ASSERT

Large-scale multiactor training and mentorship programme to ASSist people with physical impairments in energy povERTy

D2.1 Report on the state of the art on energy poverty and disability and relevant indicators

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ABOUT ASSERT

The ASSERT project is a European initiative under the LIFE23-CET-ENERPOV framework, which will address the critical issue of energy poverty, particularly among physically disabled persons.

The project goal is three-fold:

1. Ensure that policy makers at all levels of administrations, as well as energy practitioners and advisors are trained on energy matters, including on topics related to energy poverty, taking into consideration the multidimensional aspects of energy poverty and context of clean energy transition.
2. Roll-out programmes to train front line workers in energy poverty and green energy solutions. Front-line workers addressed in those programmes should include health and social care workers or other professionals who can help identify households affected and provide them with advice and information on solutions to reduce energy consumption and access more affordable and innovative sources.
3. Offer targeted training courses for energy-poor households affected by energy poverty, including those with low digital skills. Such courses should enhance the energy and digital literacy awareness of households affected by energy poverty, enable them to better control their energy bills and participate actively in the clean and just energy transition.

ASSERT will focus on persons with physical disabilities who have higher energy needs and lower income, and therefore are more susceptible to energy poverty and its effects. Addressing their needs can interrupt the vicious circle of aggravating health conditions as a consequence of unhealthy household conditions due to energy poverty.

The project will deliver an integrated target-specific training and mentorship programme for local policymakers and intermediaries, and will equip them with essential skills and knowledge and support to implement sustainable energy solutions, while integrating energy poverty considerations into broader policy frameworks.

ASSERT consortium

No	Participant organisation name	Short name	Country
1	AISFOR SRL	AISFOR SRL	IT
2	RETE ASSIST - ETS	RETE ASSIST - ETS	IT
3	ENERCOOP	ENERCOOP	FR
4	ASOCIACION ECOSERVEIS	ECOSERVEIS	ES
5	CITIZEN CROSSROADS	CCR	EL
6	ENERGEIAKO GRAFEIO KYPROU	CEA	CY
7	CLIMATE ALLIANCE - KLIMA-BUENDNIS - ALIANZA DEL CLIMA e.V.	CLIMATE ALLIANCE	DE
8	EUROPEAN NETWORK ON INDEPENDENT LIVING BRUSSELS OFFICE	ENIL	BE
9	ETHNICON METSOVION POLYTECHNION	NTUA	EL
10	INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY STICHTING	IEECP	NL
11	ACCADEMIA EUROPEA DI BOLZANO	Eurac	IT

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Executive summary

This report presents a comprehensive analysis of the intersection between disability and energy poverty, aiming to advance understanding and inform inclusive policy development across Europe. It synthesises academic literature, case studies, and policy frameworks to examine how persons with disabilities experience disproportionate exposure to energy poverty, driven by structural inequalities, higher energy needs, and systemic policy gaps. The study employs a systematic literature review of 107 sources, complemented by conceptual analysis and stakeholder consultations, to explore key dimensions: definitional frameworks, lived experiences, structural relationships, and interventions. Findings reveal that people with disabilities often face compounded vulnerabilities due to low income, inaccessible housing, and reliance on energy-intensive medical equipment. Energy poverty exacerbates health risks, social exclusion, and financial stress, while disability-specific needs remain largely unrecognised in mainstream energy policy. Existing interventions such as energy efficiency renovations, targeted financial assistance, and tariff reforms are rarely adapted to disability contexts. Opportunities for inclusive design, improved data collection, and cross-sectoral collaboration, alongside threats stemming from fragmented governance and funding limitations are identified. Finally, the report concludes by calling for a paradigm shift toward integrated, equity-driven energy policies that address the unique requirements of disabled persons, ensuring their active participation in the clean and just energy transition.

1. Introduction

This report seeks to provide a comprehensive review of the current state of knowledge on the intersection of disability and energy poverty, in Europe and beyond. The main purpose of the review is to promote an improved understanding of how and why people with disabilities are disproportionately affected by energy poverty, which can otherwise be defined as the inability to secure a socially- and materially- necessitated level of energy services in the home (Bouzarovski & Petrova, 2015). In the main, the review starts from the need to identify the reasons why disability is associated with a greater likelihood of being unable to access affordable, reliable, and sustainable energy services in the home. The review also aims to highlight gaps in existing research, explore best policy practices, and propose actionable recommendations for policymakers, practitioners, and researchers.

Ultimately, we seek to foster a more inclusive approach to energy policy, by addressing the structural drivers and impacts of disability in the context of socio-material deprivation in the home. Within this overarching purpose, the review has three more specific objectives.

Firstly, we seek to bring visibility to the often-overlooked intersection between disability and energy poverty. While energy poverty is widely recognised as a pressing global issue – having also attracted significant policy attention in Europe – the unique challenges associated with disability in the home are seldom prioritised in policy discussions or practical interventions. The report seeks to illuminate such issues by examining how vulnerabilities to energy poverty are shaped and are both shaped by- different types of disabilities, such as higher energy needs for assistive devices or difficulties in accessing energy-efficient housing. By focusing on this intersection, the review aims to foster greater awareness and inclusion in both research and policy-making.

Secondly, the review seeks to provide an evidence-based foundation for developing more inclusive energy policies and programmes. The present lack of knowledge on the disability- energy poverty nexus suggests that policies to alleviate energy deprivation in the home may be overlooking the diverse needs of people with disabilities. The report aspires to contribute to a paradigm shift by highlighting the specific socio-material needs associated with energy-related disability in the home, such as affordable access to specialised equipment, improved transport provision, improved energy efficiency and good quality housing services. In doing so, it seeks to advocate for tailored approaches to address the specific challenges associated with disability and energy poverty, ensuring that future policy decisions are

adequately attuned to the needs of social groups experiencing both sets of conditions.

Thirdly, the review aims to serve as a call to action for researchers, policymakers, and practitioners. By identifying gaps in the existing knowledge base and presenting practical recommendations, it intends to stimulate further research, collaboration, and innovation in this area. The review also aims to suggest pathways for integrating the experiences of people with disabilities into the decision-making process, emphasising their role as active participants in the energy system, rather than passive beneficiaries of social assistance. Through this approach, the review strives to contribute to broader goals of equity, sustainability, and social inclusion in the context of global energy transitions.

The review, in essence, seeks to address a deeper set of 'recognition injustices' (Neil Simcock, Frankowski, & Bouzarovski, 2021; van Uffelen, 2022; Willand, Torabi, & Horne, 2023) at the intersection of disability and energy – a challenge that has been overlooked for a series of systemic, structural, and perceptual gaps in both academic and policy domains. One key reason is the general invisibility of disability issues in broader socio-economic policies and programmes. Disability is often treated as a rare or exceptional set of circumstances that do not necessarily warrant concerted attention, rather than being integrated into the mainstream development or energy policies. This marginalisation leads to a lack of policy and scientific visibility of the ways in which disabled people experience energy poverty, perpetuating a cycle of stigmatisation and neglect.

Another contributing factor is the fragmented nature of advocacy and policymaking in the disability and energy sectors. Disability debates frequently focus on issues such as accessibility, healthcare, and employment, while energy poverty discussions often tend to centre on affordability, energy efficiency, and infrastructural development. The lack of co-ordination between these sectors means that the unique challenges faced by people with disabilities in accessing needed energy services are rarely addressed with due attention and care. Additionally, scholars and policymakers often overlook the specific energy needs associated with different types of disabilities. These include the need for powered medical equipment, particular types of heating regimes or spatial accessibility measures for those with mobility issues, or cooling provision for those with thermoregulation difficulties.

Societal biases and assumptions also play a significant role in this context. Energy poverty is often conceptualised in relatively narrow economic terms, with an

emphasis on income levels, price fluctuations, and geographic disparities, rather than the diverse lived experiences of vulnerable groups. Similarly, disability is frequently viewed through a medical lens, focusing on individual health characteristics rather than systemic barriers. Such narrow framings prevent a comprehensive understanding of the intersections among disability and energy poverty, particularly in terms of the deeper structural inequities that drive the various injustices at this nexus. As a result, the specific challenges faced by people with disabilities remain underexplored, leaving significant gaps in both research and policy responses.

Methodologically, the review is based on a systematic literature search that generated a total of 107 bibliographical entries – principally peer-reviewed articles, working papers and policy reports. The articles were identified via an exhaustive search in Google Scholar and Scopus, using over 30 search terms that combined disability and energy terminologies (e.g. 'disability' AND 'energy poverty', 'disability' AND 'energy vulnerability', 'disability' AND 'energy justice' ETC). With each search, the generated papers were checked for relevance to both disability and energy, and added to the database if this criterion was met. For the analysis of evidence, each paper was scrutinised to examine 1) how it addresses the relationship between disability and energy; 2) the main arguments and claims that were being put forward; 3) the methods that were used to collect and analyse evidence; 4) the definition and conceptualisation of disability itself. A grounded theory approach (Walsh & Rowe, 2023) was then employed to generate four themes running across the entire corpus of articles. The four themes constitute the backbone of this review.

The text that follows synthesises existing studies to outline the current understanding of how energy poverty connects with disability in terms of 1) definitions and understandings; 2) lived experiences; 3) structural relationships between the two challenges; 4) interventions and policies. All four sections present key insights from the relevant literature, including issues faced by people with disabilities, disparities in energy access, and the socioeconomic factors exacerbating these issues. The review concludes with a synthesis section, offering practical strategies for mitigating energy poverty in the context of disability, and a analytical approach to understand how the two concept relate to each other, to aid both knowledge and policy development.

2. Definitions and understandings of disability as it relates to energy poverty and energy vulnerability

For the purposes of this review, our discussion here primarily focuses on definitions and understandings of disability in the existing literature. In terms of energy poverty, we use the energy services-based definition noted above (Bouzarovski, 2014). Energy vulnerability is seen as the risk of falling into energy poverty – as an expression of the factors and circumstances that contribute to the rise of domestic energy deprivation. In this sense, energy vulnerability includes a greater number of households than those in energy poverty, while also referring to the wider systemic conditions which drive deprivation and injustices. These may include, but are not limited to: the nature of the energy provision system, the affordability of energy, the energy efficiency of dwellings, household flexibility, social practices around energy demand, and household energy needs.

2.1 Conceptual approaches to defining disability

The disability literature itself is extensive and has been subject to extensive change over the years. Disability is a multifaceted concept shaped by diverse theoretical perspectives. Each of these have shaped how policymakers (and societies more generally) will understand, address, and respond to the issue. Among the different approaches, the social model and the medical model stand as two dominant paradigms, framing disability in distinct ways (Table 1).

Table 1. Key differences between the social and medical models of disability.

Approach	Locus of the problem	Goal of intervention	Perspective on disability	Role of society	Agency
Medical Model	Disability resides in the individual's body or mind.	Cure or manage the 'impairment'.	Disability is a deficit or abnormality.	Society provides medical and therapeutic support to individuals.	Professionals and institutions are the primary agents of change.
Social Model	Disability arises from state policies, and social attitudes.	Remove societal barriers and ensure accessibility.	Disability is one aspect of human diversity.	Society must adapt and accommodate diverse needs.	Persons with disabilities and advocacy groups lead efforts for systemic change.

The medical model of disability is rooted in a biologically-focused understanding, emphasising an individual's 'impairments' or health conditions as the primary site of analysis and intervention. This model conceptualises disability as a deviation from the norm, often requiring medical intervention to correct, cure, or manage. Under this framework, the individual's body or mind is seen as the locus of the problem, and the goal is to reduce or eliminate the 'impairment' to enable full participation in society.

Within the medical model, disability is seen as a medical problem or pathology residing within the individual. The model is underpinned by a clinical focus, with efforts centring on diagnosing and treating individuals towards the restoration of a function that is seen as 'normal'. The approach is predicated upon individual responsibility, whereby individuals are expected to adapt to societal expectations through either medical or therapeutic means. The model is deficit-oriented, in that it emphasises what individuals can or cannot do due to their 'impairments', which subsequently leads to a focus on overcoming present limitations. Here, it should be noted that the medical model has historically shaped public understandings and discourses, healthcare policies, rehabilitation programmes, and institutional care. While it has contributed to advancements in medical technologies and therapies, the model has also been criticised for fostering stigmatisation, marginalisation, and the perception of disabled individuals as 'patients' requiring care, rather than as active participants in society.

In contrast, the social model of disability emerged as a response to the limitations of the medical model, particularly through the advocacy of disability rights activists in the 1960s and 1970s. This model shifts the focus from the individual's 'impairments' to the societal barriers that restrict participation and inclusion. Disability, in this context, is not inherently tied to an individual's condition but is a product of social structures, attitudes, and environments that fail to accommodate diverse needs and circumstances. Ultimately, disabilities are not the characteristics of individuals who experience them. Rather, they are the result of constraints and choices made by society as a whole.

Under the social model, disability is primarily seen as a social construct, embedded in the dynamics that create and enact material, social, and institutional environments. Within the model, there is a focus on inclusion as the approach emphasises removing structural barriers, to create an accessible society for all. The model also seeks to shifts the narrative from 'fixing the individual' to 'fixing society' to accommodate diverse needs. It is underpinned by a rights-based approach, advocates for fairness, recognition, accessibility, and the dismantling of systemic discrimination. The social model has informed disability legislation, such as the

Americans with Disabilities Act (ADA) and the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) (People with Disability Australia, 2022). It has also influenced inclusive education, universal design, and workplace accommodations.

The social model of disability, furthermore, posits that not all disabilities are visible, and therefore it becomes paramount to listen to, and work together with, people with disabilities at every stage of policy interventions. Here, it should be noted that language about disabilities matters because it gets translated into policy. Stigmatising and stereotyping language is extremely common in society because 'ableist' (Bottema-Beutel, Kapp, Lester, Sasson, & Hand, 2021) approaches are so dominant. Language influences how society includes, defines, and serves marginalised communities (Fairclough, 1999). As such, it has the power to ensure policies and resources are accessible to people with disabilities, especially when addressing energy poverty. In speaking about disability, therefore, it is important not to medicalise it, on the one hand, but also not to romanticise it, on the other - through phrases such as 'differently abled'.

The social model has also evolved in parallel with the Independent Living movement and thus share core values. Independent Living (IL) is a philosophy and movement that asserts that persons with disabilities have the same rights, choices, and control over their lives as non-disabled people. It promotes the ability to decide where, how, and with whom to live, to participate fully in community life, and to access the supports and services needed to make this possible, rather than being forced into dependency or institutional care. The IL movement emerged in the 1960s and was led by people with disabilities, particularly in the United States and Europe, and has since become a core principle of the UN Convention on the Rights of Persons with Disabilities (CRPD), notably Article 19: Living independently and being included in the community. Because of the movement, Independent Living does not mean living alone or without assistance, but rather having autonomy, choice, and self-determination in everyday life, with the necessary supports (personal assistance, accessible housing, transport, information, etc.) provided within the community. The social model of disability and the IL movement reinforce one another. Aside from both rejecting the medical model, together, the social model provides the theoretical explanation (disability arises from social barriers, not individual deficits), while Independent Living provides the practical framework for achieving equality and participation through self-determined community living.

Beyond the medical and social models, other perspectives also exist within the conceptual and policy landscape on disability. One is the biopsychosocial model,

which integrates elements of both the medical and social models, recognising that disability results from the interaction between biological, psychological, and social factors. It underpins frameworks like the World Health Organization's International Classification of Functioning, Disability, and Health (ICF), which seeks to bring together health and participation. At the same time, the human rights model positions disability as a matter of social justice and equality. It asserts that people with disabilities are entitled to the same rights and freedoms as others, emphasising the elimination of discrimination and the promotion of dignity, autonomy, and participation. Finally, the cultural model explores how disability is constructed and represented within cultural narratives, arts, and media. It examines how societal values and norms shape perceptions of disability and how these perceptions, in turn, influence the experiences of disabled individuals.

These more recent understandings of disability operate within the knowledge sphere of the critical disability studies perspective, which offers a departure from traditional (particularly medical) approaches, by challenging dominant societal narratives and power structures related to disability. This interdisciplinary framework considers disability through the lens of power, privilege, and oppression. It argues that disability is fundamentally shaped by cultural, economic, and political contexts. A key focus of critical disability studies is intersectionality—understanding how disability interacts with, and compounds, other axes of difference: race, gender, sexuality, and class. For instance, disabled individuals from marginalised racial or ethnic groups often face compounded discrimination, making their experiences distinct and requiring nuanced approaches to advocacy and policymaking.

This perspective also critiques *ableism* as a systemic issue that perpetuates inequality and exclusion. *Ableism* is prejudice, discrimination, or social prejudice against people with disabilities, based on the belief that typical abilities are superior. It can be both individual and systemic, and it often assumes that people with disabilities need to be "fixed" and defines them primarily by their disability. Additionally, critical disability studies highlight the importance of amplifying the voices and agentic capacities of disabled individuals. The approach emphasises participatory research methods and the co-creation of knowledge with relevant communities, rather than imposing outsider perspectives. By focusing on the lived experiences of disability, this approach seeks to dismantle oppressive structures and advocate for transformative societal change. Finally, critical disability studies engage with broader questions of identity, culture, and representation, challenging stereotypes and fostering an appreciation for disability as a form of diversity. In essence, the approach is geared at reshaping societal attitudes and policies alongside explaining existing inequalities through an analytical lens.

2.2 Case study-based definitions

The literature on energy poverty and disability operates with all the models and perspectives outlined above, and primarily under critical disability studies perspective. However, upon reviewing the literature, we found that most studies do not define disability explicitly, choosing instead to use indirect explanations or descriptions. Several studies also use the medical model of disability, primarily in when energy poverty is connected to issues of public health and clinical interventions. The lack of explicit definitions of disability in the context of energy poverty and energy vulnerability research – despite its mention in numerous studies – testifies to the relatively shallow treatment of the issue in the relevant literature, and the lack of in-depth research into its framings, drivers and impacts.

One of the more detailed understandings of disability in the context of energy poverty can be found in Ivanova and Middlemiss' (2021a) contribution. They recommend the use of person-first language that connects disability with the people's lived experiences. Suggesting the term 'person with a disability', these two authors outline that the definitions and languages that they use are recommended by the UK Disability Union. Their study is based on national Household Budget Surveys (HBSs) across the European Union (EU), and energy intensities from EXIOBASE (https://www.exiobase.eu), plotting a range of variables such as: 1) Energy use distribution by household type and energy poverty in the EU; 2) Risk of poverty and energy poverty by household type in the EU; 3) Socio-demographics by household type in the EU. The authors conduct a multivariate regression coefficient plot of the disability effect on energy use of the sample.

A similar approach can be found in Simcock et al (2021), who see disability as an experience that disadvantages some groups of people - one which increases their vulnerability to energy poverty and renders them more likely to experience deprivation. While lacking an explicit definition in the study, Janigan and Kim (2006) approach disability in the context of public service delivery, under the framework of the International Classification of Functioning (ICF). This paradigm defines disability as the relationship between body structures and functions, daily activities and social participation, while recognising the role of environmental factors. While lacking an explicit definition of disability, Bartiaux et al's (2019) case study-based approach understands this issue within a capability framework (Nussbaum, 2001), primarily as a health issue, considering three proxies as relevant indicators: 'being in very bad health, being in permanent disability, and a variable related to protein intake'.

Hale et al's (2020) qualitative study uses self-identification to avoid ableist biases, while arguing that socially created barriers are a major issue for people with energy limiting chronic illness, in terms of social security and healthcare. They emphasise the need for an advocacy movement to ensure recognition and support for people with energy-limiting chronic illness, highlighting both personal and systemic barriers that perpetuate inequity. Similarly, Salkeld (2016) defines disability using a social-relational model, viewing it as a form of social oppression stemming from unequal relationships between disabled and non-disabled people. This author contends that disability equality must be integrated into sustainability to achieve inclusive outcomes, because sustainability policies often adopt a neoliberal framework – prioritising market-based solutions and individual responsibility - thereby marginalising people with disabilities. The key claim here is that sustainability approaches should move beyond 'weak sustainability', which prioritizes economic growth, to frameworks like 'just sustainability' wherein environmental goals are balanced with social equity objectives. Without addressing the systemic barriers faced by disabled people, the author argues, sustainability policies risk excluding a significant portion of the population, while undermining their own objectives.

Snell et al (2015a) point out that disabled people are recognised by policy as a group of vulnerable to fuel poverty and poverty. Here, disability is understood - as defined in official statistics – within an experience-based definition: 'According to official statistics there are over 11 million people living in Britain with a limiting long-term illness, impairment or disability, with the most commonly occurring impairments relating to mobility, lifting or carrying'. Bryan at al (2024a) rely on the definition provided by the World Health Organization (WHO): '… persons with disabilities are those who reported difficulties with daily living activities, or who indicated that a physical, mental condition or health problem reduced the kind or number of activities they could do. The respondents' answers to the disability questions represent their perception of the situation and are therefore subjective'. The *2018 Disability and Development Report* (United Nations Department of Economic and Social Affairs, 2019) uses a definition that sits between the social and medical models, by highlighting that disability is an evolving concept, resulting from the interaction between persons with 'impairments', on the one hand, and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others, on the other hand. In relation to the Sustainable Development Goals (SDGs), Berie et al (2024) contend that persons with disabilities face persistent inequality in social, economic and political spheres and are disadvantaged in all areas covered by the SDGs.

The social model of disability frequently engages with explicitly political questions. Charles and Thomas (2007) define disability as a broader aspect of citizenship: disabled people cannot take part in society as citizens because of how society is organised. Thus, disablement is a political process, and the struggle for environmental justice must recognise the oppression of disabled people as part of the essential broadening of the notion of citizenship (a dynamic that continues to be the focus for struggle for the international disability movement). Imrie and Thomas (2008) operate with a similar set of arguments, highlighting that environments are not innocently constructed, and that disability itself is a relative category, contingent upon social and physical contexts. Their work speaks to environmentally-based social inequalities, emphasising exclusionary practices in urban design and planning that affect people with disabilities, contributing to a lack of inclusive spaces. They argue in favour of the integration of social and eco-social models to address intersectional challenges.

