among Italian citizens, while it was below 40 for applicants from non-EU countries. Among those who were granted the contribution, only a portion were also recipients of the Citizenship Income or Citizenship Pension: the percentage was higher in the first call, reaching 40%, while it was below 30% in the second. This data suggests that difficulties in paying utility bills—a key indicator of energy poverty—do not affect only those in extreme economic hardship due to unemployment or lack of income, but also families who do not benefit from anti-poverty measures and are likely to fall into the category of the so-called "working poor."

Then, as described above, the Municipality of Avezzano later issued an additional call for contributions to help families pay household utility bills. This call was open to applicants with an ISEE up to €26,000, with priority given to those with an ISEE between €12,001 and €26,000, specifically aimed at reaching families not in absolute poverty but still experiencing financial hardship due to the energy crisis and rising energy costs—thus falling into the category of the "energy poor." Under this call, contributions were granted to 263 applicants, with the characteristics shown in the following table:

	Utility Bills Call		
	Total	Applicants WITH priority	Applicants WITHOUT priority
n. of beneficiaries	263	88	175
average n. of components	3	3	3
% of beneficiari receiving Citizenship Income (or Pension)	58	0	58
Mean value of ISEE	€ 9.246,19	€ 17.420,89	€ 5.135,48
Maximun amount (mean value)	€ 344,10	€ 367,37	€ 332,40

The social services department did not provide data on gender, age, or citizenship of the beneficiaries of this call; however, the ISEE value of each household is available. Among the 263 beneficiaries of this measure, approximately one third (33%) were granted priority access, with an ISEE between €12,000 and €26,000. This group includes no recipients of the Citizenship Income, and their average ISEE is around €17,000—indicating a target group that typically has very limited access to social support and anti-poverty measures. Data suggest that this measure successfully addressed a specific need related to energy poverty, which increasingly affects individuals and households not always in absolute poverty.The remaining 66% of beneficiaries fall into the category of economic poverty, with a much lower average ISEE of approximately €5,000. About one third of them are also recipients of the Citizenship Income or Citizenship Pension.

The Department V – Environment, Green Areas and Urban Furnishing, Sports and Sports Facilities of the Municipality of Avezzano has processed the data related to the energy certifications of buildings located within the municipal territory. According to these data, a total of 44.3% of buildings with an energy certification in the Municipality of Avezzano fall within the two lowest energy classes (F-G), while about one in three (31.68%) are in the most efficient classes (A4-B), with 7.69% in class A4.

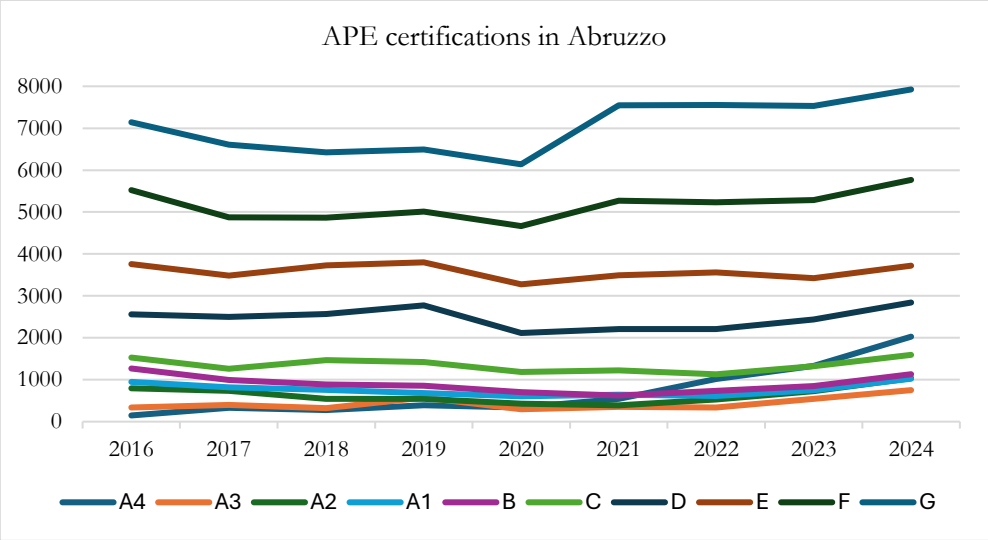
Focusing only on residential buildings, the results are similar for the lowest energy classes (44.68% in classes F-G), and slightly higher for the most efficient ones (32.24% in class A, of which 8.11% are in A4).

The data provided by ENEA for the Abruzzo region[66] show that residential buildings in the Municipality of Avezzano are, on average, in better energy efficiency conditions than the regional average, where only 21.47% of buildings fall within the

Class	AVEZZANO MUNICIPALITY RESIDENTIAL BUILDINGS	ABRUZZO REGIO RESIDENTIAL BUILDINGS (2024)
G	28,58%	28,49%
F	16,10%	20,73%
E	10,46%	13,37%
D	8,14%	10,22%
C	4,48%	5,73%
B	4,91%	4,07%
A1	6,77%	3,68%
A2	8,02%	3,73%
A3	4,42%	2,70%
A4	8,11%	7,29%

[66] https://apeabruzzo.enea.it/statistiche.php

highest energy classes (A4-B), while nearly 50% (49.22%) are in the two least efficient classes (F-G).The regional trend—consistent with the national one[67]—is nonetheless aimed at progressively increasing the number of buildings in the higher energy classes (A4-B), as illustrated in the graph below.