A more descriptive, but medically-focused definition of disability – containing both social and medical elements – can be found in Friedman (2022) who relies on United Nations Census Bureau questions, to assess disabilities in vision, hearing, cognition, and mobility, categorising responses as 'no', 'some', or 'severe' difficulty, with severe cases indicating disability. Riva et al (2024) speak of 'activity limitations': physical or mental conditions limiting daily activities that can be used as a factor assessing socioeconomic characteristics and vulnerability to energy poverty. Siegel et al (2024) use the medical model, as they indirectly consider persons with disabilities as a group of 'medically vulnerable' people. Similarly, Simes at al (2023) frame disability as a component of medical vulnerability, characterised by conditions requiring additional energy use for health maintenance, such as devices or regulated indoor environments. These authors understand disability as a critical but underexplored factor in energy insecurity studies, highlighting the limited visibility of disability-related energy needs, while emphasising the need for targeted research and policy support. Their work is based in a 'social determinants of health' framework, bridging gaps with climate change and public health studies to highlight compounded risks and vulnerabilities. Their key argument is that disabled people often depend on energy-intensive medical devices and require stable home environments for health management. These needs increase their vulnerability to energy insecurity, which can worsen health conditions and stress.

2.3 Key trends across the literature

The reviewed articles reveal a wide variety of approaches to understanding disability in the context of energy poverty and beyond, underpinned by diverse theoretical and practical frameworks. Key trends include the acknowledgment of

disability as a multidimensional and evolving concept, influenced by medical, social, and intersectional factors. Several studies, such as those by Ivanova and Middlemiss (2021a), advocate for a person-centred approach, using language that reflects lived experiences and dignity. Meanwhile, Simcock et al. (2021) and others emphasise the heightened vulnerability of disabled individuals to energy poverty, urging for a systemic understanding of their needs within broader socio-economic structures.

Many articles highlight the intersection of disability with social justice, advocating for a shift from market-driven solutions to inclusive and equity-based frameworks, as seen in the work by Charles and Thomas (2007). The integration of disability into sustainability discussions underscores the necessity of addressing systemic barriers that perpetuate exclusion. Other approaches (Hale et al., 2020; C. Snell et al., 2015a) underscore the critical role of recognising the compounded risks faced by disabled individuals due to energy-intensive health needs.

This collective body of work advances the state of the art by merging theoretical insights with actionable recommendations, pointing to the need for inclusive policies that bridge gaps across social, environmental, and economic domains, ultimately striving for a just and equitable society. Understanding disability requires a nuanced appreciation of various conceptual approaches, each offering unique insights and implications. While the medical model has traditionally dominated, the social model has challenged its limitations by emphasising societal barriers and advocating for inclusion and equity. Together with other frameworks and approaches, these contributions highlight the complexity of the disability-energy nexus, and the need for a multifaceted approach to address it.

3. Lived experiences at the energy-disability nexus

The literature suggests that the experiences of people with disabilities are unique. The intersection between disability and energy poverty reflects this uniqueness of challenges. In fact, as outlined in the previous sections, energy poverty arises from complex interactions between health, socio-material conditions, household characteristics, and individual capabilities. The unique experiences of energy poverty lived by people with disabilities are reflected through the complex interactions between these different socio-material characteristics (Groves et al. 2024; Hernández and Bird, 2012). It is widely acknowledged in the literature that energy poverty and disability interact. Furthermore, while energy poverty can be an aggravating factor of disability, disability can in turn reinforce energy poverty. In fact, as outlined by Simes et al., (2024), energy poverty is often a result of the combination of low incomes, social inequalities, high utility costs, and poor housing conditions, all of which can be factors of disability or exacerbated by a disability, as disabled people are more likely to be poorer and socially deprived (Simes et al. 2024). Energy poverty can worsen medical conditions, create financial stress, and impact mental health, which are other factors reinforcing disability (Mashke et al. 2022). Disability and energy poverty are often understood in the literature as social constructs. Disability exists because people with disabilities live in a society that is unfit to them; people are energy poor because the access to energy as a resource is socially constrained. On this basis, Fiorati et al. (2015) argue that disability is a social construct that reinforces deprivation and access to resources such as energy.

Energy poverty further affects greatly vulnerable groups due to social and political factors like inequality and inadequate social policies (Middlemess, 2022). Disabled people, especially those not working, often face extra challenges, such as lower incomes and poorer health, making them more likely to experience energy vulnerability than non-disabled people (ibid, 2022). Energy vulnerability is defined as a propensity under certain circumstances to experience a loss of access to energy services (Groves et al. 2020). On that line, many studies suggest that energy vulnerability is linked in many contexts to disposable income; the lower the income, the higher the chances for the individual to experience energy vulnerability and by extension energy poverty (Middlemiss and Gillard, 2015 ; Pye et al. 2015) Disability often places individuals in a spiral of low-income jobs and poverty (Yu and Kittner, 2024). For example, Middlemiss (2022) highlights that how a country defines disability directly affects the access to benefits and jobs of people with disabilities, which in turn impacts their disposable income and influence their likeliness to experience energy poverty.

People with disabilities are more likely to experience lower paying and less stable jobs which can be factors of income insecurity and by extension a factor of energy poverty (Simes et al. 2024). The literature suggests that people with disabilities experiencing energy poverty are further marginalised, as energy poverty notably decreases well-being and community integration (Waitt and Harada, 2019). In this continuity, several studies suggest that the interaction between energy poverty and disability are detrimental to the social relations of disabled people thereby reinforcing their exclusion (Riva et al. 2023). For instance, disabled people are more likely to miss social events because they cannot afford leaving the house due to health or economic reasons (ibid, 2023). It is important to note that people with disabilities experience psychosocial barriers even without physical or mental disabilities, as historical social exclusion perpetuates their condition of exclusion and marginalisation (Jose, Cherayi and Sadath, 2016). Middlemiss et al. (2019) answers that community and more broadly social relations can help reduce energy poverty. In fact, people with disabilities rely more than others on their friends and families for information support and advice, and on agency workers for access to resources. In other words, and as argued by Bredvold et al. (2022), both economic and social capital are significant determinants of the lived experience of energy poverty among disabled people. Disabilities, in fact, are factors of economic and social deprivation notably because of the shame or embarrassment disabled people can feel. This stresses the need, as outlined by Walker and Day (2012), to offer a structural response to disability and energy poverty considering the complexity and interactions of both these phenomena to avoid reinforcing the exclusion of people with disabilities.

People with disabilities, however, did not wait for policymakers to take actions for their own well-being. While many experience exclusion, a large part of people with disabilities relies on well-developed community networks to gather relevant information on available aids and receive targeted support. In their everyday life, people with disabilities follow different strategies when it comes to inventing solutions for coping with energy poverty. For instance, a person with a disability that must be home quite often due to their condition might decide to live into one single room of their apartment to limit the heating. Other notable coping strategies to reduce heating and energy bills include using second-hand appliances, or wearing extra clothing indoors (Brunner, Spitzer and Christanell, 2012). Energy poverty impacts many areas of the lives of people with disabilities. Notably, cold, warm or humid homes are likely to aggravate many disabilities (Cronin de Chavez, 2017; Middlemiss, 2022; Yu and Kittner, 2024). While some of the coping mechanisms outlined above can limit this aggravation, as highlighted by Brunner, Spitzer and Christanell (2012), the scope of action is limited in many cases, which supports the claim that changes in the overall conditions of people with disabilities

are essential. Some people with disabilities resort to cutting on food to pay energy bills or being unable to afford their transportation needs to balance energy bills (Riva et al. 2023). In other words, most of the coping mechanisms used by people with disabilities to handle high energy bills are detrimental to their own well-being.

The literature review so far has shown that the interrelation between disability and energy poverty is largely documented and disabled people are acknowledged as being among the most vulnerable groups to energy poverty (Bouzarowski et al. 2021). Yet, the literature suggests that financial assistance and subsidies were significantly underfunded in the home energy sector in many countries (Hernández and Bird, 2012). In addition, socially vulnerable communities are less likely to be prioritised across most types of policies (Tormos-Aponte et al., 2021; Woods et al. 2024). On the contrary, Tormos-Aponte et al. (2021) suggest that generally, policies tend to place larger burdens on marginalised communities. The lack of connections between energy-efficiency policies and social-housing policy often results in misaddressing the energy injustices faced by disabled people (Woods et al. 2024).

Tackling disability-related energy issues is indispensable for achieving energy justice and mitigating social inequality (Streimikine, 2020). Coping strategies of people with disabilities to counter energy poverty are often limited to the nature of their disability. In fact, many people with disabilities depend on energy due to reliance in medical support. While not all people with disabilities experience a medical journey, this is the case for many among them. Medicalisation of disability is often contested in the literature because they limit the understanding of disability as a complex multifaced phenomenon (Parodi and Sciulli, 2019; United Nations Department of Economic and Social Affairs, 2018). Despite this, the literature outlines that medical care is intrinsic to the experience of many people with disabilities, especially in the context of energy poverty. Recent studies such as that of Simes, Rahman and Hernandèz (2024) reveal that people with higher energy medical needs are more likely to experience energy insecurity than people without such needs. The reason behind this is the nature of energy insecurity itself: energy insecurity connects to the fear of deprivation, which is often exacerbated if the person relies on dedicated support for their survival. As discussed by Mashke et al. (2022), disabled individuals often need electricity for managing their conditions with the appropriate material. In that sense, the relation between medical equipment and energy is often a matter of dependence. Many people with disabilities further rely on energy-intensive medical equipment (e.g., ventilators), or need higher indoor temperature, which leads to higher consumptions and can therefore result in higher energy expenditures (Middlemiss et al. 2019; Shapira and Teschner,2023).

Combined with a tendency to have lower disposable incomes (Middlemiss and Gillard, 2015), higher consumption and dependence on energy for survival and medical care (ibid, 2015) people with disabilities are more vulnerable to energy poverty (ibid, 2015). Households who are dependent on electricity, without the possibility of using other fuels, show additional vulnerability (Bredvold et al. 2022). As explained by Groves et al. (2021), households with members who have disabilities often require additional energy services to achieve adequate living conditions. In that sense, households of which is part a disabled person, are statistically more vulnerable to energy poverty as they are more likely to face higher energy costs coupled with unexpected challenges due to the disability (Middlemiss and Richard, 2015). People with disabilities are more likely to be tenants and precarious, which means that many of them are among those eligible for social housing. In this regard, Waitt and Harada (2019) as well as Woods et al. (2024) argue that even in social housing, people with disabilities experience stress regarding energy spendings and perceive that their vulnerability interacts with energy poverty in their everyday lives, often aggravating their disability. In the case of a household with a disabled member, the independence to energy for managing their condition make them less flexible in terms of consumption and could make them compromise their well-being in case of forced reduction of consumption (ibid, 2019; ibid, 2024). On that line, the authors suggest that public services remain unable to answer appropriately to the concerns of people with disabilities living in social housing. This reflects the general inability of authorities to tackle complex issues.

The unique challenges of people with disabilities are impossible to represent exhaustively. Yet, many papers such as of Bouzarowski et al. (2021) and Simcock and Bouzarowsvki (2023) argue that all people with disabilities, and specifically people with cognitive and physical disability, or long-term illness are among the groups at higher statistical risk of energy poverty. While energy poverty affects people with disabilities in different ways due to the variety of disabilities and the complex interactions between disability and energy poverty, the literature emphasises that whether on the private renting market or in social housing, people with disabilities are likely to experience stress in regard to energy bills (Waitt and Harada, 2019 ; Woods et al. 2024). They are also more likely to have higher energy consumptions (Middlemiss and Gillard, 2015; Wilson et al. 2023), and are among the groups whose interests often fail to be considered by policymakers. (Middlemiss, 2022). In addition, the coping mechanisms used by people with disabilities to reduce their consumption and decrease their bills often impacts negatively their general well-being (Brunner, Spitzer and Christanell, 2012) and interacts with their disability, sometimes to the point of aggravating their condition (ibid, 2012). The literature further highlights that people with disabilities are more likely to be economically and socially deprived (Middlemiss et al., 2019) and that the interaction between

disability and energy poverty is likely to increase this exclusion. The literature further suggests that policies fail in addressing the critical juncture between disability and energy poverty and the experience of people with disabilities who go through both, thereby underlying the need to raise awareness on the subjects (Tormos-Aponte et al., 2021; Simcock and Bouzarowsvki, 2023; Woods et al. 2024).

4. The structural relationships between disability and energy poverty

We now turn to the links between energy poverty and disability. Across the 107 reviewed contributions, there is a common trend: it is evident that disability significantly intersects with energy poverty, as this form of vulnerability is associated with an increased inadequate access to affordable, reliable, and sufficient energy. Persons with disabilities often face heightened energy-related challenges, associated with higher-than-average energy consumption patterns - or specific energy demand arrangements and patterns – leading to greater financial and logistical strain. Across the literature, it is evident that disability is both a cause and a consequence of energy poverty and energy vulnerability. The societal, political and economic mechanisms that generate inequality and injustice underpin both energy poverty and disability, which means that households who experience both are exposed to both sets of exclusionary dynamics.

4.1 Mediating factors

At least six distinct processes and contingencies are relevant to the relationship between energy poverty and disability. First, many people with disabilities rely on energy-intensive medical devices, such as oxygen concentrators, powered wheelchairs, or ventilators, which necessitate consistent access to electricity. Interruptions in energy supply, disconnections, outages, or unaffordable energy costs can compromise their health, independence, and overall quality of life.

Second, and if transport poverty is considered to be related to energy poverty (Alonso-Epelde, García-Muros, & González-Eguino, 2023; Neil Simcock, Jenkins, et al., 2021), it should be noted that disability and transport poverty are also deeply interconnected, as people with disabilities often face significant barriers to the provision of affordable, reliable, and accessible transportation. Transport poverty arises when people cannot meet their transportation needs due to economic, physical, or geographic constraints, and for disabled people, these challenges are often compounded by systemic inaccessibility and social exclusion. Physical barriers are a central issue in the relationship between disability and transport poverty. Many transportation systems – in cities and beyond – are not designed with accessibility in mind (Larrington-Spencer, Verlinghieri, Lawlor, & Aldred, 2024), making it difficult for individuals with mobility impairments, visual impairments, or other disabilities to use public transport independently. For instance, inaccessible bus stops, a lack of elevators in subway stations, or insufficient space for

wheelchairs in vehicles can all exclude disabled individuals from fully participating in public transit systems. This physical inaccessibility forces many to rely on more expensive alternatives, such as specialised transport services, taxis, or private vehicles, which may not be financially sustainable.

Third, disabilities often coincide with socioeconomic disadvantages, as people with disabilities are more likely to experience unemployment, underemployment, or lower-income levels due to systemic barriers in education, workplace accessibility, and discrimination. Limited financial resources restrict their ability to pay for energy services, invest in energy-efficient appliances, or adopt renewable energy solutions. The higher costs associated with adaptive technologies and modified living spaces – such as additional heating, cooling, or lighting – further exacerbate the financial burden. As a result, households with disabled people may face trade-offs, sacrificing other essential needs, such as food or healthcare, to cover energy expenses. Economic challenges also exacerbate transport poverty for disabled people. Financial limitations often lead to higher transportation costs – whether for fuel, vehicle maintenance, or public transport fares. Moreover, adaptive technologies, such as wheelchair-accessible vehicles or modifications, require significant upfront and running costs, placing additional financial strain on individuals and families.

Fourth, energy poverty can disproportionately impact the mental and physical health of disabled people. Poor heating or cooling in residential spaces may worsen existing circulatory, respiratory, rheumatic and cardiovascular health conditions. For those with mobility challenges, inadequate heating can result in prolonged immobility and increased pain. Energy poverty also affects caregivers, who may face heightened stress and fatigue when providing support in poorly resourced households. Inadequate energy services in the home have also been shown to lead to increased mental health and social participation challenges, due to limitations on daily activity and everyday life – when interacting with disability, this creates added impacts. The cumulative effects of all such factors contributes to a cycle of disadvantage, where energy poverty and energy vulnerability are both deepened by, and themselves deepen, the social and economic marginalisation of people with disabilities.

Fifth, the geographic distribution of energy poverty also intersects with the spatial patterns of disability. Rural areas, which are often characterised by limited energy infrastructure and higher energy supply costs, are also associated with above-average rates of disability due to additional factors such as ageing populations or restricted access to healthcare. In such settings, disabled people may struggle with compounded barriers to energy access, including a lack of affordable energy providers, household support services, or renewable energy options. Geographic

factors also play a significant at the transport – disability nexus. In rural or suburban areas – as well as some inner-city areas - public transportation and active travel options may be limited or non-existent, creating isolation for individuals who do not have access to a car. This exclusion impacts access to essential services – healthcare, education, employment opportunities, or everyday amenities – perpetuating cycles of poverty and social exclusion. Even in urban areas, where public transit systems are more developed, people with disabilities may still face long journey times, uncomfortable and restrictive travel options, unreliable services, or safety concerns, further restricting their mobility.

Sixth, policy frameworks addressing energy poverty often overlook the specific needs of disabled individuals, leading to inequitable outcomes. For example, energy efficiency programmes may prioritise cost and energy consumption reductions, while to failing consider the necessity of higher energy demand among people with disabilities. Similarly, emergency energy assistance programmes may not account for the life-critical nature of home energy requirements for certain disabilities. While much of the literature we reviewed does nominally call for context-specific and -sensitive interventions – such as subsidies for medical device-related energy use, enhanced support for energy-efficient home adaptations, and inclusive energy policies – there is a lack of specific knowledge and recommendations on the specific steps that are needed to prioritise the specific circumstances and requirements of vulnerable populations.

4.2 Country case studies

As argued by Jenkins et al (2021), there is a strong relationship between energy and disability within the framework of justice as recognition. Key issues include the unique energy needs of disabled individuals, the barriers they face in accessing energy-related benefits – including issues of affordability and infrastructure adaptability – as well as systemic inequities in energy systems worsen challenges for disabled people. This study work is based on a systematic and comprehensive content analysis of energy justice research literature; descriptive statistics and thematic analysis. The United Nations Department of Economic and Social Affairs (2019) highlights that access to affordable and reliable energy is essential for persons with disabilities as they often require electricity for assistive technologies and maintaining a comfortable home environment due to extended time spent indoors.

Illustrating some of the above arguments in the case of the EU is Ivanova and Middlemiss' (2021a) contribution, which finds that Households with an

economically inactive disabled person earn less and consume 10% less energy than other households (however, this does not include food, energy at home, water and waste services). This renders them more likely to experience energy poverty, and to have inadequate access to resources. The authors highlight the role of structural inequalities (such as income disparity) in driving energy injustices. Working across a number of European countries, the WELLBASED project has involved people with disabilities as part of the vulnerable groups targeted by a series of low-carbon interventions focused on, *inter alia*, social housing and low-income areas (de Leede, van Grieken, & Stevens, 2023). This contribution has found that households with chronic and severe illnesses – including disabilities – seem to be worst affected by energy poverty, because they are less likely to be able to generate their own heat, might spend more time inside their homes, and are more likely to be on low incomes. Tøge and Bell (2016) consider disability indirectly, through the lens of longstanding illness and its limitations, while illustrating how material deprivation (including not owning a car) worsens health impacts. Their work is based on 2008–2011 longitudinal panel data from the EU Statistics on Income, Social Inclusion and Living Conditions (EU-SILC), and operating with a sample that contains 312,556 observations among 78,139 respondents from 27 European countries.

In the case of Sweden, von Platten (2022) argues that people with disabilities spend more time at home and are more likely to experience energy poverty. Focusing on Italy, Mussida and Sciulli (2022) explain how disability increases material deprivation, particularly for those with severe limitations. They show that disability is a potential vulnerability factor, leading to a lower standard of living for households who are affected. For Latvia, Zalostiba and Kiselovs (2021) note that households with disabled or vulnerable members are particularly affected by energy poverty, as they may face disproportionate energy costs due to additional needs. A case study of Portugal (Lima, Ferreira, & Leal, 2022) finds that energy affordability significantly affects health outcomes, for people with chronic conditions or disabilities, who face additional challenges in maintaining energy-efficient homes. In Poland, energy poverty indirectly affects disabled and elderly residents, with higher risks in lower-income households facing heating costs (Libor & Bouzarovski, 2018). For Germany, Großmann and Kahlheber (2017) discuss how disability intersects with other axes of inequality, such as income and ethnicity, increasing vulnerability to energy poverty and exacerbating energy-related challenges.

The UK context is comparatively better researched, with a number of contributions exploring the drivers and impacts of disability in the context of energy poverty. de Chavez (2017) connects disability with low incomes, poor housing efficiency and energy prices. This contribution is based on a case study of Sickle Cell Disease in the UK, using a semi-structured questionnaire given to 15 adults who are caregivers

of an affected minor, and subsequently plotting the qualitative insights with environmental monitoring of the families' homes. The author argues that the relationship between energy poverty and disability are underpinned by a vicious cycle, whereby cold homes reinforce illness. This cycle is preventable by increasing assistance to families with a disabled member and improving housing efficiency.

Quantitative studies, based in the UK, also find that disability drives energy poverty. For example, in Robinson et al (2018) disability is one of the six variables that are found to drive energy vulnerability. The study is based on a series of regression models, to examine relationships between energy poverty and underpinning variables, to account for local variability and place-based effects. A follow-up contribution (Robinson, Lindley, & Bouzarovski, 2019) also finds that disability and illness significantly increase the need for warmth and energy services, thus increasing vulnerabilities to energy poverty. Persons with disabilities often face reduced employment opportunities and lower incomes, particularly those relying on state welfare. Individuals needing support and those providing care spend more time at home, increasing their exposure to cold indoor temperatures. Similarly, Thomson et al (Thomson, Snell, & Bevan, 2013b) find that households with disabled members face higher fuel poverty rates, with the results being influenced by household type, disability presence, and the fuel poverty measure used. Their study is based on secondary data analysis of the 2010 to 2011 English Housing Survey (EHS), while situating disability through the ways in which society restricts economic and social participation along with access to energy. The study includes self-reported and registered disabled people in each household.

The health aspects of energy poverty are also discussed by Liddell and Morris (2010). They explore the vulnerability of people experiencing disability and chronical illness to health risks from cold homes, while highlighting that energy poverty is associated with significant – and often overlooked – mental health effects. This work is based on a narrative synthesis of large-scale studies conducted between 2000 and 2009; focused on evaluating the health impacts of tackling fuel poverty. They argue in favour of extending analyses, evaluations and interventions beyond physical health, to include measures of quality of life, social engagement, daily routines, and mental well-being. A key claim in the paper is that the mental health impacts of cold homes can appear more quickly than physical health effects, particularly when it comes to younger people. They also highlight the difference between perceived improvements in physical health, on the one hand, and clinical improvements – such as changes in symptoms or reduced medical service use – on the other. The paper calls for considering a broader range of mental health impacts across all age groups, including people's quality of life and mental well-being.

The relationship between disability and energy poverty has also been explored in the United States, where energy poverty is often termed 'energy insecurity' (Hernández, 2013). A multi-method study (Graff, Carley, Konisky, & Memmott, 2021), relying on survey data collection and quantitative analysis of survey results – including a logistic regression – finds that households with at least one member with a disability face increased energy vulnerability due to internal characteristics such as the reliance on electronic medical devices, and the greater sensitivity to temperature extremes caused by poor housing conditions and limited resources. Moving onto issues of economic and racial discrimination at the neighbourhood scale, Hatch and Graff (2024) discuss social inequalities at the nexus of energy burdens – generally understood as the share of energy costs in household budgets (Nock, Jones, Bouzarovski, Thomson, & Bednar, 2024) – as well as income poverty, racial disparities, and other forms of inequality. The authors (Hatch & Graff, 2024) use cross-sectional data sources that they treat as a proxy for neighbourhoods, while conducting a regression with different variables (which includes disability), finding that disability is considered as an individual covariate associated with housing and energy burdens, and subsequently, eviction rates. Yu and Kittner (2024) conduct a country-level dataset analysis of statistical data for the 2013-2020 period, to find that disability generates a spiral of low-income jobs, leading to increased energy poverty risks. Their contribution considers vulnerability factors within a statistical model focused on the relationship between historical temperature fluctuations and energy burdens. Shen et al (2023) also explore disability in their work, by correlating one dependent variable (the annual average energy burden) with eight independent variables (including a 'community vulnerability index' and Covid-related variables). Among other factors, disability emerges as a significant predictor of the energy burden at the national level. In essence, these authors argue that households with members with disabilities face increased financial strain.

In the case of Vermont, Mashke et al (2022) find that people with medical vulnerabilities are particularly affected by energy insecurity, as they often rely on electricity for managing their conditions and maintaining stable home temperatures. Based on a qualitative analysis of interviews (10 semi-structured focus groups, following the principles of community-engaged research), this report finds that energy poverty is associated with the worsening of medical conditions, greater financial stress, and a decrease in mental health. One of the mediating factors between the different vulnerabilities captured by the research is financial stress from high energy costs – this is argued to affect mental health, while also leading to inequitable food access. Moreover, households with health issues face challenges in receiving appropriate recognition from utility companies or assistance programmes, which further increases their difficulties. Another North America-based contribution, based on two case studies in Puerto Rico and

California (Mango, Casey, & Hernández, 2021), emphasises the vulnerability of medically dependent people – including those with disabilities – who rely on power for health-related equipment, especially during climate-induced outages. The authors of this study highlight that gap in preparedness and response to externally-induced hazards are endangering people who are already vulnerable, despite the existence of technologies that can improve resilience and energy independence for all.

Moving to Canada, a policy report focused on the links between energy poverty and housing vulnerability (Kantamneni & Haley, 2024), contends that disability is as an underlying factor of systemic marginalisation, and leads to an increased likelihood of energy poverty. The authors rely on a series of archetypal socio-demographic and housing profiles, while incorporating disability within a range of vulnerability profiles, and emphasising the disproportionate impact on people with chronic health conditions in particular. Riva et al (2024) consider disability indirectly, through the links between health and energy poverty, via insights from a community-wide survey in Atlantic Canada. Their study focuses on the causes, distribution, and consequences of energy poverty in Bridgewater – a small town in Nova Scotia. They find a high percentage of people with disabilities in the geographic case study area, specifying these forms of vulnerability affect energy needs in particular.

Energy poverty and disability has also been explored in the Australian case, e.g. via Willand and Horne's (2018) exploration of the lived experiences of low-income, older and frail people near Melbourne. This research finds that disability is a household characteristic associated with heightened vulnerabilities to energy poverty, while highlighting the nuanced experience of energy injustices among older people and stressing the need for policy and structural changes to support energy affordability. The study identifies social isolation, financial stress, and health impacts as some of the key issues faced by older adults in energy-insecure households. A related study (Willand, Middha, & Walker, 2021) uses the capabilities approach to evaluate energy vulnerability policies and initiatives in Victoria, Australia. The study highlights that households with disabled or chronically ill members are disproportionately represented among those unable to heat their homes adequately, while emphasising their social vulnerability. In a policy report for the Australian Energy Regulator, O'Neill (2020) finds that individuals with disabilities often face greater challenges in accessing and affording essential energy services, particularly if they depend on powered medical equipment. Disability issues have also been mentioned in the cases of energy poverty patterns in Japan (Castaño-Rosa & Okushima, 2021), as well as child disabilities in South Asia and Sub -Saharan Africa (Sen et al., 2023).

4.3 Cross-cutting themes and trends across the literature

As a whole, the reviewed case studies point to several circumstances in which disability becomes a driver of energy poverty and energy vulnerability, associated with social, political, economic, spatial and environmental pathways. Demographic determinants, such as age, are key: for example, older adults with disabilities are particularly vulnerable, given their reliance on consistent heating and cooling for health reasons. Moreover, people with chronic illnesses or mobility impairments are also at heightened risk. Disability intersects with other social axes of inequality, such as income and ethnicity, compounding energy insecurity in the home.

Across the case studies, it is clear that financial constraints are one of the key limits to disabled people's access to affordable and reliable energy, leading to worsened health outcomes and prolonged social exclusion. Moreover, people with disabilities often struggle to maintain thermal comfort due to the low efficiency of energy provision systems in the home, and the housing fabric more generally. This is particularly severe in households where unpaid caregiving adds financial strain, further limiting energy access. Energy poverty not only limits access to essential services but also exacerbates material deprivation, particularly for those facing severe disabilities without sufficient welfare support.

The infrastructural and spatial elements of the energy-disability nexus are most visible in the case of transport poverty. Without reliable transportation, disabled people may struggle to maintain employment, access education, or participate in community life. This exclusion reinforces feelings of isolation, dependency, and marginalisation. There is a lack of inclusive design principles, funding for accessible services, and disability-specific considerations into urban planning and infrastructure development.

In the policy sphere, energy programmes and interventions often fail to address the specific needs of disabled individuals, often framing them as passive recipients rather than active stakeholders in sustainability efforts. Accessibility barriers extend to energy advice programmes, limiting their effectiveness in addressing the root causes of disability-related energy hardship.

Additionally, people with disabilities are often excluded from decision-making processes. There is a need for a more explicit integration of the interdependencies

among energy, health, and disability in policy, alongside the engagement of people with disabilities in dynamics of environmental and energy planning.

In a sense, part of the challenges at the energy-disability nexus can be found in the sphere of knowledge production, in terms of the marginalisation of disability-focused perspectives in social science, health and energy research. Here, a useful contribution is provided by Hunt and Blease (Hunt & Blease, 2024), who discuss barriers for disabled individuals in academia and health research, while underlining that different forms of epistemic injustice and structural obstacles can limit participation and inclusion.

5. Interventions to reduce energy poverty among people with disabilities

Existing literature often groups interventions that would reduce the exposure of persons with disabilities to energy poverty with general interventions which would decrease the negative health effects of energy poverty to the general population, seldom focusing solely on disability-specific policies. The reason for this is that health and energy poverty are interlinked, as firstly, energy poverty can create health problems. For example, if one cannot afford to adequately heat their home, living in a cold house can create damp conditions that result in breathing difficulties and allergies, and potentially a disability. Secondly, people's health problems can indirectly result in them experiencing energy poverty. For example, persons with disabilities are more likely to earn lower incomes, and therefore less likely to be able to afford adequate energy services to meet their needs, exposing them to energy poverty (Cronin de Chavez, 2017; Ivanova & Middlemiss, 2021b; C. Snell, Bevan, & Thomson, 2015b; Thomson, Snell, & Bevan, 2013a). This creates a vicious cycle between energy poverty and health in which energy poverty can cause physical and mental health problems, and in turn, people experiencing energy poverty are more likely to have existing health problems, including disabilities (Chapman et al., 2022).

In the present section, we summarise the interventions and policies that are needed to address energy poverty-related disability, while also identifying measures across diverse policy types that have been successful in doing so as well as those which have not. It should be noted that despite the aim of many policies and measures that have been reviewed being the reduction of energy poverty and consequently increased health for vulnerable citizens in general, energy poverty in relation to disability has been explicitly researched or touched on in policy making less frequently. To ensure the review of mechanisms which could be applicable to persons with disabilities, without specifically targeting them, this report assumes that policies which aim to reduce energy vulnerability for vulnerable citizens can also be applied to reduce conditions of energy poverty for persons with disabilities, with slight modifications, where necessary. These most common policy types are those targeting housing and infrastructure, energy accessibility and market inclusion, financial support, health and well-being, consumer protection, data transparency, technology, regulatory and legal improvements, as well as education, awareness-raising and advocacy.

Particular policies and measures highlighted within literature that could reduce energy vulnerability for persons with disabilities include substantial energy

efficiency and housing renovations, targeted financial assistance and tariff reforms, awareness raising, education and community engagement via accessible and coordinated information and support programmes, social benefits and social protection policies including prohibitions against disconnections during extreme weather and protection against utility shutoffs for vulnerable populations, the development of health-oriented energy policies and practices, multistakeholder taskforces working on structural and policy level changes, technological improvements and smart home automation for energy management, as well as improved data collection and research to better inform policymaking. These policies and measures are described in detail below.

5.1 Substantial energy efficiency and housing renovations

Substantial energy efficiency renovations refer to renovation measures which increase indoor temperature, reduce resident's exposure to cold, and increase comfort in the home by eliminating mould and draught. This can be done by adding insulation to roofs, floors, or walls, installing double glazing windows, and updating heating systems via boiler replacements or the installation of renewable energy sources on a property (**7**). However, these are all renovation measures which would reduce exposure to energy poverty in any vulnerable household, and do not specifically address the energy challenges that arise from having a disability, yet the measures are still relevant as general renovations can decrease the energy demand and therefore energy bills of a household with limited income, which households containing a person with a disability are statistically inclined to be.

Despite the known benefits of energy renovation among academics and energy professionals, according to Middlemiss, Stevens, Ambrosio-Albalá, Pellicer-Sifres, & van Grieken (2023), there are several drivers preventing households, including those with disabilities, from engaging in substantial energy renovations. These include (i) a lack of understanding of the benefits of the measures; (ii) fear surrounding getting into more debt, higher energy costs, losing control of their energy systems; (iii) stigma associated with receiving free help or asking for help in general; and (iv) structural barriers related to tenancy type or eligibility for interventions. To increase the uptake of energy efficiency renovations, policy makers should be aware that interventions work better when they are adapted to address the above-mentioned concerns, when citizens have an input into decision making, when they are taught to use new technical equipment, when access to interventions is fair, and, particularly relevant to persons with physical disabilities, when interventions are flexible to meet varied needs.

5.2 Targeted financial assistance and tariff reforms

According to Pye & Dobbins (2015), over 40% of EU Member States use financial intervention measures as the primary basis for support to vulnerable consumers. Following the analysis of these measures, several recommendations have been made across literature on how to better support vulnerable consumers, including those with disabilities, via the use of targeted financial assistance or tariff reforms.

Lusson (2024) stresses the importance of increasing funding for weatherisation programs, such as the US federal '*Weatherisation Program*'. Increased funding to such programs would aid in the retrofitting of energy inefficient housing to help reduce low-income customers' energy burdens year-round. This would be particularly needed in homes inhabited by persons with disabilities who have thermoregulation issues related to their disability and therefore require specific indoor temperatures to be maintained throughout the year to ensure their comfort and safety. Snell, Bevan, & Thomson (2014) also found that some disabled people have energy requirements throughout the year, not just in winter, yet these additional costs are not reflected in current financial assistance. Whilst these costs will likely not be on the same scale as energy requirements in winter, the potential of targeted assistance which consider these additional costs should be revised. Similarly, greater assistance with energy costs for persons with disabilities will be needed to mitigate the impact of climate change and the associated risk of higher temperatures.

Snell et al. (2014) highlights the additional need for access to emergency funding to pay for the energy needs of persons with disabilities either at times of crisis or during periods of transition in their lives. This would be useful in the case of people of working age living with, for example, cancer, who have increased energy needs, yet also experienced a drop in income because of having to give up work due to their condition. Snell et al. (2014) also highlighted the temporary needs of parents to children with disabilities who are waiting for a diagnosis of their condition, as these may be dealing with increased daily energy needs because of their child's impairments, but find that they are unable to access financial support until a firm diagnosis has been received. As such, two distinct requirements in relation to the provision of emergency funding have been identified (Snell et al., 2014). The first is the provision of financial support to meet the immediate needs of people with disabilities in relation to paying for fuel. In the UK, this measure was instituted when funding was made available to a local network of independent advice centres so that vouchers worth £30 could be distributed to households where an immediate

need for help with energy costs was present. The second is some sort of rapid response which can meet the need for energy efficiency improvements in the homes of people who are experiencing health concerns. Proactive health agencies could be a key actor to address this requirement, as was done in the UK with the then '*Primary Care Trust'*, which set aside an emergency fund to fast-track energy efficiency improvements to people's homes. In this case, if a household was left without heating or hot water, they would be eligible for the support to get a new boiler (Snell et al., 2014)**.**

Research by Snell et al. (2014) also notes a diverse range of financial support that could potentially be available for persons with disabilities. For instance, bilateral links can be made between individual energy companies and charities, as tailored support could be offered by the former to suit the energy needs of people with specific conditions and impairments, while also making use of the knowledge and work of the latter organisations, such as, for example, the '*Charis'* grants. Furthermore, in the UK, financial support was sometimes available from sources such as suppliers of essential medical equipment, while further financial aid or advice from individual charities that worked with people who lived with particular impairments was available. Whilst such sources provide essential and valuable support, there is a danger of this type of help becoming a replacement for assistance by other agencies such as the public sector.

The provision of funding to assist with energy-related costs for persons with disabilities should therefore most often come from central or regional governments and from social welfare budgets (Pye & Dobbins, 2015). Support can either be provided via general social welfare payments or through direct payments to help cover the costs of energy. Pye & Dobbins (2015) found that most energy cost subsidies or payments are targeted via the social security systems, while in a number of countries, particularly Southern European Member States including Cyprus, Spain, France, Greece, Portugal, as well as Belgium, social tariffs are also offered. Social tariffs are a set tariff available to vulnerable consumers to ensure that these households have access to energy at fair prices. In Belgium, all electricity and gas suppliers are required to offer a social tariff to protected customers, and the service charge is waived while a maximum per unit charge is not allowed to be exceeded. However, social tariffs raise important questions of the equity of financial interventions. The Belgium social tariff is granted to all protected consumers, but the system is criticised for taking into account the social status of one member only and not the global income of the household (Pye & Dobbins, 2015). Eligibility to the French social tariffs is based on medical and health insurances, but as a substantial share of consumers eligible to these mechanisms do not receive them, they cannot be detected by the system. Even when the tariffs reach their beneficiaries, their volume (an average of 8€/month if gas and electricity are considered) is too low to

provide sufficient financial relief for consumers (Pye & Dobbins, 2015). Social tariffs inherently induce a double penalty effect for consumers just above the eligibility threshold, as they are being excluded from receiving the tariff while also having to contribute to its funding. This led the French Energy Agency (ADEME) to recommend the replacement of social tariffs with lump sum payments, while also pushing for an expansion in the range of data on beneficiaries to improve future targeted measures (Pye & Dobbins, 2015).

Tiered discounts are another affordability option that could be made available by regulators when trying to improve the affordability of rates for financially vulnerable customers. Tiered discounts are designed to reduce vulnerable consumers' monthly energy bills by a designated percentage, allowing them a designated, lower energy burden each month. This percentage usually approximates the energy burden of a median income household within a utility's service territory and is not tied to an individual customer's usage (Lusson, 2024). Instead, the discounts are set at the midpoint within income tiers. This approach was adopted by the American Illinois Commerce Commission, which established a tiered discount rate mechanism for the three large investor-owned gas utilities serving the majority of the state. In Chicago, discounts for eligible customers ranged from 83% for those whose income falls between 0-50% of the federal poverty level to 5% for those falling between 200-300% of the federal poverty level (Lusson, 2024).

Flat low-income discount rates provide a less targeted approach to lowering energy burden by income. As stated by Lusson (2024), the electric and gas utility companies of the American states of Massachusetts and California have offered low-income customers flat discount rates for years. In Massachusetts, the discount percentages vary by company and range between 25 to 32% off the entire utility bill. Qualification for the '*Low Income Home Energy Assistance Program*' (LIHEAP) automatically qualifies applicants for the discount rates, although enrolment is not a prerequisite for receiving the discounts. In California, the '*California Alternate Rates for Energy*' (CARE) program provides a 30% to 35% electric utility discount, and a 20% gas utility discount, to customers whose income falls at or below 200% the federal poverty level. Additionally, the state's '*Family Electric Rates Assistance*' (FERA) program provides an 18% discount on electric bills for households whose income falls above the CARE eligibility level, up to 250% of the federal poverty level (Lusson, 2024).

Percentage of Income Payment Plan programs can also be used to ensure that a financially eligible customer pays no more than a designated percentage of their monthly income set by the regulator for their electric and gas utility bills (Lusson, 2024).

The method by which financial aid is provided is also an important consideration when creating assistance programs for vulnerable groups in general. More specifically, some measures require consumers to be proactive to access funding while others are paid directly as part of a social welfare package. For example, Pye & Dobbins (2015) references a revised Maltese subsidy distribution system that allows households to benefit from a credit on their energy bill instead of claiming vouchers. This ensures that more households can claim the benefits for which they were eligible. Previously, based on the voucher system, €500,000 went unclaimed annually, while under the new system, the 26,000 households eligible for energy benefits (due to low income or high energy consumption due to medical reasons) were able to receive a credit to their bill through their service provider (Pye & Dobbins, 2015).

Although short-term actions such as vouchers are important seeing as structural issues that are often related to energy poverty may take many years to address, other measures tackling structural issues of energy poverty are also needed to reduce the provision of short-term assistance and increase resilience to the risk of energy poverty in future years. Measures that do so have been used in some Scandinavian countries and the Netherlands, who have social policy-led approaches, where a strong emphasis is placed on energy efficiency of the housing stock, including social housing (Pye & Dobbins, 2015). Measures targeted at the rental and social housing stock have also been implemented in France, Germany, Italy, Poland, the UK, Denmark and the Netherlands, with diverse success rates in targeting vulnerable consumers, illustrated by France's '*Habiter Mieux Programme*'. As such, novel approaches to overcoming split incentives in the private rented sector, which houses many persons with disabilities across Europe, are also needed, with measures such as the Dutch '*Energy Saving Convenant'* and the '*Energiesprong'* programmes being an example (Pye & Dobbins, 2015).

Regardless of the type of financing that is made available, it is important to improve access and accessibility for persons with disabilities to overall financial services. Physical barriers, travel barriers or time restrictions can represent serious obstacles for the financial inclusion of persons with disabilities, therefore, digital technology has the potential to reduce these barriers (United Nations Department of Economic and Social Affairs, 2018). Mobile financial services can be a convenient option to make financing more available, yet if the technology to interact with financial data is not accessible (due to lack of funds to purchase the technology or the technology not being inclusively designed), this only further excludes persons with disabilities from engaging with financial services. To remove barriers, financial service institutions can build websites and mobile apps that follow the Web Content

Accessibility Guidelines (WCAG) 2.0 (United Nations Department of Economic and Social Affairs, 2018).

To further increased access to financial services, disability should also be included as a qualifying factor for energy poverty alleviation schemes. More specifically, a member sharing a household with a person with disabilities should be able to apply for financial aid for the residence, rather than a household only being eligible to receive aid if the person with disabilities is the named bill payer (Snell et al., 2014). Further to this, it should be noted that while switching utility providers is an advantageous strategy that consumers may use to manage energy costs, the impact of the process of switching providers needs to be recognised. For example, eligibility criteria for financial aid may vary between suppliers, and cheaper energy suppliers may not even participate in financing schemes which could be used by persons with disabilities to reduce their energy costs. In addition, when a consumer switches suppliers often in the name of achieving lower energy costs, the application to financial aid, such as the such as the UK's Warm Home Discount Scheme, will likely no longer be valid due to new eligibility criteria of the new utility provider, making the use of the scheme nearly impossible when seeking cheaper energy (Snell et al., 2014). Therefore, policymakers should be aware of the hardship related to applying for financial aid dedicated to those with disabilities and the need to switch providers to obtain more favourable energy tariffs, and adapt financial programs with these barriers in mind.

Some interventions are already being adapted to be more inclusive in design and more flexible in delivery, a trend which should continue for many current and upcoming energy poverty policy funding streams (Middlemiss et al., 2023). In the future, when policies are being developed or updated, policy makers should take into consideration that some citizens do not associate warmth with better health, leading them to spend financial aid on non-energy measures. For this reason, it should not be assumed that people will automatically prioritise energy if given financial aid, particularly when they have other urgent needs that could be addressed using this aid. Although providing support to vulnerable consumers to reduce conditions of general poverty is important, financial aid measures can be modified to ensure that aid is specifically used for energy interventions, thereby protecting the physical well-being of persons with disabilities even when they may not choose to do so (Middlemiss et al., 2023).

5.3 Awareness raising, education and community engagement via accessible and coordinated information and support programmes

Financial and technical measures are unlikely to be leveraged or implemented by persons with disabilities to reduce circumstances leading to energy poverty if these are unaware of the reasons why they are energy vulnerable or what can be done from a technical or financial standpoint to address the issue. As such, information and awareness raising, education, and community engagement measures can be used to inform persons with disabilities about solutions and resources which may be available to them. These measures include the provision of advice via coordinated support programmes such as one-stop-shops for energy renovation, informational campaigns by diverse stakeholders such as energy companies or intermediaries, improved telephone advice systems (achieved through no call holds, advice lines with no time pressure, call-back systems to avoid waiting at busy times, training for staff about effective communication to help persons with disabilities), more transparent and easy to read energy bills, and increased information on bills and tariffs through price comparison sites (Chapman et al., 2022; Pye & Dobbins, 2015). Countries with the most liberalised markets tend to be those that have greater availability of consumer advice and more measures relating to price comparison and transparent billing, while those with strong civic society movements related to energy poverty have a greater number of awareness campaigns. This is particularly the case in the UK, where many NGOs and energy research organisations actively campaign on the issue of energy poverty (Pye & Dobbins, 2015).