Municipality of Crispiano

The municipality of Crispiano, in Taranto province, has approximately 13,000 inhabitants. It became independent from the municipality of Taranto in the early 1920s and is characterised by a traditional agro-pastoral economy, with a growing tourism sector linked to the restoration of typical masserie (rural farmhouses) and the development of agri-tourism. The demographic profile shows a progressive aging of the population, with a low presence of foreign residents.

Crispiano is located in Apulia region, one of the Italian regions that has introduced a support measure to increase and promote the installation of renewable energy production systems across its territory, with particular attention to the most vulnerable population groups. The aim is to combat energy poverty and reduce social inequalities. The region has launched the "Regional Energy Income" scheme, designed to encourage the widespread adoption of renewable energy production systems in residential settings (both individual homes and condominiums) by providing non-repayable grants for the purchase and installation of such systems. These grants are primarily intended for users in conditions of socio-economic hardship. This initiative seeks to promote the energy transition while also encouraging the development of a local supply chain in the installation, maintenance, and management of renewable energy systems.

The Regional Energy Income program promotes the purchase and installation of systems for the production of electricity and thermal energy from renewable sources through the provision of non-repayable grants to eligible beneficiaries. Recipients of the energy income are required to sign an agreement with GSE (Energy Services Manager), activating the net metering service for the electricity produced by the systems, or any other mechanism for managing and incentivizing renewable energy

[67] https://www.pubblicazioni.enea.it/le-pubblicazioni-enea/edizioni-enea/anno-2024/rapporto-annuale-sulla-certificazione-energetica-degli-edifici-annualita-2024.html

production introduced by the implementing decrees of Legislative Decree No. 199 of November 8, 2021.The energy income program is structured in five phases:

- the establishment of a fund for the purchase of renewable energy production systems;
- the publication of a regional list of qualified economic operators authorized to carry out installation and maintenance of electricity and thermal energy systems powered by renewable sources, from which beneficiaries can choose to access the Fund;
- users gain access to the systems through the subsidies provided by the fund;
- surplus electricity produced and not self-consumed is fed into the grid and remunerated by GSE through net metering or according to mechanisms defined in the implementing decrees of Legislative Decree 199/2021;
- revenues generated from feeding excess electricity into the grid may be reinvested to replenish the energy income fund, creating a revolving fund that sustains itself over time.

Local clean energy production also leads to self-consumption, which in turn results in lower energy bills for users.It is also important to highlight that the energy income scheme aims to stimulate employment, both in system design and installation, as well as in maintenance activities.

Moreover, Apulia Region has recently published a call for proposals supporting the creation of Renewable Energy Communities (RECs) by providing funding to municipalities and Third Sector Entities (ETS) for the administrative establishment of RECs. The funding includes the implementation of a local engagement process aimed at encouraging the participation of citizens from the most disadvantaged social groups. Entities awarded funding through this call will subsequently be eligible to apply for another program that will support the purchase and installation of photovoltaic plants for the operational launch of the REC.

In collaboration with the social services department of the Municipality of Crispiano, data were analysed regarding individuals who were either already receiving support or who contacted the service for the first time due to difficulties in paying their utility bills. This is one of the household-level indicators used to identify conditions of energy poverty. The analysis covers the years 2021 to 2023.The table reports the number of users—broken down by gender—who received a municipal social service contribution for the payment of utility bills (primarily electricity). It also includes the average age of the recipients, the average number of household members, the average ISEE value, the percentage of users who also received other forms of public support in the same year (such as Citizenship Income, NASpI unemployment benefit, wage support schemes, etc.), and the percentage of first-time requests out of the total number of accepted requests.

Year	2021			2022			2023		
	Total	Women	Men	Total	Women	Men	Total	Women	Men
n. beneficiaries	8	6	2	13	8	5	13	10	3
mean age	46,25	40,83	62,5	47,69	46,25	50	50,23	53,7	38,66
Average n. of components	3,125	3,66	1,5	2,38	2,625	2	2,15	2,2	2
mean value of ISEE	€ 3.761	€ 2.687	€ 6.885	€ 3.451	€ 2.911	€ 4.3016	€ 3.115	€ 3.097	€ 3.176
% di beneficiariesreceiving other types of support	0	0	0	38,46	37,5	40	15	10	33,3
% of new beneficiaeries out of the total	12,5	16,67	0	15,38	12,5	20	31	30	33,3

Shows that the Municipality of Crispiano has provided financial support to approximately ten beneficiaries per year through a specific measure aimed at covering utility bills (there were 8 beneficiaries in 2021 and 13 in each of the two following years).Despite the limited dataset, it can be

observed that the majority of beneficiaries are women, who are also on average younger (except in 2023, when the three male beneficiaries were all under the age of 45). These households also tend to be larger in size and have a lower average ISEE.

In addition to these data, the social services department recommended also considering figures from 2022, when the municipality distributed the Covid contribution—a national income support measure. In Crispiano, a large portion of the beneficiaries used this aid specifically to cover utility expenses, at a time of significant social and economic hardship across the country.