Many Member States have also launched campaigns to promote the roll out of smart meters to help consumers better understand how they use energy while also allowing energy suppliers to monitor energy consumption, particularly of vulnerable consumers. However, it is imperative that measures promoted within information campaigns such as smart metering programmes are evaluated regarding their potential to assisting lower income households, and issues which may arise due to the use of the technology are also address within these campaigns. For example, due to tight budgets and the need for savings, vulnerable households in the UK will not always top up their pre-payment meters, resulting in the considerable problem of 'self-disconnection' (Pye & Dobbins, 2015).

Pye & Dobbins (2015) also stress the importance of connecting information and awareness measures with energy efficiency and climate change information campaigns. While many schemes, primarily created as initiatives to adapt to

climate change and teach households how to reduce their energy consumption, are already in place in most European countries, such tools could also be used as to promote best practices on mitigating energy poverty. More specifically, these initiatives could promote information about how to detect the risk of energy poverty amongst persons with disabilities as well as information about existing advocacy organisations, service providers, energy companies, health and social care providers, tenancy liaison officers and other stakeholders trained to help support persons with disabilities in reducing exposure to the effects of energy poverty (Chapman et al., 2022). It also becomes important to ensure that support workers, advocates and family members of persons with disabilities are aware of relevant communication and information from energy companies and services to maximise the impact that these measures can have on households of persons with disabilities (Chapman et al., 2022). One important avenue for engaging with, and supporting, persons with disabilities and their families or support networks is via 'trusted intermediaries'. These are individuals and organisations who can work with people to facilitate support for those who would otherwise be very difficult for energy companies or stakeholders delivering energy efficiency measures to identify or engage with, and link persons with disabilities with support and advice available from such agencies (Snell et al., 2014). However, it should be noted that vulnerable consumers often have little trust for many public organisations such as energy companies. To overcome this lack of trust, health and social care staff can be used to deliver information relevant to energy when interacting with persons with disabilities during regular medical meetings.

It should be noted that the United Nations Department of Economic and Social Affairs (2018) found that training and support should not only be offered to persons with disabilities, but should also be provided to service personnel regarding the barriers experienced by persons with disabilities to access social protection (i.e. discrimination, lack of accessibility of grant offices, etc.) and approaches to overcome these barriers. This can be done through sensitisation trainings for staff which provide education on the rights of persons with disabilities, best practices of engaging with persons with disabilities and how to achieve disability-inclusive services, all in the name of helping persons with disabilities learn about and access their social benefits to reduce their exposure to energy poverty (United Nations Department of Economic and Social Affairs, 2018).

5.4 Social benefits and social protection policies, including prohibitions against disconnections during extreme weather and protection against utility disconnections for vulnerable people

Social protection schemes help to manage and alleviate situations that adversely affect a person's well-being. Disability-targeted benefits have demonstrated effectiveness in helping households meet their basic needs. According to the United Nations Department of Economic and Social Affairs (2018), more and more countries have adopted social protection programmes for persons with disabilities since the 1960s, reaching 179 out of 183 countries by 2013. In 168 countries, disability schemes provide periodic cash benefits to persons with disabilities, while in another 11 countries only lump-sum benefits exist. In 81 countries, benefits mainly cover workers and their families in the formal economy and thus leave out children with disabilities and persons with disabilities who did not have the opportunity to contribute to social insurance long enough to be eligible for benefits. However, 87 countries use schemes that are fully or partially financed by taxes and thus have improved coverage. In 27 countries, schemes cover all persons with assessed disabilities without regard to their income status, while in 60 countries, they protect only persons or households whose income falls below a certain threshold. Disability benefits tend to be lower than the average wage of a full-time employee, as well as lower than old-age pensions and unemployment benefits (United Nations Department of Economic and Social Affairs, 2018). While the benefits provided in each country vary, financial assistance via social welfare programmes have been established in many countries and contribute to improved energy access and financial support for persons with disabilities. However, the ability for social benefits to sufficiently cover energy bills depends on whether the benefits consider the additional energy costs faced by persons with disabilities (for example, assistive products, personal care and rehabilitation). Social welfare programmes specifically directed at supporting the energy bills of persons with disabilities have been established in a few countries. The UK's Cold Weather Payment and the Warm Home Discount Scheme for households with low incomes as well as the United States' Low Income Home Energy Assistance Program (LIHEAP) are examples available to persons with disabilities to support payments for electricity in winter, in summer, and in emergency weather conditions, and/or for low-cost energy-related home repairs (United Nations Department of Economic and Social Affairs, 2018). Based on existing schemes, the United Nations Department of Economic and Social Affairs (2018) recommends the design of social protection schemes which adequately cover persons with disabilities through income security as well as the implementation of disability-specific schemes that effectively address disability-related additional costs. These schemes should be accessible to persons with

disabilities and promote greater participation, autonomy and choice by persons with disabilities themselves. Additionally, access to electricity during weather extremes should be protected for those with medical needs by implementing calendar-based, weather-related moratoriums or temperature-related disconnection protections to ensure continued access to utility services during extreme heat and cold (Lusson, 2024).

Whilst financial intervention is primarily led by central government, Pye & Dobbins (2015) state that consumer protection measures are implemented primarily by regulators and utility companies. Of the Member States reviewed by Pye & Dobbins (2015), 20% have disconnection safeguards as their primary measure for protecting vulnerable consumers, with approximately 80% having some form of protection from disconnection due to non-payment, with Bulgaria, Croatia and Czech Republic being exceptions. Some protection measures are specifically targeted towards different groups, during the winter or provide blanket protection. The range of measures also highlights the important role of energy companies working alongside regulators to ensure consumer protection (BE, IE, LU, SE, UK), reporting on and registering vulnerable consumers (FR, GR, UK), and provision of additional customer assistance. For example, in some Member States, the regulator has the important role of ensuring fair tariffs, monitoring company profits, and fining energy companies for underperforming on specific scheme implementations (Pye & Dobbins, 2015).

The revision of antiquated credit and collection practices that punish people for not being able to cover their basic electricity costs through disconnection of essential utility service is also needed, particularly for those with disabilities and medical conditions who may rely on electricity to sustain life. To do so, Lusson (2024) suggests (i) arranging for longer deferred payment arrangements that reflect a customer's ability to pay (e.g., minimum of 24 months, with a right to re-negotiate a longer payment plan tailored to the customer's financial circumstances if default occurs); (ii) a prohibition on late fees for all customers whose income falls at or below 80% area median income; (iii) a prohibition on security deposits for the previously mentioned vulnerable consumers; (iv) no reconnection fees; and (v) ending the use of customer risk-ranking that accelerates disconnections for payment troubled households, renters, and new customers (Lusson, 2024).

5.5 The development of health-oriented energy policies and practices

According to Lusson (2024), energy poverty should be recognised as a public health issue, particularly for those with chronic illnesses, disabilities, or mobility issues. As such, the development of health-oriented energy policies and practices can help to reduce the issue for persons with disabilities, particularly when policies are cocreated with the health sector and backed by data on health, energy vulnerability, and physical disability. Health-oriented policies should therefore (i) ensure protection for any low income individual with a serious illness, whose health and safety would be put at risk by involuntary disconnection of an energy service; (ii) allow a wide range of qualified entities to certify serious illnesses (i.e. medical doctors, nurse practitioners, physician assistants, psychiatrists, psychologists, and local health boards), while ensuring that utilities respect these certifications; (iii) guarantee that seriously ill persons must be able to obtain protection against disconnection promptly, where the implementation time should correlate to their health needs; (iv) push utilities to identify medically fragile customers and avoid terminating their service; and (v) enforce the collection, reporting, and analysing of energy poverty data by for persons with disabilities and serious illnesses to monitor the administration of the protections (Lusson, 2024).

Utilities are not the only actors that can contribute towards advancements in health-related energy measures. Given the difficulties associated with identifying and targeting persons with disabilities experiencing energy poverty, the health sector and medical professionals can also play a key role in supporting persons with disabilities via the promotion of measures which improve citizen's physical health and home health (Snell et al., 2014). For example, Willand, Sharrock, & Long (2019) state that health assessments of individuals by health professionals in Australia did not typically include an assessment of their home environment or of energy related problems when assessing their health, although questions about household temperature, mould, draughts, and others were deemed relevant to people's health. International health-oriented measures can thus be improved by requiring that questions which would identify energy hardship as well as energy-related health problems be asked in standard appointments, after which GPs and health professionals could refer vulnerable individuals to existing resources to reduce energy hardships while also addressing energy=poverty-related health issues. In addition, closed-circuit TVs in health clinic waiting rooms and pharmacies could include information on available energy services, concessions, grants, and other resources, encouraging patients to seek assistance with energy-related issues. A short course on the causes, symptoms and possible mitigation of energy hardship was also regarded as being beneficial for community nurses, disability workers and

other community health workers (Willand et al., 2019). Interestingly, pediatricians and attorneys in Philadelphia formed a medical-legal partnership to protect vulnerable patients from energy insecurity while maintaining their health (Bryan, Parker, & Smith, 2024b). The attorneys trained pediatricians on legal protections against utility service shutoffs and developed a screening process to identify patients who are experiencing, or are vulnerable to, energy insecurity. Following this initiative, the number of families identified as energy insecure nearly doubled, and the approval rate for utility shutoff protection applications showed a statistically significant increase from 52% to 86%. Energy insecure families received resources about emergency funds, weatherization, grants, and how to prevent utility shutoffs (Taylor et al., 2015). This initiative shows the importance of successful cross-sectoral partnerships rooted in improving health policies and measures.

5.6 Multistakeholder taskforces working on structural and policy level changes

One difficulty in the top-down development of effective policies to address the energy needs of persons with disabilities is that national government bodies with mandates relating to disability, assistive technology and energy are almost always different, although highly linked. Disability tends to fall under the responsibility of a ministry of health or social welfare, while assistive technology tends to be under the mandate of the ministry of health, and energy issues are addressed by a ministry of energy (United Nations Department of Economic and Social Affairs, 2018). Middlemiss & Gillard (2015) argue that family policy (which affects social relations in and out of the household) and housing policy also have a significant impact on vulnerability to energy poverty. As such, the United Nations Department of Economic and Social Affairs (2018) and Middlemiss & Gillard (2015) suggest the formation of multi-disciplinary, multi-stakeholder cross-sectoral task forces, including policymakers and experts on energy and on disability as well as persons with disabilities and their representative organizations, to promote interministerial coordination for energy poverty alleviation and inclusive energy access among persons with disabilities. The United Nations Department of Economic and Social Affairs (2018) found that discussions on the energy poverty of persons with disabilities should be linked to discourses around assistive technology, and vice-versa, as being energy poor can impact the use of assistive technology, which in turn impacts the independent living of persons with disabilities and their enjoyment of human rights. Given the number of intersecting policies that can influence energy vulnerability, constructing a holistic policy response can be challenging. As such, Middlemiss & Gillard (2015) suggest that local authorities who have closer working relations with vulnerable neighbourhoods are well placed to initiate on such coordinated policy planning and delivery through Joint Strategic

Needs Assessments. Collaborations between local government, healthcare, and industry can also be effective, particularly to reduce effects of energy poverty such as excess winter deaths. However, the time-intensive nature of this proposed approach creates a financial barrier to its implementation, as local actors engaging in this type of work must dedicate significant temporal resources towards the collaboration, thereby forcing them to often rely on payment to cover the costs of engaging in such activities (Snell et al., 2014).

5.7 Technological improvements and smart home automation for energy management

Technological improvements have been cited as having the potential to improve the way persons with disabilities interact with energy, giving them better access to and control of their usage. For example, all participants within the study conducted by Chapman et al. (2022) in the UK struggled with the general interface between themselves and the energy market, as they lacked confidence in using energy-related technology and understanding of technical processes associated with energy use and payment, including smart meters, thermostats, direct debits and prepayment meters. Nearly all had smartphones and used the internet with some degree of confidence, however, instead of using a smartphone application to top up prepayment meters, they chose to visit a shop and engage with a person rather than technology. This can be attributed to the fact that meters could be difficult to use for people with visual impairments, and the location of physical payment points could limit ability to pay for or monitor energy use, resulting in higher tariffs that had to be paid, as well as the issue of self-disconnection (Chapman et al., 2022; Snell et al., 2014). Recommendations to improve the accessibility of interactive displays on smart meters include larger font and buttons, simpler phrasing, audio instructions and use of a colour display (Chapman et al., 2022). The issue revolving inaccessible prepayment points can be resolved by promoting accessible devices capable of control heating, accessing up to date information about household energy use and cost, as well as getting information about energy efficiency and energy deals (Chapman et al., 2022; Okokpujie et al., 2023). Voice operated virtual assistant AI technology, IoT-enabled voice control systems like Amazon Alexa, or talking smartphone applications could all improve accessibility of energy data to persons with disabilities. IoT systems can also be used to operate appliances hands-free which may not have otherwise been accessible to persons with physical disabilities, including those who may be visually impaired, hearing impaired, or have limited mobility. It was found by Okokpujie et al. (2023) that the combination of voice control, clap-switching, and manual control options allows these systems to provide a versatile and inclusive solution for managing home appliances and

energy usage, helping those with disabilities to control energy in the home more easily.

5.8 Improved data collection and research to better inform policymaking

In order to properly target interventions to reduce energy poverty for persons with disabilities, national databases of available information and disaggregated data on disability and energy should be created (United Nations Department of Economic and Social Affairs, 2018). The collection of clear data as well as the increase in transparency regarding the impact of utility credits, collection policies, social protection programmes and the affordability of rates in general should be emphasised, both of which can be achieved by requiring utilities to file monthly arrearage, disconnection, and other data by postal code or census data (Lusson, 2024; United Nations Department of Economic and Social Affairs, 2018). By establishing national monitoring and evaluation systems that periodically assess the impact of these schemes on the situation of persons with disabilities, tailored financing and social protection programmes for this group can be developed using solid evidence (United Nations Department of Economic and Social Affairs, 2018).

Capetillo-Ordaz, Martín-Consuegra, Alonso, Terés-Zubiaga, & Koutra (2024) have also found that women with disabilities often have elevated energy needs due to medical conditions, resulting in additional energy expenses that may strain their limited income and heighten their energy vulnerability. As such, data that can be used to identify the spatial aspects of gendered energy vulnerability and its potential unequal distribution for women and men should be gathered. This will allow for the detection and categorization of gendered energy-vulnerable areas, enabling decision-makers to prioritise regions that require more targeted interventions within the energy sector.

6. Existing Materials for Knowledge exchange on Disability and Energy Poverty

6.1 Methodology for conducting SWOT analysis

A SWOT analysis has been conducted to evaluate and systematise the body of training and educational resources currently available on energy poverty, with particular attention to how these resources incorporate, or fail to incorporate, the needs and perspectives of persons with disabilities. The overarching goal was to identify materials of sufficient quality and relevance to be integrated into online training repositories such as the ASSERT Moodle and Library, ensuring that future training initiatives surrounding energy for people with disabilities explicitly address inclusivity and accessibility.

The methodology followed a multi-phase, mixed-methods design, integrating both qualitative and quantitative dimensions to ensure robustness and comparability of results. The first stage of the analysis involved comprehensive mapping. More than forty training resources were collected from diverse origins, including EU-funded research and innovation projects, civil society toolkits, and institutional programmes. Examples include ASSIST (focusing on energy advisors and behavioural support), STEP (consumer-oriented training), SocialWatt (decision-support tools for utilities), Cooltorise (summer energy poverty awareness), and ENPOR (private rented sector analysis). Disability-focused resources, though rarer, were also included, such as the Council of Europe's HELP course on disability rights and the TRIPS toolkit on participatory co-design. Each resource was catalogued with metadata on type, year, language, geographical scope, and target group (municipalities, intermediaries, or citizens). This phase ensured the widest possible coverage of relevant content.

The second stage consisted of a pre-SWOT screening designed to refine the selection and exclude resources with limited relevance or poor methodological quality. Each resource was evaluated using a five-point scoring system across key criteria: (i) relevance to the intersection of energy poverty and disability; (ii) inclusivity and accessibility (use of plain language, captions, adaptable formats); (iii) methodological rigour and evidence base; (iv) balance between technical and behavioural dimensions; and (v) transferability across different national or social contexts. To enhance objectivity, two evaluators performed the scoring independently and their results were averaged. This procedure reduced the pool

from over forty to fifteen resources considered most pertinent for a full SWOT analysis.

The third stage involved a detailed SWOT assessment. For each resource, evaluators prepared structured qualitative reflections and quantitative scores under the four SWOT categories of strengths, weaknesses, opportunities, and threats, guided by a standardised questionnaire to ensure consistency. Each category was scored from one to five, allowing for aggregation and comparison, while qualitative commentary captured nuances, especially concerning accessibility and intersectionality, that numerical ratings alone could not convey.

Finally, the analysis informed decisions on integration into ASSERT's library and repository, which is meant to aggregate the most useful resources on the topics of energy poverty and physical disability in Europe. Resources were classified into three groups: (i) keep and upload as they are; (ii) keep but adapt; and (iii) monitor or link. A final accessibility check was applied, verifying whether the material could be used by individuals with visual or hearing impairments and whether the language was comprehensible for non-specialists. This multi-step process ensured that the selection was both evidence-based and operationally relevant for inclusive training.

6.2 Overview of identified Training Programs for Stakeholders

The mapping exercise uncovered a rich but uneven landscape of training and educational resources spanning formal and informal approaches, with varying degrees of relevance to the intersection between energy poverty and disability. These resources target a broad spectrum of stakeholders, ranging from public authorities to intermediary organisations and citizens, reflecting the multidimensional nature of energy poverty interventions.

Formal training programmes are those structured as courses, curricula, or learning modules, often within EU-funded projects or institutional platforms. Among the most notable is the ASSIST project, which developed a rigorous training curriculum for Home Energy Advisors (HEAs) focused on supporting vulnerable households through behavioural advice and energy audits. STEP offers an online training programme aimed at consumers, consumer organisations, and frontline workers, combining technical knowledge with communication and engagement skills. The EPAH (Energy Poverty Advisory Hub) platform hosts formal e-learning courses for civil servants and technical staff, strengthening capacity to design and implement local energy poverty actions. In parallel, SocialWatt provides analytical and

decision-support tools for utilities, helping them identify and assist energy-poor clients, while ENPOR focuses on the private rented sector with dedicated training for building managers, owners, and tenants.

Informal training resources include toolkits, handbooks, awareness materials, and practical guidelines. For example, Cooltorise develops social campaigns and workshops to address summer energy poverty and raise awareness among citizens and local actors. EnergyMeasures equips intermediary organisations with low-cost behavioural measures and indicators for identifying at-risk households. Greenability offers a toolkit for social operators, integrating environmental and social aspects of energy poverty. Meanwhile, PowerUp and PowerPoor deliver guidance for engaging vulnerable households, forming local energy communities, and implementing small-scale efficiency actions.

When considering disability-focused materials, the mapping revealed far fewer examples. The Council of Europe HELP course on the rights of persons with disabilities provides a solid legal and policy foundation but is not directly linked to energy poverty. The TRIPS toolkit introduces co-design methodologies to engage persons with disabilities in participatory design processes, and ENIL's contributions offer valuable perspectives on inclusion, though primarily outside the energy domain. This scarcity confirms that comprehensive integration of disability perspectives into energy poverty training remains limited. Overall, while the mapping highlighted significant progress in addressing energy poverty across Europe, it also exposed fragmentation and gaps at the intersectional level. Therefore, is is important to consolidate and adapt these resources into a coherent, inclusive, and accessible training ecosystem.

6.3 Strengths of Current Training Approaches

Across the mapped resources, several key strengths emerged, demonstrating the maturity and diversity of existing capacity-building initiatives. First, many programs display high methodological rigour. Training modules from projects such as ASSIST and STEP are underpinned by well-defined learning objectives, pedagogical structure, and practical exercises tailored to their audiences. They combine theoretical understanding of energy poverty with hands-on tools for engagement, ensuring both conceptual depth and operational applicability. Second, the coverage of target audiences is broad and well-aligned with policy needs. Resources address multiple stakeholder layers including local authorities, NGOs, utilities, and citizens, reflecting a systemic understanding of how energy poverty requires coordinated multi-actor responses. This diversity enhances knowledge diffusion and fosters a common vocabulary across institutions and practitioners.

Third, the technical quality of certain resources stands out. Projects like SocialWatt and ENPOR have produced sophisticated analytical tools that enable data-driven decision-making. These tools help policymakers identify vulnerable populations and prioritise interventions, thus bridging the gap between evidence and action. Fourth, several resources demonstrate strong dissemination and credibility. The Council of Europe's HELP platform and the EPAH e-learning hub benefit from institutional backing and large user bases, ensuring wide accessibility and sustained visibility. Moreover, many resources are multilingual and freely available, enhancing inclusivity across Member States. Finally, a subset of materials integrate participatory elements and social innovation. Initiatives like PowerPoor and Cooltorise involve communities directly in energy-saving actions, combining knowledge transfer with empowerment. This participatory ethos aligns with contemporary policy trends emphasising co-creation and citizen engagement. Together, these strengths form a robust foundation upon which a comprehensive, inclusive training platform can be built. However, as subsequent sections reveal, important shortcomings still limit the overall accessibility and intersectional relevance of current training programmes.

6.4 Weaknesses and Gaps Identified in Training Programs

Despite notable achievements, the SWOT analysis uncovered several systemic weaknesses that hinder the effectiveness of existing training initiatives, particularly regarding inclusivity and integration. The most pronounced gap is the absence of intersectionality. Very few resources explicitly address the combined challenges of energy poverty and disability. Most programs focus on one dimension while neglecting the other. As a result, the specific barriers faced by persons with disabilities, such as higher energy needs, income constraints, or accessibility issues, remain largely invisible in mainstream training materials. A second weakness lies in the overemphasis on technological solutions. Many trainings prioritise information on energy-efficient appliances, retrofitting techniques, or smart metering systems, while giving insufficient attention to behavioural change, social support mechanisms, and policy coordination, factors that are critical to addressing structural causes of energy poverty. Accessibility is another recurring concern. Many materials lack universal design features such as captions for videos, screen-reader compatibility, or simplified text. This not only limits usability for people with sensory or cognitive impairments but also reduces accessibility for non-expert users, including frontline workers without technical backgrounds. The analysis also revealed fragmentation and duplication across initiatives. Projects often develop resources in isolation, leading to overlapping content and dispersed knowledge. This fragmentation hampers learning continuity and complicates efforts to establish a unified training framework. Furthermore, some resources suffer from

context specificity. Trainings developed within national frameworks or pilot projects may not easily translate to other cultural, legal, or institutional settings. Without adaptation, their relevance beyond original contexts remains limited. Finally, update frequency is an issue, as many trainings are project-based and are not systematically revised after project completion. Consequently, they risk becoming outdated in light of evolving policies, technologies, and societal needs. Collectively, these weaknesses underscore the necessity for a coherent, accessible, and intersectionally aware training framework, precisely the gap ASSERT aims to fill.

6.5 Opportunities for Enhancing Stakeholder Training

The SWOT analysis identified multiple strategic opportunities to strengthen and expand the current training landscape. One major opportunity is the adaptation of existing high-quality resources. Robust materials like ASSIST's HEA curriculum or the HELP disability course can be leveraged, incorporating disability-specific content and accessibility enhancements. Another opportunity lies in applying co-design and participatory methodologies, such as those demonstrated in the TRIPS project. Involving persons with disabilities and frontline practitioners in future content development would ensure that training materials reflect real-world challenges and user experiences. The adoption of Universal Design for Learning (UDL) principles offers a further pathway for improvement. UDL promotes flexible, multimodal learning experiences, combining text, audio, visuals, and interactive elements, to accommodate diverse learning needs and abilities. It is also possible to capitalise on emerging digital tools and platforms. E-learning environments, gamified modules, and interactive quizzes can enhance engagement and comprehension, particularly when designed for mobile devices or low-bandwidth settings. Moreover, there is significant potential to integrate intersectional perspectives. Beyond disability, training programs could consider gender, age, and socio-economic factors that shape vulnerability to energy poverty. This holistic view aligns with EU priorities on equality and inclusion. Finally, strategic partnerships with Disabled People's Organisations (DPOs), NGOs, and academic institutions can reinforce quality, legitimacy, and dissemination. Collaboration can also facilitate co-certification or endorsement, increasing user confidence and uptake. By seizing these opportunities, ASSERT can position its Library as a flagship platform for inclusive capacity building in the energy poverty domain.

6.6 Threats to Effective Implementation and Capacity Building

Despite promising prospects, several external threats could undermine progress if not proactively addressed. A foremost concern is funding instability. Many existing resources were developed under time-limited EU projects, and the absence of mechanisms for ongoing maintenance risks obsolescence. Without sustained financial support, even high-quality materials may fall out of use. Policy fragmentation represents another major challenge. As mentioned in previous chapters of this report, in many Member States, energy poverty and disability remain separate policy domains, managed by distinct ministries or agencies. This institutional separation can hinder cross-sectoral collaboration and reduce incentives for integrated training. Institutional inertia and resistance to change may further slow adoption of inclusive approaches. Traditional training providers might be reluctant to modify curricula or invest in accessibility adaptations perceived as costly or complex. There is also the risk of redundancy, as without coordination, new projects may replicate existing materials rather than building upon them, leading to inefficiencies and confusion among stakeholders. Furthermore, legal and intellectual property constraints can restrict the adaptation or translation of resources produced under specific licensing conditions. Navigating these constraints requires careful planning and, in some cases, negotiation with content owners. Finally, technological disparities such as unequal access to digital devices or internet connectivity pose barriers to e-learning uptake, especially in rural or low-income communities where energy poverty is most acute. Anticipating these threats is essential, therefore strategies for sustained training should include plans for sustainable funding, cross-sector partnerships, and continuous monitoring to ensure long-term impact.

6.7 Conclusion about existing training and educational programs (Including short list of resources)

The results of the SWOT analysis clearly indicate that, although substantial training resources exist addressing energy poverty and, separately, disability rights, the integration of both dimensions is rare. ASSERT is thus uniquely positioned to fill this critical gap by curating, adapting, and expanding resources into a unified, inclusive knowledge base. The analysis supports a dual strategy of firstly reusing and adapting high-quality existing materials to embed disability perspectives, and to secondly develop new content where gaps remain, particularly around behavioural

change, inclusive communication, and participatory policy design. By implementing this strategy through the ASSERT Library, equipped with accessibility features and clear tagging by audience and theme, a comprehensive, dynamic, and intersectional repository on energy poverty for people with disabilities can be established. This platform will enhance the capacity of municipalities, intermediary organisations, and citizens to deliver fair, effective, and disability-sensitive responses to energy poverty across Europe, contributing directly to a more inclusive energy transition.

7. Consultations on the nexus between energy poverty and disability with decision-makers, experts, practitioners and professionals

7.1 Methodology of Consultations

A key element of work undertaken by ASSERT and the authors of this report was the survey of 64 stakeholder representatives from government, business, and third-sector organizations in the energy, social and disability sectors across Europe. The survey took the form of structured interviews lasting around one hour each, taking place either online or in person. Seven of the interviews were focused on the EU level, while the remaining 54 were based in the five pilot countries (9 in Cyprus, 12 in France, 10 in Greece, 11 in Italy, and 15 in Spain).

The Institute of European Energy and Climate Policy oversaw the development of interview questions, as well as data management and privacy protocols. The process of selecting and approaching the interviewees as well as the execution of the interviews themselves, was collaborative and iterative, involving all ASSERT piloting partners through a reflective and co-produced process. The interviews took place between February and May 2025, and were subsequently transcribed. Interviewees were recruited by all relevant partner organizations, while relying on existing European and national networks focused on energy justice and disability – e.g. the Energy Poverty Advisory Hub, disability advocacy groups, national and regional agencies, ombudsmen, expert bodies, foundations as well as practitioner groups. The wide range of professional, sectoral and governance contexts covered by the interviews allowed for a wide representation of all relevant stakeholder groups,

The interview questions were also informed by the literature review described in Chapters 2 through 5. Through consultations with all relevant partners and stakeholders, the project team defined a set of questions that were used both at the EU and national levels. These interview questions (see Appendix 1) addressed topics such as the identification of relevant household groups, the socio-technical and legal recognition of energy poverty, and effective practices for tackling the issue. They also explored best practices for reducing energy-related inequalities and identified opportunities for collaboration among public, private, and third-sector organizations. By compiling the responses of diverse organizational stakeholders, the interviews sought to build a comprehensive picture of how energy poverty affects disabled people and what systemic changes are needed to promote inclusion and equity.

The findings from the literature review and expert survey were then examined using thematic interpretive analysis. The analysis template for the analysis was also developed collaboratively across the consortium. It explored, on a country and EU-wide basis, how disability intersects with energy poverty through a justice-oriented lens by summarizing the interview findings across a set of shared themes.

The analysis matrix first reviewed direct policies that address the needs of people with disabilities, asking 'Which policies exist?' and 'Who develops and implements them?' to understand their scope, criteria, and target populations. It also considers indirect policies, identifying instances where disability-related measures unintentionally impacted energy poverty, and vice versa, highlighting who initiated these policies, where and when they were implemented, and their consequences. The template also focuses on the involvement of different sectors, asking whether the state, private, or third sector play a role, and why. It asks 'Which organizations and policies did they interact with and why?' to reveal personal and professional insights.

The interview analysis matrix incorporates recognition justice, interrogating whether energy policies sufficiently acknowledge the needs of disabled people, and procedural justice, asking 'Why and how were existing policies (not) ensuring fair participation?'. Distribution justice is explored through questions about eligibility criteria and resource allocation, while spatial justice concerns examine geographical disparities.

The template also examines the existence of indicators used to identify disabled people facing energy poverty, and the quality of data collection. Finally, it captures interviewees' views on desired policy changes, best practices, and policy adoption pathways, offering a comprehensive reflection on how justice had been embedded, or overlooked, in energy and disability policy.

The insights from the interview analyses (presented summatively in Chapters 7.3 through 7.8, with interviewee names anonymized to protect confidentiality, except for the summary of an inclusive language workshop summarised in Chapter 7.2) contributed to ASSERT's broader goal of equipping policymakers, practitioners, and communities with the tools and knowledge necessary to address disability-related energy injustices across Europe. This informed the development of a conceptual framework that provided the first unified EU-level categorization of the drivers and impacts of disability-related energy injustices across diverse socio-demographic, spatial, and economic contexts. It is hoped that the framework can play a role in helping understand and tackle these challenges at both national and EU levels.

7.2 Inclusive language workshop – key discussions and findings

A workshop, taking place online on the 27th. of November 2024, and attended by 24 people, was part of a broader effort, at the internal consortium level, to think actively, self-critically and comprehensively about the approaches, framings and vocabularies that should be used when talking about disability in the context of energy injustice. By learning from experts and holding a wider discussion about inclusive language, attendees listened to on-ground experiences and personal and professional stories, prompting us to proactively amplify conversations around disability both in our work and personal life.

Within the workshop, Antonella Candiago (ENIL) outlined the legal framework on the rights of people with disabilities with a focus on the UN Convention on the Rights of Persons with Disabilities (CRPD). The CRPD reinforces the obligation of states to promote and protect the fundamental rights and dignity of disabled people and introduces a shift from seeing disability as a medical issue to understanding it as *a human rights issue*, where disability results from the interaction between people and societal barriers. In doing so, the CRPD does not define disability rigidly; instead, *it acknowledges it as an evolving concept shaped by external conditions.*

Dr. Harrie Larrington Spencer, from the University of Westminster, shared personal experiences of physical disability and shared how the medical model assumes that disabled people need to be 'cured' or made 'normal' engraining a perspective that is passive and does not account for the reality that disabled people are defined by barriers. The social model of disability challenges this, stating that 'it is society which disables physically impaired people. Disability is something imposed on top of our impairments by the way we are unnecessarily isolated and excluded from full participation in society' (UPIAS 1976:14). As such, language also plays a role in reinforcing or challenging ableism: phrases such as 'wheelchair user' are preferable to 'person in a wheelchair' because they emphasize agency rather than restriction. Similarly, saying 'not disabled' rather than 'able-bodied' avoids reinforcing a binary distinction that places disabled people in opposition to an imagined 'normal' category.

Another point of reflection was *eco-ableism*, where environmental solutions fail to consider disabled people. A key example is the ban on single-use plastics, which some disabled people rely on for 'dignity, independence, safety, and cost'. Other infrastructural challenges, such as energy-conserving supermarket fridges in the UK that are inaccessible for wheelchair users, further highlight how ableism is embedded in design. Noteworthy in this sense is the statement 'nothing about us without us', that encapsulates the movement towards self-determination, where

disabled people assert that they 'know what is best for themselves and their community'. A fundamental approach to inclusion, contextualized by Teodor Mladenov, University of Dundee, is co-production so that disabled people are actively involved in policymaking. Co-production, 'a relationship where professionals and citizens share power to design, plan and deliver support together, recognizing that both partners have vital contributions to make to improve quality of life for people and communities', it is often seen to improve service quality, but co-production is fundamentally about social justice and human rights.

Cesar Gimenez from a Spanish DPO & Silvia Cutrera from an Italian DPO guided participants through another discussion focused on the significance of language, not just in terms of terminology but in shaping experiences: while language is important, mistakes happen, and intent matters. Someone trying to use respectful language in good faith should not be judged too harshly for minor errors.

An intersectional perspective was reiterated, noting that people with disabilities often face multiple layers of marginalization, including gender, race, and economic status. Silvia helped us reflect on disability and hate speech, a form of verbal or written communication that expresses prejudice, discrimination or hostility toward individuals with disabilities, showing how hate speech not only harms individuals emotionally and psychologically but also 'creates an environment where exclusion and inequality are normalized' and can discourage disabled people from fully participating in society. Inclusive language should reflect these intersecting forms of oppression to ensure equity in policy, however, achieving this in practice can be challenging, but the following guiding principles emerged from the workshop.

1. ***Adopt the social model of disability***: shifting from a medicalized perspective, which frames disability as a problem to be fixed, to a social understanding, which focuses on removing obstacles that prevent equal participation.
2. ***Be aware of regional and individual preferences***: while 'people with disabilities' is widely used, terminology preferences differ based on culture/geography, and personal identity. Some regions favor identity-first language (e.g., 'disabled people'), while others prefer person-first language. Ask and respect the preferred terminology.
3. ***Recognize that language is political***: and as such, also disability can not be addressed as a neutral topic – it is inherently political because policies shape the way disabled people experience the world. Efforts to be 'neutral' often reinforce the medical model by failing to acknowledge the structural nature of disability. Instead, policymaking should centre the voices of disabled people, ensuring that they are involved from the earliest stages rather than being consulted as an afterthought.
4. ***Avoid deficit-based language***: by going over phrases that suggest limitation or pity. Terms used referring to non-disabled people as 'able-

bodied' reinforces a binary distinction. Using 'not disabled' instead is a more neutral and inclusive choice.

5. ***Address intersectionality in language***: disability does not exist in isolation, it intersects with gender, race, economic status, and other social categories. Inclusive language should acknowledge these overlapping experiences rather than treating disability as a singular, homogenous identity.
6. ***Understand that language reflects power and experience***: since words shape how disabled people are perceived and treated in society. However, language is not just about terminology; it also reflects access to power: policies and discussions should be shaped by disabled people's lived experiences rather than imposed institutional frameworks. In cases where mainstream institutional language clashes with the language preferred by disabled communities, priority should be given to the voices of those directly affected.

7.3 EU level interviews

7.3.1 Current policy development and implementation

Interviewees at the EU level highlighted that various initiatives have been launched to address energy efficiency and renewable energy in both commercial and residential buildings. A significant policy framework is the EU Green Deal, which includes renovation strategies to improve energy efficiency in buildings. However, a key issue with these strategies is that they rarely make specific references to disabled people. Instead, policies generally refer to 'vulnerable groups', a broad category that includes older people, low-income households, single-parent families, and disabled individuals. The lack of explicit recognition makes it difficult to ensure that disability-related energy needs are properly addressed. As pointed out by one of the interviewees (a member of a Europe-focused intergovernmental organization affiliated to the United Nations): 'Many of these initiatives always refer to vulnerable groups, but persons with disabilities are not specifically mentioned (...). National governments may have specific targeted initiatives, but at the EU level, persons with disabilities are mostly grouped under ''vulnerable populations''.

The interviewees reflected on existing definitions of vulnerability in energy markets, noting that long-term health conditions and disabilities often appeared in national definitions of energy vulnerability. However, it was suggested that these definitions were outdated and required further revision and research.

An interviewee working for a European expert energy organization recalled the Trinomics report, an early study that examined national definitions of vulnerability across Member States, listing them in an annex. This interviewee suggested that the work needed updating, particularly in the context of recent legislative developments such as the Energy Efficiency Directive (EED). The interviewee

pointed to Article 8 of the EED, which prioritizes vulnerable households, energy-poor households, low-income populations, and people in social housing. The interviewee believed this legal framework provided an opportunity to reassess and refine definitions of energy vulnerability, particularly concerning disabled individuals.

Several national examples of successful policies were listed. For example, the Netherlands and Belgium provide automatic reductions on electricity and gas bills for disabled people, but without additional training or awareness campaigns. A common approach across many countries is the provision direct financial support, such as reduced energy tariffs for disabled people. However, this is not associated with training or awareness on sustainable energy use. Some policies indirectly target disabled people by addressing broader housing issues (e.g., social housing renovation programmes in France and the Netherlands), but there is a lack of explicit disability-focused energy policies. It was highlighted that policymakers often assume that general social policies will reach disabled people, but in practice, this is not always the case: 'Despite the fact that you get funding, you still need to have the money. Even if it's 40%, you still need to pay that other 60%' (Disability rights organization co-chair).

An academic expert described a policy mechanism where disabled people could register as 'critical power customers' through a state utility commission: this required an annual doctor's note confirming power dependency due to medical needs. However, this system did not provide actual protection during crises: 'there is a caveat in the form that says this does not guarantee an uninterrupted power supply… people are told you need to be prepared and so people dutifully do these things. And then, in the moment that they need it the most, they actually realized: no, there is no individual switch that can leave power on for power-dependent people in a context like this'. Also, the expert noted how often these systems are focused narrowly on individual preparedness rather than system-wide protections. 'Special needs registries' were cited as an example of a well-meaning but ineffective tool where one can register to get access to some sort of assistance during disasters, but 'These registries provide people with a false sense of security that somebody is going to come and rescue them'.

When it comes to examples of indirect energy poverty policies that inadvertently address disabilities, one of the interviewees (an academic expert) shared examples of how energy poverty, infrastructure failure, and disability intersect in cascading harm cycles. In one case, a low-income rural resident lost essential equipment due to a power surge, worsening future exposure to heat: 'Her wheelchair, fridge, and air conditioning fried during the blackout… and she cannot afford to get her air conditioning fixed'. Additionally, deregulated energy markets were described as amplifying vulnerability through predatory pricing mechanisms.

The United Nations Framework Convention of Climate Change's Disability Caucus was listed as a successful example in terms of the ability of existing policies to involve the state, private or third sectors in a collaborative manner.

Regarding Interviewee evaluation of the existing national/EU policy context, the interviewees highlighted the importance of collaboration in tackling these issues and stressed that policy frameworks needed to better accommodate the specific energy needs of disabled individuals. It was emphasized that people with physical disabilities have very specific requirements in terms of appliances, assistive devices, and home adaptations – all of which increase energy use.

An interviewee working for a European policy organization explained that while broader energy hardship programmes existed, they often failed to consider the unique challenges faced by disabled people. These challenges included higher energy needs due to medical devices, mobility limitations, and financial constraints. One of the few exceptions identified was a National Energy Action (NEA) programme, where a case study by Danielle Butler has examined the energy-related hardship faced of disabled people. Nevertheless, such programmes were rare, and energy justice initiatives frequently overlooked disability as a key factor.

7.3.2 Justice pathways

In evaluating the EU policy context in terms of ***recognition justice***, interviewees underlined that energy poverty is often just one part of a larger pattern of social exclusion for disabled people. Many face barriers in employment, housing, and social services, which means their energy poverty is not just about high bills – it is about systemic disadvantages. An employee of a European energy research and policy organization stated that: 'There is no direct mention of specific support for disabled people in most EU energy policies … Energy poverty is not a standalone issue. It's part of a larger set of social inequalities that persons with disabilities face'.

It was underscored that EU policies should be clearer in defining eligibility criteria for energy-related disability support. Currently, many EU-level guidelines leave implementation up to Member States, creating large disparities in access to support. As stated by one interviewee: 'It would be helpful if EU strategies were more specific about eligibility criteria, rather than leaving everything to national governments (European energy research and policy organization interview).

When it comes to ***procedural justice***, it was emphasized that NGOs and disability advocacy groups should be involved, but there should also be direct engagement with disabled people, offering training to increase participation.

As for ***distribution justice***, interviewees highlighted that many countries provide reduced energy rates and disability pensions, but amounts are insufficient. And regarding ***spatial justice***, one of the interviewees, working for a European energy

policy organization, speculated that certain geographic areas might experience concentrated vulnerability, creating energy poverty hotspots. Understanding these regional variations could help policymakers target interventions more effectively.

7.3.3 Indicators and data

Interviewees were not aware of a specific indicator framework exclusively for disabled people. The EU has started integrating disability indicators into statistical surveys, but these remain broad and do not directly measure energy poverty. The GALI definition (Global Activity Limitation Indicator) has been included in EU-wide surveys since 2022, improving data availability.

Regarding data collection and sources, most national-level energy poverty indicators still rely on administrative data, meaning they only capture people already receiving disability benefits, and miss those who are not formally registered as disabled. Collaboration between government agencies, social insurance programmes, and energy providers is needed to ensure disabled people are properly identified for support programmes.

Interviewees stressed that governments do not collect disaggregated data on energy poverty and disability, making it difficult to design targeted policies and that existing data mainly comes from social benefits registries, but not all disabled people qualify for these benefits, so the data is incomplete: 'If you get disability benefits, they assume it covers everything. But disability is expensive, and energy costs are rizing. It's not enough (...). Energy suppliers do not track whether a customer is disabled, so how can we even measure the problem?' (Interview with disability rights organization co-chair)

When speaking about the state of knowledge on energy poverty-disability identification and monitoring, one of the interviewees, working for an energy policy organization, highlighted a comprehensive international review of energy poverty alleviation programmes, which aimed to assess various approaches to alleviating energy poverty. The interviewee noted that very few programmes specifically addressed the needs of disabled individuals.

Interviewees also highlighted the need for a comprehensive analysis of Member States' definitions of vulnerability to determine which health conditions and disabilities were included, how much of the population these definitions covered, and which groups remained unrecognized. It was proposed that a systematic review of these definitions across Europe would be a valuable starting point for further research. Moreover, it was suggested that a thorough review of existing studies and policy frameworks could help establish a clearer picture of where disability fits within energy justice debates. It was also noted that some countries' definitions link social vulnerability to respiratory illnesses, or conditions that require

continuous access to electricity for medical devices. The interviewees suggested that a comparative study of these definitions across Member States would be particularly useful in identifying gaps and inconsistencies in existing policies.

The interviewees also highlighted two approaches for considering vulnerability in energy poverty. The first was the access lens, which considered physical and structural barriers that prevented people from securing adequate energy. The second was the income lens, which looked at financial constraints affecting a household's ability to afford energy. The interviewees emphasized that, while vulnerability was a known issue in energy policy, disability had not been widely discussed in this context. They noted that the literature on this subject was limited, with very few studies explicitly examining the energy-related challenges faced by disabled individuals.

In response to a direct question about whether they had encountered standout examples of disability being considered in energy justice discussions, one of the interviewees admitted that they had not come across any significant references. This, the interviewee suggested, indicated a serious research gap that needed to be addressed.

7.3.4 Policy recommendations and best practices

Interviewees reiterated the importance of data in understanding and addressing energy vulnerability. They stressed that identifying relevant datasets should be a priority, as current research in this area remained fragmented and incomplete. Improved information collection and integration, therefore, is a must.