Year	2022		
COVID contributions	Total	Women	Men
n. beneficiaries	243	154 (63%)	89 (37%)
mean age	47,41	46,55	48,89
Average n. of components	2,95	2,85	3,12
mean value of ISEE	€ 4.065	€ 3.954	€ 4.257
% di beneficiaries receiving other types of support	144	88 (57%)	56 (63%)
% of new beneficiaeries out of the total	102	66 (43%)	36 (41%)

The table shows that the number of beneficiaries was much higher in this case, reaching 243. Once again, the characteristics of the beneficiaries were quite similar to those who received the utility bill contribution: mostly women, younger on average, and with lower average ISEE values than men. However, in this case, the male beneficiaries tended to have larger households. A notable point here is that a significant percentage of beneficiaries of this contribution—both men and women—were also recipients of other forms of public support.

Municipality of Bassiano

Bassiano is a hilltop village of about 1,400 inhabitants, located in Latina province. It has a well-preserved medieval structure, a cultural heritage linked to the figure of Aldo Manuzio, who was born there, and an economy based on agriculture, food and wine, and quality tourism. The community is characterised by an elevated average age, limited presence of foreigners, and low demographic dynamism.

Being a small municipality, for social services management, Bassiano is part of the Monti Lepini LT/3 District, together with the municipalities of Maenza, Priverno, Prossedi, Roccagorga, Roccasecca dei Volsci, Sezze, and Sonnino. In implementation of Regional Council Resolution no. 1161 of December 7, 2022, the District received an amount of €225,645.75 to be allocated to needy families and households to help cope with the increased costs of domestic electricity utilities. Lazio Region aimed to support citizens and families in social and economic fragility, residing in Lazio municipalities, through the disbursement of a one-time economic contribution to mitigate the negative effects of the exceptional rise in energy prices. A total of €15 million was assigned under chapter U0000C21932 called "ARMO – Regional Fund for Energy Price Increases (Regional Law no. 19/2022, art. 9, paragraphs 163-165)" – current transfers to local administrations, Regional Council Resolution 1161/2022. This fund provides one-time economic assistance to families in need. An expenditure commitment number 67750/2022 was finalized for €15,000,000, allocated to the Municipality of Rome Capital and lead entities of health-social districts (as per Regional Council Resolution 660/2017), assigning €5,000,000 to the Municipality of Rome Capital and €10,000,000 to the remaining 36 health-social districts based on criteria and weights defined in the Regional Social Plan (Regional Council Resolution 971/2019) for fiscal year 2022.

The LT/3 district, consistent with the Lazio Region's provisions, published a call for expressions of interest for the distribution of economic aid to citizens according to the following criteria and methods: the amount of the one-time aid is set at €150; beneficiaries are citizens who meet the following requirements:

- Residents registered in the registry of one of the municipalities of the LT3 Monte Lepini Health-Social District;
- ISEE value not exceeding €25,000;
- Account holders of electricity utilities;

The aid is cumulative with other benefits aimed at addressing the exceptional rise in energy prices. Applications were submitted on the institutional websites of the Municipality of Priverno and of each municipality of the District, which, after evaluation, identified the beneficiaries and prepared two rankings based on ISEE values. The first ranking includes requests from those who did not receive benefits under the "Decreto Aiuti bis" (Law Decree 115/2022, converted with modifications by Law 142/2022 – urgent measures on energy, water emergency, social and industrial policies); the second ranking, also ordered by ISEE value, includes those who did receive such benefits. The economic support was disbursed by the Municipality of Priverno, lead municipality of the LT/3 health-social district, until funds were exhausted and no later than December 31, 2023.

In Bassiano, the beneficiaries were 7 households. However, it was not possible to obtain detailed information about the sociodemographic characteristics of this group, although the contacts reported that these were mainly families with minor children. Interviews conducted with local stakeholders (the social services councillor, the municipal social worker, etc.) revealed that in this small mountain municipality, there are many homes completely lacking heating, where mostly elderly people live who, due to their rural culture and tradition, are not accustomed to heating their homes except through fireplaces. The same difficulty is experienced by residents during the summer months, given the high temperatures caused by climate change and the inability to cool their homes.

PART 3 – Guidelines to collect data for energy poverty diagnosis

The data collection in the three partner municipalities proved to be extremely challenging, primarily due to the limited awareness of the relatively new phenomenon among local administrators and staff. Moreover, the complexity of the issue, given its multifactorial nature, requires a multi-level governance approach to ensure the integrated intervention of various policies at both national and local levels, as well as across different municipal sectors. This lack of integration and shared governance was evident during the project, significantly impacting data collection, communication, and coordination between different services within the local authority. Therefore, given the experimental nature of the European G&S HUB project, one of the outcomes of the action research conducted is the proposal to systematize a dataset to be collected at the local level to detect and deepen the understanding of the population's energy poverty condition. Besides reflecting findings from the research, the dataset aligns with the indicators suggested by EU Recommendation 2020/1563[24] and the work carried out by EPAH[26].