The mandatory inclusion of disability considerations in all climate and energy policies was highlighted: 'We need mandatory disability impact assessments before any major climate or energy policy is approved' (Disability rights organization co-chair, 3rd March 2025).

The need for government enforcement to ensure energy providers offer green energy to disabled people on social tariffs was also emphasized, alongside:

- Increased representation of disabled people in policymaking.
- Adding disability-inclusive criteria to EU financing mechanisms.
- Targeted financial aid for disability-related energy needs.
- Financing disabled people's organizations (DPOs) to work on climate and energy topics.
- Monitoring the impact of financial subsidies to ensure they lead to sustainable improvements.

Across the interviews, it was suggested that disability should be mainstreamed across multiple sectors, rather than being treated as a special case. Energy policies

should automatically include disability needs – via cross-sectoral and local solutions – rather than treating them as an afterthought.

Moreover, engagement needs to move beyond creating 'special services', instead focusing on structural resilience. Disability must be integrated into core infrastructure and energy planning: 'The very thing that is essential for disabled people's well-being is also important for everybody else, and that is keeping our infrastructure functioning... Pull disabled people into that conversation about what does it mean when our infrastructure fails, especially when it fails in a life-threatening weather event' (Interview with disability rights researcher expert).

In terms of best practices, a few national examples were listed, including:

- Finland has a Disability Ambassador in their Energy Department, conducting research on how rizing energy prices affect disabled people. The Green Foundation funds disabled people's participation in climate conferences, but there has been no representation at major EU climate discussions.
- In South France, a low-profile, neighbourhood-based approach was used to help social housing residents, including people with disabilities. However, the policy itself was not explicitly aimed at disabled people but rather low-income residents.
- The Netherlands prioritized keeping elderly and disabled people at home longer through home investments, temporarily relocating them while renovations took place.
- Energy vouchers or top-up schemes are another potential solution. Here, disabled people receive an extra financial supplement to cover energy costs related to assistive devices and adapted living conditions.

Regarding policy adoption pathways, interviewees highlighted that disabled experts should be recognized as professionals and compensated for their time and expertise, just like other policy advisors. Reasonable accommodations, accessible documents, transportation, and assistance, should be provided. Many disability organizations are overwhelmed with survival-level advocacy (e.g., education, employment, income support), so energy issues are not a priority for them unless targeted efforts are made. Specific measures for policy adoption included:

- Training disabled individuals on energy topics before policy discussions.
- Providing financial resources to support participation.
- Making information accessible, including website adaptations and surveys targeted at disabled people.
- Energy providers should collect and report disability-related energy needs, but currently, this data is not gathered.

- Direct financial compensation providing higher disability allowances to account for increased energy needs (e.g., assistive devices, heating, cooling).
- Subsidies for assistive devices reducing costs for mobility aids, medical equipment, and adapted home features that require energy.
- Energy supplier discounts offering lower energy rates or bonuses specifically for disabled households, which could be handled either through social policies or energy providers.

Another EU-level interviewee highlighted the need for ensuring green energy access for disabled people receiving social tariffs. In Belgium, where people receiving energy subsidies automatically lose access to green energy: 'Once you qualify for the social tariff, you are automatically put into a non-renewable energy contract' (Disability rights organization co-chair, 3rd March 2025).

7.4 Cyprus

7.4.1 Current policy development and implementation

In Cyprus, direct energy poverty policies tailored specifically to people with disabilities remain limited, with most measures instead subsuming them under the broader category of 'vulnerable consumers.' Indeed, the most explicit provision is found in the Electricity Law, which recognizes individuals with heavy physical disabilities, paraplegia or tetraplegia, blindness, and certain chronic illnesses such as multiple sclerosis or Raynaud syndrome as vulnerable consumers. As such, these groups benefit from reduced tariffs and protection against electricity disconnections, as well as disability is also included as an eligibility criterion in the national definition of energy poverty. Targeted grants from the Ministry of Energy are available for people with medium or high cognitive disabilities and those with severe mental disabilities, though others with less severe conditions remain excluded from both energy-related schemes and the Minimum Guaranteed Income. Broader vulnerability-based measures also apply, but definitions remain narrow: while heavy physical, mental, or sensory disabilities, and some moderate to severe cognitive disabilities, are included, many people with serious bodily disabilities fall outside the eligibility scope. Indirect policies contribute to support in other ways: a 12% quota for public sector jobs provides income security for disabled people, while social housing schemes may accommodate disability needs on financial grounds, although no direct energy-specific measures exist. At the structural level, Town Planning Department guidelines mandate accessibility in building design, such as higher lighting levels for the visually impaired and accessible electrical equipment, which indirectly shape energy use. Municipal initiatives also play a role, for instance in Strovolos, where KTIZO funding supports energy-efficient renovations in refugee settlements, benefitting residents with disabilities among others. Despite these provisions, gaps remain significant, as

many people with disabilities are either insufficiently covered or indirectly addressed, leaving their specific energy-related needs largely unmet.

In terms of indirect energy poverty policies that inadvertently address disabilities it was highlighted that, for vulnerable consumers, including people with disabilities, challenges arise from structural gaps: for instance, the Cyprus Consumer Association highlighted issues such as misleading green claims on appliances, which leave low-income and disabled consumers at risk of buying inefficient products that increase household energy costs. Similarly, while a Special Tariff exists for low-income households, its self-registration requirement excludes nearly 10,000 of an estimated 35,000 eligible consumers. Social services offer funding for medical devices, home modifications such as lifts, and adapted vehicles, which, though not designed as energy poverty measures, indirectly support households facing higher electricity needs. National renovation grants also provide higher subsidies for vulnerable consumers, yet high upfront costs still prevent many low-income disabled households from benefitting. In social housing, people with disabilities can request priority allocations (e.g., ground-floor units or adapted apartments) though these provisions address accessibility rather than energy efficiency. Additionally, income-linked schemes often create further barriers: as noted, disabled individuals with pensions exceeding €480 are excluded from other forms of aid, while not all disabled people are formally recognized as 'vulnerable consumers,' limiting their access to support. Some measures extend indirectly through institutions: grants for energy upgrades, though not targeted, benefit facilities housing people with severe cognitive disabilities by improving their living conditions. At the local level, wraparound services play a significant role. In Athienou, the Community Volunteer Council has long supported schools, nursing homes, and care facilities, including helping residents access reduced tariffs, while in Pyrga, a government-appointed social worker supports disabled people in 15 villages to navigate available energy assistance.

Sector-wise, the general consensus is that policies are designed and implemented at the national level with a lot of groundwork carried out by organizations in loco. Across the existing national policy context, interviewees reported a persistent misalignment between the lived realities of people with disabilities and Cyprus's current policy framework on energy poverty: across organizations, there was consensus that disabled people face higher and often non-negotiable energy needs, linked to medical devices, daily care, and housing requirements, yet existing policies largely subsume these under the broader 'vulnerable consumer' category without tailored recognition. Indeed, many noted that eligibility thresholds, exclusionary criteria, and complex application procedures can prevent access to available support, while consultation with disabled people on energy and housing policies remains limited despite legal obligations to carry them out. Experiences at municipal and community level showed more direct engagement, with local actors providing hands-on support to residents with disabilities, including through

housing renovation schemes and social services; while some support mechanisms exist, they are fragmented and poorly adapted to the specific circumstances of people with disabilities.

To summarize: the main challenge identified is the invisibility of disabled people's energy needs due to gaps in data, inaccessible information, and rigid eligibility criteria. Many disabled people do not engage with official systems, relying instead on civil society networks. Interviewees stressed that disability itself should be recognized as an indicator of vulnerability, rather than being tied to income or housing metrics, which excludes those with high unavoidable energy costs. Other obstacles include outdated or missing energy performance data, complex grant processes, exclusion of people with mild cognitive disabilities from support, and overly technical communication. Collectively, these gaps perpetuate the under-recognition of disability in energy poverty monitoring.

7.4.2 Justice pathways

When evaluating the energy-disability policy nexus in terms of ***recognition justice***, there was broad agreement among the interviewees that the specific energy needs of people with disabilities are insufficiently recognized in Cyprus's policy frameworks. As previously mentioned, disability is generally embraced under the generic category of 'vulnerable consumers,' without a proper acknowledgement of the additional, non-negotiable energy demands associated with medical devices, accessibility modifications, or daily living requirements. This partial recognition, with eligibility often tied to 'degrees' of disability and significant groups excluded, makes it so that structural gaps persist, such as energy-inefficient care facilities that are not prioritized for upgrades, or accessibility guidelines that apply only to public buildings but not private housing.

Regarding ***procedural justice***, interviewees pointed to bureaucratic hurdles, inaccessible communication, and financial barriers as key obstacles preventing disabled people from participating fairly in energy-related support schemes: practical examples brought in by the interviewees state that requirements such as self-registration for tariffs or high upfront costs for grant schemes will exclude many who lack the capacity or resources to comply. Likewise, application processes are often too complex for those with cognitive disabilities, and information is communicated in overly technical terms. Also, as formal consultation mechanisms also fall short, although a 2006 law mandates consultation with disabled people, as consultations are rarely applied to energy or housing policies. In practice, participation is reactive and fragmented, with local volunteer councils or municipalities filling the gaps through informal, personalized support rather than systematic engagement.

As for ***distribution justice*****,** eligibility criteria and support mechanisms often work against disabled people, either through poverty traps, rigid thresholds, or ineffective delivery structures. For instance, formal inclusion does not guarantee access: self-registration rules and reliance on households' own financial capacity to invest in efficiency measures exclude many low-income disabled people. Or even, aid is frequently channelled through energy companies rather than directly to households, raizing concerns about whether it reaches those most in need. Also, existing measures (reduced tariffs or priority in housing applications) offer only limited relief, while lack of bank incentives for affordable loans further restricts energy efficiency improvements. Ultimately, disabled people risk being trapped in poverty to retain support, while those slightly above income thresholds lose access entirely.

Spatial injustices are visible in both housing and infrastructure; while there are isolated initiatives, such as Cyprus Land Development Corporation's (KOAG) pilot social housing for people with mental disabilities or Strovolos's 'KTIZO' programme upgrading refugee housing stock, these remain exceptions. More generally, the built environment is marked by widespread non-compliance with accessibility standards, including in public buildings, which reinforces exclusion from energy-related services and facilities. Nevertheless, local and regional offices sometimes provide more capillary support, but structural enforcement of accessibility and housing standards remains weak.

7.4.3 Indicators and data

There are no disability-specific indicators for energy poverty in Cyprus. Existing national metrics, such as income below the poverty line, energy costs exceeding 4% of income, or dwellings with energy performance category D or lower, do not include disability-related data. The only partial reference comes from the Committee for Intellectual Disabilities, which holds demographic data on people with cognitive disabilities and related facilities, but these are not linked to energy poverty. Several interviewees argued that disability status alone should be sufficient to define vulnerability, but this is not reflected in practice.

Systematic data linking disability and energy poverty is absent. Public authorities track eligibility for schemes like the Special Tariff, but without distinguishing how many beneficiaries are disabled. Housing authorities receive disability data indirectly for allocation purposes, yet this is not applied to energy assessments. At local level, Strovolos municipality used EPAH tools to analyse building stock and conduct interviews on energy poverty, but without a disability focus. Access to national income data was also noted as a barrier for municipalities.

7.4.4 Policy recommendations and best practices

Interviewees identified a wide range of immediate and long-term policy changes to better address the energy needs of people with disabilities in Cyprus. A recurring priority is simplifying access: schemes like the Special Tariff should be automatic for known eligible groups, and application processes made more accessible, especially for those with cognitive disabilities. Current eligibility rules often exclude disabled people, for instance, age restrictions on homes for renovation grants or rigid income thresholds, and need to be reformed to account for disability-specific, non-negotiable energy needs. Interviewees also called for financial mechanisms that do not require high upfront payments, such as bank partnerships offering no- or low-interest loans, possibly through the Social Climate Fund. Expanding social housing that integrates both accessibility and energy efficiency was seen as essential, alongside prioritizing upgrades for care facilities and older buildings. Several emphasized support for carers, whose inadequate recognition leads to higher household energy use and isolation. At the community level, local councils and volunteer networks were seen as critical actors whose role should be formalized in inclusive planning. Collectively, the recommendations highlight the need for tailored, rights-based energy support for disabled people, rooted in recognition of their unique and unavoidable energy demands.

Examples of best practices were relatively scarce, but several initiatives were highlighted. Collective solar panel purchases organized by consumer groups demonstrated how instalment-based financing can outperform national grants in affordability. The municipality of Aradippou's PV parks were cited as a good example of local energy planning that benefits vulnerable households broadly. Community-based models were emphasized: Athienou's long-standing Volunteer Council illustrates how wraparound social support can indirectly address energy vulnerabilities, while Strovolos's KTIZO building upgrades show how improving poor housing stock can enhance both energy efficiency and social equity. Other examples included regional support offices run by disability committees, which, while not energy-focused, show the value of integrated, person-centred services, and collaborations with universities to produce simplified communication materials. While these initiatives are not systematically targeted at disabled people, they offer templates for inclusive and practical approaches that could be scaled or adapted.

In terms of policy adoption pathways, where suggestions were made, they pointed to the need for stronger collaboration and decentralization. The Committee for Intellectual Disabilities stressed that ministries, local governments, and disability organizations must coordinate more effectively, with the latter playing a central role in co-designing accessible and inclusive policies. Municipal leaders also advocated devolving more resources and decision-making powers to local authorities, who are better positioned to adapt national policies to local realities

and involve disabled residents directly through trusted community structures. Together, these perspectives suggest that future progress depends on embedding disability expertise into policymaking processes and empowering local actors to deliver context-sensitive solutions.

7.5 France

7.5.1 Current policy development and implementation

In France, most disability-related policies conceal individual experiences of people with disabilities. Interviewee point out that the country still has significant progress to make. For instance, only recently, the full coverage of wheelchair costs was put in place, thanks to the work of Sébastien Peytavie, MEP who uses a wheelchair. In terms of direct policies to address the needs of people with disabilities, most interviewees cited the Allocation aux adultes handicapés (AAH) which corresponds to maximum €1,033.32 for a disability between 50% and 79% or above. Several interviewees suggested that this amount is insufficient. In addition to the AAH, the Prestation de compensation du handicap (PCH) aims to cover the specific spendings linked to the disability. As pointed out by one of the interviewees (a former social worker, now working in an energy transition network): 'In the prestation de compensation du handicap, an assessor from the MDPH (Maison Départementale pour les Personnes Handicapées). or pension funds will evaluate the difficulties encountered by a person in their home … Assistance may then be granted to compensate for the disability (e.g., home help). However, this is seen as an income supplement and is not easy to obtain, as the process with the MDPH can be lengthy'.

For children, caregivers can request the support of the Allocation Enfant handicapé and the invalidity pension from social security is available if a person is acknowledged invalid and unable to work. Finally, the FIPHFP collects financial contributions from public sector employers and the AGFIPH supports people with disabilities to create their own company. The DALO also exists as an additional right for disabled people to apply for social housing. To request support with the demand procedures, people with disabilities can reach out to the MDPH (Maison Départementale pour les Personnes Handicapées). This service allows to submit requests online and send it to the local MDPH for processing. The MDPH can be used a beneficiary or as the legal representative of a beneficiary. However, activists such as Les Dévalideuses point out that the difficulty of proving vulnerability every 5 years to the MDPH, and the frequent refusal of aid.

In terms of policies which indirectly address the needs of people with disabilities, the SLIME programmes focuses on the identification, guidance and support of households in energy poverty. The individualized approach allows the identification

of specific needs of the person with a disability. The OPAH also aims at improving housing (particularly social rental) and the living environment surrounding it such as local services. As people with disabilities are often represented in social rental housing, OPAH thereby improves their living conditions. Same for the PDLHI (Pôle de la Lutte contre l'Habitat Indigne) and the FSL (Fonds de Soliarité Logement) from the Caisse of Allocations Familiales. Here, one of the interviewees (a representative of a disability rights advocacy group) highlighted that 'FSL was not initially not accessible to disabled people in their region … generally speaking, there is a lack of specific targeting in energy policies (efficiency, renovation, etc.) (…) [relevant policies] do not take account of additional costs specific to disability'.

On top of this, Ma Prime Adapt' is the main government aid for adapting to loss of autonomy. It is available to homeowners and co-owners, whether they occupy their property or rent it out, as well as for tenants in the private housing sector. This can address some energy poverty aspects. Despite the numerous aids available, the interviews suggest that support remains complex to access and tends to be insufficient or underfunded.

At the same time, MaPrimeRénov supports home renovation. It is important to note, however, that the French government recently announced the end of MaPrimeRénov'. Moreover, what stood out during the interviews is the lack of coordination with actors, and that decisions tend to be centralized. Funding tends to go to big organizations such as APF France Handicap or UNAPEI although the work is carried by locally implanted structures. In fact, most policies and decision-making remain centralized. which disadvantages small structures led by activists. Smaller representative groups like Handisocial, led by people directly concerned, struggle to get funding or be heard in decision-making.

Furthermore, public programmes usually do not focus specifically on people with disabilities. At the local level, activists have been pushing for changes, for example, by making sure the FSL amounts are adjusted together with the AAH. Also, private actors such as landlords and builders get renovation subsidies, but they are not much trained or required to ensure accessibility. Many interviewees work with the SLIME and collaborate with local and regional organizations such as DAC, ARS, and Les Petits Frères des Pauvres, to support vulnerable populations, including those with disabilities. However, institutional gaps such as the lack of a disability-specific evaluation framework or accessible communication tools like sign language interpreters, limit the effectiveness and inclusivity of these interventions.

The key concern outlined by interviewees is the fact that policies rely on administrative criteria to explore disability and standardized energy poverty indicators that fail to reflect the specific needs of disabled people such as higher indoor temperatures or increased space requirements. The diversity of disabilities complicates assessment, as needs vary widely depending on the type and severity

of the condition. In addition, the poor coordination between sectors, such as health, social services, and energy, also limits effective responses, while communication barriers and inaccessible information make it difficult for people with disabilities to engage with existing support systems.

Here, a group of interviewees working for a public body that aims to improve private building stock by managing and providing support mechanisms for energy renovation highlight how 'in Montreuil, we once had to rely on a municipal service that provided an interpreter, as we felt quite helpless. Home visit officers undergoing job integration programmes did not know sign language, which is a fundamental issue if we want to communicate effectively with households and ensure they feel included. This leads to infantilizing people with disabilities, simply because we don't have the right communication tools'.

7.5.2 Justice pathways

In evaluating existing policies, the interviewees discussed many limitations to ***recognition justice***. In fact, the needs of people with disabilities are not sufficiently acknowledged in most energy related policies. The focus tends to be on general poverty rather than the specific circumstances of disability Policies may recognize some physical needs, such as mobility issues, but they rarely consider how much energy someone might need for medical equipment or to stay warm at home for instance. These everyday realities are often invisible. Furthermore, the focus is often on the facilities for people with disabilities rather than on individual homes. As discussed above, programmes like MaPrimeAdapt' offer help with home adaptations, but they are the exception, not the norm. A case-to-case approach could be a solution to acknowledge people's needs, but this would require resources that many local based activist-led organizations lack. In addition, it is important to pay the activists and experts involved. Expertise is work and therefore deserves to be paid. In terms of ***procedural justice***, the centralization of policymaking and decision-making is one of the limitation to the fair participation and engagement of people with disabilities. Processes tend to rely on large, service-managing organizations which do not represent the actual voices of people with disabilities.

When it comes to the eligibility of people with disabilities to receive support, most policies use income, housing type, or energy usage as criteria which poses issues in terms of ***distribution justice***. Furthermore, financial support such as the AAH does not reflect the financial cost of a disability. In general, disability is rarely included in eligibility mechanisms, making it harder to access help without navigating a complex and often inaccessible system. Statistically, people with disabilities and especially mental disabilities are less likely to request the help to which they are entitled: they isolate themselves, which is a barrier Concerning ***spatial justice***, the focus tends to be on physical disability: adapted housing is adapted to a particular

person. Interviewees suggest acknowledging validist biases to create policies which accurately represent the complexity of disability. Many French departments (i.e., regions) are developing observatories on energy poverty within their territories, to focus on specific geographical areas. In this context, as discussed above, the renovation of very old social housing is a focus. However, such approach falls short in identifying the variety of housing of people of disabilities. Finally, programmes like Ma Prime Adapt' mainly target private homeowners and are not used for social housing tenants.

7.5.3 Indicators and data

Current disability and energy poverty indicators are often inadequate to properly identify people with disabilities who experience energy poverty. They tend to rely on administrative recognition which leaves out many concerned people, especially those with undiagnosed or less visible conditions. On that line, the 2024 DREES report shows a big gap between people who declare activity limitations and those who are officially recognized. Moreover, current indicators are not linked although this year, the APF report highlighted that 8% of people with disabilities experience energy poverty. In practice, energy poverty indicators are mostly based on income thresholds or status such as being below the RSA level do not reflect the real living costs for disabled people. Interviewees suggest using more practical, or self-reported indicators, such as whether someone can control their heating, or if they feel sufficiently warm, or whether they have energy-related debts. Activists suggest focusing indicators on the following two questions : 'Does giving up heating have an impact on your health?' or 'Are you hindered in your daily life?' These should be used alongside other metrics, like housing conditions or specific health needs, rather than in isolation. Also, current indicators are not always comparable or reliable, for example comparing CMU eligibility with AAH status, which can create confusion.

Yet, some relevant indicators exist to identify energy poverty, but they are not specifically tailored to people with disabilities. For instance, within the SLIME programme, tools like the Energy Effort Rate, thermal discomfort, and housing-related health issues are used together during home visits, which can be used as a basis since the AAH falls under the disability allowance when evaluating the situation of a person experiencing energy poverty.

Moreover, indicators tend to be general and do not distinguish between disabled and non-disabled individuals. In terms of data collection methods, the interviews suggest that they remain too focused on administrative categories and are not reflective of real-life situations. As highlighted by one of the interviewees (a disability rights advocate): 'Most data come from official sources like the MDPH, and are based on eligibility for benefits such as the AAH, which excludes many people with disabilities who either do not apply or do not meet strict criteria. Surveys often

fail to include self-reported experiences or practical questions about daily energy use, comfort or accessibility'.