To obtain a comprehensive picture of energy poverty, based on the EU recommendation indicators at national and local levels, data is needed on:

Socio-economic aspects

- Household composition: larger families may have higher energy needs (municipal registry data)

- Family income: essential to assess the spending capacity for energy (economic data at municipal level or ISEE data collected by social services)
- Employment status of family members: to estimate disposable income and potential impact of job losses (socioeconomic data at municipal level and social services data)
- Access to support measures and instruments

Energy

- Energy expenditure: amount spent on heating, electricity, and other energy services
- Energy consumption: quantity of energy used for heating and other purposes
- Energy efficiency of buildings: evaluation of thermal insulation, windows, and systems
- Types of heating and cooling: to understand the impact of different technologies on consumption
- Use of renewable energy sources: to assess the impact of renewables on reducing energy costs

Housing characteristics

- Type (apartment, detached house, etc.): to evaluate the building envelope's impact on consumption
- Surface area: to estimate energy needs
- Maintenance status: to assess the impact of building deterioration on consumption

Specific indicators

- Ratio of energy expenditure to income: percentage of income allocated to energy costs
- LIHC index (Low Income-High Cost): considers both estimated energy costs and median household expenditure
- LILEE index (Low Income Low Energy Efficiency): evaluates the combination of low housing energy efficiency and low income

Policy information

- Income support measures: to evaluate the effectiveness of policies against energy poverty
- Energy refurbishment interventions: to assess the impact of energy efficiency improvement projects

This list presents a comprehensive set of indicators able to provide a detailed overview of energy poverty at the local level. However, it is difficult for municipalities to access some of the data required to calculate these indicators, while in other cases the challenge lies in the systematic collection and sharing of data already held by the administration across different services and offices. The following section describes some possible sources of the necessary data.

Box –Data sources:
ISTAT (Italian National Institute of Statistics): provides demographic, socioeconomic, poverty, and income data.
OIPE (Italian Observatory on Energy Poverty): produces reports and analyses on energy poverty.
ARERA (Regulatory Authority for Energy, Networks and Environment): provides data on energy costs and consumption.
Local and regional authorities: can supply specific territorial data.
Academic research: for specific studies on energy poverty.

Together with policy information, demographic and employment data (socioeconomic aspects) are the basic contextual reference for the analysis of any phenomenon at the local level, as they allow understanding the composition of the population and the family households according to the main

demographic categories: gender, age, nationality of the population, number and composition of family units, etc. Information on health conditions and employment can be added. These data aim to reconstruct the local context and must be collected from official sources (ISTAT). Some of these data can also be collected from municipal registry offices. Generally, the Social Plan of the area, the main document for social and health-social programming at the local level, contains some contextual data obtained from official sources, but the data collected are not always updated and not always related to the territorial level of the individual municipality. It would also be important for all municipal offices that interact with citizens to provide services to start collecting a shared set of demographic data starting from people receiving services. The data must, of course, be collected anonymously and in compliance with privacy regulations.

Income data, and possibly ISEE data—essential to understand the family's economic capacity to bear energy costs—must also be collected from official sources (Revenue Agency, INPS, ISTAT). At the municipal level, average values can be gathered to help outline the contextual framework, also in terms of family wealth. For access to certain services, municipal offices and services collect this information (in fact, ISEE is mandatory, for example, to access some social and socio-assistance benefits provided by municipal or district services: e.g., families using nursery schools, school transport or meal services, households receiving home care services, etc.). In addition to the information held by municipal services, there is also data held by entities managing services on behalf of the municipality: for example, housing agencies managing ERP housing or waste collection companies (in many municipalities, the amount of the TARI waste tax also depends on the ISEE value, etc.). Again, in due respect of privacy regulations, it is important that the various offices/services/organizations can share common information.

Energy expenditure data are crucial for analysing energy poverty but are equally complex to collect: for households requesting income supplements for the payment of electricity bills, the data is held by social services; for the rest of the population, the data must be sourced from ARERA.

Municipalities could more easily access the data available to them through technical and urban planning services, referring to housing data both in terms of the type and characteristics of dwellings and in terms of energy efficiency, by analysing the available Energy Performance Certificates (APE). Using cadastral and urban planning data, municipalities could also focus their analysis on one or two specific areas (neighbourhoods/districts) where data suggest a potential high concentration of people experiencing energy poverty. Finally, through collaboration with the housing policy area and agencies managing public residential housing, municipalities could start a specific survey targeting social housing, whose residents—as highlighted by literature[65]—tend to experience energy poverty at a higher rate compared to private renters and owners.

It is therefore important that local authorities initiate processes aimed at systematically collecting and sharing among services the data needed to outline the framework of energy poverty. Due to the complexity of the phenomenon, it is recommended to proceed incrementally, starting from what is already available to municipal offices and then expanding and integrating further data over time. It also becomes important to progressively involve external stakeholders (primarily energy providers and ARERA) and, depending on the size of the municipality, higher levels of local government (territorial area, province, region, etc.).

Finally, it is essential to activate—alongside data collection—processes of involving people living in energy poverty, as their perspective is indispensable to complement the description of the phenomenon and, especially, to identify the most effective measures to counter it[59].

Below is a possible sequence of steps that local authorities can follow to build a method for systematically collecting and sharing data and information on energy poverty.

STEP	DATA	SOURCES
1.Context	Sociodemographic data Data on average income Data on the labour market and local economy Data on energy poverty at national and regional level	ISTAT Region OIPE ARERA/GSE
2. Info available to different municipal officed (to be shared)	Sociodemographic data and ISEE of households supported by social services and applicants for social housing Data on residential building stock, energy efficiency (APE) of residential buildings	Social service Housing services Technical, environmental and urban services
3. Collection of further data and information	Sociodemographic data of household in social and public housing Data on energy efficiency and consumption on public housing Data on renewable sources in private housing Data on households with arrears on utility bills	Social and public housing agencies Region/National level ARERA/GSE/Energy suppliers
4.Participation path	Data on families' perceptions	Survey Thematic meetings Focus group discussions with families
5. Systematisation		

PART 4 – Conclusions and policy directions

The action research carried out through the Green & Social Hub project aimed to investigate energy poverty at the local level, focusing on the three partner municipalities. The study, based on the EPAH methodology for analysing energy poverty, was not fully able to answer the questions posed during the diagnostic phase. Indeed, the three municipalities—different in size, geographic location, and belonging to different regions (Abruzzo, Lazio, Apulia) with diverse territorial welfare models—despite their willingness to intervene to understand and combat energy poverty, encountered significant difficulties along the way. The main challenges include the collection of data to outline the local characteristics of the phenomenon (target group), difficulties in identifying the responsible contacts for the actions implemented, and especially the lack of dialogue and collaboration between the municipal environment and social sectors. This highlights how, in our country, the integration between policies remains a critical issue even at the local level. Interventions are often carried out based on national and regional guidelines but in a disorganised and fragmented manner; in many cases, funds are spent and distributed solely based on income criteria, without reflecting on the multidimensional nature of poverty and social hardship and the specific characteristics of energy poverty. In this way, no real strategy has been developed to address the problem.

Given the shortage of personnel and the multiplicity of interventions and services to be managed by various local administration sectors, neither the social services nor the environmental sector in any of the three municipalities has carried out a joint and integrated diagnosis of the phenomenon. The available contributions in 2022-2023 were managed according to criteria not fully adequate to face the new phenomenon.

Furthermore, the environmental service did not share information on the condition of dwellings, for example, through a re-examination and detailed analysis of the energy certification of buildings, because the data are not collected in an organised and accessible database. The available data should be

correlated to identify the need for interventions not only of emergency economic support, but also structural ones aimed at energy efficiency improvements.

As highlighted through the literature review, energy poverty is a complex phenomenon that fits within the growing centrality of environmental issues and their impact on welfare[68]. The term eco-social welfare is increasingly used to emphasise the interconnection between the three pillars of sustainability: environmental sustainability, economic growth, and social policies[69]. These three axes are precisely the focus for building a governance system capable of interlinking policies and objectives at both national and global levels[70].

Two aspects need particular attention: the first is that inequalities today are increasingly multidimensional[71]; they no longer concern income alone but include gender and generational inequalities, inequalities related to the place of residence, education[72], and opportunities[73]. The second aspect relates to the speed at which the climate crisis is advancing beyond all predictions. The EU's Copernicus Climate Change Service, in its monthly bulletin published on November 7, 2024, documented that the temperature in October 2024 was 1.65°C higher than the pre-industrial level. It is now certain that 2024 was the hottest year ever recorded and the first year to exceed 1.5°C above pre-industrial levels (1850-1900), a safety threshold identified by the Intergovernmental Panel on Climate Change (IPCC), beyond which the possibility of reversing the trend becomes increasingly difficult. A significant point is that in 2018, the IPCC reported a temperature increase of 0.87°C for the decade 2006-2015 compared to the pre-industrial period, and it predicted that human-induced global warming would reach +1.5°C around 2040. Although fluctuations are expected in the coming years, experts highlight that we are facing a strong acceleration that requires faster climate action policies. However, as evident from the international political debate, climate policies can only accelerate if they are supported and endorsed by most of the population. If the dimension of social justice in the ongoing energy transition is not addressed, efforts to counteract the climate crisis risk failure. To succeed, the transition must consciously and constructively involve the most socially vulnerable groups, who represent the majority of the population. Therefore, appropriate policies are needed to accompany this revolution, avoiding the risk of unequal speeds in the transition and supporting the most vulnerable groups[74]. Climate change is closely linked to inequalities. Numerous studies and research demonstrate that responsibilities and impacts of emissions are not equally distributed among countries and within them. Climate change is thus considered a new "all-encompassing" or "third generation"[75] social risk, adding to existing social risks to form a complex multilayer structure of risks and needs. This generates new types of distributive conflicts and new forms of injustice between developing and developed countries, among social groups, and between present and future generations. The relationship between social and environmental policies is therefore strategic to address the interplay between social inequality

[68] Mandelli, M., Understanding eco-social policies: a proposed definition and typology. *Transfer: European Review of Labour and Research*, 2022, 28(3), 333-348. https://doi.org/10.1177/10242589221125083

[69] Mandelli M.; Sabato S.; Jessoula M., EU economic governance and the socio ecological transition: Towards a more sustainable European Semester? *Politiche Sociali* 3/2021: 619–638;

[70] Schoyen M.; Hvinden B.; Dotterud Leiren M. (eds), *Towards Sustainable Welfare States in Europe*, 2022, Cheltenham, UK: Edward Elgar Publishing.