7.5.4 Policy recommendations and best practices

Interviewees cited a few successful projects who are considered best practices. The local health/préca project led by Quercy Énergies, which combines awareness-raizing, home visits, and small-scale improvements, supported by regional funding was for instance cited. Also, successful measures were implemented thanks to the activist involvement, such as success in having a disability criterion included in the PDLHPD. Awareness campaigns and the use of advisory platforms are cited as useful strategies. When it comes to adapted communication, the experiences with GEFOSAT training and the SLIME programme's model apartment were cited: this was adapted for deaf audiences with interpreters, in collaboration with ARIEDA. Creating a toolbox to help individuals navigate available services and assistance, tailored by type of disability and target group was also suggested. Moreover, adapting electricity contracts for people with disabilities can help lower heating costs and optimize energy use. Activists suggest that consumer prices should be proportional to wages. There already exist food solidarity programmes: purchase of local currency at 30% of its value for certain groups, which enables them to eat well at a lower cost (a type of social security for food). This could be further applied for energy.

As pointed out by an energy agency employee, 'The needs of people with people with disabilities are mostly missing from current energy policies … Policies may recognize some physical needs, such as mobility issues, but they rarely consider how much energy someone might need for medical equipment or to stay warm at home. These everyday realities are often invisible. Many barriers also go unacknowledged. Online-only applications or complex paperwork make access difficult, especially for those with cognitive or mental health conditions. This happens because energy policies tend to focus on cost, emissions, or income. Disability is not used as a key factor and energy services rarely coordinate with social or health sectors. This leads to real needs being left out'.

There is a need to rely on funding models and leadership structures based on direct representation, similar to those used in family associations for example. This would make consultations more inclusive. Such structures would put emphasis on training public officials on disability rights and would further involve local authorities and independent experts in equal partnerships with disabled-led groups. Also, building stronger links between hospital rehabilitation services and housing professionals is a suggestion. Successful implementation such as through the 'springboard flats' included visits to adapted homes after a person leaves the hospital. This was the result of a collaboration between health services with organizations like SOLIHA and France Rénov'. Improving coordination between

local energy agencies and disability services is a way to envision such collaboration. It would require involving social landlords and ensuring that all relevant actors (including associations with direct ties to people with disabilities), work together to clarify roles and responsibilities. This would help in identifying hidden cases of energy poverty and conduct more detailed assessments once assistance is granted.

To address these issues, interviewees called for user-centred approaches to data collection, direct communication across services, and improved accessibility through tools like easy-to-read documentation. Priorities include rendering disabled people more visible in policy, tailoring energy poverty indicators, and recognizing the strong links between disability, health, housing, and energy needs:

- In the ***short term***, the focus should be on simplifying communication of people with disabilities and accessible information, especially for those with mental or sensory disabilities, including the use of sign language interpreters, braille, and easy-to-understand documents. Restoring automatic access to the energy cheque for people with disabilities was emphasized to make the relation between people with disabilities and their rights (since the AAH is among the criteria list to receive the cheque, this is easily feasible).
- In the ***medium term***, better coordination between energy, housing, disability, and health services was repeatedly mentioned, along with training for frontline workers to understand and respond to diverse disability-related needs. The importance of involving disabled people (and especially activists) directly in shaping policies was also highlighted, in order to ensure that their needs are reflected.
- ***Longer term*** priorities include the full integration of disability into energy and housing policies and reinforcing landlords' obligations to renovate energy-inefficient housing and providing adapted housing during renovations, particularly for disabled tenants who lack control over building conditions.

7.6 Greece

7.6.1 Policy development and implementation

In Greece, a common theme within the interviews was the lack of targeted energy policies exist for people with disabilities, leaving them dependent on general subsidies for vulnerable populations. Several mentioned 'Save at Home', a programme that provides financial incentives for home energy upgrades, such as window replacements and insulation, but noted that it does not offer additional benefits for people with disabilities. Others pointed to the Social Electricity Tariff, which provides discounted electricity rates for low-income households, including

some people with disabilities. However, eligibility is based on income rather than specific disability-related energy needs. A few interviewees also highlighted that individuals reliant on essential medical devices, such as oxygen ventilators, cannot have their electricity cut off due to unpaid bills, though no direct financial aid exists to cover their increased energy consumption. Overall, some interviewees agreed that while financial incentives for energy efficiency and discounts for vulnerable groups exist, there is no structured policy that explicitly addresses the unique energy challenges faced by people with disabilities. Others stated that they were not aware of any policies specifically targeting disabled individuals' energy needs.

At the same time, some interviewees noted that housing policies indirectly impact energy poverty for people with disabilities, as structured housing assistance in some European countries helps prevent institutionalization and homelessness, though Greece lacks similar interventions. Others highlighted energy communities, where collective solar panel installations could help reduce costs for vulnerable households, but acknowledged such initiatives remain underdeveloped due to financial barriers. A few interviewees pointed to the 'Help at Home' programme, which provides home assistance to people with disabilities, easing some financial burdens, but does not directly address energy costs. Others mentioned general energy-efficiency programmes, such as housing renovation incentives or appliance upgrade schemes, which may allow people with disabilities to qualify more easily, though it is unclear if they receive additional financial aid. Meanwhile, several interviewees stated that no systematic efforts exist to link disability-related policies with energy poverty solutions. While financial aid for heating costs is available, it does not accommodate the specific energy consumption needs of people with disabilities, such as continuous medical device usage. Overall, while a few broad social policies offer indirect assistance, interviewees agreed that no structured, disability-focused energy initiatives exist in Greece, leaving people with disabilities reliant on general welfare programmes that do not fully account for their higher energy demands.

In terms of sectoral coverage, some interviewees noted that housing policies indirectly impact energy poverty for people with disabilities, as structured housing assistance in some European countries helps prevent institutionalization and homelessness, though Greece lacks similar interventions. Others highlighted energy communities, where collective solar panel installations could help reduce costs for vulnerable households, but acknowledged such initiatives remain underdeveloped due to financial barriers. A few interviewees pointed to the 'Help at Home' programme, which provides home assistance to people with disabilities, easing some financial burdens, but does not directly address energy costs. Others mentioned general energy-efficiency programmes, such as housing renovation incentives or appliance upgrade schemes, which may allow people with disabilities to qualify more easily, though it is unclear if they receive additional financial aid. Meanwhile, several interviewees stated that no systematic efforts exist to link

disability-related policies with energy poverty solutions. While financial aid for heating costs is available, it does not accommodate the specific energy consumption needs of people with disabilities, such as continuous medical device usage. Overall, while a few broad social policies offer indirect assistance, interviewees agreed that no structured, disability-focused energy initiatives exist in Greece, leaving people with disabilities reliant on general welfare programmes that do not fully account for their higher energy demands.

When it comes to the national policy context as a whole, the interviews overall acknowledged that existing policies offer some relief, such as heating subsidies and social electricity tariffs, but fail to address the specific energy needs of people with disabilities. Some expressed frustration over financial constraints that make essential mobility equipment unaffordable and increase energy consumption due to inaccessible infrastructure. Several noted that higher heating and cooling allowances are crucial, as different disabilities require different energy consumption, yet current policies treat all disabilities the same. Others highlighted daily struggles, including elevator failures leading to social isolation and mobility limitations forcing greater reliance on vehicles. A few suggested flexible electricity pricing models, like variable-rate tariffs, could help lower costs, but smart-home solutions remain out of reach for most people with disabilities. Overall, interviewees agreed that energy affordability directly impacts autonomy and dignity, and a lack of targeted support contributes to psychological distress and social exclusion.

7.6.2 Justice pathways

In terms of ***recognition justice***, most interviewees agreed that the energy-related needs of people with disabilities are largely unrecognized in Greek policies. While electricity discounts exist, they are not structured to address the higher energy consumption linked to disabilities, such as medical device usage or temperature regulation needs. Several noted that energy support is based on disability percentage, rather than specific energy demands, leading to inequities in aid distribution. Others highlighted the lack of targeted initiatives from utility companies to lower energy costs for disabled households. Overall, interviewees emphasized that people with disabilities are often excluded from energy policy discussions, with no differentiation between various disabilities, despite significant differences in energy needs. They stressed the need for more tailored interventions that account for housing accessibility, medical reliance on electricity, and mobility challenges.

As for ***procedural justice***, interviewees agreed that people with disabilities are not sufficiently included in energy policymaking, often being represented by intermediaries rather than directly shaping decisions. Many stressed that people with disabilities should participate as co-researchers, sharing their personal narratives to improve policy awareness and eliminate stigma. Several interviewees

criticized the overpricing of the essential equipment, stating that non-disabled policymakers make uninformed decisions, failing to address the financial and energy burdens people with disabilities face. Some suggested involving disability advocacy groups in policymaking and encouraging energy providers to develop specialized tariffs for those with higher energy consumption due to medical equipment use or mobility needs. A few interviewees advocated for mobility subsidies to be expanded, covering transportation and heating costs, given their necessity for people with disabilities. Others emphasized that energy support policies should differentiate between disability types, rather than applying uniform criteria that overlook specific energy requirements. Overall, interviewees agreed that procedural justice in energy policy is lacking, with people with disabilities excluded from decision-making processes and forced to navigate inaccessible energy assistance programmes. Many stressed the need for more direct involvement, stronger representation, and tailored policies to ensure fair access to energy support.

Interviewees underscore significant gaps in Greece's financial aid system for people with disabilities, particularly concerning energy-related needs. While eligibility for general aid and discounts is based on disability status, income level, and energy consumption, the support remains insufficient and poorly targeted. Disability benefits are determined by the Disability Certification Centre's KEPA system and the percentage of disability, but this approach overlooks the specific energy demands of various disabilities-such as the need for mobility equipment or increased heating/cooling-which results in inequitable support.

Although general subsidies and some municipal aid exist, these are typically limited to housing or food assistance and do not directly address energy expenses. Overall, interviewees emphasized that disability benefits in Greece focus on general financial hardship, but fail to consider increased energy consumption needs, leaving many people with disabilities struggling with high energy costs without adequate support.

Interviewees noted that certain municipalities (Athens and Thessaly) have regional energy poverty assistance programmes, but these efforts are not disability-specific. Some highlighted that housing accessibility is better addressed in advanced European systems, where people with disabilities are integrated into urban settings, rather than segregated from the wider community. Many emphasized urban planning failures, stating that poor infrastructure increases financial strain, as people with disabilities often rely on expensive taxis or personal vehicles due to inaccessible public transport. Others pointed out that public buildings in Greece remain largely inaccessible, even when some universities attempt improvements. The Social Electricity Tariff does not account for housing characteristics, such as insulation quality or solar energy use, when determining disabled individuals' eligibility, further limiting energy efficiency efforts. Additionally, while municipal

governments offer exemptions from local taxes, this does not specifically address energy poverty or accessibility concerns. Overall, interviewees stressed that people with disabilities in rural areas face greater barriers to energy-related support, due to fewer local resources and limited accessibility, reinforcing geographical inequalities in energy assistance.

7.6.3 Indicators and data

Some of the interviewees mentioned that Greek municipalities do not systematically record energy poverty among people with disabilities, relying instead on general social welfare data. Another interviewee mentioned that disability data exists (estimated at 10-12% of the Greek population) but does not know of specific indicators tracking energy poverty among people with disabilities. Others referenced Eurostat, revealing that Greek statistical agencies lack clear tracking systems for people with disabilities experiencing energy poverty, making policy interventions difficult.

Municipal social services can identify households with disabled members, but lack formal energy-related indicators. Several interviewees emphasized that current policies treat all people with disabilities the same, failing to recognize differences in medical equipment use, mobility challenges, or heating/cooling requirements. Most interviewees indicated that eligibility for aid is based on disability status, high energy consumption due to necessary equipment, and income levels. Overall, interviewees agreed that without clear tracking systems, effective policy targeting remains difficult, leaving people with disabilities in need of tailored energy assistance without structured support.

In terms of data collection and sources, interviewees largely agreed that data collection on disability-related energy poverty in Greece is inconsistent and lacks a systematic approach. While Eurostat and European institutions provide general energy poverty statistics, Greek municipalities do not formally track disability-specific energy burdens, making targeted interventions difficult.

Some mentioned that municipal records may exist, but there is no direct knowledge of how energy poverty among people with disabilities is measured. Others noted that NGOs might collect demographic data, but government agencies do not systematically monitor disability-related energy poverty, limiting policy effectiveness. Overall, interviewees emphasized the absence of formal indicators and comprehensive data tracking, reinforcing the need for structured monitoring systems to ensure people with disabilities receive appropriate energy support.

7.6.4 Policy recommendations and best practices

In terms of moving forward, interviewees identified visibility and stigma reduction as key challenges, noting that many people with disabilities hesitate to seek support due to social barriers, though attitudes are slowly shifting. Many stressed that high living costs and inaccessible infrastructure make independent living financially unsustainable, with no structured energy assistance in place to address their needs. Several highlighted limited financial aid, the absence of inclusive energy pricing models, and underdeveloped community-based energy solutions as major concerns. Others emphasized that current policies treat all disabilities the same, failing to differentiate energy burdens based on medical or mobility-related needs. The lack of targeted support, energy-access infrastructure, and structured tracking mechanisms was repeatedly mentioned, with interviewees agreeing that without formal recognition in energy policies, people with disabilities will continue facing disproportionate financial strain. Many called for better data collection, customized policy solutions, and stronger efforts to integrate accessibility into energy affordability frameworks.

Interviewees suggested a range of policy changes to better support people with disabilities facing energy poverty, including immediate financial aid, home upgrades, and lower energy costs tailored to specific disability-related needs. Many emphasized that reducing financial and psychological burdens would improve autonomy and quality of life. Several called for expanded transport subsidies, targeted energy discounts, and better financial assistance for cooling and heating costs, recognizing that different disabilities require different energy consumption patterns. Others proposed government-supported smart-home subsidies, flexible energy pricing models, and public awareness campaigns on energy-saving options. A few interviewees recommended installing small-scale solar panels in homes to offset high energy costs, particularly for individuals reliant on medical devices and climate control systems. Others stressed the need for customized energy subsidies, specialized renovation programmes, and income-based financial aid rather than uniform disability benefits. Overall, they agreed that policy adjustments should account for geographic and accessibility challenges, ensuring people with disabilities living in different environments receive adequate support.

Interviewees identified several established best practices addressing energy poverty among people with disabilities, reinforcing the need for structured policy development. Some pointed to local energy programmes, municipal initiatives, and NGO partnerships as examples of temporary assistance, but noted that these efforts are not standardized or systematically integrated into national policies. The PowerPoor initiative was highlighted for training energy advisors to help vulnerable households improve efficiency, though it does not focus exclusively on disability-related needs. Others cited successful housing and energy support

models in Germany, Canada, and the UK, but emphasized that similar large-scale efforts are lacking in Greece.

Several interviewees mentioned energy communities as a promising concept, where shared renewable resources could reduce costs for vulnerable households, but noted that implementation remains weak due to financial barriers. No clear public-private collaborations were identified, and many stressed that disability-inclusive policymaking is urgently needed. Overall, interviewees agreed that Greece lacks structured examples of best practices, making visibility and advocacy crucial for future improvements. They suggested expanding municipal programmes, integrating structured disability-focused initiatives, and developing national policies tailored to the energy needs of people with disabilities.

When referring to policy adoption pathways, interviewees broadly agreed that direct involvement of people with disabilities in policymaking is essential to ensure their needs are accurately represented. Many stressed the importance of research-driven strategies and public awareness campaigns to combat stigma and promote inclusive policies. Several suggested closer cooperation between government agencies, NGOs, and energy providers, with some advocating for specialized advisory committees and direct consultation with disability organizations to shape targeted energy assistance programmes. Others highlighted the need for tailored energy policies, distinguishing between different disabilities rather than relying on a generalized percentage-based system. Some emphasized universal accessibility standards, particularly in urban planning and energy policy reforms, while others called for municipal expansion of support services, such as transport subsidies and energy-focused initiatives. Overall, interviewees agreed that stronger representation of people with disabilities, through direct advisory roles rather than traditional advocacy groups, is key to developing effective, disability-specific energy policies.

7.7 Italy

7.7.1. Current policy development and implementation

Interviewed stakeholders were unanimous in describing how Italy's policy response to energy poverty has grown over the past decades, but continues to fall short in terms of integrating the specific energy needs of persons with disabilities. Central to the national response are two *Bonus Sociali* (Social Allowances), which provide utility bill discounts to low-income households. Within this mechanism, there are the Bonus Sociale per il Disagio Economico (Allowance for situations of financial hardship), and the Bonus per gravi condizione di salute (Health-related hardship allowance), specifically designed for individuals who rely on electromedical devices at home and offers partial relief on electricity bills, partially recognizing energy as a health-related need, but limited in accessibility by stringent eligibility conditions.

Gas bills – still essential for almost 50% of Italian households – are no longer covered by the Health-related hardship allowance, leaving a major gap in the support framework. Local governments have occasionally stepped in with fuel subsidies, but these are inconsistently applied and often rely on narrow definitions of disability. For example, in some municipalities, a wheelchair must be classified as a 'life-saving device' to qualify for fuel aid – an overly medicalized and exclusionary standard.

Indeed, both allowances are contingent upon the ISEE, which assesses household income and assets, in so excluding many individuals whose disability-related energy needs are not captured by income alone. To better grasp the Italian policy landscape on disability rights, it must be said that most benefits and recognition mechanisms are tied to medical certification of impairment and the income indicator – ISEE, with limited focus on social participation, accessibility, or environmental barriers, reflecting a predominantly medical and economic model of disability.

Despite references in national strategies, including the PNRR (Piano Nazionale di Ripresa e Resilienza) and Superbonus 110% scheme, there is little to no formal integration of disability-specific criteria in energy renovation funding or household efficiency support. As such, fragmentation in implementation and intervention remains a persistent obstacle as energy and social welfare systems operate on separate tracks with limited data interoperability and few cross-sectoral mechanisms.

In Italy, the Red Cross attempts to close these policy-practice gaps through social helpdesks, for guidance to vulnerable individuals, including people with disabilities. Additionally, the organization supports energy consumption management and personalized assistance but mainly on ad hoc or project-based interventions. Although, most other interviewees have talked about the ever-present (yet insufficient) national top-down approach, stressing how the state that could benefit from cross-sector collaboration.

Examples of indirect policies were pinpointed by one of the interviewees (a disability researcher and advocate), who highlighted that, 'at the national level, some municipalities offer fuel subsidies, but these are tightly restricted … This reflects a medicalized approach to disability that narrowly interprets eligibility through a survival lens, ignoring broader considerations like autonomy or well-being. More broadly, while some minor resolutions from energy authorities offer discounts on utilities, these are described as piecemeal and insufficient. They operate within a fragmented framework, often inaccessible due to bureaucratic opacity or lack of outreach. The existing national provisions are reactive, not strategic, and fail to address the diverse ways in which disability intersects with energy dependency'.

Many interviewees identified the shift from assistance to structural inclusion as being central to their critique of existing policy approaches: public policies, especially those focused on housing, are noted for clustering people with disabilities without providing sufficient participatory frameworks for project co-design. Indeed, at the national level, the lack of a unified and proactive coordination framework undermines impact. While instruments like the 'bonus sociale' are functional, they are reactive in nature and constrained by rigid eligibility mechanisms. People with disabilities, for example, often struggle with documentation and procedural access, marking a major disconnection between available support measures and actual uptake by eligible individuals.

Overall, these mentioned aspects unavoidably lead to a policy landscape essentially reactive and narrow in scope. While some tools exist to mitigate extreme cases of energy deprivation among disabled people, Italy lacks a coordinated, rights-based strategy to systematically address the intersection of disability and energy poverty.

As highlighted by the representatives of a legal association, there is a 'major disconnection between available support measures and actual uptake by eligible individuals. Although economic support exists at both national and European levels – including nearly full utility coverage for people in critical health situations – implementation falters when the public is uninformed, unengaged, or deterred by bureaucratic complexity'.

7.7.2 Justice pathways

Such lack of coordination and concerted effort at national, regional and local level becomes even more apparent by examining current practices in Italy through the energy justice framework, which points at failures to meet the principles of recognition, procedural fairness, equitable distribution, and spatial inclusion for persons with disabilities.

In terms of ***recognition justice***, interviewees' opinions were unanimous in stating how energy policy in Italy does not adequately recognize the specific needs of persons with disabilities, because even where disability is acknowledged, it is often through a medicalized lens. For instance, as the eligibility criteria for the health-related hardship allowance depend on demonstrating the use of certified medical equipment, it sidelines other energy needs essential for autonomy, mobility, or social participation. Although some of these needs are partially addressed somewhere else through tax deductions and exemptions on e.g. mobile phones, car-related paperwork, and other assistive devices for persons with disabilities, such perspective still reinforces a survival-based understanding of disability, rather than a rights-based one.

The representatives of a non-profit association advocating for the rights of people with disabilities described this as structurally discriminatory: asking people with disabilities to prove financial hardship to access electricity becomes an unacceptable burden when energy is a prerequisite for independent living. Thus, such institutional oversight, also originating from the lack of disability-specific frameworks in both national and EU energy policies, corroborates then the absence of a broader cultural and institutional noted by some interviewed organizations, who shared how shame, stigma, and invisibility prevent many from seeking help.

Regarding ***procedural justice***, many pointed out how the right to participate meaningfully in policy design and implementation is notably weak, as most national programmes are designed without the direct involvement of people with disabilities or their representative organizations. In practice, several of the interviewees reported that co-programming processes exist in theory, but in practice participation is inconsistent, and, if it happens, it is often mediated by caregivers or associations where disabled people are not in leadership roles. Indeed, in some of the mentioned projects, disabled residents were engaged in educational activities but not in shaping funding models or decision-making processes. Others stressed then that even well-intentioned programmes fail when outreach is poor and communication is not adapted to different needs, creating yet another procedural barrier to access.

As for ***distribution justice***, while energy support measures in Italy are primarily income-based, virtually every interviewee across the board said that this fails to account for disability-related expenses and increased energy usage, like using electric wheelchairs, refrigerated medication, or requiring heating or cooling for health reasons, that will lead to significantly higher bills, which are not reflected in standard welfare calculations. So, while benefits do exist, they are too narrowly defined, administratively burdensome, and insufficient in scale. At the community level, some organizations rely on personal relationships rather than formal assessments, which helps reach those in need but lacks systemic reach or equity.

Regarding ***spatial aspects of injustice*** were also a recurrent theme in several interviews. In Rome's 6th Municipality, for instance, clusters of social housing concentrate people with disabilities in areas with poor infrastructure and limited mobility support, as noted by an experienced educator and social inclusion project leader. In smaller towns such as Gubbio and Città di Castello, one of our interviewees, working for a legal rights advocacy group, is involved in outreach work precisely because many eligible individuals are disconnected from support services due to geographic and digital exclusion. Only a few local initiatives, such as Scenario B's 'Le Vele' project or èNostra's community energy schemes, show attempts to tailor interventions to territorial realities. However, these remain isolated examples rather than the norm in Italy's national planning.

7.7.3 Indicators and data

Across nearly all interviews, a common thread emerged: Italy lacks a coherent, disability-sensitive data strategy capable of capturing the actual contours of energy vulnerability. While indicators were not always explicitly mentioned by all interviewees, their observations consistently pointed to the inadequacy, or outright absence, of mechanisms that could reliably guide policy and support allocation.

At the centre of the existing eligibility architecture lies the 'Indicatore della Situazione Economica Equivalente' (ISEE): a blunt instrument that can be useful for identifying general economic hardship, but still falls short in revealing the often invisibilized energy demand tied to living with a disability. In our conversations, several respondents remarked the urgency of incorporating indicators that reflect real-world conditions, to consider not only household income, but also variables like dependency on assistive technologies, frequency of electricity use for health maintenance, housing insulation quality, and the spatial configuration of living environments. In fact, according to these organizations, the ISEE acts less like a diagnostic tool and more like a filter actually blocking access to benefits unless people fit narrow economic thresholds, regardless of actual energy dependency.

In the administrative backend, Acquirente Unico oversees the Sistema Informativo Integrato (SII), which compiles highly detailed consumption data from energy distributors. While this database serves as the base for the operation of the allowances, its access is strictly restricted, for reasonable privacy concerns. However, many noted that the rigidity of data-sharing rules effectively decouples energy consumption patterns from any social or medical vulnerability data. The result: a system that knows who uses more energy but not why, paralysing strategic interventions at the source. Moreover, energy and welfare databases operate in silos with no meaningful interoperability between social service registries & consumption records, making it nearly impossible to trace how well support measures are functioning for specific groups like people with disabilities.

Alternative sources such as the National Statistical Office ISTAT are routinely used for broader statistical analysis, but these too are insufficient, with some raising concerns over the outdated nature of national datasets, which often lag two years behind real-time needs. Interviewees from the Italian Red Cross pointed to collaborative efforts with ANCI, Caritas, and Sant'Egidio's Community, such as the 'INPS in Rete per l'Inclusione' protocol, that attempt to create more integrated views by including income, housing conditions, and social vulnerability factors. Yet even here, disability-specific variables are often superficial or inconsistently applied.

Lastly, several interviewees observed that in the absence of formal data, outreach work relies on case-by-case discovery. People who need help are identified through personal networks, parish services, or municipal intermediaries, but not through

any predictive system. In short, Italy has the fragments of a data infrastructure, but without the political will and institutional design to connect them, indicators remain an unrealized asset.

7.7.4 Policy recommendations

Despite the shortcomings of national frameworks, several interviewees offered compelling examples of community-driven, intersectoral, and experimental initiatives that demonstrate how energy and disability inclusion can be meaningfully linked. These small-scale proofs of concept challenge prevailing narratives of what's possible within Italy's fragmented policy landscape.

One of the most prominent examples comes from Scenario B, whose Le Vele project in Rome, developed in collaboration with the Instituto Leonardo Vaccari, represents a rare alignment of environmental and social objectives. Here, a renewable energy community initiative combines on-site photovoltaic generation with redistribution of surplus revenues to support vulnerable individuals, therefore also including residents with disabilities. The effort in Le Vele also embeds educational activities that raise awareness among residents, including disabled people, about energy use and sustainability. While not formally framed as a disability policy, Le Vele addresses structural issues, such as institutional overconsumption and exclusion from retrofit incentives, in a way that is both inclusive and replicable.

From the humanitarian and advocacy front, interviewees from the Italian Red Cross highlighted a range of initiatives, including the Energia per Tutti project, supporting households with disabled members in reducing their energy costs and managing consumption patterns more effectively. Regional efforts like Lombardia Spazio Disabilitá and additional regional funds disbursed in Emilia-Romagna, for the removal of architectural barriers in private buildings, were also cited for their contributions to respectively provide better access to information to relevant people, and also improving energy efficiency in residential buildings used by people with disabilities.

Private sector engagement, while sporadic, is not entirely absent. Two positive examples, which remain market based, come from IKEA, which develops accessible smart-home devices, as well as from Philips, which provides environmental control technologies that are usable via voice or sensory interfaces.

Across the interviews, it became clear that Italy lacks a systemic framework for addressing the intersection of disability and energy poverty, where the policy architecture remains fragmented, medicalized, and largely indifferent to lived realities. What follows are recommendations drawn directly from the insights, critiques, and propositions shared by stakeholders across legal, energy, advocacy,

and support sectors: together, they offer a roadmap for recalibrating both the principles & practices of energy policy for energy poor disabled persons.

As highlighted by an academic expert and disability rights advocate, there is a need for 'structural reform to reflect autonomy and social participation – not just medical necessity – and investing in accessible infrastructures. genuine policy co-design must be led by disabled people themselves, through representative organizations with democratic participation … energy justice for people with disabilities cannot be achieved through piecemeal benefits. It requires a redefinition of both vulnerability and policy responsibility, shifting from reactive support to rights-based planning embedded in social, environmental, and disability strategies.

In terms of ***immediate interventions***, the use of the ISEE as a gatekeeping tool for disability-related energy support must be reconsidered: access to essential energy, whether for assistive technologies, climate control, or medication storage, should be seen as a right, not a conditional benefit. Therefore, a revised framework should incorporate fixed allowances or alternative indicators that reflect the specific energy demands of different impairments and support needs. Second, there is an urgent need to launch free energy needs assessments for households that include persons with disabilities, with both an evaluative and educational purpose, helping families understand their entitlements while tailoring interventions to their actual consumption patterns and technological dependencies. Third, communication must be transformed from a passive to an active mechanism of inclusion: several of the interviewees argued that trusted local intermediaries – legal associations, community volunteers – can counteract the shame, fear, and confusion that prevent people from claiming their rights.

Medium-term actions would include the creation of integrated data systems that allow energy and welfare actors to identify and respond to energy poverty with greater precision. As noted by an energy company representative, the SII database remains siloed and inaccessible beyond administrative functions. With structured data-sharing agreements, under strict ethical and privacy protocols, information can be developed so that consumption data can be linked with health, housing, and social vulnerability indicators. Simultaneously, the training of accessibility and inclusion officers within utilities and energy agencies, as suggested by an energy co-operative member, would allow institutions to better understand and address complex support needs, to advocate for vulnerable clients, review internal procedures, and guide inclusive service design.

Last but not least, longer-term ***structural change*** must begin with recognizing energy poverty as a disability rights issue, bringing energy access into the national disability strategy and aligning it with Italy's obligations under the United Nations Convention on the Rights of Persons with Disabilities, because of its principles on independent living, equal participation, and adequate housing that indeed provide

a strong legal and moral foundation for action. Also fundamental is the formal inclusion of DPOs in national and regional policymaking: as raised by a several of the national disability rights advocates who we interviewed, co-programming cannot be delegated to third-sector actors or family representatives alone because policy design must be led by those most affected as decision-makers.

7.8 Spain

7.8.1 Current policy development and implementation

In Spain, interviewees generally agreed that direct policies targeting the intersection of disability and energy poverty are scarce or non-existent. A DPO interviewee stated that: 'There is no evidence that these policy approaches exist. This is what we advocate.' While few direct policies exist, some legal frameworks provide indirect protections. For example, Law 24/2015, mentioned by multiple interviewees, the electric social bonus, and Law 24/2013 include provisions that affect households with disabled members. Representatives from Government of Catalonia stated that: 'Article 52.4 of the Electricity Sector Law (Law 24/2013) considers people with disabilities as essential supply users.' Additionally, the CADs (Disability Support Centres) issue certificates to recognize special circumstances like disability for the social bonus.

Policies primarily designed for broader vulnerable groups often indirectly benefit people with disabilities. The representatives of an autonomous government agency in the social sector references efforts to include 'electro dependent people with disabilities. A DPO representative notes that energy efficiency subsidies 'help indirectly by improving living conditions, which may reduce energy hardship,' although upfront costs limit access. The social bonus scheme permits higher income eligibility thresholds for disabled households according to an interviewee based in an environmental and social advocacy movement.

The public sector (including municipalities and the Catalan government) predominantly funds and administers energy poverty aid. The third sector plays a crucial role in advocacy and service delivery. A government representative stated that 'It is very important to have a public-social or public-private collaboration where people are at the centre.' Private sector involvement remains limited or anecdotal. TERESA PALAHI, CERMI observed: 'I have heard that some electricity providers have (...) shown sensitivity,' but this lacks formal recognition.

Interviewees reported significant gaps in access, awareness, and support. A DPO employee highlighted that they 'spend 30,000 euros more per year than a family that does not have a kid with disability.' Social workers' lack of knowledge about available aid is a frequent concern, as stated by the representative of a disability advocacy group: 'Social workers are not aware of the aids we can apply for.' In the

interview process, it was found that energy and environmental support groups provide personalized assistance and legal advice to people who require it.

There is a consensus that existing energy policies fail to adequately recognize the specific needs of people with disabilities. A disability rights advocate asserts: 'They cannot live without this energy supply; it contributes to their quality of life.' A government representative noted 'a lack of relation between the Disability Strategy and the Energy Poverty Strategy.' Although disability is sometimes mentioned in policies, critical needs such as medical device usage and thermoregulation remain insufficiently addressed.

7.8.2 Justice pathways

In terms of ***recognition*** and ***procedural justice***, Participation and representation mechanisms for disabled people in policymaking are weak. Interviewees from a movement that aims to inspire and upskill workers towards sustainability and social justice recommend that 'introducing a moderator… ensures their inclusion through positive discrimination.' A public health department representative out the absence of 'a prevention policy' and advocates for sectoral tables to foster consensus and inclusion. The representatives of an organization that offer support to people with physical disabilities insist that 'Families or users themselves [should be] part of the policymaking process.'

As for ***distributional justice***, eligibility frameworks primarily use income-based criteria, with some adjustments for disability, such as increased income limits for the social bonus. Nevertheless, these frameworks fail to reflect the actual costs associated with disabilities. A disability advocate notes that 'Catalonia is one of the autonomous communities in Spain where less financial aids are given for disability.' This statement was further supported by an interviewee based in a movement that represents people with physical disabilities.

In ***spatial justice*** terms, significant geographical disparities exist in services and infrastructure. Barcelona benefits from more developed support mechanisms such as the PAE (Energy Advisory Centres), while other areas lack even basic accessibility adaptations; for example, 'not even streets are fully adapted… for instance, traffic lights' (as pointed out by a disability expert working for a foundation active in the sector). The 'sustainable residence in Lleida is recognized as a successful model that 'should be a project that can be extended to other locations' (public health department representative).

7.8.3 Indicators and data

There is no standardized indicator framework to identify disabled individuals facing energy poverty. Suggestions include linking types of disabilities to specific energy needs (as highlighted by an interviewee from an environmental advocacy group)

and incorporating personal circumstances like caregiving responsibilities. A disability advocacy union interviewee highlighted that 'Other indicators are the disability degree, if there are behavioural disorders, multiple disabilities or reduced mobility.'

Data collection on disability and energy poverty is fragmented and incomplete. A public health department representative explained: 'The provincial government does not keep a record (...) due to data protection concerns.' Many organizations rely on informal self-reporting. The Catalonian government utilizes tools such as SIAS and IRER, although these are not universally accessible or integrated.

A key challenge identified is the lack of awareness, data integration, and tailored policies for disabled populations within energy poverty frameworks. The representative of an autonomous government agency in the social sector highlights an ongoing effort: 'A study is currently being conducted to assess how climate change affects (...) people with disabilities.' Furthermore, a disability rights advocate stressed the urgent need for dedicated tools and priority recognition.

7.8.4 Policy recommendations and best practices

Interviewees recommend several policy changes, including:

- 'Implement social energy rates dedicated to people with disability' (employee of a non-profit organization advocating for the rights of people with disabilities)
- 'Specialized social workers trained in disability issues' (disability advocacy union).
- 'Free energy audits and access to national housing funds' (Disability rights advocate).
- Universal basic income support for carers, with the representative of a disability advocacy union stating that 'Carers should have a financial benefit like the minimum vital income.'

Several clear best practices exist or are well-documented, with notable examples including Barcelona's energy refurbishment projects, the PAE energy support centres, the La Bassa sustainable residence in Lleida, and the UK's 'winter payments' for disabled people. However, many interviewees expressed frustration over lack of visibility and documentation of successful interventions: 'It would be great, but I am not aware' (Disability advocacy union). Key recommendations for future policy pathways include:

- 'Strengthening cross-sectoral coordination' (Disability rights advocate).
- Enforcing UNCRPD Article 29 on political participation (Government representative).

- Several interviewees from the non-profit and governments sectors highlighted the need for creating inclusive policymaking boards and providing anti-ableist training.
- Promoting participatory budgeting and decentralized decision-making to empower individuals, with a disability advocate that 'The objective is to give all the money to each person so they can manage the money freely.'

8. Discussion and conclusion: a framework for more inclusive energy policies

Based on the literature reviewed in this report, we have developed a conceptual model that highlights various interrelated factors contributing to injustices at the disability-energy, especially in relation to wider governance and socio-technical challenges. Our conceptual model (Figure 1) highlights the vicious circle between the drivers and impacts of disability-related energy poverty, with two main 'exit points' around 1) the material infrastructures that underpin vulnerabilities and 2) the provision of financial assistance and other forms of support to households. The model is divided into four main areas, each representing a key theme that intersects with deeper forms of regulation and power.

We identify four immediate underpinning factors and impacts:

1. Demographic circumstances and socio-economic disadvantage: This highlights how people's characteristics and types of disability (around age, race, gender, employment, or socio-economic status) can render them vulnerable in different ways, particularly in the context of access to energy or resources.
2. Material infrastructures of homes and settlements: This quadrant underlines how physical systems – e.g. housing quality, transport and local services – affects people's ability to access and afford energy or meet basic living needs.
3. Everyday lived experiences of disability: This quadrant specifically focuses on how individuals with disabilities face unique challenges in daily life, especially when energy infrastructure, support, or access is not designed to be inclusive.
4. Financial assistance and wider forms of support: This underlines the role of monetary and social programmes in mitigating the negative impacts of energy and socio-economic disadvantages.

In line with the social model of disability, the surrounding boxes highlight the broader issues within governing systems (social and technical) that create inequalities, around recognition, politics and power. The diagram implies that interventions need to account for multiple layers of disadvantage, and work on systemic changes that recognize and correct these inequalities. It also hints at the need for more inclusive, equitable energy policies and governance that provide real support to vulnerable groups, addressing both the material and social dimensions of their lives.

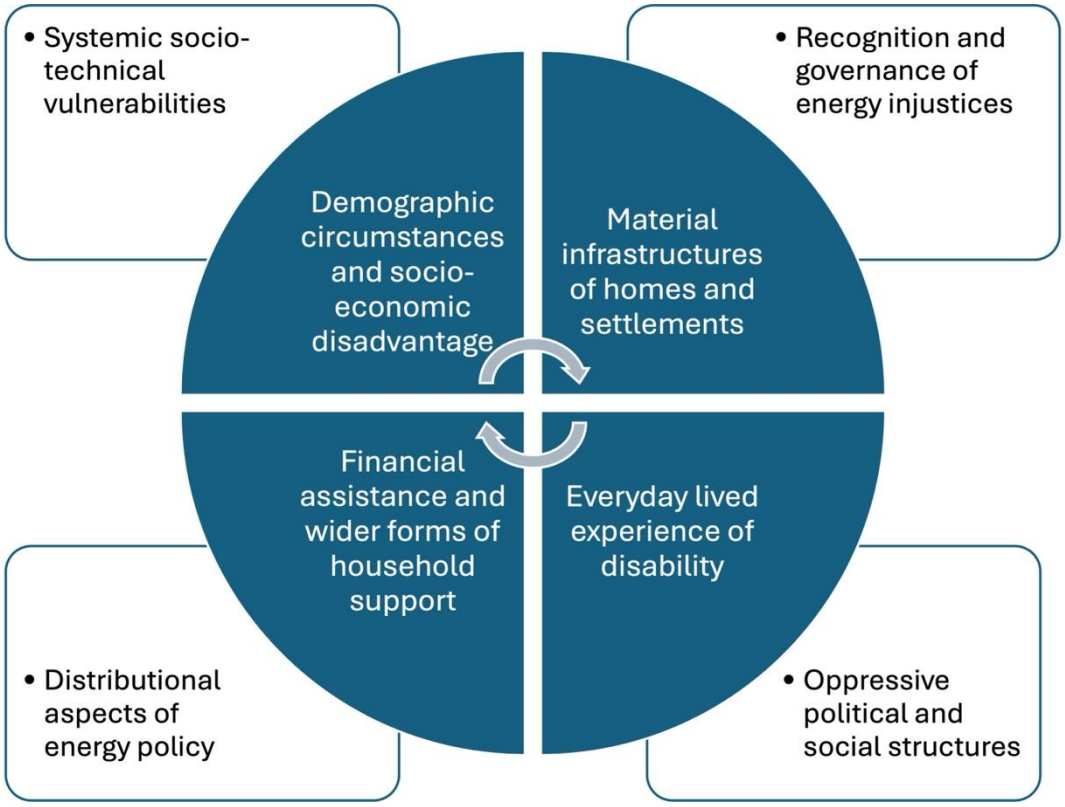

Figure 1: A conceptual model to approach the energy-disability nexus.

In policy terms, our review has highlighted the need for redesigning policy to ensure that people with disabilities are fully acknowledged within relevant energy poverty measures while also aligning aid schemes with the diverse, fluctuating, as well as nuanced needs and lived experience of persons with disabilities will make measures more accessible to this vulnerable group and ultimately more impactful (Middlemiss & Gillard, 2015; Snell et al., 2014; United Nations Department of Economic and Social Affairs, 2018). Whether this means updating policies to fast track repairs or energy efficiency improvements to people's homes to ensure the well-being of the inhabitants, tackling insufficient or unstable incomes caused by interference of a disability with employment via financial aid, increasing energy advice pertaining specifically to those who have a disability, enhancing collaboration between stakeholders to structurally reduce the effect of energy poverty on persons with disability, or any of the other above-mentioned measures, policy response should remain flexible yet tailored to cater to the needs of persons with disabilities, particularly as new data about the nexus between physical disability and energy poverty become available.

The evidence reviewed here has emphasized the need for inclusive, coordinated, and user-centred approaches. Successful initiatives are seen to combine trusted intermediary involvement, home visits, and small-scale improvements supported

by regional funding. Activist work has been shown to play a key role in achieving policy changes.

A recurring recommendation is the development of comprehensive tools and platforms to help individuals navigate available services, customized by disability type and target group. Another common policy request is the need to develop concerted policies to consider the often-overlooked high energy demands of medical equipment, or the need for constant warmth. Administrative barriers such as complex paperwork and online-only applications disproportionately affect people with disabilities.

To improve inclusivity, there is a clear need for leadership structures based on direct representation, which would ensure meaningful engagement. Training public officials on disability rights and fostering equal partnerships is also key, accompanied by improved co-ordination between energy agencies and disability services. This would help identify hidden cases of energy poverty and enable more detailed assessments. Our evidence also underscores the importance of user-centred data collection, direct communication across services, and accessible tools like easy-to-read documentation. This should be accompanied by expanded financial aid, targeted energy discounts, and smart-home subsidies, while recognizing that different disabilities entail different energy needs. Reducing financial strain and improving the quality of life for people with disabilities entails customized, geographically sensitive policy solutions, as well as the formal recognition of disability in energy policy frameworks.

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Appendix 1 - Interview questions

1. Are you aware of any direct EU/national/regional/local-level policies to address household energy poverty, energy use, and energy inequalities (past or present)?
    a. Do/did any of these explicitly target or mention direct support for disabled people?
    b. What kind of policy approaches are generally employed in targeting energy poverty specifically for disabled people? (i.e. direct income support, lowered interest rates for renovated homes, bonuses for specific appliances, etc.)
    c. Are you aware of any other policies that may be of relevance/applicable to disability-related energy injustices in the home?
2. What kind of indicator frameworks are best used to identify disabled people who face energy poverty?
    a. Could you share any additional information on the relevant data collection process for such indicators?
3. According to you, how can we best ensure and promote the effective engagement of people with disabilities who face energy poverty in policy-making?
    a. What kind of specific interventions would you suggest based on your knowledge and/or experience?
4. What current EU/national/regional/local-level economic support measures or legal protections do you think need to be adapted to improve the energy circumstances of disabled people?
5. Are there any financial aids available for people with disabilities that you know of on a national, regional, or local level?
6. What future EU/national/regional/local-level economic support measures or legal protections do you think will need to be adopted to improve the energy circumstances of disabled people?
7. What future EU/national/regional/local-level environmental and climate policies, measures and strategies do you think need to be adopted to improve the energy circumstances of disabled people?
    a. How would you adapt such policies?
8. Can you provide examples of best practices at the EU/national/regional/local levels where **public authorities** have addressed energy or infrastructure issues specifically among disabled people (i.e. via training, social support, intermediation, or other forms of support)?
9. Are there any notable examples where **private companies** have successfully addressed energy or infrastructure needs for disabled people?
10. Can you identify best practices from **third sector organizations (such as NGOs or nonprofits)** that have engaged with energy or infrastructure issues for disabled people, providing support or advocacy?
11. Are there successful examples of **collaborations** between **public authorities, private companies, and third sector organizations** that have addressed energy or infrastructure issues for disabled people? What role did each party play in these initiatives?

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PROJECT FACTS

Start date: 01/10/2024 **Duration**: 36M **Call**: LIFE-2023-CET **Coordinator:** AISFOR SRL (AISFOR)