[71] L'OECD riconosce esplicitamente che le disuguaglianze non si esauriscono nel reddito, ma si manifestano in tutte le dimensioni della qualità della vitahttps://www.oecd.org/en/publications/how-s-life/volume-/issue-_9870c393-en.html

[72] Piketty, T., *Capital and Ideology*, 2019, Harvard University Press

[73] Sen, A., *Development as Freedom*, 1999, Oxford University Press

[74]https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en

[75] Khan, J.; Johansson, H.; Hildingsson, R., Climate change and the welfare state: Do we see a new generation of social risks emerging?, 2016, In M. Koch; O. Mont (eds), *Sustainability and the Political Economy of Welfare* (pp.94–108) 10.4324/9781315683850-7.

and climate change: the former influences the climate crisis by increasing the demand for economic growth, escalating ecological irresponsibility among wealthier citizens, reducing societal resilience, and hindering collective action capacity while lowering the climate sensitivity of the less affluent[76].

While 20th-century social policies were designed to respond to the challenges of industrialisation, urbanisation, and globalisation, those of the 21st century are tasked with addressing inequalities and conflicts arising also from the climate emergency and environmental policies. The current scenario highlights new phenomena that need to be addressed by the modern welfare state: although the consequences display differently at national and local levels, the causes are often (also) global in scale. For this reason, environmental and social policies are increasingly characterized by multilevel governance[77]. Adding to the complexity of the context is the ongoing debate on the roles that the State, intermediate bodies, families, and the market should play in the welfare system and in managing social risks[78]. On the one hand, the public and political debate shows a growing demand for increased State intervention to guarantee social rights and regulate the economic dynamics that generate risks and needs—an expectation heightened by the health emergency during the pandemic. On the other hand, there is evidence of the State withdrawing from some of the most important social fronts, such as poverty—an issue also reflected in recent national debates, such as the transition from the regulated to the free energy market.

In recent years, practices of co-programming and co-design have become more widespread, reinforcing the development of collaborative services rooted in the territorial contexts in which they operate. The importance of networks between public administrations and associations—particularly multi-stakeholder ones—is increasingly recognized as a key factor of resilience and capacity to respond to emerging phenomena. During the pandemic and in response to natural disasters, the ability to rely on administrative networks willing to share information, measures, structures, and processes—and above all, on social capital supported by local actors capable of providing volunteers and resources—made a significant difference. Territories rich in social capital have proven to be better equipped to respond effectively to emergencies.

Unfortunately, Italy, has chosen the "economic support measures" approach to counter the rising cost of energy, following a "remedial" welfare model based on monetary transfers specifically targeted at economically disadvantaged households (such as the strengthening of energy bonuses), along with more general measures (such as the one-off allowances of €200 and €150). These interventions were necessary—according to estimates by Castellini et al.2023[79], the price increases between June 2021 and December 2022, if left unmitigated, would have nearly doubled the number of households in energy poverty (from 8.2% to 15.9%).

On the preventive intervention side, the strategy for years has focused on so-called "bonuses," allowing taxpayers to deduct from their taxes the expenses incurred for energy-efficient building renovations—later expanded to include credit transfer and invoice discounts. However, tax incentives related to housing have mostly benefited higher-income individuals[80]. Even when low-income families are homeowners, they are largely excluded from such measures—on the one hand, due to lack of expertise

[76] Gough, I.,*Heat, greed and human need. Climate change, capitalism and sustainable wellbeing*, 2017, Edward Elgar Publishing
[77] Cucca, R.; Kazepov, Y.; Villa, M., Towards a Sustainable Welfare System? The Challenges and Scenarios of Eco-social Transitions, in "*Politiche Sociali, Social Policies*" 1/2023, pp. 3-26, doi: 10.7389/107136
[78] Esping-Andersen, G., *Social Foundations of Postindustrial Economies*, 1999, Oxford University Press.
[79]https://www.grins.it/output/analysis-measures-enhance-energy-efficiency-italian-buildings-energy-poverty-italy?
[80]Baldini M., Pavolini, S. Energy Renovation Tax Incentives and Social Equity in Italy: Who Gains?, 2022,*Italian Journal of Social Policy*, Vol. 15, No. 2, pp. 45–68.

and the difficulties in navigating complex administrative procedures, and on the other, because with low taxable incomes, they are unable to make use of the tax deductions provided. Moreover, although the Superbonus was also made accessible to public housing entities managed on behalf of municipalities, data collected by experts indicate that public housing played only a marginal role, especially when compared to private housing[81].

Access to energy is therefore a relatively recent but highly emblematic challenge of the current context: it is strongly connected to the consequences of climate change—for example, rising temperatures and increasingly hotter summers require greater energy consumption to cool homes—and at the same time influenced by inflationary dynamics. In summary:

- ✓ With the liberalisation of energy markets, energy has increasingly taken on the characteristics of a market good, subject to the rules of competition and speculation, reducing the scope for public protection of citizens, particularly those in vulnerable conditions[82]. One example in Italy is the recent transition from the regulated market to the free market;
- ✓ The quantity of energy consumption becomes important in relation to the speed of the transition (the less energy consumed, the greater the contribution to decarbonisation);
- ✓ The quality of energy consumption, in terms of the source of energy used, becomes relevant for reducing emissions and ensuring environmental health.

The intersection of these three dimensions identifies access to energy as a new social risk, which must be addressed with measures that ensure for all:

- ✓ affordable energy costs and the ability to pay energy bills;
- ✓ energy-efficient housing equipped with appropriate technological devices;
- ✓ access to renewable sources through self-production and/or local energy sharing and/or access to 100% renewable energy suppliers at affordable prices;
- ✓ improved individual skills and knowledge regarding energy choices.

This calls for policy interventions that operate simultaneously on multiple fronts (price regulation, income support, housing policies, incentives for social targets, support for self-production and local energy exchange, etc.) and on multiple levels (national, regional, local).It is also essential to involve all actors—state, market, families, and the third sector—in achieving these goals. In this regard, the local dimension becomes strategically important, because self-production, local exchange, and the energy efficiency of homes are only possible through strong connections to, and activation within, people's living environments. It is crucial to recognize that the dimensions on which to act are not only tied to individuals and their homes but also involve the places where people live—their social and physical living environments. For this reason, local energy welfare intersects with housing issues and the socio-ecological regeneration of neighbourhoods.

In this regard, the Forum on Inequalities in 2024—at the conclusion of the European WEL project—identified the importance of social infrastructure as a key element of social protection[83]. According to American sociologist Eric Klinenberg, who studied the relationship between housing conditions and climate change, during a heatwave that hit the city of Chicago with temperatures reaching up to 52°C, the factor that made the difference among the poorest neighbourhoods was the degree of social infrastructure present in each area, as he defined it. What we would now call territorial social capital—

[81] https://www.bancaditalia.it/pubblicazioni/qef/2024-0860/index.html
[82] European Commission, *Seventh Report on the state of the energy union*, 2022, https://energy.ec.europa.eu/strategy/energy-union/seventh-report-state-energy-union_en
[83] https://www.forumdisuguaglianzediversita.org/welfare-energetico-locale/

the presence of well-used, lively common spaces animated by individuals or institutions with the role of keeping them active (public parks, libraries, recreation centres, sports clubs, squares)—had the same effect in reducing risk as having an air conditioner in every home. This occurred for two reasons: first, because common spaces can compensate for the shortcomings of individual homes (providing places where people can access shared energy services); second, because having shared spaces is a prerequisite for developing and maintaining one's relational capital, and thus a support network.From the data collected by Klinenberg in his Chicago study, it emerged that "living in a neighbourhood with strong social infrastructure, such as Auburn Gresham"—used as a model for being economically poor but rich in common resources—"is roughly equivalent to having a functioning air conditioner in every home." Energy welfare, then, can be understood as "a system of welfare that recognizes, among the rights of citizenship, access to renewable energy and energy efficiency, and the ability to play an active role in the energy transition as both a social right and a demand for democratic participation." For this reason, the climate issue must be integrated and conceived as part of the broader welfare system, one that intersects with many other domains—mobility, social life, health, work, territory.

Based on these reflections, and in line with the findings of the Forum on Inequalities Report, there are five key factors on which to focus the substantial renewal of the welfare system, integrating the dimension of energy welfare and moving beyond merely redistributive interventions:

- Income and private wealth: income support so that people have the economic means to make energy choices related to access, savings, efficiency, and production;
- Appropriate technological solutions: support for equipping households with suitable technological tools;
- Growth and strengthening of commonwealth: support for forms of shared energy production and consumption, and for the ecological care and transformation of places;
- Associative and relational networks: community-based actions to strengthen civic and social capital, which also serves as a buffer against extreme climate events;
- Coordination among different institutions: leveraging institutional resources across sectors and levels.

As we have seen, this phenomenon must be addressed structurally at the local level, through a local strategic plan that includes actions such as:

- Raising awareness among local administrators about the importance of understanding energy poverty and the most suitable responses;
- Raising awareness among managers and workers in both the environmental and social sectors about the need to coordinate and integrate resources and efforts for effective interventions;
- Supporting public-private partnerships that enhance citizens' understanding of the importance of adopting environmentally compatible consumption behaviours;
- Supporting forms of shared energy production and consumption, as well as the ecological care and transformation of local spaces (e.g. Energy Communities);
- Supporting associative and relational networks (community work to build social capital, as a resilience factor in the face of extreme climate events);
- Promoting coordination among all local institutions to systematize sustainable and solidarity-based energy infrastructures.

One of the experimental actions currently taking shape in response to the energy challenge is that of solidarity-based renewable energy communities (RECs)[84], which in Europe are considered one of the main tools for a just green transition, capable of significantly alleviating energy poverty[85].RECs are autonomous legal entities whose members may include individuals, local authorities (including municipalities), and small and medium-sized enterprises. Through these entities—especially when publicly driven—the community initiates the production of electricity from renewable sources. The energy produced is shared among the members, allowing them to save money through self-consumption of what is generated. Although they are the focus of significant public tenders and funding opportunities—for example, Italy's National Recovery and Resilience Plan (NRRP) allocates more than €2.2 billion—their diffusion has proven challenging, largely due to a lack of specialized, technical, administrative, legal, and financial expertise within local authorities. For RECs to become an effective tool in an integrated environmental-social perspective, and in light of the absence of an incentivizing legal framework in this direction, the key issue is the need to promote the conscious involvement of vulnerable social actors, and to build bonds of solidarity that go beyond purely utilitarian motivations. These are processes that require long periods of maturation and cannot be reduced to ready-made technical solutions. The development of RECs must therefore consider three key aspects:

- Ensuring full or partial funding of the energy systems. Fragile contexts typically have lower credit reliability and thus require financial and credit support. Funding should be grants based on the expected social impact of the REC, rather than on parameters such as installed capacity or energy fed into the grid. Unlike NRRP contributions—which are based on the number of residents in the area served by the REC—these funds should be oriented toward the social value generated by the community.
- Providing legal and technical support, aimed at ensuring long-term economic and financial sustainability, both in terms of developing the energy infrastructure and choosing an appropriate legal structure. This also includes accelerating the billing unbundling process, which could significantly maximize the economic and social benefits of RECs. This path should be supported by well-funded training initiatives aimed at raising awareness of conscious energy use and building capacity for managing and allocating the REC's resources to social projects, with the goal of maximising benefits for the local area.
- Supporting group formation and awareness-building regarding the proposed solutions and the personal and family-level behavioural changes they entail. This also includes fostering solidarity-based relationships among members, which are essential to the success and sustainability of the REC.

The three municipalities involved in the project also show differences in their approach and timing with respect to this experimental measure, but all have been able to benefit from the professional resources and the network built through the G&S Hub project to launch or continue the design of a Renewable Energy Community (REC) in their respective territories.

In Bassiano (LT), the smallest of the three municipalities, a REC has already been launched in the area, but the local authority is neither leading the initiative nor directly involved. Participation in the G&S

[84] See the Renewable Energy Directive (2018/2001/EU) https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en

[85] Zhao, J.; Dong, K.; Dong, X.; Shabaz, M. How renewable energy alleviate energy poverty? A global analysis. *Renewable Energy* 2022, 186, 299-311

Hub project allowed for a rethinking of the intervention model, based on the difficulties encountered in engaging citizens.

The Municipality of Crispiano, thanks to G&S Hub, initiated a participatory process to support the feasibility study for the creation of a REC. This process, which is still ongoing, will need to be shared with the social services department and involve the entire population, with particular attention to the most vulnerable and impoverished groups. A very recent call for proposals from the Apulia Region, which funds municipalities for the establishment and implementation of RECs, represents an opportunity for Crispiano to give continuity to the participatory process initiated through G&S Hub, expand it, and bring the feasibility study to life.

In Avezzano, the participatory process also encountered difficulties. Possibly due to the larger size of the municipality, it has been even more challenging to integrate the social sector with the environmental sector. However, the process has been started, a pre-feasibility study has been completed, and the municipality now needs to identify the most appropriate form of participation in the REC. The Hub has functioned effectively and could become the first building block of an essential integration—not only to address the energy issue, but also to enhance and make visible the impact of interventions carried out by the two sectors.

In all municipalities, the Hub launched through the project—with its information, consulting, and support services for sustainable consumption patterns—should become a permanent and well-known service, fully integrated across all departments of the local administration. It would then serve as a strategic driver to ensure continuity in public action—not only for the creation of a REC, but also for the development of a more solidarity-based local context, one that is committed to promoting new consumption patterns and fighting inequality. In this direction—despite some challenges—the new Social Climate Plan recently presented by Italy, along with other EU countries, can represent the preferred tool to ensure the sustainability of what has been initiated in the territories.

Box – The Italian Climate Social Fund

The overall objective of the Social Climate Plan is to contribute to a socially fair transition towards climate neutrality by addressing the social impacts related to the inclusion of greenhouse gas emissions produced by buildings and road transport in the revision of the European Union Emissions Trading System (ETS). The introduction of the emissions trading system for buildings—particularly heating—and road transport in ETS II could result in increased energy and transport costs. These effects disproportionately affect the most vulnerable groups who lack the financial capacity to invest in reducing fossil fuel consumption.

The Social Climate Plan provides for temporary direct income support measures, as well as measures and investments aimed at increasing the energy efficiency of buildings, decarbonizing heating and cooling systems, including the integration and storage of renewable energy production in buildings, and improving access to zero- and low-emission mobility and transport. The plan considers estimates of the probable effects of rising prices for energy still produced from fossil fuels and identifies and estimates the number of vulnerable households, micro-enterprises, and transport users to target with support.

The maximum amount foreseen for the fund is €65 billion at current prices for the period from January 1, 2026, to December 31, 2032, financed through the revision of the EU emissions trading system. Italy's share amounts to about €7 billion, but each Member State contributes at least 25% of the total estimated costs of their plans.

For the preparation of the Social Climate Plan, the Ministry for the Environment and Energy Security (MASE) has launched a participatory public consultation process involving local and regional authorities, representatives of economic and social partners, civil society associations, youth organizations, and other stakeholders. The plan includes measures and investments divided between the building and transport sectors.

The plan's target beneficiaries are:

-Vulnerable families, including those experiencing energy poverty
-Vulnerable micro-enterprises
-Vulnerable transport users who are particularly affected by energy and transport poverty
The measures planned by MASE for the building sector include various interventions, as illustrated in the slide below (in Italian, source MASE).